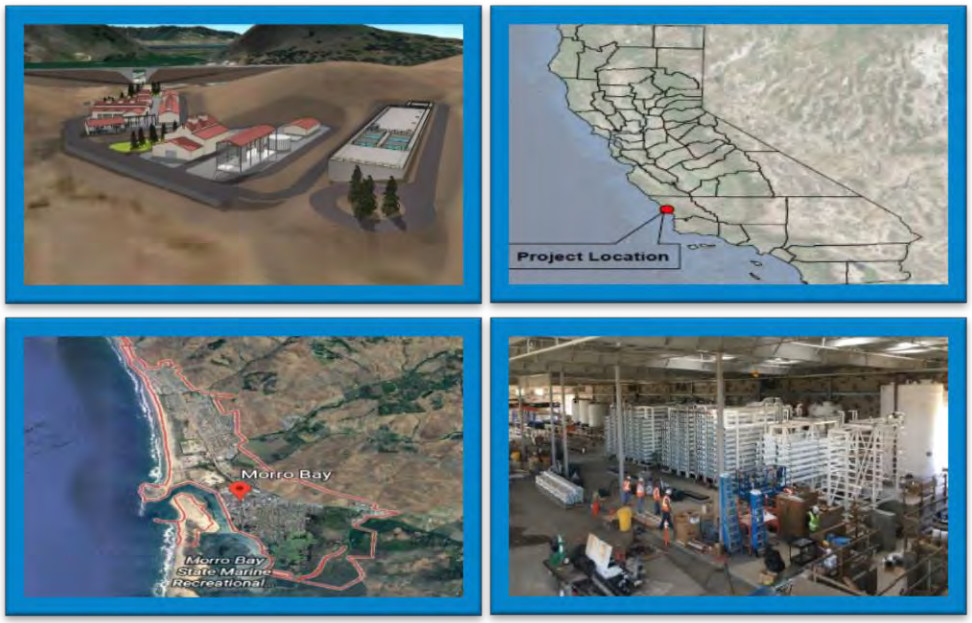
WATER INFRASTRUCTURE FINANCE AND INNOVATION ACT (WIFIA) APPLICATION

WIFIA ID: N17108CA

CITY OF MORRO BAY
WATER RECLAMATION FACILITY PROJECT



July 2018

Contact
City of Morro Bay
Rob Livick, P.E.
City Hall - 595 Harbor St
Morro Bay, CA 93442
Email: rlivick@morrobayca.gov
Phone: (805) 772-6261

TABLE OF CONTENTS

Exhibits ***(continued)***

APPLICATION FORM

1. Applicant's Legal name: City of Morro Bay
2. Project Name: Water Reclamation Facility Project
3. Other names under which the applicant does business: _____
4. Employer/taxpayer identification number (EIN/TIN): 952308629
5. Dun and Bradstreet Data Universal Number System (DUNS) number: 060890571
6. Department and division name: Public Works
7. Business street address, city, state, zip: City Hall - 595 Harbor St, Morro Bay, CA 93442
8. Mailing street address (if different from above): _____
9. Applicant website: morrobayca.gov, morrobaywrf.com

CERTIFICATIONS

1. *National Environmental Policy Act:* The applicant acknowledges that any project receiving credit assistance under this program must comply with all provisions of the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.)
2. *American Iron and Steel:* The applicant acknowledges that any project receiving credit assistance under this program for the construction, alteration, maintenance, or repair of a project may only use iron and steel products produced in the United States and must comply with all applicable guidance.
3. *Prevailing Wages*: The applicant acknowledges that all laborers and mechanics employed by contractors or subcontractors on projects receiving credit assistance under this program shall be paid wages at rates not less than those prevailing for the same type of work on similar construction in the immediate locality, as determined by the Secretary of Labor, in accordance with sections 3141-3144, 3146, and 3147 of Title 40 (Davis-Bacon wage rules).
4. *Credit Ratings:* This applicant has received a preliminary rating opinion letter(s) on the project's senior debt instrument, from one or more rating agencies. These letters or ratings are attached as Exhibit XII.
5. *Credit Processing Fees:* The undersigned certifies that it will reimburse EPA for its costs incurred in negotiating the credit agreement, irrespective of whether the credit agreement is executed.
6. *Lobbying:* Section 1352 of Title 31, United States Code provides that none of the funds appropriated by any Act of Congress may be expended by a recipient of a contract, grant, loan, or cooperative agreement to pay any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, or an employee of a Member of Congress in connection with the award or making of a Federal contract, grant, loan, or cooperative agreement or the modification thereof. EPA interprets this provision to include the use of appropriated funds to influence or attempt to influence the selection for assistance under the WIFIA program.

   WIFIA applicants must file a declaration: (a) with the submission of an application for WIFIA credit assistance; (b) upon receipt of WIFIA credit assistance (unless the information contained in the declaration accompanying the WIFIA application has not materially changed); and (c) at the end of each calendar quarter in which there occurs any event that materially affects the accuracy of the information contained in any declaration previously filed in connection with the WIFIA credit assistance.

   The undersigned certifies, to the best of his or her knowledge and belief, that:

   1. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
   2. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

3. The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.
   This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

7. *Debarment:* The undersigned further certifies that it is not currently, nor has it been in the preceding three years: 1) debarred, suspended, or declared ineligible from participating in any Federal program; 2) formally proposed for debarment, with a final determination still pending; 3) voluntarily excluded from participation in a Federal transaction; or 4) indicted, convicted, or had a civil judgment rendered against it for any of the offenses listed in the Regulations Governing Debarment and Suspension (Governmentwide Nonprocurement Debarment and Suspension Regulations: 2 C.F.R. Part 180 and Part 1532.
8. *Default/Delinquency:* The undersigned further certifies that neither it nor any of its subsidiaries or affiliates are currently in default or delinquent on any debt or loans provided or guaranteed by the Federal Government.
9. *Other Federal Requirements*: The applicant acknowledges that it must comply with all other federal statutes and regulations, as applicable. A non-exhaustive list of federal cross-cutting statutes and regulations can be found at: www.epa.gov/wifia.
10. *Signature:* By submitting this application, the undersigned certifies that the facts stated and the certifications and representations made in this application are true, to the best of the applicant's knowledge and belief after due inquiry, and that the applicant has not omitted any material facts. The undersigned is an authorized representative of the applicant.

Name: Rob Livick, PE/PLS
Title: Public Works Director/City Engineer
Organization: City of Morro Bay
Street Address: 595 Harbor St
City/State/Zip: Morro Bay, CA 93442
Phone: 805-772-6261
E-mail: rlivick@morrobayca.gov

Signature: _____

Date Signed: 5 July 2018

DISCLOSURE OF LOBBYING ACTIVITIES

Complete this form to disclose lobbying activities pursuant to 31 U.S.C.1352

Approved by OMB
4040-0013

1. * Type of Federal Action:
- [ ] a. contract
- [ ] b. grant
- [ ] c. cooperative agreement
- [x] d. loan
- [ ] e. loan guarantee
- [ ] f. loan insurance

2. * Status of Federal Action:
- [x] a. bid/offer/application
- [ ] b. initial award
- [ ] c. post-award

3. * Report Type:
- [x] a. initial filing
- [ ] b. material change

4. Name and Address of Reporting Entity:

[x] Prime [ ] SubAwardee

*Name: City of Morro Bay

*Street 1: 595 Harbor St Street 2:

*City: Morro Bay State: CA: California Zip: 93442

Congressional District, if known:

5. If Reporting Entity in No.4 is Subawardee, Enter Name and Address of Prime:

6. * Federal Department/Agency:

U.S. Environmental Protection Agency

7. * Federal Program Name/Description:

Water Infrastucture Finance and Innovation Act

CFDA Number, *if applicable:*

8. Federal Action Number, *if known:*

9. Award Amount, *if known:*

$

10. a. Name and Address of Lobbying Registrant:

Prefix *First Name: Mike Middle Name:

*Last Name: Miller Suffix:

*Street 1: 1901 Pennsylvania Ave. NW, Suite 700 Street 2:

*City: Washington State: DC: District of Columbia Zip: 20006

b. Individual Performing Services (including address if different from No. 10a)

Prefix *First Name: Middle Name:

*Last Name: Suffix:

*Street 1: Street 2:

*City: State: Zip:

11. Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when the transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to the Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

* Signature:

*Name: Prefix: Mr. *First Name: Rob Middle Name:

*Last Name: Livick Suffix: PE/PLS

Title: Public Works Director/City Engineer Telephone No.: 805-772-6261 Date: 07/10/2018

Federal Use Only:

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Standard Form - LLL (Rev. 7-97)

SECTION A: APPLICANT INFORMATION

1. Background

a. Applicant's history, ownership, and legal structure

The City of Morro Bay, San Luis Obispo County, California

The City of Morro Bay (population 10,635) is equidistant from Los Angeles and San Francisco on the coast of California. The City is adjacent to both the Pacific Ocean and Morro Bay—a marine protected area designated as a state and national bird sanctuary, and a national estuary. Founded in 1870 as a fishing port, Morro Bay's economy today is based on small businesses and tourism. It still has a vital working waterfront and commercial fishing port.

Protecting and efficiently managing water resources is essential to maintaining a strong, vibrant economy in Morro Bay and the surrounding region. City-owned sewer and water utilities serve residential and commercial customers within City limits and a few outlying areas. The City's wastewater treatment plant does not meet current regulatory standards for secondary treatment and discharge. The need to replace this facility drives the need for this project. The Regional Water Quality Control Board previously issued a waiver to the City for meeting secondary discharge standards. That waiver has expired, and the City of Morro Bay is now under a time schedule order to bring wastewater treatment facilities into compliance with the National Pollution Discharge Elimination System (NPDES) permit requirements by February 28, 2023.

The City of Morro Bay currently purchases most of its water supply from outside the region, importing water from the State Water Project. This water originates hundreds of miles away, in the Sierra Nevada mountains and the Bay-Delta. By purchasing water from an external supplier, residents and businesses in Morro Bay face considerable uncertainty about future costs and reliability. It follows that diversification of its water supply and decreasing reliance on imported water provides economic benefits to residents and businesses by creating more certainty in the water supply. A new local water supply, derived from advanced treated recycled water produced at a new Water Reclamation Facility, will greatly reduce the risk of supply disruptions due to earthquakes, droughts, curtailments in State Water Project deliveries, or shortages for other reasons. A local water supply will also improve the community's ability to adapt to climate change and will free up more State Water for other potential users.

The Water Reclamation Facility Project is regionally significant. Economic benefits are created by improvements to water supply reliability, and improvement to environmental water quality in Morro Bay. Public health benefits arise from improved water quality in Morro Bay.

Legal Structure

The City of Morro Bay was incorporated in 1964 and is governed by a five-member City Council which includes a directly-elected Mayor. The City Council is the legislative authority and sets the policies under which the City operates. As such, the City Council has the power to adopt ordinances and resolutions, make appointments to the City's advisory bodies, establish policies and approve programs, appropriate funds, adopt budgets, and approve contracts. A copy of the statutory authority under which the City was created is included in **Exhibit I**.

b. Applicant's legal authority

The City has the legal statutory authority, as an incorporated city, to carry out proposed Project activities described in the application packet, including levying taxes, issuing debt, charging fees, and/or receiving dedicated funding from another entity.

c. Approvals

The City Council approved the submission of this application packet and approved the funding and carrying out of the activities in the application. Per the included Certifications, Public Works Director Rob Livick has signatory authority as the authorized representative.

2. Organizational Structure

a. Applicant's organizational structure

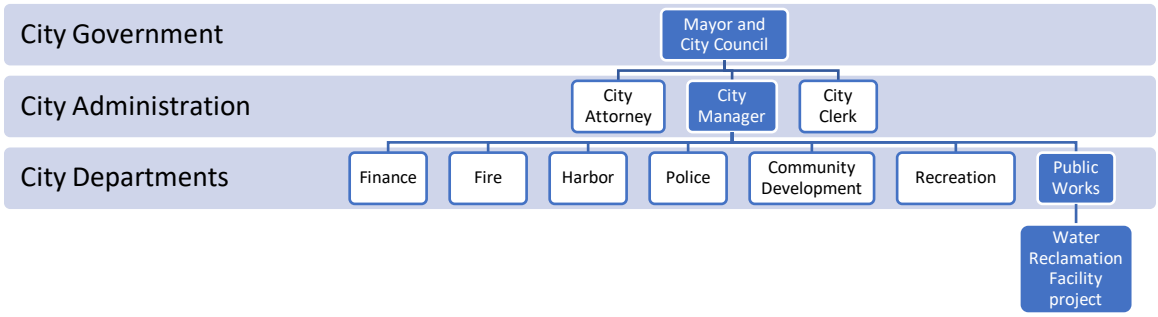
City Structure

The City of Morro Bay is governed by an elected City Council, which includes Mayor Jamie L. Irons and four additional members. As part of the City Administration, City Manager Scott Collins works closely with the City Attorney and City Clerk. Mr. Collins oversees day-to-day operations of the City and administers its budget. Mr. Collins also supervises the duties of the City's nine departments including the Department of Public Works.

Public Works Director and City Engineer Rob Livick oversees the Engineering Division, Water Division and Wastewater Collections Division which strive to maintain safe and reliable water deliveries, including waste water collection and treatment, and provide a safe and accessible street system and pavement management systems.

The City often utilizes consultants for technical support, engineering services and program management.

Figure A.1 - Organizational Chart for the City of Morro Bay



b. Project Structure

The Water Reclamation Facility will be solely owned and operated by the City of Morro Bay.

A robust project team has been assembled, led by City Manager Scott Collins. Mr. Collins has overseen and/or managed several large capital projects and department budgets. In addition to shepherding the planning, design and construction of the Water Reclamation Facility, Mr. Collins

oversees day-to-day operations of the City and administers its budget, with a total combined annual operations and capital budget of $42 million and 100 full-time employees.

The program manager, Eric Casares, of Carollo Engineers, will lead administration on this large project. Carollo Engineers has a strong reputation and demonstrated experience in large water and wastewater projects. The program manager will be accountable to the City Council, through City Manager Scott Collins, for overall program schedule, budget, and quality. The Program Manager will spend significant time and effort integrating the various complex activities and sub-projects associated with the new facility, communicating to stakeholders, and negotiating plan changes related to the work.

Engineering and technical support was provided by MKN & Associates, Inc. as the "owner's representative" during procurement and management of the initial contracts. Additional duties provided by MKN included managing the environmental, permitting, and master plan consultants and providing leadership and direction for these professionals; managing the outreach program; and managing scheduling, staff report preparation, and financial tracking of program budgets.

A detailed Project Organizational Chart and City Organizational Chart are provided in **Exhibit II.**

3. Litigation and/or Conflicts

The City of Morro Bay has no current, threatened, or pending litigation related to permitting, public involvement, environmental irregularities, construction defects, securities fraud, conflict of interest, failure to perform under a State or Federal contract, or other charges.

4. Customer Concentration Analysis

The City of Morro Bay/Cayucos Sanitary District jointly-owned Waste Water Treatment Plant annual revenues in 2016/2017 were $5,608,000, with the City accounting for a majority of the revenues as shown in Table A.1.[1]

Table A.1 - Distribution of Sewer Revenues for Morro Bay-Cayucos Wastewater Treatment Plant in 2016/2017

Customer	Annual Revenue	Percentage of Total Revenues
City of Morro Bay	$3,483,900	62%
Cayucos Sanitary District	$2,077,000	37%

[1] City of Morro Bay Adopted Operating and Capital Budgets Fiscal Year 2017/18, Sewer Revenue Fund, page 92.

Table A.2 illustrates a breakdown of the City's top 10 non-residential customers, which account for 4% of the total revenues from the Waste Water Treatment Plant.

Table A.2 - Top 10 Non-Residential Sewer Customers		
Customer	**Annual Revenue**	**Percentage of Total Revenues**
Mission Linen Supply	$78,058	<1% minus CSD percentage
Silver City RV Resort	$23,603	<1% minus CSD percentage
Morro Bay Marina	$23,301	<1% minus CSD percentage
G6 Hospitality LLC	$22,652	<1% minus CSD percentage
La Serena Inn	$19,604	<1% minus CSD percentage
Morro Dunes Trailer Park	$18,257	<1% minus CSD percentage
Embarcadero Inn	$18,110	<1% minus CSD percentage
Best Western San Marcos	$16,402	<1% minus CSD percentage
Harbor House	$14,777	<1% minus CSD percentage
ABC Investments, LLC	$13,769	<1% minus CSD percentage
Total	**$248,533**	**4%**

Annual water revenues for 2016/2017 were budgeted at $5,137,800.[2] The City of Morro Bay receives over 24% of water services revenues from the top ten water customers, as listed in Table A.3.

Table A.3 - City of Morro Bay Top 10 Water Customers		
Customer	**Annual Payment**	**Percentage of Total Revenues**
City of Morro Bay	$369,855	7%
Pacific Care Center	$182,313	4%
Mission Linen Center	$177,950	3%
Imperial Coast, LP	$119,510	2%
California Department of Parks	$78,930	2%
Silver City Resort	$78,497	2%
Morro Bay High School	$57,274	1%
Morro Dunes Trailer Park	$57,007	1%
Culligan	$49,925	1%
Morro Bay Mobil	$41,728	1%
Total	**$1,212,989**	**24%**

[2] City of Morro Bay Adopted Operating and Capital Budgets Fiscal Year 2017/18, Water Revenue Fund, page 86.

SECTION B: DETAILED PROJECT INFORMATION

1. Project Description

Overview

The City of Morro Bay (City) plans a major capital improvement project to replace the 62-year-old Morro Bay-Cayucos Wastewater Treatment Plant with a new Water Reclamation Facility (WRF) that will turn the City's wastewater into a sustainable water source for groundwater replenishment. This project is critical to securing a reliable long-term water supply for the City, and protecting water quality. Morro Bay is located on California's Central Coast which has both fragile natural environments and constrained water supplies.

The Water Reclamation Facility project includes: demolishing the existing wastewater treatment plant which is located on a beach and replacing it with a new treatment plant and water reclamation facility at an inland location; constructing a new sewage pump station and pipeline; constructing new injection wells for groundwater storage, constructing a recycled water pipeline, and constructing a waste discharge (brine) pipeline. The WRF will be owned and operated by the City of Morro Bay, and it will primarily serve residents of the City. A goal set by the community for the project is to build a cost-effective wastewater treatment facility with capacity for water reclamation. The WRF will have capacity to produce approximately 800 acre-feet per year of highly purified recycled water utilizing full advanced treatment technologies. The highly purified water will be injected into the Morro Valley aquifer and recovered at the City's existing drinking water wells. Injecting treated water into the Morro Valley aquifer is expected to have a beneficial effect on groundwater quality, as the aquifer currently has levels of nitrate that exceed the primary drinking water maximum contaminant load (MCL), largely attributed to historic agricultural impacts.

Need for the Project

The existing wastewater treatment plant does not have the ability to meet modern standards for secondary treatment. It was constructed in the 1950's, relies on a trickling filter and open-air sludge beds, sits on 26 prime oceanfront acres threatened by coastal hazards, and discharges approximately 1 million gallons of treated water into the ocean every day. Since it was last upgraded in 1985, the plant has operated under a 301(h) waiver from the EPA—one of only two still existing in California, allowing the City to discharge some wastewater that does not receive secondary treatment. The Regional Water Quality Control Board is requiring that the City meet the new limits in their NPDES permit and the California Coastal Commission has directed the City to relocate the facility inland.

In addition to solving the wastewater treatment problem, this project has potential to significantly reduce the City's need for imported potable water supplies. The City of Morro Bay currently purchases 87% of its water supply from outside the region, importing water from the California State Water Project. This water originates hundreds of miles away, in the Sierra Nevada mountains and the Bay-Delta. By purchasing water from an external supplier, the City of Morro Bay faces considerable uncertainty about the future cost and reliability of that water. There are many, many externalities beyond the City's control in this situation. These are exacerbated by increased demands expected in the future, and by climate change. It follows that decreasing reliance on imported water provides economic benefits to residents and businesses by creating more certainty in the water supply. A new local water supply derived from advanced treated recycled water from a new Water Reclamation Facility will greatly reduce the risk of supply disruption due to earthquakes, droughts, or shortages for other reasons.

The Water Reclamation Facility will be capable of producing advanced treated recycled water that meets or exceeds requirements for indirect potable reuse, as defined in the California Code of Regulations Title 22 recycled water requirements. Accordingly, the Project will allow the City to meet the minimum requirements and timeline set by the Regional Water Quality Control Board for upgrading the wastewater treatment to full secondary treatment.

Progress Since the Letter of Interest

The Water Reclamation Facility Project is consistent with what was described in the letter of interest. Since that submittal, significant progress has been made to advance this project. The City completed the master planning process resulting in the Draft Water Reclamation Facility Master Plan. The Draft Environmental Impact Report was completed in March 2018, circulated for public comment, and will be certified in August 2018. The permitting process with the County of San Luis Obispo has been initiated. A competitive procurement process to select a Program Manager consultant was completed, and in March 2018 the City executed a contract with Carollo Engineers for this purpose. A two-stage, best value procurement process to select a design-build contractor has also been completed, and on June 13, 2018, the Morro Bay City Council unanimously accepted the selection committee's recommendation of the Filanc/Black & Veatch team as the preferred design-build contractor. Following contract negotiations, it is expected that the City Council will issue a Notice to Proceed in August 2018. The public has been kept informed and engaged throughout with monthly updates presented at City Council meetings, at WRF Citizen's Advisory Committee meetings, at public workshops and via the project website.

Project Details

The project facilities are described in the most detail in the Water Reclamation Facility Master Plan (Black & Veatch, November 2016) and Master Water Reclamation Plan (MKN & Associates, March 2017). These can be found on the project web site: http://morrobaywrf.com/

Table B.1 provides a list of the planned WRF facilities. All treatment processes will be covered or housed in one of the WRF buildings.

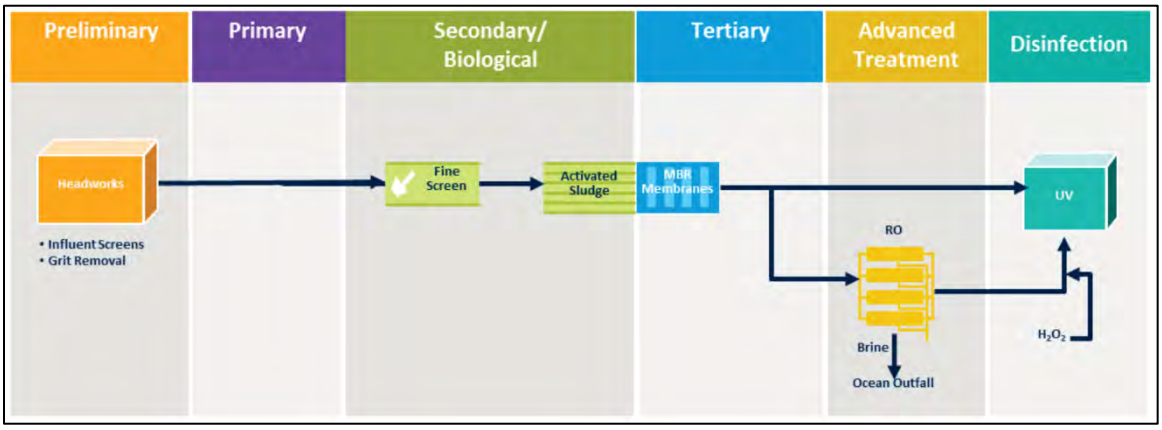
Table B.1 - WRF Facilities

	Approx. Square Feet (SF)
Headworks	3,500
Odor Control	1,750
Equalization Basin	20,910
Sequencing Batch Reactor or Membrane Bioreactor Basin	13,280
Dewatering Basin	3,850
Sludge Storage Tank	530
Standby/Emergency Power	1,140
Electric Building	1,860
Secondary Equalization Tank	1,260
Microfiltration, Reverse Osmosis, UV Building	6,720
Effluent Pump Station	2,630
Waste Discharge Pump Station	1,800
Chemical/Clean-in Place Chemical Storage	4,800
Storm Basin	1,230
Total	**65,260 SF**

Treatment Processes

The Water Reclamation Facility design includes a Combined Secondary/Tertiary treatment process and tertiary disinfection. The treatment train consists of several stages including preliminary treatment, biological (secondary) treatment, tertiary treatment, and disinfection. Primary treatment was determined to not be cost effective.

Figure B.1 - Example Treatment Train with Combined Secondary/Tertiary Treatment



The planned treatment processes include: a membrane bioreactor; advanced water treatment including reverse osmosis; ultraviolet (UV) radiation disinfection; and solids dewatering with off-site solids disposal.

Preliminary Treatment (Headworks)

Raw influent will undergo preliminary treatment in the headworks facilities, designed to screen and remove grit. The influent flow will then be sent to a concrete equalization basin.

Secondary and Tertiary Treatment (Membrane Bioreactor Process)

Secondary or biological treatment aims to remove biodegradable organic material and nutrients using an aerobic process where microorganisms oxidize organic matter into simpler products. The Membrane Bioreactor Process includes both a biological treatment process and a filtration process. The biological treatment involves activated sludge and membranes accomplish solids separation. Subsequent filtration and disinfection processes are required to provide tertiary treatment.

Advanced Treatment

Advanced treatment is used to remove dissolved salts, pathogens (viruses), total organic carbon, specific organic and inorganic chemicals, and contaminants of emerging concern (prescription drugs, etc.). Reverse osmosis (RO) is the preferred technology to remove dissolved salts. RO systems apply water under pressure to semi-permeable membranes. Product water passes through the membrane, and contaminants are retained. The contaminated stream, or brine stream, will be disposed of in the ocean through the existing ocean outfall. An Advanced Oxidation Process (AOP) will achieve the required pathogen and chemical contaminant removal per Title 22 regulations. AOP involves the generation and application of highly reactive free radical intermediates for the destruction of various contaminants. The UV disinfection process will be coupled with dosing sodium hypochlorite to provide an AOP.

The project also includes associated infrastructure to convey advanced-treated recycled water to the ultimate end use. This includes recycled water pipelines to deliver advanced treated water to new

groundwater injection wells for groundwater replenishment, then utilizing existing City wells to extract groundwater for treatment at the City's water treatment plant.

Other Facility Components

Odor Treatment Facilities and Technology
The Water Reclamation Facility will be equipped with odor control facilities to capture and treat foul smelling gases produced by raw wastewater before it is exhausted from channels and tanks. The odor treatment facilities include an Influent Scrubber Complex located near the head of the WRF to process exhaust air from the headworks. Odor control for the solids dewatering facility will be provided by enclosing the dewatering system in a building with provisions for a future passive or active filtration system.

Solids Management
Sludge dewatering will occur within the Dewatering Basin building via a belt press, screw press, or centrifuge. The City will contract with a third-party to haul biosolids to offsite facilities for composting. Land application will involve applying the biosolids to nonpublic contact sites (e.g., agricultural land and forests) or public parks, plant nurseries or roadsides to condition soil or fertilize crops.

Clean in Place Chemical Storage Facility
A Clean in Place chemical storage facility will be constructed for hazardous materials containment and handling. The facility will include a metal canopy to cover chemical tanks, bins, and/or totes in a concrete containment area. Hazardous materials associated with the treatment process include membrane cleaning chemicals, disinfection chemicals, and other treatment-related chemicals. All bulk chemicals will be stored in containment areas fitted to contain chemical spills. Spills will be conveyed to blind sumps for manual pumping and disposal.

Storm Water Management
Pavement, roofs, and other impervious areas at the Water Reclamation Facility will drain to a new onsite stormwater basin. A detention pond or multiple ponds are a requirement for the Coastal Development Permit. Unlined ponds will be located around the site to retain and percolate stormwater.

Recycled Water Storage and Pumps
A 500,000-gallon coated steel storage tank will provide recycled water storage to support operational flexibility. Two 15 or 30 HP recycled water pumps (one on standby) will convey water to offsite injection wells.

WRF Operations Building
The Operations Building will be an approximately 7,000 SF single-story building located in the southernmost portion of the site. It will include WRF employee offices, a reception area, conference room, break room, copy room, janitorial room, sample storage room, operations center, restrooms, uniform storage and wash room, map room, server/electrical room, and an outside boot wash.

Maintenance Building
The Maintenance Building will be approximately 5,600 SF and constructed as a single-story building with a single occupancy restroom, operations room, and an electronics workshop.

Buildings and Vehicle Storage
Building and vehicle storage facilities will include parking and circulation driveways, collections pump and fitting storage, water pump and fitting storage, water vehicle equipment storage, collection vehicle equipment storage, wash rack, outdoor storage aisles, and a general laydown area.

Site Access, Security and Lighting
Access to the WRF site will be provided via South Bay Boulevard off State Highway 1. The City is currently developing easements for access from South Bay Boulevard. The main access road that will run along the east edge of the property will have a 60-foot wide easement with two 12-foot wide lanes and unpaved shoulders. All other access roads will be 16 to 22 feet wide. The 10- to 15-acre WRF site will be secured by a fence. An electrical gate located near the front of the property and controlled by a key from the operations and maintenance buildings, will be monitored by a video surveillance camera. The WRF will be equipped with nighttime lighting sufficient to enable operations. Lighting will be controlled to prevent nighttime glare or direct light shining offsite.

Collection System Facilities
Offsite facilities include connections to the existing collection system, a new lift station and force main to pump wastewater to the WRF, and a waste discharge pipeline. The lift station will be located adjacent to the existing WWTP and multiple pipelines will run along an alignment between the lift station and WRF site. The alignment will include a force main pipeline to convey raw wastewater from the lift station to the WRF site; and a waste discharge pipeline to convey brine or extreme wet weather flows to the ocean outfall. A separate control building will house electrical equipment, a motor control center, switchgear, and controls for the submersible pump facilities. A building power roof ventilator will provide room ventilation.

2. Location

The Water Reclamation Facility Project is located within the City of Morro Bay and in an unincorporated area of San Luis Obispo County, adjacent to the City boundaries, as shown in **Exhibit IV**. More specifically, the WRF will be constructed on a 10- to 15-acre area within a 396-acre parcel that is located along Highway 1, north of South Bay Boulevard. The City of Morro Bay owns the property and intends to annex this site prior to construction. The lift station and pipelines will be located within existing City limits. The project will serve residents in the County of San Luis Obispo, California.

3. Construction Plans and Specifications

The City will use a design-build contract for this project, which will allow the City to assume minimal budget and schedule risks. The design-build contractor will be accountable for delivering a successful construction project within a fixed-price contract amount and according to an agreed-upon timeline. The Request for Proposals, the selected proposal, and presentation to council are included in **Exhibit V**.

The design-build contractor will be required to comply with: all mitigation measures in environmental documents and permits, American Iron & Steel requirements, Davis-Bacon Wage Compliance, and all other requirements associated with financing from WIFIA or the Clean Water State Revolving Fund. The design-build contractor will be responsible for all design materials including calculations,

drawings, samples, sketches, illustrations, descriptions and models including a Final Concept Design Report. Following the Notice to Proceed, the design-build contractor will meet with the City on a weekly basis, and prepare 30, 60, and 90% design submittals.

Selected design-build contractor Filanc/Black & Veatch received a higher score for their proposal compared to the other proposer. The design-build team consists of an experienced, cohesive, and balanced team comprised of both design engineers and contractors. The Filanc/Black & Veatch team provided a thoughtful, effective approach to project sequencing and proposed a schedule with an anticipated early project completion date of approximately six months before the proposed completion date in the Request for Proposals. The Filanc/Black & Veatch proposal demonstrated thorough due diligence for cost certainty and focused on co-location of the design-build team in the City for the duration of design and construction. The team's proposed design provided a high level of detail, a process design that better supports effective operations, and flexibility for expansion.

4. Estimated Project Cost

a. Detailed cost estimate

Table B.2 - Total Estimated Project Costs

	Total Cost	Eligible Cost
Construction Costs		
WRF Onsite Facilities	$62,616,335	$62,616,335
Conveyance Facilities	$21,086,013	$21,086,013
Recycled Water Offsite Facilities	$8,592,314	$8,592,314
Contingency	$9,463,755	$9,463,755
Soft Costs		
Planning/Environmental	$5,063,150	$5,063,150
Design	$6,224,580	$6,224,580
Program Administration	$6,360,873	$6,360,873
Construction Management	$3,750,000	$3,750,000
Property Acquisition	$2,050,000	$2,050,000
Permitting	$730,833	$730,833
Total Estimated Cost	**$125,937,851**	**$125,937,851**

b. Activity breakdown for eligible project costs

Table B.3 - Eligible Project Costs		
	Eligible Cost	**WIFIA portion (49% of Total)**
Development-Phase Activities	$5,063,150	$2,480,944
Replacement Activities	$-	$-
Construction	$91,294,661	$44,734,384
Property Acquisition	$2,050,000	$1,004,500
Environmental Mitigation	$1,000,000	$490,000
Construction Contingencies	$9,463,755	$4,637,240
Administration/Construction Management	$17,066,285	$8,362,480
Total Eligible Project Costs	**$125,937,851**	**$61,709,547**

5. Project Schedule

Table B.4 - Project Schedule	
Major Milestones	**Timeline**
Facility Master Planning	Complete
Permitting and Environmental Review (Including potential Annexation)	In Progress
Development of Bridging Documents	Complete
Design-Build Contractor Selection Award	June 2018
Issue D-B Contract and Notice to Proceed	August 2018
Final Concept Design Report	May 2019
Design Complete	November 2019
Construction Begins	May 2019
Construction Completed	October 2021
Performance Testing	November 2021
Project Close-out	January 2022

6. Alternatives Analysis

a., b., c. Alternatives analysis and description

An alternatives analysis was presented in the letter of interest and is included in the Water Reclamation Plan.

A 2016-17 Facility Master Plan explored water and solids treatment alternatives and provided recommendations. A Master Water Reclamation Plan prepared in 2016-17 identified alternatives for both treatment and uses of recycled water. The feasible Recycled Water Alternatives that were considered are summarized in Table 7-1 of the Master Water Reclamation Plan, provided below in Table B.5 for reference.

Table B.5 - Summary of Project Alternatives		
Alternative #	**Title**	**Brief Description**
0	No Recycled Water Project (Discharge to existing ocean outfall)	With no recycled water project, the City would continue discharging treated effluent to the existing ocean outfall.
1	Urban Reuse	Recycled water pipeline from WRF to City with turnouts to various urban commercial and landscape irrigation users for potential potable water offset, and recycled water to Morro Bay Golf Course.
2	Delivery of recycled water to agricultural users in exchange for pumped groundwater delivered to the City – "Agricultural Exchange"	Recycled water pipeline to properties in the Morro Valley along Hwy 41 to deliver recycled water for agricultural irrigation in exchange for groundwater sent back to the City. Alternative would include potable water pipeline from upper Morro Valley to City.
3	Indirect potable reuse: Groundwater replenishment using subsurface application at the Narrows (injection wells) – "Indirect Potable Reuse – East"	Recycled water pipeline to new groundwater injection wells east of Hwy 1 and south of Hwy 41, near the Narrows, for groundwater replenishment. Groundwater extracted from existing City wells in the Morro Valley would be treated at the City's existing water treatment plant.
4	Indirect potable reuse: Groundwater replenishment using subsurface application near the bike path (injection wells) – "Indirect Potable Reuse – West"	Recycled water pipeline to new groundwater injection wells west of Hwy 1 and south of Hwy 41, near the bike path adjacent to Lila Keiser Park, for groundwater replenishment. Groundwater extracted from existing City wells in the Morro Valley would be treated at the City's existing water treatment plant.

d., e. Rationale for the selected alternative

The alternatives analysis resulted in the following main conclusions:

- The highest water supply benefit will be realized through indirect potable reuse (Alternatives 3 and 4). Based on preliminary modeling, it appears the estimated 1000 acre-feet per year water supply benefit of Alternative 4 could meet the majority, if not all, of the City's current water demand. This could significantly reduce or eliminate reliance on imported water.
- Capital costs for agricultural exchange (Alternative 2) and indirect potable reuse (Alternatives 3 and 4) are similar, but indirect potable reuse has a significantly higher water supply benefit. Agricultural exchange relies on successful contract negotiations with landowners, adding some uncertainty.

Therefore, the recommended recycled water project was indirect potable reuse, Alternative 3 or 4, with the main difference consisting of the locations for injection and extraction wells. The indirect potable reuse alternative provided the highest potential water supply benefit. Supplementing the potable water supply with highly treated recycled water was the highest form of allowable beneficial reuse and will allow the City to reduce or eliminate dependence on imported water.

An alternatives analysis was presented in the letter of interest and is included in the Water Reclamation Plan, **Exhibit VI.**

7. System's Engineer Report(s)

The City has engaged in planning for the Water Reclamation Facility for the past five years. The project will be executed using a design-build contract, and the Systems Engineer Report will be produced by the design-build contractor. Most of the planning efforts to-date contain some discussion of engineering or engineering related-considerations. The most relevant plans are:

The Master Water Reclamation Plan (MKN & Associates, Draft – Mar. 2017)
This plan, paid in part by a State grant, was developed to consider recycled water opportunities in light of the adopted Community goals for the new WRF and to identify and evaluate the feasibility of recycled water projects. The plan used relevant information from previous reports and current hydrogeological studies and permitting evaluations; refreshed previous recycled water market assessments; included outreach to the community and potential users; and developed updated cost opinions for alternatives.

Included in the letter of interest and available at: http://morrobaywrf.com/draft-master-water-reclamation-plan-march-2017/

Water Reclamation Facility Master Plan (Black & Veatch, Draft – Nov. 2016)
This plan was a major milestone in the planning process. The Facilities Master Plan was developed from nine Technical Memoranda that each addressed different technical aspects of the project. Input from the Water Reclamation Facility Citizens Advisory Committee, City staff, and City Council was considered, in addition to public comments.

Available at: http://morrobaywrf.com/draft-water-reclamation-facility-master-plan-nov-2016/

Sewer System Management Plan (City of Morro Bay, 2014)
The City developed and maintains a Sewer System Management Plan (SSMP) to satisfy the requirements of State General Waste Discharge Requirements for Sanitary Sewer Systems (WDR). The SSMP was originally adopted by the City Council on June 08, 2009. Per the requirements of the WDR, the City has performed two audits of the SSMP (June 2011 and June 2013) which focused on the effectiveness of the SSMP, the City's compliance with permit requirements, identification of deficiencies, and steps to correct them.

Available at: http://morrobayca.gov/DocumentCenter/View/7409/Sewer-System-Management-Plan-2014-re-certification-

OneWater Plan (Carollo Engineers, 2018)
The OneWater Plan, currently in draft form, addresses all of the City's water-related infrastructure including the potable water distribution system, sanitary sewer collection system, and stormwater collection system and evaluates future water supplies. When completed, the OneWater Plan will identify deficiencies in the infrastructure, projects required to correct those deficiencies, and associated costs. The OneWater Plan recognizes and supports the importance of the Water Reclamation Facility as a drought-proof water supply for the City. The Draft OneWater Plan will be completed in August 2018.

8. Environmental Review

The City prepared an Environmental Impact Report (EIR) for the entire project, including the demolition of the existing wastewater treatment plant, construction of the new Water Reclamation Facility and related structures, and construction of a lift station, sewer pipelines, and a discharge pipeline. A few cultural resource sites were identified along the proposed pipeline alignment. Impacts to these will be avoided and/or mitigated with the design of the project. Mitigation plans were included in the EIR. The draft was released for public comment in March 2018. The City hosted a public meeting on the Draft EIR on May 1, 2018 and received all written public comments on May 18, 2018. Comments were addressed in June 2018. The EIR will be finalized in July 2018 and the City Council is expected to adopt and certify the EIR in August 2018. The final EIR will be registered with the State Clearing House and will be available on the project website.

9. Floodplain Management Plan

The Water Reclamation Facility is not located within the 100-year Flood Zone, according to flood zone mapping compiled by the Federal Emergency Management Agency's Flood Insurance Rate Maps (FIRMs).

A related lift station is located within "Flood Zone AE" where the flood zone elevation occurs at approximately 20 feet above sea level (FEMA, 2017). The lift station will be designed with flood-proofing measures. Submersible pumps, elevated structures and electric panels, and sealed conduits are being considered.

10. Other Permits and Approval

The City has not yet applied for permits, as the environmental review process is still underway. However, the project is being developed with discussion and input from many regulators, including the State Water Board Division of Drinking Water, which regulates recycled water projects in California. The anticipated permits are provided in Table B.6.

Table B.6 - Anticipated Permits

Permit	Issued By	Projected Date
National Pollution Discharge Elimination System, Waste Discharge Requirements Permit	Central Coast Regional Water Quality Control Board	February 2020
Coastal Development Permit	California Coastal Commission	March 2019
Encroachment Permit	California Department of Transportation	July 2019
Streambed alteration permit (for pipelines and lift station)	California Department of Fish and Wildlife	May 2019
Permit to operate generator	San Luis Obispo Air Pollution Control District	June 2020
Building, grading and stormwater management permits	City of Morro Bay and/or the County of San Luis Obispo	August 2019
Title 22 Permit and Approved Engineering Report	State Water Board, Division of Drinking Water	February 2020

Consultation with the following agencies will occur:

Table B.7 - Agencies		
Agency	**Regarding**	**Projected Date**
U.S. Army Corps of Engineers	Section 404 of the Clean Water Act	August 2018 – March 2019
Regional Water Quality Control Board	NPDES permit; meeting Porter-Cologne Act requirements; Section 401 certification	August 2018 – March 2019
California Department of Fish and Wildlife	Streambed Alteration Agreement	August 2018 – March 2019
California Environmental Protection Agency, Department of Toxic Substances Control	Site Assessment / Remedial Action Plan	August 2018 – March 2019

11. Project Management and Compliance Monitoring Plan

The City confirms it has the ability to deliver the project as planned, fulfill all project commitments, and ensure compliance with all terms of the credit agreement, including all applicable regulations and provision of law. Per the included Certifications, Public Works Director Rob Livick has signatory authority as the authorized representative. Table B.8 describes key project roles and responsibilities.

Table B.8 - Roles and Responsibilities		
	Key Roles	**Key Responsibilities**
City Council	Ensure project meets community project goals. Vote on major project decisions and approval for reports, rates, and contracts.	▪ Receive status reports from City Staff and Program Manager ▪ Items that affect project direction and costs ▪ Provide direction to City Staff and Program Manager ▪ Approve/Reject recommendations from City Staff and Program Manager ▪ Receive comments from residents
City Public Works Director and City Utilities Director	Report to City Council and direct Program Manager	▪ Provide input on City preferences during procurement, design, and construction ▪ Provide project updates to City Council ▪ Provide regular input into project features and design requirements ▪ Review design periodically per Submittal Requirements listed in design contracts ▪ Review construction progress periodically ▪ Participate in development of punch lists ▪ Provide recommendations to City Council for expenditures and actions

Table B.8 - Roles and Responsibilities		
	Key Roles	**Key Responsibilities**
Program Manager (Carollo Engineers)	Overall performance and implementation of the WRF Project – including management of budget, schedules, designers, contractors, work quality, safety, and program communications.	▪ Primary point of contact for communications with City of Morro Bay and other City consultants and contractors ▪ Liaison to WRF Citizen Advisory Committee ▪ Review of contracts to ensure that individual provisions and commitments are met ▪ Schedule management and progress reporting to City Staff ▪ Budget management and reporting ▪ Coordination of all program meetings and preparation of meeting documentation ▪ Oversight of planning and preliminary design documents ▪ Internal staff coordination for standardized presentation of information ▪ Management of key communication issues/changes in communication protocols/items of concern for client, designers, or contractors regarding communications and authorizations ▪ Identification of funding opportunities, development of capture strategies, and provision of technical support for funding applications. ▪ Responsible for design impacts to schedule and budget
Construction Manager (Carollo)	Monitor construction activities	▪ Ensure construction is in compliance with Agreement between City and Design-Builder, and with approved design. ▪ Review submittals, schedules, RFIs, CCOs, and deliveries ▪ Track compliance with American Iron and Steel requirements ▪ Track labor compliance ▪ Coordinate inspections ▪ Provide status reports to City Staff
Design Build Team (Black & Veatch)	Design and construct new WRF	▪ Comply with requirements listed in Design-Build Agreement with the City ▪ Provide status reports to Construction Manager and Program Manager
Contractors (Pipelines, Lift Station, and Injection Wells; TBD)	Construct new facilities related to the new WRF	▪ Comply with requirements listed in agreements with the City ▪ Provide status reports to Construction Manager and Program Manager
Design Engineers (Pipelines, Lift Station, and Injection Wells)	Design new facilities related to the new WRF	▪ Comply with requirements listed in agreements with the City ▪ Provide status reports to Program Manager ▪ Provide construction-phase engineering support to Construction Manager
City Consultants (various)	Perform studies or consulting services as needed	▪ Comply with requirements listed in agreements with the City ▪ Provide status reports to Program manager ▪ Provide construction-phase support (when appropriate) to Construction Manager

Project Management

The design-build contractor will employ a competent, on-site project team including a project manager/company representative who will be on-site during construction. The design-build contractor will confirm all communications in writing and provide a matrix of signature authority limitations.

Progress Reports and Status Updates

Once a week, or at such intervals as mutually agreed by the parties, the City will meet with the design-build contractor to review the overall project progress, the status of the design and/or construction, and to discuss any problems that may arise. The design-build contractor will prepare and submit written progress reports to be presented at these weekly meetings.

The design-build contractor will prepare monthly reports on the work accomplished during the prior monthly period. The monthly report will also set forth the projected progress for the forthcoming month.

Coordination Processes

The project manager will work closely with the engineering team, City Council and other stakeholders to ensure timely and transparent project communication. This includes providing advance notification of potential issues to all appropriate agencies and timely resolution. Prior to commencing work, the design-build contractor will attend a project kickoff meeting to discuss procedures, review contract provisions and any address other items pertaining to the administration of the project.

Conflicts, omissions, errors, interpretation or clarification, insufficiency of detail or explanation in the design-build contract documents relative to the timely or material execution of the work shall be immediately brought to the attention of the City in writing and request interpretation, clarification, or furnishing of additional detailed instructions. Such questions shall be resolved and instructions to the design-build contractor issued within a reasonable time by the City, whose decision shall be final and conclusive.

Informing the Community

Public involvement has been integral to this project since its inception. The City has held eleven public workshops since 2013 to inform the public and answer questions. Given the complexity of the WRF program and the desire to enhance civic engagement, the City Council has also convened two citizen advisory groups, including the Water Reclamation Facility Citizens Action Committee (WRFCAC) and the Blue Ribbon Commission. In June 2018, the City held two public information sessions about the upcoming WRF activities. Recent advisory group activities include reviewing proposals for the design-build team and evaluating potential rate increase structures.

The City has created a website http://morrobaywrf.com/ with information about the project, frequently asked questions, a schedule, and all publicly released documents including the bid/procurement documents, environmental reports, and technical studies.

12. Risks and Mitigation Strategies

This project has all the normal risks of any construction project, including construction schedules, cost escalation, approvals, and litigation. The City has mitigated these risks by using a fixed-price design-build project delivery. This helps to ensure the project will be on-time, on-budget, and built to the agreed-upon specifications.

MKN & Associates identified twelve potential risks of the Water Reclamation Facility Project. All of these risks include mitigation measures. These risks and mitigation strategies are outlined in Table B.9. Additionally, as part of the Request for Proposals (RFP) process, the design-build team was required to provide a Risk Register including mitigation strategies for the Top 5 Risks to the Owner's Goals and Objectives as identified by the Proposer.

Table B.9 – Risks and Mitigation Strategies

Morro Bay Water Reclamation Facility Project - Risks and Mitigation Strategies — Updated by: E. Shields — Updated: May 2018

	Risk	Background	Potential Impact (Cost, Schedule, Quality)	Level of Risk (with Mitigation)	Mitigation - City/PM Strategy
1	Unanticipated increase in project costs due to bid climate and other factors	Relative cost opinions were developed for the WRF & Recycled Water project components using a range of anticipated costs prior to development of a facility master plan to assist with the site comparison and planning. The City's Rate Study and user rates are based on these early budgetary costs. Additional design development could identify unanticipated costs, which would lead to another proposed user rate increase.	Cost	Medium	Include 25% contingency and conservative soft cost assumptions in master planning. Adjust accordingly as project proceeds and uncertainty is reduced. Assume conservative loan rates (+ 0.25% above historical rates).
2	Delay in Project schedule	City Council set a goal for an operational reclamation-ready WRF in 5 years. The Program Management Team developed an aggressive schedule based on this goal. During design and construction, unanticipated factors could cause schedule delays.	Schedule	High	Provide schedule updates as soon as major project decisions are made. Expedite efforts where cost and quality are not at risk. Require final completion 6 months in advance of goal date.
3	Change in City Council Members	Based on the current schedule, the program will be ongoing through at least two City Council election cycles (Nov 2018 and Nov 2020). A substantial change in City Council members could result in a change in goals and direction for the project.	Schedule, Cost, Quality	High	Continually present project goals and provide opportunities for refinement by Council as project proceeds. Work closely to educate Council members on design, construction, and design-build procurement processes and typical project challenges.
4	Public Opposition	Public opposition can arise due to project costs, neighborhood concerns, and organized misinformation campaigns arising from those factors.	Schedule, Cost	High	Work closely with project team to identify outreach strategies to counter misinformation. PM team to implement and advise on strategies. Work closely with Council members to educate them and reduce risk they may inadvertantly say something incorrect or that puts City at risk.
5	City and CSD disagree on shared faciliites	The City and the Cayucos Sanitary District (CSD) co-own the existing WWTP and outfall, and each is pursuing a separate treatment facility. The existing WWTP will need to be decommissioned in a mutually agreeable way. The details and agreement need to be worked through. Both agencies will likely want to use the existing ocean outfall for discharge from the two future facilities. The details for continued, shared use of the ocean outfall need to be worked through.	Schedule	Low	Include specifications for plant decommissioning in performance criteria and acquire cost opinion as an additive bid item for preliminary discussions with CSD. Develop Outfall Management Plan for review by City and CSD prior to design/construction of outfall connection and improvements
8	Land and Easement Acquisition	Project will require land for WRF and for pipeline easements.	Schedule	Low	Obtain easements and execute MOU for property acquisition early in process. Install pipeline in rights-of-way where possible
9	Financial capability of Design/Build firm	If DB entity faces business stresses that result in project failure, City will need to pay for remediation of problems and to solicit new DB entity to finish the work.	Cost, Schedule	Low	Develop RFQ process that applies financial capability as one of the evaluation criteria
10	Project Requirements and Objectives	City will want a high-quality, energy-efficient system with relatively low operation/maintenance costs.	Quality	Low	Develop performance criteria that prioritize specific needs or desires of City
11	Land Use Permitting	Land use permitting with likely be through San Luis Obispo County per the Local Coastal Plan. Permitting will be appealable to the Coastal Commission, which could delay final permits.	Cost, Schedule	Low	JFR to take lead on permitting development and coordinate with County permitting and CA Coastal Commission staff early to determine if permitting directly through Coastal Commission could reduce processing and appeal time.
12	CEQA	EIR is under development by ESA as primary author and City as lead agency. If EIR is not certified, due to project opposition or legal challenges, funding and project development cannot proceed	Cost, Schedule	Low	EIR development strategy will require input from ESA depending on final site chosen by City. One strategy could be to develop an analysis for two sites that would allow the City to change sites quickly if one is not politically achievable.

SECTION C: OPERATIONS AND MAINTENANCE PLAN

1. Operation and Maintenance Plan

The final Operation and Maintenance Plan will be available for review prior to the obligation of the loan. The design-build contractor will be responsible for developing this plan.

Contractual Arrangements

The City of Morro Bay will own and operate the Water Reclamation Facility. The design-build contractor will develop operations and maintenance procedures, which will be transferred to the City upon completion of performance testing.

Cost Estimates

The design-build contractor will be responsible for providing estimates for operations and maintenance costs, as part of the design process. The City estimates the cost of operating and maintaining the new WRF to be approximately $2.7 million per year.

Key Performance Indicators

The design-build contractor will be held accountable for performance indicators during the contract period and will be responsible for meeting minimum design requirements specified by the City. Key performance indicators include, but are not limited to: Title 22 Report, Engineering and Design Activities including treatment systems, recycled water production, stormwater facilities, structural construction activities, system integration, decommissioning of the old wastewater treatment plant, operation and maintenance manuals and training, performance testing, 6-months of transitional operation including staffing and training support. The design-build contractor will be responsible for meeting influent flows and water quality standards, incorporating energy savings where appropriate, and meeting the minimum treatment capacity. The WRF will be designed and constructed to produce a volume of recycled water for indirect potable reuse groundwater injection equal to 76% of the influent flow, which is estimated to be 825 acre-feet per year. The minimum design life requirement for the facility is 30 years.

Insurance Policies

The fixed-price design-build contract will specify all necessary insurance policies to ensure that the City holds minimal risk before transfer of ownership. The design-build contractor shall provide General Liability Insurance, Business Auto Coverage or ISO Business Auto Coverage, Property Damage Insurance, Workers Compensation, Excess or Umbrella Liability Insurance, Professional Liability or Errors and Omissions Insurance. The City will assume all necessary insurance liability after transfer of ownership in 2022.

Reserves for maintenance

An operations and maintenance reserve fund of approximately $2.7 million per year will be established from water and sewer enterprise funds.

2. Management Experience

Contractor/Management Team

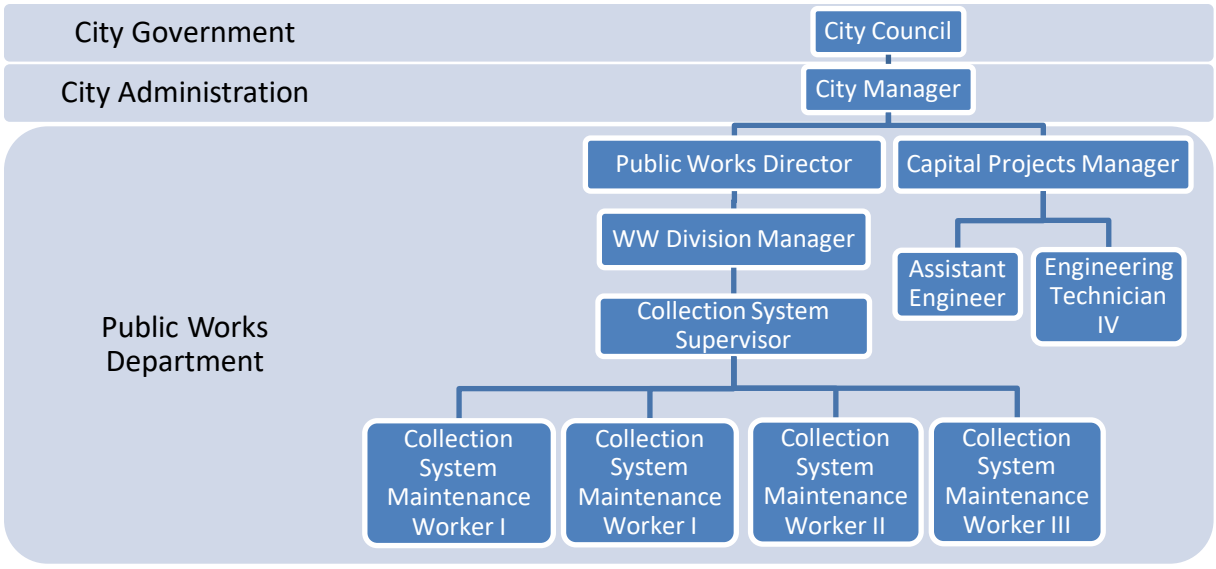
The design-build team includes a designer, construction team, and an operator. The operator will be responsible for developing operations and maintenance procedures and will operate the facility during the transitional operation period. The Performance and Operational Testing period shall be 6 months in duration. The City may extend the performance and operation testing period if desired.

The design-build team from Filanc/Black and Veatch is a world-class team with a robust Management Approach and Quality Control Program. The Filanc/Black & Veatch team's Management Approach is based on taking full advantage of their combined talents and working side-by-side with the City and its consultants to collaboratively deliver a new WRF that provides robust and reliable performance at the lowest achievable cost. The team has an established Quality Control Program to address all aspects of quality from design through construction and startup. Documentation of quality reviews, inspections, and corrective actions are recorded and maintained in a cloud-based project management system, and available to City representatives for review.

City's Management Team

After the transitional operation period, the City of Morro Bay will assume responsibility for operating the Water Reclamation Facility. The City's management team will include the City Manager, Public Works Director, Utilities Operations Manager, and the City Finance Director as needed. The Wastewater Division of Public Works will be responsible for administration, day to day operations and collections. Collections Operators are responsible for daily maintenance of the facility and response to emergencies such as spills, during regular work hours and after hours and weekends on standby.

Figure C.1 - Organization Chart



3. Operational Risks and Mitigation Strategies

The operational risks to the Water Reclamation Facility Project have been closely analyzed. The City has identified the following risks to the project: unanticipated increase in projects costs due to economic climate and other factors, delay in project schedule, change in City Council members, public opposition to the project, financial capability of the design/build firm, project requirements and objectives, permitting, and CEQA.

Relative cost opinions were developed for the project using a wide range of anticipated costs. This information was considered in the Master Water Reclamation Plan. The City's Rate Study and user rates are based on these early budget estimates. Additional design development could identify unanticipated costs, which would lead to proposing another water/sewer rate increase. The level of risk is considered medium. The City's mitigation strategy includes a 25% contingency and conservative assumptions for soft costs and loan rates. The City will adjust accordingly as the project proceeds and uncertainty is reduced.

The City Council set a goal for an operational Water Reclamation Facility in 5 years. The Project Management team has developed an aggressive schedule based on this goal. During design and construction, unanticipated factors could cause schedule delays. The level of risk is high, given the time constraints. The City plans to mitigate project delays by providing schedule updates as soon as major project decisions are made and will expedite efforts where cost and quality are not at risk. The City will require final completion of the project months in advance of the goal date.

The program will be ongoing through at least two City Council election cycles (November 2018 and November 2020). A substantial change in City Council members could result in a change in goals or direction for the project. There is a high level of risk, however, it will be mitigated by continually presenting project goals and providing opportunities for refinement by Council. The Project Management team and consultants will work closely to educate Council members on design, construction, and typical project challenges.

Public opposition can arise due to project costs, neighborhood concerns, and organized misinformation campaigns arising from these factors. The City will work with the project team to identify outreach strategies to counter misinformation. The Project Management Team will implement and advise on strategies and work closely with Council members to educate them and reduce the risk of spreading misinformation.

The City and Cayucos Sanitary District (CSD) currently own and operate the existing wastewater facility. Each entity is now pursuing their own separate treatment facility. The existing wastewater treatment plant will be decommissioned in a mutually agreeable way. The details and agreement still need to be worked out. Both agencies will likely want to continue to use the existing ocean outfall for discharge. The details of shared ocean outfall use will need to be worked through. The level of risk is low. The City will mitigate this risk by including specifications for plant decommissioning in performance criteria and using cost opinions in preliminary discussions with CSD. The design-build contractor will develop an Outfall Management Plan for review by the City and CSD prior to design and construction of the outfall connection and improvements.

The project will require land for WRF and for pipeline easements. The City has already purchased the property and is obtaining easements and executed a Memorandum of Understand for property acquisition early in the process. The City will install pipelines in rights-of-way wherever possible.

Land use permitting will likely be through San Luis Obispo County per the City's Local Coastal Plan. The level of risk is low, but the City will utilize the permitting consultant to determine permitting needs and ensure that there are minimal delays.

Another low risk faced by this project is if the design-build contractor faces business stresses that result in project failure. The City established "financial capability" as one of the evaluation criteria for contractor selection.

The City will also want a high-quality, energy-efficient treatment system with relatively low operation and maintenance costs. The City will balance project requirements and objectives with performance criteria that reflect the budget.

Lastly, if the EIR is not certified due to project opposition or legal challenges during the public comment period, funding and project development cannot proceed. The City is mitigating this risk by requiring input from the EIR lead author.

SECTION D: FINANCING PLAN

1. Cash Flow Pro Forma

The cash flow pro forma for the Water Reclamation Facility Project is included as **Exhibit IX**. It includes sources and uses of funds, a projection of quarterly cash flows during the construction period and annual cash flows thereafter. The estimated debt service coverage, amortization schedule and anticipated repayment schedule are also included.

2. Sources and Uses of Funds

Since 2014, the City of Morro Bay has engaged with the State Water Resources Control Board about funding for this project. In 2016, the SWRCB awarded a $75,000 planning grant and a $10 million planning loan from the Clean Water State Revolving Fund (CWSRF) to support Morro Bay's Water Reclamation Facility Project. The City has initiated an application for a CWSRF loan for 51% of project costs. This application is in process and the State Water Board Project Manager, Jody Hack, has been in regular communication. The SWRCB has initiated the environmental review, and a signed loan agreement is expected by March 2019. However, in light of the fact that the CWSRF loan is not secured, financing projections have been based on 49% of the project being funded by WIFIA, 20% of the project being funded with bond financing—assuming a 4.75% interest rate—and the remainder of the project financed with cash on a pay-go basis. Financing projections are conservative to ensure that sufficient funds are available to finance the project, though the CWSRF loan is preferred. A table outlining sources of funds for the WRF project is included in the cash flow pro forma and as **Exhibit X**.

Table D.1

Sources of Funds	**Amount**	**Status**
CWSRF Planning Loan	$ 10,300,000	Awarded
CWSRF Construction Loan OR Bond Financing	$ 50,399,851	Requested
WIFIA	$ 60,175,000	Requested
Cash Expenditures through May 31, 2018	$ 5,063,000	Expensed
Total Project Funds	**$ 125,937,851**	

Table D.2

Use of Funds	**Cost**
Development-phase Activities	$ 5,063,150
Replacement Activities	$ 0
Construction	$ 91,294,661
Property Acquisition	$ 2,050,000
Environmental Mitigation	$ 1,000,000
Construction Contingencies	$ 9,463,755
Administration/Construction Management	$ 17,066,285
Total Project Costs	**$ 125,937,851**

3. Dedicated Sources of Income for Repayment

Sewer and water enterprise revenues, consisting primarily of sewer and water service charges and fees, will be used to repay the WIFIA assistance. The City proposes to repay the assistance with 71% sewer revenues and 29% water revenues, reflecting the focus on recycled water. Effective in 2019, the City proposes to utilize an already-approved Water Reclamation Facility (WRF) surcharge of $41.00 per month ($25.00 per month for sewer and $16.00 per month for water). This surcharge was approved with the last rate increase in 2015. The City intends to impose the already approved maximum sewer and water rates effective in fiscal year 2019/20.

In order to fully fund the Project and all other wastewater enterprise operations and capital projects, sewer rate revenues of $9 million per year and water service revenues of $7.6 million are planned beginning in fiscal year 2020/21. From these revenues, $5.6 million will be allocated annually for debt service. The City will utilize its CWSRF planning loan in fiscal year 2018/19.

The City is assuming a 35-year repayment term with the first debt service payment due fiscal year 2022/23 (e.g., February 1, 2023), the year after the project is complete, and the final debt service payment due fiscal year 2057/58 (e.g., February 1, 2058). The proposed rate structure includes $5.6 million in annual debt service (both interest and principal, split between the water and sewer funds) for the CWSRF planning loan, WIFIA loan and revenue bonds. The City is assuming level annual debt service in the rate structure.

An example of the rate structure is provided in Table D.3 and is based on an average consumer utilizing 5 units of water per month.

Table D.3 - Example Rate Structure

	2018/19	2019/20	2020/21	2021/22	2022/23
Monthly Utility Bill					
Sewer Monthly Charge	$77.00	$83.00	$83.00	$83.00	$83.00
Water Monthly Charge	62.50	67.00	67.00	67.00	67.00
Subtotal Monthly Bill	139.50	150.00	150.00	150.00	150.00
WRF Facility Surcharges					
Sewer WRF Facility Surcharge	-	25.00	25.00	25.00	25.00
Water WRF Facility Surcharge	-	16.00	16.00	16.00	16.00
Subtotal Monthly Bill		41.00	41.00	41.00	41.00
Total Monthly Charges	**139.50**	**191.00**	**191.00**	**191.00**	**191.00**

The City has contracted with Bartle Wells Associates, a municipal advisory firm, to complete a Water and Sewer Rate update to establish new rates to support the WRF project and other needs. This process is well underway. Public notices of the new rates will be mailed July 13, 2018. The mandatory public hearing is tentatively scheduled for August 28, 2018. Tables outlining projected revenues for sewer and water are included in the cash flow pro forma and as **Exhibit XI**.

4. Financial Condition

The City is current on all debt service and is not in risk of imminent default, not in technical default, and not in bankruptcy proceedings. The City has excellent financial status and has financed most of the planning efforts through the general fund. The City is in excellent financial shape to take on debt for the WRF project. See **Exhibit III** for the City's Financial Statements from fiscal year 2014-2015, 2015-2016 and 2016-2017.

5. Available Sources of Security

The Water Reclamation Facility project will be financed with WIFIA and Clean Water State Revolving Fund loans. WIFIA will cover 49% of the total projects costs, up to $60,175,000, and the CWSRF will cover 51% of the total projects, up to $60,699,851, including the CWSRF planning loan already awarded. If for some reason, the CWSRF loan is not available, the City has a contingency plan to use bond financing and pay-go.

6. Preliminary Rating Letter

The preliminary rating letter from Standard & Poor's is included as **Exhibit XII**.

7. Proposed Terms for the WIFIA assistance

The City is assuming a 35-year repayment term with the first debt service payment due fiscal year 2022/23 (e.g. February 1, 2023), the year after the project is complete, and the final debt service payment due fiscal year 2057/58 (e.g. February 1, 2058). The proposed rate structure includes $5.6 million in debt service (both interest and principal, split between the water and sewer funds) for the CWSRF planning loan, WIFIA loan and revenue bonds. The City is assuming level annual debt service in the rate structure. A table illustrating the Draft WIFIA Loan Repayment Schedule, assuming an interest rate of 3.25%, is provided in **Exhibit XIII**.

Loan disbursements will be requested as project activities and initially paid by the City, then invoiced to the State Water Resources Control Board and/or USEPA.

8. Financing Restrictions

There are no financing restrictions that would limit the City's ability to pursue additional funding for this project.

9. Rate

Proposition 218 Process

Proposition 218 was adopted by the California voters on November 5, 1996. It governs how municipalities, counties and special districts establish fees and charges (rates) for certain services. Among other things, the proposition added Article XIIID, Section 6, to the California Constitution,

which requires the City Council to consider written protests to certain proposed increases to rates for sewer (wastewater), water or refuse collection services. Government Code section 53750 *et seq.*, known as the Proposition 218 Omnibus Implementation Act (Act), was adopted to assist local governments and citizens with the implementation of that constitutional provision.

On June 13, 2018, Morro Bay's City Council passed Resolution No 44-18 to guide the Proposition 218 process and help ensure that all utility customers and property owners are aware of the process prior to it being initiated. This resolution is provided in **Exhibit XIV**.

Resolution 44-18 guides how the Proposition 218 process is conducted in the City of Morro Bay. In large part, the Resolution memorializes the previous practices of Morro Bay regarding how it has conducted Proposition 218 processes and further conforms with the California Constitution and the Act. As with any Proposition 218 process, the City shall give notice via U.S. mail, no less than 45 days before the public hearing to be scheduled regarding the proposed rate increases subject to Proposition 218, of the fact protests can be submitted in writing any time after the 45-day period commences and up through the close of that public hearing. The Resolution also provides guidance for the following components of the process, some of which are clearly dictated by Proposition 218 or the Act and some of which are not:

1. Information that must be included in the notice of proposed rates and public hearing
2. Delivery and posting of that required notice
3. Method for submittal of a protest
4. Information that must be included with the protest
5. Withdrawal or changing of a protest
6. How many protests will be counted per parcel
7. What will constitute a majority protest
8. The City Clerk's responsibility to handle, validate, tabulate, report and retain the protests
9. Conformance with confidentiality requirements

The intent of the Resolution is to ensure that all utility customers and property owners, as well as the general public, are aware of the process prior to it being initiated. It mirrors previous practices in Morro Bay including sending the notice not only to subject property owners (as is required by the California Constitution), but also sending the notice to all subject customers of the City's utilities. The Resolution also establishes that individuals who seek to submit a written protest must do so either: in person at the public hearing before it is completed, in person at City Hall any time after the initiation of the process and no later than close of business on the day of the public hearing, or by the person who signed the protest mailing it to the City Clerk. If mailed, the protest must be received by the Clerk prior to the City Hall closing on the day of the hearing. That will ensure that the individual maintains ownership of her/his protest. In addition, in order to ensure all pertinent information is provided and considered prior to a protest being submitted, no protest shall be signed before the City has issued the formal notice that commences the 45-day protest period.

Draft Rate Study

The City engaged Bartle Wells to conduct the rate study. They are a respected firm that provides these services to hundreds of water and sewer agencies. Their representative on the Morro Bay rate study, Alex Handlers, conducted the City's previous rate study in 2015. In addition to Mr. Handlers, City staff including the City Manager, Finance Director, Public Works Director, Utility Division Manager, and the WRF Program Manager, Eric Casares (Carollo Engineers), assisted in developing the rate study. The other major contributor to the rate study is the City of Morro Bay's Blue Ribbon Commission. The City Manager appointed the Blue Ribbon Commission in April 2018 to independently evaluate "the

costs of the major components of the WRF program and water and sewer capital project needs and provide a recommendation to the City Manager for equitable and reasonable rates to pay for those needs." Both the 2015 Rate Study and 2018 Draft Rate Study are included in **Exhibit XIV**.

The Blue Ribbon Commission met with the City team eight times over the past several months. The objective of those meetings has been to gather and analyze information about costs and financing scenarios to determine impacts on water and sewer rates. Commissioners consistently challenged staff on all major components of the cost structure and their analyses and recommendations regarding the proposed rates. Through that process, and other efforts including those by the Water Reclamation Facility Citizens Advisory Committee, staff developed the following assumptions for costs and financing scenarios that inform the proposed new rates:

Key Rate Assumptions

1) WRF Program Costs and Annual Operating and Maintenance Expenses

The WRF program costs are now estimated to be approximately $126 million. That estimate was reduced from the $128.5 million figure provided to Council on June 13, 2018 by re-examining what has been spent to date on program management, planning, design engineering, and contingencies, and evaluation of actual contracts. Table D.4 identifies the major costs of the WRF program:

Table D.4

	Cost Distribution			
Project Component	**Construction**	**Soft Costs**	**Project Reserves**	**Total**
General Program Implementation	$-	$5,159,500	$-	$5,159,500
Onsite WRF Facilities	$62,616,335	$8,488,729	$3,130,817	$74,235,880
Conveyance Facilities	$21,086,013	$2,820,403	$2,342,890	$26,249,305
Offsite Recycled Water Facilities	$8,592,314	$2,647,654	$859,231	$12,099,199
Total	**$92,294,661**	**$19,116,285**	**$6,332,938**	**$117,743,885**
			Total Financed Amount	**$117,743,885**
			Previous Program Expenditures (March 2013 to Present)	$5,063,150
			Project Total	**$122,807,035**
			Additional Project Reserves held with Cash on Hand	$3,130,817
			Total Program Costs	**$125,937,851**

As noted in the table above, a 5% project reserve is built into the proposed project financing as a matter of best practice. In addition, staff recommends that a 5% additional project reserve be retained with existing available cash on hand. As the project progresses, if this project reserve is not needed for the WRF project, the City Council could reallocate these funds for demolition of the current facility, completion of deferred capital projects and/or leverage them to reduce rates. This option is allowable under the annual rate review and accounting process.

2) Capital Improvements for Water and Sewer System (Non-WRF)

The new rate assumes an annual capital projects program of $1 million each for water and sewer. Major sewer projects to be accomplished over the next five years are focused on reducing inflow and infiltration. For water infrastructure, the City's major capital project is replacement of the Nutmeg Tank, an undersized water storage tank at risk of failure due to corrosion. Replacement of the tank will improve the reliability of the distribution system and provide adequate flows for fire protection. The water capital improvements include the addition of pipelines and valves necessary to eliminate the Vashon pump station, which is in poor condition and poses operational challenges.

3) WRF Program Financing

In developing the new rate, the City assumed the Water Reclamation Facility will be funded by a low-interest EPA Water Infrastructure Finance and Innovation Act (WIFIA) loan for up to 49% of the program, the Clean Water State Revolving Fund Planning Loan (8%) and a CWSRF construction loan. While the City hopes to obtain CWSRF funding for construction, at this time, a loan is not secured. Therefore, the rate study is based on cash contributions (approximately 14%), conventional bond financing (25%), and prior expenditures made toward the program (4%).

Staff will also continue to pursue grants for the project. If a CWSRF loan is secured, or grants are awarded, the City Council will have the opportunity to review enterprise revenues and expenses, and either reduce water and sewer rates or allocate additional funds for other water and sewer capital needs.

The assumptions discussed above were used to develop the draft proposed rate.

The 2015 approved rate will end in fiscal year 2019/20 and is outlined in Table D.5. The average residential user is defined as using 500 cubic feet of water per month.

Table D.5

Water Usage per Month (100 cubic feet)	Sewer Rate	Water Rate	Usage Charge (Water)	Total
1	$83.00	$32.00	$6.00	$121.00
2	$83.00	$32.00	$12.00	$127.00
3	$83.00	$32.00	$18.00	$133.00
4	$83.00	$32.00	$26.50	$141.50
5[1]	**$83.00**	**$32.00**	**$35.00**	**$150.00**
6	$83.00	$32.00	$43.50	$158.50
7	$83.00	$32.00	$52.00	$167.00
8	$83.00	$32.00	$60.50	$175.50
9	$83.00	$32.00	$69.00	$184.00
10	$83.00	$32.00	$77.50	$192.50

Notes:
1. Average residential user is defined as using 500 cubic feet per month.

Based upon the rate study conducted by Bartle Wells Associates, informed by Blue Ribbon Commission analysis and recommendations, the following 2019 proposed rate increase is proposed:

Table D.6

Water Usage per Month (100 cubic feet)	Sewer Rate	WRF Surcharge (Sewer)[1]	Water Rate	WRF Surcharge (Water)[1]	Usage Charge (Water)	Total
1	$83.00	$25.00	$32.00	$16.00	$6.00	$162.00
2	$83.00	$25.00	$32.00	$16.00	$12.00	$168.00
3	$83.00	$25.00	$32.00	$16.00	$18.00	$174.00
4	$83.00	$25.00	$32.00	$16.00	$26.50	$182.50
5[2]	**$83.00**	**$25.00**	**$32.00**	**$16.00**	**$35.00**	**$191.00**
6	$83.00	$25.00	$32.00	$16.00	$43.50	$199.50
7	$83.00	$25.00	$32.00	$16.00	$52.00	$208.00
8	$83.00	$25.00	$32.00	$16.00	$60.50	$216.50
9	$83.00	$27.00	$32.00	$16.00	$69.00	$225.00
10	$83.00	$27.00	$32.00	$16.00	$77.50	$233.50

Notes:
1. Total WRF surcharge is $41.00 (i.e., $25.00 + $16.00)
2. Average residential user is defined as using 500 cubic feet per month.

The proposed rate for the typical water and sewer customer will be $191/month beginning in fiscal year 2019/20 (July 1, 2019). That rate represents a 27.3% rate increase over the maximum rate approved in 2015 ($150/month). Thus, the City has determined there is approximately a $41/month surcharge to finance the WRF program in its entirety. The Blue Ribbon Commission determined that this rate is reasonable.

10-Year Rate History

The City of Morro Bay did not increase water rates for over 20 years, then in 2015 the City conducted a public process to increase both water and sewer rates. Table D.7 illustrates the history of the sewer rate increases from January 1, 2008, through the approved rate schedule ending in fiscal year 2019/20. Table D.8 shows the water and sewer rates approved in 2015.

Table D.7

City of Morro Bay: Wastewater User Fee Schedule

Residential Annual Percent Increase**	Current Rate *	FY 07/08 January 1 2008	FY08/09 July 1 2008	FY09/10 July 1 2009	FY10/11 July 1 2010	FY 11/12 July 1 2011	FY12/13 July 1 2012	FY13/14 July 1 2013	FY14/15 July 1 2014
	0.00%	5.00%	50.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%
Single Family Residential	$21.60	$22.68	$34.02	$35.72	$37.51	$39.38	$41.35	$43.42	$45.59
Single Family Condo	$21.60	$22.68	$34.02	$35.72	$37.51	$39.38	$41.35	$43.42	$45.59
Multi - Family Residential	$21.60	$22.68	$34.02	$35.72	$37.51	$39.38	$41.35	$43.42	$45.59
Overage Fee per ccf	$1.93	$2.03	$3.04	$3.19	$3.35	$3.52	$3.69	$3.88	$4.07

Notes for Residential Rates:
1. * =Current Rate represents rate as of October 1, 2007;
2. Rate cited for Single and Multi Family Residential is for 10 ccf, additional usage is billed at the overage fee per ccf cited in the table above
3. Rate cited for Single Family Condo is for 3 ccf, additional usage is billed at the overage fee cited above
4. ** Rate increase reflects 5% annual rate escalator per resolution 59-06 adopted in November 2006

Non-Residential Annual Percent Increase**	Current Rate *	January 1 2008	July 1 2008	July 1 2009	July 1 2010	July 1 2011	July 1 2012	July 1 2013	July 1 2014
	0.00%	5.00%	50.00%	7.25%	7.25%	7.25%	7.25%	7.25%	7.25%
Minimum Charge	$21.60	$22.68	$34.02	$36.49	$39.13	$41.97	$45.01	$48.27	$51.77
Mobile Home Parks	$1.93	$2.03	$3.04	$3.26	$3.50	$3.75	$4.02	$4.31	$4.63
Commercial/Domestic Strength	$2.43	$2.55	$3.83	$4.10	$4.40	$4.72	$5.06	$5.43	$5.82
Commercial Laundry	$2.43	$2.55	$3.83	$4.10	$4.40	$4.72	$5.06	$5.43	$5.82
Condo - Common Area (w/sewer)	$2.43	$2.55	$3.83	$4.10	$4.40	$4.72	$5.06	$5.43	$5.82
Laundromat	$1.93	$2.03	$3.04	$3.26	$3.50	$3.75	$4.02	$4.31	$4.63
Car Wash	$1.93	$2.03	$3.04	$3.26	$3.50	$3.75	$4.02	$4.31	$4.63
Restaurants	$5.58	$5.86	$8.79	$9.43	$10.11	$10.84	$11.63	$12.47	$13.38
Bakeries	$5.58	$5.86	$8.79	$9.43	$10.11	$10.84	$11.63	$12.47	$13.38
Retirement Home/Hospital	$4.36	$4.58	$6.87	$7.36	$7.90	$8.47	$9.09	$9.74	$10.45
Motels	$3.35	$3.52	$5.28	$5.66	$6.07	$6.51	$6.98	$7.49	$8.03
Mortuaries	$3.64	$3.82	$5.73	$6.15	$6.59	$7.07	$7.59	$8.14	$8.73
Hotels with Dining	$4.36	$4.58	$6.87	$7.36	$7.90	$8.47	$9.09	$9.74	$10.45
Seafood Processors	$5.58	$5.86	$8.79	$9.43	$10.11	$10.84	$11.63	$12.47	$13.38
Water Softeners	$1.93	$2.03	$3.04	$3.26	$3.50	$3.75	$4.02	$4.31	$4.63
Schools	$1.93	$2.03	$3.04	$3.26	$3.50	$3.75	$4.02	$4.31	$4.63
Other Public Facilities	$1.93	$2.03	$3.04	$3.26	$3.50	$3.75	$4.02	$4.31	$4.63
City Facilities on Sewer	$1.93	$2.03	$3.04	$3.26	$3.50	$3.75	$4.02	$4.31	$4.63
Power Plant	$248.26	$260.67	$391.01	$419.36	$449.76	$482.37	$517.34	$554.85	$595.07

Notes For Non-Residential Rates:
1. * =Current Rate represents rate as of October 1, 2007
2. ** Rate increase reflects 5% annual rate escalator per resolution 39-06 adopted in August 2006
3. Non-residential rate is calculated as: # of ccf x rate per ccf (the rate varies depending upon buisness category cited above); with the minimum charge listed above

Table D.8

Water Rates/Effective Dates

		Previous Rate	7/1/2015	7/1/2016		7/1/2017		7/1/2018	7/1/2019
Fixed Montly Charge		$ 16.43	$ 23.00	$ 26.00		$ 28.00		$ 30.00	$ 32.00
Water Quantity Charges									
(Billed in 100 cubic feet of metered water use ($/hcf)									
Tier	Use in Tier								
Tier 1	1-3 hcf	$0.00	$ 3.00	$ 4.00	*12*	$ 5.00	*15*	$ 5.50	$ 6.00
Tier 2	4-10 hcf	$5.56-$5.74	$ 6.00	$ 7.00	*49*	$ 7.50	*52.5*	$ 8.00	$ 8.50
Tier 3	11-50 hcf	$5.77-$7.81	$ 9.00	$ 9.50	*380*	$ 10.00	*400*	$ 10.50	$ 11.00
Tier 4	>50 hcf	$7.85-$13.68	$ 12.00	$ 12.50		$ 13.00		$ 13.50	$ 14.00
1 hcf=100 cubic feet=748 gallons									

Sewer Rates/ Effective Dates

		Previous Rate	7/1/2015	7/1/2016		7/1/2017		7/1/2018	7/1/2019
Residential Sewer Rates									
(Fixed monthly charge per residential dwelling unit)									
Single Family		$ 45.59	$ 55.00	$ 62.50		$ 70.00		$ 77.00	$ 83.00
Multiple Family/Condo		$ 45.59	$ 45.59	$ 50.00		$ 56.00		$ 61.60	$ 66.40
Non-Residential Sewer Rates									
(Billed per 100 cubic feet of metered water use ($/hcf))									
Class A- Low Strength		$ 4.63	$ 6.50	$ 7.95	*6*	$ 9.37	*5*	$ 10.57	$ 11.40
Class B- Domestic Strength		$ 5.82	$ 7.98	$ 9.65	*5*	$ 11.29	*5*	$ 12.67	$ 13.61
Class C- Moderate Strength		$ 8.03	$ 10.19	$ 11.86	*4*	$ 13.50	*4*	$ 14.89	$ 15.82
Class D- Mod-High Strength		$ 10.45	$ 12.55	$ 14.18	*4*	$ 15.78	*4*	$ 17.13	$ 18.03
Class E- High Strength		$ 13.38	$ 15.89	$ 17.84	*2*	$ 19.75	*2*	$ 21.36	$ 22.46
Minimum Monthly Charge		*$ 51.77*	*$ 45.59*	*$ 50.00*		*$ 56.00*		*$ 61.60*	*$ 66.40*
1 hcf=100 cubic feet=748 gallons									

Class A- Low Strength includes schools, laundromats, carwashes, city and public facilities, & water softener accounts

Class B- Domestic Strength includes professional offices, retail stores, mobile home parks, and all other standard-strength commercial accounts.

Class C- Moderate Strength includes motels, retirement homes with dining facilities, and mortuaries.

Class D- Mod-High Strength includes hotels with dining rooms or restaurants, and mixed-use accounts where high-strength sewage accounts for between an estimated 25% to 75% of toal wastewater flow.

Class E- High Strength includes restaurants, bakeries, and seafood processors.

Note: The City reserves the right to estimate wastewater strength and assign customer class.

EXHIBITS

Exhibit I: Applicant Background

- Statutory authority under which the City was incorporated

Exhibit II: Organizational Chart

- Organizational chart for the Water Reclamation Facility Project
- Organizational chart for the City of Morro Bay

Exhibit III: Financial Statements

- 2014-2015 financial statement
- 2015-2016 financial statement
- 2016-2017 financial statement

Exhibit IV: Project Map

- Project location map
- Site location map

Exhibit V: Construction Plans and Specifications

- RFP for design-build project delivery for Water Reclamation Facility
- Filanc/Black & Veatch proposal
- City Council agenda, rationale for Black & Veatch selection

Exhibit VI: Alternatives Analysis

- Alternatives analysis from the Draft Master Reclamation Plan

Exhibit VII: System Engineer's Report – N/A

Exhibit VIII: Operations and Maintenance Plan – N/A

Exhibit IX: Cash Flow Pro Forma

- Cash flow pro forma

Exhibit X: Source of Funds

- Funding sources Tables 4 and 5 from cash flow pro forma

Exhibit XI: Projected Revenues

- Project Revenues Tables 11 and 12 from cash flow pro forma

Exhibit XII: Preliminary Rating Letter

- S&P preliminary rating letter

Exhibit XIII: Proposed Terms and Conditions for WIFIA Assistance

- Brief statement with proposed loan terms

Exhibit XIV: Rate Studies and Rate Schedules

- Resolution No 44-18 to guide the Proposition 218 Process
- 2015 rate study
- 2018 draft rate study

Other: Non-refundable Application Fee

- Proof of payment

EXHIBIT I. APPLICANT BACKGROUND

The City of Morro Bay was incorporated on July 27, 1964. It is a general law city that was established by a vote of the citizens and subsequently approved by the County of San Luis Obispo Board of Supervisors. Attached is **Exhibit I**, a copy of the original statutory authority under which the City was incorporated.

IN THE BOA[illegible] OF SUPERVISORS
COUNTY OF SAN LUIS OBISPO, STATE OF CALIFORNIA

Mon day July 27, 19 64

PRESENT: Supervisors Samuel Borradori, Fred C. Kimball, Lyle Carpenter, Urain Perkins, and Chairman M. Roland Gates

ABSENT: None

RESOLUTION NO. 370-64

RESOLUTION COMMENDING INCORPORATION OF MORRO BAY

WHEREAS, the citizens of Morro Bay have, by an overwhelming vote, approved formation of the City of Morro Bay; and

WHEREAS, the City of Morro Bay now becomes the sixth incorporated city in the County of San Luis Obispo; and

WHEREAS, by this incorporation, newest in the State of California, the citizens of the Morro Bay community have demonstrated and proven their interest in the benefits and advantages of home rule; and

WHEREAS, the County of San Luis Obispo recognizes the advantages to be derived by its citizens through the medium of the municipal form of government:

NOW, THEREFORE, BE IT RESOLVED, that the Board of Supervisors of the County of San Luis Obispo command and extend their hearty congratulations to the citizens of Morro Bay and to the newly elected city council; and

BE IT FURTHER RESOLVED that the Board of Supervisors go on record directing all County departments to give their fullest cooperation and assistance to the new city during its formative period; and

BE IT FURTHER RESOLVED that the County of San Luis Obispo extends a sincere welcome to the new civic corporation of Morro Bay.

On motion of Supervisor Borradori, seconded by Supervisor Kimball, and on the following roll call vote, to-wit:

AYES: Supervisors Borradori, Kimball, Carpenter, Perkins, Chairman Gates

NOES: None

ABSENT: None

the foregoing resolution is hereby adopted.

/s/ M. Roland Gates
Chairman of the Board of Supervisors

ATTEST:

PA-34 /s/ A. E. Mallagh
Clerk of the Board of Supervisors

IN THE BOARD OF SUPERVISORS
COUNTY OF SAN LUIS OBISPO, STATE OF CALIFORNIA

Mon day July 13, 1964

PRESENT: Supervisors Samuel Serrpdori, Fred C. Kimball, Lyle Carpenter, Ursin Perkins, and Chairman M. Roland Gates

ABSENT: None

RESOLUTION NO. 361-64

RESOLUTION DECLARING THE CITY OF MORRO BAY INCORPORATED AND DECLARING THE PERSONS ELECTED TO THE CITY COUNCIL OF MORRO BAY

The following resolution is hereby offered and read:

WHEREAS, the Board of Supervisors of the County of San Luis Obispo, State of California, met in regular session on the 13th day of July, 1964, at the hour of 1:45 P.M. of said day, and

WHEREAS, the County Clerk of the County of San Luis Obispo was duly authorized by the said Board of Supervisors to canvass the returns of the election held on the 7th day of July, 1964, in the matter of the incorporation of the City of Morro Bay in the County of San Luis Obispo, State of California, and

WHEREAS, pursuant to law, said County Clerk duly canvassed the returns of said election, and

WHEREAS, said County Clerk has this date duly presented to this Board the results of his canvass of the returns of said election which is hereby approved and ratified, along with affidavits showing due publication of the election notice, and

WHEREAS, from the results of the canvassing of said returns, this Board finds and determines that 1505 votes were for the incorporation of the City of Morro Bay and that 747 votes were against the incorporation of the City of Morro Bay, and

WHEREAS, of the said votes for the incorporation of the City of Morro Bay, ~~2002~~ 1448 were regular votes and 57 were absentee ballots, and

WHEREAS, of those votes against the incorporation of said City, 716 were regular votes and ~~29~~ were absentee ballot, and

WHEREAS, a majority of the votes cast were in favor of incorporation, and

WHEREAS, said Board also finds and determines that the number of votes cast in said election for each candidate for the office of councilman was as follows:

NAME	REGULAR VOTES	ABSENTEE VOTES	TOTAL VOTES
Alonzo D. Bell	221	16	237
Wayne E. Bickford	556	20	576

PA-34

IN THE BOARD OF SUPERVISORS
COUNTY OF SAN LUIS OBISPO, STATE OF CALIFORNIA

_____ day _____, 19_____

PRESENT: Supervisors

ABSENT:

NAME	REGULAR VOTES	ABSENTEE VOTES	TOTAL VOTES
Paul Bowen	804	8	812
Laurance F. Carver	281	10	291
Vernon D. Crass	713	29	742
Arthur Criddle	483	14	497
Louis Domenghini	680	30	710
John D. (Doug) Fort	71	4	75
Hugh D. Graham	470	22	492
James C. Hardman	329	7	336
Christina R. Hayn	159	7	166
Neil R. Kline	74	4	78
Karl P. Kolb	490	35	525
Frank B. (Brownie) Lewis	247	8	255
Wesley E. Mallery	305	13	318
Calvin (Cal) Massey	78	8	86
Neil McDonald	303	6	309
Letha M. Paden	234	7	241
William E. Payne	700	25	725
Theodore R. (Ted) Siebert	266	6	272
Noma M. Stocking	457	15	472
J. S. (Jack) Surfluh	733	25	758
J. Rudolf Tanner	517	14	531
Lawrence M. (Larry) Whitlock	58	4	62
Frederick C. (Fred) Witt	184	5	189
Chester E. Zinn	731	28	759

and

WHEREAS, the following five persons received the highest number of votes for the office of councilman of the City of Morro Bay:

	NAME	NUMBER OF VOTES
1.	PAUL BOWEN	812
2.	J.S.(JACK) SURFLUH	778
3.	CHESTER E. ZINN	759
4.	VERNON D. CRASS	742
5.	WILLIAM E. PAYNE	725

NOW, THEREFORE, BE IT RESOLVED AND ORDERED by the Board of Supervisors of the County of San Luis Obispo, State of California, as follows:

1. That that certain territory in the County of San Luis Obispo, State of California, be and hereby is declared duly incorporated as a general law city, to be known and designated as the City of Morro Bay, said territory herein referred to being more particularly described on the attached sheet marked "Exhibit A".

2. That PAUL BOWEN, J.S.(JACK) SURFLUH, CHESTER E. ZINN, VERNON D. CRASS, and WILLIAM E. PAYNE be and hereby are declared the

PA-34

IN THE BOARD OF SUPERVISORS
COUNTY OF SAN LUIS OBISPO, STATE OF CALIFORNIA

_____ day _____, 19_____

PRESENT: Supervisors

ABSENT:

duly elected members of the City Council of the City of Morro Bay.

3. That the Clerk of said Board of Supervisors be, and hereby is ordered and directed to file a certified copy of this resolution in the office of the Secretary of State of the State of California.

4. That the Clerk of said Board be, and hereby is ordered and directed to file with the County Recorder of said County an affidavit of completion, stating that all requirements of the law pertaining to incorporation have been duly complied with, which affidavit shall have attached to it the certificate of the Secretary of State, as required by Section 34080 of the Government Code.

5. That pursuant to Government Code Sections 54900, etc., the Clerk of said Board be,and hereby is authorized and directed to file with the County Assessor and with the State Board of Equalization, a statement setting forth the legal description and a map or plat of said City of Morro Bay.

On motion of Supervisor Borradori, seconded by Supervisor Kimball, and on the following roll call vote, to-wit:

AYES: Supervisors Borradori, Kimball, Carpenter, Perkins, Chairman Gates

NOES: None

ABSENT: None

the foregoing resolution is hereby adopted.

M. Roland Gates
Chairman of the Board of Supervisors

ATTEST:

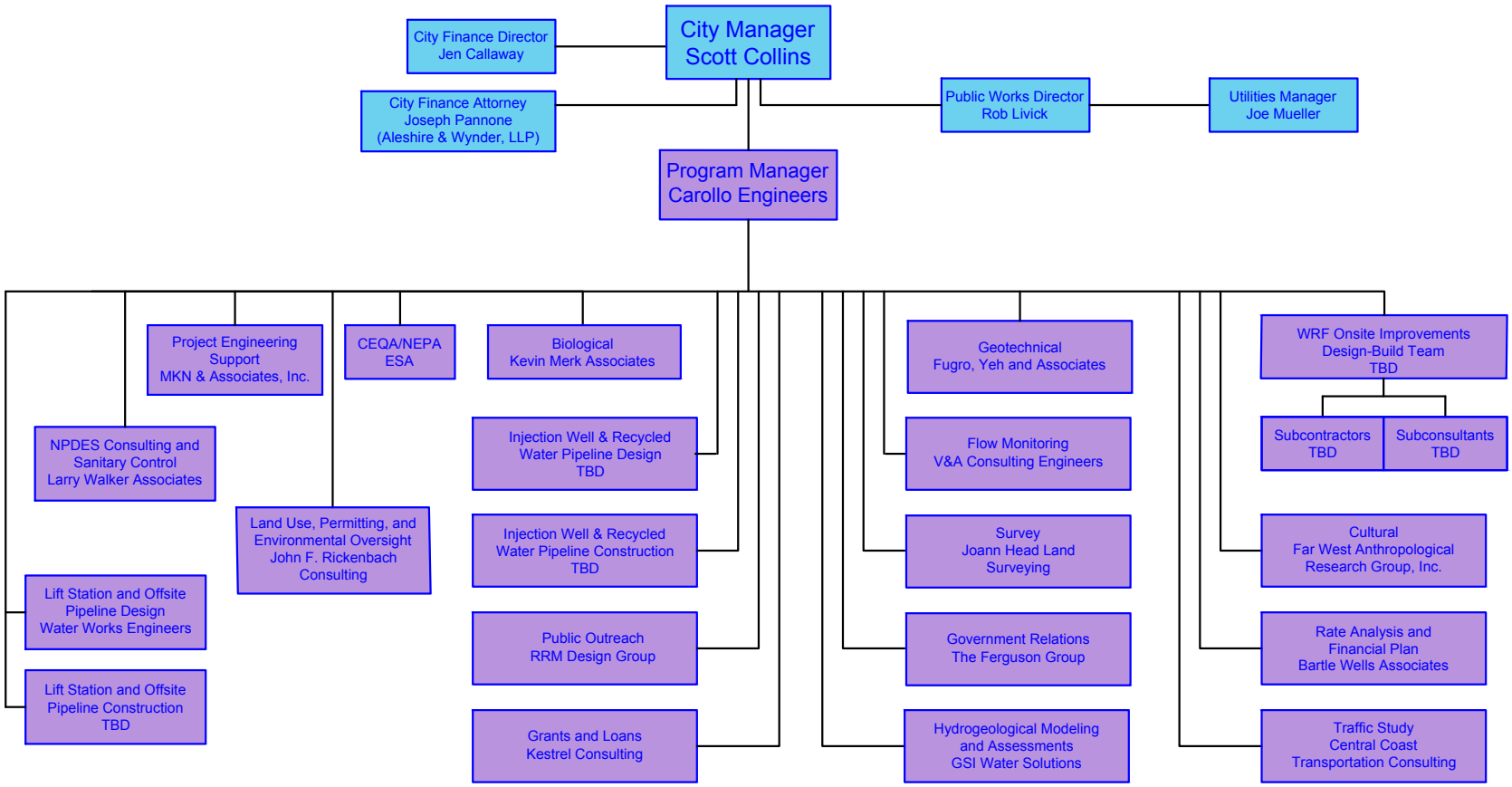
A. E. MALLAGH
Clerk of the Board of Supervisors

PA-34

EXHIBIT II. ORGANIZATIONAL CHART

Two organizational charts are included as **Exhibit II**. The first document is an organizational chart of the Water Reclamation Facility Project. The second document is an organizational chart for the City government.

City of Morro Bay
Water Reclamation Facility Project
EPA WIFIA Loan Application
Exhibit II - Organizational Chart



City of Morro Bay
Water Reclamation Facility Project
EPA WIFIA Loan Application
Exhibit II – City Organizational Chart

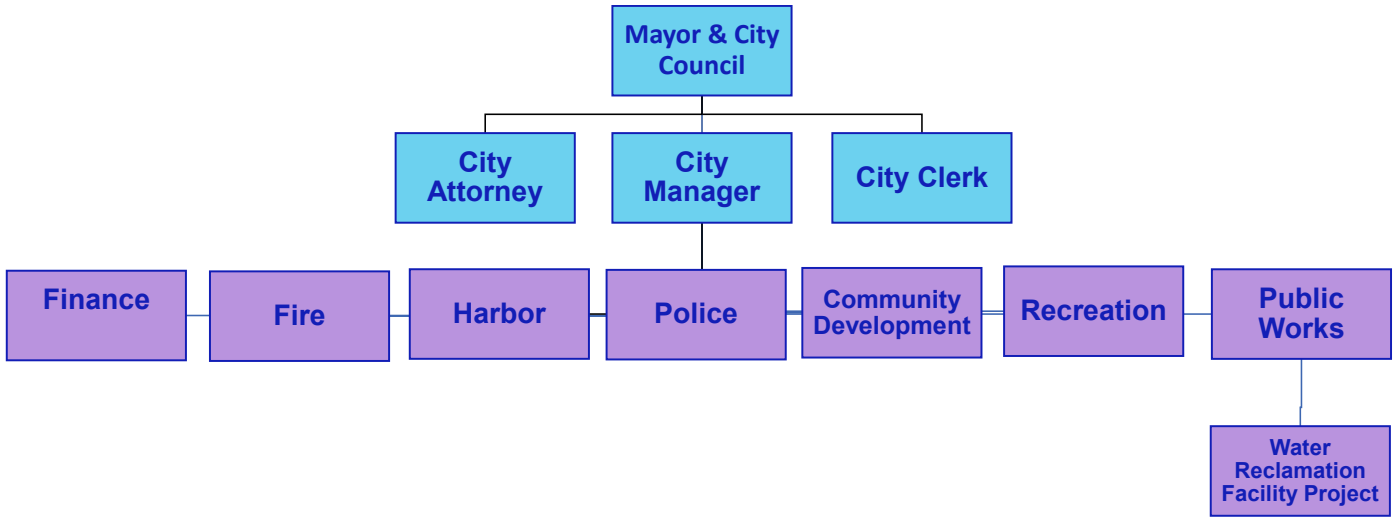


EXHIBIT III. FINANCIAL STATEMENTS

Financial statements for fiscal year 2014-2015, 2015-2016, and 2016-2017 are presented in the following attachments for **Exhibit III.**

City of Morro Bay

Morro Bay, California

Independent Auditors' Report and Basic Financial Statements

For the Year Ended June 30, 2015

THE PUN GROUP
ACCOUNTANTS & ADVISORS

City of Morro Bay
Basic Financial Statements
For the Year Ended June 30, 2015

Table of Contents

City of Morro Bay
Basic Financial Statements
For the Year Ended June 30, 2015

Table of Contents (Continued)

CITY OF MORRO BAY
ELECTED AND CITY OFFICIAL
COMMISSIONS, BOARDS, AND COMMITTEES

Elected Officials	Title	Term Expires
Jamie Irons	Mayor	November 2016
Noah Smukler	Mayor Pro Tempore	November 2016
John Headding	Councilmember	November 2018
Christine Johnson	Councilmember	November 2016
Matt Makowetski	Councilmember	November 2018

City Officials	Position
David Buckingham	City Manager
Joseph Pannone	City Attorney
Eric Endersby	Harbor Director
Scot Graham	Community Development Manager
Robert Livick	Public Works Director
Amy Christey	Police Chief
Steve Knuckles	Fire Chief
Susan Slayton	Administrative Services Director
Dana Swanson	City Clerk
Sam Taylor	Deputy City Manager

Planning Commission

Robert Tefft	Chair
Katherine Sorenson	Vice-Chair
Michael Lucas	Commissioner
Gerald Luhr	Commissioner
Richard Sadowski	Commissioner

Public Works Advisory Board

Marlys McPherson	Chair
Stephen Shively	Vice-Chair
Janith Goldman	Commissioner
Deborah Owens	Commissioner
Christopher Parker	Commissioner
Stewart Skiff	Commissioner
David Sozinho	Commissioner

Morro Bay Tourism Business Imprvmnt Dist

Joan Solu	Chair
Jack Smith	Vice-Chair
Roger Corwin	Member
Michele Jacquez	Member
Taylor Newton	Member
Fred Reed	Member
Vacant	Member

Harbor Advisory Board

William Luffee	Chair
Dana McLish	Vice-Chair
Alan Alward	Member
Gene Doughty	Member
Neal Maloney	Member
Lynn Meissen	Member
Ron Reisner	Member

Recreation and Parks Commission

Drew Sidaris	Chair
Tom Coxwell	Vice-Chair
Jeffrey Cox	Commissioner
Karen Croley	Commissioner
Al Romero	Commissioner
Robert Swain	Commissioner
Vacant	Commissioner

Citizens Finance Committee

Betty Forsythe	Member
Gregory Head	Member
Marlys McPherson	Member
Susan Schneider	Member
Barbara Spagnola	Member

CITY OF MORRO BAY
ELECTED AND CITY OFFICIALS
COMMISSIONS, BOARDS, AND COMMITTEES

Planning Commission

Robert Tefft	Chair
Katherine Sorenson	Vice-Chair
Michael Lucas	Commissioner
Gerald Luhr	Commissioner
Richard Sadowski	Commissioner

Public Works Advisory Board

Marlys McPherson	Chair
Stephen Shively	Vice-Chair
Janith Goldman	Commissioner
Deborah Owens	Commissioner
Christopher Parker	Commissioner
Stewart Skiff	Commissioner
David Sozinho	Commissioner

Water Reclamation Facility Citizen Advisory Committee (WRFCAC)

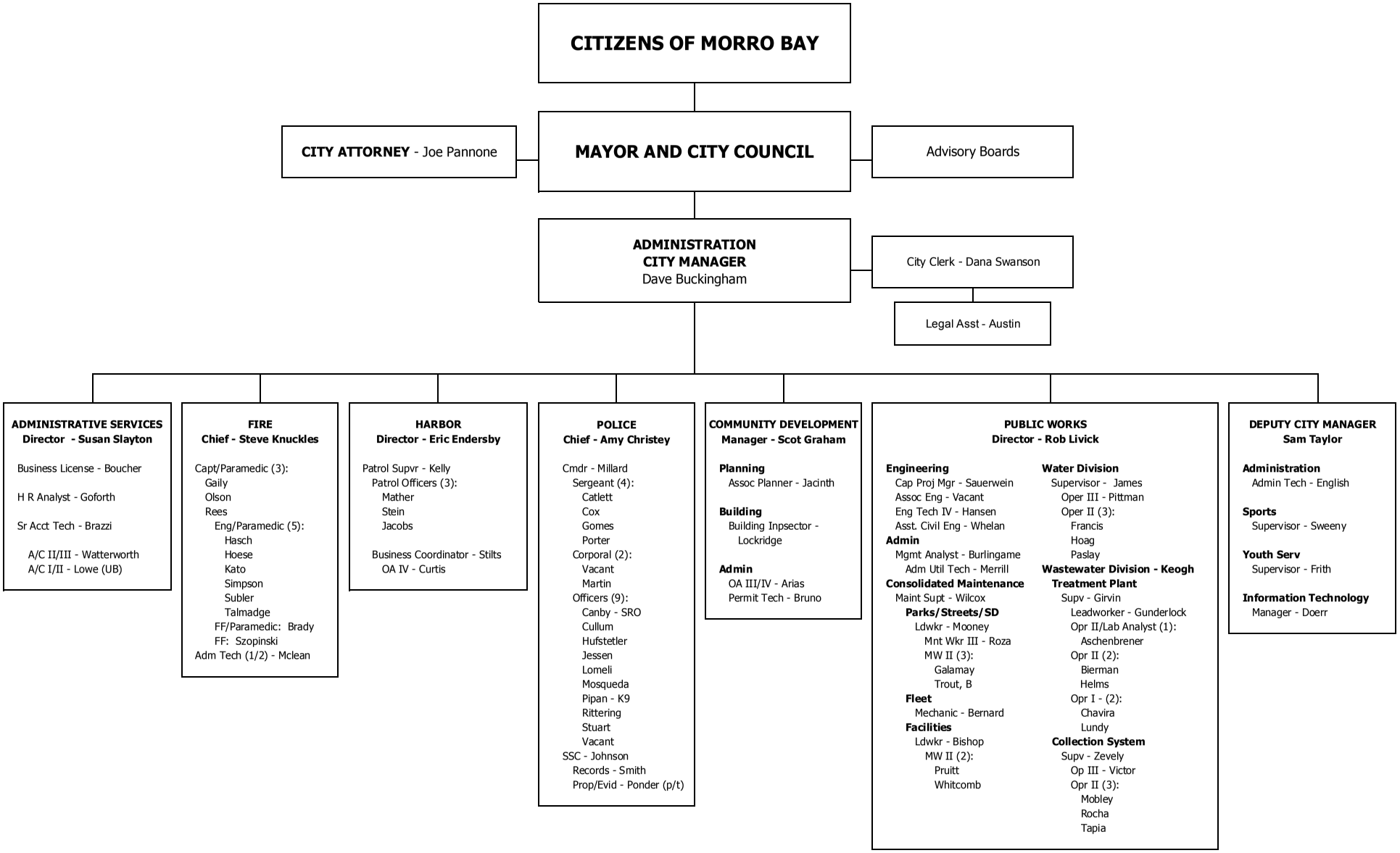
John Diodati	Chair
Bill Woodson	Vice-Chair
Paul Donnelly	Member
Mary (Ginny) Garelick	Member
Dale Guerra	Member
Valerie Levulett	Member
Barbara Spagnola	Member
Richard Sadowski	Planning Commission Appointee
Steven Shively	PWAB Appointee

General Plan/Local Coastal Program Advisory Board (GPAC)

Rich Buquet	Member
Robert Davis	Member
Janith Goldman	Member
Christine Rogers	Member
Susan Schneider	Member
Glenn Silloway	Member
Melani Smith	Member
Susan Stewart	Member
Robert Tefft	Member

CITY OF MORRO BAY
ORGANIZATIONAL CHART

For the 2014/15 Fiscal Year



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THE PUN GROUP
ACCOUNTANTS & ADVISORS

INDEPENDENT AUDITORS' REPORT

To the Honorable Mayor and Members of the City Council
of the City of Morro Bay
Morro Bay, California

Report on Financial Statements

We have audited the accompanying financial statements of the governmental activities, the business-type activities, the discretely presented component unit, each major fund, and the aggregate remaining fund information of the City of Morro Bay, California (the "City"), as of and for the year ended June 30, 2015, and the related notes to the financial statements, which collectively comprise the City's basic financial statements as listed in the table of contents.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with accounting principles generally accepted in the United States of America; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditor's Responsibility

Our responsibility is to express opinions on these financial statements based on our audit. We conducted our audit in accordance with auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards,* issued by Comptroller General of the United States. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinions.
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Opinions

In our opinion, the financial statements referred to above present fairly, in all material respects, the respective financial position of the governmental activities, the business-type activities, the discretely presented component unit, each major fund, and the aggregate remaining fund information of the City as of June 30, 2015, and the respective changes in financial position and, where applicable, cash flows thereof for the year then ended in accordance with accounting principles generally accepted in the United States of America.

2121 North California Blvd., Suite 290, Walnut Creek, California 94596
Tel: 925-974-3394 • Fax: 925-974-3501

Emphasis of Matter

Implementation of GASB Statement No. 68 and 71

As discussed in Note 1 to the basic financial statements, the City implemented Governmental Accounting Standards Board ("GASB") Statement No. 68, *Accounting and Financial Reporting for Pensions – an amendment of GASB Statement No. 27)* and GASB Statement No. 71, *Pension Transition for Contributions Made Subsequent to the Measurement Date – an amendment of GASB Statement No. 68*. The adoption of these standards required retrospective application of previously reported net position and reclassification of certain accounts as of July 1, 2014 as described in Note 11 to the basic financial statements. In addition, net pension liability is reported in the Statement of Net Position in the amount of $15,038,904 as of the measurement date. Net pension liability is calculated by actuaries using estimates and actuarial techniques from an actuarial valuation as of June 30, 2013 which was then rolled-forward by the actuaries to June 30, 2014, the measurement date for California Public Employee Retirement System ("CalPERS") plans. Our opinion is not modified with respect to this matter.

Prior Period Adjustments

As discussed in Note 11 to the basic financial statements, the City has restated the beginning net positions to report corrections of errors. The beginning net position for governmental activities and business-type activities were restated in the amount of $(736,889) and $(75,232), respectively. Our opinion is not modified with respect to this manner.

Water Revenue Over State Water Payments

As discussed in Note 10 to the basic financial statements, the City did not meet the Water Revenue over State Water Payments Ratio. For the year ended June 30, 2015, the City's ratio was at 64%, which is below the required minimum ratio of 125%. Management's plans regarding this matter is also described in the Note 10 to the basic financial statements. Our opinion is not modified with respect to this manner.

Other Matters

Required Supplementary Information

Accounting principles generally accepted in the United States of America require that the Management's Discussion and Analysis, the Budgetary Comparison Schedule - General Fund, the Schedule of Proportionate Share of the Net Pension Liability and Related Ratios, the Schedule of City's Contributions, and the Schedules of Funding Progress-Other Postemployment Benefits Plan on pages 5 to 14 and 89 to 98, be presented to supplement the basic financial statements. Such information, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board, who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Other Information

Our audit was conducted for the purpose of forming opinions on the financial statements that collectively comprise the City's basic financial statements. The Introductory Section and Combining and Individual Nonmajor Fund Financial Statements and Budgetary Comparison Schedules are presented for purposes of additional analysis and are not a required part of the basic financial statements.

Supplementary Information

The Combining and Individual Nonmajor Fund Financial Statements and Statement of Revenue, Expenditures, and Changes in Fund Balance - Budget and Actual are the responsibility of management and were derived from and relate directly to the underlying accounting and other records used to prepare the basic financial statements. Such information has been subjected to the auditing procedures applied in the audit of the basic financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the basic financial statements or to the basic financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the Combining and Individual Nonmajor Fund Financial Statements and Statement of Revenue, Expenditures, and Changes in Fund Balance - Budget and Actual are fairly stated in all material respects in relation to the basic financial statements as a whole.

The Introductory Sections have not been subject to the auditing procedures applied in the audit of the basic financial statements and, accordingly, we do not express an opinion or provide any assurance on them.

Other Reporting Required by *Government Auditing Standards*

In accordance with *Government Auditing Standards*, we have also issued our report dated March 30, 2016 on our consideration of the City's internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements and other matters. The purpose of that report is to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing, and not to provide an opinion on the internal control over financial reporting or on compliance. That report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the City's internal control over financial reporting and compliance.

The Pun Group, LLP

Walnut Creek, California
March 30, 2016

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Management's Discussion and Analysis

As management of the City of Morro Bay, we offer readers of the City's financial statements this narrative overview and analysis of the financial activities of the City, for the fiscal year ended June 30, 2015. It should be read in conjunction with the accompanying basic financial statements.

Financial Highlights

In the 2014/15 fiscal year, the City implemented the two new statements from the Governmental Accounting Standards Board (GASB), related to pension activities:

- Statement No. 68, "Accounting and Financial Reporting for Pensions - an amendment of GASB Statement No. 27," and
- Statement No. 71, "Pension Transition for Contributions Made Subsequent to the Measurement Date - an amendment of GASB Statement No. 68."

GASB Statement No. 68 establishes standards of accounting and financial reporting, but not funding or budgetary standards, for the City's defined benefit pension plans. This Statement replaces the requirements of prior GASB statements, impacting accounting and disclosure of pensions.

The significant impact to the City of implementing GASB Statement No. 68 is the reporting of the City's unfunded pension liability on the full accrual basis of accounting in the government-wide financial statements. There are also new note disclosure requirements and supplementary schedules required by the Statement. The measurement date for the pension liabilities is as of June 30, 2014. This date reflects a one-year lag in the release of actuaries from CalPERS, and was used so that these financial statements could be issued in a timely manner. Activity, such as contributions made by the City, occurring during the 2014/15 fiscal year, are reported as deferred outflows of resources, in accordance with Statement No. 71. The City did not reflect these pension standards in the 2013/14 fiscal year results because the necessary actuarial information from the California Employees' Retirement System was not provided for the prior years presented.

The following outlines financial highlights for the year:

- At June 30, 2015, the City's net position increased $0.9 million due to recovery of the economy and increase in building fees.
- Total city-wide assets increased by approximately $866, or 0.53%. In governmental activities, cash and prepaid items increased by $661K, and receivables by $981K. In business-type activities, cash and prepaid items decreased by $728K.
- Total city-wide liabilities, excluding net pension and deferred inflows, increased $16.6 million. Current liabilities decreased by $165K, and long-term liabilities increased by $16.7 million.
- With the application of GASB Statement No. 68, the City restated the 2013-2014 fiscal year beginning net position for both governmental and business-type activities. The significant impact to the City of implementing Statement No. 68 is the reporting of the City's unfunded pension liability on full accrual basis of accounting government-wide financial statements and more directly affecting the 2014-2015 fiscal year' unrestricted net position. These amounts are presented as deferred in-/out- flows of resources, and aggregate net pension liabilities. More information on GASB Statement No. 68 and 71 application can be found in Note 7 and 11. GASB Statement No. 68 does not change CalPERS policies or contribution rates or cash flow.

- The City's governmental funds altogether reported combined ending fund balances of $8.5 million. Of this amount, $6.4 million, or 75%, is nonspendable ($2.8 million), restricted ($1.8 million) and committed ($1.8 million).
- The City's General fund balance increased by $1.4 million. The fund balance includes nonspendable ($2.67 million) and committed ($1.28 million) funds. A total of $3.2 million is held in reserve, per the City's policy of retaining 27.5% of General fund expenditure estimate.

Overview of the Financial Statements

This discussion and analysis are intended to serve as an introduction to the City of Morro Bay's basic financial statements, which consists of three components: 1) government-wide financial statements, 2) fund financial statements, and 3) notes to the financial statements. This report also contains required and other supplementary information in addition to the basic financial statements.

Government-wide financial statements

The *government-wide financial statements* are designed to provide readers with a broad overview of the City of Morro Bay's finances, in a manner similar to a private-sector business.

The *Statement of Net Position* presents information on all of the City's assets, deferred outflows of resources, liabilities, and deferred inflow of resources, with the difference reported as *net position*. Over time, increases or decreases in net position may serve as a useful indicator of the City's overall financial health.

The *Statement of Activities* presents information showing how the City's net position changed during the most recent fiscal year. All changes in net position are reported as soon as the underlying event giving rise to the change occurs, *regardless of the timing of related cash flows*. Thus, revenues and expenses are reported in this statement for some items that will only result in cash flows in future fiscal periods (e.g., earned, but unused, vacation leave).

Both of the government-wide financial statements distinguish functions of the City of Morro Bay that are principally supported by taxes and intergovernmental revenues (*governmental activities*) from other functions that are intended to recover all or a significant portion of their costs through user fees and charges (*business-type activities*). The governmental activities of the City include administration, community promotion, finance, fire, housing, police, public services, and parks and recreation. The business-type activities of the City include the Water, Sewer, Harbor, and Local Transportation ("LTF") operations.

The government-wide financial statements include not only the City of Morro Bay itself (known as the *primary government*), but also the Morro Bay-Cayucos Sanitary District Waste Water Treatment Facility, for which the City is financially accountable. Financial information for this *component unit* is reported separately from the financial information presented for the primary government itself.

The government-wide financial statements can be found on pages 18-21 of this report.

Fund financial statements

A *fund* is a grouping of related accounts that is used to maintain control over resources that have been segregated for specific activities or objectives. The City of Morro Bay, like other state and local governments, uses fund accounting to ensure and demonstrate compliance with finance-related legal requirements. City funds are divided into three categories: governmental, proprietary, and fiduciary.

Governmental funds

Governmental funds are used to account for essentially the same functions reported as *governmental activities* in the government-wide financial statements. However, unlike the government-wide financial statements, governmental fund financial statements focus on *near-term inflows and outflows of spendable resources,* as well as on *balances of spendable resources* available at the end of the fiscal year. Such information may be useful in evaluating a government's near-term financing requirements.

Because the focus of governmental funds is narrower than that of the government-wide financial statements, it is useful to compare the information presented for *governmental funds* with similar information presented for *governmental activities* in the government-wide financial statements. By doing so, readers may better understand the long-term impact of the government's near-term financing decisions. Both the governmental fund balance sheet and the governmental fund statement of revenues, expenditures, and changes in fund balances provide a reconciliation to facilitate this comparison between *governmental funds* and *governmental activities.*

The City of Morro Bay maintains eighteen individual governmental funds. Information is presented separately in the governmental fund balance sheet, and in the governmental fund statement of revenues, expenditures, and changes in fund balances for the General Fund, Community Development Grants Funds, and Capital Improvement Fund, all of which are considered major funds of the government. Data from the other governmental funds are combined into a single, aggregated presentation. Fund data for each of these non-major governmental funds is provided in the form of *combining statements* elsewhere in this report.

The City adopts an annual appropriated budget for all governmental funds. Requirement Supplementary Information - Budgetary Statements for the General Fund have been provided to demonstrate compliance with its budget.

The governmental fund financial statements can be found on pages 27-30 of this report.

Proprietary funds

The City of Morro Bay maintains two different types of proprietary funds. *Enterprise funds* are used to report the same functions presented as business-type activities in the government-wide financial statements. The City uses enterprise funds to account for the Water, Sewer, Harbor, and LTF operations. *Internal service funds* are an accounting device used to accumulate and allocate costs internally among the City's various functions. Morro Bay uses internal service funds to account for the various types of insurance coverage for the City. Because these services predominantly benefit governmental rather than business-type functions, they have been included within *governmental activities* in the government-wide financial statements.
Proprietary funds provide the same type of information as the government-wide financial statements, only in more detail. The proprietary fund financial statements provide separate information for the Water, Sewer and Harbor operations, all of which are considered to be major funds of the City. The remaining proprietary fund (LTF) is combined into a single, aggregated presentation in the proprietary fund financial statements.

The proprietary fund financial statements can be found on pages 32-39 of this report.

Fiduciary funds

Fiduciary funds are used to account for resources held for the benefit of parties outside the government. Fiduciary funds are *not* reflected in the government-wide financial statements because the resources of those funds are *not* available to support the City of Morro Bay's own programs. The accounting used for fiduciary funds is much like that used for proprietary funds.

The fiduciary fund financial statement can be found on pages 43-44 of this report.

Notes to the financial statements

The notes provide additional information that is essential to a full understanding of the data provided in the government-wide and fund financial statements. The notes to the financial statements can be found on pages 47-86 of this report.

Required supplementary information

In addition to the basic financial statements and accompanying notes, this report also presents certain *required supplementary information* including Budgetary Comparison Schedule - General Fund, Schedule of Proportionate Share of the Net Pension Liability and Related Ratio, Schedule of Plan Contributions, and Schedule of Funding Progress – Other Postemployement Benefits Plan. Required supplementary information can be found on page 89 - 98 of this report.

Supplementary information

The combining and individual statements, referred to earlier in connection with the nonmajor governmental funds, are presented immediately following the required supplementary information on pensions. Combining and individual fund statements and schedules can be found on pages 100 - 126 of this report.

Government-wide Financial Analysis

The City's net position from governmental activities increased from $114.8 million to $117.2 million (approximately 3%).

Changes between fiscal years are shown in Table I, and explained in detail below:

Total assets and deferred outflows increased approximately $1.3 million:

- Governmental:
    - Cash and investments increased $371K
    - Receivables increased $981K
    - Prepaid items and inventories increased $290K
    - Capital assets increased $1.3 million
    - Deferred outflows of resources increased $21K
- Business-type:
    - Cash and investments decreased $202K
    - Receivables decreased $49K
    - Prepaid items and inventories decreased $525K
    - Capital assets increased $997K
    - Deferred outflows of resources increased $105K

Total liabilities and deferred inflows decreased approximately $2.7 million:

- Governmental:
    - Accounts payable increased $811K
    - Payroll payable increased $69K
    - Deposits and unearned revenue decreased $866K
    - Long-term liabilities increased $34K
    - Aggregate net pension liabilities decreased $3.3 million
    - Deferred inflow of resources increased $3.3 million

- Business-type:
  - Accounts payable decreased $277K
  - Payroll payable increased $11K
  - Deposits and unearned revenues increased $214K
  - Long-term liabilities decreased $87K
  - Aggregate net pension liabilities decreased $926K
  - Deferred inflow of resources increased $926K

TABLE 1: CITY OF MORRO BAY NET POSITION

(Amounts expressed in thousands)

	Governmental activities		Business-type activities		Total	
		(As Restated)		(As Restated)		(As Restated)
	2015	2014	2015	2014	2015	2014
Current and other assets	$ 12,913	$ 11,291	$ 10,368	$ 11,123	$ 23,281	$ 22,414
Capital assets	123,287	122,003	18,631	19,629	141,918	141,632
Total assets	136,200	133,294	28,999	30,752	165,199	164,046
Deferred outflows	1,647	1,271	460	355	2,107	1,626
Current liabilities	2,870	1,352	750	857	3,620	2,209
Long-term liabilities	14,499	18,406	4,044	5,071	18,543	23,477
Total liabilities	17,369	19,758	4,794	5,928	22,163	25,686
Deferred inflows	3,319	-	926	-	4,245	-
Net position:						
Net investment in capital assets	121,872	122,002	17,836	19,629	139,708	141,631
Restricted	1,773	128	46	-	1,819	128
Unrestricted (Deficit)	(6,486)	(7,323)	5,857	5,550	(629)	(1,773)
Total net position	$ 117,159	$ 114,807	$ 23,739	$ 25,179	$ 140,898	$ 139,986

Activities in 2014/15, which changed the City's net position, are described in the Table 2, with comparison totals for 2013/14 activities

Governmental activities. Governmental activities increased the City of Morro Bay's net position by $2.35 million. Increased building and increased building fees comprise the greatest reason for change. The economy is stabilizing, and the City is seeing the results in tourism increases, and building. The City completed one major capital project, the Morro Creek Bridge and Bikeway, which was paid mostly from a National Scenic Byways grants, California Department of Transportation (CalTRANS) grants, and Local Transportation funding made available by the San Luis Obispo Council of Governments (SLOCOG).

TABLE 2: CITY OF MORRO BAY CHANGES IN NET POSITION

(Amounts expressed in thousands)

	Governmental activites		Business-type activites		Total	
	2015	(As Restated) 2014	2015	(As Restated) 2014	2015	(As Restated 2014
Revenues:						
Program revenues:						
Charges for services	$ 4,016	$ 2,225	$ 9,595	$ 9,726	$ 13,611	$ 11,951
Operating grants and contributions	442	1,638	455	182	897	1,820
Capital grants and contributions	1,603	354	-	764	1,603	1,118
General revenues:						
Property taxes	3,940	4,745	-	-	3,940	4,745
Other taxes	6,521	5,093	-	-	6,521	5,093
Other	500	111	101	63	601	174
Total revenues	17,022	14,166	10,151	10,735	27,173	24,901
Expenses:						
Administraton	2,773	3,016	-	-	2,773	3,016
Community promotion	1,167	905	-	-	1,167	905
Finance	630	711	-	-	630	711
Fire	2,658	6,479	-	-	2,658	6,479
Housing	53	456	-	-	53	456
Police	3,392	9,185	-	-	3,392	9,185
Public Works	2,985	3,904	-	-	2,985	3,904
Recreation	1,819	4,480	-	-	1,819	4,480
Water operating	-	-	4,113	5,046	4,113	5,046
Sewer operating	-	-	4,167	5,314	4,167	5,314
Harbor operating	-	-	2,234	3,476	2,234	3,476
Transit	-	-	270	359	270	359
Total expenses	15,477	29,136	10,784	14,195	26,261	43,331
Increase (decrease) in net assets before transfers	1,545	(14,970)	(633)	(3,460)	912	(18,430)
Transfers	807	803	(807)	(803)	-	-
Increase (decrease) in net assets	2,352	(14,167)	(1,440)	(4,263)	912	(18,430)
Net position-beginning of year, restated	114,807	128,974	25,179	29,442	139,986	158,416
Net position - June 30	$ 117,159	$ 114,807	$ 23,739	$ 25,179	$ 140,898	$139,986

Business-type activities.

Business-type activities decreased the City of Morro Bay's net position by $1.44 million. Cost of personnel and services continues to rise, while revenues have not, particularly in Water Operations. The City is a participant in the California state water project, and the commitment must be paid, whether or not the City's allotment of water is provided. With the drought conditions in California, state water allocations have declined, and the City has been forced to use it desalinization facility to clean well water to maintain sufficient supply to its citizens. As a part of the drought situation, restrictions have been imposed on our citizens, and thus, revenues have fallen by $216. An additional problem is our water rate structure that has not been updated since 1996. In fiscal year 2013/14, the process to update water rates began, with a study conducted by Bartle Wells.

After several public hearings and much public outreach, the City mailed out a protest vote invitation, in accordance with Proposition 218. During the Proposition 218 public hearing, protest votes were received, but the number of protests was insufficient to stop the imposition of the new rates. On May 26, 2015, the City Council adopted the new rate study which will go into effect with July 2015 usage.

In 2014/15, the Harbor Fund used a considerable amount ($500 thousand) of its accumulated cash to complete repairs to its North T-Pier. The total cost of the project, which began in fiscal year 2013/14, was $997.

Financial Analysis of the Government's Funds

As noted earlier, the City of Morro Bay uses fund accounting to ensure and demonstrate compliance with finance-related legal requirements.

Governmental funds. The focus of the City's *governmental funds* is to provide information on near-term inflows, outflows, and balances of *spendable* resources. Such information is useful in assessing Morro Bay's financing requirements. In particular, *unreserved fund balance* may serve as a useful measure of a government's net resources available for spending at the end of the fiscal year.

As of June 30, 2015, the City of Morro Bay's governmental funds reported combined ending fund balances of $8.5 million, an increase of $731K in comparison to the prior year. The majority of this total amount ($6.4 million) constitutes nonspendable ($2.8 million), restricted ($1.8 million) and committed ($1.8 million) fund balances. The amount available for spending at the City's discretion ($2.1 million) is 25% of the combined fund balances.

The General Fund is the chief operating fund of the City of Morro Bay. At the end of June 30, 2015, total fund balance of the general fund was $6.1 million, the majority of which is nonspendable ($2.7 million) and committed ($1.3 million). As a measure of the general fund's liquidity, it may be useful to compare unreserved fund balance to total fund expenditures. Unreserved fund balance represents 19% of total general fund expenditures.

The General Fund's fund balance increased by $1.4 million during the current fiscal year. City management has embraced a change in philosophy, leaning towards leveling the playing field for residents and businesses by ensuring those who utilize services pay for those services. Fees for services, with the exception of tiered subsidies for youth recreation programs, have been increased to collect more fully the cost of services provided. Additionally, the City engaged a professional firm to perform an organizational assessment and financial stability model. Some of these recommendations and tools were implemented in fiscal year 2014/15, and the remaining are subject to review for implementation in fiscal years 2015/16 and 2016/17.

Proprietary funds. The City of Morro Bay's proprietary funds provide the same type of information in the government-wide financial statements, but in more detail. At June 30, 2015, unrestricted net position in the Water and Sewer Operating Funds amounted to $2.9 million and $3.4 million, respectively. Unrestricted net position in the Harbor Operating Funds presented as a deficit $544K, due to the use of cash for the North T-Pier repair, as previously mentioned. Net position increased in the Sewer fund by $28K. The Water and Harbor funds decreased by $1 million and $438, respectively. Factors concerning those funds have already been addressed in the discussion of the City's business-type activities.

General Fund Budgetary Highlights

Differences between the original budget and the final amended budget ($486 in expenditures, $369K in revenues, and $126K in transfers) are briefly summarized below:

TABLE 3: CITY OF MORRO BAY GENERAL FUND
DEPARTMENTAL CHANGES TO ORIGINAL ADOPTED BUDGET
(Amounts expressed in thousands)

REVENUES		EXPENDITURES	
$ 51	Property taxes	$ 49	City Council
(40)	Sales tax	$ 77	City Manager
100	Tranisient occupancy tax	5	Human resources
108	Other Fire services	25	City Attorney
150	Business tax	12	Accounting & Treasury
		6	Information services
		81	Police department
		144	Fire department
		45	Public works
		17	Consolidated maintenance
		3	Vehicle maintenance
		8	Street maintenance
		14	Recreation
$ 369		$ 486	
$ 126	Transfers in		

Capital Asset and Debt Administration

Capital assets.

The City of Morro Bay's net investment in capital assets for its governmental and business-type activities as of June 30, 2015, amounts to $140 million. This investment in capital assets includes land, distribution and collection systems, buildings and equipment, improvements, works of art and historical collections, and current year infrastructure.

The major capital asset event that occurred during the current fiscal year was the construction of the Morro Creek Bridge and Bikeway.

TABLE 4: CITY OF MORRO BAY NET CAPITAL ASSETS

(Amounts expressed in thousands)

	Governmental Activities		Business-type Activities		Total	
	2015	2014	2015	2014	2015	2014
Land	$ 95,465	$ 95,465	$ 1,496	$ 1,496	$ 96,961	$ 96,961
Artwork	63	63	3	3	66	66
Construction in progress	1,852	1,667	206	202	2,058	1,869
Subtotal	97,380	97,195	1,705	1,701	99,085	98,896
Machinery and equipment	4,280	3,760	9,741	9,872	14,021	13,632
Buildings and structures	15,468	14,876	5,316	5,316	20,784	20,192
Infrastructure	25,716	25,288	30,207	30,207	55,923	55,495
Less accum deprn	(19,557)	(19,117)	(28,338)	(27,467)	(47,895)	(46,584)
Subtotal	25,907	24,807	16,926	17,928	42,833	42,735
Total	$ 123,287	$ 122,002	$ 18,631	$ 19,629	$ 141,918	$ 141,631

Additional information on the City's capital assets can be found in Note 1-I and Note 4 on page 52 and pages 60-61.

Long-term debt.

At the end of the current fiscal year, the City of Morro Bay had total debt outstanding of $4.3 million. Of this amount, $2.2 million comprises debt secured solely by specified revenue sources (e.g., notes payable and certificates of participation). The City maintains a double A ("AA") rating from Standard & Poor's.

TABLE 5: CITY OF MORRO BAY LONG-TERM LIABILITIES

(Amounts expressed in thousands)

	Governmental activities		Business-type activities		Total	
	2015	(As Restated) 2014	2015	(As Restated) 2014	2015	(As Restated) 2014
Certificates payable	$ 1,416	$ 1,487	$ -	$ -	$ 1,416	$ 1,487
Notes payable	-	-	795	889	795	889
Claims payable	230	-	-	-	230	-
Compensated absenses	290	260	80	69	370	329
Other Post-Employment Benefits	206	110	-	-	206	110
Pension-related debt	1,256	1,508	-	-	1,256	1,508
Total	$ 3,398	$ 3,365	$ 875	$ 958	$ 4,273	$ 4,323

Additional information on the City's long-term liabilities can be found in Note 5 on pages 62 - 63 of this report.

Economic Factors and Next Year's Budget and Rates

- Home prices, home sales and remodels are booming, and that momentum is anticipated to continue for the fiscal year 2015/16. The median home price in Morro Bay is $448,500, which is an increase of 13.2% from this time last year. Property taxes continue to grow by approximately 2% annually. Morro Bay is nearly built out, with little vacant land to construct more homes. There are several project in process right now that could provide 80+ additional homes, and require 10 of those to be affordable.

- Tourism in Morro Bay is flourishing, as demonstrated by the significant increases in Transient Occupancy Tax (TOT). Since the 2010/11 fiscal year, TOT has rocketed, increasing each year over the previous year as follows:

    - 2011/12 – 7.37%
    - 2012/13 – 10.25%
    - 2013/14 – 13.07%
    - 2014/15 – 10.3%

  Our Embarcadero and waterfront are bustling with activity on a daily basis, including our normal *off-season*, from January through April. For the fiscal year 2015/16, TOT growth is expected to slow down to 3%, unless our transient stay inventory increases.

- Sales tax revenue is expecting a modest increase (2%), which has been our historical norm. The City has hired a Deputy City Manager, whose responsibilities include economic development and public outreach. Additionally, the City has expanded its marketing through social media, and an updated website. Promoting the City as a tourist destination is a top goal for management.

- In the 2014/15 fiscal year, the City was successful in negotiating two year contracts with its employees that contained a 3% salary increase, along with other incentives.

- In 2015, Dynegy Morro Bay LLC, owners of the Morro Bay power plant, permanently closed operations. The future of this property is unknown.

These factors were considered in preparing the City's budget for the 2015/16 fiscal year.

Requests for Information

This financial report is designed to provide a general overview of the City of Morro Bay's finances for all those with an interest in the government's finances. Questions concerning any of the information provided in this report or requests for additional financial information should be addressed to the Finance Department, City of Morro Bay, 595 Harbor Street, Morro Bay, CA 93442.

BASIC FINANCIAL STATEMENTS

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GOVERNMENT-WIDE FINANCIAL STATEMENTS

City of Morro Bay
Statement of Net Position
June 30, 2015

	Primary Government			Discretely Presented Component Unit
	Governmental Activities	Business-Type Activities	Total	
ASSETS				
Current Assets:				
Cash and investments	$ 6,187,852	$ 7,827,181	$ 14,015,033	$ 160,667
Receivables, net of allowance for doubtful accounts:				-
Utility billings	-	1,447,588	1,447,588	9,400
Intergovernmental	2,124,728	116,574	2,241,302	-
Notes	2,095,286	-	2,095,286	-
Due from primary government	-	-	-	3,012
Due from component unit	-	4,766	4,766	-
Internal balances	(64,395)	64,395	-	-
Prepaid items & inventories	1,229,407	907,179	2,136,586	11,655
Land held for resale	1,340,000	-	1,340,000	-
Total Current Assets	12,912,878	10,367,683	23,280,561	184,734
Noncurrent Assets:				
Capital assets - nondepreciable	97,379,792	1,705,035	99,084,827	899,133
Capital assets - depreciable, net	25,907,707	16,926,153	42,833,860	27,333
Total Noncurrent Assets	123,287,499	18,631,188	141,918,687	926,466
Total Assets	136,200,377	28,998,871	165,199,248	1,111,200
DEFERRED OUTFLOWS OF RESOURCES				
Pension contribution after measurement date	1,318,092	367,879	1,685,971	-
Employer's actual contribution in excess of emploter's proportionate share of contribution	118,098	32,961	151,059	-
Positive adjustment due to difference in proportion	210,850	58,848	269,698	-
Total deferred outflows of resources	1,647,040	459,688	2,106,728	-

City of Morro Bay
Statement of Net Position (Continued)
June 30, 2015

	Primary Government			Discretely Presented Component Unit
	Governmental Activities	Business-Type Activities	Total	
LIABILITIES				
Accounts payable	1,282,527	141,592	1,424,119	95,187
Accrued payroll and benefits	733,279	162,537	895,816	63,454
Due to primary government	-	-	-	4,766
Due to component unit	-	3,012	3,012	-
Deposits	-	89,749	89,749	-
Unearned revenues	197,633	239,786	437,419	-
Long-term liabilities:				
Due within one year	657,303	112,387	769,690	-
Due in more than one year	2,741,220	762,322	3,503,542	15,338
Aggregate net pension liabilities	11,757,415	3,281,489	15,038,904	-
Total Liabilities	17,369,377	4,792,874	22,162,251	178,745
DEFERRED INFLOWS OF RESOURCES				
Difference in projected and actual earnings on pension investments	3,151,139	879,481	4,030,620	-
Employer's proportionate share of contribution in excess of emploter's actual contribution	112,217	31,320	143,537	-
Negative adjustment due to difference in proportion	55,651	15,532	71,183	-
Total deferred inflows of resources	3,319,007	926,333	4,245,340	-
NET POSITION				
Net investment in capital assets	121,871,499	17,836,522	139,708,021	926,466
Restricted for:				
Housing	779,788	-	779,788	-
Assessment district	135,449	-	135,449	-
Parking	405,811	-	405,811	-
Parks and recreation	164,345	-	164,345	-
Transportation	29,240	46,185	75,425	-
Other purposes	258,545	-	258,545	-
Unrestricted (Deficit)	(6,485,644)	5,856,645	(628,999)	5,989
Total Net Position	$ 117,159,033	$ 23,739,352	$ 140,898,385	$ 932,455

City of Morro Bay
Statement of Activities
For the Year Ended June 30, 2015

Functions/Programs	Expenses	Program Revenues: Charges for Services	Program Revenues: Operating Grants and Contributions	Program Revenues: Capital Grants and Contributions
Governmental Activities:				
Administration	$ 2,772,921	$ 1,919,455	$ -	$ -
Community promotion	1,166,533	471,039	-	-
Finance	630,241	344,220	-	-
Fire	2,657,615	212,280	10,085	-
Housing	53,518	40,040	1,920	-
Police	3,392,394	-	143,744	-
Public works	2,984,847	493,886	286,394	1,602,492
Rec/parks/maintenance	1,819,370	535,198	-	-
Total Governmental Activities	15,477,439	4,016,118	442,143	1,602,492
Business-Type Activities:				
Water	4,112,628	3,311,970	-	-
Sewer	4,167,339	4,330,253	-	-
Harbor	2,234,035	1,910,962	147,262	-
Local Transportation	270,198	42,160	307,751	-
Total Business-Type Activities	10,784,200	9,595,345	455,013	-
Total Primary Government	$ 26,261,639	$ 13,611,463	$ 897,156	$ 1,602,492
Discretely Presented Component Unit:				
Waste Water Treatment Plant	$ 3,466,004	$ 3,271,709	$ 4,540	$ -

City of Morro Bay
Statement of Activities (Continued)
For the Year Ended June 30, 2015

	Net (Expense) Revenue and Changes in Net Positions			
	Governmental Activities	Business-Type Activities	Total	Component Unit
Functions/Programs				
Governmental Activities:				
Administration	$ (853,466)	$ -	$ (853,466)	$ -
Community promotion	(695,494)	-	(695,494)	-
Finance	(286,021)	-	(286,021)	-
Fire	(2,435,250)	-	(2,435,250)	-
Housing	(11,558)	-	(11,558)	-
Police	(3,248,650)	-	(3,248,650)	-
Public services	(602,075)	-	(602,075)	-
Rec/parks/maintenance	(1,284,172)	-	(1,284,172)	-
Total Governmental Activities	(9,416,686)	-	(9,416,686)	-
Business-Type Activities:				
Water	-	(800,658)	(800,658)	-
Sewer	-	162,914	162,914	-
Harbor	-	(175,811)	(175,811)	-
Local Transportation	-	79,713	79,713	-
Total Business-Type Activities	-	(733,842)	(733,842)	-
Total Primary Government	(9,416,686)	(733,842)	(10,150,528)	-
Component Units:				
Waste Water Treatment Plant	-	-	-	(189,755)
General Revenues and Transfers:				
Taxes:				
Property taxes	3,940,250	-	3,940,250	-
Sales tax	2,317,779	-	2,317,779	-
Transient occupancy tax	3,630,074	-	3,630,074	-
Franchise taxes	492,572	-	492,572	-
Other taxes	80,484	-	80,484	-
Investment earnings	375,298	91,489	466,787	-
Gain on disposition of capital assets	42,286	9,500	51,786	-
Miscellaneous	82,799	-	82,799	-
Transfers	807,213	(807,213)	-	-
Total General Revenues and Transfers	11,768,755	(706,224)	11,062,531	-
Changes in Net Position	2,352,069	(1,440,066)	912,003	(189,755)
Net Position - beginning of year, restated (Note 11)	114,806,964	25,179,418	139,986,382	1,122,210
Net Position - end of year	$ 117,159,033	$ 23,739,352	$ 140,898,385	$ 932,455

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FUND FINANCIAL STATEMENTS

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GOVERNMENTAL FUND FINANCIAL STATEMENTS

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City of Morro Bay
Balance Sheet
Governmental Funds
June 30, 2015

	General Fund	Community Development Grant Special Revenue Fund	Capital Improvement Capital Projects Fund	Nonmajor Governmental Funds	Total
ASSETS					
Cash and cash equivalents	$ 3,475,764	$ 116,947	$ -	$ 1,487,054	$ 5,079,765
Receivables:					
Intergovernmental	152,879	1,144	1,267,704	77,411	1,499,138
Accounts	535,703	-	-	86,553	622,256
Notes	1,178,101	885,871	-	31,314	2,095,286
Other	-	-	-	-	-
Due from other funds	540,125	-	-	12,580	552,705
Prepaid items	140,335	288	872	1,575	143,070
Inventories	10,424	-	-	-	10,424
Land held for resale	1,340,000	-	-	-	1,340,000
Total Assets	$ 7,373,331	$ 1,004,250	$ 1,268,576	$ 1,696,487	$ 11,342,644
LIABILITIES, DEFERRED INFLOWS OF RESOURCES AND FUND BALANCES					
Liabilities:					
Accounts payable	$ 269,032	$ 46,840	$ 781,120	$ 178,577	$ 1,275,569
Accued payroll and benefits	723,823	1,225	2,432	5,799	733,279
Due to other funds	109,576	-	484,998	32,506	627,080
Unearned revenue	194,466	-	-	3,167	197,633
Total Liabilities	1,296,897	48,065	1,268,550	220,049	2,833,561
Fund Balances:					
Nonspendable	2,668,860	176,397	872	1,575	2,847,704
Restricted	-	779,788	-	993,390	1,773,178
Committed	1,276,529	-	-	481,473	1,758,002
Unassigned (Deficit)	2,131,045	-	(846)	-	2,130,199
Total Fund Balances	6,076,434	956,185	26	1,476,438	8,509,083
Total Liabilities & Fund Balances	$ 7,373,331	$ 1,004,250	$ 1,268,576	$ 1,696,487	$ 11,342,644

City of Morro Bay
Reconciliation of the Governmental Funds Balance Sheet to the Government-wide Statement of Net Position
June 30, 2015

Total Fund Balances - Total Governmental Funds			$ 8,509,083
Amounts reported for governmental activities in the Statement of Net Position were reported differently because:			
Capital assets used in governmental activities were not current financial resources. Therefore, they were not reported in the Governmental Funds Balance Sheet.			
Nondepreciable	$	97,379,792	
Depreciable, net		25,907,707	123,287,499
Internal Service Funds were used by management to charge the costs of certain activities, such as insurance and equipment replacement to individual funds. The assets and liabilities of the Internal Service Funds were included in the governmental activities in the Government-Wide Statement of Net Position.			2,190,356
Long-term liabilities are not due and payable in the current period and accordingly are not reported as fund liabilities. All liabilities, both current and long-term, are reported in the Statement of Net Position:			
Certificates payable	$	(1,416,000)	
Claims payable		(229,549)	
Compensated absences		(290,150)	
Other postemployment benefits		(206,590)	
Pension related debt		(1,256,234)	(3,398,523)
Pension contributions made during the year after the measurement date are reported as pension expense in governmental funds and as deferred outflow of resources in the government-wide financial statements.			1,318,092
Deferred amounts relates to pension net available for current expenditures and are not reported in the governmental fund financial statements:			
Actual earnings in excess of projected earning on pension plan investments.			(3,151,139)
Deferred amounts relates to pension net available for current expenditures and are not reported in the governmental fund financial statements:			
Employer's actual contributions in excess of employer's proportionate contributions			118,098
Employer's proportionate contributions in excess of employer's actual contributions			(112,217)
Adjustments due to difference in proportions.			155,199
Aggregate net pension liability is not due and payable in the current period and therefore is not reported in the governmental funds.			(11,757,415)
Net Position of Governmental Activities			$ 117,159,033

City of Morro Bay
Statement of Revenues, Expenditures and Changes in Fund Balances
Governmental Funds
For the Year Ended June 30, 2015

	General Fund	Community Development Grant Special Revenue Fund	Capital Improvement Capital Projects Fund	Nonmajor Governmental Funds	Total
Revenues:					
Taxes & special assessments	$ 8,768,929	$ -	$ -	$ 1,845,304	$ 10,614,233
Intergovernmental revenue	36,322	-	1,601,042	432,129	2,069,493
Charges for services	1,537,444	2,200	1,450	224,653	1,765,747
Revenues from use of money and property	418,119	600	-	95,922	514,641
Fines & forfeits	8,562	-	-	15,624	24,186
Other revenues	603,344	4,202	-	33,314	640,860
Total Revenues	11,372,720	7,002	1,602,492	2,646,946	15,629,160
Expenditures:					
Current:					
Administration	1,320,110	-	-	-	1,320,110
Community promotion	279,225	-	-	872,552	1,151,777
Finance	630,241	-	-	-	630,241
Fire	2,280,930	-	-	107,857	2,388,787
Housing	-	60,914	-	-	60,914
Police	3,305,060	-	-	299,944	3,605,004
Public works	1,444,781	-	-	972,060	2,416,841
Recreation/parks/maintenance	1,710,790	-	-	134,650	1,845,440
Capital outlay	382,964	-	2,044,386	-	2,427,350
Debt service:					
Principal	-	-	-	70,838	70,838
Interest	-	-	-	53,971	53,971
Total Expenditures	11,354,101	60,914	2,044,386	2,511,872	15,971,273
Excess (deficiency) of revenues over expenditures	18,619	(53,912)	(441,894)	135,074	(342,113)
Other Financing Sources (Uses):					
Transfers in	1,824,177	-	743,107	406,346	2,973,630
Transfers (out)	(458,238)	-	(301,187)	(1,141,096)	(1,900,521)
Total Other Financing Sources (Uses):	1,365,939	-	441,920	(734,750)	1,073,109
Net change in Fund Balance	1,384,558	(53,912)	26	(599,676)	730,996
Fund Balances:					
Beginning of year, as restated (Note 11)	4,691,876	1,010,097	-	2,076,114	7,778,087
End of year	$ 6,076,434	$ 956,185	$ 26	$ 1,476,438	$ 8,509,083

City of Morro Bay
Reconciliation of the Governmental Funds Statement of Revenues, Expenditures, and Changes in Fund Balances to the Government-Wide Statement of Activities
For the Year Ended June 30, 2015

Net Change in Fund Balances - Total Governmental Funds	$	730,996
Governmental activities in the Statement of Activities were reported differently because:		
Capital assets used in governmental activities are not financial resources and therefore are not reported in governmental funds.		
Capital outlay		2,427,350
Depreciation		(1,065,260)
Net effect on disposal of capital assets		(77,024)
Total		1,285,066
The issuance of long-term liabilities provides current financial resources to governmental funds, while the repayment of the principal of long-term liabilities consumes the current financial resources of governmental funds. Neither transaction, however; has any effect on net position.		
Change in compensated absences		(30,674)
Pension expense		375,453
Change in pension related liabilities		252,207
Change in other postempoyment benefits		(96,753)
Change in claims payable		(229,549)
Payment of certificates payable		70,838
Total		341,522
Internal Service Funds are used by management to charge the costs of certain activities, such as insurance and equipment replacement, to individual funds. The net revenue of the Internal Service Funds is reported in governmental activities.		(5,515)
Change in Net Position of Governmental Activities	$	2,352,069

PROPRIETARY FUND FINANCIAL STATEMENTS

City of Morro Bay
Statement of Net Position
Proprietary Funds
June 30, 2015

	Business-Type Activities		
	Water Fund	Sewer Fund	Harbor Fund
ASSETS			
Current Assets:			
Cash and cash equivalents	$ 2,411,466	$ 4,564,661	$ 507,112
Accounts receivable, net of allowance for doubtful accounts	423,479	538,389	479,850
Other receivables	2,147	1,925	-
Intergovernmental receivables	-	-	112,502
Due from other funds	20,039	35,866	6,472
Due from component unit	-	4,766	-
Prepaid items	891,259	6,636	9,284
Total Current Assets	3,748,390	5,152,243	1,115,220
Noncurrent Assets:			
Capital assets, nondepreciable	460,080	1,202,155	2,800
Capital assets, depreciable	7,236,995	8,581,452	964,109
Total Noncurrent Assets	7,697,075	9,783,607	966,909
Total Assets	11,445,465	14,935,850	2,082,129
DEFERRED OUTFLOWS OF RESOURCES			
Pension contribution after measurement date	63,898	166,069	137,912
Employer's actual contribution in excess of employer's proportional share of contribution	5,725	14,879	12,357
Positive adjustment due to difference in proportion	10,222	26,565	22,061
Total deferred outflows of resources	79,845	207,513	172,330
LIABILITIES			
Current Liabilities:			
Accounts payable	57,186	15,420	30,722
Accrued payroll and benefits	53,934	39,272	69,331
Due to component unit	-	3,012	-
Deposits payable	79,142	-	10,607
Unearned revenues	-	-	107,831
Compensated absences, due within one year	5,118	2,309	5,861
Notes payable, due within one year	-	-	99,099
Total Current Liabilities	195,380	60,013	323,451
Noncurrent Liabilities			
Compensated absences, due in more than one year	25,712	11,599	29,444
Note payable, due in more than one year	-	-	695,567
Aggregate net pension liabilities	569,974	1,481,333	1,230,182
Total Noncurrent Liabilities	595,686	1,492,932	1,955,193
Total Liabilities	791,066	1,552,945	2,278,644

City of Morro Bay
Statement of Net Position
Proprietary Funds (Continued)
June 30, 2015

	Business-Type Activities		Governmental Activites
	Nonmajor - Local Transportation Fund	Total	Internal Service
ASSETS			
Current Assets:			
Cash and cash equivalents	$ 343,942	$ 7,827,181	$ 1,108,087
Accounts receivable, net of allowance for doubtful accounts	5,870	1,447,588	3,334
Other receivables	-	4,072	-
Intergovernmental receivables	-	112,502	-
Due from other funds	2,018	64,395	9,980
Due from component unit	-	4,766	-
Prepaid items	-	907,179	1,075,913
Total Current Assets	351,830	10,367,683	2,197,314
Noncurrent Assets:			
Capital assets, nondepreciable	40,000	1,705,035	-
Capital assets, depreciable	143,597	16,926,153	-
Total Noncurrent Assets	183,597	18,631,188	-
Total Assets	535,427	28,998,871	2,197,314
DEFERRED OUTFLOWS OF RESOURCES			
Pension contribution after measurement date	-	367,879	-
Employer's actual contribution in excess of employer's proportional share of contribution	-	32,961	-
Positive adjustment due to difference in proportion	-	58,848	-
Total deferred outflows of resources	-	459,688	-
LIABILITIES			
Current Liabilities:			
Accounts payable	38,264	141,592	6,958
Accrued payroll and benefits	-	162,537	-
Due to component unit	-	3,012	-
Deposits payable	-	89,749	-
Unearned revenues	131,955	239,786	-
Compensated absences, due within one year	-	13,288	
Notes payable, due within one year	-	99,099	-
Total Current Liabilities	170,219	749,063	6,958
Noncurrent Liabilities			
Compensated absences, due in more than one year	-	66,755	-
Note payable, due in more than one year	-	695,567	-
Aggregate net pension liabilities	-	3,281,489	-
Total Noncurrent Liabilities	-	4,043,811	-
Total Liabilities	170,219	4,792,874	6,958

City of Morro Bay
Statement of Net Position
Proprietary Funds (Continued)
June 30, 2015

	Business-Type Activities		
	Water Fund	Sewer Fund	Harbor Fund
DEFERRED INFLOWS OF RESOURCES			
Difference in projected and actual earnings on pension investments	152,760	397,016	329,705
Employer's proportionate share of contribution in excess of employer's actual contribution	5,440	14,139	11,741
Negative adjustment due to difference in proportion	2,698	7,011	5,823
Total deferred inflows of resources	160,898	418,166	347,269
NET POSITION			
Net investment in capital assets	7,697,075	9,783,607	172,243
Restricted for:			
PTMISEA	-	-	-
LTF	-	-	-
Unrestricted (Deficit)	2,876,271	3,388,645	(543,697)
Total Net Position	$ 10,573,346	$ 13,172,252	$ (371,454)

City of Morro Bay
Statement of Net Position
Proprietary Funds (Continued)
June 30, 2015

	Business-Type Activities		Governmental Activites
	Nonmajor - Local Transportation Fund	Total	Internal Service
DEFERRED INFLOWS OF RESOURCES			
Difference in projected and actual earnings on pension investments	-	879,481	-
Employer's proportionate share of contribution in excess of employer's actual contribution	-	31,320	-
Negative adjustment due to difference in proportion	-	15,532	-
Total deferred inflows of resources	-	926,333	-
NET POSITION			
Net investment in capital assets	183,597	17,836,522	-
Restricted for:			
PTMISEA	13,185	13,185	
LTF	33,000	33,000	
Unrestricted (Deficit)	135,426	5,856,645	2,190,356
Total Net Position	$ 365,208	$ 23,739,352	$ 2,190,356

City of Morro Bay
Statement of Revenues, Expenses and Changes in Net Position
For the Year Ended June 30, 2015

	Business-Type Activities		
	Water Fund	Sewer Fund	Harbor Fund
Operating Revenues:			
Charges for services	$ 3,311,970	$ 4,323,986	$ 1,894,203
Other revenues	-	6,267	16,759
Total operating revenues	3,311,970	4,330,253	1,910,962
Operating Expenses:			
Employee wages and benefits	727,156	500,328	931,222
Insurance costs	73,394	38,980	80,783
Transportation services	-	-	-
Public works	-	2,643,944	-
Depreciation	273,878	497,122	202,219
Maintenance	138,451	65,907	122,692
Administration	2,841,432	265,191	780,903
Supplies	58,317	155,867	76,189
Total operating expenses	4,112,628	4,167,339	2,194,008
Operating income (loss)	(800,658)	162,914	(283,046)
Nonoperating Income (loss):			
Intergovernmental	-	-	147,262
Rental income	-	23,370	-
Investment earnings	20,388	36,007	9,823
Gain on sale of capital assets	-	-	9,500
Interest expense	-	-	(40,027)
Total nonoperating income (loss)	20,388	59,377	126,558
Net income (loss) before transfers	(780,270)	222,291	(156,488)
Transfers:			
Transfers in	28,410	-	-
Transfers out	(279,105)	(194,757)	(281,986)
Total transfers	(250,695)	(194,757)	(281,986)
Changes in net position	(1,030,965)	27,534	(438,474)
Net Position:			
Beginning of the year, as restated (Note 11)	11,604,311	13,144,718	67,020
End of the year	$ 10,573,346	$ 13,172,252	$ (371,454)

City of Morro Bay
Statement of Revenues, Expenses and Changes in Net Position (Continued)
For the Year Ended June 30, 2015

	Business-Type Activities		Governmental Activites
	Nonmajor - Local Transportation Fund	Total	Internal Service
Operating Revenues:			
Charges for services	$ 39,932	$ 9,570,091	$ 1,369,469
Other revenues	2,228	25,254	13,550
Total operating revenues	42,160	9,595,345	1,383,019
Operating Expenses:			
Employee wages and benefits	-	2,158,706	-
Insurance costs	-	193,157	1,076,505
Transportation services	180,690	180,690	-
Public works	-	2,643,944	-
Depreciation	38,932	1,012,151	-
Maintenance	1,073	328,123	15,000
Administration	7,245	3,894,771	41,249
Supplies	42,258	332,631	-
Total operating expenses	270,198	10,744,173	1,132,754
Operating income (loss)	(228,038)	(1,148,828)	250,265
Nonoperating Income (loss):			
Intergovernmental	307,751	455,013	-
Rental income	-	23,370	-
Investment earnings	1,901	68,119	10,116
Gain on sale of capital assets	-	9,500	-
Interest expense	-	(40,027)	-
Total nonoperating income (loss)	309,652	515,975	10,116
Net income (loss) before transfers	81,614	(632,853)	260,381
Transfers:			
Transfers in	-	28,410	-
Transfers out	(79,775)	(835,623)	(265,896)
Total transfers	(79,775)	(807,213)	(265,896)
Changes in net position	1,839	(1,440,066)	(5,515)
Net Position:			
Beginning of the year, as restated (Note 11)	363,369	25,179,418	2,195,871
End of the year	$ 365,208	$ 23,739,352	$ 2,190,356

City of Morro Bay
Statement of Cash Flows
Proprietary Funds
For the Year Ended June 30, 2015

	Business-Type Activities		
	Water Operating Fund	Sewer Fund	Harbor Fund
CASH FLOWS FROM OPERATING ACTIVITIES			
Cash receipts from services provided	$ 3,362,113	$ 4,324,954	$ 1,937,094
Cash paid to suppliers for goods and services	(2,583,182)	(3,252,994)	(1,245,139)
Cash paid to employees	(745,334)	(538,745)	(957,469)
Net Cash Provided by (Used in) Operating Activities	33,597	533,215	(265,514)
CASH FLOWS FROM NONCAPITAL FINANCING ACTIVITIES:			
Transfers in (out)	(250,695)	(194,757)	(281,986)
Intergovemmental	(14,279)	33,889	46,187
Net Cash Provided by (Used in) Noncapital Financing Activities	(264,974)	(160,868)	(235,799)
CASH FLOWS FROM CAPITAL AND RELATED FINANCING ACTIVITIES:			
Payment on long-term debt	-	-	(94,832)
Interest paid	-	-	(40,027)
Proceeds from sale of capital assets	-	-	9,500
Acquisition of capital assets	(11,157)	(3,599)	-
Net Cash (Used In) Capital and Related Financing Activities	(11,157)	(3,599)	(125,359)
CASH FLOWS FROM INVESTING ACTIVITIES:			
Interest received	20,388	59,377	9,823
Net Cash Provided by Investing Activities	20,388	59,377	9,823
Net Increase (Decrease) In Cash and Cash Equivalents	(222,146)	428,125	(616,849)
CASH AND CASH EQUIVALENTS:			
Beginning of Year	2,633,612	4,136,536	1,123,961
End of Year	$ 2,411,466	$ 4,564,661	$ 507,112
Reconclliatlon of Operating Income (Loss) to to Net Cash Provided (Used) by Operating Activities:			
Operating Income (loss)	$ (800,658)	$ 162,914	$ (283,046)
Adjustments to reconcile operating income (loss) to net cash provided (used) by operating activities:			
Depreciation	273,878	497,122	202,219
Changes in assets and liabilities:			
(Increase)/decrease in accounts receivables	50,153	(5,299)	(53,275)
(Increase)/decrease in other receivables	(10)	-	-
(Increase)/decrease in prepaid items	524,155	500	758
(Increase)/decrease in deferred outflows of resources related to pension	(10,317)	(6,622)	(5,498)
Increase/(decrease) in accounts payable	1,282	(83,605)	(184,718)
Increase/(decrease) in accrued payroll and benefits	217	6,578	3,755
Increase/(decrease) in deposits payable	2,975	-	(612)
Increase/(decrease) in unearned revenue	-	-	79,407
Increase/(decrease) in compensated absences	(193)	2,309	9,280
Increase/(decrease) in net pension liabilities	(160,891)	(418,144)	(347,251)
Increase/(decrease) in deferred inflows of resources related to pension	153,006	377,462	313,467
Net Cash Provided by (Used in) Operating Activities	$ 33,597	$ 533,215	$ (265,514)

City of Morro Bay
Statement of Cash Flows (Continued)
Proprietary Funds
For the Year Ended June 30, 2015

	Business-Type Activities		Governmental Activities
	Nonmajor - Local Transportation Fund	Total	Internal Service
CASH FLOWS FROM OPERATING ACTIVITIES			
Cash receipts from services provided	$ 36,290	$ 9,660,451	$ 1,380,130
Cash paid to suppliers for goods and services	(241,137)	(7,322,452)	(1,410,870)
Cash paid to employees	-	(2,241,548)	-
Net Cash Provided by (Used in) Operating Activities	(204,847)	96,451	(30,740)
CASH FLOWS FROM NONCAPITAL FINANCING ACTIVITIES:			
Transfers in (out)	(79,775)	(807,213)	(265,896)
Intergovemmental	491,365	557,162	(9,980)
Net Cash Provided by (Used in) Noncapital Financing Activities	411,590	(250,051)	(275,876)
CASH FLOWS FROM CAPITAL AND RELATED FINANCING ACTIVITIES:			
Payment on long-term debt	-	(94,832)	-
Interest paid	-	(40,027)	-
Proceeds from sale of capital assets	-	9,500	-
Acquisition of capital assets	-	(14,756)	-
Net Cash (Used In) Capital and Related Financing Activities	-	(140,115)	-
CASH FLOWS FROM INVESTING ACTIVITIES:			
Interest received	1,901	91,489	10,116
Net Cash Provided by Investing Activities	1,901	91,489	10,116
Net Increase (Decrease) In Cash and Cash Equivalents	208,644	(202,226)	(296,500)
CASH AND CASH EQUIVALENTS:			
Beginning of Year	135,298	8,029,407	1,404,587
End of Year	$ 343,942	$ 7,827,181	$ 1,108,087
Reconclliatlon of Operating Income (Loss) to to Net Cash Provided (Used) by Operating Activities:			
Operating Income (loss)	$ (228,038)	$ (1,148,828)	$ 250,265
Adjustments to reconcile operating income (loss) to net cash provided (used) by operating activities:			
Depreciation	38,932	1,012,151	-
Changes in assets and liabilities:			
(Increase)/decrease in accounts receivables	(5,870)	(14,291)	(2,889)
(Increase)/decrease in other receivables	-	(10)	-
(Increase)/decrease in prepaid items	79	525,492	(267,955)
(Increase)/decrease in deferred outflows of resources related to pension	-	(22,437)	-
Increase/(decrease) in accounts payable	(9,950)	(276,991)	(10,161)
Increase/(decrease) in accrued payroll and benefits	-	10,550	-
Increase/(decrease) in deposits payable	-	2,363	-
Increase/(decrease) in unearned revenue	-	79,407	-
Increase/(decrease) in compensated absences	-	11,396	-
Increase/(decrease) in net pension liabilities	-	(926,286)	-
Increase/(decrease) in deferred inflows of resources related to pension	-	843,935	-
Net Cash Provided by (Used in) Operating Activities	$ (204,847)	$ 96,451	$ (30,740)

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FIDUCIARY FUND FINANCIAL STATEMENTS

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City of Morro Bay
Statement of Fiduciary Net Position
Fiduciary Funds
June 30, 2015

	Other Post-employment Trust Fund	Agency Fund
ASSETS		
Current assets:		
Cash and cash equivalents	$ 515,813	$ 1,225,626
Miscellaneous receivable	-	486
Prepaids	-	1,456
Total assets	515,813	$ 1,227,568
LIABILITIES		
Accounts payable	-	$ 34,281
Agency funds held for others	-	1,193,287
Total liabilities	-	$ 1,227,568
NET POSITION		
Held in trust	515,813	
Total net position	$ 515,813	

City of Morro Bay
Statement of Change in Fiduciary Net Position
Fiduciary Fund
For the Year Ended June 30, 2015

	Other Postemployment Benefits Trust Fund
ADDITIONS:	
Gains on investment	$ 11,734
Total additions	11,734
Change in net position	11,734
NET POSITION:	
Beginning of year, as restated (Note 11)	504,079
End of year	$ 515,813

City of Morro Bay
Index to the Notes to the Basic Financial Statements
For the Year Ended June 30, 2015

City of Morro Bay
Index to the Notes to the Basic Financial Statements
For the Year Ended June 30, 2015

Note 1 – Summary of Significant Accounting Policies

The basic financial statements of the City of Morro Bay, California, (the "City") have been prepared in accordance with accounting principles generally accepted in the United States of America ("U.S. GAAP") as applied to governmental agencies. The Governmental Accounting Standards Board ("GASB") is the accepted standard setting body for establishing governmental accounting and financial reporting principles. The following is a summary of the City's significant policies:

A. Financial Reporting Entity

The City of Morro Bay is a general law city incorporated in 1964. The City operates under a Council-Manager form of government. The mayor and four council members are elected at large. A full range of services is provided, including general government, parks and recreation, police and fire and emergency services, streets and storm drain maintenance, water and sanitary, and transportation. The City also maintains the Morro Bay harbor and manages state-granted tidelands and harbor fee lands within the City limits.

The basic financial statements present the City and its component units, entities for which the City is considered to be financially accountable. The City is considered to be financially accountable for an organization if the City appoints a voting majority of that organization's governing body and either the City is able to impose its will on that organization or there is a potential for the organization to provide financial benefits to or impose specific financial burdens on the City. The City is also considered to be financially accountable for an organization if that organization is fiscally dependent (i.e., it is unable to adopt its budget, levy taxes, set rates or charges, or issue bonded debt without approval from the City). In certain cases, other organizations are included as component units if the nature and significance of their relationship with the City are such that their exclusion would cause the City's financial statement to be misleading or incomplete. Blended component units, although legally separate entities, are in substance, part of the City's operations and data from these units are combined with data of the City.

Management determined that the following entities should be reported discretely presented component units based on the criteria above.

Discretely Presented Component Unit - The Morro Bay/Cayucos Sanitary District Wastewater Treatment Plant Joint Powers Agreement (JPA) provides for the treatment of wastewater for the benefit of the government's residents and those of Cayucos, an unincorporated community in San Luis Obispo County. The JPA's governing board consists of the Morro Bay City Council and the Cayucos Sanitary District Board. The governing board sets user charges and establishes budgets. Additionally, the contribution to the JPA was made by the Sewer Enterprise Fund. The component unit has a June 30 year-end. The separately issued financial statement can be obtained from the finance department of the JPA.

There are no component units for the City that meet the criteria for blended presentation.

The City participates in the California Joint Powers Insurance Authority (the "CJPIA") for its general liability, workers' compensation, property, vehicle and crime insurance. This organization is financed through premium charges to each member. The CJPIA does not meet the aforementioned reporting criteria, and is therefore, not included in the accompanying financial statements.

Note 1 – Summary of Significant Accounting Policies (Continued)

B. Basis of Accounting and Measurement Focus

The accounts of the City are organized on the basis of funds, each of which is considered a separate accounting entity. The operations of each fund are accounted for by providing a separate set of self-balancing accounts that comprise its assets, liabilities, fund equity, revenues and expenditures or expenses, as appropriate. City resources are allocated to and accounted for in individual funds based upon the purposes for which they are to be spent and the means by which spending activities are controlled.

In accordance with GASB Statement No. 63, *Financial Reporting of Deferred Outflows of Resources, Deferred Inflows of Resources, and Net Position*, the statement of net position reports separate sections for Deferred Outflows of Resources and Deferred Inflows of Resources, when applicable.

Deferred Outflows of Resources represent outflows of resources (consumption of net position) that apply to future periods and that, therefore, will not be recognized as an expense until that time.

Deferred Inflows of Resources represent inflows of resources (acquisition of net position) that apply to future periods and that, therefore, are not recognized as revenue until that time.

Government-Wide Financial Statements

The government-wide financial statements are reported using the "*economic resources*" measurement focus and the accrual basis of accounting.

Revenues are recorded when earned and expenses are recorded at the time liabilities are incurred, regardless of when the related cash flows take place. Nonexchange transactions, in which the City gives (or receives) value without directly receiving (or giving) equal value in exchange, include property and sales taxes, grants, entitlements and donations. On an accrual basis, revenues from property taxes are recognized in the fiscal year for which the taxes are levied. Revenues from sales taxes are recognized when the underlying transactions take place. Revenues from grants, entitlements and donations are recognized in the fiscal year in which all eligible requirements have been satisfied.

The government-wide financial statements consist of the statement of net position and the statement of activities that report information on all of the non-fiduciary activities of the primary government and its component unit. Eliminations have been made to minimize the double counting of internal activities. These statements distinguish between the governmental and business-type activities of the City. Governmental activities generally are financed through taxes, intergovernmental revenues and other non-exchange revenues. Business-type activities generally rely, to a significant extent, on fees and charges for services.

Note 1 – Summary of Significant Accounting Policies (Continued)

B. Basis of Accounting and Measurement Focus (Continued)

Government-Wide Financial Statements (Continued)

The statement of activities presents a comparison between direct expenses and program revenues for each function of the City's activities. Direct expenses are (1) expenses that are specifically associated with a program or function, and (2) allocated indirect expenses. Program revenues include (1) fees, fines and charges paid by the recipients of goods or services offered by the programs, and (2) grants and contributions that are restricted to meeting the operational or capital requirements of a particular program. Revenues that are not classified as program revenues, including all taxes, are presented instead as general revenues.

When both restricted and unrestricted net position are available, restricted resources are used only after the unrestricted resources are depleted.

Fund Financial Statements

The fund financial statements report detailed information about the City's funds. Separate statements are provided for each fund category- governmental, proprietary and fiduciary- even though the latter are excluded from the government-wide financial statements. The emphasis of the Governmental and Proprietary Fund financial statements is on major individual funds. Each major fund is presented in a single column. All remaining governmental funds are separately aggregated and reported as nonmajor funds.

Governmental Fund Financial Statements include a Balance Sheet and a Statement of Revenues, Expenditures and Changes in Fund Balances for all major governmental funds and non-major funds aggregated. An accompanying schedule is presented to reconcile and explain the differences in Net Position as presented in these statements to the Net Position presented in the Government-Wide Financial Statements. The City has presented all major funds that met the applicable criteria.

All governmental funds are accounted for on a spending or *"current financial resources"* measurement focus and the modified accrual basis of accounting. Accordingly, only current assets and current liabilities are included on the Balance Sheet. The Statement of Revenues, Expenditures and Changes in Fund Balances presents increases (revenues and other financing sources) and decreases (expenditures and other financing uses) in net current assets. Under the modified accrual basis of accounting, revenues are recognized in the accounting period in which they become both measurable and available to finance expenditures of the current period.

Revenues are recognized as soon as they are both “measurable” and “available”. Revenues are considered to be available when they are collectible within the current period as soon enough thereafter to pay liabilities of the current period. For this purpose, the City considers revenues to be available if they are collected within 60 days of the end of the current fiscal period. The primary revenue sources, which have been treated as susceptible to accrual by the City, are property taxes, sales tax, intergovernmental revenues and other taxes. Expenditures are recorded in the accounting period in which the related fund liability is incurred.

Note 1 – Summary of Significant Accounting Policies (Continued)

B. Basis of Accounting and Measurement Focus (Continued)

Fund Financial Statements (Continued)

The Reconciliation of the Fund Financial Statements to the Government-Wide Financial Statements is provided to explain the differences created by the integrated approach of GASB Statement No. 34.

The City reports the following major governmental funds:

General Fund - The City's primary operating fund. The General Fund is used to account for all revenues and expenditures necessary to carry out the basic governmental activities of the City that are not accounted for through other funds. For the City, the General Fund includes such activities as public protection, public ways and facilities, health and sanitation, public assistance, education and recreational services.

Community Development Grants Special Revenue Fund - Used to account for financial resources to be used for offering low or no interest-bearing loans to income-qualified homeowners for the acquisition or rehabilitation of owner-occupied site-built or manufactured homes.

Capital Improvement Capital Projects Fund - Used to account for financial resources to be solely used for the construction of capital assets.

Proprietary Fund Financial Statements include a Statement of Net Position, a Statement of Revenues, Expenses and Changes in Fund Net Position, and a Statement of Cash Flows for each major Proprietary Fund.

A separate column representing internal service funds is also presented in these statements. However, internal service balances and activities have been combined with the governmental activities in the Government-Wide Financial Statements.

Proprietary funds are accounted for using the *"economic resources"* measurement focus and the accrual basis of accounting. Accordingly, all assets and liabilities (whether current or noncurrent) are included on the Statement of Net Position. The Statement of Revenues, Expenses and Changes in Fund Net Position presents increases (revenues) and decreases (expenses) in total Net Position. Under the accrual basis of accounting, revenues are recognized in the period in which they are earned while expenses are recognized in the period in which the liability is incurred. In these funds, receivables have been recorded as revenue and provisions have been made for uncollectible amounts.

Proprietary fund operating revenues, such as charges for services, result from exchange transactions associated with the principal activity of the fund. Exchange transactions are those in which each party receives and gives up essentially equal values. Nonoperating revenues, such as subsidies and investment earnings, result from nonexchange transactions or ancillary activities.

The City reports the following major proprietary funds:

Water Enterprise Fund - Accounts for revenues received primarily from water service charges, which are expended for maintenance, operations and improvements to the water system.

Note 1 – Summary of Significant Accounting Policies (Continued)

B. Basis of Accounting and Measurement Focus (Continued)

Fund Financial Statements (Continued)

The City reports the following major proprietary funds (Continued):

Sewer Enterprise Fund - Accounts for revenues received primarily from sewer service charges, which are expended for maintenance, operations and improvements to the sanitary sewer system.

Harbor Enterprise Fund - Accounts for revenues received from harbor leases, rentals, moorings and other sources, which are expended for maintenance, operation, patrolling, and improvements of the harbor.

Internal Service Funds - Accounts for revenues received primarily from charges to City departments on an estimated basis for insurance coverage, and which are expended for insurance purchase, valid claims and related costs. These funds were opened in 1980-81 to account for workers unemployment compensation and fire insurance costs. They now account for all insurance coverage including health, dental, general liability, and vehicle insurance.

Fiduciary fund financial statements include a Statement of Fiduciary Net Position and a Statement of Changes in Fiduciary Net Position. The City's fiduciary funds represent agency fund and Other Postemployment Benefits (OPEB) trust fund. Both agency fund and the OPEB trust fund are accounted for on the full accrual basis of accounting.

The City reports the following fiduciary funds:

Other Postemployment Benefits (OPEB) Trust Fund – Used to account for assets held by the City as a trustee for pre-funding of OPEB liability.

Agency Fund - Used to account for assets held by the City as an agent for individuals, private organizations, other governments, and/or other funds. Agency Funds are custodial in nature (assets equal liabilities) and do not involve measurement of results of operations.

C. Cash and Investments

The City's cash and cash equivalents are comprised of cash on hand, demand deposits, and short-term investments with original maturity of three months or less from the date of acquisition. All cash and investments of proprietary funds are held in the City's investment pool. These cash pools have the general characteristics of a demand deposit account; therefore, all cash and investments in the proprietary funds are considered cash and cash equivalents for statement of cash flows purposes.

Investments are stated at fair value (quoted market price or best available estimate thereof).

D. Receivable and Allowance for Doubtful Accounts

Customer accounts receivable consist of amounts owed by private individuals and organizations for services rendered in the regular course of business operations. Receivable are shown net of allowances for doubtful accounts. Uncollectable accounts are based on prior experience and management's assessment of the collectability of existing accounts.

Note 1 – Summary of Significant Accounting Policies (Continued)

E. Prepaid Items

Certain payments to vendors applicable to future accounting periods are recorded as prepaid items.

F. Inventories

The City maintains an inventory account for fuel. Fuel is valued at June 30 based on the amount of fuel in the storage tanks and the most recent invoices' purchase price. Inventories are valued using first in first out method.

G. Land Held for Resale

Land held for resale is carried at the lower of cost or estimated net realizable value.

H. Property Tax Revenue

Property taxes attach as an enforceable lien at March 1. Taxes are levied on July 1 and payable in two installments, December 10 and April 10. All general property taxes are then allocated by the County Auditor's Office to the various taxing entities per the legislation implementing Proposition 13. The method of allocation used by the County is subject to review by the State of California. City property tax revenues are recognized when levied and received within 60 days of the year end.

I. Capital Assets

Capital assets are recorded at historical cost or estimated historical cost if actual historical cost is not available. Contributed fixed assets are valued at their estimated fair market value on the date contributed. The City defines capital assets as assets with an initial, individual cost of more than $5,000 and an estimated useful life in excess of one year. Capital assets used in operations are depreciated or amortized (assets under capital leases) using the straight-line method over the lesser of the capital lease period or their estimated useful lives in the government-wide statements and proprietary funds. The estimated useful lives are as follows:

Structures & improvements	15-30 years
Equipment	4-10 years
Infrastructure	25-75 years

J. Interfund Transactions

Interfund transactions are reflected as loans, services provided, reimbursements or transfers. Loans are reported as receivables and payables, as appropriate, are subject to elimination upon consolidation, and are referred to as either "due to/from other funds' (i.e., the current portion of interfund loans) or "advances to/from other funds (i.e., the noncurrent portion of interfund loans). Any residual balances outstanding between the governmental activities and the business-type activities are reported in the government-wide financial statements as "internal balances."

Advances between funds, as reported in the fund financial statements, are offset by a fund balance reserve account in applicable governmental funds to indicate that they are not available for appropriation and are not available financial resources. There were no advances between funds during the year.

Services provided, deemed to be at market or near market rates, are treated as revenues and expenditures/expenses. Reimbursements occur when one fund incurs a cost, charges the appropriate benefiting fund and reduces its related cost as a reimbursement. All other interfund transactions are treated as transfers. Transfers between governmental or proprietary funds are netted as part of the reconciliation to the government-wide presentation.

Note 1 – Summary of Significant Accounting Policies (Continued)

K. Claims Payable

The City records a liability to reflect an actuarial estimate of ultimate uninsured losses for both general liability claims (including property damage claims) and workers' compensation claims. The estimated liability for workers' compensation claims and general liability claims includes "*incurred but not reported*" ("IBNR") claims. There is no fixed payment schedule to pay these liabilities.

L. Compensated Absences Payable

City employees have vested interest in varying levels of vacation, sick leave and compensatory time based on their length of employment. It is the policy of the City to pay all accumulated vacation pay and all or a portion of sick pay when an employee retires or terminates. The long-term amount is included as a liability in the governmental activities of the government-wide financial statements. A liability for these amounts is reported in governmental funds only if they have matured, for example, as a result of employee resignations and retirements. All of the liability for compensated absences applicable to proprietary funds is reported in those funds.

M. Pension

For purposes of measuring the net pension liability, deferred outflows of resources and deferred inflows of resources related to pensions, and pension expense, information about the fiduciary net position of the plans and additions to/deductions from the plans' fiduciary net position have been determined on the same basis as they are reported by the plans (Note 7). For this purpose, benefit payments (including refunds of employee contributions) are recognized when due and payable in accordance with benefit terms. Investments are reported at fair value.

The following timeframes are used for pension reporting:

CalPERS	
Valuation Date	June 30, 2013
Measurement Date	June 30, 2014
Measurement Period	July 1, 2013 to June 30, 2014

Gains and losses related to changes in total pension liability and fiduciary net position are recognized in pension expense systematically over time. The first amortized amounts are recognized in pension expense for the year the gain or loss occurs. The remaining amounts are categorized as deferred outflows and deferred inflows of resources related to pensions and are to be recognized in future pension expense. The amortization period differs depending on the source of the gain or loss. The difference between projected and actual earnings is amortized straight-line over 5 years. All other amounts are amortized straight-line over the average expected remaining service lives of all members that are provided with benefits (active, inactive, and retired) as of the beginning of the measurement period.

Note 1 – Summary of Significant Accounting Policies (Continued)

N. ***Unearned Revenue***

In the government-wide financial statements, unearned revenue is reported for transactions for which revenue has not yet been earned. Typical transactions recorded as unearned revenues in the government-wide financial statements are cell phone site license lease payments received in advance, prepaid charges for services and facility rentals paid in advance.

In the fund financial statements, unearned revenue is recorded when transactions have not yet met the revenue recognition criteria. The City records unearned revenue for transactions for which revenues have not been earned. Typical transactions for which unearned revenue is recorded are lease payments, quarterly encroachment fees and advance registration for recreation classes which were not yet earned.

O. ***Net Position***

In the government-wide financial statements and proprietary fund financial statements, net position is classified as follows:

Net Investment in Capital Assets - This component of net position consists of capital assets, net of accumulated depreciation, reduced by the outstanding balances of debt that are attributable to the acquisition, construction, or improvement of those assets.

Restricted - This component of net position consists of restricted assets reduced by liabilities and deferred inflows of resources related to those assets.

Unrestricted - This component of net position is the amount of the assets, deferred outflows of resources, liabilities, and deferred inflows of resources that are not included in the determination of net investment in capital assets or the restricted component of net position.

P. ***Fund Balances***

In the governmental fund financial statements, fund balances are classified as follows:

Nonspendable – Nonspendable fund balances include amounts that cannot be spent because they are not in a spendable form, such as inventory, prepaid items, land held for resale and long-term receivable or because resources legally or contractually must remain intact.

Restricted – Restricted fund balances are the portion of fund balance that have externally enforceable limitations on their usage through legislation or limitations imposed by creditors, grantor, laws and regulations of other governments or enabling legislation.

Committed – Committed fund balances are self-imposed limitations by the highest level of decision-making authority, namely the City Council, prior to the end of the reporting period. City Council adoption of a resolution is required to commit resources or to rescind the commitment.

Note 1 – Summary of Significant Accounting Policies (Continued)

P. ***Fund Balances (Continued)***

Assigned – Assigned fund balances are limitations imposed by management based on the intended use of the funds. Modifications or rescissions of the constraints can be removed by the same type of action that limited the use of the funds. Assignment of resources can be done by the highest level of decision making or by a committee or official designated for that purpose. The City Council has authorized the Finance Director for that purpose.

Unassigned – Unassigned fund balances represent the residual net resources in excess of the other classifications. The general fund is the only fund that reports a positive unassigned fund balance amount. In other governmental funds, it is not appropriate to report a positive unassigned fund balance amount. However, in governmental fund other than general fund, if expenditures incurred for specific purposes exceed the amounts that are restricted, committed, or assigned to those purposes, it may be necessary to report a negative unassigned fund balance in that fund.

Q. ***Use of Estimates***

The preparation of the basic financial statements in conformity with U.S. GAAP requires management to make estimates and assumptions that affect certain reported amounts and disclosures. Accordingly, actual results could differ from those estimates.

R. ***Accounting Changes***

GASB has issued Statement No. 68, *Accounting and Financial Reporting for Pensions – an amendment of GASB Statement No. 27).* This Statement establishes standards for measuring and recognizing liabilities, deferred outflow of resources, deferred inflows of resources, and expense/expenditures for pension plans. This Statement identifies the methods and assumptions that should be used to project benefit payments, discount projected benefit payments to their actuarial present value, and attribute that present value to periods of employee service. This statement became effective for periods beginning after June 15, 2014. See Note 11 for prior period adjustment as a result of implementation.

GASB has issued Statement No. 69, *Government Combinations and Disposals of Government Operation*. This Statement establishes accounting and financial reporting standards related to government combinations and disposals of government operations. As used in this Statement, the term government combinations includes a variety of transactions referred to as mergers, acquisitions, and transfers of operations This statement became effective for periods beginning after December 15, 2013 and did not have a significant impact on the City's financial statements for year ended June 30, 2015.

GASB has issued Statement No. 71, *Pension Transition for Contributions Made Subsequent to the Measurement Date – an amendment of GASB Statement No. 68*. This statement establishes standards relates to amounts associated with contributions, if any, made by a state or local government employer or nonemployer contributing entity to a defined benefit pension plan after the measurement date of the government's beginning net pension liability. This statement became effective for periods beginning after June 15, 2014. See Note 11 for prior period adjustment as a result of implementation.

Note 2 – Cash and Investments

The City maintains a cash and investment pool, which includes cash balances and authorized investments of all funds.

The City had the following cash and investments at June 30, 2015:

	Primary Government				
	Government-Wide Statement of Net Position				
	Governmental Activities	Business-type Activities	Fiduciary Fund	Discretely Presented Component Unit	Total
Cash and investments	$ 6,187,852	$ 7,827,181	$ 1,741,439	$ 160,667	$ 15,917,139

The City's cash and investments at June 30, 2015 in more detail:

Cash and cash equivalents:	
Petty Cash	$ 1,900
Deposits with financial institutions	7,564,319
Total cash and cash equivalents	7,566,219
Investments:	
Local Agency Investment Fund	3,127,955
Mutual Funds	515,813
Certificates of Deposit	3,710,482
U.S. Government Sponsored Enterprise Securities	996,670
Total investments	8,350,920
Total cash and investments	$ 15,917,139

A. Deposits

The carrying amounts of the City's demand deposits were $7,564,319 at June 30, 2015. Bank balances at that date were $7,514,478, the total amount of which was collateralized or insured with accounts held by the pledging financial institutions in the City's name as discussed below.

The California Government Code requires California banks and savings and loan associations to secure the City's cash deposits by pledging securities as collateral. This Code states that collateral pledged in this manner shall have the effect of perfecting a security interest in such collateral superior to those of a general creditor. Thus, collateral for cash deposits is considered to be held in the City's name.

The market value of pledged securities must equal at least 110% of the City's cash deposits. California law also allows institutions to secure City deposits by pledging first trust deed mortgage notes having a value of 150% of the City's total cash deposits. The City may waive collateral requirements for cash deposits, which are fully insured up to $250,000 by the Federal Deposit Insurance Corporation ("FDIC"). The City, however, has not waived the collateralization requirements.

The City follows the practice of pooling cash and investments of all funds, except for funds required to be held by fiscal agents under the provisions of bond indentures, if applicable. Interest income earned on pooled cash and investments is allocated on an accounting period basis to the various funds based on the period-end cash and investment balances, however, interest is not allocated to funds created to advance costs for utility undergrounding districts, reimbursable grant funds or internal service funds.

Note 2 – Cash and Investments (Continued)

B. Investments

Under the provisions of the City's investment policy, the City's investments are limited to those authorized by the California Government Code, except as follows:

Authorized Investment Type	Maximum Maturity	Maximum Percentage of Portfolio	Maximum Investment in one Issuer
Securities Issued by U.S. Government, or its agencies	5 years	None	None
Local Agency Investment Fund (LAIF)	N/A	None	None
Certificates of Deposit	5 years	None	$250,000
Bankers Acceptances	180 days	40%	None
Mutual Funds and Money Market Mutual Funds	5 years	None	None
Collaterized Deposit	N/A	None	None
Passbook Savings Accounts	5 years	None	None
Repurchase Agreements	5 years	25%	None

The City is a participant in LAIF, which is regulated by California Government Code Section 16429 under the oversight of the Treasurer of the State of California. The City's investments with LAIF at June 30, 2015 included a portion of the pool funds invested in Structured Notes and Asset-Backed Securities, which included the following:

Structured Notes: debt securities (other than asset-backed securities) whose cash flow characteristics (coupon rate, redemption amount, or stated maturity) depend upon one or more indices and/or that have embedded forwards or options.

Asset-Backed Securities: generally mortgage-backed securities that entitle their purchasers to receive a share of the cash flows from a pool of assets such as principal and interest repayments from a pool of mortgages (for example, collateralized mortgage obligations), or credit card receivables.

As of June 30, 2015, the City had $3,127,955 invested in LAIF, which had invested 2.08% of the pool investment funds in Structured Notes and Asset-Backed Securities.

C. Risk Disclosures

Interest Rate Risk - As a means of limiting its exposure to fair value losses arising from rising interest rates, the City's investment policy limits investments to a maximum maturity of five years.

At June 30, 2015, the City had the following investment maturities:

		Investment Maturities (in Years)				
Investment Type	Fair value	Less than 1	1 to 2	2 to 3	3 to 4	4 to 5
Local Agency Investment Fund	$ 3,127,955	$ 3,127,955	$ -	$ -	$ -	$ -
Mutual Funds	515,813	515,813	-	-	-	-
Certificates of deposit	3,710,482	1,187,361	1,002,828	-	1,270,293	250,000
U.S. Government Sponsored Enterprise Securities	996,670	-	-	996,670	-	-
Total	$ 8,350,920	$ 4,831,129	$ 1,002,828	$ 996,670	$1,270,293	$ 250,000

Note 2 – Cash and Investments (Continued)

C. Risk Disclosures (Continued)

Credit Risk – State law limits investments in commercial paper and corporate bonds to the top two ratings issued by nationally recognized statistical rating organizations. It is the City's policy to limit its investments in these investment types to the top rating issued by Standard & Poor's and Moody's Investor Service. At June 30, 2015, the City's credit risks, expressed on a percentage basis, were as follows:

Credit Quality Distribution for Securities
with Credit Exposure as a Percentage of Total Investments

Investment Type	Moody's Credit Rating	S&P's Credit Rating	% of Investments with Interest Rate Risk
Local Agency Investment Fund (LAIF)	Not Rated	Not Rated	37.46%
Mutual Funds	Not Rated	Not Rated	6.18%
Certificates of Deposits	Not Rated	Not Rated	44.43%
U.S. Government Sponsored Enterprise Securities			
Federal Farm Credit Banks	AAA	AA+	5.98%
Federal National Mortgage Association	AAA	AA+	5.95%
Total			100.00%

Custodial Risk – For deposits, custodial credit risk is the risk that, in the event of the failure of a depository financial institution, the City will not be able to recover its deposits or will not be able to recover collateral securities that are in the possession of an outside party. For an investment, custodial credit risk is the risk that, in the event of the failure of the counterparty (e.g. broker-dealer), the City will not be able to recover the value of its investments or collateral securities that are in the possession of an outside party.

Concentration of credit risk – The investment policy of the City contains no limitations on the amount that can be invested in any one issuer beyond that stipulated by the California Government Code. There was no investments in any one issuer (other than mutual funds and external investment pools) that represent 5% or more of the City's investments.

Note 3 – Interfund Transactions

Due From/To Other Funds – At June 30, 2015, the City had the following due from/to other funds:

	Due From Other Funds								
Due To Other Funds	General Fund	Nonmajor Governmental Funds	Water Fund	Sewer Fund	Harbor Fund	Local Transit Fund	Internal Service Fund	Component Unit MB/CSD WWT	Total
Governmental Funds:									
General Fund	$ 22,621	$ 12,580	$ 20,039	$ 35,866	$ 6,472	$ 2,018	$ 9,980	$ -	$ 109,576
Capital Improvement Fund	484,998	-	-	-	-	-	-	-	484,998
Nonmajor Funds	32,506	-	-	-	-	-	-	-	32,506
Enterprise Funds:									
Sewer Fund	-	-	-	-	-	-	-	3,012	3,012
Component Unit:									
MB/CSD WWT	-	-	-	4,766	-	-	-	-	4,766
Total	$ 540,125	$ 12,580	$ 20,039	$ 40,632	$ 6,472	$ 2,018	$ 9,980	$ 3,012	$ 634,858

The above amount resulted from the time lag between the dates that reimbursable expenditures occur and payments are received from other agencies.

Transfers

At June 30, 2015, the City had the following transfers:

	Transfers in				
Transfers out	General Fund	Capital Improvement fund	Nonmajor Governmental Funds	Water Fund	Total
Governmental Funds:					
General Fund	$ -	$ 191,888	$ 266,350	$ -	$ 458,238
Capital Improvement Fund	301,187	-	-	-	301,187
Nonmajor Funds	589,877	551,219	-	-	1,141,096
Enterprise Funds:					
Water Fund	279,105	-	-	-	279,105
Sewer Fund	166,347	-	-	28,410	194,757
Harbor Fund	281,986	-	-	-	281,986
LTF Fund	79,775	-	-	-	79,775
Internal Service Fund:					
Risk Management Fund	125,900	-	139,996	-	265,896
Total	$ 1,824,177	$ 743,107	$ 406,346	$ 28,410	$ 3,002,040

In general, transfers are used to 1) use unrestricted revenues collected in one fund to finance various programs accounted for in other funds in accordance with budgetary authorizations, and 2) to reimburse the General Fund for administration services provided to other funds.

Note 4 – Capital Assets

The following is a summary of changes in capital assets for the governmental activities for the year ended June 30, 2015:

	Balance July 1, 2014	Addition	Deletion	Reclassification	Balance June 30, 2015
Governmental Activities:					
Nondepreciable capital assets:					
Artwork	$ 63,000	$ -	$ -	$ -	$ 63,000
Land	95,465,028	-	-	-	95,465,028
Construction in progress	1,667,446	2,032,555	(77,024)	(1,771,213)	1,851,764
Total nondepreciable capital assets	97,195,474	2,032,555	(77,024)	(1,771,213)	97,379,792
Depreciable capital assets:					
Machinery & equipment	3,760,082	394,795	(625,123)	750,998	4,280,752
Buildings & structures	14,876,262		-	592,106	15,468,368
Infrastructure	25,287,737	-	-	428,109	25,715,846
Total depreciable capital assets	43,924,081	394,795	(625,123)	1,771,213	45,464,966
Less accumulated depreciation	(19,117,122)	(1,065,260)	625,123	-	(19,557,259)
Total depreciable assets, net	24,806,959	(670,465)	-	1,771,213	25,907,707
Governmental activities capital assets, net	$ 122,002,433	$ 1,362,090	$ (77,024)	$ -	$ 123,287,499

The following is a summary of changes in capital assets for the business-type activities for the year ended June 30, 2015:

	Balance July 1, 2014	Addition	Deletion	Reclassification	Balance June 30, 2015
Business-Type Activities:					
Nondepreciable capital assets:					
Artwork	$ 2,800	$ -	$ -	$ -	$ 2,800
Land	1,495,855	-	-	-	1,495,855
Construction in progress	201,574	4,806	-		206,380
Total nondepreciable capital assets	1,700,229	4,806	-	-	1,705,035
Depreciable capital assets:					
Machinery & equipment	9,872,005	9,950	(140,898)		9,741,057
Buildings & structures	5,315,603	-	-	-	5,315,603
Infrastructure	30,207,253	-	-	-	30,207,253
Total depreciable capital assets	45,394,861	9,950	(140,898)	-	45,263,913
Less accumulated depreciation	(27,466,507)	(1,012,151)	140,898	-	(28,337,760)
Total depreciable assets, net	17,928,354	(1,002,201)	-	-	16,926,153
Business-type activities capital assets, net	$ 19,628,583	$ (997,395)	$ -	$ -	$ 18,631,188

Note 4 – Capital Assets (Continued)

The following is a summary of changes in capital assets for the discretely presented component unit for the year ended June 30, 2015:

	Balance July 1, 2014	Additions & Transfers	Dispositions & Transfers	Balance June 30, 2015
Discretely Presented Component Unit:				
Nondepreciable capital assets:				
Construction in progress	$ 721,626	$ 1,289,330	$ (1,111,823)	$ 899,133
Depreciable capital assets:				
Machinery & equipment	1,564,257	-	-	1,564,257
Buildings & structures	12,764,471	-	-	12,764,471
Total depreciable capital assets	14,328,728	-	-	14,328,728
Less accumulated depreciation	(13,928,144)	(373,251)	-	(14,301,395)
Total depreciable assets, net	400,584	(373,251)	-	27,333
Component unit capital assets, net	$ 1,122,210	$ 916,079	$ (1,111,823)	$ 926,466

Depreciation expense was charged to governmental activites as follow:

Administration	$ 5,237
Community Development	5,505
Police	83,926
Fire	391,913
Public Works	543,172
Recreation & Parks	35,507
Total depreciation expense, governmental activities	$ 1,065,260

Depreciation expense was charged to business-type activites as follows:

Water	$ 273,878
Sewer	497,122
Harbor	202,219
Transit	38,932
Total depreciation expense, business-type activities	1,012,151

Depreciation expense was charged to discretely presented component unit as follows

Waste Water Treatment Plant	$ 373,251
Total depreciation expense, discretely presented component unit	$ 373,251

Note 5 – Long-term Liabilities

Summary of changes in long-term liabilities for the year ended June 30, 2015 is as follows:

	Balance July 1, 2015, As Restated	Additions	Deletion	Balance June 30, 2015	Amounts due within one Year
Governmental Activities:					
Certificates payable	$ 1,486,838	$ -	$ (70,838)	$ 1,416,000	$ 30,000
Claims payable	-	292,253	(62,704)	229,549	229,549
Compensated absences	259,476	410,821	(380,147)	290,150	34,818
Other postemployment benefits	109,837	146,411	(49,658)	206,590	-
Pension related debt	1,508,441	100,159	(352,366)	1,256,234	362,936
	$ 3,364,592	$ 949,644	$ (915,713)	$ 3,398,523	$ 657,303
Business-Type Activities:					
Notes Payable	$ 889,497	$ -	$ (94,831)	$ 794,666	$ 99,099
Compensated absences	68,647	77,684	(66,288)	80,043	13,288
	$ 958,144	$ 77,684	$ (161,119)	$ 874,709	$ 112,387
Component Unit:					
Compensated absences	$ 17,042	$ 23,882	$ (25,586)	$ 15,338	$ -

Pension-Related Debt

As of June 30, 2003, the California Public Employees' Retirement System ("CalPERS") implemented a risk pool for the City's multiple-employer public employee defined benefit pension plan. The City's Miscellaneous and Safety Plans converted from agent multiple-employer plans to cost-sharing multiple employer plans. In addition to the annual required contributions (see Note 7), the City is also required to make annual payments on a Side Fund, which was created when the City entered the risk pool to account for the difference between the funded status of the pool and the funded status of the City's plans. The responsibility for funding the Side Fund is specific to the City and is not shared by all employers in the risk pool. The annual payments on the Side Fund represent principal and interest payments on the pension-related debt, which are included in the retirement expenditures in the City's various functions.

The amount of pension-related debt outstanding at June 30, 2015 totaled $1,256,234, which includes $665,974 for the Safety Fire Plan and $590,260 for the Safety Police Plan.

Note 5 – Long-term Liabilities (Continued)

Certificates of Participation

On October 12, 2011, the City entered into an installment sale agreement with the Public Property Financing Corporation of California 2011 Fire Station Financing Project, Series A and B, Certificates of Participation (the "COP") for $1,500,000 and $300,000, respectively. The principal balance of Series A matures commencing from September 2012 to September 1, 2041, interest rates at 3.75%, payable on March 1 and September 1 of each year. Series B was fully paid as of June 30, 2015. Series A had an outstanding balance of $1,416,000 at June 30, 2015.

Year Ending	Certificate of participation		
June 30,	Principal	Interest	Total
2016	$ 30,000	$ 52,538	$ 82,538
2017	31,000	51,393	82,393
2018	33,000	50,194	83,194
2019	34,000	48,937	82,937
2020	35,000	47,644	82,644
2021-2025	199,000	216,844	415,844
2026-2030	241,000	175,707	416,707
2031-2035	293,000	125,830	418,830
2036-2040	357,000	65,045	422,045
2041-2042	163,000	6,587	169,587
	$ 1,416,000	$ 840,719	$ 2,256,719

Notes Payable

Note Payable to the Department of Boating and Waterways for the construction of the T-Pier and other harbor improvements. Payable annually, beginning August 1, 1997, in the amount of $134,121, including interest at 4.7% annum.

Year Ending	Notes Payable		
June 30,	Principal	Interest	Total
2016	$ 99,099	$ 35,760	$ 134,859
2017	103,558	31,300	134,858
2018	108,219	26,640	134,859
2019	113,088	21,771	134,859
2020	118,177	252,523	370,700
2021-2025	252,524	129,028	381,552
	$ 794,665	$ 497,022	$ 1,291,687

Note 6 – Liability, Workers' Compensation, and Purchased Insurance

A. Description of Self-Insurance Pool Pursuant to Joint Powers Agreement

The City of Morro Bay is a member of the California Joint Powers Insurance Authority (the "CJPIA"). The CJPIA is composed of 118 California public entities and is organized under a joint powers agreement pursuant to California Government Code §6500 et seq. The purpose of the CJPIA is to arrange and administer programs for the pooling of self-insured losses, to purchase excess insurance or reinsurance, and to arrange for group purchased insurance for property and other lines of coverage. The CJPIA began covering claims of its members in 1978. Each member government has an elected official as its representative on the Board of Directors. The Board operates through a nine-member Executive Committee.

B. Self-Insurance Programs of the CJPIA

Each member pays an annual contribution at the beginning of the coverage period. A retrospective adjustment is then conducted annually thereafter, for coverage years 2012-13 and prior. Retrospective adjustments are scheduled to continue indefinitely on coverage years 2012-13 and prior, until all claims incurred during those coverage years are closed, on a pool-wide basis. This subsequent cost re-allocation among members, based on actual claim development, can result in adjustments of either refunds or additional deposits required. Coverage years 2013-14 and forward are not subject to routine annual retrospective adjustment. At June 30, 2015, the amount of this liability was $229,549.

The total funding requirement for self-insurance programs is estimated using actuarial models and pre-funded through the annual contribution. Costs are allocated to individual agencies based on exposure (payroll) and experience (claims) relative to other members of the risk-sharing pool. Additional information regarding the cost allocation methodology is provided below.

Liability

In the liability program claims are pooled separately between police and general government exposures. (1) The payroll of each member is evaluated relative to the payroll of other members. A variable credibility factor is determined for each member, which establishes the weight applied to payroll and the weight applied to losses within the formula. (2) The first layer of losses includes incurred costs up to $30,000 for each occurrence and is evaluated as a percentage of the pool's total incurred costs within the first layer. (3) The second layer of losses includes incurred costs from $30,000 to $750,000 for each occurrence and is evaluated as a percentage of the pool's total incurred costs within the second layer. (4) Incurred costs from $750,000 to $50 million, are distributed based on the outcome of cost allocation within the first and second loss layers.

For 2014-15 the CJPIA's pooled retention is $2 million per occurrence, with reinsurance to $20 million, and excess insurance to $50 million. The CJPIA's reinsurance contracts are subject to the following additional pooled retentions: (a) 50% of the $2.5 million annual aggregate deductible in the $3 million excess $2 million layer, (b) 50% quota share of the $3 million excess $2 million layer, and (c) $3 million annual aggregate deductible in the $5 million excess $10 million layer.

The overall coverage limit for each member, including all layers of coverage, is $50 million per occurrence. Costs of covered claims for subsidence losses have a sub-limit of $30 million per occurrence.

Note 6 – Liability, Workers' Compensation, and Purchased Insurance (Continued)

Workers' Compensation

In the workers' compensation program claims are pooled separately between public safety (police and fire) and general government exposures. (1) The payroll of each member is evaluated relative to the payroll of other members. A variable credibility factor is determined for each member, which establishes the weight applied to payroll and the weight applied to losses within the formula. (2) The first layer of losses includes incurred costs up to $50,000 for each occurrence and is evaluated as a percentage of the pool's total incurred costs within the first layer. (3) The second layer of losses includes incurred costs from $50,000 to $100,000 for each occurrence and is evaluated as a percentage of the pool's total incurred costs within the second layer. (4) Incurred costs from $100,000 to statutory limits are distributed based on the outcome of cost allocation within the first and second loss layers.

For 2014-15 the CJPIA's pooled retention is $2 million per occurrence, with reinsurance to statutory limits under California Workers' Compensation Law.

Employer's Liability losses are pooled among members to $2 million. Coverage from $2 million to $5 million is purchased as part of a reinsurance policy, and Employer's Liability losses from $5 million to $10 million are pooled among members.

C. Purchased Insurance

Property Insurance

The City of Morro Bay participates in the all-risk property protection program of the CJPIA. This insurance protection is underwritten by several insurance companies. City of Morro Bay property is currently insured according to a schedule of covered property submitted by the City of Morro Bay to the CJPIA. City of Morro Bay property currently has all-risk property insurance protection in the amount of $91,123,400. There is a $5,000 deductible per occurrence except for non-emergency vehicle insurance which has a $1,000 deductible. Premiums for the coverage are paid annually and are not subject to retrospective adjustments.

Earthquake and Flood Insurance

The City of Morro Bay purchases earthquake and flood insurance on a portion of its property. The earthquake insurance is part of the property protection insurance program of the CJPIA. City of Morro Bay property currently has earthquake protection in the amount of $49,309,584. There is a deductible of 5% per unit of value with a minimum deductible of $100,000. Premiums for the coverage are paid annually and are not subject to retrospective adjustments.

Crime Insurance

The City of Morro Bay purchases crime insurance coverage in the amount of $1,000,000 with a $2,500 deductible. The fidelity coverage is provided through the CJPIA. Premiums are paid annually and are not subject to retrospective adjustments.

Note 6 – Liability, Workers' Compensation, and Purchased Insurance (Continued)

Special Event Tenant User Liability Insurance

The City of Morro Bay further protects against liability damages by requiring tenant users of certain property to purchase low-cost tenant user liability insurance for certain activities on agency property. The insurance premium is paid by the tenant user and is paid to the City of Morro Bay according to a schedule. The City of Morro Bay then pays for the insurance. The insurance is arranged by the CJPIA.

D. Adequacy of Protection

During the past three fiscal years, none of the above programs of protection experienced settlements or judgments that exceeded pooled or insured coverage. There were also no significant reductions in pooled or insured liability coverage in 2014-15.

Note 7 – Defined Benefit Pension Plans

The following is a summary of changes in net pension liability, and the related deferred outflows and inflows of resources for the year ended June 30, 2015:

	Balance July 1, 2014 (As Restated)	Additions	Deletions	Balance June 30, 2015
Deferred outflows of resources:				
Pension contribution after measurement date:				
Fire Tier 1	$ 284,171	$ 325,631	$ (284,171)	$ 325,631
Fire Tier 2	26,535	30,122	(26,535)	30,122
Fire Tier PEPRA	-	9,435	-	9,435
Police Tier 1	428,502	398,627	(428,502)	398,627
Police Tier 2	111,079	133,057	(111,079)	133,057
Police PEPRA	-	17,908	-	17,908
Miscellaneous Tier 1	720,548	696,786	(720,548)	696,786
Miscellaneous Tier 2	49,154	54,189	(49,154)	54,189
Miscellaneous PEPRA	6,281	20,216	(6,281)	20,216
Total pension contribution after measurement date	1,626,270	1,685,971	(1,626,270)	1,685,971
Employer actual contributions in excess of employer's proportionate share of contribution:				
Fire Tier 1	-	15,491	(4,077)	11,414
Fire Tier 2	-	25,055	(6,593)	18,462
Police Tier 1	-	1,788	(471)	1,317
Police Tier 2	-	107,848	(28,381)	79,467
Miscellaneous Tier 2	-	48,562	(12,779)	35,783
Miscellaneous PEPRA	-	6,265	(1,649)	4,616
Total employer actual contributions in excess of employer's proportionate share of contribution	-	205,009	(53,950)	151,059
Positive adjustment due to difference in proportion:				
Fire Tier 1	-	24,892	(6,551)	18,341
Police Tier 1	-	66,126	(17,402)	48,724
Miscellaneous Tier 1	-	275,002	(72,369)	202,633
Total positive adjustment due to difference in proportion	-	366,020	(96,322)	269,698
Total deferred outflows of resources	$ 1,626,270	$ 2,257,000	$ (1,776,542)	$ 2,106,728

Note 7 – Defined Benefit Pension Plans (Continued)

	Balance July 1, 2014 (As Restated)	Additions	Deletions	Balance June 30, 2015
Net pension liabilities:				
Fire Tier 1	$ 3,711,549	$ 1,072,195	$ (1,733,366)	$ 3,050,378
Fire Tier 2	15,796	32,104	(35,972)	11,928
Police Tier 1	5,444,418	1,700,325	(2,772,231)	4,372,512
Police Tier 2	34,486	136,468	(144,911)	26,043
Miscellaneous Tier 1	10,071,499	3,551,374	(6,049,426)	7,573,447
Miscellaneous Tier 2	6,116	45,659	(47,299)	4,476
Miscellaneous PEPRA	164	11,987	(12,031)	120
Total net pension liabilities	$ 19,284,028	$ 6,550,112	$ (10,795,236)	$ 15,038,904
Deferred inflows of Resources:				
Difference in projected and actual earnings on pension investments:				
Fire Tier 1	$ -	$ 817,430	$ (163,486)	$ 653,944
Fire Tier 2	-	4,502	(900)	3,602
Police Tier 1	-	1,298,235	(259,647)	1,038,588
Police Tier 2	-	9,829	(1,966)	7,863
Miscellaneous Tier 1	-	2,906,349	(581,270)	2,325,079
Miscellaneous Tier 2	-	1,880	(376)	1,504
Miscellaneous PEPRA	-	50	(10)	40
Total difference in projected and actual earnings on pension investments:	-	5,038,275	(1,007,655)	4,030,620
Employer's proportionate share of contribution in excess of employer's actual contribution:				
Miscellaneous Tier 1	-	194,800	(51,263)	143,537
Total employer's proportionate share of contribution in excess of employer's actual contribution	-	194,800	(51,263)	143,537
Total adjustment due to difference in proportion in pension investments:				
Fire Tier 2	-	14,976	(3,941)	11,035
Police Tier 2	-	75,740	(19,932)	55,808
Miscellaneous Tier 2	-	295	(78)	217
Miscellaneous PEPRA	-	5,595	(1,472)	4,123
Total adjustment due to difference in proportion in actual earnings on pension investments	-	96,606	(25,423)	71,183
Total deferred inflows of resources	$ -	$ 5,329,681	$ (1,084,341)	$ 4,245,340

Note 7 – Defined Benefit Pension Plans (Continued)

General Information about the Pension Plan

Plan Description

The City contributes to the California Public Employees' Retirement System ("CalPERS"), a cost-sharing multiple-employer defined benefit pension plan. CalPERS provides retirement and disability benefits, annual cost-of-living adjustments, and death benefits to plan members and beneficiaries. CalPERS acts as a common investment and administrative agent for participating public entities within the State of California. Benefit provisions and all other requirements are established by State statute and City ordinance. Copies of the CalPERS annual financial report may be obtained from their Executive Office located at 400 P Street, Sacramento, California 95814.

Employees Covered by Benefit Terms

At June 30, 2013, the following employees were covered by the benefit terms:

	Plans			
	Fire Tier 1	**Fire Tier 2**	**Police Tier 1**	**Police Tier 2**
Active employees	8	2	14	7
Transferred and terminated employees	6	1	14	1
Separated	1	-	8	-
Retired Employees and Beneficiaries	19	-	38	-
Total	34	3	74	8

	Plans		
	Misc. Tier 1	**Misc. Tier 2**	**Misc. PEPRA**
Active employees	48	7	2
Transferred and terminated employees	30	-	-
Separated	29	1	-
Retired Employees and Beneficiaries	114	-	-
Total	221	8	2

There were no employees covered by Fire PEPRA and Police PEPRA plan at June 30, 2013.

Note 7 – Defined Benefit Pension Plans (Continued)

General Information about the Pension Plan

Benefit Provided

CalPERS provide retirement and disability benefits, annual cost-of-living adjustments, and death benefits to plan members and beneficiaries. Following are the benefit provisions for each plan:

- Fire Tier 1: 3% (at age 50) of the highest average final 12 months compensation
- Fire Tier 2: 3% (at age 55) of the highest average final 36 months compensation
- Police Tier 1: 3% (at age 50) of the highest average final 12 months compensation
- Police Tier 2: 3% (at age 55) of the highest average final 36 months compensation
- Miscellaneous Tier 1: 2-2.7% (at age 55) of the highest average final 12 months compensation
- Miscellaneous Tier 2 : 2% (at age 60) of the highest average final 36 months compensation
- PEPRA Miscellaneous : 2% (at age 62) of the highest average final 36 months compensation

Employees may retire from active service once they reach 50 years of age and have five years of CalPERS-credited service.

The City has contracted with CalPERS for pre-retirement death benefits, should an employee die while actively employed, subject to the employee's eligibility to retire. Eligibility is established when an employee reaches 50 years of age, and has a minimum of five years of CalPERS-credited service.

Upon the death of an eligible employee, beneficiary(ies) may choose to receive: 1) the City-contracted CalPERS retirement formula Option 2W, or 2) the basic death benefit (employee contributions plus interest) and one month's salary for each year of current services, up to six months' pay. With either choice, the City-contracted 4th Level 1959 Survivor Benefit, which provides additional allocations to spouses caring for unmarried children, under the age of 22, or incapacitated children, is provided.

If the employee dies prior to attaining retirement eligibility, beneficiary(ies) receive: 1) the lump sum basic death benefit (employee contributions plus interest) and one month's salary for each year of current services, up to six months' pay, and 2) the City-contracted 4th Level 1959 Survivor Benefit.

Upon the death of a retiree, a one-time lump sum payment of $500 will be made to the retirees designated survivor(s), or to the retiree's estate. Depending on the retirement option chosen, beneficiary(ies) may continue to receive lifetime benefits. The City does not contract for Survivor Continuance. Additionally, the City does not participate in Social Security retirement.

Contributions

Section 20814(c) of the California Public Employees' Retirement Law ("PERL") requires that the employer contribution rates for all public employers be determined on an annual basis by the actuary and shall be effective on the July 1 following notice of a change in the rate. The total plan contributions are determined through CalPERS' annual actuarial valuation process. The Public agency cost-sharing plans covered by either the Safety risk pools, the Plan's actuarially determined rate is based on the estimated amount necessary to pay the Plan's allocated share of the risk pool's costs of benefits earned by employees during the year, and any unfunded accrued liability. The employer is required to contribute the difference between the actuarially determined rate and the contribution rate of employees.

Note 7 – Defined Benefit Pension Plans (Continued)

General Information about the Pension Plan (Continued)

For the measurement period ended June 30, 2014 (the measurement date), the active employee contribution rate were as follows:

Plans	Active Employee Contribution Rate	Employer Contribution Rate
Fire Tier 1	8.986%	41.225%
Fire Tier 2	8.980%	20.774%
Police Tier 1	8.986%	37.729%
Police Tier 2	8.980%	20.774%
Miscellaneous Tier 1	7.947%	23.217%
Miscellaneous Tier 2	6.880%	8.049%
Miscellaneous PEPRA	6.308%	6.250%

There were no employees covered by Fire PEPRA and Police PEPRA plan at June 30, 2013.

Pension Liabilities, Pension Expenses, and Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pension

Actuarial Methods and Assumptions Used to Determine Total Pension Liability

For the measurement period ended June 30, 2014 (the measurement date), the total pension liability was determined by rolling forward the June 30, 2013 total pension liability. Both the June 30, 2013 and the June 30, 2014 total pension liabilities were based on the following actuarial methods and assumptions:

Actuarial Methods and Assumptions Used to Determine Total Pension Liability

Actuarial Cost Method	Entry Age Normal in accordance with the requirement of GASB Statement No. 68
Actuarial Assumptions:	
Discount Rate	7.50%
Inflation	2.75%
Salary Increases	Varies by Entry Age and Service
Investment Rate of Return	7.50% Net of Pension Plan Investment and Administrative Expenses; includes Inflation
Mortality Rate Table	Derived using CalPERS' Membership Data for all Funds.
Post Retirement Benefit Increase	Contract COLA up to 2.75% until Purchasing Power Protection Allowance Floor on Purchasing Power applies, 2.75% thereafter

Note 7 – Defined Benefit Pension Plans (Continued)

Pension Liabilities, Pension Expenses, and Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pension (Continued)

Actuarial Methods and Assumptions Used to Determine Total Pension Liability (Continued)

All other actuarial assumptions used in the June 30, 2013 valuation were based on the results of an actuarial experience study for the period from 1997 to 2011, including updates to salary increase, mortality and retirement rates. The Experience Study report can be obtained at CalPERS' website under Forms and Publications.

Discount Rate

The discount rate used to measure the total pension liability was 7.50 percent, which is net of administrative expenses. An investment return excluding administrative expenses would have been 7.65 percent. Management has determined that using the lower discount rate has resulted in a slightly higher total pension liability and net pension liability and the difference was deemed immaterial to the financial statement. The long-term expected rate of return on pension plan investments was determined in which best-estimate ranges of expected future real rates are developed for each major asset class. In determining the long-term expected rate of return, both short-term and long-term market return expectations as well as the expected pension fund cash flows were considered. Such cash flows were developed assuming that both members and employers will make their required contributions on time and as scheduled in all future years.

The long-term expected rate of return on pension plan investments was determined using a building-block method in which best-estimate ranges of expected future real rates of return (expected returns, net of pension plan investment expense and inflation) are developed for each major *asset class.*

The table below reflects long-term expected real rate of return by asset class. The rate of return was calculated using the capital market assumptions applied to determine the discount rate and asset allocation. These geometric rates of return are net of administrative expenses.

Asset Class	New Strategic Allocation	Real Return Years 1-10[1]	Real Return Years 11+[2]
Global Equity	47.00%	5.25%	5.71%
Global Fixed Income	19.00	0.99	2.43
Inflation Sensitive	6.00	0.45	3.36
Private Equity	12.00	6.83	6.95
Real Estate	11.00	4.50	5.13
Infrastructure and Forestland	3.00	4.50	5.09
Liquidity	2.00	-0.55	-1.05

[1]An expected inflation of 2.5% used for this period

[2]An expected inflatin of 3.0% used for this period.

Note 7 – Defined Benefit Pension Plans (Continued)

Pension Liabilities, Pension Expenses, and Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pension (Continued)

Sensitivity of the City's Proportionate Share of the Net Pension Liability to Changes in the Discount Rate

The following presents the City's proportionate share of the net pension liability of the Plan as of the measurement date, calculated using the discount rate of 7.5%, as well as what the City's proportionate share of the net pension liability would be if it were calculated using a discount rate that is 1 percentage-point lower (6.50%) or 1 percentage-point higher (8.50%) than the current rate:

	Plan's Net Pension Liability/(Asset)		
	Discount Rate - 1% (6.50%)	Current Discount Rate (7.50%)	Discount Rate + 1% (8.50%)
Fire Tier 1	$ 4,730,162	$ 3,050,378	$ 1,666,309
Fire Tier 2	$ 20,527	$ 11,928	$ 4,843
Police Tier 1	$ 6,977,093	$ 4,372,512	$ 2,226,449
Police Tier 2	$ 44,817	$ 26,043	$ 10,574
Miscellaneous Tier 1	$ 13,068,736	$ 7,573,447	$ 3,012,878
Miscellaneous Tier 2	$ 7,975	$ 4,476	$ 1,573
Miscellaneous PEPRA	$ 214	$ 120	$ 42

Sensitivity of the City's Proportionate Share of the Net Pension Liability to Changes in the Discount Rate
Pension Plan Fiduciary Net Position

Detail information about the plan's fiduciary net position is available in the separately issued CalPERS financial report and can be obtained from CalPERS' website under Forms and Publications.

Note 7 – Defined Benefit Pension Plans (Continued)

Pension Liabilities, Pension Expenses, and Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pension (Continued)

Proportionate Share of Net Pension Liability and Pension Expense

The following table shows the plan's proportionate share of the risk pool collective net pension liability over the measurement period:

	Increase (Decrease)		
	Plan Total Pension Liability	Plan Fiduciary Net Position	Plan Net Pension Liability/(Asset)
Fire Tier 1			
Balance at: 6/30/13 (Valuation date)	$ 11,960,359	$ 8,248,810	$ 3,711,549
Balance at: 6/30/14 (Measurement date)	$ 12,540,608	$ 9,490,230	$ 3,050,378
Net Changes during 2013-2014	$ 580,249	$ 1,241,420	$ (661,171)
Fire Tier 2			
Balance at: 6/30/13 (Valuation date)	$ 61,227	$ 45,431	$ 15,796
Balance at: 6/30/14 (Measurement date)	$ 64,197	$ 52,269	$ 11,928
Net Changes during 2013-2014	$ 2,970	$ 6,838	$ (3,868)
Police Tier 1			
Balance at: 6/30/13 (Valuation date)	$ 18,545,088	$ 13,100,670	$ 5,444,418
Balance at: 6/30/14 (Measurement date)	$ 19,444,792	$ 15,072,280	$ 4,372,512
Net Changes during 2013-2014	$ 899,704	$ 1,971,610	$ (1,071,906)
Police Tier 2			
Balance at: 6/30/13 (Valuation date)	$ 133,673	$ 99,187	$ 34,486
Balance at: 6/30/14 (Measurement date)	$ 140,158	$ 114,115	$ 26,043
Net Changes during 2013-2014	$ 6,485	$ 14,928	$ (8,443)

Note 7 – Defined Benefit Pension Plans (Continued)

Pension Liabilities, Pension Expenses, and Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pension (Continued)

Proportionate Share of Net Pension Liability and Pension Expense (Continued)

	Increase (Decrease)		
	Plan Total Pension Liability	Plan Fiduciary Net Position	Plan Net Pension Liability/(Asset)
Miscellaneous Tier 1			
Balance at: 6/30/13 (Valuation date)	$ 39,096,398	$ 29,024,899	$ 10,071,499
Balance at: 6/30/14 (Measurement date)	$ 41,423,011	$ 33,849,564	$ 7,573,447
Net Changes during 2013-2014	$ 2,326,613	$ 4,824,665	$ (2,498,052)
Miscellaneous Tier 2			
Balance at: 6/30/13 (Valuation date)	$ 24,892	$ 18,776	$ 6,116
Balance at: 6/30/14 (Measurement date)	$ 26,373	$ 21,897	$ 4,476
Net Changes during 2013-2014	$ 1,481	$ 3,121	$ (1,640)
Miscellaneous PEPRA			
Balance at: 6/30/13 (Valuation date)	$ 668	$ 504	$ 164
Balance at: 6/30/14 (Measurement date)	$ 708	$ 588	$ 120
Net Changes during 2013-2014	$ 40	$ 84	$ (44)

The following is the approach established by the plan actuary to allocate the net pension liability and pension expense to the individual employers within the risk pool.

(1) In determining a cost-sharing plan's proportionate share, total amounts of liabilities and assets are first calculated for the risk pool as a whole on the valuation date (June 30, 2013). The risk pool's fiduciary net position ("FNP") subtracted from its total pension liability ("TPL") determines the net pension liability ("NPL") at the valuation date.

(2) Using standard actuarial roll forward methods, the risk pool TPL is then computed at the measurement date (June 30, 2014). Risk pool FNP at the measurement date is then subtracted from this number to compute the NPL for the risk pool at the measurement date. For purposes of FNP in this step and any later reference thereto, the risk pool's FNP at the measurement date denotes the aggregate risk pool's FNP at June 30, 2014 less the sum of all additional side fund (or unfunded liability) contributions made by all employers during the measurement period (2013-14).

Note 7 – Defined Benefit Pension Plans (Continued)

Pension Liabilities, Pension Expenses, and Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pension (Continued)

Proportionate Share of Net Pension Liability and Pension Expense (Continued)

The following is the approach established by the plan actuary to allocate the net pension liability and pension expense to the individual employers within the risk pool (Continued).

(3) The individual plan's TPL, FNP and NPL are also calculated at the valuation date.

(4) Two ratios are created by dividing the plan's individual TPL and FNP as of the valuation date from (3) by the amounts in step (1), the risk pool's total TPL and FNP, respectively.

(5) The plan's TPL as of the Measurement Date is equal to the risk pool TPL generated in (2) multiplied by the TPL ratio generated in (4). The plan's FNP as of the Measurement Date is equal to the FNP generated in (2) multiplied by the FNP ratio generated in (4) plus any additional side fund (or unfunded liability) contributions made by the employer on behalf of the plan during the measurement period.

(6) The plan's NPL at the Measurement Date is the difference between the TPL and FNP calculated in (5).

The City's proportionate share of the net pension liability was as follows:

	Plans			
	Fire Tier 1	**Fire Tier 2**	**Police Tier 1**	**Police Tier 2**
June 30, 2013	0.07758%	0.00033%	0.11380%	0.00072%
June 30, 2014	0.08132%	0.00032%	0.11657%	0.00069%
Change - Increase (Decrease)	0.00374%	-0.00001%	0.00277%	-0.00003%

	Plans		
	Misc. Tier 1	**Misc. Tier 2**	**Misc. PEPRA**
June 30, 2013	0.30737%	0.00019%	0.00001%
June 30, 2014	0.30643%	0.00018%	0.00000%
Change - Increase (Decrease)	-0.00094%	-0.00001%	-0.00001%

Note 7 – Defined Benefit Pension Plans (Continued)

Pension Liabilities, Pension Expenses, and Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pension (Continued)

Proportionate Share of Net Pension Liability and Pension Expense (Continued)

For the year ended June 30, 2015, the City recognized pension expense as follows:

Plans	Pension Expense
Fire Tier 1	$ 247,189
Fire Tier 2	18,842
Police Tier 1	345,143
Police Tier 2	86,840
Miscellaneous Tier 1	488,479
Miscellaneous Tier 2	13,452
Miscellaneous PEPRA	5,784
Total	$ 1,205,729

The amortization period differs depending on the source of the gain or loss. The difference between projected and actual earnings is amortized over 5-years straight line. All other amounts are amortized straight-line over the average expected remaining service lives of all members that are provided with benefits (active, inactive and retired) as of the beginning of the measurement period.

The expected average remaining service lifetime ("EARSL") is calculated by dividing the total future service years by the total number of plan participants (active, inactive, and retired) in the risk pool. The EARSL for risk pool for the 2013-14 measurement period is 3.8 years, which was obtained by dividing the total service years of 460,700 (the sum of remaining service lifetimes of the active employees) by 122,789 (the total number of participants: active, inactive, and retired).

At June 30, 2015, the City reported deferred outflows of resources and deferred inflows of resources related to pensions from the following sources:

Fire Tier 1

	Deferred outflows of Resources	Deferred inflows of Resources
Difference between projected and actual earning on pension plan investments	$ -	$ (653,944)
Adjustment due to differences in proportions	18,341	-
Difference between City contributions and proportionate share of contributions	11,414	-
Total	$ 29,755	$ (653,944)

Note 7 – Defined Benefit Pension Plans (Continued)

Pension Liabilities, Pension Expenses, and Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pension (Continued)

Proportionate Share of Net Pension Liability and Pension Expense (Continued)

Fire Tier 2

	Deferred outflows of Resources	Deferred inflows of Resources
Difference between projected and actual earning on pension plan investments	$ -	$ (3,602)
Adjustment due to differences in proportions	-	(11,035)
Difference between City contributions and proportionate share of contributions	18,462	-
Total	$ 18,462	$ (14,637)

Police Tier 1

	Deferred outflows of Resources	Deferred inflows of Resources
Difference between projected and actual earning on pension plan investments	$ -	$ (1,038,588)
Adjustment due to differences in proportions	48,724	-
Difference between City contributions and proportionate share of contributions	1,317	-
Total	$ 50,041	$ (1,038,588)

Police Tier 2

	Deferred outflows of Resources	Deferred inflows of Resources
Difference between projected and actual earning on pension plan investments	$ -	$ (7,863)
Adjustment due to differences in proportions		(55,808)
Difference between City contributions and proportionate share of contributions	79,467	-
Total	$ 79,467	$ (63,671)

Note 7 – Defined Benefit Pension Plans (Continued)

Pension Liabilities, Pension Expenses, and Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pension (Continued)

Proportionate Share of Net Pension Liability and Pension Expense (Continued)

Miscellaneous Tier 1

	Deferred outflows of Resources	Deferred inflows of Resources
Difference between projected and actual earning on pension plan investments	$ -	$ (2,325,079)
Adjustment due to differences in proportions	202,633	-
Difference between City contributions and proportionate share of contributions	-	(143,537)
Total	$ 202,633	$ (2,468,616)

Miscellaneous Tier 2

	Deferred outflows of Resources	Deferred inflows of Resources
Difference between projected and actual earning on pension plan investments	$ -	$ (1,504)
Adjustment due to differences in proportions	-	(217)
Difference between City contributions and proportionate share of contributions	35,783	-
Total	$ 35,783	$ (1,721)

Miscellaneous PEPRA

	Deferred outflows of Resources	Deferred inflows of Resources
Difference between projected and actual earning on pension plan investments	$ -	$ (40)
Adjustment due to differences in proportions	-	(4,123)
Difference between City contributions and proportionate share of contributions	4,616	-
Total	$ 4,616	$ (4,163)

Note 7 – Defined Benefit Pension Plans (Continued)

Pension Liabilities, Pension Expenses, and Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pension (Continued)

Proportionate Share of Net Pension Liability and Pension Expense (Continued)

Reported deferred outflows of resources related to pensions resulting from City's contributions subsequent to the measurement date will be recognized as a reduction of the net pension liability in the year ended June 30, 2016. Other amounts reported as deferred outflows of resources and deferred inflows of resources related to pensions will be recognized in pension expense as follows:

	Deferred Outflows/ (Inflows) of Resources			
Year Ended June 30,	Fire Tier 1	Fire Tier 2	Police Tier 1	Police Tier 2
2016	$ (152,858)	$ 1,752	$ (241,774)	$ 6,483
2017	(152,858)	1,752	(241,774)	6,483
2018	(154,987)	1,223	(245,352)	4,795
2019	(163,486)	(902)	(259,647)	(1,965)
2020	-	-	-	-
Thereafter	-	-	-	-
	$ (624,189)	$ 3,825	$ (988,547)	$ 15,796

	Deferred Outflows/ (Inflows) of Resources		
Year Ended June 30,	Misc. Tier 1	Misc. Tier 2	Misc. PEPRA
2016	$ (560,164)	$ 12,325	$ 167
2017	(560,164)	12,325	167
2018	(564,386)	9,788	129
2019	(581,269)	(376)	(10)
2020	-	-	-
Thereafter	-	-	-
	$ (2,265,983)	$ 34,062	$ 453

Note 8 –Other Postemployment Benefits Plan

Plan Description

The City contributes to a multi-employer defined benefit plan to provide post-employment medical benefits. Specifically, the City provides postretirement medical benefits to all employees who retire from the City after attaining age 50 with at least 5 years of service. The plan does not provide a publicly available financial report.

Funding Policy

The contribution requirements of plan members and the City are established and may be amended by the City's City Council, and/or the employee associations. The required employer contribution was $119 per person for months in 2014 and $122 per person per month in 2015. Retirees pay the differential monthly amount of the premium, which varies depending on the health benefits they select. The City implemented GASB 45 for the fiscal year ended June 30, 2010, establishing a liability in its Risk Management Fund for the value of the annual required contribution (ARC), an amount actuarially determined in accordance with the parameters of GASB Statement 45. The ARC represents a level of funding that, if paid on an ongoing basis, is projected to cover normal cost each year and amortize any unfunded actuarial liabilities over a closed period not to exceed thirty years. The ARC and contribution total for year ended June 30, 2015 was $146,411 and $49,658, respectively.

Annual OPEB Cost and Net OPEB Asset

The City's annual OPEB cost is calculated based on the ARC. The ARC represents a level of funding that, if paid on an ongoing basis, is projected to cover normal cost each year and amortize any unfunded actuarial liabilities (or funding excesses) over a period not to exceed thirty years. The following table shows the components of the City's annual OPEB cost for the year, the amount actually contributed to the plan, and changes in the City's net OPEB Obligation:

Annual Required Contribution	$	149,704
Interest Adjustment		(5,298)
Adjustment to Annual Required Contribution		2,005
Annual OPEB Cost		146,411
Contribution made		(49,658)
Change in Net OPEB Obligation		96,753
Net OPEB Obligation, Beginning of Year, as Restated		109,837
Net OPEB Obligation, End of Year	$	206,590

Note 8 –Other Postemployment Benefits Plan (Continued)

The City's annual OPEB cost, the percentage of annual OPEB cost contributed to the plan, and the net OPEB obligation (asset) for the year ended June 30, 2015 and the two preceding years were as follows:

Year Ended	OPEB Cost	OPEB Cost Contributed	Percentage of Annual OPEB cost Contributed	Net OPEB Obligation (Asset)
June 30, 2013	$ 145,950	$ 47,445	32.51%	$ (4,175)
June 30, 2014	149,704	50,425	33.68%	109,837
June 30, 2015	146,217	49,658	33.96%	206,590

Funded Status and Funding Progress

As of August 1, 2015, the latest actuarial valuation date, there were no plan assets on the valuation date. The actuarial accrued liability for benefits was $1,938,928, and the actuarial value of assets was $614,048, resulting in an unfunded actuarial accrued liability (UAAL) of $1,324,880. The covered payroll (annual payroll of active employees covered by the plan) was $6,509,854 and the ratio of the UAAL to the covered payroll was negative 20.35%.

Actuarial valuations of an ongoing plan involve estimates of the value of reported amounts and assumptions about the probability of occurrence of events far into the future. Examples include assumptions about future employment, mortality, and the healthcare cost trend. Amounts determined regarding the funded status of the plan and the annual required contributions of the City are subject to continual revision as actual results are compared with past expectations and new estimates are made about the future. The schedule of funding progress, presented as required supplementary information following the notes to the financial statements, presents multi-year trend information about whether the actuarial value of plan assets is increasing or decreasing over time relative to the actuarial accrued liability for benefits.

In January 2013, the City adopted ICMA-RC's Vantagecare RHS Employer Investment Program for pre-funding of OPEB liability and established a revocable trust account. The City holds discretion to amend or terminate the program, and appoint program administrator to manage the daily operations of the trust account. This trust account is solely funded with assets from the City. The balance as of June 30, 2015 was $515,813.

Actuarial Methods and Assumptions

Projections of benefits for financial reporting purposes are based on the substantive plan (the plan as understood by the employer and the plan members) and include the types of benefits provided at the time of each valuation and the historical pattern of sharing of benefit costs between the employer and the plan members at that point. The actuarial methods and assumptions used include techniques that are designed to reduce the effects of short-term volatility in actuarial accrued liabilities and the actuarial value of assets consistent with the long-term perspective of the calculations.

The required contribution for the year ended June 30, 2015 was determined as part of the August 1, 2015 actuarial valuation using the entry age normal actuarial cost method. The actuarial assumptions included a 4.5% investment rate of return (net of administrative expenses), payroll increase of 2.75% per annum, and inflation rate of 2.75% per annum, and the City's share of premium cost will increase at rates of 4% per annum. The level percentage of payroll method is used to allocate amortization cost by year, closed 30 year amortization period is used for the initial UAAL, and open 25 year amortization period is used for any residual UAAL.

Note 9 – Classification of Fund Balances

At June 30, 2015, fund balances are classified in the governmental funds as follows:

	General Fund	Community Development Grant Special Revenue Fund	Capital Improvement Capital Projects Fund	Nonmajor Governmental Funds	Total
Nonspendable:					
Prepaid Items	$ 140,335	$ 288	$ 872	$ 1,575	$ 143,070
Inventories	10,424	-	-	-	10,424
Notes Receivable	1,178,101	176,109	-	-	1,354,210
Land Held for Resale	1,340,000	-	-	-	1,340,000
	2,668,860	176,397	872	1,575	2,847,704
Restricted:					
Community Development Grants	-	779,788	-	-	779,788
Tourism Business Improvement	-	-	-	79,664	79,664
Lower Cost Visitor Accommodations	-	-	-	52,797	52,797
Traffic Safety Grant				-	-
Special Safety Grants	-	-	-	29,031	29,031
Parking In-lieu	-	-	-	405,811	405,811
Non-Transit LTF - Bike Paths	-	-	-	113	113
Special Assessment Districts	-	-	-	59,092	59,092
State Park Marina Grants	-	-	-	154,139	154,139
Cloister Special Assessment Districts	-	-	-	76,357	76,357
LTF Roads	-	-	-	29,127	29,127
District Transaction Tax	-	-	-	97,053	97,053
Park In-lieu (Quimby) Fees	-	-	-	10,206	10,206
	-	779,788	-	993,390	1,773,178
Committed:					
Facility Maintenance Fund	1,276,529	-	-	-	1,276,529
Government Impact Fees	-	-	-	318,197	318,197
Affortable Housing	-	-	-	163,276	163,276
	1,276,529	-	-	481,473	1,758,002
Unassigned	2,131,045	-	(846)	-	2,130,199
	$ 6,076,434	$ 956,185	$ 26	$ 1,476,438	$ 8,509,083

Note 10 – Water Revenue Over State Water Payments

The City has contracted with the San Luis Obispo County Flood Control and Water Conservation District to provide water from the state water project. The City has contracted to obtain 1,313 acre feet of water per year with an initial estimated cost of $750 per acre foot, not including the fixed operating and management costs allocated to the City on a pro rata share basis. The City is obligated to make payments even if the City fails or refuses to accept water deliveries. The City paid a total of $2,208,691 during the year ended June 30, 2015 for its share of the construction and operating costs.

For the fiscal year ending June 30, 2015, the city had 0.64 in water revenue over State Water Payments ratio which is required to be at minimum ratio of greater than, or equal to 1.25. The City entered into a contract with Bartle Wells for water and sewer rate study services. After many public meetings, a Prop 218 protest vote and public hearing, the new rates were adopted on May 26, 2015.

Note 11 – Prior Period Adjustments

Net positions as of July 1, 2014 were restated as follows:

	Governmental Activities	Business-type Activities
Net Position at July 1, 2014	$ 129,348,688	$ 29,107,573
Report pension contribution made during the measurement period as deferred outflows of resources due to implementation of GASB 71	1,271,418	354,852
Report net pension liability due to the implementation of GASB 68	(15,076,253)	(4,207,775)
Overstatement of unearned revenue	881,389	-
Understatement of unearned revenue	-	(75,232)
Understatement of other postemployment benefits	(109,837)	-
Understatement of pension related debt	(1,508,441)	-
Subtotal	(14,541,724)	(3,928,155)
Net Position at July 1, 2014, as Restated	$ 114,806,964	$ 25,179,418

Note 11 – Prior Period Adjustments (Continued)

Net positions as of July 1, 2014 were restated as follows (Continued):

	Enterprise Funds				
	Water	Sewer	Harbor	Nonmajor Local Transportation Fund	Total
Net Position at July 1, 2014	$ 12,273,540	$ 14,884,008	$ 1,511,424	$ 438,601	$ 29,107,573
Report pension contribution made during the measurement period as deferred outflows of resources due to implementation of GASB 71	61,636	160,187	133,029	-	354,852
Report net pension liability due to the implementation of GASB 68	(730,865)	(1,899,477)	(1,577,433)	-	(4,207,775)
Understatement of unearned revenue	-	-	-	(75,232)	(75,232)
Subtotal	(669,229)	(1,739,290)	(1,444,404)	(75,232)	(3,928,155)
Net Position at July 1, 2014, as Restated	$ 11,604,311	$ 13,144,718	$ 67,020	$ 363,369	$ 25,179,418

	Special Revenue Fund
	Community Development
Fund Balance at July 1, 2014	$ 128,708
Correction of reporting deferred revenue for notes receivable	881,389
Fund Balance at July 1, 2014, as Restated	$ 1,010,097

Prior period adjustment of $504,079 was made to the Other Postemployment Benefits Trust Fund due to the change of the reporting of the fund type from an agency fund to a trust fund.

Note 12 – Commitments and Contingencies

A. Commitments

The City had several outstanding or planned constructions as of June 30, 2015. However, those constructions neither were contractual nor carried over in a budget. Open constructions are re-budgeted and adopted in a new fiscal year.

B. Contingencies

The City is subject to various legal matters incidental to the ordinary course of City operations. At this time, the outcome of these matters and the potential loss, if any, that might result are uncertain. No provision for any liability that may result has been made in the financial statements for these matters.

C. Grants

Amounts received or receivable from granting agencies are subject to audit and adjustment by grantor agencies. While no matters of noncompliance were disclosed by the audit of the financial statements or single audit of the Federal grant programs, grantor agencies may subject grant programs to additional compliance tests, which may result in disallowed costs. In the opinion of management, future disallowances of current or prior grant expenditures, if any, would not have a material adverse effect on the financial position of the City.

Note 13 – Subsequent Events

Beginning in 2015/16, CalPERS changed its methodology for collecting contributions from employers to cover not only the normal cost of pensions, but to repay the side funds that developed as a result of contracting for enhanced pension benefits. These side funds were created as a result of enhanced benefits, retroactively covering all existing employees without requiring a cash deposit to cover the retroactive cost difference between the enhanced benefit plans and the former plans. Contribution are now based on the normal cost percentage rate by Tier for each payroll plus a flat amount every month for each segment (Miscellaneous plan, Safety Police plan, and Safety Fire plan) to repay these side funds.

Note 14 – Other Required Disclosure

Excess of Expenditures over Appropriations

Excess of expenditures over appropriations occurred in individual funds during the year ended June 30, 2015 as follows:

	Expenditures	Appropriations	Expenditure in Excess of Appropriations
General Fund			
Administration	$ 1,320,110	$ 1,214,673	$ (105,437)
Community promotion	279,225	-	(279,225)
Fire	2,280,930	2,189,761	(91,169)
Nonmajor Special Revenue Funds:			
MB Tourism Business Improvement District Fund			
Community promotion	872,552	715,000	(157,552)
Special Safety Grant			
Police	170,698	100,000	(70,698)
Parking In-lieu Fund			
Police	25,229	-	(25,229)
Special Assessments Fund			
Park and recreation	7,550	5,645	(1,905)
Park In-lieu Fee Fund			
Park and recreation	4,680	-	(4,680)
District Transaction Tax Fund			
Fire	107,857	95,312	(12,545)
Public works	972,060	755,521	(216,539)
Principal	70,838	25,000	(45,838)

REQUIRED SUPPLEMENTARY INFORMATION (UNAUDITED)

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City of Morro Bay
Required Supplementary Information (Unaudited)
For the Year Ended June 30, 2015

Budgetary Comparison Schedule - General Fund

	Budgeted Amounts		Actual	Variance with Final Budget Positive
	Original	Final	Amounts	(Negative)
Revenues:				
Taxes & special assessments	$ 7,821,976	$ 7,932,106	$ 8,768,929	$ 836,823
Intergovernmental revenue	22,000	22,000	36,322	14,322
Charges for services	1,155,609	1,413,156	1,537,444	124,288
Revenues from use of money and property	432,298	432,298	418,119	(14,179)
Fines & forfeits	11,000	11,000	8,562	(2,438)
Other revenues	13,650	13,650	603,344	589,694
Total Revenues	9,456,533	9,824,210	11,372,720	1,548,510
Expenditures:				
Current:				
Administration	1,055,161	1,214,673	1,320,110	(105,437)
Community promotion	-	-	279,225	(279,225)
Finance	645,329	662,145	630,241	31,904
Fire	2,045,618	2,189,761	2,280,930	(91,169)
Police	3,479,825	3,561,289	3,305,060	256,229
Public works	1,041,512	1,518,387	1,444,781	73,606
Recreation/parks/maintenance	2,103,490	1,715,913	1,710,790	5,123
Capital Outlay	382,964	382,964	382,964	-
Total Expenditures	10,370,935	10,862,168	11,354,101	(108,969)
Excess(deficiency) of revenues over expenditures	(914,402)	(1,037,958)	18,619	1,439,541
Other Financing Sources (Uses):				
Transfers in	1,324,755	1,450,655	1,824,177	373,522
Transfers out	-	(200,000)	(458,238)	(258,238)
Total Other Financing Sources (Uses):	1,324,755	1,250,655	1,365,939	115,284
Net change in Fund Balance	$ 410,353	$ 212,697	1,384,558	$ 1,171,861
Fund Balances, July 1			4,691,876	
Fund Balances, June 30			$ 6,076,434	

City of Morro Bay
Required Supplementary Information (Unaudited) (Continued)
Schedule of Funding Progress
For the Year Ended June 30, 2015

Note 1 – Budgetary Control and Accounting Policy

Budgets are annually adopted for all governmental and proprietary fund types on a basis consistent with generally accepted accounting principles. The City is required by its municipal code to adopt an annual budget on or before June 30 for the ensuing fiscal year. From the effective date of the budget, the amounts become the "*annual appropriated budget*."

The appropriated budget is prepared by fund, department and division. The City Council may amend the budget by motion during the fiscal year. Expenditures may not legally exceed appropriations at the fund level. The City Manager is authorized to transfer budgeted amounts between departments within the same fund; however, any transfers between funds or revisions that alter total appropriations of any fund require City Council approval. The legal level of control is therefore at the fund level.

Supplemental appropriations, which increase appropriations, were made during the fiscal year, therefore, "final" budgeted revenue and appropriation amounts shown in the financial statements represent the original budget, modified for adjustments during the year. Appropriations lapse at the end of the fiscal year.

Budget was not adopted for Community Development Grant Special Revenue Fund and Capital Improvement Grant Special Revenue Fund.

Encumbrances - Under encumbrance accounting, purchase orders, contracts and other commitments for expenditures are recorded to reserve that portion of the applicable appropriation. Encumbrance accounting is employed as an extension of formal budgetary accounting. Unexpended appropriations lapse at year-end.

City of Morro Bay
Required Supplementary Information (Unaudited)
Schedule of the City's Proportionate Share of the Net Pension Liability and Related Ratios
For the Year Ended June 30, 2015

Last Ten Fiscal Years

California Public Employees' Retirement System ("CalPERS") Fire Tier I Plan

		June 30, 2014[1]
City's Proportion of the Net Pension Liability/(Asset)		0.04902%
City's Proportionate Share of the Net Pension Liability/(Asset)	$	3,050,378
City's Covered-Employee Payroll	$	657,222
City's Proportionate Share of the Net Pension Liability/(Asset) as a Percentage of Its Covered-Employee Payroll		464.13%
Plan's Proportionate Share of the Fiduciary Net Position as a Percentage of the Total Pension Liability		75.68%

California Public Employees' Retirement System ("CalPERS") Fire Tier II Plan

		June 30, 2014[1]
City's Proportion of the Net Pension Liability/(Asset)		0.00019%
City's Proportionate Share of the net Pension Liability/(Asset)	$	11,928
City's Covered-Employee Payroll	$	108,177
City's Proportionate Share of the Net Pension Liability/(Asset) as a Percentage of Its Covered-Employee Payroll		11.03%
Plan's Proportionate Share of the Fiduciary Net Position as a Percentage of the Total Pension Liability		81.42%

California Public Employees' Retirement System ("CalPERS") Fire PEPRA Plan

		June 30, 2014[1]
City's Proportion of the Net Pension Liability/(Asset)		0.00000%
City's Proportionate Share of the net Pension Liability/(Asset)	$	-
City's Covered-Employee Payroll	$	-
City's Proportionate Share of the Net Pension Liability/(Asset) as a Percentage of Its Covered-Employee Payroll		0.00%
Plan's Proportionate Share of the Fiduciary Net Position as a Percentage of the Total Pension Liability		0.00%

[1] Historical information is required only for measurement periods for which GASB 68 is applicable. The fiscal year 2015 was the first year of implementation, therefore only one year is shown.

City of Morro Bay
Required Supplementary Information (Unaudited) (Continued)
Schedule of the City's Proportionate Share of the Net Pension Liability and Related Ratios (Continued)
For the Year Ended June 30, 2015

Last Ten Fiscal Years

California Public Employees' Retirement System ("CalPERS") Police Tier I Plan

		June 30, 2014[1]
City's Proportion of the Net Pension Liability/(Asset)		0.07027%
City's Proportionate Share of the net Pension Liability/(Asset)	$	4,372,512
City's Covered-Employee Payroll	$	1,152,305
City's Proportionate Share of the Net Pension Liability/(Asset) as a Percentage of Its Covered-Employee Payroll		379.46%
Plan's Proportionate Share of the Fiduciary Net Position as a Percentage of the Total Pension Liability		77.51%

California Public Employees' Retirement System ("CalPERS") Police Tier II Plan

		June 30, 2014[1]
City's Proportion of the Net Pension Liability/(Asset)		0.00042%
City's Proportionate Share of the net Pension Liability/(Asset)	$	26,043
City's Covered-Employee Payroll	$	496,607
City's Proportionate Share of the Net Pension Liability/(Asset) as a Percentage of Its Covered-Employee Payroll		5.24%
Plan's Proportionate Share of the Fiduciary Net Position as a Percentage of the Total Pension Liability		81.42%

California Public Employees' Retirement System ("CalPERS") Police PEPRA Plan

		June 30, 2014[1]
City's Proportion of the Net Pension Liability/(Asset)		0.00000%
City's Proportionate Share of the net Pension Liability/(Asset)	$	-
City's Covered-Employee Payroll	$	-
City's Proportionate Share of the Net Pension Liability/(Asset) as a Percentage of Its Covered-Employee Payroll		0.00%
Plan's Proportionate Share of the Fiduciary Net Position as a Percentage of the Total Pension Liability		0.00%

[1] Historical information is required only for measurement periods for which GASB 68 is applicable. The fiscal year 2015 was the first year of implementation, therefore only one year is shown.

City of Morro Bay
Required Supplementary Information (Unaudited) (Continued)
Schedule of the City's Proportionate Share of the Net Pension Liability and Related Ratios (Continued)
For the Year Ended June 30, 2015

Last Ten Fiscal Years

California Public Employees' Retirement System ("CalPERS") Miscellaneous Tier I Plan

		June 30, 2014[1]
City's Proportion of the Net Pension Liability/(Asset)		0.12171%
City's Proportionate Share of the net Pension Liability/(Asset)	$	7,573,447
City's Covered-Employee Payroll	$	3,299,199
City's Proportionate Share of the Net Pension Liability/(Asset) as a Percentage of Its Covered-Employee Payroll		229.55%
Plan's Proportionate Share of the Fiduciary Net Position as a Percentage of the Total Pension Liability		81.72%

California Public Employees' Retirement System ("CalPERS") Miscellaneous Tier II Plan

		June 30, 2014[1]
City's Proportion of the Net Pension Liability/(Asset)		0.00007%
City's Proportionate Share of the net Pension Liability/(Asset)	$	4,476
City's Covered-Employee Payroll	$	307,456
City's Proportionate Share of the Net Pension Liability/(Asset) as a Percentage of Its Covered-Employee Payroll		1.46%
Plan's Proportionate Share of the Fiduciary Net Position as a Percentage of the Total Pension Liability		83.03%

California Public Employees' Retirement System ("CalPERS") Miscellaneous PEPRA Plan

		June 30, 2014[1]
City's Proportion of the Net Pension Liability/(Asset)		0.00000%
City's Proportionate Share of the net Pension Liability/(Asset)	$	120
City's Covered-Employee Payroll	$	89,322
City's Proportionate Share of the Net Pension Liability/(Asset) as a Percentage of Its Covered-Employee Payroll		0.13%
Plan's Proportionate Share of the Fiduciary Net Position as a Percentage of the Total Pension Liability		83.05%

[1] Historical information is required only for measurement periods for which GASB 68 is applicable. The fiscal year 2015 was the first year of implementation, therefore only one year is shown.

City of Morro Bay
Required Supplementary Information (Unaudited) (Continued)
Schedule of the City's Contributions
For the Year Ended June 30, 2015

Last Ten Fiscal Years

California Public Employees' Retirement System ("CalPERS") Fire Tier I Plan

	2014-15	2013-14[1]
Actuarially Determined Contribution[2]	$ 325,631	$ 284,171
Contribution in Relation to the Actuarially Determined Contribution[2]	(325,631)	(284,171)
Contribution Deficiency (Excess)	$ -	$ -
Covered-Employee Payroll[3,4]	$ 676,939	$ 657,222
Contributions as a Percentage of Covered-Employee Payroll	48.10%	43.24%

California Public Employees' Retirement System ("CalPERS") Fire Tier II Plan

	2014-15	2013-14[1]
Actuarially Determined Contribution[2]	$ 30,122	$ 26,535
Contribution in Relation to the Actuarially Determined Contribution[2]	(30,122)	(26,535)
Contribution Deficiency (Excess)	$ -	$ -
Covered-Employee Payroll[3,4]	$ 111,422	$ 108,177
Contributions as a Percentage of Covered-Employee Payroll	27.03%	24.53%

California Public Employees' Retirement System ("CalPERS") Fire PEPRA Plan

	2014-15	2013-14[1]
Actuarially Determined Contribution[2]	$ 9,435	$ -
Contribution in Relation to the Actuarially Determined Contribution[2]	(9,435)	-
Contribution Deficiency (Excess)	$ -	$ -
Covered-Employee Payroll[3,5]	$ 82,151	$ -
Contributions as a Percentage of Covered-Employee Payroll	11.48%	0.00%

City of Morro Bay
Required Supplementary Information (Unaudited) (Continued)
Schedule of the City's Contributions (Continued)
For the Year Ended June 30, 2015

Last Ten Fiscal Years

California Public Employees' Retirement System ("CalPERS") Police Tier I Plan

	2014-15	2013-14[1]
Actuarially Determined Contribution[2]	$ 398,627	$ 428,502
Contribution in Relation to the Actuarially Determined Contribution[2]	(398,627)	(428,502)
Contribution Deficiency (Excess)	$ -	$ -
Covered-Employee Payroll[3,4]	$ 1,186,874	$ 1,152,305
Contributions as a Percentage of Covered-Employee Payroll	33.59%	37.19%

California Public Employees' Retirement System ("CalPERS") Police Tier II Plan

	2014-15	2013-14[1]
Actuarially Determined Contribution[2]	$ 133,057	$ 111,079
Contribution in Relation to the Actuarially Determined Contribution[2]	(133,057)	(111,079)
Contribution Deficiency (Excess)	$ -	$ -
Covered-Employee Payroll[3,4]	$ 511,505	$ 496,607
Contributions as a Percentage of Covered-Employee Payroll	26.01%	22.37%

California Public Employees' Retirement System ("CalPERS") Police PEPRA Plan

	2014-15	2013-14[1]
Actuarially Determined Contribution[2]	$ 17,908	$ -
Contribution in Relation to the Actuarially Determined Contribution[2]	(17,908)	-
Contribution Deficiency (Excess)	$ -	$ -
Covered-Employee Payroll[3,4]	$ 159,302	$ -
Contributions as a Percentage of Covered-Employee Payroll	11.24%	0.00%

City of Morro Bay
Required Supplementary Information (Unaudited) (Continued)
Schedule of the City's Contributions (Continued)
For the Year Ended June 30, 2015

Last Ten Fiscal Years

California Public Employees' Retirement System ("CalPERS") Miscellaneous Tier I Plan

	2014-15	2013-14[1]
Actuarially Determined Contribution[2]	$ 696,786	$ 720,548
Contribution in Relation to the Actuarially Determined Contribution[2]	(696,786)	(720,548)
Contribution Deficiency (Excess)	$ -	$ -
Covered-Employee Payroll[3,4]	$ 3,398,175	$ 3,299,199
Contributions as a Percentage of Covered-Employee Payroll	20.50%	21.84%

California Public Employees' Retirement System ("CalPERS") Miscellaneous Tier II Plan

	2014-15	2013-14[1]
Actuarially Determined Contribution[2]	$ 54,189	$ 49,154
Contribution in Relation to the Actuarially Determined Contribution[2]	(54,189)	(49,154)
Contribution Deficiency (Excess)	$ -	$ -
Covered-Employee Payroll[3,4]	$ 316,680	$ 307,456
Contributions as a Percentage of Covered-Employee Payroll	17.11%	15.99%

California Public Employees' Retirement System ("CalPERS") Miscellaneous PEPRA Plan

	2014-15	2013-14[1]
Actuarially Determined Contribution[2]	$ 20,216	$ 6,281
Contribution in Relation to the Actuarially Determined Contribution[2]	(20,216)	(6,281)
Contribution Deficiency (Excess)	$ -	$ -
Covered-Employee Payroll[3,4]	$ 92,002	$ 89,322
Contributions as a Percentage of Covered-Employee Payroll	21.97%	7.03%

City of Morro Bay
Required Supplementary Information (Unaudited) (Continued)
Schedule of the City's Contributions (Continued)
For the Year Ended June 30, 2015

[1] Historical information is required only for measurement periods for which GASB 68 is applicable. The fiscal year 2015 was the first year of implementation, therefore only one year and the measure period are shown.

[2] Employers are assumed to make contributions equal to the actuarially determined contributions (which is the actuarially determined contribution).

[3] Covered-Employee Payroll represented above is based on pensionable earnings provided by the employer. However, GASB 68 defines covered-

[4] Payroll from 2012-13 was assumed to increase by the 3.00% payroll growth assumption

Plans	2012-13 Covered-Employee Payroll
Fire Tier 1	$ 638,080
Fire Tier 2	105,026
Police Tier 1	1,118,743
Police Tier 2	482,143
Miscellaneous Tier 1	3,203,106
Miscellaneous Tier 2	298,501
Miscellaneous PEPRA	86,720

[5] Payroll amounts for Fire and Police PEPRA plan are from payroll record of the City. No valuation reports were available due to having no covered employee for June 30, 2013 valuation period.

Notes to Schedule

Change in Benefit Terms: The figures above do not include any liability impact that may have resulted from plan changes which occurred after June

Changes of Assumptions: There were no changes in assumptions.

City of Morro Bay
Required Supplementary Information (Unaudited) (Continued)
Schedule of Funding Progress
For the Year Ended June 30, 2015

Other Postemployment Benefits Plan

The schedule of funding progress for the past two available actuarial valuations is presented below:

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (b)	Unfunded AAL (UAAL) [(b) - (a)]	Funded Ratio [(a) / (b)]	Covered Payroll (c)	UAAL as a % of Covered Payroll [(b) - (a)] / (c)
August 1, 2010	$ -	$ 1,272,897	$ 1,272,897	0.00%	$ 6,609,575	19.26%
August 1, 2012	326,933	1,616,609	1,289,676	20.2%	$ 6,154,925	20.95%
August 1, 2015	614,048	1,938,928	1,324,880	31.7%	$ 6,509,854	20.35%

SUPPLEMENTARY INFORMATION

SPECIAL REVENUE FUNDS:

Morro Bay Tourism Business Improvement District (MBTBID) Special Revenue Fund - to account for the marketing activities of the MBTBID and the Visitors Center.

Gas Tax Special Revenue Fund - to account for monies received from gasoline taxes.

Lower Cost Visitor Special Revenue Fund – to accounts for collections in-lieu mitigation fees for lower cost visitor serving overnight accommodations, such as hostels and tent campground units, as required by California Coastal Commission actions on coastal development permits.

Traffic Safety Special Revenue Fund – to account for fines and forfeitures collected from any person charged with a misdemeanor.

Special Safety Grant Special Revenue Fund – To account for the Supplemental Law Enforcement Services Fund (SLESF) grant.

Parking In-Lieu Special Revenue Fund – To account for in-lieu fees charged for parking spaces required to adequately service a new business establishment, or the expansion of an existing one.

Bike Path Special Revenue Fund – To account for two percent of Transportation Development Act funds received by the City that are specifically set aside for bike path.

Special Assessment District Special Revenue Fund – to account for parcel assessments and expenditures associated with certain housing developments within the City limits.

Governmental Impact Fees Special Revenue Fund – to account for fees collected to ensure that new development pays the cost of infrastructure expansion required to meet the needs of that new development, effectively transferring the cost burden of growth from the existing rate and taxpayers.

State Park Marina Special Revenue Fund – To account for marina concessions revenues that are received for the planning and environmental review of the proposed dredging and renovation of the State Park Marina.

Affordable Housing In-lieu Special Revenue Fund – To account for collection of impact fees for affordable housing.

Cloisters Special Assessment District Special Revenue Fund – To account for parcel assessments and expenditures associated with the Cloisters housing developments within the City limits.

Local Transportation Funds ("LTF") Roads Special Revenue Fund – To account for Transportation Development Act (TDA) money for roads projects, under TDA Article 8, 99400(a)).

Park In-Lieu Fees Special Revenue Fund – To account for special revenue fees collected under the 1975 Quimby Act (California Government Code §66477).

District Transaction Tax Special Revenue Fund – To account for ½ cent district sales tax, commonly known as “Measure Q”.

City of Morro Bay
Combining Balance Sheet
Nonmajor Governmental Funds
June 30, 2015

	Special Revenue			
	MB Tourism Business Improvement District	Gas Tax	Lower Cost Visitor Accommodation	Traffic Safety Grant
ASSETS				
Cash and cash equivalents	$ 71,865	$ 25,295	$ 36,770	$ -
Receivables:				
Intergovernmental	-	4,552	-	2,659
Accounts	78,999	-	-	-
Notes	-	-	15,735	-
Due from other funds	678	-	292	-
Prepaid items	-	-	-	-
Total Assets	$ 151,542	$ 29,847	$ 52,797	$ 2,659
LIABILITIES AND FUND BALANCES				
Liabilities:				
Accounts payable	$ 71,878	$ -	$ -	$ -
Accrued payroll and benefits	-	-	-	-
Due to other funds	-	29,847	-	2,659
Unearned revenue	-	-	-	-
Total Liabilities	71,878	29,847	-	2,659
Fund Balances:				
Nonspendable	-	-	-	-
Restricted	79,664	-	52,797	-
Committed	-	-	-	-
Total Fund Balances	79,664	-	52,797	-
Total Liabilities & Fund Balances	$ 151,542	$ 29,847	$ 52,797	$ 2,659

City of Morro Bay
Combining Balance Sheet (Continued)
Nonmajor Governmental Funds
June 30, 2015

	Special Revenue			
	Special Safety Grant	Parking In-Lieu	Bike Path	Special Assessments District
ASSETS				
Cash and cash equivalents	$ 49,307	$ 390,218	$ 3	$ 59,593
Receivables:				
Intergovernmental	-	-	-	-
Accounts	-	-	-	-
Notes	-	15,579	-	-
Due from other funds	507	3,181	110	-
Prepaid items	-	-	-	9
Total Assets	$ 49,814	$ 408,978	$ 113	$ 59,602
LIABILITIES AND FUND BALANCES				
Liabilities:				
Accounts payable	$ 20,783	$ -	$ -	$ 492
Accrued payroll and benefits	-	-	-	9
Due to other funds	-	-	-	-
Unearned revenue	-	3,167	-	-
Total Liabilities	20,783	3,167	-	501
Fund Balances:				
Nonspendable	-	-	-	9
Restricted	29,031	405,811	113	59,092
Committed	-	-	-	-
Total Fund Balances	29,031	405,811	113	59,101
Total Liabilities & Fund Balances	$ 49,814	$ 408,978	$ 113	$ 59,602

City of Morro Bay
Combining Balance Sheet (Continued)
Nonmajor Governmental Funds
June 30, 2015

	Special Revenue			
	Governmental Impact Fees	State Park Marina	Affordable Housing In-Lieu	Cloister Special Assessments District
ASSETS				
Cash and cash equivalents	$ 314,353	$ 146,585	$ 161,996	$ 85,909
Receivables:				
Intergovernmental	-	-	-	-
Accounts	-	7,554	-	-
Notes	-	-	-	-
Due from other funds	3,844	-	1,280	543
Prepaid items	-	-	-	276
Total Assets	$ 318,197	$ 154,139	$ 163,276	$ 86,728
LIABILITIES AND FUND BALANCES				
Liabilities:				
Accounts payable	$ -	$ -	$ -	$ 9,689
Accrued payroll and benefits	-	-	-	406
Due to other funds	-	-	-	-
Unearned revenue	-	-	-	-
Total Liabilities	-	-	-	10,095
Fund Balances:				
Nonspendable	-	-	-	276
Restricted	-	154,139	-	76,357
Committed	318,197	-	163,276	-
Total Fund Balances	318,197	154,139	163,276	76,633
Total Liabilities & Fund Balances	$ 318,197	$ 154,139	$ 163,276	$ 86,728

City of Morro Bay
Combining Balance Sheet (Continued)
Nonmajor Governmental Funds
June 30, 2015

	Special Revenue			
	LTF Roads	Park In-Lieu Fees	District Transaction Tax	Total Nonmajor Governmental Funds
ASSETS				
Cash and cash equivalents	$ 28,997	$ 9,784	$ 106,379	$ 1,487,054
Receivables:				
Intergovernmental	-	-	70,200	77,411
Accounts	-	-	-	86,553
Notes	-	-	-	31,314
Due from other funds	130	422	1,593	12,580
Prepaid items	-	-	1,290	1,575
Total Assets	$ 29,127	$ 10,206	$ 179,462	$ 1,696,487
LIABILITIES AND FUND BALANCES				
Liabilities:				
Accounts payable	$ -	$ -	$ 75,735	$ 178,577
Accrued payroll and benefits	-	-	5,384	5,799
Due to other funds	-	-	-	32,506
Unearned revenue	-	-	-	3,167
Total Liabilities	-	-	81,119	220,049
Fund Balances:				
Nonspendable	-	-	1,290	1,575
Restricted	29,127	10,206	97,053	993,390
Committed	-	-	-	481,473
Total Fund Balances	29,127	10,206	98,343	1,476,438
Total Liabilities & Fund Balances	$ 29,127	$ 10,206	$ 179,462	$ 1,696,487

City of Morro Bay
Combining Statement of Revenues, Expenditures and Changes in Fund Balances
Nonmajor Governmental Funds
For the Year Ended June 30, 2015

	Special Revenue Funds			
	MB Tourism Business Improvement District	Gas Tax	Lower Cost Visitor Accommodation	Traffic Safety Grant
REVENUES:				
Taxes and special assessments	$ 741,435	$ -	$ -	$ -
Intergovernmental revenues	-	286,393	-	-
Charges for services	-	-	-	-
Revenue from use of money and property	681	-	294	-
Fines and forfeitures	-	-	-	15,624
Other revenues	-	-	15,735	-
Total revenues	742,116	286,393	16,029	15,624
EXPENDITURES:				
Current:				
Community promotion	872,552	-	-	-
Fire	-	-	-	-
Police	-	-	-	-
Public works	-	-	-	-
Recreation and parks	-	-	-	-
Debt service:				
Principal	-	-	-	-
Interest	-	-	-	-
Total expenditures	872,552	-	-	-
REVENUE OVER (UNDER) EXPENDITURES	(130,436)	286,393	16,029	15,624
OTHER FINANCING SOURCES (USES):				
Transfers in	139,996	59,695	-	3,147
Transfers out	-	(346,088)	-	(18,771)
Total Other Financing Sources (Uses)	139,996	(286,393)	-	(15,624)
NET CHANGE IN FUND BALANCES	9,560	-	16,029	-
FUND BALANCES				
Beginning of Year	70,104	-	36,768	-
End of Year	$ 79,664	$ -	$ 52,797	$ -

City of Morro Bay
Combining Statement of Revenues, Expenditures and Changes in Fund Balances (Continued)
Nonmajor Governmental Funds
For the Year Ended June 30, 2015

	Special Revenue Funds			
	Special Safety Grant	Parking In-Lieu	Bike Path	Special Assessments District
REVENUES:				
Taxes and special assessments	$ -	$ -	$ -	$ 9,099
Intergovernmental revenues	106,230	-	10,721	-
Charges for services	-	-	-	-
Revenue from use of money and property	505	4,840	113	-
Fines and forfeitures	-	-	-	-
Other revenues	-	15,579	-	-
Total revenues	106,735	20,419	10,834	9,099
EXPENDITURES:				
Current:				
Community promotion	-	-	-	-
Fire	-	-	-	-
Police	170,698	25,229	-	-
Public works	-	-	-	-
Recreation and parks	-	-	-	7,550
Debt service:				
Principal	-	-	-	-
Interest	-	-	-	-
Total expenditures	170,698	25,229	-	7,550
REVENUE OVER (UNDER) EXPENDITURES	(63,963)	(4,810)	10,834	1,549
OTHER FINANCING SOURCES (USES):				
Transfers in	-	-	-	-
Transfers out	-	-	(40,969)	-
Total Other Financing Sources (Uses)	-	-	(40,969)	-
NET CHANGE IN FUND BALANCES	(63,963)	(4,810)	(30,135)	1,549
FUND BALANCES				
Beginning of Year	92,994	410,621	30,248	57,552
End of Year	$ 29,031	$ 405,811	$ 113	$ 59,101

City of Morro Bay
Combining Statement of Revenues, Expenditures and Changes in Fund Balances (Continued)
Nonmajor Governmental Funds
For the Year Ended June 30, 2015

	Special Revenue Funds			
	Governmental Impact Fees	State Park Marina	Affordable Housing In-Lieu	Cloister Special Assessments District
REVENUES:				
Taxes and special assessments	$ -	$ -	$ -	$ 148,322
Intergovernmental revenues	-	-	-	-
Charges for services	195,327	-	12,044	-
Revenue from use of money and property	3,895	81,430	1,290	537
Fines and forfeitures	-	-	-	-
Other revenues	-	-	-	-
Total revenues	199,222	81,430	13,334	148,859
EXPENDITURES:				
Current:				
Community promotion	-	-	-	-
Fire	-	-	-	-
Police	-	-	-	-
Public works	-	-	-	-
Recreation and parks	-	-	-	122,420
Debt service:				
Principal	-	-	-	-
Interest	-	-	-	-
Total expenditures	-	-	-	122,420
REVENUE OVER (UNDER) EXPENDITURES	199,222	81,430	13,334	26,439
OTHER FINANCING SOURCES (USES):				
Transfers in	-	-	-	-
Transfers out	(534,590)	-	(10,410)	-
Total Other Financing Sources (Uses)	(534,590)	-	(10,410)	-
NET CHANGE IN FUND BALANCES	(335,368)	81,430	2,924	26,439
FUND BALANCES				
Beginning of Year	653,565	72,709	160,352	50,194
End of Year	$ 318,197	$ 154,139	$ 163,276	$ 76,633

City of Morro Bay
Combining Statement of Revenues, Expenditures and Changes in Fund Balances (Continued)
Nonmajor Governmental Funds
For the Year Ended June 30, 2015

	Special Revenue Funds			
	LTF Roads	Park In-Lieu Fees	District Transaction Tax	Total Nonmajor Governmental Funds
REVENUES:				
Taxes and special assessments	$ -	$ -	$ 946,448	$ 1,845,304
Intergovernmental revenues	28,785	-	-	432,129
Charges for services	-	17,282	-	224,653
Revenue from use of money and property	242	431	1,664	95,922
Fines and forfeitures	-	-	-	15,624
Other revenues	-	2,000	-	33,314
Total revenues	29,027	19,713	948,112	2,646,946
EXPENDITURES:				
Current:				
Community promotion	-	-	-	872,552
Fire	-	-	107,857	107,857
Police	-	-	104,017	299,944
Public works	-	-	972,060	972,060
Recreation and parks	-	4,680	-	134,650
Debt service:				
Principal	-	-	70,838	70,838
Interest	-	-	53,971	53,971
Total expenditures	-	4,680	1,308,743	2,511,872
REVENUE OVER (UNDER) EXPENDITURES	29,027	15,033	(360,631)	135,074
OTHER FINANCING SOURCES (USES):				
Transfers in	-	-	203,508	406,346
Transfers out	-	(90,660)	(99,608)	(1,141,096)
Total Other Financing Sources (Uses)	-	(90,660)	103,900	(734,750)
NET CHANGE IN FUND BALANCES	29,027	(75,627)	(256,731)	(599,676)
FUND BALANCES				
Beginning of Year	100	85,833	355,074	2,076,114
End of Year	$ 29,127	$ 10,206	$ 98,343	$ 1,476,438

City of Morro Bay
Schedule of Revenues, Expenditures and Changes in Fund Balance - Budget and Actual
MB Tourism Business Improvement District Special Revenue Fund
For the Year Ended June 30, 2015

	Budgeted Amounts		Actual	Variance with Final Budget Positive
	Original	Final	Amounts	(Negative)
Revenues:				
Taxes and special assessments	$ 575,000	$ 575,000	$ 741,435	$ 166,435
Revenues from use of money and property	-	-	681	681
Total revenues	575,000	575,000	742,116	167,116
Expenditures:				
Current:				
Community Promotion	715,000	715,000	872,552	(157,552)
Total expenditures	715,000	715,000	872,552	(157,552)
Excess of Revenues Over (Under) Expenditures	(140,000)	(140,000)	(130,436)	9,564
Other Financing Sources :				
Transfers in	140,000	140,000	139,996	(4)
Total Other Financing Sources	140,000	140,000	139,996	(4)
Net change in fund balances	$ -	$ -	9,560	$ 9,560
FUND BALANCES				
Beginning of Year			70,104	
End of Year			$ 79,664	

City of Morro Bay
Schedule of Revenues, Expenditures and Changes in Fund Balance - Budget and Actual
Gas Tax Special Revenue Fund
For the Year Ended June 30, 2015

	Budgeted Amounts		Actual	Variance with Final Budget Positive
	Original	Final	Amounts	(Negative)
Revenues:				
Intergovernmental revenues	$ 271,934	$ 271,934	$ 286,393	$ 14,459
Total revenues	271,934	271,934	286,393	14,459
Excess of Revenues Over (Under) Expenditures	271,934	271,934	286,393	14,459
Other Financing Sources (Uses):				
Transfers in	-	-	59,695	59,695
Transfers out	(271,934)	(271,934)	(346,088)	(74,154)
Total Other Financing Sources (Uses)	(271,934)	(271,934)	(286,393)	(14,459)
Net change in fund balances	$ -	$ -	-	$ -
FUND BALANCES (DEFICIT)				
Beginning of Year			-	
End of Year			$ -	

City of Morro Bay
Schedule of Revenues, Expenditures and Changes in Fund Balance - Budget and Actual
Lower Cost Visitor Accommodation Special Revenue Fund
For the Year Ended June 30, 2015

	Budgeted Amounts		Actual	Variance with Final Budget Positive
	Original	Final	Amounts	(Negative)
Revenues:				
Revenues from use of money and property	$ -	$ -	$ 294	$ 294
Other revenue	-	-	15,735	15,735
Total revenues	-	-	16,029	16,029
Net change in fund balances	$ -	$ -	16,029	$ 16,029
FUND BALANCES				
Beginning of Year			36,768	
End of Year			$ 52,797	

City of Morro Bay
Schedule of Revenues, Expenditures and Changes in Fund Balance - Budget and Actual
Traffic Safety Grant Special Revenue Fund
For the Year Ended June 30, 2015

	Budgeted Amounts		Actual	Variance with Final Budget Positive
	Original	Final	Amounts	(Negative)
Revenues:				
Fines and forfeitures	$ 30,000	$ 30,000	$ 15,624	$ (14,376)
Total revenues	30,000	30,000	15,624	(14,376)
Excess of Revenues Over (Under) Expenditures	30,000	30,000	15,624	(14,376)
Other Financing Sources (Uses):				
Transfers in	-	-	3,147	3,147
Transfers out	-	-	(18,771)	(18,771)
Total Other Financing Sources (Uses)	-	-	(15,624)	(15,624)
Net change in fund balances	$ 30,000	$ 30,000	-	$ (30,000)
FUND BALANCES				
Beginning of Year			-	
End of Year			$ -	

City of Morro Bay
Schedule of Revenues, Expenditures and Changes in Fund Balance - Budget and Actual
Special Safety Grant Special Revenue Fund
For the Year Ended June 30, 2015

	Budgeted Amounts		Actual	Variance with Final Budget Positive
	Original	Final	Amounts	(Negative)
Revenues:				
Intergovernmental revenues	$ 100,000	$ 100,000	$ 106,230	$ 6,230
Revenues from use of money and property	-	-	505	505
Total revenues	100,000	100,000	106,735	6,735
Expenditures:				
Current:				
Police	100,000	100,000	170,698	(70,698)
Total expenditures	100,000	100,000	170,698	(70,698)
Net change in fund balances	$ -	$ -	(63,963)	$ (63,963)
FUND BALANCES				
Beginning of Year			92,994	
End of Year			$ 29,031	

City of Morro Bay
Schedule of Revenues, Expenditures and Changes in Fund Balance - Budget and Actual
Parking In-lieu Special Revenue Fund
For the Year Ended June 30, 2015

	Budgeted Amounts		Actual	Variance with Final Budget Positive
	Original	Final	Amounts	(Negative)
Revenues:				
Taxes and special assessments	$ -	$ -	$ -	$ -
Revenues from use of money and property	-	-	4,840	4,840
Other revenues	-	-	15,579	15,579
Total revenues	-	-	20,419	20,419
Expenditures:				
Current:				
Police	-	-	25,229	(25,229)
Total expenditures	-	-	25,229	(25,229)
Net change in fund balances	$ -	$ -	(4,810)	$ (4,810)
FUND BALANCES				
Beginning of Year			410,621	
End of Year			$ 405,811	

City of Morro Bay
Schedule of Revenues, Expenditures and Changes in Fund Balance - Budget and Actual
Bike Path Special Revenue Fund
For the Year Ended June 30, 2015

	Budgeted Amounts		Actual	Variance with Final Budget Positive
	Original	Final	Amounts	(Negative)
Revenues:				
Intergovernmental revenues	$ 10,721	$ 10,721	$ 10,721	$ -
Revenues from use of money and property	-	-	113	113
Total revenues	10,721	10,721	10,834	113
Excess of Revenues Over (Under) Expenditures	10,721	10,721	10,834	113
Other Financing Uses:				
Transfers out	-	(35,205)	(40,969)	(5,764)
Total Other Financing Uses	-	(35,205)	(40,969)	(5,764)
Net change in fund balances	$ 10,721	$ (24,484)	(30,135)	$ (5,651)
FUND BALANCES				
Beginning of Year			30,248	
End of Year			$ 113	

City of Morro Bay
Schedule of Revenues, Expenditures and Changes in Fund Balance - Budget and Actual
Special Assessments Special Revenue Fund
For the Year Ended June 30, 2015

	Budgeted Amounts		Actual	Variance with Final Budget Positive
	Original	Final	Amounts	(Negative)
Revenues:				
Taxes and special assessments	$ 157,421	$ 8,477	$ 9,099	$ 622
Total revenues	157,421	8,477	9,099	622
Expenditures:				
Current:				
Recreation and parks	134,645	5,645	7,550	(1,905)
Total expenditures	134,645	5,645	7,550	(1,905)
Net change in fund balances	$ 22,776	$ 2,832	1,549	$ (1,283)
FUND BALANCES				
Beginning of Year			57,552	
End of Year			$ 59,101	

City of Morro Bay
Schedule of Revenues, Expenditures and Changes in Fund Balance - Budget and Actual
Governmental Impact Fees Special Revenue Fund
For the Year Ended June 30, 2015

	Budgeted Amounts		Actual	Variance with Final Budget Positive
	Original	Final	Amounts	(Negative)
Revenues:				
Charges for services	$ 40,000	$ 40,000	$ 195,327	$ 155,327
Revenues from use of money and property	-	-	3,895	3,895
Total revenues	40,000	40,000	199,222	159,222
Excess of Revenues Over (Under) Expenditures	40,000	40,000	199,222	159,222
Other Financing Uses:				
Transfers out	(115,000)	(115,000)	(534,590)	(419,590)
Total Other Financing Uses	(115,000)	(115,000)	(534,590)	(419,590)
Net change in fund balances	$ (75,000)	$ (75,000)	(335,368)	$ (260,368)
FUND BALANCES				
Beginning of Year			653,565	
End of Year			$ 318,197	

City of Morro Bay
Schedule of Revenues, Expenditures and Changes in Fund Balance - Budget and Actual
State Park Marina Special Revenue Fund
For the Year Ended June 30, 2015

	Budgeted Amounts		Actual	Variance with Final Budget Positive
	Original	Final	Amounts	(Negative)
Revenues:				
Revenues from use of money and property	$ 65,000	$ 65,000	$ 81,430	$ 16,430
Total revenues	65,000	65,000	81,430	16,430
Expenditures:				
Current:				
Marina	65,000	65,000	-	65,000
Total expenditures	65,000	65,000	-	65,000
Net change in fund balances	$ -	$ -	81,430	$ 81,430
FUND BALANCES				
Beginning of Year			72,709	
End of Year			$ 154,139	

City of Morro Bay
Schedule of Revenues, Expenditures and Changes in Fund Balance - Budget and Actual
Affordable Housing In-lieu Special Revenue Fund
For the Year Ended June 30, 2015

	Budgeted Amounts		Actual	Variance with Final Budget Positive
	Original	Final	Amounts	(Negative)
Revenues:				
Charges for services	$ -	$ -	$ 12,044	$ 12,044
Revenues from use of money and property	-	-	1,290	1,290
Total revenues	-	-	13,334	13,334
Excess of Revenues Over (Under) Expenditures	-	-	13,334	13,334
Other Financing Uses:				
Transfers out	(1,000)	(1,000)	(10,410)	(9,410)
Total Other Financing Uses	(1,000)	(1,000)	(10,410)	(9,410)
Net change in fund balances	$ (1,000)	$ (1,000)	2,924	$ 3,924
FUND BALANCES				
Beginning of Year			160,352	
End of Year			$ 163,276	

City of Morro Bay
Schedule of Revenues, Expenditures and Changes in Fund Balance - Budget and Actual
Cloister Reserve Special Revenue Fund
For the Year Ended June 30, 2015

	Budgeted Amounts		Actual	Variance with Final Budget Positive
	Original	Final	Amounts	(Negative)
Revenues:				
Taxes and special assessments	$ -	$ 148,944	$ 148,322	$ (622)
Revenues from use of money and property	-	-	537	537
Total revenues	-	148,944	148,859	(85)
Expenditures:				
Current:				
Recreation and parks	-	129,000	122,420	6,580
Total expenditures	-	129,000	122,420	6,580
Net change in fund balances	$ -	$ 19,944	26,439	$ 6,495
FUND BALANCES				
Beginning of Year			50,194	
End of Year			$ 76,633	

City of Morro Bay
Schedule of Revenues, Expenditures and Changes in Fund Balance - Budget and Actual
LTF Roads Special Revenue Fund
For the Year Ended June 30, 2015

	Budgeted Amounts		Actual	Variance with Final Budget Positive
	Original	Final	Amounts	(Negative)
Revenues:				
Intergovernmental revenues	$ -	$ -	$ 28,785	$ 28,785
Revenues from use of money and property	-	-	242	242
Total revenues	-	-	29,027	29,027
Excess of Revenues Over (Under) Expenditures	-	-	29,027	29,027
Other Financing Uses:				
Transfers out	-	(32,590)	-	32,590
Total Other Financing Uses	-	(32,590)	-	32,590
Net change in fund balances	$ -	$ (32,590)	29,027	$ 61,617
FUND BALANCES				
Beginning of Year			100	
End of Year			$ 29,127	

City of Morro Bay
Schedule of Revenues, Expenditures and Changes in Fund Balance - Budget and Actual
Park In-lieu Fee Special Revenue Fund
For the Year Ended June 30, 2015

	Budgeted Amounts		Actual	Variance with Final Budget Positive
	Original	Final	Amounts	(Negative)
Revenues:				
Charges for services	$ -	$ -	$ 17,282	$ 17,282
Revenues from use of money and property	-	-	431	431
Other revenues	-	-	2,000	2,000
Total revenues	-	-	19,713	19,713
Expenditures:				
Current:				
Recreation and parks	-	-	4,680	(4,680)
Total expenditures	-	-	4,680	(4,680)
Excess of Revenues Over (Under) Expenditures	-	-	15,033	15,033
Other Financing Sources (Uses):				
Transfers out	-	-	(90,660)	(90,660)
Total Other Financing Sources (Uses)	-	-	(90,660)	(90,660)
Net change in fund balances	$ -	$ -	(75,627)	$ (75,627)
FUND BALANCES				
Beginning of Year			85,833	
End of Year			$ 10,206	

City of Morro Bay
Schedule of Revenues, Expenditures and Changes in Fund Balance - Budget and Actual
District Transaction Tax Special Revenue Fund
For the Year Ended June 30, 2015

	Budgeted Amounts		Actual	Variance with Final Budget Positive
	Original	Final	Amounts	(Negative)
Revenues:				
Taxes and special assessments	$ 930,000	$ 930,000	$ 946,448	$ 16,448
Revenues from use of money and property	-	-	1,664	1,664
Total revenues	930,000	930,000	948,112	18,112
Expenditures:				
Current:				
Fire	93,142	95,312	107,857	(12,545)
Police	115,100	116,135	104,017	12,118
Public works	530,850	755,521	972,060	(216,539)
Debt service				
Principal	25,000	25,000	70,838	(45,838)
Interest	66,300	66,300	53,971	12,329
Total expenditures	830,392	1,058,268	1,308,743	(250,475)
Excess of Revenues Over (Under) Expenditures	99,608	(128,268)	(360,631)	(232,363)
Other Financing Sources (Uses):				
Transfers in	-	232,590	203,508	(29,082)
Transfers out	(99,608)	(99,608)	(99,608)	-
Total Other Financing Sources (Uses)	(99,608)	132,982	103,900	(29,082)
Net change in fund balances	$ -	$ 4,714	(256,731)	$ (261,445)
FUND BALANCES				
Beginning of Year			355,074	
End of Year			$ 98,343	

AGENCY FUND FINANCIAL STATEMENTS

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City of Morro Bay
Statement of Assets and Liabilities
Agency Fund
June 30, 2015

	Community Service Agency Fund
ASSETS	
Current assets:	
Cash and cash equivalents	$ 1,225,626
Miscellaneous receivables	486
Prepaids	1,456
Total assets	$ 1,227,568
LIABILITIES	
Accounts payable	$ 34,280
Agency funds held for others	1,193,287
Total liabilities	$ 1,227,567

City of Morro Bay
Statement of Changes in Assets and Liabilities
Agency Fund
For the Year Ended June 30, 2015

	Balance July 1, 2014	Additions	Deletions	Balance June 30, 2015
Community Services Fund				
Assets:				
Cash and investments	$ 1,194,087	$ 276,198	$ (244,660)	$ 1,225,626
Miscellaneous receivables	-	486	-	486
Prepaid items	721	1,456	(721)	1,456
Total assets	$ 1,194,808	$ 278,140	$ (245,381)	$ 1,227,568
Liabilities:				
Accounts payable	$ 16,530	$ 236,963	$ (219,213)	$ 34,280
Agency funds held for others	1,178,278	372,812	(357,803)	1,193,287
Total liabilities	$ 1,194,808	$ 609,775	$ (577,016)	$ 1,227,567

City of Morro Bay

Morro Bay, California

Comprehensive Annual Financial Report

For the Year Ended June 30, 2016

THE PUN GROUP
ACCOUNTANTS & ADVISORS

City of Morro Bay
Basic Financial Statements
For the Year Ended June 30, 2016

Table of Contents

City of Morro Bay
Basic Financial Statements
For the Year Ended June 30, 2016

Table of Contents (Continued)

City of Morro Bay
Basic Financial Statements
For the Year Ended June 30, 2016

Table of Contents (Continued)

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CITY OF MORRO BAY

CITY HALL
595 Harbor Street
Morro Bay, CA 93442

December 30, 2016

Honorable Mayor
Members of the City Council
Citizens of the City of Morro Bay

REPORT PURPOSE AND ORGANIZATION

It is our pleasure to present the Comprehensive Annual Financial Report (CAFR) of the City of Morro Bay, California, for the fiscal year ended June 30, 2016. All financial statements were prepared in conformity with U.S. generally accepted accounting principles (GAAP) for each fiscal year end. The 2015/16 fiscal year marks the first CAFR prepared by the City; only basic financial statements have been completed for prior years. The difference between the basic financial statements and a CAFR is the inclusion of a letter of transmittal and a statistical section.

Management assumes full responsibility for the completeness and reliability of the information contained in this report, based upon a comprehensive framework of internal control the City has established for this purpose. Because the cost of internal control should not exceed anticipated benefits, the objective is to provide reasonable, rather than absolute, assurance that the City's financial statements are free of any material misstatements.

Audited Financial Statements

In 2015, the City issued a Request for Proposals (RFP) for auditing services, and as a result of that RFP, The Pun Group, LLP, a firm of licensed certified public accountants, was engaged to perform auditing services for the fiscal years ending June 30, 2015, 2016 and 2017, with the option to renew for two additional fiscal years (2018 and 2019). The FY 2014/15 audit was completed on March 31, 2016, with audit findings.

Since FY 2013/14, the Department Director, staff, and previous auditors expressed concerns regarding the breadth of responsibilities performed by this very small staff. From FY 2009/10, the Director, one IT manager, two confidential employees, and two account clerks were responsible for General Ledger accounting and reconciliations, budgeting, accounts payable, accounts receivable, utility billing, treasury, Human Resources management, and City-wide Information Technology. The request had been made many times to reinstate the Accountant position, which had been unfilled since July 1, 2010, or add a Budget Analyst; however, more pressing needs in public safety required immediate attention. In 2014, the City contracted with Management Partners for an update to its 2008 organizational study (discussed later in this letter), and in its 2015 report, Management Partners stated:

> "The Finance Division is very leanly staffed, yet few related functions are contracted. Because of the lean staffing, the department's ability to provide financial and budgeting information and assistance to operating departments is limited. In addition, the division has limited capacity for innovation and planning, and for example, does not prepare a Comprehensive Annual Financial Report (CAFR), a Government Finance Officers Association best practice."

"There is inadequate time and funding allowed for training and participation in professional organizations. Even getting routine work done is difficult when in the midst of audit or budget preparation. While this "belt tightening" can work for short periods of time, it is not sustainable over the long run."

Early in calendar year 2016, management began the process of separating the scope of responsibility of the Administrative Services Department, transferring oversight of Information Technology to the Deputy City Manager. Management additionally offered a retirement incentive to its employees who worked for the City for a minimum of five years as of June 30, 2016, and two key employees in the Administrative Services Department (Director and Senior Accounting Technician) availed themselves of the incentive. As a result, management continued separating the Department's scope of duties, transferring Human Resources to the City Clerk, and in October 2016, hired a Finance Director, a Budget and Accounting Manager, and a Senior Accounting Technician.

Information on the *audit findings* and management's responses can be found on the City's website at this link http://www.morro-bay.ca.us/DocumentCenter/View/9557 or by contacting the Finance Director.

The City's FY 2016 financial statements have been audited by The Pun Group, LLP. The goal of the independent audit was to provide reasonable assurance that the financial statements of the City are free of material misstatement. The independent auditor, based upon the audit, rendered an unqualified ("clean") opinion on the City of Morro Bay's financial statements for the year ended June 30, 2016. The independent auditor's report is located at the front of the financial section of this report.

GAAP requires management prepare a narrative introduction, overview, and analysis to accompany the basic financial statements in the form of Management's Discussion and Analysis (MD&A). The MD&A complements this letter of transmittal, and should be read in conjunction with it. The City's MD&A immediately follows the Report on Internal Control over Financial Reporting and on Compliance and Other Matters Based on an Audit of Financial Statements Performed in Accordance with Government Auditing Standards.

Report Organization

This report is organized in three sections: introductory, financial, and statistical.

1. The *Introductory* section includes this transmittal memorandum and other information to familiarize the reader with the City, including a list of principal officials and advisory bodies and organizational chart.
2. The *Financial* section contains the independent auditor's report on the financial statement audit, the Management Discussion & Analysis (MD&A), basic financial statements, which include the notes to the financial statements, Required Supplementary Information, and combining and individual fund presentation and supplementary information.
3. The *Statistical* section includes selected financial and demographic information.

PROFILE OF THE CITY OF MORRO BAY

The City of Morro Bay, incorporated in 1964, is located on the Central Coast of California, midway between Los Angeles and San Francisco, and is home to about 10,700 residents. The city is visited annually by a substantial number of tourists, seeking to enjoy the area's moderate climate, ocean views and sunsets, and the relaxing atmosphere unique to coastal communities, as well as outdoor activities of kayaking, surfing, hiking, sailing, fishing and bird watching. Morro Rock, a state historic landmark and one of the most visible landmarks on the Central Coast, sits adjacent to the harbor entrance and the quiet inner bay. Tourism and commercial fishing are the main features of the local economy.

Form of Government

The City operates under the mayor-council form of government. The City Council consists of the Mayor and four members, all of which are elected at large. Council members serve four-year terms, with two members elected every two years. The Mayor is elected for a two-year term.

The City Council is responsible, among other matters, for passing Ordinances, adopting the City budget, appointing committees and their members, and hiring the City Manager. The City Manager is responsible for carrying out the policies and Ordinances of the City Council, for overseeing the daily operations of the City, for appointing other employees, and otherwise managing daily operations of the City.

City Services

The City is a full-service city, which includes police and fire protection, building inspections, licenses and permits, construction and maintenance of streets and other infrastructure, park maintenance, recreational activities, and transit services with seasonal trolleys. Water distribution, sewer collection, and harbor operations are provided through enterprise activities. Wastewater treatment is provided by a joint-powers agreement with the Cayucos Sanitary District, which serves the unincorporated community of Cayucos, located to the north of the City. The City is in the process of building its own Water Reclamation Facility, as is the Cayucos Sanitary District with its Sustainable Water Facility. The jointly-owned treatment facility will continue to be utilized until each party's new facility is operational.

Budget Process and Budgetary Control

The Council is required to adopt an initial budget for the fiscal year, no later than June 30 preceding the beginning of the fiscal year on July 1. This annual budget serves as the foundation for the City's financial planning and control. The budget is prepared by fund, function (e.g., public safety), and department (e.g., police). Department heads may transfer resources within their department(s) as they see fit. Transfers of City Council-approved appropriations between departments require City Manager approval, and transfers between funds need approval from the City Council.

Appropriation requests are submitted to the Finance Department to compile for presentation to the City Manager. Once the budget is balanced, the City Manager presents the budget to the City Council at a public workshop(s). Any changes, as a result of the workshop(s), are made, and the final draft budget is presented to the City Council for approval at an upcoming regular meeting, or special meeting if required. The Adopted Budget is posted on the City's website.

The City Council reviews budget performance in October, January (mid-year budget review), and April. The presentation includes the quarter-to-date financial performance, detailed list of contract expenditures by contractor, and detailed investment portfolio performance. With these presentations and prior City Manager approval, department directors have the opportunity to request needed budget adjustments.

ECONOMIC CONDITION

The City's three largest General Fund revenue sources are property taxes, transient occupancy taxes (TOT), and sales tax. The main driver for the City's economy is tourism and visitor-serving businesses. These businesses include hotels, motels, vacation rentals, and recreation vehicle parks, and contribute TOT, at a rate of 10%, which makes up 25% of the City's General Fund revenues. Property taxes are the largest General Fund revenue generator (29%), and sales tax revenues make up 14%. Other national economic impacts have been felt in the City, but to a lesser degree. When the housing bubble burst, property values declined, but not to the extent felt in other San Luis Obispo County cities. Sales taxes dipped, but not significantly, as there are no "big box" retail stores or auto dealerships that drastically affected other cities.

In May 2009, the Morro Bay Tourism Business Improvement District (TBID) was established by Ordinance No. 546. TBID is composed of hotel establishment within the city limits. At the time of its creation, all hotels, motels, bed and breakfast lodging, and inns were authorized to assess a 3% TBID charge to all transient stays, in addition to the 10% TOT collected; recreational vehicle parks, campgrounds and vacation rentals were excluded from this assessment. In FY 2010/11, the second full fiscal year of TBID operation, promotion efforts plus the dry, warm winters produced positive results: tourism in our City began to flourish, and our TOT revenues increased by 3.12%. Over the past five fiscal years, TOT has increased an average of 11% each fiscal year. Translating this to dollars, taxes have increased, since FY 2010/11, by $1.2 million ($1.9 million to $3.1 million). Prior to the recession, TOT's all-time high was $2 million in FY 2006/07. TOT revenues dropped during the recession by $136,000, and recovered to the FY 2006/07 level in FY 2011/12. Since FY 2011/12, the growth seen from each prior fiscal year is 7.37%, 10.25%, 13.07%, 14.3% and 8.58%.

The other significant growth in revenues comes from building permit revenues and impact fees, due to increased development/remodeling around the City. Permit revenues and impact fees increased from $734,000 in FY 2014/15 to $1.1 million in FY 2015/16, a $366,000 (54.6%) increase. The number of building permits jumped by 186 (from 294 to 480) in the same time period.

Other improvements in the City's economy reflect a positive outlook. According to the Bureau of Labor Statistics, the unemployment rate in the San Luis Obispo-Paso Robles-Arroyo Grande Metropolitan Statistical Area is 4.5% for June 2016, which is the same as reported in June 2015. According to the California Department of Finance, the population factor for Morro Bay remained relatively stable from January 1, 2015 to January 1, 2016 (from 10,640 to 10,722).

Financial planning and major initiatives

In 2008, the City contracted with Management Partners for an organizational assessment. At that time, many of the suggested changes were explored, with some implemented. In November 2014, the City contracted with Management Partners to update the 2008 study and prepare a 10-year budget forecast. The forecast was presented to Council in March 2015, and was quite clear in demonstrating while the City is not on the verge of insolvency, some significant medium term (5-year) and long-term (30-year) fiscal challenges are evident. This forecast was updated in December 2015 for use with the FY 2016/17 budget.

Long-Term Challenges

The financial forecast reinforced significant concerns:

- Capital savings are, in many respects, non-existent. The FY 2015/16 budget committed an initial $100,000 to a capital replacement savings fund for the future replacement of City facilities, such as City Hall and the Police Station. This savings plan is being continued with the FY 2016/17 budget and beyond.
- Funding for repairs and reconstruction of streets. The Pavement Condition Index (PCI) is the accepted measure of street condition, and an average of PCI-70 is the California State sought-after standard. If the City's streets were currently at PCI-70, then funding in the amount of $1.5 million per year would be needed to maintain that PCI-70 average condition. Unfortunately, our streets are below the average pavement condition index. The City currently budgets its District Transaction Tax fund, a ½ cent district sales tax, by the established priorities memorialized in Resolution 46-12, which are improving the Fire Department, enhancing public safety, street maintenance, and storm drain maintenance to prevent toxic runoff into the Bay. With each annual budget, approximately $500,000 of the ½ cent district sales tax is set-aside for street maintenance and reconstruction.

Medium-Term Challenges

The City participates in CalPERS retirement for its employees, and because of the size of the employee base, City employees are in pooled plans. Contributions are continuing to rise, driving labor costs up measurably. For the City, the outlook is better than many California cities, because the side funds in the Police and Fire retirement plans will be paid off in FY 2017/18 (Police) and FY 2019/20 (Fire). Paying off these debts will reduce contribution rates significantly. However, most employees are in the Miscellaneous pool, and while the City's miscellaneous side fund was paid off in FY 2014/15, there is still a large unfunded liability due to the pool's unfunded liabilities, asset losses, and assumption changes. These same issues affect Police and Fire, but not to the degree as the effect on the Miscellaneous pool.

An additional 5-year concern is a potential recession. The Management Partner's 2016 revised 10-year budget forecast projected a moderate recession in 2018. The City is planning and preparing for this recession, as well as the CalPERS' impacts to chart a course to weather the 5-year storm we see coming, and come out the other end with existing services intact. The City identified in the FY 2015/16 budget: 1) cut services to keep the Emergency Reserve above the 27.5% reserve requirement; or 2) base planning on a 10-year budget forecast, and dip gently into our Emergency Reserves to sustain services. The City Council chose option #2, and adopted Resolution No. 33-15, which is discussed under *Relevant financial policies* below.

Relevant financial policies

The City is in the process of compiling its financial policies into one comprehensive set of financial policies to be adopted in the FY 2016/17 fiscal year.

During the fiscal year and with the adoption of the FY 2015/16 budget, the following key financial policies were adopted:

Resolution No. 30-15: Establishing User Rates for Water and Sewer Services. This Resolution updates the water and sewer rates last authorized in 1996. It is designed to ensure recovery for cost of services, ensure costs are allocated fairly to all customers, secure the financial stability of the water and sewer systems, and provide a sound financial plan that meets existing ongoing operations and maintenance, and debt service obligations

.

Resolution No. 31-15: Adoption of the FY 2015/16 fiscal year operating budget, which includes the Investment Policy. In prior years, the Investment Policy was brought to the City Council in January, for a calendar year adoption. In January 2014, the City Council made the decision to have the Investment Policy reviewed and presented as a part of the FY 2014/15 budget and thereafter.

Resolution No. 32-15: Establishing the Risk Management Internal Service Fund and Committed Fund Balance. The policy describes the Risk Management ISF as a managing tool for City-wide insurance policies. It additionally defines the minimum reserve balance as $100,000.

Resolution No. 33-15: Establishing the General Fund Emergency Reserve Fund Policy and Accepting Management Partner's Financial Forecast Assumptions. This Resolution sets the Reserve's target balance at 27.5% of the average of the three previous years' actual General fund operating revenues. It also restricts use of Reserve funds to City Council approval. Additionally, it set the assumptions for fund balances based on the Management Partners' financial forecast that included a recession, requiring use of Reserves, and authorized the use of Reserves. These assumptions are listed below, and are subject to annual review:

- 2014/15: $3.385 million (33.4%)
- 2015/16: $3.583 million (32.7%)
- 2016/17: $3.272 million (30.2%)
- 2017/18: $2.685 million (24.5%)
- 2018/19: $2.802 million (24.7%)
- 2019/20: $2.797 million (23.6%)
- 2020/21: $2.983 million (24.6%)
- 2021/22: $3.097 million (25%)

Resolution No. 34-15: Establishing a Strategic Investment Spending Plan. This plan identified surplus funds in the Risk Management ISF ($900,000) that were not programmed, committed or assigned for insurance purposes, per the Risk Management Resolution No. 32-15. The Strategic Investment Spending Plan identified a priority spending list based on City Council-approved goals, as follows:

- ADA compliance: $100,000
- Land Use Plans for the General Plan and Local Coastal Plan: $300,000
- Economic Development Strategic Plan: $75,000
- Information Technology Program: $100,000
- Web-based Planning, Permitting and Licensing Software: $85,000
- High-Speed Fiber Investment: $150,000
- Additional Projects approved by City Council (TBD): ~$90,000

FY 2014/15 & 2015/16 major initiatives

In FY 2014/15, the City contracted with Management Partners to update the 2008 Management Partners organizational study. Many of the recommendations from the 2008 study had not been implemented and were still considered viable alternatives.

The report was delivered to Council in May 2015, and it was decided that all suggested changes be reviewed for implementation. Management Partners provided the City with an implementation schedule, and management established timeframes for review/implementation through FY 2017/18. City goal 5e below requires staff to research and implement, or bring to City Council for adoption or rejection, all Management Partners recommendations.

The City immediately addressed changes to the City organization for operational effectiveness. These changes to the organization were enacted with the FY 2015/16 budget, which include:

- Moving the Consolidated Maintenance activities from the Recreation Department to the Public Services Department. Maintenance activities performed in this division are streets, storm drains, trees, parks, facilities and vehicles.
- Separating the planning functions from the Public Services Department, and creating a Community Development Department for planning activities, and a Public Works Department for engineering, capital projects and utility management.

- Rearranging oversight in the Recreation Department and establishing an Economic Development Department. A new position, Deputy City Manager, was created to replace the Recreation Director, and was assigned oversight responsibilities for Recreation, Information Technology, Economic Development and Tourism.
- Returning control of the Morro Bay Tourism Business Improvement District to the City (formerly control was vested in a 501C(6) Tourism Bureau, a separate entity from the City).

Goals and Goals Accomplished and Projects Completed in FY 2015/16

Goals:

In Spring 2013, the City Council discussed, developed and adopted a set of goals for action over the next two fiscal years (FY 2013/14 and 2014/15). Management changed in December 2013, and the City Manager was replaced in September 2014. In January and February 2015, the 2013 goals were discussed, modified and reaffirmed. These goals, and their subordinate program objectives, were intended to remain valid and in force through at least FY 2015/16, and are listed below:

Goal #1 Develop a new Water Reclamation Facility (WRF)

a. Establish a citizens committee for robust pubic engagement
b. Present a recommendation to City Council for governance (ownership) with the Cayucos Sanitary District
c. Present a draft agreement to City Council, outlining the roles and responsibilities for the City and Cayucos Sanitary District
d. Complete a *fatal flaws* analysis of the Rancho Colina site
e. Complete the first phase of the Facility Master Plan
f. Complete and initial study for preparing an Environmental Review document

Goal #2 Improve streets

a. Research and discuss a ballot measure for a streets district transaction tax or other financing product to rebuild or repair Morro Bay streets in 5 years
b. Present to City Council a traffic management plan, consistent with the State of California "Complete Streets," to include vehicles, bikes and pedestrians
c. Prepare a database and maintenance plan for all traffic control devices, including signs, signals, feedback devices and pavement markings; for action now – refresh all crosswalks, stop bars, legends, parking stall markings, and bicycle lane markings, and replace non-compliant regulatory signs
d. Update the Pavement Management System
e. Evaluate unmet bike needs plus maintenance of existing bike paths

Goal #3 Review and update significant City land use plans

a. Complete the *General Plan/Local Coastal Plan* update by December 2017
b. Complete the revision/update of the City's *Secondary Unit* Ordinance
c. Complete the revision/update of the City's *Sign* Ordinance
d. Develop and implement neighborhood design guidelines
e. Update the *Downtown Specific Plan* to establish the identity and vision of the City's downtown area, to include the *Old Town* designation

Goal #4 Maintain core public safety services

a. Complete four regional Community Emergency Response Team courses for citizens, and enhance the Emergency Operations Center with training for City employees, volunteers and City Council
b. Complete the *drought annex* to Part II of our City's Multi-Hazard Emergency Response Plan
c. Create and implement Information Technology solutions to enhance public safety communication to the community
d. Present a proactive code enforcement program to City Council for decision and immediate implementation
e. Complete all emergency plan updates
f. Complete implementation of body-worn camera technology for all police officers
g. Establish a Police Chief's Advisory Committee; complete a strategic plan to enhance organizational efficiency and community collaboration
h. Present Ordinance to City Council related to emerging public safety trends
i. Complete a Fire Department strategic plan update to improve efficiencies

Goal #5 Ensure fiscal sustainability

a. Retool the budget process to improve transparency and simplicity, consider biennial and program-based budgeting, and develop a 5-year strategic forecast
b. Present a plan to City Council for a financial oversight body
c. Establish capital replacement accounts for all major capital assets plus minimum contributions
d. Present a plan to City Council for balance cost recovery for City fees and charges
e. Research and implement, or bring to City Council for adoption or rejection, all Management Partners recommendations
f. Research and provide a recommendation on City vehicle leasing vs ownership
g. Explore renewable energy projects to reduce energy costs

Goal #6 Support economic development

a. Provide staff support and participation in the *Local Economic Action Plan* (LEAP) process, and bring appropriate LEAP proposals to City Council
b. Present a proposal to City Council to retain a consultant for a 5-year economic development strategic plan
c. Present a proposal to City Council for public/private partnership options to deliver high-speed fiber connectivity
d. Present a proposal to City Council for possible incorporation of the Tri-W property, preserving a green belt and dedicated a portion to affordable housing
e. Present a proposal to City Council on the feasibility or establishment of a marine services facility
f. Implement or present a proposal to City Council on improving event coordination/support; consider an event coordinator function
g. Present to City Council alternate modes for partnership's between the City and both the Chamber of Commerce and the Morro Bay Tourism Bureau
h. Continue momentum on various projects, such as the Maritime Museum, Marine Research Center/Aquarium, Coast Guard facility, and Tidelands Park fish cleaning station

Goal #7 **Improve City infrastructure, facilities and public spaces**

a. Present to City Council a plan to link the Embarcadero with Old Town at Centennial Parkway
b. Present to City Council a proposal on the Embarcadero Promenade, widening the west side of Embarcadero, as part of a *Waterfront Master Plan*
c. Utilize the 2007 *Parking Management Plan* to improve parking management and density with enforcement, paid parking, and center aisle parking
d. Complete a full American with Disabilities Act (ADA) compliance assessment on all City facilities, to include a plan to address issues and annual spending
e. Complete a needs assessment for the Harbor and Police Departments
f. Present to City Council best future use of City-owned properties
g. Conduct a sidewalk assessment and plan for improvements, with a focus on parks, school zones and business districts
h. Present to City Council a plan for California Streets and Highways requirements for street frontage maintenance (sidewalk responsibility)
i. Present to City Council a distinctive design for new street name signs
j. Update and/or replace 20% of *way-finding* signs

Goal #8 **Enhance quality of life**

a. Development /implement a plan to operate a community use portion of the new high school pool
b. Initiate outreach to appropriate healthcare providers to reestablish a health care center in the City
c. Present to City Council a policy, regulating the use of City funds for non-City events
d. Present to City Council for approval a list of City-sponsored events
e. Implement annual community quality of life/customer service surveys
f. Conduct a community needs assessment regarding resident and visitor recreational priorities
g. Improve marketing of core recreation programs

Goal #9 **Improve water supply diversification**

a. Conduct an assessment of long-term requirements for continued participation in State Water Project
b. Complete permitting process of the City's existing desalination plant
c. Present to City Council sewer and water rates to ensure fiscal sustainability
d. Develop a reuse plan for WRF recycle water
e. If appropriate, present to City Council a public/private partnership regional desalination facility
f. Continue community education to improve water conservation
g. Evaluate groundwater improvement options

Goal #10 Improve City operations

a. Provide opportunities for robust public involvement and input to major decisions
b. Present to City Council a *Vision, Values and Mission Statement*
c. Present to City Council a City strategic planning framework
d. Fundamentally retool Information Technology operations in the City to include an IT Master Plan
e. Improve public information and public outreach, ensuring less technically-oriented residents have access
f. Present to City Council a proposal for contracted automated water meter reading and billing
g. Develop and implement employee customer service standards to include an employee recognition system
h. Research and apply for all possible grants

Goals accomplished by department FY 2014/15 and 2015/16:

Administrative Services – 5a, b, d & e
Community Development – 3a, b & d; 4d; 10h
Economic Development – 6a, b, g & h; 10e
Fire – 4a, b & f; 9b
Harbor – 6e & h; 7e
Police – 4f & h; 7e
Public Works – 1a, b, c & d; 2a; 7b, c & d; 9f
Recreation – 8d, e, & g

Projects completed:

Morro Bay is an active and vibrant community, with a municipal government that is proactive and prepared to respond to changing community needs. Even with a small staff, the City has accomplished many projects in FY 2015/16. The following are the most significant accomplishments in FY 2015/16:

Morro Creek Bridge and Bike Path: expenditures for this project mostly occurred in the FY 2014/15, but the grand opening was held on July 4, 2015. This project provides bike, pedestrian and emergency access from the Embarcadero to the other bike paths plus north Morro Bay business and residential district.

Repurchase of 781 Market Street property and adjacent parking lot. On December 31, 2015, the City reacquired the above property through a bankruptcy. Currently at the site is an Italian restaurant, DiStasio's on the Bay. The City negotiated a three-year lease, set to terminate no later than December 31, 2018.

Pickleball Court: In April 2015, the City entered into a Management Agreement with the Morro Bay Senior Citizens, Inc., for the conversion of the Del Mar Park Hockey Rink into permanent Pickleball Courts, and designates routine maintenance responsibilities to the Seniors and long-term maintenance to the City. The Agreement expires on June 30, 2019, with a three-year extension by mutual agreement. The Seniors provided a $30,000 donation for the this project that was completed in FY 2015/16 at a cost of $40,000.

Underground Storage Tank removal: The City spent $65,000 to remove its underground fuel tanks at its corporation yard, due to the lack of cost savings by providing fuel for City vehicles. In 2015, the City entered into a contract with the State of California's Voyager Card Program to purchase gasoline for its vehicles. This program provides participants with a reduced price per gallon by eliminating the federal fees. To provide emergency services with fuel in case of a situation where local fuel stations are inoperable, the City installed an above-ground fuel tank at Fire Station #1, at a cost of $6,000 for the tank, hose and diesel fuel.

General Plan Update. Efforts have begun on this process, via a contract with Michael Baker and Associates. The City spent $341,000 on the contract: $185,000 was from a federal grant, and the remaining $156,000 was from a building permit fee for this specific purpose.

Awards and Acknowledgements

The 2015/16 fiscal year marks the first year the City has prepared a Comprehensive Annual Financial Report. This report will be submitted in future years to the Government Finance Officers Association (GFOA) Certificate of Achievement for Excellence in Financial Reporting program.

The preparation of this report would not have been possible without the skill, effort, and dedication of the entire staff of the Administrative Services Department. We wish to thank all City department directors for their assistance in providing the data necessary to prepare this report.

Credit also is due to the Mayor and the Council for their unfailing support for maintaining the highest standards of professionalism in the management of the City's finances.

Respectfully submitted,

Signed: David Buckingham

Title: City Manager

Signed: Susan Slayton

Susan Slayton

Title: Administrative Services Director

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City of Morro Bay
Elected and City Officials
Commissions, Boards, and Committees

As of June 30, 2016

Elected Officials	Title	Term Expires
Jamie Irons	Mayor	November 2016
Matt Makowetski	Mayor Pro Tempore	November 2018
John Headding	Councilmember	November 2018
Christine Johnson	Councilmember	November 2016
Noah Smukler	Councilmember	November 2016

City Officials	Position
David Buckingham	City Manager
Joseph Pannone	City Attorney
Vacant	Assistant City Manager/Deputy City Manager
Amy Christey	Police Chief
Eric Endersby	Harbor Director
Scot Graham	Community Development Manager
Steve Knuckles	Fire Chief
Robert Livick	Public Works Director
Susan Slayton	Administrative Services Director
Dana Swanson	City Clerk

Planning Commission (PC)	
Robert Tefft	Chair
Gerald Luhr	Vice-Chair
Joseph Ingraffia	Commissioner
Michael Lucas	Commissioner
Richard Sadowski	Commissioner

Public Works Advisory Board	
Marlys McPherson	Chair
Stephen Shively	Vice-Chair
Jan Goldman	Commissioner
Christopher Parker	Commissioner
Stewart Skiff	Commissioner
David Sozinho	Commissioner
Vacant	Commissioner

Morro Bay Tourism Business Improvement District (MBTBID)	
Michele Jacquez	Chair
Aaron Graves	Vice-Chair
Jayne Behman	Member
Taylor Newton	Member
Charles Yates	Member
Vacant	Member
Vacant	Member

Harbor Advisory Board	
William Luffee	Chair
Ron Reisner	Vice-Chair
Alan Alward	Member
Gene Doughty	Member
Neal Maloney	Member
Dana McClish	Member
Lynn Meissen	Member

City of Morro Bay
Elected and City Officials (Continued)
Commissions, Boards, and Committees

Recreation and Parks Commission	
Drew Sidaris	Chair
Bob Swain	Vice-Chair
Kevin Carroll	Commissioner
Jeffrey Cox	Commissioner
Al Romero	Commissioner
Timothy Ross	Commissioner
Skip Sorich	Commissioner

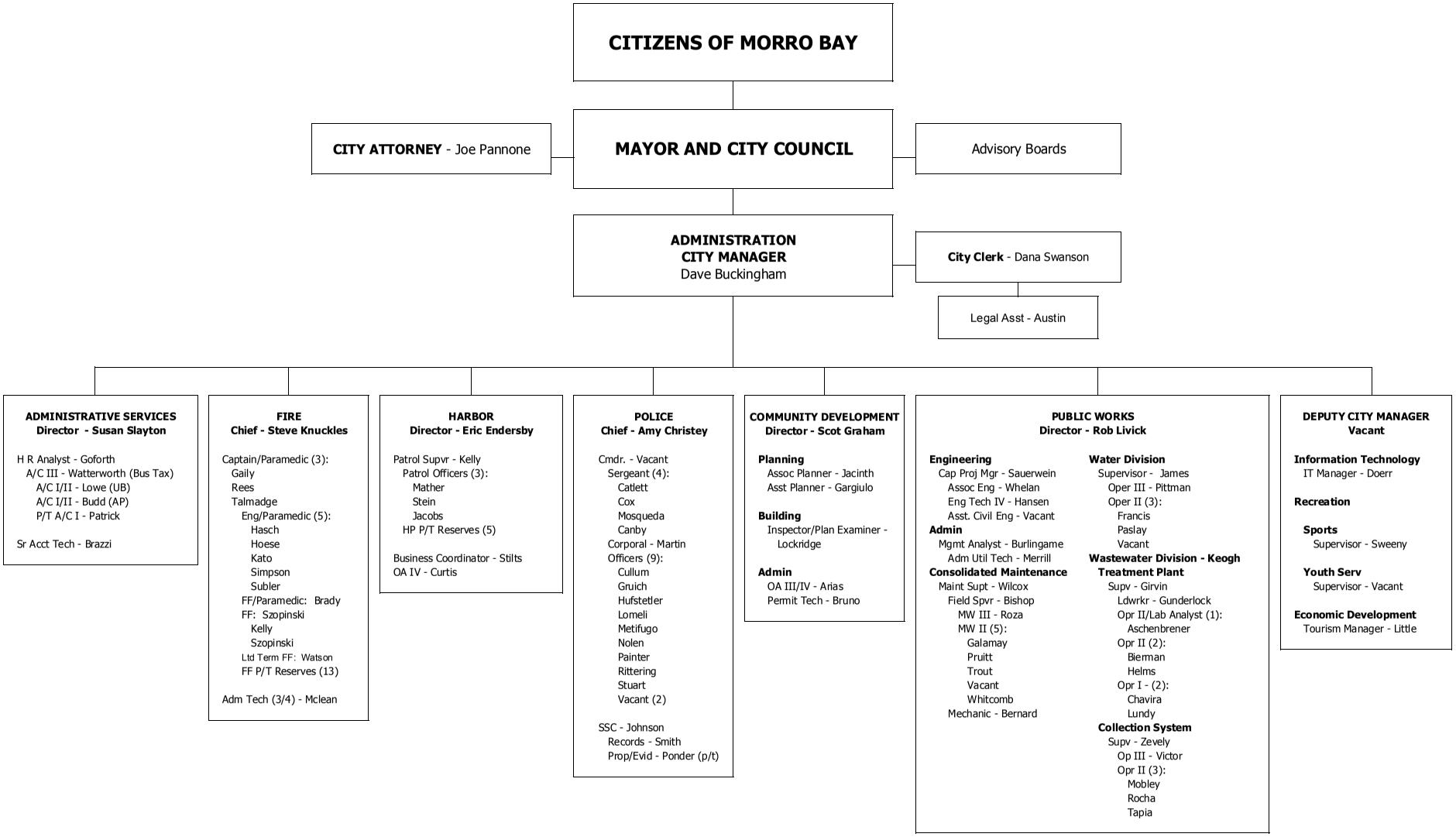
Citizens Oversight/Finance Advisory Committee (CFAC)	
Barbara Spagnola	Chair
Dave Betonte	Member
Betty Forsythe	Member
Roscoe Mathieu	Member
Marlys McPherson	Member
Vacant	Member
Vacant	Member

Water Reclamation Facility Citizen Advisory Committee (WRFCAC)	
John Diodati	Chair
Bill Woodson	Vice-Chair
Paul Donnelly	Member
Mary (Ginny) Garelick	Member
Dale Guerra	Member
Valerie Levulett	Member
Barbara Spagnola	Member
Richard Sadowski	PC Appointee
Steven Shively	PWAB Appointee

General Plan/Local Coastal Program Advisory Board (GPAC)	
Robert Tefft	Chair
Rich Buquet	Member
Robert Davis	Member
Jan Goldman	Member
Jeffrey Heller	Member
Susan Schneider	Member
Glenn Silloway	Member
Melani Smith	Member
Susan Stewart	Member
Robert Tefft	Member

CITY OF MORRO BAY
ORGANIZATIONAL CHART

For the 2015/16 Fiscal Year



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THE PUN GROUP
ACCOUNTANTS & ADVISORS

INDEPENDENT AUDITORS' REPORT

To the Honorable Mayor and Members of the City Council
of the City of Morro Bay
Morro Bay, California

Report on Financial Statements

We have audited the accompanying financial statements of the governmental activities, the business-type activities, each major fund, and the aggregate remaining fund information of the City of Morro Bay, California (the "City"), as of and for the year ended June 30, 2016, and the related notes to the financial statements, which collectively comprise the City's basic financial statements as listed in the table of contents.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with accounting principles generally accepted in the United States of America; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditor's Responsibility

Our responsibility is to express opinions on these financial statements based on our audit. We conducted our audit in accordance with auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards,* issued by Comptroller General of the United States. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the City's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinions.

Opinions

In our opinion, the financial statements referred to above present fairly, in all material respects, the respective financial position of the governmental activities, the business-type activities, each major fund, and the aggregate remaining fund information of the City as of June 30, 2016, and the respective changes in financial position and, where applicable, cash flows thereof for the year then ended in accordance with accounting principles generally accepted in the United States of America.

Emphasis of Matters

Water Revenue Over State Water Payments

As discussed in Note 10 to the basic financial statements, the City did not meet the Water Revenue over State Water Payments Ratio. For the year ended June 30, 2016, the City's ratio was at 116%, which is below the required minimum ratio of 125%. Management's plans regarding this matter is also described in the Note 10 to the basic financial statements. Our opinion is not modified with respect to this manner.

Financial Condition

As of June 30, 2016, the City's Governmental Activities and the Harbor Enterprise Fund had unrestricted net position deficits of $5,767,414 and $608,390, respectively. Management's plans regarding those matters are also described in the Management's Discussion and Analysis. The basic financial statements do not include any adjustments that might result from the outcome of these uncertainties. Our opinion is not modified with respect to this matter.

Other Matters

Required Supplementary Information

Accounting principles generally accepted in the United States of America require that the Management's Discussion and Analysis, the Budgetary Comparison Schedule - General Fund, the Schedule of Proportionate Share of the Net Pension Liability and Related Ratios, the Schedule of City's Contributions, and the Schedules of Funding Progress-Other Postemployment Benefits Plan on pages 7 to 16 and 89 to 94, be presented to supplement the basic financial statements. Such information, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board, who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Other Information

Our audit was conducted for the purpose of forming opinions on the financial statements that collectively comprise the City's basic financial statements. The Introductory Section and Combining and Individual Nonmajor Fund Financial Statements and Schedule of Revenues, Expenditures, and Changes in Fund Balances – Budget and Actual are presented for purposes of additional analysis and are not a required part of the basic financial statements.

Supplementary Information

The Combining and Individual Nonmajor Fund Financial Statements and Statement of Revenue, Expenditures, and Changes in Fund Balances - Budget and Actual are the responsibility of management and were derived from and relate directly to the underlying accounting and other records used to prepare the basic financial statements. Such information has been subjected to the auditing procedures applied in the audit of the basic financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the basic financial statements or to the basic financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the Combining and Individual Nonmajor Fund Financial Statements and Statement of Revenue, Expenditures, and Changes in Fund Balances - Budget and Actual are fairly stated in all material respects in relation to the basic financial statements as a whole.

The Introductory Section has not been subject to the auditing procedures applied in the audit of the basic financial statements and, accordingly, we do not express an opinion or provide any assurance on them.

Other Reporting Required by *Government Auditing Standards*

In accordance with *Government Auditing Standards*, we have also issued our report dated December 30, 2016 on our consideration of the City's internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements and other matters. The purpose of that report is to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing, and not to provide an opinion on the internal control over financial reporting or on compliance. That report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the City's internal control over financial reporting and compliance.

The Pun Group, LLP

Walnut Creek, California
December 30, 2016

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THE PUN GROUP
ACCOUNTANTS & ADVISORS

REPORT ON INTERNAL CONTROL OVER FINANCIAL REPORTING AND ON COMPLIANCE AND OTHER MATTERS BASED ON AN AUDIT OF FINANCIAL STATEMENTS PERFORMED IN ACCORDANCE WITH *GOVERNMENT AUDITING STANDARDS*

Independent Auditors' Report

To the Honorable Mayor and Members of the City Council
of the City of Morro Bay
Morro Bay, California

We have audited, in accordance with the auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards* issued by the Comptroller General of the United States, the financial statements of the governmental activities, the business-type activities, each major fund, and the aggregate remaining fund information of the City of Morro Bay, California (the "City"), as of and for the year ended June 30, 2016, and the related notes to the basic financial statements, which collectively comprise the City's basic financial statements, and have issued our report thereon dated December 30, 2016.

Internal Control Over Financial Reporting

In planning and performing our audit of the financial statements, we considered the City's internal control over financial reporting ("internal control") to determine the audit procedures that are appropriate in the circumstances for the purpose of expressing our opinions on the financial statements, but not for the purpose of expressing an opinion on the effectiveness of the City's internal control. Accordingly, we do not express an opinion on the effectiveness of the City's internal control.

Our consideration of internal control was for the limited purpose described in the preceding paragraph and was not designed to identify all deficiencies in internal control that might be material weaknesses or significant deficiencies and therefore, material weaknesses or significant deficiencies may exist that were not identified. However, as described in the accompanying schedule of findings and questioned costs, we identified certain deficiencies in internal control that we consider to be material weaknesses and significant deficiencies.

A *deficiency in internal control* exists when the design or operation of a control does not allow management or employees, in the normal course of performing their assigned functions, to prevent, or detect and correct, misstatements on a timely basis. A *material weakness* is a deficiency, or a combination of deficiencies, in internal control such that there is a reasonable possibility that a material misstatement of the entity's financial statements will not be prevented, or detected and corrected on a timely basis. We consider the deficiencies described in the separately issued AU-C Section 265–*Communicating Internal Control Related Matters Identified in an Audit* letter that we consider to be material weaknesses as items 2016-001.

A *significant deficiency* is a deficiency, or a combination of deficiencies, in internal control that is less severe than a material weakness, yet important enough to merit attention by those charged with governance. We consider the deficiencies described in the separately issued AU-C Section 265–*Communicating Internal Control Related Matters Identified in an Audit* letter that we consider to be significant deficiencies as items 2016-002, 2016-003, and 2016-004.

Compliance and Other Matters

As part of obtaining reasonable assurance about whether the City s financial statements are free from material misstatement, we performed tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements, noncompliance with which could have a direct and material effect on the determination of financial statement amounts. However, providing an opinion on compliance with those provisions was not an objective of our audit, and accordingly, we do not express such an opinion. The results of our tests disclosed instances of noncompliance or other matters that are required to be reported under *Government Auditing Standards* and which are described in separately issued AU-C Section 265–*Communicating Internal Control Related Matters Identified in an Audit* letter as item 2016-004.

City's Reponses to Finding

The City's response to the finding identified in our audit is described in the separately issued AU-C Section 265, Communicating Internal Control Related Matters Identified in an Audit Letter. The City's response was not subjected to the auditing procedures applied in the audit of the financial statements and, accordingly, we express no opinion on it.

Purpose of this Report

The purpose of this report is solely to describe the scope of our testing of internal control and compliance and the results of that testing, and not to provide an opinion on the effectiveness of the City's internal control or on compliance. This report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the City's internal control and compliance. Accordingly, this communication is not suitable for any other purpose.

The Pun Group, LLP

Walnut Creek, California
December 30, 2016

Management's Discussion and Analysis

As management of the City of Morro Bay, we offer readers of the City's financial statements this narrative overview and analysis of the financial activities of the City, for the fiscal year ended June 30, 2016. It should be read in conjunction with the accompanying basic financial statements. All amounts, unless otherwise indicated, are expressed in thousands of dollars.

Financial Highlights

In the 2014/15 fiscal year, the City implemented the two new statements from the Governmental Accounting Standards Board (GASB), related to pension activities:

- Statement No. 68, "*Accounting and Financial Reporting for Pensions - an amendment of GASB Statement No. 27*," and
- Statement No. 71, "*Pension Transition for Contributions Made Subsequent to the Measurement Date - an amendment of GASB Statement No. 68*."

GASB Statement No. 68 establishes standards of accounting and financial reporting, but not funding or budgetary standards, for the City's defined benefit pension plans. This Statement replaces the requirements of prior GASB statements, impacting accounting and disclosure of pensions.

The significant impact to the City of implementing GASB Statement No. 68 is the reporting of the City's unfunded pension liability on the full accrual basis of accounting in the government-wide financial statements and the proprietary fund financial statements. There are also new note disclosure requirements and supplementary schedules required by the Statement.

The measurement date for the 2015/16 pension liabilities is as of June 30, 2015. This date reflects a one-year lag in the release of actuaries from CalPERS and was used so that these financial statements could be issued in a timely manner. Activities, such as contributions made by the City, occurring during the 2015/16 fiscal year, are reported as deferred outflows of resources, in accordance with Statement No. 71. The City reflected these pension standards in the 2014/15 and 2015/16 fiscal years.

The following outlines financial highlights for the year:

- At June 30, 2016, the City's net position increased $1.9 million due to continued economy recovery, most notably tourism and transient occupancy taxes.
- Total city-wide current assets increased by approximately $1.2 million, or 5.1%. In governmental activities, cash increased by $1.4 million, notes receivable decreased by $1.2 million, land held for resale increased by $1.4 million, and other items decreased by $636K. In business-type activities, cash increased by $1.3 million, receivables increased by $114K, and other items decreased by $938K.
- Total city-wide liabilities, excluding aggregate net pension liabilities, decreased $467K. Current liabilities decreased by $184K, and long-term liabilities decreased by $297K.
- The City's governmental funds altogether reported combined ending fund balances of $10.4 million, an increase of $1.9 million. Of the 2016 amount, $3.1 million, or 29%, is nonspendable, $3.2 million, or 30.2%, is restricted, and $80K, or 0.7%, is committed, with the remaining 40% unassigned.
- The City's General fund balance increased by $1.0 million. The fund balance includes nonspendable ($2.9 million) and committed ($80K) funds. A total of $3.6 million is held in reserve, per the City's policy of retaining 27.5% of General Fund three-year average of actual revenues, and Resolution No. 33-15, which established target balances for Fiscal Years 2014/15 – 2021/22 (2015/16 = $3.6 million).

Overview of the Financial Statements

This discussion and analysis are intended to serve as an introduction to the City of Morro Bay's basic financial statements, which consists of three components: 1) government-wide financial statements, 2) fund financial statements, and 3) notes to the financial statements. This report also contains required supplementary information and other supplementary information in addition to the basic financial statements.

Government-wide financial statements

The *government-wide financial statements* are designed to provide readers with a broad overview of the City of Morro Bay's finances, in a manner similar to a private-sector business.

The *Statement of Net Position* presents information on all of the City's assets, deferred outflows of resources, liabilities, and deferred inflow of resources, with the difference reported as *net position*. Over time, increases or decreases in net position may serve as a useful indicator of the City's overall financial health.

The *Statement of Activities* presents information showing how the City's net position changed during the most recent fiscal year. All changes in net position are reported as soon as the underlying event giving rise to the change occurs, *regardless of the timing of related cash flows*. Thus, revenues and expenses are reported in this statement for some items that will only result in cash flows in future fiscal periods (e.g., earned, but unused, vacation leave).

Both of the government-wide financial statements distinguish functions of the City of Morro Bay that are principally supported by taxes and intergovernmental revenues (*governmental activities*) from other functions that are intended to recover all or a significant portion of their costs through user fees and charges (*business-type activities*). The governmental activities of the City include administration, community promotion, finance, fire, housing, police, public services, and parks and recreation. The business-type activities of the City include the water, sewer, harbor, and local transportation operations.

The government-wide financial statements can be found on pages 20-23 of this report.

Fund financial statements

A *fund* is a grouping of related accounts that is used to maintain control over resources that have been segregated for specific activities or objectives. The City of Morro Bay, like other state and local governments, uses fund accounting to ensure and demonstrate compliance with finance-related legal requirements. City funds are divided into three categories: governmental, proprietary, and fiduciary.

Governmental funds

Governmental funds are used to account for essentially the same functions reported as *governmental activities* in the government-wide financial statements. However, unlike the government-wide financial statements, governmental fund financial statements focus on *near-term inflows and outflows of spendable resources,* as well as on *balances of spendable resources* available at the end of the fiscal year. Such information may be useful in evaluating a government's near-term financing requirements.

Because the focus of governmental funds is narrower than that of the government-wide financial statements, it is useful to compare the information presented for *governmental funds* with similar information presented for *governmental activities* in the government-wide financial statements. By doing so, readers may better understand the long-term impact of the government's near-term financing decisions. Both the governmental fund balance sheet and the governmental fund statement of revenues, expenditures, and changes in fund balances provide a reconciliation to facilitate this comparison between *governmental funds* and *governmental activities.*

The City of Morro Bay maintains eighteen individual governmental funds. Information is presented separately in the governmental fund balance sheet, and in the governmental fund statement of revenues, expenditures, and changes in fund balances for the General Fund, Community Development Grants Funds, and Capital Improvement Capital Projects Fund, all of which are considered major funds of the government. Data from the other governmental funds are combined into a single, aggregated presentation. Fund data for each of these non-major governmental funds is provided in the form of *combining statements* elsewhere in this report.

The City adopts an annual appropriated budget for all governmental funds. Required Supplementary Information - Budgetary Statements for the General Fund have been provided to demonstrate compliance with its budget.

The basic governmental fund financial statements can be found on pages 29-32 of this report.

Proprietary funds

The City of Morro Bay maintains two different types of proprietary funds. *Enterprise funds* are used to report the same functions presented as business-type activities in the government-wide financial statements. The City uses enterprise funds to account for the Water, Sewer, Harbor, and LTF operations. *Internal service funds* are an accounting device used to accumulate and allocate costs internally among the City's various functions. Morro Bay uses internal service funds to account for the various types of insurance coverage for the City, and to manage the City's information technology needs. Because these services predominantly benefit governmental rather than business-type functions, they have been included within *governmental activities* in the government-wide financial statements.

Proprietary funds provide the same type of information as the government-wide financial statements, only in more detail. The proprietary fund financial statements provide separate information for the Water, Sewer and Harbor operations, all of which are considered to be major funds of the City. The remaining proprietary fund (LTF) is combined into a single, aggregated presentation in the proprietary fund financial statements.

The basic proprietary fund financial statements can be found on pages 34-41 of this report.

Fiduciary funds

Fiduciary funds are used to account for resources held for the benefit of parties outside the government. Fiduciary funds are *not* reflected in the government-wide financial statements because the resources of those funds are *not* available to support the City of Morro Bay's own programs. The accounting used for fiduciary funds is much like that used for proprietary funds.

The basic fiduciary fund financial statement can be found on pages 45-46 of this report.

Notes to the financial statements

The notes provide additional information that is essential to a full understanding of the data provided in the government-wide and fund financial statements. The notes to the financial statements can be found on pages 51-86 of this report.

Required supplementary information

In addition to the basic financial statements and accompanying notes, this report also presents certain *required supplementary information* including Budgetary Comparison Schedule – General Fund and Community Development Grant Special Revenue Fund, Schedule of the City's Proportionate Share of the Net Pension Liabilities and Related Ratios, Schedule of the City's Contributions, and Schedule of Funding Progress – Other Postemployment Benefits Plan. Required supplementary information can be found on pages 89 - 94 of this report.

Supplementary information

The combining and individual statements, referred to earlier in connection with the nonmajor governmental funds, are presented immediately following the required supplementary information on pensions. Combining and individual fund statements and schedules can be found on pages 98 - 120 of this report.

Government-wide Financial Analysis

The City's net position for governmental activities increased from $117.2 million to $117.9 million (approximately 0.6%) and business-type activities increased from $24.3 million to $25.5 million (approximately 4.9%).

Changes between fiscal years are shown in Table 1, and explained in detail below:

Total assets and deferred outflows increased approximately $1.8 million:

- Governmental:
  - Cash and investments increased $1.4 million
  - Receivables decreased $1.8 million
  - Prepaid items and inventories decreased $72K
  - Land held for resale increased $1.4 million
  - Capital assets decreased $1.4 million
  - Deferred outflows of resources increased $705K
- Business-type:
  - Cash and investments increased $1.1 million
  - Receivables increased $91K
  - Investments in Joint Powers Agreement increased $9K
  - Prepaid items and inventories decreased $878K
  - Capital assets increased $856K
  - Deferred outflows of resources increased $209K

Total liabilities and deferred inflows decreased approximately $136K:

- Governmental:
  - Accounts payable decreased $800K
  - Payroll payable increased $128K
  - Deposits and unearned revenue increased $317K
  - Long-term liabilities decreased $359K
  - Aggregate net pension liabilities increased $1.9 million
  - Deferred inflows of resources decreased $1.8 million
- Business-type:
  - Accounts payable increased $348K
  - Payroll payable increased $26K
  - Deposits and unearned revenues decreased $106K
  - Long-term liabilities decreased $66K
  - Aggregate net pension liabilities increased $820K
  - Deferred inflows of resources decreased $681K

TABLE 1: CITY OF MORRO BAY NET POSITION

(Amounts expressed in thousands)

	Governmental activities		Business-type activities		Total	
				(As Restated)		
	2016	2015	2016	2015	2016	2015
Current and other assets	$ 13,808	$ 12,913	$ 10,782	$ 10,384	$ 24,590	$ 23,297
Capital assets	121,936	123,287	20,077	19,221	142,013	142,508
Total assets	135,744	136,200	30,859	29,605	166,603	165,805
Deferred outflows	2,352	1,647	669	460	3,021	2,107
Current liabilities	2,348	2,870	1,088	750	3,436	3,620
Long-term liabilities	16,254	14,499	4,773	4,043	21,027	18,542
Total liabilities	18,602	17,369	5,861	4,793	24,463	22,162
Deferred inflows	1,563	3,319	245	926	1,808	4,245
Net position:						
Invested in capital assets, net of related debt	120,550	121,872	19,382	18,426	139,932	140,298
Restricted	3,148	1,773	13	46	3,161	1,819
Unrestricted (Deficit)	(5,768)	(6,486)	6,077	5,874	309	(612)
Total net position	$ 117,930	$ 117,159	$ 25,472	$ 24,346	$ 143,402	$ 141,505

Activities in 2015/16, which changed the City's net position, are described in the Table 2, with comparison totals for 2014/15 activities

Governmental activities

Governmental activities increased the City of Morro Bay's net position by $771K. Increased transient occupancy tax due to strong tourism (which also increased sales taxes), the unanticipated receipt of cash from old state-mandated cost claims and a 2010 grant closeout for the construction of the City Fire Department's Apparatus Bay, cash received in December 2015 from the San Luis Obispo Council of Governments for the Morro Creek Bridge project and reduced expenses comprise the greatest reasons for change.

The largest governmental capital projects were the General Plan Update ($340K), which is funded by building fees, improvements to the parking lot located on the Embarcadero ($83K), the completion of the Morro Creek Bridge project ($66K), and the removal of the City's underground fuel storage tanks ($65K).

TABLE 2: CITY OF MORRO BAY CHANGES IN NET POSITION

	Governmental activites		Business-type activites		Total	
				(As Restated)		
	2016	2015	2016	2015	2016	2015
Revenues:						
Program revenues:						
Charges for services	$ 3,513	$ 4,016	$ 11,425	$ 9,595	$ 14,938	$ 13,611
Operating grants and contributions	1,745	442	315	455	2,060	897
Capital grants and contributions	343	1,603	-	-	343	1,603
General revenues:						
Property taxes	4,054	3,940	-	-	4,054	3,940
Other taxes	5,301	6,521	-	-	5,301	6,521
Other	470	500	103	117	573	617
Total revenues	15,426	17,022	11,843	10,167	27,269	27,189
Expenses:						
Administraton	1,557	2,773	-	-	1,557	2,773
Community promotion	1,480	1,167	-	-	1,480	1,167
Finance	1,117	630	-	-	1,117	630
Fire	3,220	2,658	-	-	3,220	2,658
Housing	69	53	-	-	69	53
Police	3,271	3,392	-	-	3,271	3,392
Public Works	3,714	2,985	-	-	3,714	2,985
Recreation	1,235	1,819	-	-	1,235	1,819
Water operating	-	-	4,404	4,113	4,404	4,113
Sewer operating	-	-	3,227	3,576	3,227	3,576
Harbor operating	-	-	1,783	2,234	1,783	2,234
Transit	-	-	295	270	295	270
Total expenses	15,663	15,477	9,709	10,193	25,372	25,670
Increase (decrease) in net assets before transfers	(237)	1,545	2,134	(26)	1,897	1,519
Transfers	1,008	807	(1,008)	(807)	-	-
Increase (decrease) in net assets	771	2,352	1,126	(833)	1,897	1,519
Net position-beginning of year	117,159	114,807	24,346	25,179	141,505	139,986
Net assets - June 30	$ 117,930	$ 117,159	$ 25,472	$ 24,346	$ 143,402	$ 141,505

Business-type activities.

Business-type activities increased the City of Morro Bay's net position by $1.1 million. The water and sewer rate increase, adopted by the City Council in May 2015, went into effect with July 2015 usage (September 2015 billing), plus lower expenses, accounts for this increase. Rates will continue to increase for the next five years to ensure compliance with bond coverage ratios required for the City's participation in the state water project. This is discussed in further detail in Note 10 on page 84.

The most significant capital expense is present in the Sewer Fund. Since 1953, the City and the Cayucos Sanitary District have been partners in a jointly-owned wastewater treatment plant. The treatment plant is operated under a Joint Powers Agreement (JPA). In 2003, the City and the Cayucos Sanitary District began work efforts to replace the existing Facility, agreeing to share in the costs of studying, planning and designing a new facility to be constructed at the existing site. Activities continued until January 2013, when the California Coastal Commission voted to deny the Coastal Development Permit for the Facility at its existing location. The entities attempted to work together to build a jointly-owned facility at a different site, but since April 2015, both entities have taken steps to build separate facilities serving each entity's own community.

The City has been actively exploring options to build a new water reclamation facility, which will produce water that may be reused for groundwater injection (recharge) and agricultural or other irrigation. The City has reviewed three potential sites for locating the new facility, but has not made a final site selection at this time.

There were no major capital expenses in the Water or Harbor Funds.

Financial Analysis of the Government's Funds

As noted earlier, the City of Morro Bay uses fund accounting to ensure and demonstrate compliance with finance-related legal requirements.

Governmental funds. The focus of the City's *governmental funds* is to provide information on near-term inflows, outflows, and balances of *spendable* resources. Such information is useful in assessing Morro Bay's financing requirements. In particular, *unreserved fund balance* may serve as a useful measure of a government's net resources available for spending at the end of the fiscal year.

As of June 30, 2016, the City of Morro Bay's governmental funds reported combined ending fund balances of $10.4 million, an increase of $1.9 million in comparison to the prior year. The majority of this total amount ($6.3 million) constitutes nonspendable ($3.1 million), restricted ($3.2 million) and committed ($80K). The amount available for spending at the City's discretion ($4.1 million) is 40% of the combined fund balances.

The General Fund is the chief operating fund of the City of Morro Bay. At the end of June 30, 2016, total fund balance of the general fund was $7.1 million, the majority of which is unassigned ($4.1 million). As a measure of the general fund's liquidity, it may be useful to compare unreserved fund balance to total fund expenditures. Unreserved fund balance represents 34% of total general fund expenditures.

The General Fund's fund balance increased by $1.0 million during the current fiscal year. City management has embraced a change in philosophy, leaning towards leveling the playing field for residents and businesses by ensuring those who utilize services pay for those services. Fees for services, with the exception of tiered subsidies for youth recreation programs, have been increased to collect more fully the cost of services provided. Additionally, the City engaged a professional firm to perform an organizational assessment and financial stability model. Some of these recommendations and tools were implemented in fiscal year 2015/16, and the remaining are subject to review for implementation in fiscal year 2016/17. Additionally, the City collected $280K in additional transient occupancy taxes and $200K in sales taxes from significantly increased tourism.

Proprietary funds. The City of Morro Bay's proprietary funds provide the same type of information in the government-wide financial statements, but in more detail. At June 30, 2016, unrestricted net position in the Water, Sewer and Harbor Operating Funds amounted to $2.9 million, $3.6 million and $(608K), respectively. Net position changes in the three funds are decrease of $275K (Water), increase of $1.6 million (Sewer), and decrease of 133K (Harbor). Factors concerning those funds have already been addressed in the discussion of the City's business-type activities.

General Fund Budgetary Highlights

Differences between the original budget and the final amended budget ($530K in expenditures and $1 million in revenues) are briefly summarized below:

TABLE 3: CITY OF MORRO BAY GENERAL FUND

DEPARTMENTAL CHANGES TO ORIGINAL ADOPTED BUDGET

REVENUES		EXPENDITURES	
$ 21	Property taxes	$ 13	City Council
243	Tranisient occupancy tax	(34)	City Manager
62	State-mandated cost reimb	(10)	Elections
150	Sale of real property	91	Deputy City Manager
243	Tranisient occupancy tax	45	Human resources
21	Other Police grants	76	City Attorney
226	Other Fire services	72	Accounting & Treasury
100	FEMA grant	4	City Rental Property
(18)	Rental income	24	Police department
7	Special events	181	Fire department
(12)	Program revenue	7	Public works
		37	Consolidated maintenance
		22	Recreation
		2	Community Development
$ 1,043		$ 530	

Capital Asset and Debt Administration

Capital assets.

The City of Morro Bay's net investment in capital assets for its governmental and business-type activities as of June 30, 2016, amounts to $142.0 million. This investment in capital assets includes land, distribution and collection systems, buildings and equipment, improvements, works of art and historical collections, and current year infrastructure.

The major capital asset event that occurred during the current fiscal year was the increase to the Sewer Operating Fund's construction in progress for costs incurred for planning related to the City-owned water reclamation facility.

TABLE 4: CITY OF MORRO BAY NET CAPITAL ASSETS

	Governmental Activities		(As Restated) Business-type Activities		Total	
	2016	2015	2016	2015	2016	2015
Land	$ 95,440	$ 95,465	$ 1,496	$ 1,496	$ 96,936	$ 96,961
Artwork	63	63	3	3	66	66
Construction in progress	2	1,852	2,608	796	2,610	2,648
Subtotal	95,505	97,380	4,107	2,295	99,612	99,675
Machinery and equipment	4,136	4,280	9,708	9,741	13,844	14,021
Buildings and structures	15,343	15,468	5,316	5,316	20,659	20,784
Infrastructure	27,566	25,716	30,207	30,207	57,773	55,923
Less accum deprn	(20,614)	(19,557)	(29,261)	(28,338)	(49,875)	(47,895)
Subtotal	26,431	25,907	15,970	16,926	42,401	42,833
Total	$ 121,936	$ 123,287	$ 20,077	$ 19,221	$ 142,013	$ 142,508

Additional information on the City's capital assets can be found in Note 4 on pages 65-66.

Long-term debt. At the end of the current fiscal year, the City of Morro Bay had total debt outstanding of $3.8 million. Of this amount, $2.1 million comprises debt secured solely by specified revenue sources (e.g., notes payable and certificates of participation). The City maintains a double A ("AA") rating from Standard & Poor's.

TABLE 5: CITY OF MORRO BAY LONG-TERM LIABILITIES

	Governmental activities		(As Restated) Business-type activities		Total	
	2016	2015	2016	2015	2016	2015
Certificates payable	$ 1,386	$ 1,416	$ -	$ -	$ 1,386	$ 1,416
Notes payable	-	-	695	795	695	795
Claims payable	52	230	-	-	52	230
Compensated absenses	280	290	114	95	394	385
Other Post-Employment Benefits	347	206	-	-	347	206
Pension-related debt	974	1,256	-	-	974	1,256
Total	$ 3,039	$ 3,398	$ 809	$ 890	$ 3,848	$ 4,288

Additional information on the City's long-term liabilities can be found in Note 5 on pages 67 - 68 of this report.

Economic Factors and Next Year's Budget and Rates

- Tourism in Morro Bay continues to flourish, as demonstrated by the significant increases in Transient Occupancy Tax (TOT). Since the 2011/12 fiscal year, TOT has increased measurably as shown below:

    - 2011/12 – 7.37%
    - 2012/13 – 10.25%
    - 2013/14 – 13.07%
    - 2014/15 – 14.30%
    - 2015/16 - 8.58%

  Our Embarcadero and waterfront are bustling with activity and the normal *off-season* period, from January through April, is seeing some strength. For the fiscal year 2016/17, TOT growth is projected in our budget at 5%, and to date we are beating that estimate.

- Sales tax revenue experienced an increase of 9% in 2015/16, and is projected to realize a 17% increase in 2016/17. It is important to note, however, that a significant part of the projected increase is due to the complete unwind of the state imposed "triple flip" and sales tax restoration. We anticipate real sales tax revenue and associated "triple flip" will increase at a similar rate as last year.

- Like many cities in the County, Morro Bay is now managing all tourism efforts in house, and we expect revenue from tourism to continue to increase in the near term. While occupancy this year is somewhat flat, average daily rate is up, meaning lodging establishments are selling around the same number of rooms, but at increased revenue levels resulting in the TOT increases noted above.

- In the 2015/16 fiscal year, the City was successful in negotiating one year contracts with its employees that contained a 2.25% cost of living increase and an additional 1.75% equity increase for Police. Management contracted for a salary survey in 2016, and the City Council is considering a compensation policy in 2017.

- The City continues to encourage appropriate revitalization efforts that may have moderate positive effect on City revenues in the years ahead. This likely includes new construction on two Tidelands Trust lease sites and the opening of a new Aquarium on the waterfront, all in 2018-2020.

These factors were considered in preparing the City's budget for the 2016/17 fiscal year.

Requests for Information

This financial report is designed to provide a general overview of the City of Morro Bay's finances for all those with an interest in the government's finances. Questions concerning any of the information provided in this report or requests for additional financial information should be addressed to the Finance Department, City of Morro Bay, 595 Harbor Street, Morro Bay, CA 93442.

BASIC FINANCIAL STATEMENTS

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GOVERNMENT-WIDE FINANCIAL STATEMENTS

City of Morro Bay
Statement of Net Position
June 30, 2016

	Primary Government		
	Governmental Activities	Business-Type Activities	Total
ASSETS			
Current Assets:			
Cash and investments	$ 7,553,824	$ 9,088,839	$ 16,642,663
Receivables, net of allowance for doubtful accounts:			
Utility billings	-	1,650,595	1,650,595
Intergovernmental	1,469,434	5,002	1,474,436
Interest	10,987		10,987
Notes	904,303	-	904,303
Other	4	-	4
Investment in Joint Powers Agreement	-	8,674	8,674
Internal balances	(96)	96	-
Prepaid items and inventories	1,157,267	29,143	1,186,410
Land held for resale	2,712,279	-	2,712,279
Total Current Assets	13,808,002	10,782,349	24,590,351
Noncurrent Assets:			
Capital assets - nondepreciable	95,505,138	4,106,836	99,611,974
Capital assets - depreciable, net	26,430,564	15,970,411	42,400,975
Total Noncurrent Assets	121,935,702	20,077,247	142,012,949
Total Assets	135,743,704	30,859,596	166,603,300
DEFERRED OUTFLOWS OF RESOURCES			
Deferred outflows of resources for pension	2,351,503	668,882	3,020,385
Total deferred outflows of resources	2,351,503	668,882	3,020,385

City of Morro Bay
Statement of Net Position (Continued)
June 30, 2016

	Primary Government		
	Governmental Activities	Business-Type Activities	Total
LIABILITIES			
Current Liabilities:			
Accounts payable	482,232	489,183	971,415
Accrued payroll and benefits	860,921	188,814	1,049,735
Deposits	-	91,011	91,011
Unearned revenues	514,725	132,539	647,264
Long-term liabilities:			
Due within one year	490,110	137,196	627,306
Due in more than one year	2,549,030	671,979	3,221,009
Aggregate net pension liabilities	13,705,107	4,100,950	17,806,057
Total Liabilities	18,602,125	5,811,672	24,413,797
DEFERRED INFLOWS OF RESOURCES			
Deferred inflows of resources for pension	1,563,012	245,016	1,808,028
Total deferred inflows of resources	1,563,012	245,016	1,808,028
NET POSITION			
Net investment in capital assets	120,549,702	19,381,680	139,931,382
Restricted for:			
Housing	933,395	-	933,395
Assessment district	148,600	-	148,600
Parking	320,278	-	320,278
Parks and recreation	219,092	-	219,092
Transportation	25,418	13,301	38,719
Other purposes	1,500,999	-	1,500,999
Total restricted	3,147,782	13,301	3,161,083
Unrestricted (Deficit)	(5,767,414)	6,076,809	309,395
Total Net Position	$ 117,930,070	$ 25,471,790	$ 143,401,860

City of Morro Bay
Statement of Activities
For the Year Ended June 30, 2016

Functions/Programs	Expenses	Program Revenues: Charges for Services	Program Revenues: Operating Grants and Contributions	Program Revenues: Capital Grants and Contributions
Governmental Activities:				
Administration	$ 1,556,268	$ 139,573	$ -	$ -
Community promotion	1,480,497	1,326,608	980,853	-
Finance	1,117,343	367,471	21,839	-
Fire	3,219,756	422,782	1,848	-
Housing	69,051	-	111,389	-
Police	3,270,891	30,578	383,669	-
Public works	3,714,280	636,868	245,393	342,536
Rec/parks/maintenance	1,235,092	589,365	-	-
Total Governmental Activities	15,663,178	3,513,245	1,744,991	342,536
Business-Type Activities:				
Water	4,404,403	4,460,018	-	-
Sewer	3,227,130	4,988,523	-	-
Harbor	1,783,023	1,927,378	11,904	-
Local Transportation	295,151	49,133	302,858	-
Total Business-Type Activities	9,709,707	11,425,052	314,762	-
Total Primary Government	$ 25,372,885	$ 14,938,297	$ 2,059,753	$ 342,536

City of Morro Bay
Statement of Activities (Continued)
For the Year Ended June 30, 2016

Functions/Programs	Net (Expense) Revenue and Changes in Net Positions		
	Governmental Activities	Business-Type Activities	Total
Governmental Activities:			
Administration	$ (1,416,695)	$ -	$ (1,416,695)
Community promotion	826,964	-	826,964
Finance	(728,033)	-	(728,033)
Fire	(2,795,126)	-	(2,795,126)
Housing	42,338	-	42,338
Police	(2,856,644)	-	(2,856,644)
Public services	(2,489,483)	-	(2,489,483)
Rec/parks/maintenance	(645,727)	-	(645,727)
Total Governmental Activities	(10,062,406)	-	(10,062,406)
Business-Type Activities:			
Water	-	55,615	55,615
Sewer	-	1,761,393	1,761,393
Harbor	-	156,259	156,259
Local Transportation	-	56,840	56,840
Total Business-Type Activities	-	2,030,107	2,030,107
Total Primary Government	(10,062,406)	2,030,107	(8,032,299)
General Revenues and Transfers:			
Taxes:			
Property taxes	4,054,361	-	4,054,361
Sales tax	1,556,334	-	1,556,334
Transient occupancy tax	3,136,366	-	3,136,366
Franchise taxes	513,081	-	513,081
Other taxes	95,428	-	95,428
Investment earnings	267,217	103,569	370,786
Miscellaneous	203,055	-	203,055
Transfers	1,007,601	(1,007,601)	-
Total General Revenues and Transfers	10,833,443	(904,032)	9,929,411
Changes in Net Position	771,037	1,126,075	1,897,112
Net Position - beginning of year, as restated (Note 14)	117,159,033	24,345,715	141,504,748
Net Position - end of year	$ 117,930,070	$ 25,471,790	$ 143,401,860

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FUND FINANCIAL STATEMENTS

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GOVERNMENTAL FUND FINANCIAL STATEMENTS

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City of Morro Bay
Balance Sheet
Governmental Funds
June 30, 2016

	Major Funds				
	General Fund	Community Development Grant Special Revenue Fund	Capital Improvement Capital Projects Fund	Nonmajor Governmental Funds	Total
ASSETS					
Cash and cash equivalents	$ 4,694,565	$ 50,774	$ -	$ 2,240,252	$ 6,985,591
Receivables:					
Intergovernmental	416,519	62,992	190,434	78,232	748,177
Accounts	622,222	-	-	99,003	721,225
Interest receivable	10,987	-	-	-	10,987
Notes	-	887,712	-	16,591	904,303
Other	4	-	-	-	4
Due from other funds	68,589	-	226,776	-	295,365
Prepaid items	163,919	21	-	1,542	165,482
Land held for resale	2,712,279	-	-	-	2,712,279
Total Assets	$ 8,689,084	$ 1,001,499	$ 417,210	$ 2,435,620	$ 12,543,413
LIABILITIES AND FUND BALANCES					
Liabilities:					
Accounts payable	$ 326,250	$ -	$ 106,807	$ 24,503	$ 457,560
Accrued payroll and benefits	840,983	135	282	12,351	853,751
Due to other funds	226,872	-	-	68,589	295,461
Unearned revenue	204,604	-	310,121	-	514,725
Total Liabilities	1,598,709	135	417,210	105,443	2,121,497
Fund Balances:					
Nonspendable	2,876,198	176,130	-	1,683	3,054,011
Restricted	-	825,234	-	2,328,494	3,153,728
Committed	79,515	-	-	-	79,515
Unassigned (Deficit)	4,134,662	-	-	-	4,134,662
Total Fund Balances	7,090,375	1,001,364	-	2,330,177	10,421,916
Total Liabilities and Fund Balances	$ 8,689,084	$ 1,001,499	$ 417,210	$ 2,435,620	$ 12,543,413

City of Morro Bay
Reconciliation of the Governmental Funds Balance Sheet to the Government-wide Statement of Net Position
June 30, 2016

Total Fund Balances - Total Governmental Funds			$ 10,421,916
Amounts reported for governmental activities in the Statement of Net Position were reported differently because:			
Capital assets used in governmental activities were not current financial resources. Therefore, they were not reported in the Governmental Funds Balance Sheet.			
Nondepreciable	$	95,505,138	
Depreciable, net		26,430,564	121,935,702
Internal Service Funds were used by management to charge the costs of certain activities, such as insurance and equipment replacement to individual funds. The assets and liabilities of the Internal Service Funds were included in the governmental activities in the Government-Wide Statement of Net Position.			1,476,480
Long-term liabilities are not due and payable in the current period and accordingly are not reported as fund liabilities. All liabilities, both current and long-term, are reported in the Statement of Net Position:			
Certificates payable	$	(1,386,000)	
Compensated absences		(279,654)	
Other postemployment benefits		(347,607)	
Pension related debt		(974,151)	(2,987,412)
Deferred amounts relates to pension net available for current expenditures and are not reported in the governmental fund financial statements:			
Deferred outflows of resources			2,351,503
Deferred inflows of resources			(1,563,012)
Aggregate net pension liability is not due and payable in the current period and therefore is not reported in the governmental funds.			(13,705,107)
Net Position of Governmental Activities			$ 117,930,070

City of Morro Bay
Statement of Revenues, Expenditures, and Changes in Fund Balances
Governmental Funds
For the Year Ended June 30, 2016

	Major Funds				
	General Fund	Community Development Grant Special Revenue Fund	Capital Improvement Capital Projects Fund	Nonmajor Governmental Funds	Total
Revenues:					
Taxes & special assessments	$ 9,351,421	$ -	$ -	$ 1,911,780	$ 11,263,201
Intergovernmental revenue	320,286	111,389	259,018	360,010	1,050,703
Charges for services	1,906,840	-	-	340,093	2,246,933
Revenues from use of money and property	281,085	2,841	-	101,774	385,700
Fines & forfeits	7,289	-	-	10,282	17,571
Other revenues	358,533	-	83,519	63,768	505,820
Total Revenues	12,225,454	114,230	342,537	2,787,707	15,469,928
Expenditures:					
Current:					
Administration	1,417,131	-	-	-	1,417,131
Community promotion	733,416	-	-	717,643	1,451,059
Finance	1,135,126	-	-	-	1,135,126
Fire	2,488,453	-	-	197,839	2,686,292
Housing	-	69,051	-	-	69,051
Police	3,075,489	-	-	106,349	3,181,838
Public works	2,241,112	-	756,415	64,763	3,062,290
Recreation/parks/maintenance	1,015,767	-	-	134,615	1,150,382
Debt service:					
Principal	-	-	-	30,000	30,000
Interest	-	-	-	52,538	52,538
Total Expenditures	12,106,494	69,051	756,415	1,303,747	14,235,707
Excess (deficiency) of revenues over expenditures	118,960	45,179	(413,878)	1,483,960	1,234,221
Other Financing Sources (Uses):					
Transfers in	1,719,365	-	834,745	47,549	2,601,659
Transfers (out)	(824,384)	-	(420,893)	(677,770)	(1,923,047)
Total Other Financing Sources (Uses):	894,981	-	413,852	(630,221)	678,612
Net change in Fund Balances	1,013,941	45,179	(26)	853,739	1,912,833
Fund Balances:					
Beginning of year	6,076,434	956,185	26	1,476,438	8,509,083
End of year	$ 7,090,375	$ 1,001,364	$ -	$ 2,330,177	$ 10,421,916

City of Morro Bay
Reconciliation of the Governmental Funds Statement of Revenues, Expenditures, and Changes in Fund Balances to the Government-Wide Statement of Activities
For the Year Ended June 30, 2016

Net Change in Fund Balances - Total Governmental Funds	$	1,912,833
Governmental activities in the Statement of Activities were reported differently because:		
Capital assets used in governmental activities are not financial resources and therefore are not reported in governmental funds.		
Capital outlay, net of internal service fund		8,666
Depreciation		(1,317,149)
Net effect on disposal of capital assets		(43,314)
Total		(1,351,797)
The issuance of long-term liabilities provides current financial resources to governmental funds, while the repayment of the principal of long-term liabilities consumes the current financial resources of governmental funds. Neither transaction, however; has any effect on net position.		
Change in compensated absences		10,496
Pension expense		512,765
Change in pension related liabilities		282,083
Change in other postemployment benefits		(141,017)
Change in claims payable		229,549
Payment of certificates payable		30,000
Total		923,876
Internal Service Funds are used by management to charge the costs of certain activities, such as insurance and equipment replacement, to individual funds. The net revenue of the Internal Service Funds is reported in governmental activities.		(713,875)
Change in Net Position of Governmental Activities	$	771,037

PROPRIETARY FUND FINANCIAL STATEMENTS

City of Morro Bay
Statement of Net Position
Proprietary Funds
June 30, 2016

	Business-Type Activities		
	Major Funds		
	Water Fund	Sewer Fund	Harbor Fund
ASSETS			
Current Assets:			
Cash and cash equivalents	$ 3,209,313	$ 5,071,288	$ 484,957
Accounts receivable, net of allowance for doubtful accounts	585,351	632,493	432,751
Other receivables	2,891	1,925	-
Intergovernmental receivables	-	-	-
Due from other funds	-	-	96
Investment in Joint Powers Agreement	-	8,674	-
Prepaid items	10,282	8,276	10,585
Total Current Assets	3,807,837	5,722,656	928,389
Noncurrent Assets:			
Capital assets, nondepreciable	470,990	3,593,046	2,800
Capital assets, depreciable	6,968,943	8,091,135	796,518
Total Noncurrent Assets	7,439,933	11,684,181	799,318
Total Assets	11,247,770	17,406,837	1,727,707
DEFERRED OUTFLOWS OF RESOURCES			
Deferred outflows of resources related to pension	108,011	294,557	266,314
Total deferred outflows of resources	108,011	294,557	266,314

City of Morro Bay
Statement of Net Position
Proprietary Funds (Continued)
June 30, 2016

	Business-Type Activities		Governmental Activities
	Nonmajor - Local Transportation Fund	Total	Internal Service
ASSETS			
Current Assets:			
Cash and cash equivalents	$ 323,281	$ 9,088,839	$ 568,233
Accounts receivable, net of allowance for doubtful accounts	-	1,650,595	32
Other receivables	-	4,816	-
Intergovernmental receivables	186	186	-
Due from other funds	-	96	-
Investment in Joint Powers Agreement	-	8,674	-
Prepaid items	-	29,143	991,785
Total Current Assets	323,467	10,782,349	1,560,050
Noncurrent Assets:			
Capital assets, nondepreciable	40,000	4,106,836	-
Capital assets, depreciable	113,815	15,970,411	-
Total Noncurrent Assets	153,815	20,077,247	-
Total Assets	477,282	30,859,596	1,560,050
DEFERRED OUTFLOWS OF RESOURCES			
Deferred outflows of resources related to pension	-	668,882	-
Total deferred outflows of resources	-	668,882	-

City of Morro Bay
Statement of Net Position
Proprietary Funds (Continued)
June 30, 2016

	Business-Type Activities		
	Major Funds		
	Water Fund	Sewer Fund	Harbor Fund
LIABILITIES			
Current Liabilities:			
Accounts payable	120,118	294,152	48,814
Accrued payroll and benefits	58,963	46,396	83,455
Deposits payable	82,142	-	8,869
Unearned revenues	-	-	26,879
Compensated absences, due within one year	9,738	16,075	7,825
Claims payable, due within one year	-	-	-
Notes payable, due within one year	-	-	103,558
Total Current Liabilities	270,961	356,623	279,400
Noncurrent Liabilities:			
Compensated absences, due in more than one year	24,862	16,633	38,475
Note payable, due in more than one year	-	-	592,009
Aggregate net pension liabilities	726,947	1,948,683	1,425,320
Total Noncurrent Liabilities	751,809	1,965,316	2,055,804
Total Liabilities	1,022,770	2,321,939	2,335,204
DEFERRED INFLOWS OF RESOURCES			
Deferred inflows of resources related to pension	35,010	46,550	163,456
Total deferred inflows of resources	35,010	46,550	163,456
NET POSITION			
Net investment in capital assets	7,439,933	11,684,181	103,751
Restricted for:			
PTMISEA	-	-	-
Unrestricted	2,858,068	3,648,724	(608,390)
Total Net Position	$ 10,298,001	$ 15,332,905	$ (504,639)

City of Morro Bay
Statement of Net Position
Proprietary Funds (Continued)
June 30, 2016

	Business-Type Activities		Activities
	Nonmajor - Local Transportation Fund	Total	Internal Service
LIABILITIES			
Current Liabilities:			
Accounts payable	26,099	489,183	24,672
Accrued payroll and benefits	-	188,814	7,170
Deposits payable	-	91,011	-
Unearned revenues	105,660	132,539	-
Compensated absences, due within one year	-	33,638	
Claims payable, due within one year	-	-	51,728
Notes payable, due within one year	-	103,558	-
Total Current Liabilities	131,759	1,038,743	83,570
Noncurrent Liabilities:			
Compensated absences, due in more than one year	-	79,970	-
Note payable, due in more than one year	-	592,009	-
Aggregate net pension liabilities	-	4,100,950	-
Total Noncurrent Liabilities	-	4,772,929	-
Total Liabilities	131,759	5,811,672	83,570
DEFERRED INFLOWS OF RESOURCES			
Deferred inflows of resources related to pension	-	245,016	-
Total deferred inflows of resources	-	245,016	-
NET POSITION			
Net investment in capital assets	153,815	19,381,680	-
Restricted for:			
PTMISEA	13,301	13,301	-
Unrestricted	178,407	6,076,809	1,476,480
Total Net Position	$ 345,523	$ 25,471,790	$ 1,476,480

City of Morro Bay
Statement of Revenues, Expenses, and Changes in Net Position
For the Year Ended June 30, 2016

	Business-Type Activities		
	Water Fund	Sewer Fund	Harbor Fund
Operating Revenues:			
Charges for services	$ 4,459,983	$ 4,985,771	$ 1,915,464
Other revenues	35	2,752	11,914
Total operating revenues	4,460,018	4,988,523	1,927,378
Operating Expenses:			
Employee wages and benefits	706,412	593,544	977,764
Insurance costs	73,758	38,996	77,012
Transportation services	-	-	-
Public works	-	1,670,756	-
Depreciation	268,052	490,316	167,591
Maintenance	110,494	51,597	62,870
Administration	3,228,175	247,630	373,252
Supplies	17,512	134,291	88,774
Total operating expenses	4,404,403	3,227,130	1,747,263
Operating income (loss)	55,615	1,761,393	180,115
Nonoperating Income (loss):			
Intergovernmental	-	-	11,904
Rental income	-	15,790	-
Investment earnings	27,558	46,179	10,792
Interest expense	-	-	(35,760)
Total nonoperating income (loss)	27,558	61,969	(13,064)
Net income (loss) before transfers	83,173	1,823,362	167,051
Transfers:			
Transfers in	-	-	-
Transfers out	(358,518)	(269,072)	(300,236)
Total transfers	(358,518)	(269,072)	(300,236)
Changes in net position	(275,345)	1,554,290	(133,185)
Net Position:			
Beginning of the year, as restated (Note 14)	10,573,346	13,778,615	(371,454)
End of the year	$ 10,298,001	$ 15,332,905	$ (504,639)

City of Morro Bay
Statement of Revenues, Expenses, and Changes in Net Position (Continued)
For the Year Ended June 30, 2016

	Business-Type Activities		Governmental Activities
	Nonmajor - Local Transportation Fund	Total	Internal Service
Operating Revenues:			
Charges for services	$ 42,975	$ 11,404,193	$ 1,421,199
Other revenues	6,158	20,859	102,981
Total operating revenues	49,133	11,425,052	1,524,180
Operating Expenses:			
Employee wages and benefits	-	2,277,720	-
Insurance costs	-	189,766	1,355,537
Transportation services	226,449	226,449	-
Public works	-	1,670,756	-
Depreciation	29,783	955,742	-
Maintenance	124	225,085	-
Administration	5,816	3,854,873	1,185,303
Supplies	32,979	273,556	34,529
Total operating expenses	295,151	9,673,947	2,575,369
Operating income (loss)	(246,018)	1,751,105	(1,051,189)
Nonoperating Income (loss):			
Intergovernmental	302,858	314,762	-
Rental income	-	15,790	-
Investment earnings	3,250	87,779	8,325
Interest expense	-	(35,760)	-
Total nonoperating income (loss)	306,108	382,571	8,325
Net income (loss) before transfers	60,090	2,133,676	(1,042,864)
Transfers:			
Transfers in	-	-	328,989
Transfers out	(79,775)	(1,007,601)	-
Total transfers	(79,775)	(1,007,601)	328,989
Changes in net position	(19,685)	1,126,075	(713,875)
Net Position:			
Beginning of the year, as restated (Note 14)	365,208	24,345,715	2,190,355
End of the year	$ 345,523	$ 25,471,790	$ 1,476,480

City of Morro Bay
Statement of Cash Flows
Proprietary Funds
For the Year Ended June 30, 2016

	Business-Type Activities		
	Water Operating Fund	Sewer Fund	Harbor Fund
CASH FLOWS FROM OPERATING ACTIVITIES			
Cash receipts from services provided	$ 4,297,402	$ 4,894,419	$ 1,893,525
Cash paid to suppliers for goods and services	(2,483,028)	(1,866,178)	(586,855)
Cash paid to employees	(694,694)	(558,930)	(1,035,303)
Net Cash Provided by (Used in) Operating Activities	1,119,680	2,469,311	271,367
CASH FLOWS FROM NONCAPITAL FINANCING ACTIVITIES:			
Transfers in (out)	(358,518)	(269,072)	(300,236)
Intergovemmental	20,037	37,620	130,782
Net Cash Provided by (Used in) Noncapital Financing Activities	(338,481)	(231,452)	(169,454)
CASH FLOWS FROM CAPITAL AND RELATED FINANCING ACTIVITIES:			
Payment on long-term debt	-	-	(99,098)
Interest paid	-	-	(35,760)
Proceeds from sale of capital assets	11,771	324	-
Acquisition of capital assets	(22,681)	(1,801,253)	-
Net Cash (Used In) Capital and Related Financing Activities	(10,910)	(1,800,929)	(134,858)
CASH FLOWS FROM INVESTING ACTIVITIES:			
Interest received	27,558	69,697	10,790
Net Cash Provided by Investing Activities	27,558	69,697	10,790
Net Increase (Decrease) In Cash and Cash Equivalents	797,847	506,627	(22,155)
CASH AND CASH EQUIVALENTS:			
Beginning of Year	2,411,466	4,564,661	507,112
End of Year	$ 3,209,313	$ 5,071,288	$ 484,957
Reconciliation of Operating Income (Loss) to to Net Cash Provided (Used) by Operating Activities:			
Operating Income (loss)	$ 55,615	$ 1,761,393	$ 180,115
Adjustments to reconcile operating income (loss) to net cash provided (used) by operating activities:			
Depreciation	268,052	490,316	167,591
Changes in assets and liabilities:			
(Increase)/decrease in accounts receivables	(161,872)	(94,104)	47,099
(Increase)/decrease in other receivables	(744)	-	-
(Increase)/decrease in prepaid items	880,977	(1,640)	(1,301)
(Increase)/decrease in deferred outflows of resources related to pension	(28,166)	(87,044)	(93,984)
Increase/(decrease) in accounts payable	62,934	278,732	18,092
Increase/(decrease) in accrued payroll and benefits	5,029	7,124	14,124
Increase/(decrease) in deposits payable	3,000	-	(1,738)
Increase/(decrease) in unearned revenue	-	-	(80,952)
Increase/(decrease) in compensated absences	3,770	18,800	10,996
Increase/(decrease) in claims payable			
Increase/(decrease) in net pension liabilities	156,973	467,350	195,138
Increase/(decrease) in deferred inflows of resources related to pension	(125,888)	(371,616)	(183,813)
Net Cash Provided by (Used in) Operating Activities	$ 1,119,680	$ 2,469,311	$ 271,367

City of Morro Bay
Statement of Cash Flows (Continued)
Proprietary Funds
For the Year Ended June 30, 2016

	Business-Type Activities		Governmental Activities
	Nonmajor - Local Transportation Fund	Total	Internal Service
CASH FLOWS FROM OPERATING ACTIVITIES			
Cash receipts from services provided	$ 55,003	$ 11,140,349	$ 1,527,482
Cash paid to suppliers for goods and services	(277,533)	(5,213,594)	(2,421,800)
Cash paid to employees	-	(2,288,927)	7,170
Net Cash Provided by (Used in) Operating Activities	(222,530)	3,637,828	(887,148)
CASH FLOWS FROM NONCAPITAL FINANCING ACTIVITIES:			
Transfers in (out)	(79,775)	(1,007,601)	328,989
Intergovemmental	278,394	466,833	9,980
Net Cash Provided by (Used in) Noncapital Financing Activities	198,619	(540,768)	338,969
CASH FLOWS FROM CAPITAL AND RELATED FINANCING ACTIVITIES:			
Payment on long-term debt	-	(99,098)	-
Interest paid	-	(35,760)	-
Proceeds from sale of capital assets	-	12,095	-
Acquisition of capital assets	-	(1,823,934)	-
Net Cash (Used In) Capital and Related Financing Activities	-	(1,946,697)	-
CASH FLOWS FROM INVESTING ACTIVITIES:			
Interest received	3,250	111,295	8,325
Net Cash Provided by Investing Activities	3,250	111,295	8,325
Net Increase (Decrease) In Cash and Cash Equivalents	(20,661)	1,261,658	(539,854)
CASH AND CASH EQUIVALENTS:			
Beginning of Year	343,942	7,827,181	1,108,087
End of Year	$ 323,281	$ 9,088,839	$ 568,233
Reconciliation of Operating Income (Loss) to to Net Cash Provided (Used) by Operating Activities:			
Operating Income (loss)	$ (246,018)	$ 1,751,105	$ (1,051,189)
Adjustments to reconcile operating income (loss) to net cash provided (used) by operating activities:			
Depreciation	29,783	955,742	-
Changes in assets and liabilities:			
(Increase)/decrease in accounts receivables	5,870	(203,007)	3,302
(Increase)/decrease in other receivables	-	(744)	-
(Increase)/decrease in prepaid items	-	878,036	84,127
(Increase)/decrease in deferred outflows of resources related to pension	-	(209,194)	-
Increase/(decrease) in accounts payable	(12,165)	347,593	17,714
Increase/(decrease) in accrued payroll and benefits	-	26,277	7,170
Increase/(decrease) in deposits payable	-	1,262	-
Increase/(decrease) in unearned revenue	-	(80,952)	-
Increase/(decrease) in compensated absences	-	33,566	-
Increase/(decrease) in claims payable	-	-	51,728
Increase/(decrease) in net pension liabilities	-	819,461	-
Increase/(decrease) in deferred inflows of resources related to pension	-	(681,317)	-
Net Cash Provided by (Used in) Operating Activities	$ (222,530)	$ 3,637,828	$ (887,148)

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FIDUCIARY FUND FINANCIAL STATEMENTS

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City of Morro Bay
Statement of Fiduciary Net Position
Fiduciary Funds
June 30, 2016

	Other Post-employment Trust Fund	Agency Fund
ASSETS		
Current assets:		
Cash and cash equivalents	$ 697,635	$ 1,403,630
Miscellaneous receivable	-	2,771
Prepaids	-	2,770
Total assets	697,635	$ 1,409,171
LIABILITIES		
Accounts payable	-	$ 117,746
Agency funds held for others	-	1,291,425
Total liabilities	-	$ 1,409,171
NET POSITION		
Held in trust	697,635	
Total net position	$ 697,635	

City of Morro Bay
Statement of Change in Fiduciary Net Position
Fiduciary Fund
For the Year Ended June 30, 2016

	Other Postemployment Benefits Trust Fund
ADDITIONS:	
Contributions	$ 180,471
Net appreciation on investment	1,351
Total additions	181,822
Change in net position	181,822
NET POSITION:	
Beginning of year	515,813
End of year	$ 697,635

NOTES TO THE BASIC FINANCIAL STATEMENTS

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City of Morro Bay
Index to the Notes to the Basic Financial Statements
For the Year Ended June 30, 2016

City of Morro Bay
Index to the Notes to the Basic Financial Statements
For the Year Ended June 30, 2016

Note 1 – Summary of Significant Accounting Policies

The basic financial statements of the City of Morro Bay, California, (the "City") have been prepared in accordance with accounting principles generally accepted in the United States of America ("U.S. GAAP") as applied to governmental agencies. The Governmental Accounting Standards Board ("GASB") is the accepted standard setting body for establishing governmental accounting and financial reporting principles. The following is a summary of the City's significant policies:

A. Financial Reporting Entity

The City of Morro Bay is a general law city incorporated in 1964. The City operates under a Council-Manager form of government. The mayor and four council members are elected at large. A full range of services is provided, including general government, parks and recreation, police and fire and emergency services, streets and storm drain maintenance, water and sanitary, and transportation. The City also maintains the Morro Bay harbor and manages state-granted tidelands and harbor fee lands within the City limits.

The basic financial statements present the City and its component units, entities for which the City is considered to be financially accountable. The City is considered to be financially accountable for an organization if the City appoints a voting majority of that organization's governing body and either the City is able to impose its will on that organization or there is a potential for the organization to provide financial benefits to or impose specific financial burdens on the City. The City is also considered to be financially accountable for an organization if that organization is fiscally dependent (i.e., it is unable to adopt its budget, levy taxes, set rates or charges, or issue bonded debt without approval from the City). In certain cases, other organizations are included as component units if the nature and significance of their relationship with the City are such that their exclusion would cause the City's financial statement to be misleading or incomplete. Blended component units, although legally separate entities, are in substance, part of the City's operations and data from these units are combined with data of the City. Management determined there are no entities that should be reported discretely presented component units based on the criteria above.

There are no component units for the City that meet the criteria for blended presentation.

The City participates in the California Joint Powers Insurance Authority (the "CJPIA") for its general liability, workers' compensation, property, vehicle and crime insurance. This organization is financed through premium charges to each member. The CJPIA does not meet the aforementioned reporting criteria, and is therefore, not included in the accompanying financial statements.

Note 1 – Summary of Significant Accounting Policies (Continued)

B. Basis of Accounting and Measurement Focus

The accounts of the City are organized on the basis of funds, each of which is considered a separate accounting entity. The operations of each fund are accounted for by providing a separate set of self-balancing accounts that comprise its assets, liabilities, fund equity, revenues and expenditures or expenses, as appropriate. City resources are allocated to and accounted for in individual funds based upon the purposes for which they are to be spent and the means by which spending activities are controlled.

In accordance with GASB Statement No. 63, *Financial Reporting of Deferred Outflows of Resources, Deferred Inflows of Resources, and Net Position*, the statement of net position reports separate sections for Deferred Outflows of Resources and Deferred Inflows of Resources, when applicable.

Deferred Outflows of Resources represent outflows of resources (consumption of net position) that apply to future periods and that, therefore, will not be recognized as an expense until that time.

Deferred Inflows of Resources represent inflows of resources (acquisition of net position) that apply to future periods and that, therefore, are not recognized as revenue until that time.

Government-Wide Financial Statements

The government-wide financial statements are reported using the "*economic resources*" measurement focus and the accrual basis of accounting.

Revenues are recorded when earned and expenses are recorded at the time liabilities are incurred, regardless of when the related cash flows take place. Nonexchange transactions, in which the City gives (or receives) value without directly receiving (or giving) equal value in exchange, include property and sales taxes, grants, entitlements and donations. On an accrual basis, revenues from property taxes are recognized in the fiscal year for which the taxes are levied. Revenues from sales taxes are recognized when the underlying transactions take place. Revenues from grants, entitlements and donations are recognized in the fiscal year in which all eligible requirements have been satisfied.

The government-wide financial statements consist of the statement of net position and the statement of activities that report information on all of the non-fiduciary activities of the primary government and its component unit. Eliminations have been made to minimize the double counting of internal activities. These statements distinguish between the governmental and business-type activities of the City. Governmental activities generally are financed through taxes, intergovernmental revenues and other non-exchange revenues. Business-type activities generally rely, to a significant extent, on fees and charges for services.

Note 1 – Summary of Significant Accounting Policies (Continued)

B. Basis of Accounting and Measurement Focus (Continued)

Government-Wide Financial Statements (Continued)

The statement of activities presents a comparison between direct expenses and program revenues for each function of the City's activities. Direct expenses are (1) expenses that are specifically associated with a program or function, and (2) allocated indirect expenses. Program revenues include (1) fees, fines and charges paid by the recipients of goods or services offered by the programs, and (2) grants and contributions that are restricted to meeting the operational or capital requirements of a particular program. Revenues that are not classified as program revenues, including all taxes, are presented instead as general revenues.

When both restricted and unrestricted net position are available, restricted resources are used only after the unrestricted resources are depleted.

Fund Financial Statements

The fund financial statements report detailed information about the City's funds. Separate statements are provided for each fund category- governmental, proprietary and fiduciary- even though the latter are excluded from the government-wide financial statements. The emphasis of the Governmental and Proprietary Fund financial statements is on major individual funds. Each major fund is presented in a single column. All remaining governmental funds are separately aggregated and reported as nonmajor funds.

Governmental Fund Financial Statements include a Balance Sheet and a Statement of Revenues, Expenditures and Changes in Fund Balances for all major governmental funds and non-major funds aggregated. An accompanying schedule is presented to reconcile and explain the differences in Net Position as presented in these statements to the Net Position presented in the Government-Wide Financial Statements. The City has presented all major funds that met the applicable criteria.

All governmental funds are accounted for on a spending or *"current financial resources"* measurement focus and the modified accrual basis of accounting. Accordingly, only current assets and current liabilities are included on the Balance Sheet. The Statement of Revenues, Expenditures and Changes in Fund Balances presents increases (revenues and other financing sources) and decreases (expenditures and other financing uses) in net current assets. Under the modified accrual basis of accounting, revenues are recognized in the accounting period in which they become both measurable and available to finance expenditures of the current period.

Revenues are recognized as soon as they are both “measurable” and “available”. Revenues are considered to be available when they are collectible within the current period as soon enough thereafter to pay liabilities of the current period. For this purpose, the City considers revenues to be available if they are collected within 60 days of the end of the current fiscal period. The primary revenue sources, which have been treated as susceptible to accrual by the City, are property taxes, sales tax, intergovernmental revenues and other taxes. Expenditures are recorded in the accounting period in which the related fund liability is incurred.

Note 1 – Summary of Significant Accounting Policies (Continued)

B. Basis of Accounting and Measurement Focus (Continued)

Fund Financial Statements (Continued)

The Reconciliation of the Fund Financial Statements to the Government-Wide Financial Statements is provided to explain the differences created by the integrated approach of GASB Statement No. 34.

The City reports the following major governmental funds:

General Fund - The City's primary operating fund. The General Fund is used to account for all revenues and expenditures necessary to carry out the basic governmental activities of the City that are not accounted for through other funds. For the City, the General Fund includes such activities as public protection, public ways and facilities, health and sanitation, public assistance, education and recreational services.

Community Development Grants Special Revenue Fund - Used to account for financial resources to be used for offering low or no interest-bearing loans to income-qualified homeowners for the acquisition or rehabilitation of owner-occupied site-built or manufactured homes.

Capital Improvement Capital Projects Fund - Used to account for financial resources to be solely used for the construction of capital assets.

Proprietary Fund Financial Statements include a Statement of Net Position, a Statement of Revenues, Expenses and Changes in Fund Net Position, and a Statement of Cash Flows for each major Proprietary Fund.

Proprietary funds are accounted for using the *"economic resources"* measurement focus and the accrual basis of accounting. Accordingly, all assets and liabilities (whether current or noncurrent) are included on the Statement of Net Position. The Statement of Revenues, Expenses and Changes in Fund Net Position presents increases (revenues) and decreases (expenses) in total Net Position. Under the accrual basis of accounting, revenues are recognized in the period in which they are earned while expenses are recognized in the period in which the liability is incurred. In these funds, receivables have been recorded as revenue and provisions have been made for uncollectible amounts.

Proprietary fund operating revenues, such as charges for services, result from exchange transactions associated with the principal activity of the fund. Exchange transactions are those in which each party receives and gives up essentially equal values. Nonoperating revenues, such as subsidies and investment earnings, result from nonexchange transactions or ancillary activities.

The City reports the following major proprietary funds:

Water Enterprise Fund - Accounts for revenues received primarily from water service charges, which are expended for maintenance, operations and improvements to the water system.

Note 1 – Summary of Significant Accounting Policies (Continued)

B. Basis of Accounting and Measurement Focus (Continued)

Fund Financial Statements (Continued)

The City reports the following major proprietary funds (Continued):

Sewer Enterprise Fund - Accounts for revenues received primarily from sewer service charges, which are expended for maintenance, operations and improvements to the sanitary sewer system.

Harbor Enterprise Fund - Accounts for revenues received from harbor leases, rentals, moorings and other sources, which are expended for maintenance, operation, patrolling, and improvements of the harbor.

A separate column representing internal service funds is also presented in these statements. However, internal service balances and activities have been combined with the governmental activities in the Government-Wide Financial Statements.

Internal Service Funds - Accounts for revenues received primarily from charges to City departments on an estimated basis for insurance coverage, and which are expended for insurance purchase, valid claims and related costs. These funds were opened in 1980-81 to account for workers unemployment compensation and fire insurance costs. They now account for all insurance coverage including health, dental, general liability, and vehicle insurance.

Fiduciary fund financial statements include a Statement of Fiduciary Net Position and a Statement of Changes in Fiduciary Net Position. The City's fiduciary funds represent agency fund and Other Postemployment Benefits (OPEB) trust fund. Both agency fund and the OPEB trust fund are accounted for on the full accrual basis of accounting.

The City reports the following fiduciary funds:

Other Postemployment Benefits (OPEB) Trust Fund – Used to account for assets held by the City as a trustee for pre-funding of OPEB liability.

Agency Fund - Used to account for assets held by the City as an agent for individuals, private organizations, other governments, and/or other funds. Agency Funds are custodial in nature (assets equal liabilities) and do not involve measurement of results of operations.

C. Cash and Investments

Investments are reported in the accompanying balance sheet at fair value, except for certain certificates of deposit and investment contracts that are reported at cost because they are not transferable and they have terms that are not affected by changes in market interest rates.

Changes in fair value that occur during a fiscal year are recognized as investment income reported for that fiscal year. Investment income includes interest earnings, changes in fair value, and any gains or losses realized upon the liquidation, maturity, or sale of investments.

The City pools cash and investments of all funds, except for assets held by fiscal agents. Each fund's share in this pool is displayed in the accompanying financial statements as cash and investments. Investment income earned from pooled investments is allocated to those various funds based on each fund's average cash and investment balance.

Note 1 – Summary of Significant Accounting Policies (Continued)

C. Cash and Investments (Continued)

For purposes of the statement of cash flows, cash equivalents are defined as short-term, highly liquid investments that are both readily convertible to known amounts of cash or were purchased so near their maturity that they present insignificant risk of change in value because of changes in interest rates. Cash and cash equivalents in the accompanying statements include the proprietary funds' share of the cash and investment pool of the City of Hemet.

Certain disclosure requirements, if applicable, for Deposits and Investment Risks in the following areas:

- Interest Rate Risk
- Credit Risk
  - Overall
  - Custodial Credit Risk
  - Concentration of Credit Risk
- Foreign Currency Risk

In addition, other disclosures are specified including use of certain methods to present deposits and investments, highly sensitive investments, credit quality at year-end and other disclosures.

D. Fair Value Measurement

In accordance with GASB Statement No. 72, *Fair Value Measurement and Applications,* this statement defines fair value, establishes a framework for measuring fair value and establishes disclosures about fair value measurement. Investments, unless otherwise specified, recorded at fair value in the financial statements, are categorized based upon the level of judgment associated with the inputs used to measure their fair value. Levels of inputs are as follows:

The three levels of the fair value measurement hierarchy are described below:

- Level 1 - Inputs are unadjusted, quoted prices for identical assets and liabilities in active markets at the measurement date.
- Level 2 – Inputs, other than quoted prices included in Level 1, that are observable for the assets and liabilities through corroboration with market data at the measurement date.
- Level 3 – Unobservable inputs that reflect management’s best estimate of what market participants would use in pricing the assets and liabilities at the measurement date.

E. Receivable and Allowance for Doubtful Accounts

Customer accounts receivable consist of amounts owed by private individuals and organizations for services rendered in the regular course of business operations. Receivable are shown net of allowances for doubtful accounts. Uncollectable accounts are based on prior experience and management’s assessment of the collectability of existing accounts.

Note 1 – Summary of Significant Accounting Policies (Continued)

F. Prepaid Items

Certain payments to vendors applicable to future accounting periods are recorded as prepaid items.

G. Inventories

The City maintains an inventory account for fuel. Fuel is valued at June 30 based on the amount of fuel in the storage tanks and the most recent invoices' purchase price. Inventories are valued using first in first out method.

H. Land Held for Resale

Land held for resale is carried at the lower of cost or estimated net realizable value.

I. Property Tax Revenue

Property taxes attach as an enforceable lien at March 1. Taxes are levied on July 1 and payable in two installments, December 10 and April 10. All general property taxes are then allocated by the County Auditor's Office to the various taxing entities per the legislation implementing Proposition 13. The method of allocation used by the County is subject to review by the State of California. City property tax revenues are recognized when levied and received within 60 days of the year end.

J. Capital Assets

Capital assets are recorded at historical cost or estimated historical cost if actual historical cost is not available. Contributed fixed assets are valued at their estimated fair market value on the date contributed. The City defines capital assets as assets with an initial, individual cost of more than $5,000 and an estimated useful life in excess of one year. Capital assets used in operations are depreciated or amortized (assets under capital leases) using the straight-line method over the lesser of the capital lease period or their estimated useful lives in the government-wide statements and proprietary funds. The estimated useful lives are as follows:

Structures & improvements	15-30 years
Equipment	4-10 years
Infrastructure	25-75 years

K. Interfund Transactions

Interfund transactions are reflected as loans, services provided, reimbursements or transfers. Loans are reported as receivables and payables, as appropriate, are subject to elimination upon consolidation, and are referred to as either "due to/from other funds' (i.e., the current portion of interfund loans) or "advances to/from other funds (i.e., the noncurrent portion of interfund loans). Any residual balances outstanding between the governmental activities and the business-type activities are reported in the government-wide financial statements as "internal balances."

Advances between funds, as reported in the fund financial statements, are offset by a fund balance reserve account in applicable governmental funds to indicate that they are not available for appropriation and are not available financial resources. There were no advances between funds during the year.

Services provided, deemed to be at market or near market rates, are treated as revenues and expenditures/expenses. Reimbursements occur when one fund incurs a cost, charges the appropriate benefiting fund and reduces its related cost as a reimbursement. All other interfund transactions are treated as transfers. Transfers between governmental or proprietary funds are netted as part of the reconciliation to the government-wide presentation.

Note 1 – Summary of Significant Accounting Policies (Continued)

L. Claims Payable

The City records a liability to reflect an actuarial estimate of ultimate uninsured losses for both general liability claims (including property damage claims) and workers' compensation claims. The estimated liability for workers' compensation claims and general liability claims includes "*incurred but not reported*" ("IBNR") claims. There is no fixed payment schedule to pay these liabilities.

M. Compensated Absences Payable

City employees have vested interest in varying levels of vacation, sick leave and compensatory time based on their length of employment. It is the policy of the City to pay all accumulated vacation pay and all or a portion of sick pay when an employee retires or terminates. The long-term amount is included as a liability in the governmental activities of the government-wide financial statements. A liability for these amounts is reported in governmental funds only if they have matured, for example, as a result of employee resignations and retirements. All of the liability for compensated absences applicable to proprietary funds is reported in those funds.

N. Pension

For purposes of measuring the net pension liability, deferred outflows of resources and deferred inflows of resources related to pensions, and pension expense, information about the fiduciary net position of the plans and additions to/deductions from the plans' fiduciary net position have been determined on the same basis as they are reported by the plans (Note 7). For this purpose, benefit payments (including refunds of employee contributions) are recognized when due and payable in accordance with benefit terms. Investments are reported at fair value.

The following timeframes are used for pension reporting:

CalPERS	
Valuation Date	June 30, 2014
Measurement Date	June 30, 2015
Measurement Period	July 1, 2014 to June 30, 2015

Gains and losses related to changes in total pension liability and fiduciary net position are recognized in pension expense systematically over time. The first amortized amounts are recognized in pension expense for the year the gain or loss occurs. The remaining amounts are categorized as deferred outflows and deferred inflows of resources related to pensions and are to be recognized in future pension expense. The amortization period differs depending on the source of the gain or loss. The difference between projected and actual earnings is amortized straight-line over 5 years. All other amounts are amortized straight-line over the average expected remaining service lives of all members that are provided with benefits (active, inactive, and retired) as of the beginning of the measurement period.

O. Unearned Revenue

In the government-wide financial statements, unearned revenue is reported for transactions for which revenue has not yet been earned. Typical transactions recorded as unearned revenues in the government-wide financial statements are cell phone site license lease payments received in advance, prepaid charges for services and facility rentals paid in advance.

In the fund financial statements, unearned revenue is recorded when transactions have not yet met the revenue recognition criteria. The City records unearned revenue for transactions for which revenues have not been earned. Typical transactions for which unearned revenue is recorded are lease payments, quarterly encroachment fees and advance registration for recreation classes which were not yet earned.

Note 1 – Summary of Significant Accounting Policies (Continued)

P. Net Position

In the government-wide financial statements and proprietary fund financial statements, net position is classified as follows:

Net Investment in Capital Assets - This component of net position consists of capital assets, net of accumulated depreciation, reduced by the outstanding balances of debt that are attributable to the acquisition, construction, or improvement of those assets.

Restricted - This component of net position consists of restricted assets and deferred outflows of resources reduced by liabilities and deferred inflows of resources related to those assets.

Unrestricted - This component of net position is the amount of the assets, deferred outflows of resources, liabilities, and deferred inflows of resources that are not included in the determination of net investment in capital assets or the restricted component of net position.

Q. Fund Balances

In the governmental fund financial statements, fund balances are classified as follows:

Nonspendable – Nonspendable fund balances include amounts that cannot be spent because they are not in a spendable form, such as inventory, prepaid items, land held for resale and long-term receivable or because resources legally or contractually must remain intact.

Restricted – Restricted fund balances are the portion of fund balance that have externally enforceable limitations on their usage through legislation or limitations imposed by creditors, grantor, laws and regulations of other governments or enabling legislation.

Committed – Committed fund balances are self-imposed limitations by the highest level of decision-making authority, namely the City Council, prior to the end of the reporting period. City Council adoption of a resolution is required to commit resources or to rescind the commitment.

Assigned – Assigned fund balances are limitations imposed by management based on the intended use of the funds. Modifications or rescissions of the constraints can be removed by the same type of action that limited the use of the funds. Assignment of resources can be done by the highest level of decision making or by a committee or official designated for that purpose. The City Council has authorized the Finance Director for that purpose.

Unassigned – Unassigned fund balances represent the residual net resources in excess of the other classifications. The general fund is the only fund that reports a positive unassigned fund balance amount. In other governmental funds, it is not appropriate to report a positive unassigned fund balance amount. However, in governmental fund other than general fund, if expenditures incurred for specific purposes exceed the amounts that are restricted, committed, or assigned to those purposes, it may be necessary to report a negative unassigned fund balance in that fund.

Note 1 – Summary of Significant Accounting Policies (Continued)

R. Use of Estimates

The preparation of the basic financial statements in accordance with U.S. GAAP requires management to make estimates and assumptions that affect certain reported amounts and disclosures. Accordingly, actual results could differ from those estimates.

S. Accounting Changes

GASB has issued Statement No. 72, *Fair Value Measurement and Application*. This Statement addresses accounting and financial reporting issues related to fair value measurements. This Statement provides guidance for determining a fair value measurement for financial reporting purposes and also provides guidance for applying fair value to certain investments and disclosures related to all fair value measurements. This Statement became effective for periods beginning after June 15, 2015 and did not have any measurement impact on the City's investment portfolio, except for the additional disclosure regarding to measurement input as discussed in Note 2C of the City's financial statements for the year ended June 30, 2016.

GASB has issued Statement No. 73, *Accounting and Financial reporting for Pensions and Related Assets That Are Not within the Scope of GASB Statement 68, and Amendments to Certain Provisions of GASB Statements 67 and 68*. This Statement establishes requirements for defined benefit pensions that are not within the scope of Statement No. 68, Accounting and Financial Reporting for Pensions, as well as for the assets accumulated for purposes of providing those pensions. In addition, it establishes requirements for defined contribution pensions that are not within the scope of Statement 68. It also amends certain provisions of Statement No. 67, Financial Reporting for Pension Plans, and Statement 68 for pension plans and pensions that are within their respective scopes. This statement became effective for periods beginning after June 15, 2015 and did not have a significant impact on the City 's financial statements for the year ended June 30, 2016.

GASB has issued Statement No. 76, *The Hierarchy of Generally Accepted Accounting Principles for State and Local Governments*. This statement establishes standards relating to the hierarchy of generally accepted accounting principles (GAAP). The "GAAP hierarchy" consists of the sources of accounting principles used to prepare financial statements of state and local governmental entities in conformity with GAAP and the framework for selecting those principles. This Statement reduces the GAAP hierarchy to two categories of authoritative GAAP and addresses the use of authoritative and nonauthoritative literature in the event that the accounting treatment for a transaction or other event is not specified within a source of authoritative GAAP. This statement became effective for periods beginning after June 15, 2015, and should be applied retroactively. This statement did not have a significant impact on the City's financial statements for the year ended June 30, 2016.

GASB has issued Statement No. 79, *Certain External Investment Pools and Pool Participants*. This statement establishes standards relating accounting and financial reporting for certain external investment pools and pool participants. This statement became effective for periods beginning after June 15, 2015, except for certain provisions on portfolio quality, custodial credit risk, and shadow pricing. Those provisions are effective for reporting periods beginning after December 15, 2015. This statement did not have a significant impact on the City's financial statements for the year ended June 30, 2016.

Note 2 – Cash and Investments

At June 30, 2016, cash and investments are classified in the accompanying financial statements as follows:

	Government-Wide Statement of Net Position			
	Governmental Activities	Business-type Activities	Fiduciary Fund	Total
Cash and investments	$ 7,553,824	$ 9,088,839	$ 2,101,265	$ 18,743,928

At June 30, 2016, cash and investments consisted of the following:

Cash:	
Petty Cash	$ 1,950
Deposits with financial institutions	8,590,510
Total cash and cash equivalents	8,592,460
Investments:	
Local Agency Investment Fund	5,145,628
Mutual Funds	504,704
Non-negotiable Certificates of Deposit	3,499,451
U.S. Government Sponsored Enterprise Securities	1,001,685
Total investments	10,151,468
Total cash and investments	$ 18,743,928

A. Deposits

The carrying amounts of the City's demand deposits were $8,590,510 at June 30, 2016. Bank balances at that date were $8,290,066, the total amount of which was collateralized or insured with accounts held by the pledging financial institutions in the City's name as discussed below.

The California Government Code requires California banks and savings and loan associations to secure the City's cash deposits by pledging securities as collateral. This Code states that collateral pledged in this manner shall have the effect of perfecting a security interest in such collateral superior to those of a general creditor. Thus, collateral for cash deposits is considered to be held in the City's name.

The market value of pledged securities must equal at least 110% of the City's cash deposits. California law also allows institutions to secure City deposits by pledging first trust deed mortgage notes having a value of 150% of the City's total cash deposits. The City may waive collateral requirements for cash deposits, which are fully insured up to $250,000 by the Federal Deposit Insurance Corporation ("FDIC"). The City, however, has not waived the collateralization requirements.

The City follows the practice of pooling cash and investments of all funds, except for funds required to be held by fiscal agents under the provisions of bond indentures, if applicable. Interest income earned on pooled cash and investments is allocated on an accounting period basis to the various funds based on the period-end cash and investment balances, however, interest is not allocated to funds created to advance costs for utility undergrounding districts, reimbursable grant funds or internal service funds.

Note 2 – Cash and Investments (Continued)

B. Investments

Under the provisions of the City's investment policy, the City's investments are limited to those authorized by the California Government Code, except as follows:

Authorized Investment Type	Maximum Maturity	Maximum Percentage of Portfolio	Maximum Investment in one Issuer
Securities Issued by U.S. Government, or its agencies	5 years	None	None
Local Agency Investment Fund (LAIF)	N/A	None	None
Certificates of Deposit	5 years	None	$250,000
Bankers Acceptances	180 days	40%	None
Mutual Funds and Money Market Mutual Funds	5 years	None	None
Collaterized Deposit	N/A	None	None
Passbook Savings Accounts	5 years	None	None
Repurchase Agreements	5 years	25%	None

The City is a participant in LAIF, which is regulated by California Government Code Section 16429 under the oversight of the Treasurer of the State of California. The City's investments with LAIF at June 30, 2016 included a portion of the pool funds invested in Structured Notes and Asset-Backed Securities, which included the following:

Structured Notes: debt securities (other than asset-backed securities) whose cash flow characteristics (coupon rate, redemption amount, or stated maturity) depend upon one or more indices and/or that have embedded forwards or options.

Asset-Backed Securities: generally mortgage-backed securities that entitle their purchasers to receive a share of the cash flows from a pool of assets such as principal and interest repayments from a pool of mortgages (for example, collateralized mortgage obligations), or credit card receivables.

As of June 30, 2016, the City had $5,145,628 invested in LAIF, which had invested 2.81% of the pool investment funds in Structured Notes and Asset-Backed Securities.

C. Fair Value Measurement

At June 30, 2016, investments are reported at fair value. The following table presents the fair value measurement of investments on a recurring basis and the levels within GASB 72 fair value hierarchy in which the fair value measurements fall at June 30, 2016:

Investment Type	Level 1	Level 2	Level 3	N/A
Local Agency Investment Fund	$ -	$ 5,145,628	$ -	$ -
Mutual Funds		-		504,704
Certificates of deposit	-	3,499,451	-	-
U.S. Government Sponsored Enterprise Securities	-	1,001,685	-	-
Total	$ -	$ 9,646,764	$ -	$ 504,704

Note 2 – Cash and Investments (Continued)

D. Risk Disclosures

Interest Rate Risk - As a means of limiting its exposure to fair value losses arising from rising interest rates, the City's investment policy limits investments to a maximum maturity of five years.

At June 30, 2016, the City had the following investment maturities:

		Investment Maturities (in Years)				
Investment Type	Fair value	Less than 1	1 to 2	2 to 3	3 to 4	4 to 5
Local Agency Investment Fund	$ 5,145,628	$ 5,145,628	$ -	$ -	$ -	$ -
Mutual Funds	504,704	504,704	-	-	-	-
Certificates of deposit	3,499,451	999,008	1,000,000	1,500,443	-	-
U.S. Government Sponsored Enterprise Securities	1,001,685	-	1,001,685	-	-	-
Total	$ 10,151,468	$ 6,649,340	$ 2,001,685	$ 1,500,443	$ -	$ -

Credit Risk – State law limits investments in commercial paper and corporate bonds to the top two ratings issued by nationally recognized statistical rating organizations. It is the City's policy to limit its investments in these investment types to the top rating issued by Standard & Poor's and Moody's Investor Service. At June 30, 2016, the City's credit risks, expressed on a percentage basis, were as follows:

Credit Quality Distribution for Securities
with Credit Exposure as a Percentage of Total Investments

Investment Type	Moody's Credit Rating	S&P's Credit Rating	% of Investments with Interest Rate Risk
Local Agency Investment Fund (LAIF)	Not Rated	Not Rated	50.69%
Mutual Funds	Not Rated	Not Rated	4.97%
Certificates of Deposits	Not Rated	Not Rated	34.47%
U.S. Government Sponsored Enterprise Securities			
Federal Home Loan Mortgage Corporation	AAA	AA+	4.94%
Federal National Mortgage Association	AAA	AA+	4.93%
Total			100.00%

Custodial Risk – For deposits, custodial credit risk is the risk that, in the event of the failure of a depository financial institution, the City will not be able to recover its deposits or will not be able to recover collateral securities that are in the possession of an outside party. For an investment, custodial credit risk is the risk that, in the event of the failure of the counterparty (e.g. broker-dealer), the City will not be able to recover the value of its investments or collateral securities that are in the possession of an outside party.

Concentration of credit risk – The investment policy of the City contains no limitations on the amount that can be invested in any one issuer beyond that stipulated by the California Government Code. There was no investments in any one issuer (other than mutual funds and external investment pools) that represent 5% or more of the City's investments.

Note 3 – Interfund Transactions

Due From/To Other Funds – At June 30, 2016, the City had the following due from/to other funds:

	Due From Other Funds			
Due To Other Funds	General Fund	Capital Improvement Fund	Harbor Fund	Total
Governmental Funds:				
General Fund	$ -	$ 226,776	$ 96	$ 226,872
Nonmajor Funds	68,589	-	-	68,589
Total	$ 68,589	$ 226,776	$ 96	$ 295,461

The above amount resulted from the time lag between the dates that reimbursable expenditures occur and payments are received from other agencies.

Transfers

For the year ended June 30, 2016, the City had the following transfers:

	Transfers in				
Transfers out	General Fund	Capital Improvement fund	Nonmajor Governmental Funds	Internal Service Funds	Total
Governmental Funds:					
General Fund	$ -	$ 461,095	$ 43,800	$ 319,489	$ 824,384
Capital Improvement Fund	417,144	-	3,749	-	420,893
Nonmajor Funds	491,890	185,880	-	-	677,770
Enterprise Funds:					
Water Fund	281,058	73,960	-	3,500	358,518
Sewer Fund	167,512	97,560	-	4,000	269,072
Harbor Fund	281,986	16,250	-	2,000	300,236
Local Transportation Fund	79,775	-	-	-	79,775
Total	$ 1,719,365	$ 834,745	$ 47,549	$ 328,989	$ 2,930,648

In general, transfers are used to 1) use unrestricted revenues collected in one fund to finance various programs accounted for in other funds in accordance with budgetary authorizations, and 2) to reimburse the General Fund for administration services provided to other funds.

Note 4 – Capital Assets

The following is a summary of changes in capital assets for the governmental activities for the year ended June 30, 2016:

	Balance July 1, 2015	Additions	Deletions	Reclassification	Balance June 30, 2016
Governmental Activities:					
Nondepreciable capital assets:					
Artwork	$ 63,000	$ -	$ -	$ -	$ 63,000
Land	95,465,028	-	(24,742)	-	95,440,286
Construction in progress	1,851,764	-	-	(1,849,912)	1,852
Total nondepreciable capital assets	97,379,792	-	(24,742)	(1,849,912)	95,505,138
Depreciable capital assets:					
Machinery & equipment	4,280,752	6,071	(151,412)	-	4,135,411
Buildings & structures	15,468,368	2,595	(127,832)	-	15,343,131
Infrastructure	25,715,846	-	-	1,849,912	27,565,758
Total depreciable capital assets	45,464,966	8,666	(279,244)	1,849,912	47,044,300
Less accumulated depreciation	(19,557,259)	(1,317,149)	260,672	-	(20,613,736)
Total depreciable assets, net	25,907,707	(1,308,483)	(18,572)	1,849,912	26,430,564
Governmental activities capital assets, net	$ 123,287,499	$ (1,308,483)	$ (43,314)	$ -	$ 121,935,702

The following is a summary of changes in capital assets for the business-type activities for the year ended June 30, 2016:

	Balance July 1, 2015	Restatement	Balance July 1, 2015 As Restated	Additions	Deletions	Balance June 30, 2016
Business-Type Activities:						
Nondepreciable capital assets:						
Artwork	$ 2,800	$ -	$ 2,800	$ -	$ -	$ 2,800
Land	1,495,855	-	1,495,855	-	-	1,495,855
Construction in progress	206,380	589,963	796,343	1,823,934	(12,096)	2,608,181
Total nondepreciable capital assets	1,705,035	589,963	2,294,998	1,823,934	(12,096)	4,106,836
Depreciable capital assets:						
Machinery & equipment	9,741,057		9,741,057	-	(32,520)	9,708,537
Buildings & structures	5,315,603	-	5,315,603	-	-	5,315,603
Infrastructure	30,207,253	-	30,207,253	-	-	30,207,253
Total depreciable capital assets	45,263,913	-	45,263,913	-	(32,520)	45,231,393
Less accumulated depreciation	(28,337,760)		(28,337,760)	(955,742)	32,520	(29,260,982)
Total depreciable assets, net	16,926,153	-	16,926,153	(955,742)	-	15,970,411
Business-type activities capital assets, net	$18,631,188	$ 589,963	$19,221,151	$ 868,192	$(12,096)	$ 20,077,247

Note 4 – Capital Assets (Continued)

Depreciation expense was charged to governmental activities as follow:

Administration	$	6,454
Community Development		6,849
Police		103,792
Fire		484,579
Public Works		628,280
Recreation & Parks		87,195
Total depreciation expense, governmental activities	$	1,317,149

Depreciation expense was charged to business-type activites as follows:

Water	$	268,052
Sewer		490,316
Harbor		167,591
Transit		29,783
Total depreciation expense, business-type activities	$	955,742

Note 5 – Long-term Liabilities

Summary of changes in long-term liabilities for the year ended June 30, 2016 is as follows:

	Balance July 1, 2015, As Restated	Additions	Deletion	Balance June 30, 2016	Amounts due within one Year	Amounts due over a Year
Governmental Activities:						
Certificates payable	$ 1,416,000	$ -	$ (30,000)	$ 1,386,000	$ 31,000	$ 1,355,000
Claims payable	229,549	51,728	(229,549)	51,728	51,728	-
Compensated absences	290,150	103,587	(114,083)	279,654	33,558	246,096
Other postemployment benefits	206,590	193,497	(52,480)	347,607	-	347,607
Pension related debt	1,256,234	80,853	(362,936)	974,151	373,824	600,327
	$ 3,398,523	$ 429,665	$ (789,048)	$ 3,039,140	$ 490,110	$ 2,549,030
Business-Type Activities:						
Notes Payable	$ 794,666	$ -	$ (99,099)	$ 695,567	$ 103,558	$ 592,009
Compensated absences	80,043	89,635	(56,070)	113,608	33,638	79,970
	$ 874,709	$ 89,635	$ (155,169)	$ 809,175	$ 137,196	$ 671,979

Pension-Related Debt

As of June 30, 2003, the California Public Employees' Retirement System ("CalPERS") implemented a risk pool for the City's multiple-employer public employee defined benefit pension plan. The City's Miscellaneous and Safety Plans converted from agent multiple-employer plans to cost-sharing multiple employer plans. In addition to the annual required contributions (see Note 7), the City is also required to make annual payments on a Side Fund, which was created when the City entered the risk pool to account for the difference between the funded status of the pool and the funded status of the City's plans. The responsibility for funding the Side Fund is specific to the City and is not shared by all employers in the risk pool. The annual payments on the Side Fund represent principal and interest payments on the pension-related debt, which are included in the retirement expenditures in the City's various functions.

The amount of pension-related debt outstanding at June 30, 2016 totaled $974,151, which includes $560,238 for the Safety Fire Plan and $413,913 for the Safety Police Plan.

Note 5 – Long-term Liabilities (Continued)

Certificates of Participation

On October 12, 2011, the City entered into an installment sale agreement with the Public Property Financing Corporation of California 2011 Fire Station Financing Project, Series A and B, Certificates of Participation (the "COP") for $1,500,000 and $300,000, respectively. The principal balance of Series A matures commencing from September 2012 to September 1, 2041, interest rates at 3.75%, payable on March 1 and September 1 of each year. Series B was fully paid as of June 30, 2016. Series A had an outstanding balance of $1,386,000 at June 30, 2016.

Year Ending	Certificate of participation		
June 30,	Principal	Interest	Total
2017	$ 31,000	$ 51,393	$ 82,393
2018	33,000	50,194	83,194
2019	34,000	48,937	82,937
2020	35,000	47,644	82,644
2021	37,000	46,293	83,293
2022-2026	207,000	209,232	416,232
2027-2031	250,000	166,501	416,501
2032-2036	305,000	114,618	419,618
2037-2041	371,000	51,394	422,394
2042	83,000	1,975	84,975
	$ 1,386,000	$ 788,181	$ 2,174,181

Notes Payable

Note Payable to the Department of Boating and Waterways for the construction of the T-Pier and other harbor improvements. Payable annually, beginning August 1, 1997, in the amount of $134,859, including interest at 4.7% annum.

Year Ending	Notes Payable		
June 30,	Principal	Interest	Total
2017	$ 103,558	$ 31,301	$ 134,859
2018	108,219	26,640	134,859
2019	113,088	21,771	134,859
2020	118,177	16,682	134,859
2021	123,496	11,363	134,859
2022	129,029	5,806	134,835
	$ 695,567	$ 113,563	$ 809,130

Note 6 – Liability, Workers' Compensation, and Purchased Insurance

A. Description of Self-Insurance Pool Pursuant to Joint Powers Agreement

The City of Morro Bay is a member of the California Joint Powers Insurance Authority (the "CJPIA"). The CJPIA is composed of 116 California public entities and is organized under a joint powers agreement pursuant to California Government Code §6500 et seq. The purpose of the CJPIA is to arrange and administer programs for the pooling of self-insured losses, to purchase excess insurance or reinsurance, and to arrange for group purchased insurance for property and other lines of coverage. The CJPIA began covering claims of its members in 1978. Each member government has an elected official as its representative on the Board of Directors. The Board operates through a nine-member Executive Committee.

B. Self-Insurance Programs of the CJPIA

Each member pays an annual contribution at the beginning of the coverage period. A retrospective adjustment is then conducted annually thereafter, for coverage years 2012-13 and prior. Retrospective adjustments are scheduled to continue indefinitely on coverage years 2012-13 and prior, until all claims incurred during those coverage years are closed, on a pool-wide basis. This subsequent cost re-allocation among members, based on actual claim development, can result in adjustments of either refunds or additional deposits required. Coverage years 2013-14 and forward are not subject to routine annual retrospective adjustment.

The total funding requirement for self-insurance programs is estimated using actuarial models and pre-funded through the annual contribution. Costs are allocated to individual agencies based on exposure (payroll) and experience (claims) relative to other members of the risk-sharing pool. Additional information regarding the cost allocation methodology is provided below.

Liability

In the liability program claims are pooled separately between police and general government exposures. (1) The payroll of each member is evaluated relative to the payroll of other members. A variable credibility factor is determined for each member, which establishes the weight applied to payroll and the weight applied to losses within the formula. (2) The first layer of losses includes incurred costs up to $30,000 for each occurrence and is evaluated as a percentage of the pool's total incurred costs within the first layer. (3) The second layer of losses includes incurred costs from $30,000 to $750,000 for each occurrence and is evaluated as a percentage of the pool's total incurred costs within the second layer. (4) Incurred costs from $750,000 to $50 million, are distributed based on the outcome of cost allocation within the first and second loss layers.

For 2015-16 the CJPIA's pooled retention is $2 million per occurrence, with reinsurance to $20 million, and excess insurance to $50 million. The CJPIA's reinsurance contracts are subject to the following additional pooled retentions: (a) $2.5 million annual aggregate deductible in the $3 million excess $2 million layer, (b) $3 million annual aggregate deductible in the 5 million excess $10 million layer. There is a third annual aggregate deductible in the amount of $2.5 million in the $5 million excess $5 million layer, however it is fully covered under a separate policy and therefore not retained by the Authority.

The overall coverage limit for each member, including all layers of coverage, is $50 million per occurrence. Costs of covered claims for subsidence losses have a sub-limit of $30 million per occurrence.

Note 6 – Liability, Workers' Compensation, and Purchased Insurance (Continued)

Workers' Compensation

In the workers' compensation program claims are pooled separately between public safety (police and fire) and general government exposures. (1) The payroll of each member is evaluated relative to the payroll of other members. A variable credibility factor is determined for each member, which establishes the weight applied to payroll and the weight applied to losses within the formula. (2) The first layer of losses includes incurred costs up to $50,000 for each occurrence and is evaluated as a percentage of the pool's total incurred costs within the first layer. (3) The second layer of losses includes incurred costs from $50,000 to $100,000 for each occurrence and is evaluated as a percentage of the pool's total incurred costs within the second layer. (4) Incurred costs from $100,000 to statutory limits are distributed based on the outcome of cost allocation within the first and second loss layers.

For 2015-16 the CJPIA's pooled retention is $2 million per occurrence, with reinsurance to statutory limits under California Workers' Compensation Law.

Employer's Liability losses are pooled among members to $2 million. Coverage from $2 million to $5 million is purchased as part of a reinsurance policy, and Employer's Liability losses from $5 million to $10 million are pooled among members.

C. Purchased Insurance

Property Insurance

The City participates in the all-risk property protection program of the CJPIA. This insurance protection is underwritten by several insurance companies. The City property is currently insured according to a schedule of covered property submitted by the City to the CJPIA. The City property currently has all-risk property insurance protection in the amount of $93,108,215. There is a $5,000 deductible per occurrence except for non-emergency vehicle insurance which has a $1,000 deductible. Premiums for the coverage are paid annually and are not subject to retrospective adjustments.

Earthquake and Flood Insurance

The City purchases earthquake and flood insurance on a portion of its property. The earthquake insurance is part of the property protection insurance program of the CJPIA. The City property currently has earthquake protection in the amount of $50,433,208. There is a deductible of 5% per unit of value with a minimum deductible of $100,000. Premiums for the coverage are paid annually and are not subject to retrospective adjustments.

Crime Insurance

The City purchases crime insurance coverage in the amount of $1,000,000 with a $2,500 deductible. The fidelity coverage is provided through the CJPIA. Premiums are paid annually and are not subject to retrospective adjustments.

Note 6 – Liability, Workers' Compensation, and Purchased Insurance (Continued)

C. Purchased Insurance (Continued)

Special Event Tenant User Liability Insurance

The City of Morro Bay further protects against liability damages by requiring tenant users of certain property to purchase low-cost tenant user liability insurance for certain activities on agency property. The insurance premium is paid by the tenant user and is paid to the City of Morro Bay according to a schedule. The City of Morro Bay then pays for the insurance. The insurance is arranged by the Authority.

D. Adequacy of Protection

During the past three fiscal years, none of the above programs of protection experienced settlements or judgments that exceeded pooled or insured coverage. There were also no significant reductions in pooled or insured liability coverage in 2015-16.

Note 7 – Defined Benefit Pension Plans

The following is a summary of changes in net pension liability, and the related deferred outflows and inflows of resources for the year ended June 30, 2016:

	Governmental Activities	Business-type Activities			
		Water	Sewer	Harbor	Total
Deferred outflows of resources:					
Pension contribution made after measurement date:	$ 1,513,402	$ 66,591	$ 174,085	$ 166,707	$ 407,383
Adjustment due to differences in proportions	838,101	41,420	120,472	99,607	261,499
Total deferred outflows of resources	$ 2,351,503	$ 108,011	$ 294,557	$ 266,314	$ 668,882
Net pension liabilities:					
Net pension liabilities	$ 13,705,107	$ 726,947	$ 1,948,683	$ 1,425,320	$ 4,100,950
Total net pension liabilities	$ 13,705,107	$ 726,947	$ 1,948,683	$ 1,425,320	$ 4,100,950
Deferred inflows of Resources:					
Changes of assumptions	$ 775,639	$ 37,787	$ 112,502	$ 95,194	$ 245,483
Difference between expected and actual experience	72,569	(3,994)	(11,891)	14,231	(1,654)
Employer contributions in excess/(under) proportionated contributions	124,049	17,518	52,263	7,217	76,998
Difference in projected and actual earnings on pension investments	590,755	(16,301)	(106,324)	46,814	(75,811)
Total deferred inflows of Resources	$ 1,563,012	$ 35,010	$ 46,550	$ 163,456	$ 245,016
Pension expenses:	$ 963,407	$ 67,928	$ 202,241	$ 103,395	$ 373,564

Note 7 – Defined Benefit Pension Plans (Continued)

General Information about the Pension Plan

Plan Description

The City contributes to the California Public Employees' Retirement System ("CalPERS"), a cost-sharing multiple-employer defined benefit pension plan. CalPERS provides retirement and disability benefits, annual cost-of-living adjustments, and death benefits to plan members and beneficiaries. CalPERS acts as a common investment and administrative agent for participating public entities within the State of California. Benefit provisions and all other requirements are established by State statute and City ordinance. Copies of the CalPERS annual financial report may be obtained from their Executive Office located at 400 P Street, Sacramento, California 95814.

Employees Covered by Benefit Terms

At June 30, 2014, the following employees were covered by the benefit terms:

	Plans		
	Fire Tier 1	**Fire Tier 2**	**Fire PEPRA**
Active employees	8	2	1
Transferred and terminated employees	5	1	-
Separated	1	-	-
Retired Employees and Beneficiaries	20	-	-
Total	34	3	1

	Plans		
	Police Tier 1	**Police Tier 2**	**Police PEPRA**
Active employees	12	7	2
Transferred and terminated employees	16	2	-
Separated	9	-	-
Retired Employees and Beneficiaries	38	-	-
Total	75	9	2

	Misc. Tier 1	**Misc. Tier 2**	**Misc. PEPRA**
Active employees	43	12	4
Transferred and terminated employees	31	-	-
Separated	32	2	1
Retired Employees and Beneficiaries	115	-	-
Total	221	14	5

Note 7 – Defined Benefit Pension Plans (Continued)

General Information about the Pension Plan (Continued)

Benefit Provided

CalPERS provide retirement and disability benefits, annual cost-of-living adjustments, and death benefits to plan members and beneficiaries. Following are the benefit provisions for each plan:

- Fire Tier 1: 3% (at age 50) of the highest average final 12 months compensation
- Fire Tier 2: 3% (at age 55) of the highest average final 36 months compensation
- Police Tier 1: 3% (at age 50) of the highest average final 12 months compensation
- Police Tier 2: 3% (at age 55) of the highest average final 36 months compensation
- Miscellaneous Tier 1: 2-2.7% (at age 55) of the highest average final 12 months compensation
- Miscellaneous Tier 2 : 2% (at age 60) of the highest average final 36 months compensation
- PEPRA Miscellaneous : 2% (at age 62) of the highest average final 36 months compensation

Employees may retire from active service once they reach 50 years of age and have five years of CalPERS-credited service.

The City has contracted with CalPERS for pre-retirement death benefits, should an employee die while actively employed, subject to the employee's eligibility to retire. Eligibility is established when an employee reaches 50 years of age, and has a minimum of five years of CalPERS-credited service.

Upon the death of an eligible employee, beneficiary(ies) may choose to receive: 1) the City-contracted CalPERS retirement formula Option 2W, or 2) the basic death benefit (employee contributions plus interest) and one month's salary for each year of current services, up to six months' pay. With either choice, the City-contracted 4th Level 1959 Survivor Benefit, which provides additional allocations to spouses caring for unmarried children, under the age of 22, or incapacitated children, is provided.

If the employee dies prior to attaining retirement eligibility, beneficiary(ies) receive: 1) the lump sum basic death benefit (employee contributions plus interest) and one month's salary for each year of current services, up to six months' pay, and 2) the City-contracted 4th Level 1959 Survivor Benefit.

Upon the death of a retiree, a one-time lump sum payment of $500 will be made to the retirees designated survivor(s), or to the retiree's estate. Depending on the retirement option chosen, beneficiary(ies) may continue to receive lifetime benefits. The City does not contract for Survivor Continuance. Additionally, the City does not participate in Social Security retirement.

Contributions

Section 20814(c) of the California Public Employees' Retirement Law ("PERL") requires that the employer contribution rates for all public employers be determined on an annual basis by the actuary and shall be effective on the July 1 following notice of a change in the rate. The total plan contributions are determined through CalPERS' annual actuarial valuation process. The Public agency cost-sharing plans covered by either the Safety risk pools, the Plan's actuarially determined rate is based on the estimated amount necessary to pay the Plan's allocated share of the risk pool's costs of benefits earned by employees during the year, and any unfunded accrued liability. The employer is required to contribute the difference between the actuarially determined rate and the contribution rate of employees.

Note 7 – Defined Benefit Pension Plans (Continued)

General Information about the Pension Plan (Continued)

For the measurement period ended June 30, 2015 (the measurement date), the active employee contribution rate were as follows:

Plans	Active Employee Contribution Rate	Employer Contribution Rate
Fire Tier 1	9.000%	45.264%
Fire Tier 2	9.000%	21.367%
Fire PEPRA	8.000%	11.500%
Police Tier 1	9.000%	41.001%
Police Tier 2	9.000%	21.367%
Police PEPRA	8.000%	11.500%
Misc. Tier 1	7.000%	25.441%
Misc. Tier 2	7.000%	8.005%
Misc. PEPRA	6.250%	6.250%

Pension Liabilities, Pension Expenses, and Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pension

Actuarial Methods and Assumptions Used to Determine Total Pension Liability

For the measurement period ended June 30, 2015 (the measurement date), the total pension liability was determined by rolling forward the June 30, 2014 total pension liability. The June 30, 2015 total pension liabilities were based on the following actuarial methods and assumptions:

Actuarial Cost Method	Entry Age Normal in accordance with the requirement of GASB Statement No. 68
Actuarial Assumptions:	
Discount Rate	7.65%
Inflation	2.75%
Salary Increases	Varies by Entry Age and Service
Investment Rate of Return	7.65% Net of Pension Plan Investment; includes Inflation
Mortality Rate Table	Derived using CalPERS' Membership Data for all Funds.
Post Retirement Benefit Increase	Contract COLA up to 2.75% until Purchasing Power Protection Allowance Floor on Purchasing Power applies, 2.75% thereafter

Note 7 – Defined Benefit Pension Plans (Continued)

Pension Liabilities, Pension Expenses, and Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pension (Continued)

Actuarial Methods and Assumptions Used to Determine Total Pension Liability (Continued)

All other actuarial assumptions used in the June 30, 2014 valuation were based on the results of an actuarial experience study for the period from 1997 to 2011, including updates to salary increase, mortality and retirement rates. The Experience Study report can be obtained at CalPERS' website under Forms and Publications.

Change of Assumption

In accordance with GASB 68, the long-term expected rate of return should be determined net of pension plan investment expense but without reduction for pension plan administrative expense. The discount rate was changed from 7.5 % (net of administrative expense in 2014) to 7.65% as of the June, 30, 2015 measurement date to correct the adjustment which previously reduced the discount rate for administrative expense.

Discount Rate

The discount rate used to measure the total pension liability was 7.65 percent. To determine whether the municipal bond rate should be used in the calculation of a discount rate for each plan, CalPERS stress tested plans that would most likely result in a discount rate that would be different from the actuarially assumed discount rate. Based on the testing of the plans, the tests revealed the assets would not run out. Therefore, the current 7.65 percent discount rate is appropriate and the use of the municipal bond rate calculation is not deemed necessary. The long-term expected discount rate of 7.65 percent is applied to all plans in the Public Employees Retirement Fund. The stress test results are presented in a detailed report called "GASB Crossover Testing Report" that can be obtained at CalPERS' website under the GASB 68 section.

The long-term expected rate of return on pension plan investments was determined using a building-block method in which best-estimate ranges of expected future real rates of return (expected returns, net of pension plan investment expense and inflation) are developed for each major asset class.

In determining the long-term expected rate of return, staff took into account both short-term and long-term market return expectations as well as the expected pension fund (Public Employees' Retirement Fund) cash flows. Such cash flows were developed assuming that both members and employers will make their required contributions on time and as scheduled in all future years. Using historical returns of all the funds' asset classes, expected compound (geometric) returns were calculated over the short-term (first 10 years) and the long-term (11-60 years) using a building-block approach. Using the expected nominal returns for both short-term and long-term, the present value of benefits was calculated for each fund. The expected rate of return was set by calculating the single equivalent expected return that arrived at the same present value of benefits for cash flows as the one calculated using both short-term and long-term returns. The expected rate of return was then set equivalent to the single equivalent rate calculated above and rounded down to the nearest one quarter of one percent.

Note 7 – Defined Benefit Pension Plans (Continued)

Pension Liabilities, Pension Expenses, and Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pension (Continued)

Discount Rate (Continued)

The table below reflects long-term expected real rate of return by asset class. The rate of return was calculated using the capital market assumptions applied to determine the discount rate and asset allocation. The target allocation shown was adopted by the Board effective on July 1, 2014.

Asset Class	New Strategic Allocation	Real Return Years 1-10[1]	Real Return Years 11+[2]
Global Equity	51.00%	5.25%	5.71%
Global Fixed Income	19.00	0.99	2.43
Inflation Sensitive	6.00	0.45	3.36
Private Equity	10.00	6.83	6.95
Real Estate	10.00	4.50	5.13
Infrastructure and Forestland	2.00	4.50	5.09
Liquidity	2.00	-0.55	-1.05

[1]An expected inflation of 2.5% used for this period

[2]An expected inflatin of 3.0% used for this period.

Sensitivity of the City's Proportionate Share of the Net Pension Liability to Changes in the Discount Rate

The following presents the City's proportionate share of the net pension liability of the Plan as of the measurement date, calculated using the discount rate of 7.65%, as well as what the City's proportionate share of the net pension liability would be if it were calculated using a discount rate that is 1 percentage-point lower (6.65%) or 1 percentage-point higher (8.65%) than the current rate:

	Plan's Net Pension Liability/(Asset)		
	Discount Rate - 1% (6.65%)	Current Discount Rate (7.65%)	Discount Rate + 1% (8.65%)
Safety	$ 13,284,361	$ 8,285,412	$ 4,186,366
Misc.	$ 15,966,786	$ 9,520,645	$ 4,198,607

Note 7 – Defined Benefit Pension Plans (Continued)

Pension Liabilities, Pension Expenses, and Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pension (Continued)

Pension Plan Fiduciary Net Position

Detail information about the plan's fiduciary net position is available in the separately issued CalPERS financial report and can be obtained from CalPERS' website under Forms and Publications.

Proportionate Share of Net Pension Liability and Pension Expense

The following table shows the plan's proportionate share of the risk pool collective net pension liability over the measurement period:

	Increase (Decrease)		
	Plan Total Pension Liability	Plan Fiduciary Net Position	Plan Net Pension Liability/(Asset)
Safety			
Balance at: 6/30/14 (Valuation date)	$ 32,189,755	$ 24,728,894	$ 7,460,861
Balance at: 6/30/15 (Measurement date)	$ 33,128,093	$ 24,842,681	$ 8,285,412
Net Changes during 2014-2015	$ 938,338	$ 113,787	$ 824,551
Misc.			
Balance at: 6/30/14 (Valuation date)	$ 41,450,092	$ 33,872,049	$ 7,578,043
Balance at: 6/30/15 (Measurement date)	$ 41,904,645	$ 32,384,000	$ 9,520,645
Net Changes during 2014-2015	$ 454,553	$ (1,488,049)	$ 1,942,602

Note 7 – Defined Benefit Pension Plans (Continued)

Pension Liabilities, Pension Expenses, and Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pension (Continued)

Proportionate Share of Net Pension Liability and Pension Expense (Continued)

The following is the approach established by the plan actuary to allocate the net pension liability and pension expense to the individual employers within the risk pool.

(1) In determining a cost-sharing plan's proportionate share, total amounts of liabilities and assets are first calculated for the risk pool as a whole on the valuation date (June 30, 2013). The risk pool's fiduciary net position ("FNP") subtracted from its total pension liability ("TPL") determines the net pension liability ("NPL") at the valuation date.

(2) Using standard actuarial roll forward methods, the risk pool TPL is then computed at the measurement date (June 30, 2014). Risk pool FNP at the measurement date is then subtracted from this number to compute the NPL for the risk pool at the measurement date. For purposes of FNP in this step and any later reference thereto, the risk pool's FNP at the measurement date denotes the aggregate risk pool's FNP at June 30, 2014 less the sum of all additional side fund (or unfunded liability) contributions made by all employers during the measurement period (2013-14).

(3) The individual plan's TPL, FNP and NPL are also calculated at the valuation date. TPL is allocated based on the rate plan's share of the actuarial accrued liability. FNP is allocated based on the rate plan's share of the market value assets.

(4) Two ratios are created by dividing the plan's individual TPL and FNP as of the valuation date from (3) by the amounts in step (1), the risk pool's total TPL and FNP, respectively.

(5) The plan's TPL as of the Measurement Date is equal to the risk pool TPL generated in (2) multiplied by the TPL ratio generated in (4). The plan's FNP as of the Measurement Date is equal to the FNP generated in (2) multiplied by the FNP ratio generated in (4) plus any additional side fund (or unfunded liability) contributions made by the employer on behalf of the plan during the measurement period.

(6) The plan's NPL at the Measurement Date is the difference between the TPL and FNP calculated in (5).

Deferred outflows of resources, deferred inflows of resources, and pension expense is allocate based on the City's share of contributions during measurement period.

The City's proportionate share of the net pension liability was as follows:

	Plans	
	Safety	Misc.
June 30, 2014	0.11990%	0.12179%
June 30, 2015	0.12071%	0.13871%
Change - Increase (Decrease)	0.00081%	0.01692%

Note 7 – Defined Benefit Pension Plans (Continued)

Pension Liabilities, Pension Expenses, and Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pension (Continued)

Proportionate Share of Net Pension Liability and Pension Expense (Continued)

For the year ended June 30, 2016, the City recognized pension expense as follows:

Safety	$	496,325
Misc.		840,646
	$	1,336,971

The amortization period differs depending on the source of the gain or loss. The difference between projected and actual earnings is amortized over 5-years straight line. All other amounts are amortized straight-line over the average expected remaining service lives of all members that are provided with benefits (active, inactive and retired) as of the beginning of the measurement period.

The expected average remaining service lifetime ("EARSL") is calculated by dividing the total future service years by the total number of plan participants (active, inactive, and retired) in the risk pool. The EARSL for risk pool for the 2014-15 measurement period is 3.8 years, which was obtained by dividing the total service years of 467,023 (the sum of remaining service lifetimes of the active employees) by 122,410 (the total number of participants: active, inactive, and retired).

At June 30, 2016, the City reported deferred outflows of resources and deferred inflows of resources related to pensions from the following sources:

	Safety		Misc.		Totals	
	Deferred outflows of Resources	Deferred inflows of Resources	Deferred outflows of Resources	Deferred inflows of Resources	Deferred outflows of Resources	Deferred inflows of Resources
Pension contribution after measurement date	$ 1,116,272	$ -	$ 804,513	$ -	$ 1,920,785	$ -
Difference between expected and actual experience	-	(120,342)	-	49,427	-	(70,915)
Changes of assumptions	-	(553,493)	-	(467,630)	-	(1,021,123)
Difference between projected and actual earning on pension plan investments	-	(280,514)	-	(234,429)	-	(514,943)
Adjustment due to differences in proportions	481,828	-	617,772	-	1,099,600	-
Difference between City contributions and proportionate share of contributions	-	122,413	-	(323,460)	-	(201,047)
Total	$ 1,598,100	$ (831,936)	$ 1,422,285	$ (976,092)	$ 3,020,385	$ (1,808,028)

Note 7 – Defined Benefit Pension Plans (Continued)

Pension Liabilities, Pension Expenses, and Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pension (Continued)

Proportionate Share of Net Pension Liability and Pension Expense (Continued)

Reported deferred outflows of resources related to pensions resulting from City's contributions subsequent to the measurement date will be recognized as a reduction of the net pension liability in the year ended June 30, 2017. Other amounts reported as deferred outflows of resources and deferred inflows of resources related to pensions will be recognized in pension expense as follows:

	Deferred Outflows/ (Inflows) of Resources		
Year Ended June 30,	Safety	Misc	Total
2017	$ (218,999)	$ (210,137)	$ (429,136)
2018	(226,919)	(216,934)	(443,853)
2019	(248,536)	(230,904)	(479,440)
2020	344,346	299,655	644,001
2021	-	-	-
Thereafter	-	-	-
	$ (350,108)	$ (358,320)	$ (708,428)

Note 8 –Other Postemployment Benefits Plan

Plan Description

The City contributes to a multi-employer defined benefit plan to provide post-employment medical benefits. Specifically, the City provides postretirement medical benefits to all employees who retire from the City after attaining age 50 with at least 5 years of service. The plan does not provide a publicly available financial report.

Funding Policy

The contribution requirements of plan members and the City are established and may be amended by the City's City Council, and/or the employee associations. The required employer contribution was $119 per person for months in 2014 and $122 per person per month in 2016. Retirees pay the differential monthly amount of the premium, which varies depending on the health benefits they select. The City implemented GASB 45 for the fiscal year ended June 30, 2010, establishing a liability in its Risk Management Fund for the value of the annual required contribution (ARC), an amount actuarially determined in accordance with the parameters of GASB Statement 45. The ARC represents a level of funding that, if paid on an ongoing basis, is projected to cover normal cost each year and amortize any unfunded actuarial liabilities over a closed period not to exceed thirty years. The ARC and contribution total for year ended June 30, 2016 was $193,497 and $52,480, respectively.

Annual OPEB Cost and Net OPEB Asset

The City's annual OPEB cost is calculated based on the ARC. The ARC represents a level of funding that, if paid on an ongoing basis, is projected to cover normal cost each year and amortize any unfunded actuarial liabilities (or funding excesses) over a period not to exceed thirty years. The following table shows the components of the City's annual OPEB cost for the year, the amount actually contributed to the plan, and changes in the City's net OPEB Obligation:

Annual Required Contribution	$	191,821
Interest Adjustment		14,978
Adjustment to Annual Required Contribution		(13,302)
Annual OPEB Cost		193,497
Contribution made		(52,480)
Change in Net OPEB Obligation		141,017
Net OPEB Obligation, Beginning of Year		206,590
Net OPEB Obligation, End of Year	$	347,607

Note 8 –Other Postemployment Benefits Plan (Continued)

Annual OPEB Cost and Net OPEB Asset (Continued)

The City's annual OPEB cost, the percentage of annual OPEB cost contributed to the plan, and the net OPEB obligation (asset) for the year ended June 30, 2016 and the two preceding years were as follows:

Year Ended	OPEB Cost	OPEB Cost Contributed	Percentage of Annual OPEB cost Contributed	Net OPEB Obligation (Asset)
June 30, 2014	$ 149,704	$ 50,425	33.68%	$ 109,837
June 30, 2015	146,217	49,658	33.96%	206,590
June 30, 2016	193,497	52,480	27.12%	347,607

Funded Status and Funding Progress

As of August 1, 2015, the latest actuarial valuation date, there were no plan assets on the valuation date. The actuarial accrued liability for benefits was $1,938,928, and the actuarial value of assets was $614,048, resulting in an unfunded actuarial accrued liability (UAAL) of $1,324,880. The covered payroll (annual payroll of active employees covered by the plan) was $6,509,854 and the ratio of the UAAL to the covered payroll was negative 20.35%.

Actuarial valuations of an ongoing plan involve estimates of the value of reported amounts and assumptions about the probability of occurrence of events far into the future. Examples include assumptions about future employment, mortality, and the healthcare cost trend. Amounts determined regarding the funded status of the plan and the annual required contributions of the City are subject to continual revision as actual results are compared with past expectations and new estimates are made about the future. The schedule of funding progress, presented as required supplementary information following the notes to the financial statements, presents multi-year trend information about whether the actuarial value of plan assets is increasing or decreasing over time relative to the actuarial accrued liability for benefits.

In January 2013, the City adopted ICMA-RC's Vantagecare RHS Employer Investment Program for pre-funding of OPEB liability and established a revocable trust account. The City holds discretion to amend or terminate the program, and appoint program administrator to manage the daily operations of the trust account. This trust account is solely funded with assets from the City. The balance as of June 30, 2016 was $697,635.

Actuarial Methods and Assumptions

Projections of benefits for financial reporting purposes are based on the substantive plan (the plan as understood by the employer and the plan members) and include the types of benefits provided at the time of each valuation and the historical pattern of sharing of benefit costs between the employer and the plan members at that point. The actuarial methods and assumptions used include techniques that are designed to reduce the effects of short-term volatility in actuarial accrued liabilities and the actuarial value of assets consistent with the long-term perspective of the calculations.

The required contribution for the year ended June 30, 2016 was determined as part of the August 1, 2015 actuarial valuation using the entry age normal actuarial cost method. The actuarial assumptions included a 4.5% investment rate of return (net of administrative expenses), payroll increase of 2.75% per annum, and inflation rate of 2.75% per annum, and the City's share of premium cost will increase at rates of 4% per annum. The level percentage of payroll method is used to allocate amortization cost by year, closed 30 year amortization period is used for the initial UAAL, and open 25 year amortization period is used for any residual UAAL.

Note 9 – Classification of Fund Balances

At June 30, 2016, fund balances are classified in the governmental funds as follows:

	General Fund	Community Development Grant Special Revenue Fund	Capital Improvement Capital Projects Fund	Nonmajor Governmental Funds	Total
Nonspendable:					
Prepaid Items	$ 163,919	$ 21	$ -	$ 1,683	$ 165,623
Notes Receivable	-	176,109	-	-	176,109
Land Held for Resale	2,712,279	-	-	-	2,712,279
	2,876,198	176,130	-	1,683	3,054,011
Restricted:					
Community Development Grants	-	825,234	-	-	825,234
Gas Tax	-	-	-	4,552	4,552
Tourism Business Improvement	-	-	-	260,753	260,753
Lower Cost Visitor Accommodations	-	-	-	53,226	53,226
Traffic Safety Grant	-	-	-	1,394	1,394
Special Safety Grants	-	-	-	117,210	117,210
Parking In-lieu	-	-	-	320,278	320,278
Non-Transit LTF - Bike Paths	-	-	-	4,042	4,042
Special Assessment Districts	-	-	-	67,034	67,034
Government Impact Fees	-	-	-	571,140	571,140
State Park Marina Grants	-	-	-	209,237	209,237
Affortable Housing	-	-	-	108,161	108,161
Cloister Special Assessment Districts	-	-	-	81,566	81,566
LTF Roads	-	-	-	21,376	21,376
District Transaction Tax	-	-	-	498,670	498,670
Park In-lieu (Quimby) Fees	-	-	-	9,855	9,855
	-	825,234	-	2,328,494	3,153,728
Committed:					
Facility Maintenance Fund	79,515	-	-	-	79,515
	79,515	-	-	-	79,515
Unassigned (deficit)	4,134,662	-	-	-	4,134,662
	$ 7,090,375	$ 1,001,364	$ -	$ 2,330,177	$ 10,421,916

Note 10 – Water Revenue Over State Water Payments

The City has contracted with the San Luis Obispo County Flood Control and Water Conservation District to provide water from the state water project. The City has contracted to obtain 1,313 acre feet of water per year with an initial estimated cost of $750 per acre foot, not including the fixed operating and management costs allocated to the City on a pro rata share basis. The City is obligated to make payments even if the City fails or refuses to accept water deliveries. The City paid a total of $2,166,523 during the year ended June 30, 2016 for its share of the construction and operating costs. For the fiscal year ended June 30, 2016, the City had 1.16, an increase from 0.64 for the fiscal year ended June 30, 2015, in water revenue over State Water Payments ratio which is required to be at minimum ratio of greater than, or equal to 1.25.

Note 11 – Commitments and Contingencies

A. Commitments

The City had several outstanding or planned constructions as of June 30, 2016. However, those constructions neither were contractual nor carried over in a budget. Open constructions are re-budgeted and adopted in a new fiscal year.

B. Contingencies

The City is subject to various legal matters incidental to the ordinary course of City operations. At this time, the outcome of these matters and the potential loss, if any, that might result are uncertain. No provision for any liability that may result has been made in the financial statements for these matters.

C. Grants

Amounts received or receivable from granting agencies are subject to audit and adjustment by grantor agencies. While no matters of noncompliance were disclosed by the audit of the financial statements or single audit of the Federal grant programs, grantor agencies may subject grant programs to additional compliance tests, which may result in disallowed costs. In the opinion of management, future disallowances of current or prior grant expenditures, if any, would not have a material adverse effect on the financial position of the City.

Note 12 – Investment in Joint Powers Agreement

On October 25, 1982, the City entered into Morro Bay/Cayucos Sanitary District Wastewater Treatment Plant Joint Powers Agreement (JPA) for the treatment of wastewater for the benefit of the government's residents and those of Cayucos, an unincorporated community in San Luis Obispo County. The contributions to the JPA were made by the Sewer Enterprise Fund.

During April 2016, Cayucos Sanitary District made a decision to pursue alternatives for wastewater treatment and reclamation of water independently. Because of this reason, construction in progress that was fully funded by the City were reclassified to be reported as part of the Sewer Enterprise Fund. The impact to the prior period net position is presented in Note 14.

Investment in joint powers agreement as of June 30, 2016 was $8,674

Note 13 – Other Required Disclosure

Excess of Expenditures over Appropriations

Excess of expenditures over appropriations occurred in individual funds during the year ended June 30, 2016 as follows:

	Expenditures	Appropriations	Expenditure in Excess of Appropriations
General Fund			
Administration	$ 1,417,131	$ 1,233,503	$ (183,628)
Finance	1,135,126	1,078,792	(56,334)
Fire	2,488,453	2,473,498	(14,955)
Police	3,075,489	3,055,005	(20,484)
Public works	2,241,112	1,495,341	(745,771)
Community Development Grant Special Revenue Fund			
Housing	69,051	-	(69,051)
Nonmajor Special Revenue Funds:			
MB Tourism Business Improvement District Fund			
Community promotion	642,643	-	(642,643)
Special Safety Grant			
Police	38,495	34,000	(4,495)
State Park Marina			
Public works	-	30,922	(30,922)
Affortable Housing In-lieu			
Community promotion	-	75,000	(75,000)
Park In-lieu Fee Fund			
Park and recreation	454	-	(454)
District Transaction Tax Fund			
Fire	197,839	127,366	(70,473)

Note 14 – Prior Period Adjustments

During April 2016, Cayucos Sanitary District made a decision to pursue alternatives for wastewater treatment and reclamation of water independently. Because of this reason, construction in progress that was fully funded by the City were reclassified to be reported as part of the Sewer Enterprise Fund. Net positions as of July 1, 2015 were restated as follows:"

	Sewer	Business-type Activities
Net Position at July 1, 2015	$ 13,172,252	$ 23,739,352
Understatement of capital assets	589,963	589,963
Understatement of investment in Joint Powers Agreement	16,400	16,400
Subtotal	606,363	606,363
Net Position at July 1, 2015, as Restated	$ 13,778,615	$ 24,345,715

REQUIRED SUPPLEMENTARY INFORMATION (UNAUDITED)

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City of Morro Bay
Required Supplementary Information (Unaudited)
For the Year Ended June 30, 2016

Budgetary Information

Budgets are annually adopted for all governmental and proprietary fund types on a basis consistent with generally accepted accounting principles. The City is required by its municipal code to adopt an annual budget on or before June 30 for the ensuing fiscal year. From the effective date of the budget, the amounts become the "*annual appropriated budget*."

The appropriated budget is prepared by fund, department and division. The City Council may amend the budget by motion during the fiscal year. Expenditures may not legally exceed appropriations at the fund level. The City Manager is authorized to transfer budgeted amounts between departments within the same fund; however, any transfers between funds or revisions that alter total appropriations of any fund require City Council approval. The legal level of control is therefore at the fund level.

Supplemental appropriations, which increase appropriations, were made during the fiscal year, therefore, "final" budgeted revenue and appropriation amounts shown in the financial statements represent the original budget, modified for adjustments during the year. Appropriations lapse at the end of the fiscal year.

Encumbrances - Under encumbrance accounting, purchase orders, contracts and other commitments for expenditures are recorded to reserve that portion of the applicable appropriation. Encumbrance accounting is employed as an extension of formal budgetary accounting. Unexpended appropriations lapse at year-end.

City of Morro Bay
Required Supplementary Information (Unaudited) (Continued)
For the Year Ended June 30, 2016

Budgetary Comparison Schedule - General Fund

	Budgeted Amounts		Actual	Variance with Final Budget Positive
	Original	Final	Amounts	(Negative)
Revenues:				
Taxes & special assessments	$ 8,800,434	$ 9,064,080	$ 9,351,421	$ 287,341
Intergovernmental revenue	24,900	207,679	320,286	112,607
Charges for services	1,330,478	1,882,285	1,906,840	24,555
Revenues from use of money and property	367,030	51,927	281,085	229,158
Fines & forfeits	5,000	5,000	7,289	2,289
Other revenues	7,100	157,100	358,533	201,433
Total Revenues	10,534,942	11,368,071	12,225,454	857,383
Expenditures:				
Current:				
Administration	1,097,117	1,233,503	1,417,131	(183,628)
Community promotion	887,910	890,166	733,416	156,750
Finance	1,241,594	1,078,792	1,135,126	(56,334)
Fire	2,292,460	2,473,498	2,488,453	(14,955)
Police	3,032,060	3,055,005	3,075,489	(20,484)
Public works	1,468,797	1,495,341	2,241,112	(745,771)
Recreation/parks/maintenance	1,141,352	1,163,806	1,015,767	148,039
Total Expenditures	11,161,290	11,390,111	12,106,494	(716,383)
Excess(deficiency) of revenues over expenditures	(626,348)	(22,040)	118,960	141,000
Other Financing Sources (Uses):				
Transfers in	1,452,011	1,452,011	1,719,365	267,354
Transfers out	(719,489)	(719,489)	(824,384)	(104,895)
Total Other Financing Sources (Uses):	732,522	732,522	894,981	162,459
Net change in Fund Balance	$ 106,174	$ 710,482	1,013,941	$ 303,459
Fund Balances, July 1			6,076,434	
Fund Balances, June 30			$ 7,090,375	

City of Morro Bay
Required Supplementary Information (Unaudited) (Continued)
For the Year Ended June 30, 2016

Budgetary Comparison Schedule – Community Development Grant Special Revenue Fund

	Budgeted Amounts		Actual	Variance with Final Budget Positive
	Original	Final	Amounts	(Negative)
Revenues:				
Intergovernmental	$ -	$ 62,992	$ 111,389	$ 48,397
Revenues from use of money and property	-	-	2,841	2,841
Total Revenues	-	62,992	114,230	51,238
Expenditures:				
Current:				
Housing	-	-	69,051	(69,051)
Total Expenditures	-	-	69,051	(69,051)
Excess(deficiency) of revenues over expenditures	-	62,992	45,179	(17,813)
Fund Balances, July 1	956,185	956,185	956,185	-
Fund Balances, June 30	$ 956,185	$ 1,019,177	$ 1,001,364	$ (17,813)

City of Morro Bay
Required Supplementary Information (Unaudited) (Continued)
For the Year Ended June 30, 2016

Schedule of the City's Proportionate Share of the Net Pension Liabilities and Related Ratios

Last Ten Fiscal Years

California Public Employees' Retirement System ("CalPERS") Safety Plan

Measurement Date	June 30, 2015	6/30/2014[1]
City's Proportion of the Net Pension Liability/(Asset)	0.12071%	0.11990%
City's Proportionate Share of the Net Pension Liability/(Asset)	$ 8,285,412	$ 7,460,861
City's Covered-Employee Payroll	$ 2,715,263	$ 2,414,311
City's Proportionate Share of the Net Pension Liability/(Asset) as a Percentage of its Covered-Employee Payroll	305.14%	309.03%
Plan's Proportionate Share of the Fiduciary Net Position as a Percentage of the Total Pension Liability	74.99%	76.82%

California Public Employees' Retirement System ("CalPERS") Miscellaneous Plan

Measurement Date	June 30, 2015	June 30, 2014[1]
City's Proportion of the Net Pension Liability/(Asset)	0.13871%	0.12179%
City's Proportionate Share of the net Pension Liability/(Asset)	$ 9,520,645	$ 7,578,043
City's Covered-Employee Payroll	$ 3,632,297	$ 3,695,977
City's Proportionate Share of the Net Pension Liability/(Asset) as a Percentage of its Covered-Employee Payroll	262.11%	205.03%
Plan's Proportionate Share of the Fiduciary Net Position as a Percentage of the Total Pension Liability	77.28%	81.72%

[1] Historical information is required only for measurement periods for which GASB 68 is applicable.

City of Morro Bay
Required Supplementary Information (Unaudited) (Continued)
For the Year Ended June 30, 2016

Schedule of the City's Contributions

Last Ten Fiscal Years

California Public Employees' Retirement System ("CalPERS") Safety Plan

	2015-16	2014-15	2013-14[1]
Actuarially Determined Contribution	$ 464,239	$ 914,780	$ 850,287
Contribution in Relation to the Actuarially Determined Contribution	(1,116,271)	(914,780)	(850,287)
Contribution Deficiency (Excess)	$ (652,032)	$ -	$ -
Covered-Employee Payroll[2,3]	$ 2,796,721	$ 2,715,263	$ 2,414,311
Contributions as a Percentage of Covered-Employee Payroll	16.60%	33.69%	35.22%

California Public Employees' Retirement System ("CalPERS") Miscellaneous Plan

	2015-16	2014-15	2013-14[1]
Actuarially Determined Contribution	$ 345,848	$ 771,191	$ 775,983
Contribution in Relation to the Actuarially Determined Contribution	(804,512)	(771,191)	(775,983)
Contribution Deficiency (Excess)	$ (458,664)	$ -	$ -
Covered-Employee Payroll[2,3]	$ 3,741,266	$ 3,632,297	$ 3,695,977
Contributions as a Percentage of Covered-Employee Payroll	9.24%	21.23%	21.00%

[1] Historical information is required only for measurement periods for which GASB 68 is applicable.

[2] Covered-Employee Payroll represented above is based on pensionable earnings.

[3] Payroll from 2014-15 was assumed to increase by the 3.00% payroll growth assumption

Notes to Schedule

Changes of Assumptions: Discount rate was changed from 7.50% to 7.65% for the June 30, 2015 measurement date.

Schedule of Funding Progress – Other Postemployment Benefits Plan

The schedule of funding progress for the past two available actuarial valuations is presented below:

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (b)	Unfunded AAL (UAAL) [(b) - (a)]	Funded Ratio [(a) / (b)]	Covered Payroll (c)	UAAL as a % of Covered Payroll [(b) - (a)] / (c)
August 1, 2010	$ -	$ 1,272,897	$ 1,272,897	0.00%	$ 6,609,575	19.26%
August 1, 2012	326,933	1,616,609	1,289,676	20.2%	$ 6,154,925	20.95%
August 1, 2015	614,048	1,938,928	1,324,880	31.7%	$ 6,347,560	20.87%

SUPPLEMENTARY INFORMATION

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NONMAJOR SPECIAL REVENUE FUNDS

Morro Bay Tourism Business Improvement District (MBTBID) Special Revenue Fund - to account for the marketing activities of the MBTBID and the Visitors Center.

Gas Tax Special Revenue Fund - to account for monies received from gasoline taxes.

Lower Cost Visitor Accommodation Special Revenue Fund – to accounts for collections in-lieu mitigation fees for lower cost visitor serving overnight accommodations, such as hostels and tent campground units, as required by California Coastal Commission actions on coastal development permits.

Traffic Safety Grant Special Revenue Fund – to account for fines and forfeitures collected from any person charged with a misdemeanor.

Special Safety Grant Special Revenue Fund – To account for the Supplemental Law Enforcement Services Fund (SLESF) grant.

Parking In-Lieu Special Revenue Fund – To account for in-lieu fees charged for parking spaces required to adequately service a new business establishment, or the expansion of an existing one.

Bike Path Special Revenue Fund – To account for two percent of Transportation Development Act funds received by the City that are specifically set aside for bike path.

Special Assessment District Special Revenue Fund – to account for parcel assessments and expenditures associated with certain housing developments within the City limits.

Governmental Impact Fees Special Revenue Fund – to account for fees collected to ensure that new development pays the cost of infrastructure expansion required to meet the needs of that new development, effectively transferring the cost burden of growth from the existing rate and taxpayers.

State Park Marina Special Revenue Fund – To account for marina concessions revenues that are received for the planning and environmental review of the proposed dredging and renovation of the State Park Marina.

Affordable Housing In-lieu Special Revenue Fund – To account for collection of impact fees for affordable housing.

Cloisters Special Assessment District Special Revenue Fund – To account for parcel assessments and expenditures associated with the Cloisters housing developments within the City limits.

Local Transportation Funds ("LTF") Roads Special Revenue Fund – To account for Transportation Development Act (TDA) money for roads projects, under TDA Article 8, 99400(a)).

Park In-Lieu Fees Special Revenue Fund – To account for special revenue fees collected under the 1975 Quimby Act (California Government Code §66477).

District Transaction Tax Special Revenue Fund – To account for ½ cent district sales tax, commonly known as “Measure Q”.

City of Morro Bay
Combining Balance Sheet
Nonmajor Governmental Funds
June 30, 2016

	Special Revenue			
	MB Tourism Business Improvement District	Gas Tax	Lower Cost Visitor Accommodation	Traffic Safety Grant
ASSETS				
Cash and cash equivalents	$ 181,701	$ -	$ 53,226	$ -
Receivables:				
Intergovernmental	-	4,552	-	1,394
Accounts	90,229	-	-	-
Notes	-	-	-	-
Prepaid items	-	-	-	-
Total Assets	$ 271,930	$ 4,552	$ 53,226	$ 1,394
LIABILITIES AND FUND BALANCES				
Liabilities:				
Accounts payable	$ 4,769	$ -	$ -	$ -
Accrued payroll and benefits	6,408	-	-	-
Due to other funds	-	-	-	-
Total Liabilities	11,177	-	-	-
Fund Balances:				
Nonspendable	-	-	-	-
Restricted	260,753	4,552	53,226	1,394
Total Fund Balances	260,753	4,552	53,226	1,394
Total Liabilities & Fund Balances	$ 271,930	$ 4,552	$ 53,226	$ 1,394

City of Morro Bay
Combining Balance Sheet (Continued)
Nonmajor Governmental Funds
June 30, 2016

	Special Revenue			
	Special Safety Grant	Parking In-Lieu	Bike Path	Special Assessments District
ASSETS				
Cash and cash equivalents	$ 117,605	$ 303,687	$ 4,042	$ 67,601
Receivables:				
Intergovernmental	-	-	-	-
Accounts	-	-	-	-
Notes	-	16,591	-	-
Prepaid items	-	-	-	25
Total Assets	$ 117,605	$ 320,278	$ 4,042	$ 67,626
LIABILITIES AND FUND BALANCES				
Liabilities:				
Accounts payable	$ 395	$ -	$ -	$ 260
Accrued payroll and benefits	-	-	-	166
Due to other funds	-	-	-	-
Total Liabilities	395	-	-	426
Fund Balances:				
Nonspendable	-	-	-	166
Restricted	117,210	320,278	4,042	67,034
Total Fund Balances	117,210	320,278	4,042	67,200
Total Liabilities & Fund Balances	$ 117,605	$ 320,278	$ 4,042	$ 67,626

City of Morro Bay
Combining Balance Sheet (Continued)
Nonmajor Governmental Funds
June 30, 2016

	Special Revenue			
	Governmental Impact Fees	State Park Marina	Affordable Housing In-Lieu	Cloister Special Assessments District
ASSETS				
Cash and cash equivalents	$ 571,140	$ 207,904	$ 108,161	$ 88,204
Receivables:				
Intergovernmental	-	-	-	2,486
Accounts	-	8,774	-	-
Notes	-	-	-	-
Prepaid items	-	-	-	74
Total Assets	$ 571,140	$ 216,678	$ 108,161	$ 90,764
LIABILITIES AND FUND BALANCES				
Liabilities:				
Accounts payable	$ -	$ 7,441	$ -	$ 8,544
Accrued payroll and benefits	-	-	-	580
Due to other funds	-	-	-	-
Total Liabilities	-	7,441	-	9,124
Fund Balances:				
Nonspendable	-	-	-	74
Restricted	571,140	209,237	108,161	81,566
Total Fund Balances	571,140	209,237	108,161	81,640
Total Liabilities & Fund Balances	$ 571,140	$ 216,678	$ 108,161	$ 90,764

City of Morro Bay
Combining Balance Sheet (Continued)
Nonmajor Governmental Funds
June 30, 2016

	Special Revenue			
	LTF Roads	Park In-Lieu Fees	District Transaction Tax	Total Nonmajor Governmental Funds
ASSETS				
Cash and cash equivalents	$ 21,376	$ 9,855	$ 505,750	$ 2,240,252
Receivables:				
Intergovernmental	-	-	69,800	78,232
Accounts	-	-	-	99,003
Notes	-	-	-	16,591
Prepaid items	-	-	1,443	1,542
Total Assets	$ 21,376	$ 9,855	$ 576,993	$ 2,435,620
LIABILITIES AND FUND BALANCES				
Liabilities:				
Accounts payable	$ -	$ -	$ 3,094	$ 24,503
Accrued payroll and benefits	-	-	5,197	12,351
Due to other funds	-	-	68,589	68,589
Total Liabilities	-	-	76,880	105,443
Fund Balances:				
Nonspendable	-	-	1,443	1,683
Restricted	21,376	9,855	498,670	2,328,494
Total Fund Balances	21,376	9,855	500,113	2,330,177
Total Liabilities & Fund Balances	$ 21,376	$ 9,855	$ 576,993	$ 2,435,620

City of Morro Bay
Combining Statement of Revenues, Expenditures, and Changes in Fund Balances
Nonmajor Governmental Funds
For the Year Ended June 30, 2016

	Special Revenue Funds			
	MB Tourism Business Improvement District	Gas Tax	Lower Cost Visitor Accommodation	Traffic Safety Grant
REVENUES:				
Taxes and special assessments	$ 774,355	$ -	$ -	$ -
Intergovernmental revenues	-	237,485	-	-
Charges for services	3,025	-	-	-
Revenue from use of money and property	1,239	-	429	-
Fines and forfeitures	-	-	-	10,282
Other revenues	62,675	-	-	-
Total revenues	841,294	237,485	429	10,282
EXPENDITURES:				
Current:				
Community promotion	642,643	-	-	-
Fire	-	-	-	-
Police	-	-	-	-
Public works	-	-	-	-
Recreation and parks	-	-	-	-
Debt service:				
Principal	-	-	-	-
Interest	-	-	-	-
Total expenditures	642,643	-	-	-
REVENUE OVER (UNDER) EXPENDITURES	198,651	237,485	429	10,282
OTHER FINANCING SOURCES (USES):				
Transfers in	-	29,848	-	2,659
Transfers out	(17,562)	(262,781)	-	(11,547)
Total Other Financing Sources (Uses)	(17,562)	(232,933)	-	(8,888)
NET CHANGE IN FUND BALANCES	181,089	4,552	429	1,394
FUND BALANCES:				
Beginning of Year	79,664	-	52,797	-
End of Year	$ 260,753	$ 4,552	$ 53,226	$ 1,394

City of Morro Bay
Combining Statement of Revenues, Expenditures, and Changes in Fund Balances (Continued)
Nonmajor Governmental Funds
For the Year Ended June 30, 2016

	Special Revenue Funds			
	Special Safety Grant	Parking In-Lieu	Bike Path	Special Assessments District
REVENUES:				
Taxes and special assessments	$ -	$ -	$ -	$ 7,006
Intergovernmental revenues	114,618	-	7,907	-
Charges for services	-	4,178	-	-
Revenue from use of money and property	763	3,419	22	-
Fines and forfeitures	-	-	-	-
Other revenues	-	-	-	1,093
Total revenues	115,381	7,597	7,929	8,099
EXPENDITURES:				
Current:				
Community promotion	-	-	-	-
Fire	-	-	-	-
Police	38,495	-	-	-
Public works	-	-	-	-
Recreation and parks	-	-	-	-
Debt service:				
Principal	-	-	-	-
Interest	-	-	-	-
Total expenditures	38,495	-	-	-
REVENUE OVER (UNDER) EXPENDITURES	76,886	7,597	7,929	8,099
OTHER FINANCING SOURCES (USES):				
Transfers in	11,293	-	-	-
Transfers out	-	(93,130)	(4,000)	-
Total Other Financing Sources (Uses)	11,293	(93,130)	(4,000)	-
NET CHANGE IN FUND BALANCES	88,179	(85,533)	3,929	8,099
FUND BALANCES:				
Beginning of Year	29,031	405,811	113	59,101
End of Year	$ 117,210	$ 320,278	$ 4,042	$ 67,200

City of Morro Bay
Combining Statement of Revenues, Expenditures, and Changes in Fund Balances (Continued)
Nonmajor Governmental Funds
For the Year Ended June 30, 2016

	Special Revenue Funds			
	Governmental Impact Fees	State Park Marina	Affordable Housing In-Lieu	Cloister Special Assessments District
REVENUES:				
Taxes and special assessments	$ -	$ -	$ -	$ 149,566
Intergovernmental revenues	-	-	-	-
Charges for services	314,337	-	18,553	-
Revenue from use of money and property	4,356	86,020	1,332	853
Fines and forfeitures	-	-	-	-
Other revenues	-	-	-	-
Total revenues	318,693	86,020	19,885	150,419
EXPENDITURES:				
Current:				
Community promotion	-	-	75,000	-
Fire	-	-	-	-
Police	-	-	-	-
Public works	-	30,922	-	-
Recreation and parks	-	-	-	134,161
Debt service:				
Principal	-	-	-	-
Interest	-	-	-	-
Total expenditures	-	30,922	75,000	134,161
REVENUE OVER (UNDER) EXPENDITURES	318,693	55,098	(55,115)	16,258
OTHER FINANCING SOURCES (USES):				
Transfers in	-	-	-	3,749
Transfers out	(65,750)	-	-	(15,000)
Total Other Financing Sources (Uses)	(65,750)	-	-	(11,251)
NET CHANGE IN FUND BALANCES	252,943	55,098	(55,115)	5,007
FUND BALANCES:				
Beginning of Year	318,197	154,139	163,276	76,633
End of Year	$ 571,140	$ 209,237	$ 108,161	$ 81,640

City of Morro Bay
Combining Statement of Revenues, Expenditures, and Changes in Fund Balances (Continued)
Nonmajor Governmental Funds
For the Year Ended June 30, 2016

	Special Revenue Funds			
	LTF Roads	Park In-Lieu Fees	District Transaction Tax	Total Nonmajor Governmental Funds
REVENUES:				
Taxes and special assessments	$ -	$ -	$ 980,853	$ 1,911,780
Intergovernmental revenues	-	-	-	360,010
Charges for services	-	-	-	340,093
Revenue from use of money and property	249	103	2,989	101,774
Fines and forfeitures	-	-	-	10,282
Other revenues	-	-	-	63,768
Total revenues	249	103	983,842	2,787,707
EXPENDITURES:				
Current:				
Community promotion	-	-	-	717,643
Fire	-	-	197,839	197,839
Police	-	-	67,854	106,349
Public works	-	-	33,841	64,763
Recreation and parks	-	454	-	134,615
Debt service:				
Principal	-	-	30,000	30,000
Interest	-	-	52,538	52,538
Total expenditures	-	454	382,072	1,303,747
REVENUE OVER (UNDER) EXPENDITURES	249	(351)	601,770	1,483,960
OTHER FINANCING SOURCES (USES):				
Transfers in	-	-	-	47,549
Transfers out	(8,000)	-	(200,000)	(677,770)
Total Other Financing Sources (Uses)	(8,000)	-	(200,000)	(630,221)
NET CHANGE IN FUND BALANCES	(7,751)	(351)	401,770	853,739
FUND BALANCES:				
Beginning of Year	29,127	10,206	98,343	1,476,438
End of Year	$ 21,376	$ 9,855	$ 500,113	$ 2,330,177

City of Morro Bay
Schedule of Revenues, Expenditures, and Changes in Fund Balance - Budget and Actual
MB Tourism Business Improvement District Special Revenue Fund
For the Year Ended June 30, 2016

	Budgeted Amounts		Actual	Variance with Final Budget Positive
	Original	Final	Amounts	(Negative)
Revenues:				
Taxes and special assessments	$ 775,406	$ 775,406	$ 774,355	$ (1,051)
Charges for services	-	-	3,025	3,025
Revenues from use of money and property	-	-	1,239	1,239
Other revenues	-	-	62,675	62,675
Total revenues	775,406	775,406	841,294	65,888
Expenditures:				
Current:				
Community Promotion	-	-	642,643	(642,643)
Total expenditures	-	-	642,643	(642,643)
Excess of Revenues Over (Under) Expenditures	775,406	775,406	198,651	(576,755)
Other Financing Sources (Uses):				
Transfers in	50,000	50,000	-	(50,000)
Transfers out	-	-	(17,562)	(17,562)
Total Other Financing Sources	50,000	50,000	(17,562)	(50,000)
Net change in fund balances	$ 825,406	$ 825,406	181,089	$ (644,317)
FUND BALANCES:				
Beginning of Year			79,664	
End of Year			$ 260,753	

City of Morro Bay
Schedule of Revenues, Expenditures, and Changes in Fund Balance - Budget and Actual
Gas Tax Special Revenue Fund
For the Year Ended June 30, 2016

	Budgeted Amounts		Actual	Variance with Final Budget Positive
	Original	Final	Amounts	(Negative)
Revenues:				
Intergovernmental revenues	$ 230,562	$ 230,562	$ 237,485	$ 6,923
Total revenues	230,562	230,562	237,485	6,923
Excess of Revenues Over (Under) Expenditures	230,562	230,562	237,485	6,923
Other Financing Sources (Uses):				
Transfers in	-	-	29,848	29,848
Transfers out	(230,562)	(230,562)	(262,781)	(32,219)
Total Other Financing Sources (Uses)	(230,562)	(230,562)	(232,933)	(2,371)
Net change in fund balances	$ -	$ -	4,552	$ 4,552
FUND BALANCES:				
Beginning of Year			-	
End of Year			$ 4,552	

City of Morro Bay
Schedule of Revenues, Expenditures, and Changes in Fund Balance - Budget and Actual
Lower Cost Visitor Accommodation Special Revenue Fund
For the Year Ended June 30, 2016

	Budgeted Amounts		Actual	Variance with Final Budget Positive
	Original	Final	Amounts	(Negative)
Revenues:				
Revenues from use of money and property	$ 815	$ 815	$ 429	$ (386)
Other revenue	-	-	-	-
Total revenues	815	815	429	(386)
Net change in fund balances	$ 815	$ 815	429	$ (386)
FUND BALANCES:				
Beginning of Year			52,797	
End of Year			$ 53,226	

City of Morro Bay
Schedule of Revenues, Expenditures, and Changes in Fund Balance - Budget and Actual
Traffic Safety Grant Special Revenue Fund
For the Year Ended June 30, 2016

	Budgeted Amounts		Actual	Variance with Final Budget Positive
	Original	Final	Amounts	(Negative)
Revenues:				
Fines and forfeitures	$ 20,000	$ 20,000	$ 10,282	$ (9,718)
Total revenues	20,000	20,000	10,282	(9,718)
Excess of Revenues Over (Under) Expenditures	20,000	20,000	10,282	(9,718)
Other Financing Sources (Uses):				
Transfers out	(20,000)	(20,000)	(11,547)	8,453
Total Other Financing Sources (Uses)	(20,000)	(20,000)	(8,888)	11,112
Net change in fund balances	$ -	$ -	1,394	$ 1,394
FUND BALANCES:				
Beginning of Year			-	
End of Year			$ 1,394	

City of Morro Bay
Schedule of Revenues, Expenditures, and Changes in Fund Balance - Budget and Actual
Special Safety Grant Special Revenue Fund
For the Year Ended June 30, 2016

	Budgeted Amounts		Actual	Variance with Final Budget Positive
	Original	Final	Amounts	(Negative)
Revenues:				
Intergovernmental revenues	$ 100,000	$ 100,000	$ 114,618	$ 14,618
Revenues from use of money and property	-	-	763	763
Total revenues	100,000	100,000	115,381	15,381
Expenditures:				
Current:				
Police	34,000	34,000	38,495	(4,495)
Total expenditures	34,000	34,000	38,495	(4,495)
Other Financing Sources (Uses):				
Transfers in	-	-	11,293	(11,293)
Total other financing sources (uses)	-	-	11,293	(11,293)
Net change in fund balances	$ 66,000	$ 66,000	88,179	$ 8,583
FUND BALANCES:				
Beginning of Year			29,031	
End of Year			$ 117,210	

City of Morro Bay
Schedule of Revenues, Expenditures, and Changes in Fund Balance - Budget and Actual
Parking In-lieu Special Revenue Fund
For the Year Ended June 30, 2016

	Budgeted Amounts		Actual	Variance with Final Budget Positive
	Original	Final	Amounts	(Negative)
Revenues:				
Charges for services	$ -	$ -	$ 4,178	$ 4,178
Revenues from use of money and property	859	859	3,419	2,560
Total revenues	859	859	7,597	6,738
Other Financing Sources (Uses):				
Transfers out	-	-	(93,130)	93,130
Total expenditures	-	-	(93,130)	93,130
Net change in fund balances	$ 859	$ 859	(85,533)	$ 99,868
FUND BALANCES:				
Beginning of Year			405,811	
End of Year			$ 320,278	

City of Morro Bay
Schedule of Revenues, Expenditures, and Changes in Fund Balance - Budget and Actual
Bike Path Special Revenue Fund
For the Year Ended June 30, 2016

	Budgeted Amounts		Actual	Variance with Final Budget Positive
	Original	Final	Amounts	(Negative)
Revenues:				
Intergovernmental revenues	$ 7,907	$ 7,907	$ 7,907	$ -
Revenues from use of money and property	-	-	22	22
Total revenues	7,907	7,907	7,929	22
Excess of Revenues Over (Under) Expenditures	7,907	7,907	7,929	22
Other Financing Uses:				
Transfers out	(46,443)	(46,443)	(4,000)	42,443
Total Other Financing Uses	(46,443)	(46,443)	(4,000)	42,443
Net change in fund balances	$ (38,536)	$ (38,536)	3,929	$ 42,465
FUND BALANCES:				
Beginning of Year			113	
End of Year			$ 4,042	

City of Morro Bay
Schedule of Revenues, Expenditures, and Changes in Fund Balance - Budget and Actual
Special Assessments Special Revenue Fund
For the Year Ended June 30, 2016

	Budgeted Amounts		Actual	Variance with Final Budget Positive
	Original	Final	Amounts	(Negative)
Revenues:				
Taxes and special assessments	$ 8,477	$ 8,477	$ 7,006	$ (1,471)
Other revenues			1,093	(1,093)
Total revenues	8,477	8,477	8,099	(2,564)
Expenditures:				
Current:				
Recreation and parks	2,200	2,200	-	2,200
Total expenditures	2,200	2,200	-	2,200
Net change in fund balances	$ 6,277	$ 6,277	8,099	$ (364)
FUND BALANCES:				
Beginning of Year			59,101	
End of Year			$ 67,200	

City of Morro Bay
Schedule of Revenues, Expenditures, and Changes in Fund Balance - Budget and Actual
Governmental Impact Fees Special Revenue Fund
For the Year Ended June 30, 2016

	Budgeted Amounts		Actual	Variance with Final Budget Positive
	Original	Final	Amounts	(Negative)
Revenues:				
Charges for services	$ 161,500	$ 161,500	$ 314,337	$ 152,837
Revenues from use of money and property	-	-	4,356	4,356
Total revenues	161,500	161,500	318,693	157,193
Excess of Revenues Over (Under) Expenditures	161,500	161,500	318,693	157,193
Other Financing Uses:				
Transfers out	-	-	(65,750)	(65,750)
Total Other Financing Uses	-	-	(65,750)	(65,750)
Net change in fund balances	$ 161,500	$ 161,500	252,943	$ 91,443
FUND BALANCES:				
Beginning of Year			318,197	
End of Year			$ 571,140	

City of Morro Bay
Schedule of Revenues, Expenditures, and Changes in Fund Balance - Budget and Actual
State Park Marina Special Revenue Fund
For the Year Ended June 30, 2016

	Budgeted Amounts		Actual	Variance with Final Budget Positive
	Original	Final	Amounts	(Negative)
Revenues:				
Revenues from use of money and property	$ -	$ -	$ 86,020	$ 86,020
Total revenues	-	-	86,020	86,020
Expenditures:				
Current:				
Public works	-	-	30,922	(30,922)
Total expenditures	-	-	30,922	(30,922)
Net change in fund balances	$ -	$ -	55,098	$ 55,098
FUND BALANCES:				
Beginning of Year			154,139	
End of Year			$ 209,237	

City of Morro Bay
Schedule of Revenues, Expenditures, and Changes in Fund Balance - Budget and Actual
Affordable Housing In-lieu Special Revenue Fund
For the Year Ended June 30, 2016

	Budgeted Amounts		Actual	Variance with Final Budget Positive
	Original	Final	Amounts	(Negative)
Revenues:				
Charges for services	$ 800	$ 800	$ 18,553	$ 17,753
Revenues from use of money and property	-	-	1,332	1,332
Total revenues	800	800	19,885	19,085
Expenditures:				
Current:				
Community promotion	-	-	75,000	(75,000)
Total Other Financing Uses	-	-	75,000	(75,000)
Net change in fund balances	$ 800	$ 800	(55,115)	$ (55,915)
FUND BALANCES:				
Beginning of Year			163,276	
End of Year			$ 108,161	

City of Morro Bay
Schedule of Revenues, Expenditures, and Changes in Fund Balance - Budget and Actual
Cloister Reserve Special Revenue Fund
For the Year Ended June 30, 2016

	Budgeted Amounts		Actual	Variance with Final Budget Positive
	Original	Final	Amounts	(Negative)
Revenues:				
Taxes and special assessments	$ 148,944	$ 148,944	$ 149,566	$ 622
Revenues from use of money and property	-	-	853	853
Total revenues	148,944	148,944	150,419	1,475
Expenditures:				
Current:				
Recreation and parks	134,500	134,500	134,161	339
Total expenditures	134,500	134,500	134,161	339
Excess of Revenues Over (Under) Expenditures	14,444	14,444	16,258	(1,814)
Other Financing Uses:				
Transfers in			3,749	
Transfers out	-	-	(15,000)	(15,000)
Total Other Financing Uses	-	-	(11,251)	(15,000)
Net change in fund balances	$ 14,444	$ 14,444	5,007	$ (9,437)
FUND BALANCES:				
Beginning of Year			76,633	
End of Year			$ 81,640	

City of Morro Bay
Schedule of Revenues, Expenditures, and Changes in Fund Balance - Budget and Actual
LTF Roads Special Revenue Fund
For the Year Ended June 30, 2016

	Budgeted Amounts		Actual	Variance with Final Budget Positive
	Original	Final	Amounts	(Negative)
Revenues:				
Intergovernmental revenues	$ -	$ -	$ -	$ -
Revenues from use of money and property	-	-	249	249
Total revenues	-	-	249	249
Excess of Revenues Over (Under) Expenditures	-	-	249	249
Other Financing Uses:				
Transfers out	-	-	(8,000)	(8,000)
Total Other Financing Uses	-	-	(8,000)	(8,000)
Net change in fund balances	$ -	$ -	(7,751)	$ (7,751)
FUND BALANCES:				
Beginning of Year			29,127	
End of Year			$ 21,376	

City of Morro Bay
Schedule of Revenues, Expenditures, and Changes in Fund Balance - Budget and Actual
Park In-lieu Fee Special Revenue Fund
For the Year Ended June 30, 2016

	Budgeted Amounts		Actual	Variance with Final Budget Positive
	Original	Final	Amounts	(Negative)
Revenues:				
Revenues from use of money and property	$ -	$ -	$ 103	$ 103
Total revenues	-	-	103	103
Expenditures:				
Current:				
Recreation and parks	-	-	454	(454)
Total expenditures	-	-	454	(454)
Excess of Revenues Over (Under) Expenditures	-	-	(351)	(351)
Other Financing Sources (Uses):				
Transfers out	-	-	-	-
Total Other Financing Sources (Uses)	-	-	-	-
Net change in fund balances	$ -	$ -	(351)	$ (351)
FUND BALANCES:				
Beginning of Year			10,206	
End of Year			$ 9,855	

City of Morro Bay
Schedule of Revenues, Expenditures, and Changes in Fund Balance - Budget and Actual
District Transaction Tax Special Revenue Fund
For the Year Ended June 30, 2016

	Budgeted Amounts		Actual	Variance with Final Budget Positive
	Original	Final	Amounts	(Negative)
Revenues:				
Taxes and special assessments	$ 923,360	$ 923,360	$ 980,853	$ 57,493
Revenues from use of money and property	-	-	2,989	2,989
Total revenues	923,360	923,360	983,842	60,482
Expenditures:				
Current:				
Fire	127,366	127,366	197,839	(70,473)
Police	70,000	70,000	67,854	2,146
Public works	446,500	446,500	33,841	412,659
Debt service				
Principal	30,000	30,000	30,000	-
Interest	52,553	52,553	52,538	15
Total expenditures	726,419	726,419	382,072	344,347
Excess of Revenues Over (Under) Expenditures	196,941	196,941	601,770	404,829
Other Financing Sources (Uses):				
Transfers in	-	-	-	-
Transfers out	(292,867)	(292,867)	(200,000)	92,867
Total Other Financing Sources (Uses)	(292,867)	(292,867)	(200,000)	92,867
Net change in fund balances	$ (95,926)	$ (95,926)	401,770	$ 497,696
FUND BALANCES:				
Beginning of Year			98,343	
End of Year			$ 500,113	

AGENCY FUND
FINANCIAL STATEMENTS

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City of Morro Bay
Statement of Changes in Assets and Liabilities
Agency Fund
For the Year Ended June 30, 2016

	Balance June 30, 2015	Additions	Deletions	Balance June 30, 2016
Community Services Fund				
Assets:				
Cash and investments	$ 1,225,626	$ 2,303,404	$ (2,125,400)	$ 1,403,630
Miscellaneous receivables	486	2,771	(486)	2,771
Prepaid items	1,456	2,770	(1,456)	2,770
Total assets	$ 1,227,568	$ 2,308,945	$ (2,127,342)	$ 1,409,171
Liabilities:				
Accounts payable	$ 34,280	$ 1,250,916	$ (1,167,450)	$ 117,746
Agency funds held for others	1,193,288	372,811	(274,674)	1,291,425
Total liabilities	$ 1,227,568	$ 1,623,727	$ (1,442,124)	$ 1,409,171

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STATISTICAL SECTION

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STATISTICAL SECTION OVERVIEW

This part of the City's comprehensive annual financial report is not covered by the Independent Auditor's Report, but presents supplemental detailed information for the benefit of readers in understanding what the information in the financial statements, note disclosures, and required supplementary information says about the government's overall financial health.

Contents

City of Morro Bay
Net Position by Component
Last Ten Fiscal Years
(Accrual Basis of Accounting)
(in thousands of dollars)

	Fiscal Year				
	2007	2008	2009	2010	2011
Governmental Activities:					
Net Investment in Capital Assets	$ 112,898	$ 117,498	$ 120,699	$ 120,545	$ 120,485
Restricted	-	-	-	-	-
Unrestricted	6,417	9,079	7,022	7,916	9,068
Total governmental activities net position	$ 119,315	$ 126,577	$ 127,721	$ 128,461	$ 129,553
Business-Type Activities:					
Net investment in capital assets	$ 20,958	$ 20,355	$ 20,748	$ 19,502	$ 19,684
Restricted	-	-	-	-	-
Unrestricted	11,392	12,321	12,090	12,245	10,860
Total business-type activities net position	$ 32,350	$ 32,676	$ 32,838	$ 31,747	$ 30,544
Primary Government:					
Net investment in capital assets	$ 133,856	$ 137,853	$ 141,447	$ 140,047	$ 140,169
Restricted	-	-	-	-	-
Unrestricted	17,809	21,400	19,112	20,161	19,928
Total Primary Government Net Position	$ 151,665	$ 159,253	$ 160,559	$ 160,208	$ 160,097

(Continued)

Source: City of Morro Bay Administrative Services Department

City of Morro Bay
Net Position by Component (Continued)
Last Ten Fiscal Years
(Accrual Basis of Accounting)
(in thousands of dollars)

	Fiscal Year				
	2012	2013	2014	2015	2016
Governmental Activities:					
Net Investment in Capital Assets	$ 121,492	$ 121,839	$ 122,002	$ 121,871	$ 120,550
Restricted	-	113	128	1,774	3,147
Unrestricted	8,681	7,023	7,218	(6,486)	(5,767)
Total governmental activities net position	$ 130,173	$ 128,975	$ 129,348	$ 117,159	$ 117,930
Business-Type Activities:					
Net investment in capital assets	$ 19,603	$ 20,246	$ 19,629	$ 17,836	$ 19,382
Restricted	-	9,196	-	46	13
Unrestricted	9,789	-	9,479	5,857	6,077
Total business-type activities net position	$ 29,392	$ 29,442	$ 29,108	$ 23,739	$ 25,472
Primary Government:					
Net investment in capital assets	$ 141,095	$ 142,085	$ 141,631	$ 139,707	$ 139,932
Restricted	-	9,309	128	1,820	3,160
Unrestricted	18,470	7,023	16,697	(629)	310
Total Primary Government Net Position	$ 159,565	$ 158,417	$ 158,456	$ 140,898	$ 143,402

(Concluded)

Source: City of Morro Bay Administrative Services Department

City of Morro Bay
Changes in Net Position
Last Ten Fiscal Years
(Accrual Basis of Accounting)
(in thousands of dollars)

	Fiscal Year				
	2007	2008	2009	2010	2011
Expenses:					
Governmental activities:					
Administration	$ 1,310	$ 1,330	$ 2,306	$ $ 2,707	$ 1,910
Community promotion	-	-	-	-	713
Finance	670	736	859	776	606
Fire	755	1,785	2,012	2,041	2,127
Housing	214	223	138	67	7
Police	3,015	3,180	3,387	3,369	3,236
Public Works	3,689	2,825	2,462	2,142	2,030
Recreation	1,610	1,794	2,292	2,057	2,948
Total governmental activities expenses	11,263	11,873	13,456	13,159	13,577
Business-type activities:					
Water operations	3,497	3,694	3,976	4,537	4,363
Wastewater Collection operations	1,845	2,282	2,792	2,827	3,466
Harbor operations	1,662	1,628	1,520	1,672	1,753
Local transportation	441	456	453	510	320
Total business-type activities expenses	7,445	8,060	8,741	9,546	9,902
Total primary government expenses	$ 18,708	$ 19,933	$ 22,197	$ 22,705	$ 23,479
Program Revenues:					
Governmental activities:					
Charges for services:					
Administration	$ 95	$ 190	$ 1,402	$ 1,809	$ 2,065
Community promotion	-	-	-	-	399
Finance	66	50	736	370	248
Fire	204	239	410	175	112
Housing	55	23	-	7	7
Police	214	139	106	52	77
Public Works	1,186	929	451	432	513
Recreation	424	396	547	736	711
Operating grants and contributions	902	3,514	582	641	909
Capital grants and contributions	1,342	4,777	963	267	725
Total governmental activities program revenues	4,488	10,257	5,197	4,489	5,766
Business-type activities:					
Charges for services:					
Water operations	3,863	3,843	3,730	3,574	3,410
Wastewater Collection operations	1,898	2,046	3,168	3,340	3,511
Harbor operations	1,773	2,048	1,579	1,813	1,772
Local transportation	56	60	59	63	38
Operating grants and contributions	33	18	382	413	454
Capital grants and contributions	390	542	530	143	215
Total business-type activities program revenues	8,013	8,557	9,448	9,346	9,400
Total primary government program revenues	$ 12,501	$ 18,814	$ 14,645	$ 13,835	$ 15,166

Source: City of Morro Bay Administrative Services Department

(Continued)

City of Morro Bay
Changes in Net Position (Continued)
Last Ten Fiscal Years
(Accrual Basis of Accounting)
(in thousands of dollars)

	Fiscal Year				
	2012	2013	2014	2015	2016
Expenses:					
Governmental activities:					
Administration	$ 2,718	$ 851	$ 1,393	$ 2,773	$ 1,556
Community promotion	661	848	905	1,167	1,481
Finance	748	680	710	630	1,117
Fire	2,132	2,656	1,873	2,658	3,220
Housing	605	20	184	53	69
Police	3,443	3,490	3,348	3,392	3,271
Public Works	1,229	2,979	2,532	2,985	3,714
Recreation	3,061	4,400	2,768	1,819	1,235
Total governmental activities expenses	14,597	15,924	13,713	15,477	15,663
Business-type activities:					
Water operations	4,864	4,066	4,377	4,113	4,405
Wastewater Collection operations	3,101	2,882	3,575	4,167	3,227
Harbor operations	1,682	1,746	2,032	2,234	1,783
Local transportation	274	288	282	270	295
Total business-type activities expenses	9,921	8,982	10,266	10,784	9,710
Total primary government expenses	$ 24,518	$ 24,906	$ 23,979	$ 26,261	$ 25,373
Program Revenues:					
Governmental activities:					
Charges for services:					
Administration	$ 1,936	$ 652	$ 250	$ 1,920	$ 140
Community promotion	1	-	-	471	1,326
Finance	278	-	-	344	367
Fire	140	149	188	212	423
Housing	8	56	37	40	-
Police	57	94	49	-	31
Public Works	543	562	883	494	637
Recreation	755	577	818	535	589
Operating grants and contributions	911	1,889	757	442	1,745
Capital grants and contributions	991	652	354	1,602	343
Total governmental activities program revenues	5,620	4,631	3,336	6,060	5,601
Business-type activities:					
Charges for services:					
Water operations	3,391	3,399	3,504	3,312	4,460
Wastewater Collection operations	3,654	3,918	4,166	4,330	4,989
Harbor operations	1,836	1,926	2,015	1,911	1,927
Local transportation	36	41	40	42	49
Operating grants and contributions	442	494	182	455	315
Capital grants and contributions	170	-	764	-	-
Total business-type activities program revenues	9,529	9,778	10,671	10,050	11,740
Total primary government program revenues	$ 15,149	$ 14,409	$ 14,007	$ 16,110	$ 17,341

Source: City of Morro Bay Administrative Services Department

(Concluded)

City of Morro Bay
Changes in Net Position (Continued)
Last Ten Fiscal Years
(Accrual Basis of Accouting)
(in thousands of dollars)

	Fiscal Year				
	2007	2008	2009	2010	2011
Net (Expense) Revenue:					
Governmental activities	$ (6,775)	$ (1,616)	$ (8,259)	$ (8,670)	$ (7,811)
Business-type activities	568	497	707	(200)	(502)
Total primary government	$ (6,207)	$ (1,119)	$ (7,552)	$ (8,870)	$ (8,313)
General Revenues and Other Changes in Net Position:					
Governmental activities:					
Property taxes	$ 3,525	$ 3,635	$ 3,918	$ 3,566	$ 3,620
Sales tax	1,268	1,260	1,955	1,792	1,903
Transient occupancy tax	1,967	1,956	1,914	2,208	1,888
Franchise taxes	677	785	603	496	543
Other taxes	74	46	58	52	53
Investment earnings	204	274	151	106	80
Gain (loss) on dispostion of capital assets	16	-	25	3	(11)
Miscellaneous	-	-	-	-	-
Transfers	(1,688)	790	780	1,280	785
Total governmental activities	$ 6,043	$ 8,746	$ 9,404	$ 9,503	$ 8,861
Business-type activities:					
Investment earnings	$ 484	$ 573	$ 278	$ 186	$ 102
Gain (loss) on dispostion of capital assets	5	-	14	12	(17)
Miscellaneous	-	-	-	-	-
Transfers	1,688	(789)	(838)	(1,088)	(786)
Total business-type activities	2,177	(216)	(546)	(890)	(701)
Total primary government	$ 8,220	$ 8,530	$ 8,858	$ 8,613	$ 8,160
Change in Net Position:					
Governmental activities	$ (732)	$ 7,130	$ 1,145	$ 833	$ 1,050
Business-type activities	2,745	281	161	(1,090)	(1,203)
Total primary government	$ 2,013	$ 7,411	$ 1,306	$ (257)	$ (153)

Source: City of Morro Bay Administrative Services Department

(Continued)

City of Morro Bay
Changes in Net Position (Continued)
Last Ten Fiscal Years
(Accrual Basis of Accouting)
(in thousands of dollars)

	Fiscal Year				
	2012	2013	2014	2015	2016
Net (Expense) Revenue:					
Governmental activities	$ (8,977)	$ (11,293)	$ (10,377)	$ (9,417)	$ (10,062)
Business-type activities	(392)	796	405	(734)	2,030
Total primary government	$ (9,369)	$ (10,497)	$ (9,972)	$ (10,151)	$ (8,032)
General Revenues and Other Changes in Net Position:					
Governmental activities:					
Property taxes	$ 3,576	$ 4,521	$ 4,745	$ 3,940	$ 4,054
Sales tax	1,963	1,286	1,346	2,318	1,556
Transient occupancy tax	2,537	2,802	3,171	3,630	3,136
Franchise taxes	513	513	506	493	513
Other taxes	47	65	70	81	96
Investment earnings	104	97	104	375	267
Gain (loss) on dispostion of capital assets	5	15	7	42	-
Miscellaneous	-	-	-	83	203
Transfers	851	795	803	807	1,008
Total governmental activities	$ 9,596	$ 10,094	$ 10,752	$ 11,769	$ 10,833
Business-type activities:					
Investment earnings	$ 91	$ 44	$ 55	$ 91	$ 104
Gain (loss) on dispostion of capital assets	1	5	8	10	-
Miscellaneous	-	(795)	-	-	-
Transfers	(851)	-	(803)	(807)	(1,008)
Total business-type activities	(759)	(746)	(740)	(706)	(904)
Total primary government	$ 8,837	$ 9,348	$ 10,012	$ 11,063	$ 9,929
Change in Net Position:					
Governmental activities	$ 619	$ (1,199)	$ 375	$ 2,352	$ 771
Business-type activities	(1,151)	50	(335)	(1,440)	1,126
Total primary government	$ (532)	$ (1,149)	$ 40	$ 912	$ 1,897

Source: City of Morro Bay Administrative Services Department (Concluded)

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City of Morro Bay
Fund Balances of Governmental Funds
Last Ten Fiscal Years
(Modified Accrual Basis of Accounting)
(in thousands of dollars)

	Fiscal Year				
	2007	2008	2009	2010	2011
General fund:					
Nonspendable:					
Prepaids	$ 17	$ 17	$ 3	$ 2	$ 14
Inventory	12	9	9	11	10
Notes Receivable	-	-	-	-	-
Land held for Resale	-	-	-	-	-
Committed:					
Facility Maintenance	-	-	-	-	-
Unassigned	4,079	5,085	1,656	4,500	5,135
Total general fund	$ 4,108	$ 5,111	$ 1,668	$ 4,513	$ 5,159
All other governmental funds:					
Nonspendable (prepaids):					
Prepaids:					
Capital Improvement	-	-	-	-	-
District Trans Tax (Meas Q)	-	-	-	-	-
Notes Receivable:					
Community Devel	-	-	-	-	-
Restricted:					
Community Develpmnt Grants	$ 96	$ 78	$ 55	$ 52	$ 93
District Trans Tax (Meas Q)	49	287	775	1,003	1,089
Gas Tax	-	-	-	-	-
Tourism Business Improv Dist	-	-	47	67	-
Highway Users (Gas) Tax	21	19	-	46	-
Traffic Safety	10	-	-	4	-
Lower Cost Visitor Accommodations	-	-			15
Safety Grants	13	65	-	-	-
Parking In Lieu	329	365	139	134	145
LTF, Non-Transit - Bike Path	-	-	-	-	-
LTF, Non-Transit - Roads	-	-	-	-	-
Assessment Districts	(18)	-	42	52	28
Cloisters Accumulation	-	8			
Gov'l Impact Fees	-	-	106	201	336
Park In Lieu (Quimby Act)	106	117	110	175	25
Gov'l Capital Improvement	51	(455)	48	-	-
State Park Marina	-	(39)	(15)	2	108
Affordable Housing In Lieu	-	-	638	655	667
Committed:					
Government Impact Fees	-	35	-	-	-
Affordable Housing In Lieu	597	654	-	-	-
Unassigned	-	-	-	-	-
Total all other governmental funds	$ 1,254	$ 1,134	$ 1,945	$ 2,391	$ 2,506

(Continued)

Source: City of Morro Bay Administrative Services Department

City of Morro Bay
Fund Balances of Governmental Funds (Continued)
Last Ten Fiscal Years
(Modified Accrual Basis of Accounting)
(in thousands of dollars)

	Fiscal Year				
	2012	2013	2014	2015	2016
General fund:					
Nonspendable:					
Prepaids	$ 112	$ 118	$ 112	$ 140	$ 164
Inventory	12	12	17	10	-
Notes Receivable	-	-	-	1,178	-
Land held for Resale	-	-	1,340	1,340	2,712
Committed:					
Facility Maintenance	-	-	1,291	1,277	80
Unassigned	3,832	2,744	1,932	2,131	4,134
Total general fund	$ 3,956	$ 2,874	$ 4,692	$ 6,076	$ 7,090
All other governmental funds:					
Nonspendable (prepaids):					
Prepaids:					
Capital Improvement	-	-	-	1	-
District Trans Tax (Meas Q)	-	-	-	2	2
Notes Receivable:					
Community Devel	-	-	-	176	176
Restricted:					
Community Develpmnt Grants	$ 162	$ 171	$ 129	$ 780	$ 825
District Trans Tax (Meas Q)	1,545	738	355	97	499
Gas Tax	-	-	-	-	5
Tourism Business Improv Dist	52	54	70	80	261
Highway Users (Gas) Tax	-	-	-	-	-
Traffic Safety	-	-	-	-	1
Lower Cost Visitor Accommodations	36	37	37	53	53
Safety Grants	14	50	93	29	117
Parking In Lieu	388	400	411	406	320
LTF, Non-Transit - Bike Path	13	20	30	-	4
LTF, Non-Transit - Roads	-	-	-	29	21
Assessment Districts	5	26	58	59	67
Cloisters Accumulation			50	76	82
Gov'l Impact Fees	402	552	654	318	571
Park In Lieu (Quimby Act)	21	65	85	10	10
Gov'l Capital Improvement	-	-	-	-	-
State Park Marina	162	15	73	154	209
Affordable Housing In Lieu	120	176	160	163	108
Committed:					
Government Impact Fees	-	-	-	-	-
Affordable Housing In Lieu	-	-	-	-	-
Unassigned	-	-	-	(1)	-
Total all other governmental funds	$ 2,920	$ 2,304	$ 2,205	$ 2,432	$ 3,331

(Concluded)

Source: City of Morro Bay Administrative Services Department

City of Morro Bay
Revenues, Expenditures, and Changes in Fund Balances of Governmental Funds
Last Ten Fiscal Years
(Modified Accrual Basis of Accounting)
(in thousands of dollars)

	Fiscal Year				
	2007	2008	2009	2010	2011
Revenues:					
Taxes	$ 7,844	$ 8,875	$ 8,462	$ 8,092	$ 8,331
Intergovernmental	1,892	5,209	1,497	852	1,547
Charges for services	1,306	1,075	1,093	900	1,052
Special assessments and fees	214	176	206	538	556
Fines and forfeitures	67	102	66	55	47
Revenues from use of money and property	158	363	346	385	327
Miscellaneous	661	576	683	639	554
Total revenues	12,142	16,376	12,353	11,461	12,414
Expenditures:					
Community/Economic development	214	223	432	721	721
General government	1,980	2,066	1,883	1,648	1,417
Recreation and parks	1,457	1,601	2,111	2,061	2,719
Public safety:					
Fire	1,677	1,757	1,918	2,034	2,127
Police	2,943	2,998	3,380	3,345	3,235
Public works	2,123	2,380	1,888	1,842	1,244
Capital outlay	1,289	5,386	4,146	195	1,014
Debt service:					
Principal	-	-	-	-	-
Interest and other charges	-	3	8	3	2
Total expenditures	11,683	16,414	15,766	11,849	12,479
Excess of revenues over (under) expenditures	459	(38)	(3,413)	(388)	(65)
Other Financing Sources (Uses)					
Transfers in	1,768	1,543	8,624	6,167	1,670
Transfers out	(3,456)	(754)	(7,844)	(2,487)	(885)
Other debt issued	-	-	-	-	-
Total other financing sources (uses)	(1,688)	789	780	3,680	785
Net change in fund balances	$ (1,229)	$ 751	$ (2,633)	$ 3,292	$ 720
Debt service as a percentage of noncapital expenditures	0.000%	0.018%	0.051%	0.025%	0.016%

(Continued)

Source: City of Morro Bay Administrative Services Department

City of Morro Bay
Revenues, Expenditures, and Changes in Fund Balances of Governmental Funds (Continued)
Last Ten Fiscal Years
(Modified Accrual Basis of Accounting)
(in thousands of dollars)

	Fiscal Year				
	2012	2013	2014	2015	2016
Revenues:					
Taxes	$ 8,426	$ 8,903	$ 9,502	$ 10,457	$ 11,106
Intergovernmental	1,836	2,246	1,042	2,069	1,051
Charges for services	965	1,094	1,141	1,766	2,247
Special assessments and fees	732	722	802	157	157
Fines and forfeitures	38	36	28	24	17
Investment earnings	411	408	436	515	386
Miscellaneous	616	195	171	641	506
Total revenues	13,024	13,604	13,122	15,629	15,470
Expenditures:					
Community/Economic development	1,266	868	1,088	1,213	1,520
General government	1,478	1,593	2,145	1,950	2,552
Recreation and parks	2,864	2,638	2,705	1,845	1,151
Public safety:					
Fire	2,132	2,211	1,427	2,389	2,686
Police	3,507	3,399	3,300	3,605	3,182
Public works	1,426	3,768	1,876	2,417	3,062
Capital outlay	1,989	1,796	540	2,427	-
Debt service:					
Principal	-	-	838	71	30
Interest and other charges	2	3	8	54	53
Total expenditures	14,664	16,276	13,927	15,971	14,236
Excess of revenues over (under) expenditures	(1,640)	(2,672)	(805)	(342)	1,234
Other Financing Sources (Uses)					
Transfers in	3,510	4,841	5,468	2,974	2,602
Transfers out	(2,659)	(3,867)	(4,393)	(1,901)	(1,923)
Other debt issued	-	-	1,449	-	-
Total other financing sources (uses)	851	974	2,524	1,073	679
Net change in fund balances	$ (789)	$ (1,698)	$ 1,719	$ 731	$ 1,913
Debt service as a percentage of noncapital expenditures	0.014%	0.018%	6.467%	0.789%	0.586%

(Concluded)

Source: City of Morro Bay Administrative Services Department

City of Morro Bay
General Fund Operating Expenditure Trends By Category
Last Ten Fiscal Years (1)

	Fiscal Year				
	2006-07	2007-08	2008-09	2009-10	2010-11
Staffing:					
Salaries and wages:					
Regular	$ 4,536	$ 4,758	$ 4,898	$ 4,695	$ 4,454
Temporary	423	530	571	596	600
Overtime	197	219	305	270	279
Benefits:					
Total employer benefits					
Retirement	1,325	1,333	1,422	1,426	1,304
Health	775	780	831	830	778
Other	400	403	429	337	490
Total staffing	7,656	8,023	8,456	8,154	7,905
Contract services	789	732	823	741	539
Other operating expenditures:					
Supplies	379	385	534	494	529
Services	798	809	964	845	836
Insurance	230	230	219	212	211
Miscellaneous	44	48	30	98	31
Total operating expenditures	1,451	1,472	1,747	1,649	1,607
Capital repairs		6	5	1	14
Total General Fund expenditures	$ 9,896	$ 10,233	$ 11,031	$ 10,545	$ 10,065

(Continued)

Notes:
Other benefits are unemployment, medicare, matching contributions to deferred comp, long term disability, workers compensation.
By the end of FY 2010, the City laid off four employees, and three employees retired.

City of Morro Bay
General Fund Operating Expenditure Trends By Category (Continued)
Last Ten Fiscal Years (1)

	Fiscal Year				
	2011-12	2012-13	2013-14	2014-15	2015-16
Staffing:					
Salaries and wages:					
Regular	$ 4,499	$ 4,444	$ 4,863	$ 4,734	$ 4,695
Temporary	690	772	750	794	925
Overtime	236	299	312	350	370
Benefits:					
Total employer benefits					
Retirement	1,374	1,301	1,299	1,399	1,610
Health	820	804	805	854	902
Other	614	513	545	464	526
Total staffing	8,233	8,133	8,574	8,595	9,028
Contract services	639	430	717	880	1,375
Other operating expenditures:					
Supplies	527	578	514	537	606
Services	831	926	856	891	878
Insurance	212	120	130	132	142
Miscellaneous	35	49	102	140	77
Total operating expenditures	1,605	1,673	1,602	1,700	1,703
Capital repairs	6	45	51	10	-
Total General Fund expenditures	$ 10,483	$ 10,281	$ 10,944	$ 11,185	$ 12,106

(Concluded)

Notes:
In FY 2012, City employees, except sworn Police, either paid an additional percentage of the employee contribution to CalPERS or had their salaries reduced. All City employees are now paying 100% of the CalPERS employee-paid contribution.

City of Morro Bay
Changes in Fund Balances of Proprietary Funds
Water, Sewer and Harbor
Last Ten Fiscal Years (1)

	Fiscal Year				
	2006-07	2007-08	2008-09	2009-10	2010-11
WATER FUND					
Operating revenue:					
Water services	$ 3,711,494	$ 3,705,020	$ 3,588,500	$ 3,451,279	$ 3,323,916
Penalties	46,291	42,702	66,141	66,944	75,069
Reconnection fees	4,154	6,944	4,797	4,779	4,829
Service application fees	11,497	11,588	11,070	10,628	11,175
Connection/impact fees	76,223	66,827	53,977	29,177	28,911
Other local income	13,751	10,251	6,014	11,512	6,467
Total operating revenues	3,863,410	3,843,332	3,730,499	3,574,319	3,450,367
Operating Expenses:					
Employee wage and benefits	637,169	633,138	655,077	728,891	762,780
Insurance costs	14,049	14,050	94,841	64,285	62,134
State water contract/maint	1,781,358	1,877,733	2,062,878	1,955,757	2,133,080
Depreciation	410,492	630,274	641,566	694,579	710,577
Maintenance	157,888	67,146	95,771	172,151	185,916
Administration	400,655	377,230	386,461	837,349	467,515
Supplies	91,814	90,801	39,136	66,960	40,859
Total expenses	3,493,425	3,690,372	3,975,730	4,519,972	4,362,861
Operating income (loss)	369,985	152,960	(245,231)	(945,653)	(912,494)
Non-Operating Income (Loss):					
Intergovernmental	-	-	-	-	-
Refunds and adjustments	(3,800)	(3,963)	-	(17,190)	(40,344)
Investment earnings	308,591	355,027	163,405	90,476	47,412
Gain (loss) on sale of capital assets	4,750	350	(1,115)	-	-
Other non-operating	4,458	-	-	-	-
Total non-operating	313,999	351,414	162,290	73,286	7,068
Net income (loss) before transfers	683,984	504,374	(82,941)	(872,367)	(905,426)
Transfers:					
Transfers in	8,778,370	5,698,821	3,139,003	77,664	427,341
Transfers out	(6,959,297)	(5,976,681)	(3,567,945)	(570,885)	(694,974)
Total transfers	1,819,073	(277,860)	(428,942)	(493,221)	(267,633)
Change in net position	2,503,057	226,514	(511,883)	(1,365,588)	(1,173,059)
Net Position:					
Beginning of year, restated	15,676,497	18,248,614	18,475,128	17,963,245	16,597,657
Ending of year	18,179,554	18,475,128	17,963,245	16,597,657	15,424,598

(Continued)

City of Morro Bay
Changes in Fund Balances of Proprietary Funds (Continued)
Water, Sewer and Harbor
Last Ten Fiscal Years (1)

	Fiscal Year				
	2006-07	2007-08	2008-09	2009-10	2010-11
SEWER FUND					
Operating revenue:					
Sewer services	$ 1,847,526	$ 2,016,213	$ 3,119,479	$ 3,274,721	$ 3,448,925
Penalties	9,194	11,147	19,204	25,633	29,947
Other local income	41,418	18,682	28,841	19,723	29,145
Total operating revenues	1,898,138	2,046,042	3,167,524	3,320,077	3,508,017
Operating expenses:					
Employee wage and benefits	263,697	368,094	396,104	455,345	524,378
Insurance costs	12,352	12,352	47,133	30,752	29,932
Wastewater treatment	963,717	1,225,855	1,546,314	1,568,081	2,151,514
Depreciation	381,298	397,585	444,511	413,503	426,966
Maintenance	22,732	21,928	17,050	13,947	15,701
Administration	146,706	166,429	274,954	262,811	272,583
Supplies	50,522	89,162	66,423	82,468	44,858
Total expenses	1,841,024	2,281,405	2,792,489	2,826,907	3,465,932
Operating income (loss)	57,114	(235,363)	375,035	493,170	42,085
Non-operating income (loss):					
Intergovernmental	3,038	-	66,721	76,472	214,930
Rental income	-	-	-	19,582	19,582
Refunds and adjustments	964	329	-	(329)	(16,735)
Investment earnings	122,887	147,485	73,632	67,677	41,024
Gain (loss) on sale of capital assets	(2,360)	-	-	100	-
Other non-operating	(2,723)	3,788	-	-	-
Total non-operating	121,806	151,602	140,353	163,502	258,801
Net income (loss) before transfers	178,920	(83,761)	515,388	656,672	300,886
Transfers:					
Transfers in	1,284,039	993,595	1,955,748	464,523	108,711
Transfers out	(1,380,152)	(1,196,605)	(2,132,981)	(751,837)	(268,419)
Total transfers	(96,113)	(203,010)	(177,233)	(287,314)	(159,708)
Change in net position	82,807	(286,771)	338,155	369,358	141,178
Net Position:					
Beginning of year	12,387,147	12,504,378	12,217,607	12,555,762	12,925,120
Ending of year	12,469,954	12,217,607	12,555,762	12,925,120	13,066,298

(Continued)

City of Morro Bay
Changes in Fund Balances of Proprietary Funds (Continued)
Water, Sewer and Harbor
Last Ten Fiscal Years (1)

	Fiscal Year				
	2006-07	2007-08	2008-09	2009-10	2010-11
HARBOR FUND					
Operating revenue:					
Harbor leases	$ 1,415,567	$ 1,430,305	$ $ 1,235,135	$ 1,358,185	$ 1,387,292
North T-Pier dockage	53,362	56,919	62,929	61,440	56,777
South T-Pier dockage	40,655	33,758	50,317	60,374	52,482
Mooring	61,823	67,437	74,705	73,806	88,106
Slip rental	103,130	187,410	123,313	179,057	83,269
Other services	42,789	34,773	24,139	33,902	52,948
Penalties	-	-	-	-	-
Other local income	579	46,719	8,059	45,957	51,391
Total operating revenues	1,717,905	1,857,321	1,578,597	1,812,721	1,772,265
Operating expenses:					
Employee wage and benefits	854,517	891,420	922,648	1,007,712	917,442
Insurance costs	22,960	23,051	30,814	43,862	50,886
Depreciation	161,053	213,107	194,360	164,562	174,031
Maintenance	65,371	122,676	83,310	148,370	216,392
Administration	429,827	302,876	175,373	224,592	298,810
Supplies	60,190	9,837	20,045	24,132	39,908
Total expenses	1,593,918	1,562,967	1,426,550	1,613,230	1,697,469
Operating income (loss)	123,987	294,354	152,047	199,491	74,796
Non-operating income (loss):					
Intergovernmental	61,621	331,323	212,959	18,820	99,098
Rental income	16,001	-	-	-	
Refunds and adjustments	-	7,361	(30,790)	(2)	130
Investment earnings	53,409	63,619	35,556	25,115	12,768
Gain (loss) on sale of capital assets	(1,183)	-		(150)	
Interest on debt	(68,175)	(65,174)	(62,038)	(58,761)	(55,337)
Other non-operating	977	-	-	-	-
Total non-operating	62,650	337,129	155,687	(14,978)	56,659
Net income (loss) before transfers	186,637	631,483	307,734	184,513	131,455
Transfers:					
Transfers in	199,965	1,398,648	195,595	-	141,600
Transfers out	(205,614)	(1,640,953)	(437,482)	(273,704)	(376,570)
Total transfers	(5,649)	(242,305)	(241,887)	(273,704)	(234,970)
Change in net position	180,988	389,178	65,847	(89,191)	(103,515)
Net Position:					
Beginning of year	1,138,751	1,261,161	1,650,339	1,716,186	1,626,995
End of year	$ 1,319,739	$ 1,650,339	$ 1,716,186	$ 1,626,995	$ 1,523,480

(Continued)

City of Morro Bay
Changes in Fund Balances of Proprietary Funds (Continued)
Water, Sewer and Harbor
Last Ten Fiscal Years (1)

	Fiscal Year				
	2011-12	2012-13	2013-14	2014-15	2015-16
WATER FUND					
Operating revenue:					
Water services	$ 3,325,454	$ 3,273,369	$ 3,391,983	$ 3,127,845	$ 4,164,080
Penalties	59,973	56,572	64,443	68,164	67,686
Reconnection fees	3,936	4,770	6,340	7,047	6,106
Service application fees	9,750	9,960	9,400	7,900	9,095
Connection/impact fees	32,866	76,921	55,192	79,111	183,478
Other local income	1,259	813	734	21,903	29,573
Total operating revenues	3,433,238	3,422,405	3,528,092	3,311,970	4,460,018
Operating Expenses:					
Employee wage and benefits	793,391	767,758	751,605	727,156	706,412
Insurance costs	69,352	69,414	70,009	73,394	73,759
State water contract/maint	2,145,319	2,143,326	2,119,397	2,208,691	2,608,377
Depreciation	699,196	642,814	318,793	273,878	268,052
Maintenance	174,064	140,342	191,095	138,451	99,930
Administration	959,024	264,837	912,947	632,741	613,410
Supplies	23,990	37,609	13,552	58,317	34,463
Total expenses	4,864,336	4,066,100	4,377,398	4,112,628	4,404,403
Operating income (loss)	(1,431,098)	(643,695)	(849,306)	(800,658)	55,615
Non-Operating Income (Loss):					
Intergovernmental	169,625	-	429,108	-	-
Refunds and adjustments	(42,126)	(23,029)	(23,701)	-	-
Investment earnings	43,148	19,848	22,003	20,388	27,558
Gain (loss) on sale of capital assets	(169)	-	-	-	-
Other non-operating	-	-	-	-	-
Total non-operating	170,478	(3,181)	427,410	20,388	27,558
Net income (loss) before transfers	(1,260,620)	(646,876)	(421,896)	(780,270)	83,173
Transfers:					
Transfers in	866,760	-	-	28,410	-
Transfers out	(1,140,898)	(271,188)	(276,340)	(279,105)	(358,518)
Total transfers	(274,138)	(271,188)	(276,340)	(250,695)	(358,518)
Change in net position	(1,534,758)	(918,064)	(698,236)	(1,030,965)	(275,345)
Net Position:					
Beginning of year, restated	15,424,598	13,889,840	12,971,776	11,604,311	10,573,346
Ending of year	13,889,840	12,971,776	12,273,540	10,573,346	10,298,001

(Continued)

City of Morro Bay
Changes in Fund Balances of Proprietary Funds (Continued)
Water, Sewer and Harbor
Last Ten Fiscal Years (1)

	Fiscal Year				
	2011-12	2012-13	2013-14	2014-15	2015-16
SEWER FUND					
Operating revenue:					
Sewer services	$ 3,612,159	$ 3,834,348	$ 4,124,770	$ 4,295,577	$ 4,955,153
Penalties	25,578	25,368	26,496	28,409	30,618
Other local income	17,760	53,422	6,834	6,267	2,752
Total operating revenues	3,655,497	3,913,138	4,158,100	4,330,253	4,988,523
Operating expenses:					
Employee wage and benefits	566,121	507,848	535,091	500,328	593,544
Insurance costs	38,058	38,142	38,310	38,980	38,996
Wastewater treatment	1,853,768	1,611,817	2,099,474	2,643,944	1,670,756
Depreciation	406,948	440,051	499,826	497,122	490,316
Maintenance	26,395	26,088	112,682	65,907	51,597
Administration	171,465	176,666	234,678	265,191	247,630
Supplies	37,956	81,417	55,246	155,867	134,291
Total expenses	3,100,711	2,882,029	3,575,307	4,167,339	3,227,130
Operating income (loss)	554,786	1,031,109	582,793	162,914	1,761,393
Non-operating income (loss):					
Intergovernmental	24,688	42,534	-	-	-
Rental income	19,665	20,078	18,704	23,370	15,790
Refunds and adjustments	(21,455)	(15,746)	(9,904)	-	-
Investment earnings	34,200	17,366	24,627	36,007	46,179
Gain (loss) on sale of capital assets	508	-	-	-	-
Other non-operating	-	-	-	-	-
Total non-operating	57,606	64,232	33,427	59,377	61,969
Net income (loss) before transfers	612,392	1,095,341	616,220	222,291	1,823,362
Transfers:					
Transfers in	4,364,048	-	-	-	-
Transfers out	(4,543,961)	(161,629)	(164,701)	(194,757)	(269,072)
Total transfers	(179,913)	(161,629)	(164,701)	(194,757)	(269,072)
Change in net position	432,479	933,712	451,519	27,534	1,554,290
Net Position:					
Beginning of year	13,066,298	13,498,777	14,432,489	13,144,718	13,778,615
Ending of year	13,498,777	14,432,489	14,884,008	13,172,252	15,332,905

(Continued)

City of Morro Bay
Changes in Fund Balances of Proprietary Funds (Continued)
Water, Sewer and Harbor
Last Ten Fiscal Years (1)

	Fiscal Year				
	2011-12	2012-13	2013-14	2014-15	2015-16
HARBOR FUND					
Operating revenue:					
Harbor leases	$ 1,440,227	$ 1,505,513	$ 1,653,448	$ 1,471,057	$ 1,484,070
North T-Pier dockage	74,309	62,077	51,750	38,221	43,404
South T-Pier dockage	71,982	51,642	66,956	65,979	66,475
Mooring	80,154	85,036	84,908	97,428	101,606
Slip rental	114,203	105,583	127,430	123,783	142,764
Other services	48,245	48,437	47,799	59,675	62,892
Penalties	-	60,416	59,571	38,033	14,924
Other local income	6,688	7,232	34,781	16,786	11,243
Total operating revenues	1,835,808	1,925,936	2,126,643	1,910,962	1,927,378
Operating expenses:					
Employee wage and benefits	923,603	911,089	937,228	931,222	977,764
Insurance costs	66,420	67,824	77,491	80,783	77,012
Depreciation	163,036	236,536	139,350	202,219	167,591
Maintenance	172,839	101,659	114,642	122,692	62,870
Administration	286,093	347,925	697,359	780,903	373,252
Supplies	18,021	33,327	21,635	76,189	88,774
Total expenses	1,630,012	1,698,360	1,987,705	2,194,008	1,747,263
Operating income (loss)	205,796	227,576	138,938	(283,046)	180,115
Non-operating income (loss):					
Intergovernmental	144,462	151,715	181,604	147,262	11,904
Rental income		-	260	-	-
Refunds and adjustments	-	246	(111,669)	-	-
Investment earnings	12,251	6,178	7,537	9,823	10,792
Gain (loss) on sale of capital assets	350	4,644	7,902	9,500	-
Interest on debt	(51,758)	(48,019)	(44,111)	(40,027)	(35,760)
Other non-operating	-	-	-	-	-
Total non-operating	105,305	114,764	41,523	126,558	(13,064)
Net income (loss) before transfers	311,101	342,340	180,461	(156,488)	167,051
Transfers:					
Transfers in	-	-	-	-	-
Transfers out	(281,986)	(281,986)	(281,986)	(281,986)	(300,236)
Total transfers	(281,986)	(281,986)	(281,986)	(281,986)	(300,236)
Change in net position	29,115	60,354	(101,525)	(438,474)	(133,185)
Net Position:					
Beginning of year	1,523,480	1,552,595	1,612,949	67,020	(371,454)
End of year	$ 1,552,595	$ 1,612,949	$ 1,511,424	$ (371,454)	$ (504,639)

(Concluded)

City of Morro Bay
Governmental Activities Tax Revenues by Source
Last Ten Fiscal Years
(In Thousands)

Fiscal Year	Property Tax [1]	Franchise Tax	Transient Occupancy Tax [2]	Sales Tax [3]	Business Tax	Total
2006-07	$ 3,504	$ 677	$ 1,967	1,333	$ 238	$ 7,719
2007-08	3,615	785	1,956	2,092	254	8,702
2008-09	3,760	603	1,914	1,955	156	8,388
2009-10	3,566	496	2,212	1,792	292	8,358
2010-11	3,620	543	2,287	1,904	240	8,594
2011-12	3,575	513	2,537	1,963	223	8,811
2012-13	3,658	513	2,803	2,196	230	9,400
2013-14	3,875	506	3,171	2,267	248	10,067
2014-15	3,940	493	3,630	2,317	306	10,686
2015-16	4,054	513	3,911	2,537	351	11,366

Notes:

[1] Contains General Fund net property taxes and in lieu property taxes (Sales and VLF)

[2] Contains General Fund Transient Occupancy Tax and Morro Bay Tourism Business Improvement District Special Revenue Fund lodging assessment

[3] Contains General Fund sales tax and District Transaction Tax (Measure Q) 1/2 cent sales tax

City of Morro Bay
Assessed Value and Estimated Actual Value of Taxable Property
Last Ten Fiscal Years

Fiscal Year	Homeowners Exemption	Secured Roll Gross Value	Unsecured Roll	Unitary	Total	Total Direct Tax Rate	Market Value	Percentage of Market Value
2007	$ 14,402,438	$ 1,613,482,305	$ 26,291,133	$ 61,061,721	$ 1,700,835,159	1.00%	$ 1,700,835,159	100%
2008	14,393,533	1,738,587,996	26,244,393	52,361,721	1,817,194,110	1.00%	1,817,194,110	100%
2009	14,284,126	1,823,330,491	27,686,187	44,617,274	1,895,633,952	1.00%	1,895,633,952	100%
2010	14,116,682	1,888,384,363	29,594,504	46,217,274	1,964,196,141	1.00%	1,964,196,141	100%
2011	13,938,842	1,874,127,718	29,939,053	53,117,274	1,957,184,045	1.00%	1,957,184,045	100%
2012	13,764,237	1,833,454,294	33,317,458	51,217,274	1,917,989,026	1.00%	1,917,989,026	100%
2013	13,550,249	1,836,656,977	33,778,074	37,881,190	1,908,316,241	1.00%	1,908,316,241	100%
2014	13,222,865	1,907,683,084	40,361,469	23,581,190	1,971,625,743	1.00%	1,971,625,743	100%
2015	13,209,761	2,009,556,995	36,269,646	17,497,190	2,063,323,831	1.00%	2,063,323,831	100%
2016	13,273,217	2,060,506,332	36,522,496	14,381,190	2,111,410,018	1.00%	2,111,410,018	100%

Note: In 1978, the voters of the State of California pass Proposition 13, which limited the property taxes to a total maximum rate of 1% based upon the assessed value of the property being taxed. Each year, the assessed value of property may be increased by an "inflation factor," which is limited to a maximum increase of 2%. With few exceptions, property is only re-assessed at the time it is sold to a new owner. At that point, the new assessed value is re-assessed at the purchase price of the property sold.

The assessed valuation data, shown above, represents the only data currently available with respect to the actual market value of taxable property, and is subject to the limitations described above.

Source: County of San Luis Obispo of the Auditor-Controller Hunderlitel, deLllamas (HdL) report

City of Morro Bay
Direct and Overlapping Property Tax Rates
Last Ten Fiscal Years

	Fiscal Year				
	2007	**2008**	**2009**	**2010**	**2011**
Prop 13 maximum tax rate	1.00000	1.00000	1.00000	1.00000	1.00000
Voter approved indebtedness:					
State Water Project	0.00221	0.00220	0.00220	0.00220	0.00290
Cuesta Community College District 2014 bond					
School District:					
San Luis Coastal 2014 GO	-	-	-	-	-
Total for taxpayers in San Luis Coastal District	1.00221	1.00220	1.00220	1.00220	1.00290
Prop 13 maximum tax rate	1.00000	1.00000	1.00000	1.00000	1.00000
Voter approved indebtedness:					
State Water Project	0.00221	0.00220	0.00220	0.00220	0.00290
Cuesta Community College District 2014 bond					
School District:					
Coastal Unified (Cayucos Elementary)	0.02310	0.04915	0.04915	0.04915	0.04990
Total for taxpayers in Coastal Unified District	1.02531	1.05135	1.05135	1.05135	1.05280

(Continued)

Notes:
Property tax rates are levied per $100 of assessed valuation. The tax rate information provided is for Tax Rate Area 006-000 (Coast Unified) and 006-001 (San Luis Coastal District).

On June 6, 1978, Proposition 13 passed, which established a maximum County-wide levy, for general revenue purposes, of 1% of market value.

Source: County of San Luis Obispo Office of the Auditor-Controller

City of Morro Bay
Direct and Overlapping Property Tax Rates (Continued)
Last Ten Fiscal Years

	Fiscal Year				
	2012	2013	2014	2015	2016
Prop 13 maximum tax rate	1.00000	1.00000	1.00000	1.00000	1.00000
Voter approved indebtedness:					
State Water Project	0.00300	0.00400	0.00400	0.00400	0.00374
Cuesta Community College District 2014 bond					0.01925
School District:					
San Luis Coastal 2014 GO	-	-	-	-	0.04900
Total for taxpayers in San Luis Coastal District	1.00300	1.00400	1.00400	1.00400	1.07199
Prop 13 maximum tax rate	1.00000	1.00000	1.00000	1.00000	1.00000
Voter approved indebtedness:					
State Water Project	0.00300	0.00400	0.00400	0.00400	0.00374
Cuesta Community College District 2014 bond					0.01925
School District:					
Coastal Unified (Cayucos Elementary)	0.05035	0.05095	0.05095	0.05095	0.04954
Total for taxpayers in Coastal Unified District	1.05335	1.05495	1.05495	1.05495	1.07253

(Concluded)

Notes:
Property tax rates are levied per $100 of assessed valuation. The tax rate information provided is for Tax Rate Area 006-000 (Coast Unified) and 006-001 (San Luis Coastal District).

On June 6, 1978, Proposition 13 passed, which established a maximum County-wide levy, for general revenue purposes, of 1% of market value.

Source: County of San Luis Obispo Office of the Auditor-Controller

City of Morro Bay
Principal Property Taxpayers
Current Year and Nine Fiscal Years Ago

	2016			2007		
Taxpayer	Taxable Assessed Value	Rank	Percentage of Total Taxable Assessed Value	Taxable Assessed Value	Rank	Percentage of Total Taxable Assessed Value
Dynegy Morro Bay, LLC	$ 14,381,190	1	0.68%	$ 62,715,674	1	3.69%
Bartfield Family Trust	9,431,691	2	0.45%	4,998,600	8	0.29%
ABS California -O, LLC	9,071,125	3	0.43%	7,308,185	4	0.43%
Imperial Coast LP	9,049,357	4	0.43%			0.00%
Seashell Communities Asset Corp	8,435,936	5	0.40%	7,532,290	3	0.44%
GE Mobile Water Inc.	7,515,612	6	0.36%			0.00%
Morro Bay Marina	5,771,786	7	0.27%	5,101,136	7	0.30%
ABC Investments, LLC	4,700,000	8	0.22%			0.00%
Someo Properties, LLC	4,627,969	9	0.22%			0.00%
GE Hospitality Property, LLC	4,526,192	10	0.21%	8,049,227	2	0.47%
Amitage Corp			0.00%			0.00%
George & Charlotte Salwasser			0.00%	7,017,373	5	0.41%
Inn at Morro Bay LLC			0.00%	6,700,547	6	0.39%
Cihan Corporation			0.00%	3,932,290	9	0.23%
William J Wade Trust Etal			0.00%	3,791,481	10	0.22%
Subtotal	77,510,858		3.67%	117,146,803		6.89%
Total taxable assessed value of other taxpayers	2,033,899,160		96.33%	1,583,688,356		93.11%
Total taxable assessed value	$ 2,111,410,018		100.00%	$ 1,700,835,159		100.00%

Source: County of San Luis Obispo Office of the Tax Assessor

City of Morro Bay
Property Tax Levies and Collections
Last Ten Fiscal Years

Fiscal Year	Total Secured Tax Levy (Notes 1 & 2)	Current Year Collections	Percent Collected	Current Year Delinquencies (Note 3)	Percent Delinquent (Note 3)
2007	$ 1,969,907	$ 1,969,907	100.00%	$ -	$ -
2008	2,107,156	2,107,156	100.00%	-	-
2009	2,193,391	2,193,391	100.00%	-	-
2010	2,212,638	2,212,638	100.00%	-	-
2011	2,205,675	2,205,675	100.00%	-	-
2012	2,161,276	2,161,276	100.00%	-	-
2013	2,146,559	2,146,559	100.00%	-	-
2014	2,219,874	2,219,874	100.00%	-	-
2015	2,328,969	2,328,969	100.00%	-	-
2016	2,447,638	2,447,638	100.00%	-	-

Notes:

1. The secured property tax roll is composed of ad valorem taxes, as well as special assessments, and is calculated by the San Luis Obispo County Auditor-Controller. The San Luis Obispo County Tax collector is responsible for all property tax roll collections within the City of Morro Bay. The amount reported is before the SB2557 County administrative fees of approximately 3% of total property tax revenues.

2. The secured levy does not include supplemental assessments, unsecured tax revenues or prior year adjustments. In 2012/13, a one-time refund of $104,903 was received from the County Auditor-Controller, for prior year overcharges of the SB2557 fee.

3. The City has elected the Teeter Plan-method of property tax collection, whereby the County remits 100% of taxes levied to the City, pursues collection of unpaid/delinquent taxes, and retains the taxes collected, as well as related penalties and interest.

Source: San Luis Obispo County Auditor-Controller

City of Morro Bay
Transient Occupancy Tax Revenues and Assessments Data
Last Ten Years

	Hotels/Motels/Inns/B & B						RV Parks & Campgrounds		Vacation Rentals	
		Annual Average								
Fiscal Year	Taxable Receipts	Rooms Available	Occupancy Rate	Room Rate	10% Tax	TBID Assessment	Taxable Receipts	10% Tax	Taxable Receipts	10% Tax
2006-07	$ 17,800,481	887	52.50%	$ 55	$ 1,780,048	$ -	$ 1,331,492	$ 133,149	$ 717,372	$ 71,737
2007-08	17,152,824	833	50.17%	56	1,715,282	-	1,529,098	152,910	918,877	91,888
2008-09 [1]	15,976,250	913	48.67%	48	1,597,625	44,874	1,564,187	156,419	887,288	88,729
2009-10 [2]	15,285,777	915	47.42%	46	1,528,578	458,573	1,588,335	158,834	1,362,896	136,290
2010-11 [3]	15,713,492	919	49.83%	47	1,571,349	397,301	1,578,353	157,835	138,615	13,862
2011-12	17,105,133	917	51.58%	51	1,710,513	513,154	1,641,084	164,108	1,545,374	154,537
2012-13	18,891,852	912	55.00%	57	1,889,185	566,756	1,731,895	173,190	1,707,402	170,740
2013-14	21,422,442	903	59.67%	65	2,142,244	642,673	1,815,442	181,544	1,914,618	191,462
2014-15	24,346,340	910	63.00%	73	2,434,634	730,390	2,005,807	200,581	2,666,152	266,615
2015-16	25,936,031	914	62.92%	78	2,593,603	778,081	2,220,232	222,023	3,245,301	324,530

[1] May 2008 was the beginning of the Morro Bay Tourism Business Improvement District (TBID). The assessment was set by Ordinance to be 2%, but the City Council took action to increase the collection rate to 3% for one year.

[2] TBID's first full year of operation; assessment rate was 3%, until May 2010, when it returned to 2%, per the Ordinance.

[3] TBID collected assessments at 2% through October; Council action set the rate at 3% for November and until further Council action was taken to change it.

Source: City of Morro Bay Finance Department - Transient Occupancy Reports; these reports may vary from fiscal year-to-year to the TOT reported in the financials, due to reporting method differences. Financials accrue the entire month of July, and may pick up small amounts that apply to the future period. Additionally, net TOT audit results are included in the financial statement amount, and not recorded in these reports.

City of Morro Bay
Schedule of Taxable Sales by Type, Category and Geographic Area
Last Ten Calendar Years
(in thousands of dollars)

	2006	2007	2008	2009	2010
All sales tax by major category:					
Autos And Transportation	$ 58,203	$ 59,002	$ 56,090	$ 57,984	$ 54,862
Building And Construction	120,472	166,392	131,402	104,939	95,137
Business And Industry	70,173	63,692	69,257	57,906	55,056
Food And Drugs	218,192	203,661	202,289	199,425	193,271
Fuel And Service Stations	278,034	314,736	339,828	230,836	267,765
General Consumer Goods	242,198	243,287	207,334	203,848	194,498
Restaurants And Hotels	357,949	368,732	352,844	357,945	349,214
Total all sales	$ 1,345,221	$ 1,419,502	$ 1,359,044	$ 1,212,883	$ 1,209,803
Performance by Geographic Area					
Embarcadero retailers	$ 271	$ 277	$ 263	$ 247	$ 252
Downtown shopping district	90	93	92	83	81
Quintana Road business area	293	275	267	268	269
No. Morro Bay business area	157	164	164	120	130
Total geographic areas	811	809	786	718	732
Sales by others	566	588	575	482	492
Total all sales	$ 1,377	$ 1,397	$ 1,361	$ 1,200	$ 1,224
District Transaction Tax (DTT) - Measure Q [1]:					
Autos And Transportation	N/A	$ 85,637	$ 102,009	$ 98,683	$ 96,653
Building And Construction	N/A	53,463	71,416	63,368	57,185
Business And Industry	N/A	42,207	69,668	59,739	53,453
Food And Drugs	N/A	77,760	101,212	98,253	97,698
Fuel And Service Stations	N/A	122,190	167,917	117,130	136,222
General Consumer Goods	N/A	98,661	117,934	111,555	112,057
Restaurants And Hotels	N/A	139,633	180,248	179,668	174,813
Total DTT	$ -	$ 619,551	$ 810,404	$ 728,396	$ 728,081
Total number of businesses by category:					
Autos And Transportation	33	32	31	32	33
Building And Construction	31	32	27	27	25
Business And Industry	92	95	95	88	87
Food And Drugs	27	28	23	24	26
Fuel And Service Stations	9	10	11	10	10
General Consumer Goods	367	343	329	326	327
Restaurants And Hotels	75	75	79	72	74
Total	634	615	595	579	582
Number of businesses located in Geographic Areas:					
Embarcadero retailers	86	88	83	78	86
Downtown shopping district	94	81	86	83	80
Quintana Road business area	53	53	56	53	53
No. Morro Bay business area	44	43	39	39	34
Total	277	265	264	253	253

(Continued)

[1] The City of Morro Bay's District Transaction Tax (Measure Q) passed with the November 2006 election; collections began April 1, 2007.

City of Morro Bay
Schedule of Taxable Sales by Type, Category and Geographic Area (Continued)
Last Ten Calendar Years
(in thousands of dollars)

	2011	2012	2013	2014	2015
All sales tax by major category:					
Autos And Transportation	$ 52,994	$ 55,355	$ 55,715	$ 55,464	$ 60,869
Building And Construction	103,167	104,434	100,070	100,207	105,532
Business And Industry	59,636	57,372	64,285	73,890	76,926
Food And Drugs	193,734	196,715	201,612	214,787	224,754
Fuel And Service Stations	295,693	361,761	360,558	333,935	285,913
General Consumer Goods	194,182	204,757	220,564	214,625	205,865
Restaurants And Hotels	364,693	408,027	441,170	463,617	533,412
Total all sales	$ 1,264,099	$ 1,388,421	$ 1,443,974	$ 1,456,525	$ 1,493,271
Performance by Geographic Area					
Embarcadero retailers	$ 267	$ 281	$ 309	$ 330	$ 341
Downtown shopping district	81	86	92	95	102
Quintana Road business area	267	268	275	285	302
No. Morro Bay business area	127	135	140	145	140
Total geographic areas	742	770	816	855	885
Sales by others	542	593	605	591	1,492,386
Total all sales	$ 1,284	$ 1,363	$ 1,421	$ 1,446	$ 1,493,271
District Transaction Tax (DTT) - Measure Q [1]:					
Autos And Transportation	$ 101,283	$ 121,317	$ 139,361	$ 142,770	$ 154,383
Building And Construction	67,592	69,582	65,939	68,094	79,363
Business And Industry	62,007	62,963	77,869	83,945	96,824
Food And Drugs	97,425	98,483	102,498	107,425	112,000
Fuel And Service Stations	150,512	183,506	182,368	171,949	144,401
General Consumer Goods	112,400	123,218	129,307	132,939	136,299
Restaurants And Hotels	181,338	202,254	218,239	234,519	267,421
Total DTT	$ 772,557	$ 861,323	$ 915,581	$ 941,641	$ 990,691
Total number of businesses by category:					
Autos And Transportation	35	33	36	36	32
Building And Construction	25	22	27	28	28
Business And Industry	97	101	122	122	128
Food And Drugs	23	23	23	22	26
Fuel And Service Stations	9	9	9	7	6
General Consumer Goods	321	335	373	373	397
Restaurants And Hotels	79	81	84	87	94
Total	589	604	674	675	711
Number of businesses located in Geographic Areas:					
Embarcadero retailers	84	80	90	88	96
Downtown shopping district	84	82	85	86	91
Quintana Road business area	54	53	54	52	62
No. Morro Bay business area	37	32	34	37	45
Total	259	247	263	263	294

(Concluded)

City of Morro Bay
Schedule of Historic Sales and Use Tax Rates

Effective Date	End Date	State Jurisdiction	Local Transportation Fund	City Rate	Combined Rate
7/17/1964	7/31/1967	3.00%		1.00%	4.00%
8/1/1967	6/30/1972	4.00%		1.00%	5.00%
7/1/1972	6/30/1973	3.75%	0.25%	1.00%	5.00%
7/1/1973	9/30/1973	4.75%	0.25%	1.00%	6.00%
10/1/1973	3/31/1974	3.75%	0.25%	1.00%	5.00%
4/1/1974	11/30/1989	4.75%	0.25%	1.00%	6.00%
12/1/1989	12/31/1990	5.00%	0.25%	1.00%	6.25%
1/1/1991	7/14/1991	4.75%	0.25%	1.00%	6.00%
7/15/1991	12/31/2000	6.00%	0.25%	1.00%	7.25%
1/1/2001	12/31/2001	5.75%	0.25%	1.00%	7.00%
1/1/2002	6/30/2004	6.00%	0.25%	1.00%	7.25%
7/1/2004	3/31/2007	6.25%	0.00%	1.00%	7.25%
4/1/2007	3/31/2009	6.25%	0.00%	1.50%	7.75%
4/1/2009	6/30/2011	7.25%	0.00%	1.50%	8.75%
7/1/2011	12/31/2015	6.25%	0.00%	1.50%	7.75%
1/1/2013	12/31/2015	6.50%	0.00%	1.50%	8.00%
1/1/2016		6.25%	0.25%	1.50%	8.00%

Notes:

1 The Bradley-Burns Uniform Local Sales and Use Tax Law was enacted in 1955. The law authorizes cities and counties to impose a sales and use tax.

2 In March 2004, a State ballot measure was passed, issuing deficit reduction bonds for State purposes. Funding was provided, effective July 1, 2004, by repealing 25% of the local 1% sales tax, and adopting a new 1/4 cent sales tax, dedicated to repayment of the deficit reduction bonds. Cities and counties would be made whole by the state from increased property tax allocations, via reduced contributions to ERAF. This *triple flip* is theoretically revenue-neutral, and as such, the effective rate, for revenue purposes, remains at 1%.

3 In November 2006, voters in Morro Bay approved a local sales tax measure (Measure Q), increasing the City rate by 1/2%, which became effective April 1, 2007.

Source: State Board of Equalization, State of California; Hinderliter, deLlamas (HdL)

City of Morro Bay
Schedule of Business Tax Certificates by Category
Last Ten Fiscal Years

Category	2006-07	2007-08	2008-09	2009-10	2010-11
Autos And Transportation	33	32	31	32	33
Building And Construction	31	32	27	27	25
Business And Industry	92	95	95	88	87
Food And Drugs	27	28	23	24	26
Fuel And Service Stations	9	10	11	10	10
General Consumer Goods	367	343	329	326	327
Restaurants And Hotels	75	75	79	72	74
Vacation rentals	47	52	76	93	110
Total certificates	681	667	671	672	692

Source: City of Morro Bay Finance Department; Hinderliter de Llamas

City of Morro Bay
Schedule of Business Tax Certificates by Category (Continued)
Last Ten Fiscal Years

Category	2011-12	2012-13	2013-14	2014-15	2015-16
Autos And Transportation	35	33	36	36	32
Building And Construction	25	22	27	28	28
Business And Industry	97	101	122	122	128
Food And Drugs	23	23	23	22	26
Fuel And Service Stations	9	9	9	7	6
General Consumer Goods	321	335	373	373	397
Restaurants And Hotels	79	81	84	87	94
Vacation rentals	140	153	157	165	167
Total certificates	729	757	831	840	878

Source: City of Morro Bay Finance Department; Hinderliter de Llamas

City of Morro Bay
Ratios of Outstanding Debt by Type
Last Ten Fiscal Years
(amounts expressed in thousands, except per capita amount)

	Fiscal Year									
	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Governmental activities:										
Certificates of Participation (Fire)	$ -	$ -	$ -	$ -	$ -	$ 51	$ 24	$ 1,445	$ 1,416	$ 1,386
Business-type activities:										
Harbor So T-Pier construction loan	1,448	1,379	1,306	1,230	1,150	1,067	980	889	795	696
Total primary government	$ 1,448	$ 1,379	$ 1,306	$1,230	$1,150	$ 1,118	$1,004	$ 2,334	$ 2,211	$ 2,082
Percentage of personal income	$ 5	$ 5	$ 4	$ 4	$ 4	$ 3	$ 3	$ 6	$ 7	$ 6
Per capita	$ 138	$ 132	$ 124	$ 116	$ 108	$ 109	$ 97	$ 227	$ 216	$ 194

Notes:

Details regarding the city's outstanding debt can be found in the notes to the financial statements.

City of Morro Bay
Direct and Overlapping Long-Term Debt
Fiscal Year ended June 30, 2016

	Percent Applicable to the City of Morro Bay	Amount Applicable to the City of Morro Bay as of June 30, 2016
Direct long-term debt:		
City of Morro Bay 2011 Certificates of Participation	100.00%	$ 1,386,419
City of Morro Bay Harbor Construction Loan	100.00%	695,556
Subtotal direct debt		2,081,975
Overlappiing long-term debt (percentage of overlapping agency's assessed valuation located withing boundaries of the City):		
San Luis Obispo County General Fund Obligations	4.643%	$ 1,253,842
San Luis Obispo County Pension Obligations	5.643%	4,665,723
San Luis Community College District Certificates of Participation	4.623%	352,735
Subtotal over-lapping debt		6,272,300
Total gross direct and overlapping long-term debt		$ 8,354,275

City of Morro Bay
Legal Debt Margin Information
Last Ten Fiscal Years
(amounts expressed in thousands)

	Fiscal Year				
	2006-07	2007-08	2008-09	2009-10	2010-11
Debt Limit	$ 255,125	$ 272,579	$ 284,345	$ 294,629	$ 293,578
Total net debt applicable to limit	-	-	-	-	-
Legal debt margin	$ 255,125	$ 272,579	$ 284,345	$ 294,629	$ 293,578
Total net debt applicable to the limit as a percentage of debt limit	-	-	-	-	-

(Continued)

Section 43605 of the State of California Government Code limits the amount of indebtedness for public improvements to no more than 15% of the assessed valuation of all taxable property in the City.

The City of Morro Bay does not have any general obligation debt.

City of Morro Bay
Legal Debt Margin Information (Continued)
Last Ten Fiscal Years
(amounts expressed in thousands)

	Fiscal Year				
	2011-12	2012-13	2013-14	2014-15	2015-16
Debt Limit	$ 287,698	$ 286,247	$ 295,744	$ 309,499	$ 316,712
Total net debt applicable to limit	-	-	-	-	-
Legal debt margin	$ 287,698	$ 286,247	$ 295,744	$ 309,499	$ 316,712
Total net debt applicable to the limit as a percentage of debt limit	-	-	-	-	-

(Concluded)

Legal Debt Margin Calculation for Fiscal Year 2015-16

Total assessed value of taxable property	$	2,111,410,018
Debt limit (15% of total assessed value)	$	316,712
Debt applicable to limit		-
Legal debt margin	$	316,712

Section 43605 of the State of California Government Code limits the amount of indebtedness for public improvements to no more than 15% of the assessed valuation of all taxable property in the City.

The City of Morro Bay does not have any general obligation debt.

City of Morro Bay
Demographic and Economic Statistics
Last Ten Fiscal Years

Fiscal Year	Population	Personal Income (in thousands)	Per Capita Personal Income	Median Age (2)	% of Pop 25+ with High School Degree	% of Pop 25+ Bachelor's Degree	Unemployment Rate (5)
2007	10,521	$ 285,384	$ 27,125				4.3%
2008	10,485	297,311	28,356				5.7%
2009	10,521	301,325	28,640				8.9%
2010	10,576	293,474	27,749	50.5	90.7%	28.9%	10.0%
2011	10,608	311,101	29,327	55.5	89.6%	30.2%	9.9%
2012	10,274	323,878	31,524	54.1	92.6%	30.5%	8.7%
2013	10,317	340,079	32,963	51.1	92.5%	32.6%	7.0%
2014	10,276	359,999	35,033	51.2	93.1%	34.7%	5.4%
2015	10,254	329,023	32,087	51.1	91.9%	36.2%	4.5%
2016	10,722	338,618	31,582	50.8	92.9%	37.7%	4.5%

Sources:

Population from California State Department of Finance, provided by HdL

Unemployment rates are from the Bureau of Labor and Statistics, Local Area Unemployment Statistics, for the San Luis Obispo-Paso Robles-Arroyo Grande metorpolitan area.

City of Morro Bay
Principal Employers
Current Year and Nine Fiscal Years Ago

Employer	2015-16 Number of Full-Time Equivalent Employees [1]	2015-16 Ranking	2015-16 Percentage of Total City Labor Force	2006-07 Number of Full-Time Equivalent Employees [1]	2006-07 Ranking	2006-07 Percentage of Total City Labor Force
City of Morro Bay	148	1	2.60%	130	1	2.50%
Albertsons	101	2	1.77%	89	2	1.71%
Dorn's Original Breakers Café	44	3	0.77%	38	4	0.73%
Mission Linen Supply	42	4	0.74%	40	3	0.77%
Miner's Ace Hardware	39	5	0.68%	30	6	0.58%
McDonald's	39	6	0.68%	37	5	0.71%
The Inn at Morro Bay	33	7	0.58%	25	7	0.48%
Giovanni's Fish Market	31	8	0.54%	25	8	0.48%
Tognazzini's Dockside Restaurants & Fish Market	29	9	0.51%	23	11	0.44%
Bayside Café	26	10	0.46%	24	10	0.46%
Rite-Aid	26	11	0.46%	25	9	0.48%
Spencer's Fresh Market	24	12	0.42%	22	12	0.42%
Harbor Hut	22	13	0.39%	20	13	0.38%
Great American Fish Company	20	14	0.35%	20	14	0.38%
Total	624			548		
City labor force	5,700			5,200		

[1] The number of full-time equivalent employees is calculated by dividing annual hours worked by 2080, which is the normal total for annual hours worked by one full-time employee.

Source:

FTE: City of Morro Bay payroll records; HdL Business Tax records

Labor Force: California Employment Development Department "Unemployment Rates and Labor Force," at www.labormarketinfo.edd.ca.gov

City of Morro Bay
Full-Time City Government Employees By Function
Last Ten Fiscal Years

	Fiscal Year				
	2006-07	2007-08	2008-09	2009-10	2010-11
GENERAL FUND:					
City Council	5.00	5.00	5.00	5.00	5.00
City Manager	5.00	5.00	3.00	1.00	1.00
Deputy City Manager	-	-	-	-	-
City Clerk/Legal	1.75	1.75	1.75	2.75	2.75
Accounting & Treasury	5.00	5.00	4.00	4.00	3.00
Human Resources	-	-	1.00	1.00	1.00
Information Services	1.00	1.00	1.00	1.00	1.00
Police Department					
Sworn	18.50	18.50	18.50	18.50	18.00
Non-sworn	5.00	5.00	5.00	5.00	5.00
Fire Department					
Sworn	10.00	10.00	10.00	11.00	11.00
Non-sworn	1.00	1.00	1.00	1.00	0.50
Public Works Department	10.00	10.00	9.00	11.00	9.75
Consolidated Maintenance Division	8.50	8.50	9.50	10.00	10.00
Recreation and Parks Administration	4.00	4.00	3.00	3.00	2.00
Recreation Programs	4.00	4.00	3.50	2.00	2.00
Community Development Department				-	-
ENTERPRISE FUNDS:					
Water Revenue Fund	8.00	8.00	8.50	7.50	7.50
Sewer Revenue Fund	4.00	4.00	4.50	4.50	4.50
Harbor Fund	8.00	8.00	8.00	8.00	8.00
MB/CSD Wastewater Treatment Plant	8.00	8.00	8.00	8.00	8.00
TOTAL STAFF MEMBERS	106.75	106.75	104.25	104.25	100.00

Notable changes:

2010-11: layoff and reduction in workforce due to the economic downturn.

Source: City of Morro Bay, Human Resources Division

City of Morro Bay
Full-Time City Government Employees By Function (Continued)
Last Ten Fiscal Years

	Fiscal Year				
	2011-12	2012-13	2013-14	2014-15	2015-16
GENERAL FUND:					
City Council	5.00	5.00	5.00	5.00	5.00
City Manager	1.00	1.00	1.00	1.00	1.00
Deputy City Manager	-	-	-	-	1.00
City Clerk/Legal	2.75	3.00	3.00	1.00	2.00
Accounting & Treasury	3.00	3.00	3.00	3.00	4.00
Human Resources	1.00	1.00	1.00	1.00	1.00
Information Services	1.00	1.00	1.00	1.00	1.00
Police Department					
Sworn	18.00	18.00	18.00	18.00	18.00
Non-sworn	5.00	5.00	5.00	5.00	2.00
Fire Department					
Sworn	11.00	11.00	11.00	11.00	12.00
Non-sworn	0.50	0.50	0.50	0.50	0.50
Public Works Department	9.75	9.75	9.75	9.75	7.00
Consolidated Maintenance Division	11.00	10.00	10.00	10.00	9.00
Recreation and Parks Administration	2.00	2.00	2.00	2.00	-
Recreation Programs	2.00	2.00	2.00	2.00	2.00
Community Development Department	-	-	-	-	5.00
ENTERPRISE FUNDS:					
Water Revenue Fund	7.50	7.38	7.50	7.50	5.50
Sewer Revenue Fund	5.50	5.37	5.50	5.50	5.50
Harbor Fund	7.75	7.00	7.00	7.00	7.00
MB/CSD Wastewater Treatment Plant	8.00	8.00	8.00	8.00	8.00
TOTAL STAFF MEMBERS	101.75	100.00	100.25	98.25	96.50

Notable changes:

2015/16: Deputy City Manager position established for economic development; one additional firefighter was hired; City dispatch services were transferred to the SLO County Sheriff and County Fire, reducing Police non-sworn personnel to support services/records only.

Source: City of Morro Bay, Human Resources Division

City of Morro Bay
Operating Indicators By Function
Last Ten Fiscal Years

	Fiscal Year				
	2006-07	2007-08	2008-09	2009-10	2010-11
Police [1]					
Number of Stations	1	1	1	1	1
Patrol units:					
In service	N/A	N/A	N/A	N/A	N/A
Volunteer	N/A	N/A	N/A	N/A	N/A
Crimes:					
Homicide	N/A	N/A	2	-	-
Rape	N/A	N/A	2	1	3
Robbery	N/A	N/A	4	1	2
Assaults	N/A	N/A	60	71	62
Burglary	N/A	N/A	36	39	29
Larceny	N/A	N/A	125	124	119
Vehicle theft	N/A	N/A	8	15	3
Domestic violence	N/A	N/A	14	10	30
Driving under the influence	N/A	N/A	113	82	123
Drunk in public	N/A	N/A	125	95	98
Forgery/Fraud	N/A	N/A	30	35	24
Sex offenses	N/A	N/A	8	11	13
Vandalism/Graffiti	N/A	N/A	47	38	28
Weapons offenses	N/A	N/A	9	6	11
All other offenses	N/A	N/A	852	874	826
Traffic collisions:					
Non-injury	N/A	N/A	101	158	125
Injury	N/A	N/A	27	25	21
Fatal	N/A	N/A	1	-	-
Calls for service/Officer-initiated activity	N/A	14,923	13,723	13,873	14,371
Reports & citations:					
Incident reports	N/A	1,767	1,521	1,474	1,371
Citations - parking	N/A	N/A	364	414	230
Citations - traffic	N/A	N/A	639	500	480
Warnings	N/A	N/A	2,121	1,704	2,402
Other citations	N/A	N/A	13	120	165
Arrests:					
Adult	N/A	N/A	601	548	535
Juvenile	N/A	N/A	46	32	22

N/A = NOT AVAILABLE

(Continued)

[1] Police statistics are for the calendar years 2008 - 2015

City of Morro Bay
Operating Indicators By Function (Continued)
Last Ten Fiscal Years

	Fiscal Year				
	2006-07	2007-08	2008-09	2009-10	2010-11
Fire					
Number of Stations [1]	2	2	2	2	2
Trucks:					
Suppression	1	1	1	1	1
Ladder	1	1	1	1	1
Rescue	1	1	1	1	1
Emergency responses:					
Fires	70	58	70	44	43
Basic Life Support	410	457	433	457	357
Advanced Life Support (Paramedic)	654	598	649	655	723
Rescues / Traffic Collisions	49	51	60	43	38
False Alarm	38	63	50	49	38
Haz Mat	24	36	31	10	19
Electrical	17	13	25	20	23
Public Service and Agency Assists	445	440	410	409	444
Fire prevention:					
Inspections	N/A	N/A	N/A	N/A	N/A
Plan reviews	N/A	N/A	N/A	N/A	N/A
Fire Code Enforcement cases/violations	N/A	N/A	N/A	N/A	N/A
Harbor					
Number of Stations	1	1	1	1	1
Calls for service	N/A	N/A	N/A	N/A	N/A
Officer-initiated activity	N/A	N/A	N/A	N/A	N/A
Emergency responses	N/A	N/A	N/A	N/A	N/A
Assists of other agencies ("AOA")	N/A	N/A	N/A	N/A	N/A
Enforcement actions (warnings, citations)	N/A	N/A	N/A	N/A	N/A
Maintenance actions	N/A	N/A	N/A	N/A	N/A
Community Development					
Building permits:					
Number of permits issued	278	219	199	178	209
Valuation of const/impv (in thousands of dollars)	$19,306	$10,997	$5,007	$4,372	$4,746
Fees paid (in thousands of dollars)	$698	$374	$241	$281	$348

N/A = NOT AVAILABLE

(Continued)

[1] The Bonita Street Fire Station is unmanned; it is used for storing equipment

City of Morro Bay
Operating Indicators By Function (Continued)
Last Ten Fiscal Years

	Fiscal Year				
	2006-07	2007-08	2008-09	2009-10	2010-11
Public works					
Streets:					
Miles:					
Arterial	7.6	7.6	7.6	7.6	7.6
Collector	12.2	12.2	12.2	12.2	12.2
Local Commercial/Industrial	N/A	N/A	N/A	N/A	N/A
Local/Residential	33.3	33.3	33.3	33.3	33.3
Street resurfacing (miles)	N/A	N/A	N/A	N/A	N/A
Traffic signals	1	1	1	1	1
Street lights					
Solid waste - Recycling:					
Curbside Recycling (tons/year)	2,515	2,552	2,157	2,103	2,232
Greenwaste (tons/year)	1,751	1,642	1,879	1,808	1,499
Construction & Demolition Debris (tons/year)	444	324	225	142	101
Solid Waste - Garbage:					
Residential (tons/year)	1,659	1,735	1,892	2,420	2,857
Commercial (tons/year)	5,213	5,003	4,730	4,578	4,316
Transit					
Dial-A-Ride (rides/year) [1]	34,701	34,347	30,973	26,143	-
Morro Bay Transit:					
Fixed Route (riders/year)	-	-	-	-	10,965
Call-A-Ride (rides/year)	-	-	-	-	1,410
Trolley (riders/year)	14,778	19,071	23,752	20,877	21,247
Water:					
Number of consumers	5,473	5,513	5,440	5,370	5,399
Water introduced into system (millions of gallons)	457	462	446	426	407
Metered water deliveries (millions of gallons)	324	412	409	432	379
Unmetered water (million gallons)	133	51	37	-	28
Wastewater [2]					
Average daily sewage treatment (millions of gallons)	1.19	1.09	1.10	1.09	1.19

N/A = NOT AVAILABLE

(Continued)

[1] In Fiscal Year 2010-11, the Dial-A-Ride program changed to a Fixed Route plus Call-A-Ride system

[2] Averages are calculated as calendar year, not fiscal

City of Morro Bay
Operating Indicators By Function (Continued)
Last Ten Fiscal Years

	Fiscal Year				
	2006-07	2007-08	2008-09	2009-10	2010-11
Recreation services					
Number of parks	11	11	11	11	11
Acreage	N/A	N/A	N/A	N/A	N/A
Community centers [1]	3	3	3	3	3
Lila Keiser athletic field permits (hours reserved)	3,732	2,397	2,469	2,645	1,811
Facility rentals (hours reserved)					
Community Center/Veterans Memorial Building	18,648	18,602	17,857	18,749	17,943
Park pavilions/Barbeque areas	996	1,207	1,227	1,144	1,140
Recreation program enrollment:					
Kids Club Before/After School	13,209	15,121	17,151	19,846	15,181
Sports Leagues/Classes	43,568	40,147	38,418	39,499	40,208
Junior Lifeguards	1,629	2,129	2,285	1,791	1,603
Kids Camp	2,506	2,395	2,584	2,386	2,378
Teen Center	7,387	6,597	7,005	6,215	7,283
Skate Park [2]	1,047	1,083	532	-	-
Enrichment [3]	12,557	11,092	10,162	7,591	8,883
Coast Summer Slam	360	360	360	360	435
Rock to Pier Run	689	826	871	950	1,037
Labor Day	390	390	360	360	360
Oktoberfest [4]	225	225	225	225	135

(Continued)

N/A = NOT AVAILABLE

[1] Kennedy Way Community Center, Veterans Memorial Building, Teen Center

[2] Skate Park moved to Teen Center Parking Lot; not staffed, but open during teen center hours

[3] In fiscal year 2012-13, classes were moved from Sports Division to Administration

[4] Discontinued due to declining enrollment

City of Morro Bay
Operating Indicators By Function (Continued)
Last Ten Fiscal Years

	Fiscal Year				
	2011-12	2012-13	2013-14	2014-15	2015-16
Police [1]					
Number of Stations	1	1	1	1	1
Patrol units:					
In service	N/A	N/A	N/A	N/A	7
Volunteer	N/A	N/A	N/A	N/A	1
Crimes:					
Homicide	-	-	-	-	N/A
Rape	2	3	3	3	N/A
Robbery	3	1	1	6	N/A
Assaults	45	47	52	80	N/A
Burglary	44	57	49	62	N/A
Larceny	91	105	72	219	N/A
Vehicle theft	5	10	9	11	N/A
Domestic violence	23	17	29	51	N/A
Driving under the influence	93	60	44	45	N/A
Drunk in public	133	129	116	134	N/A
Forgery/Fraud	20	24	31	30	N/A
Sex offenses	12	6	4	10	N/A
Vandalism/Graffiti	41	31	39	68	N/A
Weapons offenses	3	4	6	5	N/A
All other offenses	689	156	138	185	N/A
Traffic collisions:					
Non-injury	92	146	114	112	N/A
Injury	17	25	32	10	N/A
Fatal	-	-	-	-	N/A
Calls for service/Officer-initiated activity	12,866	13,340	12,959	12,264	N/A
Reports & citations:					
Incident reports	1,291	1,263	1,386	1,546	N/A
Citations - parking	220	227	149	205	N/A
Citations - traffic	294	376	70	116	N/A
Warnings	1,483	291	258	375	N/A
Other citations	110	16	17	295	N/A
Arrests:					
Adult	502	461	454	555	N/A
Juvenile	45	18	17	11	N/A

N/A = NOT AVAILABLE

(Continued)

[1] Police statistics are for the calendar years 2008 - 2015

City of Morro Bay
Operating Indicators By Function (Continued)
Last Ten Fiscal Years

	Fiscal Year				
	2011-12	2012-13	2013-14	2014-15	2015-16
Fire					
Number of Stations [1]	2	2	2	2	2
Trucks:					
Suppression	1	1	1	1	1
Ladder	1	1	1	1	1
Rescue	1	1	1	1	1
Emergency responses:					
Fires	39	37	48	40	49
Basic Life Support	374	410	414	414	364
Advanced Life Support (Paramedic)	701	749	799	825	847
Rescues / Traffic Collisions	35	34	38	21	20
False Alarm	53	36	37	40	51
Haz Mat	10	12	18	14	24
Electrical	16	19	12	20	23
Public Service and Agency Assists	452	412	492	501	529
Fire prevention:					
Inspections	N/A	84	153	139	121
Plan reviews	N/A	72	76	102	125
Fire Code Enforcement cases/violations	N/A	19	25	20	28
Harbor					
Number of Stations	1	1	1	1	1
Calls for service	N/A	259	1,441	1,466	1,541
Officer-initiated activity	N/A	699	4,156	4,553	4,579
Emergency responses	N/A	32	140	186	191
Assists of other agencies ("AOA")	N/A	88	426	419	430
Enforcement actions (warnings, citations)	N/A	53	236	331	308
Maintenance actions	N/A	330	2,144	2,271	1,780
Community Development					
Building permits:					
Number of permits issued	198	195	216	294	480
Valuation of const/impv (in thousands of dollars)	$8,792	$6,729	$6,899	$12,252	$15,986
Fees paid (in thousands of dollars)	$289	$483	$398	$734	$1,135

N/A = NOT AVAILABLE

(Continued)

[1] The Bonita Street Fire Station is unmanned; it is used for storing equipment

City of Morro Bay
Operating Indicators By Function (Continued)
Last Ten Fiscal Years

	Fiscal Year				
	2011-12	2012-13	2013-14	2014-15	2015-16
Public works					
Streets:					
Miles:					
Arterial	7.6	7.6	7.6	7.6	7.6
Collector	12.2	12.2	12.2	12.2	12.2
Local Commercial/Industrial	N/A	N/A	N/A	N/A	N/A
Local/Residential	33.3	33.3	33.3	33.3	33.3
Street resurfacing (miles)	1.86	7.37	3.24	4.54	N/A
Traffic signals	1	1	1	1	1
Street lights					
Solid waste - Recycling:					
Curbside Recycling (tons/year)	2,150	2,121	1,802	1,588	1,736
Greenwaste (tons/year)	1,709	1,768	1,077	862	1,504
Construction & Demolition Debris (tons/year)	207	263	346	288	528
Solid Waste - Garbage:					
Residential (tons/year)	3,092	3,271	4,137	4,407	3,191
Commercial (tons/year)	4,558	4,224	4,771	4,609	5,010
Transit					
Dial-A-Ride (rides/year) [1]	-	-	-	-	-
Morro Bay Transit:					
Fixed Route (riders/year)	15,703	21,716	21,618	21,445	22,625
Call-A-Ride (rides/year)	1,707	1,623	1,497	1,492	1,612
Trolley (riders/year)	20,647	18,866	18,072	17,572	16,395
Water:					
Number of consumers	5,399	5,411	5,418	5,447	5,466
Water introduced into system (millions of gallons)	404	394	417	367	335
Metered water deliveries (millions of gallons)	383	379	390	356	324
Unmetered water (million gallons)	20	16	27	11	11
Wastewater [2]					
Average daily sewage treatment (millions of gallons)	1.24	1.10	0.96	0.94	0.93

N/A = NOT AVAILABLE

(Continued)

[1] In Fiscal Year 2010-11, the Dial-A-Ride program changed to a Fixed Route plus Call-A-Ride system

[2] Averages are calculated as calendar year, not fiscal

City of Morro Bay
Operating Indicators By Function (Continued)
Last Ten Fiscal Years

	Fiscal Year				
	2011-12	2012-13	2013-14	2014-15	2015-16
Recreation services					
Number of parks	11	11	13	13	13
Acreage	N/A	N/A	N/A	N/A	N/A
Community centers [1]	3	3	3	3	3
Lila Keiser athletic field permits (hours reserved)	1,960	2,828	2,799	3,477	3,667
Facility rentals (hours reserved)					
Community Center/Veterans Memorial Building	15,844	17,606	14,756	10,439	12,173
Park pavilions/Barbeque areas	1,052	1,019	1,110	1,200	1,027
Recreation program enrollment:					
Kids Club Before/After School	14,029	14,131	13,771	13,459	13,521
Sports Leagues/Classes	42,828	30,519	34,736	34,005	32,425
Junior Lifeguards	2,256	2,778	2,586	2,193	2,500
Kids Camp	2,325	2,197	2,231	2,108	2,418
Teen Center	7,379	8,573	8,781	6,243	5,329
Skate Park [2]	-	-	-	-	-
Enrichment [3]	6,100	15,626	12,747	10,392	9,346
Coast Summer Slam	420	465	480	480	420
Rock to Pier Run	1,115	1,173	1,072	992	1,188
Labor Day	360	330	315	315	255
Oktoberfest [4]	-	-	-	-	-

(Concluded)

N/A = NOT AVAILABLE

1 Kennedy Way Community Center, Veterans Memorial Building, Teen Center

2 Skate Park moved to Teen Center Parking Lot; not staffed, but open during teen center hours

3 In fiscal year 2012-13, classes were moved from Sports Division to Administration

4 Discontinued due to declining enrollment

City of Morro Bay

Morro Bay, California

Comprehensive Annual Financial Report

For the Year Ended June 30, 2017

THE PUN GROUP
ACCOUNTANTS & ADVISORS

City of Morro Bay
Basic Financial Statements
For the Year Ended June 30, 2017

Table of Contents

City of Morro Bay
Basic Financial Statements
For the Year Ended June 30, 2017

Table of Contents (Continued)

City of Morro Bay
Basic Financial Statements
For the Year Ended June 30, 2017

Table of Contents (Continued)

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CITY OF MORRO BAY
CITY HALL
595 Harbor Street
Morro Bay, CA 93442

March 13, 2018

Honorable Mayor
Members of the City Council
Citizens of the City of Morro Bay

REPORT PURPOSE AND ORGANIZATION

It is our pleasure to present the Comprehensive Annual Financial Report (CAFR) of the City of Morro Bay, California, for the fiscal year ended June 30, 2017. All financial statements were prepared in conformity with U.S. generally accepted accounting principles (GAAP) for each fiscal year end. The 2016/17 fiscal year marks the second CAFR prepared by the City; only basic financial statements have been completed for prior years. The difference between the basic financial statements and a CAFR is the inclusion of a letter of transmittal and a statistical section.

Management assumes full responsibility for the completeness and reliability of the information contained in this report, based upon a comprehensive framework of internal control the City has established for this purpose. Because the cost of internal control should not exceed anticipated benefits, the objective is to provide reasonable, rather than absolute, assurance that the City's financial statements are free of any material misstatements.

Audited Financial Statements

In 2015, the City issued a Request for Proposals (RFP) for auditing services, and as a result of that RFP, The Pun Group, LLP, a firm of licensed certified public accountants, was engaged to perform auditing services for the fiscal years ending June 30, 2015, 2016, 2017, and 2018 with the option to renew for two additional fiscal years (2019 and 2020). The FY 2014/15 audit was completed on March 31, 2016, with audit findings.

Since FY 2013/14, the Department Director, staff, and previous auditors expressed concerns regarding the breadth of responsibilities performed by this very small staff. From FY 2009/10, the Director, one IT manager, two confidential employees, and two account clerks were responsible for General Ledger accounting and reconciliations, budgeting, accounts payable, accounts receivable, utility billing, treasury, Human Resources management, and City-wide Information Technology. The request had been made many times to reinstate the Accountant position, which had been unfilled since July 1, 2010, or add a Budget Analyst; however, more pressing needs in public safety required immediate attention. In 2014, the City contracted with Management Partners for an update to its 2008 organizational study (discussed later in this letter), and in its 2015 report, Management Partners stated:

> "The Finance Division is very leanly staffed, yet few related functions are contracted. Because of the lean staffing, the department's ability to provide financial and budgeting information and assistance to operating departments is limited. In addition, the division has limited capacity for innovation and planning, and for example, does not prepare a Comprehensive Annual Financial Report (CAFR), a Government Finance Officers Association best practice."

> "There is inadequate time and funding allowed for training and participation in professional organizations. Even getting routine work done is difficult when in the midst of audit or budget preparation. While this "belt tightening" can work for short periods of time, it is not sustainable over the long run."

Early in calendar year 2016, management began the process of separating the scope of responsibility of the Administrative Services Department, transferring oversight of Information Technology to the Deputy City Manager. Management additionally offered a retirement incentive to its employees who worked for the City for a minimum of five years as of June 30, 2016, and two key employees in the Administrative Services Department (Director and Senior Accounting Technician) availed themselves of the incentive. As a result, management continued separating the Department's scope of duties, transferring Human Resources to the City Clerk, and in October 2016, hired a Finance Director, a Budget and Accounting Manager, and a Senior Accounting Technician.

Information on the *audit findings* and management's responses can be found on the City's website at this link http://www.morro-bay.ca.us/DocumentCenter/View/9557 or by contacting the Finance Director.

The City's FY 2017 financial statements have been audited by The Pun Group, LLP. The goal of the independent audit was to provide reasonable assurance that the financial statements of the City are free of material misstatement. The independent auditor, based upon the audit, rendered an unqualified ("clean") opinion on the City of Morro Bay's financial statements for the year ended June 30, 2017. The independent auditor's report is located at the front of the financial section of this report.

GAAP requires management prepare a narrative introduction, overview, and analysis to accompany the basic financial statements in the form of Management's Discussion and Analysis (MD&A). The MD&A complements this letter of transmittal and should be read in conjunction with it. The City's MD&A immediately follows the Report on Internal Control over Financial Reporting and on Compliance and Other Matters Based on an Audit of Financial Statements Performed in Accordance with Government Auditing Standards.

Report Organization

This report is organized in three sections: introductory, financial, and statistical.

1. The *Introductory* section includes this transmittal memorandum and other information to familiarize the reader with the City, including a list of principal officials and advisory bodies and organizational chart.
2. The *Financial* section contains the independent auditor's report on the financial statement audit, the Management Discussion & Analysis (MD&A), basic financial statements, which include the notes to the financial statements, Required Supplementary Information, and combining and individual fund presentation and supplementary information.
3. The *Statistical* section includes selected financial and demographic information.

PROFILE OF THE CITY OF MORRO BAY

The City of Morro Bay, incorporated in 1964, is located on the Central Coast of California, midway between Los Angeles and San Francisco, and is home to about 10,700 residents. The city is visited annually by a substantial number of tourists, seeking to enjoy the area's moderate climate, ocean views and sunsets, and the relaxing atmosphere unique to coastal communities, as well as outdoor activities of kayaking, surfing, hiking, sailing, fishing and bird watching. Morro Rock, a state historic landmark and one of the most visible landmarks on the Central Coast, sits adjacent to the harbor entrance and the quiet inner bay. Tourism and commercial fishing are the main features of the local economy.

Form of Government

The City operates under the mayor-council form of government. The City Council consists of the Mayor and four members, all of which are elected at large. Council members serve four-year terms, with two members elected every two years. The Mayor is elected for a two-year term.

The City Council is responsible, among other matters, for passing Ordinances, adopting the City budget, appointing committees and their members, and hiring the City Manager. The City Manager is responsible for carrying out the policies and Ordinances of the City Council, for overseeing the daily operations of the City, for appointing other employees, and otherwise managing daily operations of the City.

City Services

The City is a full-service city, which includes police and fire protection, building inspections, licenses and permits, construction and maintenance of streets and other infrastructure, park maintenance, recreational activities, and transit services with seasonal trolleys. Water distribution, sewer collection, and harbor operations are provided through enterprise activities. Wastewater treatment is provided by a joint-powers agreement with the Cayucos Sanitary District, which serves the unincorporated community of Cayucos, located to the north of the City. The City is in the process of building its own Water Reclamation Facility, as is the Cayucos Sanitary District with its Sustainable Water Facility. The jointly-owned treatment facility will continue to be utilized until each party's new facility is operational.

Budget Process and Budgetary Control

The Council is required to adopt an initial budget for the fiscal year, no later than June 30 preceding the beginning of the fiscal year on July 1. This annual budget serves as the foundation for the City's financial planning and control. The budget is prepared by fund, function (e.g., public safety), and department (e.g., police). Department heads may transfer resources within their department(s) as they see fit. Transfers of City Council-approved appropriations between departments require City Manager approval, and transfers between funds need approval from the City Council.

Appropriation requests are submitted to the Finance Department to compile for presentation to the City Manager. Once the budget is balanced, the City Manager presents the budget to the City Council at a public workshop(s). Any changes, as a result of the workshop(s), are made, and the final draft budget is presented to the City Council for approval at an upcoming regular meeting, or special meeting if required. The Adopted Budget is posted on the City's website.

The City Council reviews budget performance in October, January (mid-year budget review), and April. The presentation includes the quarter-to-date financial performance, detailed list of contract expenditures by contractor, and detailed investment portfolio performance. With these presentations and prior City Manager approval, department directors have the opportunity to request needed budget adjustments.

ECONOMIC CONDITION

The City's three largest General Fund revenue sources are property taxes, transient occupancy taxes (TOT), and sales tax. The main driver for the City's economy is tourism and visitor-serving businesses. These businesses include hotels, motels, vacation rentals, and recreation vehicle parks, and contribute TOT, at a rate of 10%, which makes up 23% of the City's General Fund revenues. Property taxes are the largest General Fund revenue generator (27%), and sales tax revenues make up 13%. Other national economic impacts have been felt in the City, but to a lesser degree. When the housing bubble burst, property values declined, but not to the extent felt in other San Luis Obispo County cities. Sales taxes dipped, but not significantly, as there are no "big box" retail stores or auto dealerships that drastically affected other cities.

In May 2009, the Morro Bay Tourism Business Improvement District (TBID) was established by Ordinance No. 546. TBID is composed of hotel establishment within the city limits. At the time of its creation, all hotels, motels, bed and breakfast lodging, and inns were authorized to assess a 3% TBID charge to all transient stays, in addition to the 10% TOT collected; recreational vehicle parks, campgrounds and vacation rentals were excluded from this assessment. In FY 2010/11, the second full fiscal year of TBID operation, promotion efforts plus the dry, warm winters produced positive results: tourism in our City began to flourish, and our TOT revenues increased by 3.12%. Over the past five fiscal years, TOT has increased an average of 11% each fiscal year. Translating this to dollars, taxes have increased, since FY 2010/11, by $1.2 million ($1.9 million to $3.1 million). Prior to the recession, TOT's all-time high was $2 million in FY 2006/07. TOT revenues dropped during the recession by $136,000, and recovered to the FY 2006/07 level in FY 2011/12. Since FY 2011/12, the growth seen from each prior fiscal year is 7.37%, 10.25%, 13.07%, 14.3%, 8.58% and 6.08%.

Other improvements in the City's economy reflect a positive outlook. According to the Bureau of Labor Statistics, the unemployment rate in the San Luis Obispo-Paso Robles-Arroyo Grande Metropolitan Statistical Area is 3.0% for December 2017. According to the California Department of Finance, the population factor for Morro Bay remained relatively stable from January 1, 2016 to January 1, 2017 (from 10,714 to 10,762).

Financial planning and major initiatives

In 2008, the City contracted with Management Partners for an organizational assessment. At that time, many of the suggested changes were explored, with some implemented. In November 2014, the City contracted with Management Partners to update the 2008 study and prepare a 10-year budget forecast. The forecast was presented to Council in March 2015 and was quite clear in demonstrating while the City is not on the verge of insolvency, some significant medium term (5-year) and long-term (30-year) fiscal challenges are evident. This forecast was updated in 2016 for use with the FY 2017/18 budget.

Long-Term Challenges

The financial forecast reinforced significant concerns:

- Capital savings are, in many respects, non-existent. The FY 2015/16 budget committed an initial $100,000 to a capital replacement savings fund for the future replacement of City facilities, such as City Hall and the Police Station. This savings plan was continued with the FY 2016/17 budget with an additional $100,000 deposited into the fund. The savings plan was not continued into the FY 17/18 budget due to needed cutbacks to balance the budget.
- Funding for repairs and reconstruction of streets. The Pavement Condition Index (PCI) is the accepted measure of street condition, and an average of PCI-70 is the California State sought-after standard. If the City's streets were currently at PCI-70, then funding in the amount of $1.5 million per year would be needed to maintain that PCI-70 average condition. Unfortunately, our streets are below the average pavement condition index. The City currently budgets its District Transaction Tax fund, a ½ cent district sales tax, by the established priorities memorialized in Resolution 46-12, which are improving the Fire Department, enhancing public safety, street maintenance, and storm drain maintenance to prevent toxic runoff into the Bay. With each annual budget, approximately $500,000 of the ½ cent district sales tax is set-aside for street maintenance and reconstruction.

Medium-Term Challenges

The City participates in CalPERS retirement for its employees, and because of the size of the employee base, City employees are in pooled plans. Contributions are continuing to rise, driving labor costs up measurably. For the City, the outlook is better than many California cities, because the side funds in the Police and Fire retirement plans will be paid off in FY 2017/18 (Police) and FY 2019/20 (Fire). Paying off these debts will reduce contribution rates significantly. However, most employees are in the Miscellaneous pool, and while the City's miscellaneous side fund was paid off in FY 2014/15, there is still a large unfunded liability due to the pool's unfunded liabilities, asset losses, and assumption changes. These same issues affect Police and Fire, but not to the degree as the effect on the Miscellaneous pool.

An additional 5-year concern is a potential recession. The Management Partner's 2016 revised 10-year budget forecast projected a moderate recession in 2018. The City is planning and preparing for this recession, as well as the CalPERS' impacts to chart a course to weather the 5-year storm we see coming and come out the other end with existing services intact. The City identified in the FY 2015/16 budget: 1) cut services to keep the Emergency Reserve above the 27.5% reserve requirement; or 2) base planning on a 10-year budget forecast, and dip gently into our Emergency Reserves to sustain services. The City Council chose option #2, and adopted Resolution No. 33-15, which is discussed under *Relevant financial policies* below.

Relevant financial policies

The City is in the process of compiling its financial policies into one comprehensive set of financial policies to be adopted in the FY 2017/18 fiscal year.

During the fiscal year 2015/16 a series of Resolutions were adopted with the annual budget, and an additional resolution related to tourism within the City was adopted in FY 2016/17. Following is a summary of these key financial policies:

Resolution No. 30-15: Establishing User Rates for Water and Sewer Services. This Resolution updates the water and sewer rates last authorized in 1996. It is designed to ensure recovery for cost of services, ensure costs are allocated fairly to all customers, secure the financial stability of the water and sewer systems, and provide a sound financial plan that meets existing ongoing operations and maintenance, and debt service obligations

.

Resolution No. 31-15: Adoption of the FY 2015/16 fiscal year operating budget, which includes the Investment Policy. In prior years, the Investment Policy was brought to the City Council in January, for a calendar year adoption. In January 2014, the City Council made the decision to have the Investment Policy reviewed and presented as a part of the FY 2014/15 budget and thereafter.

Resolution No. 32-15: Establishing the Risk Management Internal Service Fund and Committed Fund Balance. The policy describes the Risk Management ISF as a managing tool for City-wide insurance policies. It additionally defines the minimum reserve balance as $100,000.

Resolution No. 33-15: Establishing the General Fund Emergency Reserve Fund Policy and Accepting Management Partner's Financial Forecast Assumptions. This Resolution sets the Reserve's target balance at 27.5% of the average of the three previous years' actual General fund operating revenues. It also restricts use of Reserve funds to City Council approval. Additionally, it set the assumptions for fund balances based on the Management Partners' financial forecast that included a recession, requiring use of Reserves, and authorized the use of Reserves. These assumptions are listed below, and are subject to annual review:

- 2014/15: $3.385 million (33.4%)
- 2015/16: $3.583 million (32.7%)
- 2016/17: $3.272 million (30.2%)
- 2017/18: $2.685 million (24.5%)
- 2018/19: $2.802 million (24.7%)
- 2019/20: $2.797 million (23.6%)
- 2020/21: $2.983 million (24.6%)
- 2021/22: $3.097 million (25%)

Resolution No. 34-15: Establishing a Strategic Investment Spending Plan. This plan identified surplus funds in the Risk Management ISF ($900,000) that were not programmed, committed or assigned for insurance purposes, per the Risk Management Resolution No. 32-15. The Strategic Investment Spending Plan identified a priority spending list based on City Council-approved goals, as follows:

- ADA compliance: $100,000
- Land Use Plans for the General Plan and Local Coastal Plan: $300,000
- Economic Development Strategic Plan: $75,000
- Information Technology Program: $100,000
- Web-based Planning, Permitting and Licensing Software: $85,000
- High-Speed Fiber Investment: $150,000
- Additional Projects approved by City Council (TBD): ~$90,000

Resolution No. 03-16: Defines the management of tourism promotions and marketing. The City began to manage its tourism promotions and marketing directly. The following structure for management of the Tourism Business Improvement District Assessment (TBID) is as follows:

- Manage tourism promotions and marketing, including expenditures of the community's TBID assessment funds.
- Expert tourism professionals will manage the tourism promotions and marketing.
- The TBID Advisory Board shall participate in the annual review of the City's tourism manager and assist in setting goals and metrics to measure the success of the community's tourism promotions and marketing.
- The TBID Advisory Board shall have enhanced duties to include enhancing the destination of Morro Bay as it relates to Tourism.
- The City shall commit $300,000 in Transient Occupancy Tax (TOT) to the City's tourism operations.
- City shall provide office space, accounting, legal advice, and IT support.

Major Initiatives

In FY 2014/15, the City contracted with Management Partners to update the 2008 Management Partners organizational study. Many of the recommendations from the 2008 study had not been implemented and were still considered viable alternatives.

The report was delivered to Council in May 2015, and it was decided that all suggested changes be reviewed for implementation. Management Partners provided the City with an implementation schedule, and management established timeframes for review/implementation through FY 2017/18.

The City immediately addressed changes to the City organization for operational effectiveness. These changes to the organization were enacted with the FY 2015/16 budget, which include:

- Moving the Consolidated Maintenance activities from the Recreation Department to the Public Services Department. Maintenance activities performed in this division are streets, storm drains, trees, parks, facilities, and vehicles.
- Separating the planning functions from the Public Services Department, and creating a Community Development Department for planning activities, and a Public Works Department for engineering, capital projects, and utility management.
- Rearranging oversight in the Recreation Department and establishing an Economic Development Department. A new position, Deputy City Manager, was created to replace the Recreation Director, and was assigned oversight responsibilities for Recreation, Information Technology, Economic Development, and Tourism.
- Returning control of the Morro Bay Tourism Business Improvement District to the City (formerly control was vested in a 501C(6) Tourism Bureau, a separate entity from the City).

Goals to be Completed in FY 2017/18

Goals:

In Spring 2013, the City Council discussed, developed and adopted a set of goals for action over the next two fiscal years (FY 2013/14 and 2014/15). Management changed in December 2013, and the City Manager was replaced in September 2014. In April 2017 the City Manager and City Council identified goals and objectives to be completed in FY 2017/18. These goals are described below:

Goal #1 (Essential Goal) – Achieve Economic and Fiscal Sustainability

Description: This essential goal recognizes the City has been living within our means but is not currently able to fund all basic services and requirements at the level appropriate for a community of our size. It also recognizes the importance of strengthening and maintaining strong financial management practices. Due both to our previous inability to fund important services such as street paving and replacement of key facilities, and the lack of an adequate General Fund capital budget, plus the impact of recent cost concerns – especially escalating CalPERS costs – we are unable to continue living as we have in the past. This goal centers around economic development and fiscal actions (revenue enhancement, public funding measures, cost control, and sound fiscal management practices) that target a 25% increase in projected revenues from the end of FY17 to the end of FY25.

Duration: This is an 8-year goal – the City intends to achieve fiscal sustainability by 2025.

Goal #2 (Essential Goal) – Complete WRF Project and "OneWater" Program

Description: This essential City goal centers around completion of the City's Water Reclamation Facility (WRF) and includes implementation of a fiscally conservative, comprehensive water resource policy, program and infrastructure to ensure a sustainable water future. Key items include building the WRF and associated reclamation system, developing a "OneWater" policy, and diversifying our water supply toward achieving water independence.

Duration: This is a 6-year goal that is intended to be completed by 2023.

Goal #3 (Important Goal) – Improve Infrastructure and Public Spaces

Description: This important goal centers around substantially improving the City's streets, multi-modal transportation infrastructure, facilities and public spaces. The City does not currently have sufficient revenues to fund the capital improvement program required to make substantial and necessary infrastructure improvements and, therefore, this goal is contingent on making significant progress on Goal #1 – Achieve Fiscal Sustainability.

Duration: This is, at a minimum, an 8-year goal.

Goal #4 (Important Goal) – Review and Update Significant City Land Use Plans

Description: This important goal centers around completion of the City's General Plan (GP)/Local Coastal Program (LCP) rewrite, and update of other essential land use document. While the GP is the important task, update of other essential land use plans and mater plans is also a priority.

Duration: This is a 2-year goal that should be complete by summer 2019.

Awards and Acknowledgements

The 2016/17 fiscal year marks the second year the City has prepared a Comprehensive Annual Financial Report. This report will be submitted in future years to the Government Finance Officers Association (GFOA) Certificate of Achievement for Excellence in Financial Reporting program.

The preparation of this report would not have been possible without the skill, effort, and dedication of the entire staff of the Finance Department, included the retired Director, Susan Slayton. We wish to thank all City department directors for their assistance in providing the data necessary to prepare this report.

Credit also is due to the Mayor and the Council for their unfailing support for maintaining the highest standards of professionalism in the management of the City's finances.

Respectfully submitted,

Signed: Scott Collins

Title: City Manager

Signed: Jennifer Callaway

Title: Finance Director

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City of Morro Bay
Elected and City Officials
Commissions, Boards, and Committees

As of June 30, 2017

Elected Officials	Title	Term Expires
Jamie Irons	Mayor	November 2018
John Headding	Mayor Pro Tempore	November 2018
Matt Makowetski	Councilmember	November 2018
Robert Davis	Councilmember	November 2020
Marlys McPherson	Councilmember	November 2020

City Officials	Position
David Buckingham	City Manager
Joseph Pannone	City Attorney
Ikani Taumoepeau	Assistant City Manager/Deputy City Manager
Greg Allen	Police Chief
Eric Endersby	Harbor Director
Scot Graham	Community Development Manager
Steve Knuckles	Fire Chief
Robert Livick	Public Works Director
Craig Schmollinger	Administrative Services Director
Dana Swanson	City Clerk

Planning Commission (PC)	
Robert Tefft	Chair
Gerald Luhr	Commissioner
Joseph Ingraffia	Commissioner
Michael Lucas	Commissioner
Richard Sadowski	Commissioner

Public Works Advisory Board	
Ric Deschler	Chair
Stephen Shively	Vice-Chair
Jan Goldman	Commissioner
Christopher Parker	Commissioner
Stewart Skiff	Commissioner
John Erwin	Commissioner
Chris Erlendson	Commissioner

Morro Bay Tourism Business Improvement District (MBTBID)	
Aaron Graves	Chair
Charlie Yates	Vice-Chair
Margaret Juren	Member
Taylor Newton	Member
Steven Allen	Member
Sean Green	Member
Vacant	Member

Harbor Advisory Board	
Ron Reisner	Chair
Lynn Meissen	Vice-Chair
Bill Luffee	Member
Gene Doughty	Member
Neal Maloney	Member
Dana McClish	Member
Jeremiah O'Brien	Member

City of Morro Bay
Elected and City Officials (Continued)
Commissions, Boards, and Committees

Recreation and Parks Commission	
Drew Sidaris	Chair
Bob Swain	Vice-Chair
Jeffrey Cox	Commissioner
Michelle Morosin	Commissioner
Kevin Carroll	Commissioner
Skip Sorich	Commissioner
Vacant	Commissioner

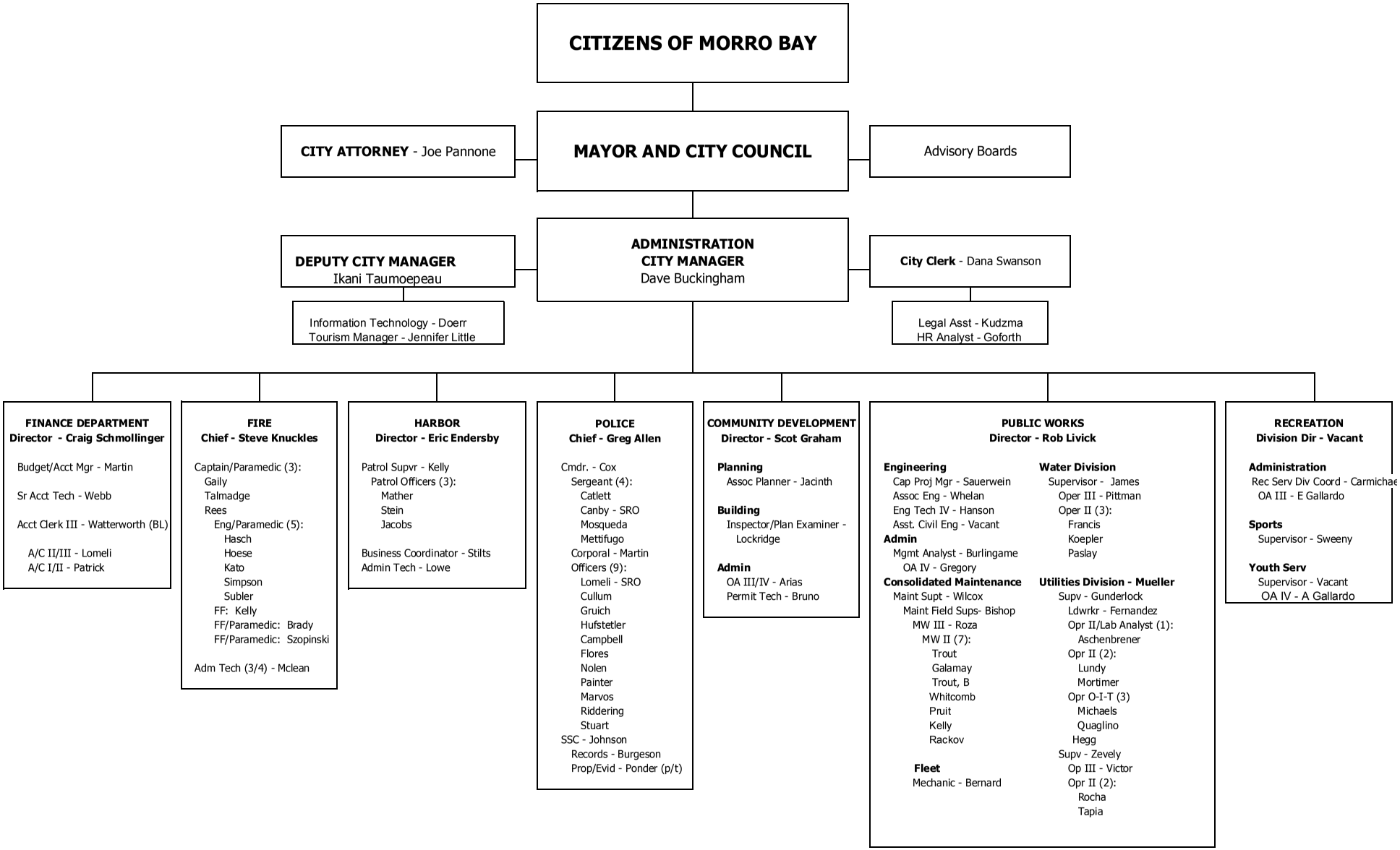
Citizens Oversight/Finance Advisory Committee (CFAC)	
Barbara Spagnola	Chair
Bart Beckman	Member
John Erwin	Member
David Betonte	Member
Dawn Addis	Member
Walter Heath	Member
John Martin	Member

Water Reclamation Facility Citizen Advisory Committee (WRFCAC)	
John Diodati	Chair
Barbara Spagnola	Vice-Chair
Paul Donnelly	Member
Mary (Ginny) Garelick	Member
Dale Guerra	Member
Valerie Levulett	Member
Ann Fullerton	Member
Richard Sadowski	PC Appointee
Steven Shively	PWAB Appointee

General Plan/Local Coastal Program Advisory Board (GPAC)	
Robert Tefft	Chair
Rich Buquet	Member
Jan Goldman	Member
Jeffrey Heller	Member
Susan Schneider	Member
Glenn Silloway	Member
Melani Smith	Member
Susan Stewart	Member
Vacant	Member

CITY OF MORRO BAY
ORGANIZATIONAL CHART

For the 2016/17 Fiscal Year



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THE PUN GROUP
ACCOUNTANTS & ADVISORS

INDEPENDENT AUDITORS' REPORT

To the Honorable Mayor and Members of the City Council
of the City of Morro Bay
Morro Bay, California

Report on Financial Statements

We have audited the accompanying financial statements of the governmental activities, the business-type activities, each major fund, and the aggregate remaining fund information of the City of Morro Bay, California (the "City"), as of and for the year ended June 30, 2017, and the related notes to the financial statements, which collectively comprise the City's basic financial statements as listed in the table of contents.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with accounting principles generally accepted in the United States of America; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditor's Responsibility

Our responsibility is to express opinions on these financial statements based on our audit. We conducted our audit in accordance with auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards,* issued by Comptroller General of the United States. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the City's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinions.

Opinions

In our opinion, the financial statements referred to above present fairly, in all material respects, the respective financial position of the governmental activities, the business-type activities, each major fund, and the aggregate remaining fund information of the City as of June 30, 2017, and the respective changes in financial position and, where applicable, cash flows thereof for the year then ended in accordance with accounting principles generally accepted in the United States of America.

Other Matters

Required Supplementary Information

Accounting principles generally accepted in the United States of America require that the Management's Discussion and Analysis, the Budgetary Comparison Schedule - General Fund, the Schedule of Proportionate Share of the Net Pension Liability and Related Ratios, the Schedule of City's Contributions, and the Schedules of Funding Progress-Other Postemployment Benefits Plan on pages 5 to 14 and 90 to 93, be presented to supplement the basic financial statements. Such information, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board, who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Other Information

Our audit was conducted for the purpose of forming opinions on the financial statements that collectively comprise the City's basic financial statements. The Introductory Section and Combining and Individual Nonmajor Fund Financial Statements and Schedule of Revenues, Expenditures, and Changes in Fund Balances – Budget and Actual are presented for purposes of additional analysis and are not a required part of the basic financial statements.

The Combining and Individual Nonmajor Fund Financial Statements and Statement of Revenue, Expenditures, and Changes in Fund Balances - Budget and Actual are the responsibility of management and were derived from and relate directly to the underlying accounting and other records used to prepare the basic financial statements. Such information has been subjected to the auditing procedures applied in the audit of the basic financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the basic financial statements or to the basic financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the Combining and Individual Nonmajor Fund Financial Statements and Statement of Revenue, Expenditures, and Changes in Fund Balances - Budget and Actual are fairly stated in all material respects in relation to the basic financial statements as a whole.

The Introductory and Statistical Sections have not been subject to the auditing procedures applied in the audit of the basic financial statements and, accordingly, we do not express an opinion or provide any assurance on them.

Other Reporting Required by *Government Auditing Standards*

In accordance with *Government Auditing Standards*, we have also issued our report dated March 13, 2018 on our consideration of the City's internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements and other matters. The purpose of that report is to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing, and not to provide an opinion on the internal control over financial reporting or on compliance. That report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the City's internal control over financial reporting and compliance.

The Pun Group, LLP

Walnut Creek, California
March 13, 2018

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Management's Discussion and Analysis

As management of the City of Morro Bay, we offer readers of the City's financial statements this narrative overview and analysis of the financial activities of the City, for the fiscal year ended June 30, 2017. It should be read in conjunction with the accompanying basic financial statements. All amounts, unless otherwise indicated, are expressed in thousands of dollars.

Financial Highlights

In the 2014/15 fiscal year, the City implemented the two new statements from the Governmental Accounting Standards Board (GASB), related to pension activities:

- Statement No. 68, "*Accounting and Financial Reporting for Pensions - an amendment of GASB Statement No. 27*," and
- Statement No. 71, "*Pension Transition for Contributions Made Subsequent to the Measurement Date - an amendment of GASB Statement No. 68*."

GASB Statement No. 68 establishes standards of accounting and financial reporting, but not funding or budgetary standards, for the City's defined benefit pension plans. This Statement replaces the requirements of prior GASB statements, impacting accounting and disclosure of pensions.

The significant impact to the City of implementing GASB Statement No. 68 is the reporting of the City's unfunded pension liability on the full accrual basis of accounting in the government-wide financial statements and the proprietary fund financial statements. There are also new note disclosure requirements and supplementary schedules required by the Statement.

The following outlines financial highlights for the year:

- At June 30, 2017, the City's net position increased $3.7 million due to continued economy recovery, most notably tourism and transient occupancy taxes and water/sewer revenue increases.
- Total city-wide current assets increased by approximately $3.6 million, or 15%. In governmental activities, cash decreased by $670K, notes receivable increased by $686K, land held for resale increased by $350K. In business-type activities, cash increased by $2.1 million, and receivables increased by $276K.
- Total city-wide liabilities, excluding aggregate net pension liabilities, decreased $77K. Current liabilities decreased by $665K, and long-term liabilities increased by $588K.
- The City's governmental funds altogether reported combined ending fund balances of $10.7 million, an increase of $300,000. Of the 2017 amount, $3.4 million, or 31%, is nonspendable, $3.8 million, or 36%, is restricted, and $109K, or 1%, is committed, with the remaining 32% unassigned.
- The City's General fund balance increased by $396K. The fund balance includes nonspendable ($3.2 million, or 43%) and committed ($109K, or 1.5%) funds. A total of $3.6 million is held in reserve, per the City's policy of retaining 27.5% of General Fund three-year average of actual revenues, and Resolution No. 33-15, which established target balances for Fiscal Years 2014/15 – 2021/22 (2016/17 = $3.272 million).

Overview of the Financial Statements

This discussion and analysis are intended to serve as an introduction to the City of Morro Bay's basic financial statements, which consists of three components: 1) government-wide financial statements, 2) fund financial statements, and 3) notes to the financial statements. This report also contains required supplementary information and other supplementary information in addition to the basic financial statements.

Government-wide financial statements

The *government-wide financial statements* are designed to provide readers with a broad overview of the City of Morro Bay's finances, in a manner similar to a private-sector business.

The *Statement of Net Position* presents information on all of the City's assets, deferred outflows of resources, liabilities, and deferred inflow of resources, with the difference reported as *net position*. Over time, increases or decreases in net position may serve as a useful indicator of the City's overall financial health.

The *Statement of Activities* presents information showing how the City's net position changed during the most recent fiscal year. All changes in net position are reported as soon as the underlying event giving rise to the change occurs, *regardless of the timing of related cash flows*. Thus, revenues and expenses are reported in this statement for some items that will only result in cash flows in future fiscal periods (e.g., earned, but unused, vacation leave).

Both of the government-wide financial statements distinguish functions of the City of Morro Bay that are principally supported by taxes and intergovernmental revenues (*governmental activities*) from other functions that are intended to recover all or a significant portion of their costs through user fees and charges (*business-type activities*). The governmental activities of the City include administration, community promotion, finance, fire, housing, police, public services, and parks and recreation. The business-type activities of the City include the water, sewer, harbor, and local transportation operations.

The government-wide financial statements can be found on pages 18-21 of this report.

Fund financial statements

A *fund* is a grouping of related accounts that is used to maintain control over resources that have been segregated for specific activities or objectives. The City of Morro Bay, like other state and local governments, uses fund accounting to ensure and demonstrate compliance with finance-related legal requirements. City funds are divided into three categories: governmental, proprietary, and fiduciary.

Governmental funds

Governmental funds are used to account for essentially the same functions reported as *governmental activities* in the government-wide financial statements. However, unlike the government-wide financial statements, governmental fund financial statements focus on *near-term inflows and outflows of spendable resources,* as well as on *balances of spendable resources* available at the end of the fiscal year. Such information may be useful in evaluating a government's near-term financing requirements.

Because the focus of governmental funds is narrower than that of the government-wide financial statements, it is useful to compare the information presented for *governmental funds* with similar information presented for *governmental activities* in the government-wide financial statements. By doing so, readers may better understand the long-term impact of the government's near-term financing decisions. Both the governmental fund balance sheet and the governmental fund statement of revenues, expenditures, and changes in fund balances provide a reconciliation to facilitate this comparison between *governmental funds* and *governmental activities.*

The City of Morro Bay maintains eighteen individual governmental funds. Information is presented separately in the governmental fund balance sheet, and in the governmental fund statement of revenues, expenditures, and changes in fund balances for the General Fund which is considered major fund of the government. Data from the other governmental funds are combined into a single, aggregated presentation. Fund data for each of these non-major governmental funds is provided in the form of *combining statements* elsewhere in this report.

The City adopts an annual appropriated budget for all governmental funds. Required Supplementary Information - Budgetary Statements for the General Fund have been provided to demonstrate compliance with its budget.

The basic governmental fund financial statements can be found on pages 27-30 of this report.

Proprietary funds

The City of Morro Bay maintains two different types of proprietary funds. *Enterprise funds* are used to report the same functions presented as business-type activities in the government-wide financial statements. The City uses enterprise funds to account for the Water, Sewer, Harbor, and Local Transportation Fund (LTF) operations. *Internal service funds* are an accounting device used to accumulate and allocate costs internally among the City's various functions. Morro Bay uses internal service funds to account for the various types of insurance coverage for the City, and to manage the City's information technology needs. Because these services predominantly benefit governmental rather than business-type functions, they have been included within *governmental activities* in the government-wide financial statements.

Proprietary funds provide the same type of information as the government-wide financial statements, only in more detail. The proprietary fund financial statements provide separate information for the Water, Sewer, and Harbor operations, all of which are considered to be major funds of the City. The remaining proprietary fund (LTF) is combined into a single, aggregated presentation in the proprietary fund financial statements.

The basic proprietary fund financial statements can be found on pages 32-39 of this report.

Fiduciary funds

Fiduciary funds are used to account for resources held for the benefit of parties outside the government. Fiduciary funds are *not* reflected in the government-wide financial statements because the resources of those funds are *not* available to support the City of Morro Bay's own programs. The accounting used for fiduciary funds is much like that used for proprietary funds.

The basic fiduciary fund financial statement can be found on pages 43-44 of this report.

Notes to the financial statements

The notes provide additional information that is essential to a full understanding of the data provided in the government-wide and fund financial statements. The notes to the financial statements can be found on pages 49-85 of this report.

Required supplementary information

In addition to the basic financial statements and accompanying notes, this report also presents certain *required supplementary information* including Budgetary Comparison Schedule – General Fund, Schedule of the City's Proportionate Share of the Net Pension Liabilities and Related Ratios, Schedule of the City's Contributions, and Schedule of Funding Progress – Other Postemployment Benefits Plan. Required supplementary information can be found on pages 89-93 of this report.

Supplementary information

The combining and individual statements, referred to earlier in connection with the nonmajor governmental funds, are presented immediately following the required supplementary information on pensions. Combining and individual fund statements and schedules can be found on pages 98-107 of this report.

Government-wide Financial Analysis

The City's net position for governmental activities increased from $117.9 million to $118.6 million (approximately 0.6%) and business-type activities increased from $25.5 million to $28.5 million (approximately 11.9%).

Changes between fiscal years are shown in Table 1, and explained in detail below:

Total assets and deferred outflows increased approximately $7.0 million:

- Governmental:
    - Cash and investments decreased by $670K
    - Receivables increased by $674K
    - Prepaid items and inventories increased by $148K
    - Land held for resale increased $350K
    - Capital assets decreased $484K
    - Deferred outflows of resources increased by $2.4 million
- Business-type:
    - Cash and investments increased $2.0 million
    - Receivables increased $276K
    - Investments in Joint Powers Agreement decreased $5K
    - Prepaid items and inventories increased $817K
    - Capital assets increased $566K
    - Deferred outflows of resources increased $868K

Total liabilities and deferred inflows increased approximately $3.2 million:

- Governmental:
    - Accounts payable increased $205K
    - Payroll payable decreased $548K
    - Deposits and unearned revenue decreased $117K
    - Long-term liabilities increased $648K
    - Aggregate net pension liabilities increased $2.2 million
    - Deferred inflows of resources decreased $690K
- Business-type:
    - Accounts payable decreased $144K
    - Payroll payable decreased $118K
    - Deposits and unearned revenues increased $57K
    - Long-term liabilities decreased $60K
    - Aggregate net pension liabilities increased $1.7 million
    - Deferred inflows of resources increased $96K

Table 1: City of Morro Bay Net Position
(Amts expressed in thousands)

	Government Activities		Business-type Activities		Total	
	2017	2016	2017	2016	2017	2016
Current and other assets	$ 14,311	$ 13,808	$ 13,921	$ 10,782	$ 28,232	$ 24,590
Capital assets	121,451	121,936	20,643	20,077	142,094	142,013
Total Assets	135,762	135,744	34,564	30,859	170,326	166,603
Deferred outflows	4,723	2,352	1,537	669	6,260	3,021
Current liabilities	2,283	2,348	896	1,088	3,179	3,436
Long-term liabilities	18,733	16,254	6,359	4,773	25,092	21,027
Total Liabilities	21,016	18,602	7,255	5,861	28,271	24,463
Deferred inflows	872	1,563	341	245	1,213	1,808
Net investment in capital assets	120,936	120,550	20,051	19,382	140,987	139,932
Restricted	3,812	3,148		13	3,812	3,161
Unrestricted (deficit)	(6,151)	(5,767)	8,454	6,027	2,303	260
Total Net Position	$ 118,597	$ 117,931	$ 28,505	$ 25,422	$ 147,102	$ 143,353

Activities in 2016/17, which changed the City's net position, are described in the Table 2, with comparison totals for 2015/16 activities

Governmental activities

Governmental activities increased the City of Morro Bay's net position by $667K. Increased transient occupancy tax due to strong tourism (which also increased sales taxes), and enhanced investment earnings comprise the greatest reasons for change.

Table 2: City of Morro Bay Changes in Net Position
(Amts expressed in thousands)

	Government Activities		Business-type Activities		Total	
	2017	2016	2017	2016	2017	2016
Revenues:						
Program Revenues:						
Charges for Service	$ 3,453	$ 3,513	$ 12,657	$ 11,425	$ 16,110	$ 14,938
Operating grants and contributions	1,489	1,745	399	315	1,888	2,060
Capital grants and contributions	587	343	-	-	587	343
General Revenues						
Property Taxes	3,936	4,054	-	-	3,936	4,054
Other Taxes	5,902	5,301	-	-	5,902	5,301
Other	874	470	-	103	874	573
Total Revenue	16,241	15,426	13,056	11,843	29,297	27,269
Expenses:						
Administration	1,876	1,557	-	-	1,876	1,557
Community Promotion	1,969	1,480	-	-	1,969	1,480
Finance	973	1,117	-	-	973	1,117
Fire	3,071	3,220	-	-	3,071	3,220
Housing	5	69	-	-	5	69
Police	2,676	3,271	-	-	2,676	3,271
Public Works	4,628	3,714	-	-	4,628	3,714
Recreation	1,205	1,235	-	-	1,205	1,235
Water Operating	-	-	3,553	4,404	3,553	4,404
Sewer Operating	-	-	3,349	3,227	3,349	3,227
Harbor Operating	-	-	2,105	1,783	2,105	1,783
Transit	-	-	273	295	273	295
Total Expenses	16,403	15,663	9,280	9,709	25,683	25,372
Increase (decrease) in net position before transfers	(162)	(237)	3,776	2,134	3,614	1,897
Transfers	829	1,008	(829)	(1,008)	-	-
Increase (decrease) in net position	667	771	2,947	1,126	3,614	1,897
Net position - beginning of year	117,930	117,159	25,472	24,346	143,402	141,505
Net position - June 30	$ 118,597	$ 117,930	$ 28,419	$ 25,472	$ 147,016	$ 143,402

Business-type activities.

Business-type activities increased the City of Morro Bay's net position by $3 million. The water and sewer rate increase, adopted by the City Council in May 2015, went into effect with July 2015 usage (September 2015 billing), plus lower expenses, accounts for this increase. Rates will continue to increase for the next four years to ensure compliance with bond coverage ratios required for the City's participation in the state water project.

The most significant capital expense is present in the Sewer Fund. Since 1953, the City and the Cayucos Sanitary District have been partners in a jointly-owned wastewater treatment plant. The treatment plant is operated under a Joint Powers Agreement (JPA). In 2003, the City and the Cayucos Sanitary District began work efforts to replace the existing Facility, agreeing to share in the costs of studying, planning and designing a new facility to be constructed at the existing site. Activities continued until January 2013, when the California Coastal Commission voted to deny the Coastal Development Permit for the Facility at its existing location. The entities attempted to work together to build a jointly-owned facility at a different site, but since April 2015, both entities have taken steps to build separate facilities serving each entity's own community.

The City has been actively exploring options to build a new water reclamation facility, which will produce water that may be reused for groundwater injection (recharge) and agricultural or other irrigation. The City has reviewed three potential sites for locating the new facility but has not made a final site selection at this time.

There were no major capital expenses in the Water or Harbor Funds.

Financial Analysis of the Government's Funds

As noted earlier, the City of Morro Bay uses fund accounting to ensure and demonstrate compliance with finance-related legal requirements.

Governmental funds. The focus of the City's *governmental funds* is to provide information on near-term inflows, outflows, and balances of *spendable* resources. Such information is useful in assessing Morro Bay's financing requirements. In particular, *unreserved fund balance* may serve as a useful measure of a government's net resources available for spending at the end of the fiscal year.

As of June 30, 2017, the City of Morro Bay's governmental funds reported combined ending fund balances of $10.7 million, an increase of $300K in comparison to the prior year. The majority of this total amount ($7.3 million) constitutes nonspendable ($3.4 million), restricted ($3.8 million) and committed ($109K). The amount available for spending at the City's discretion ($3.4 million) is 32% of the combined fund balances.

The General Fund is the chief operating fund of the City of Morro Bay. At the end of June 30, 2017, total fund balance of the general fund was $7.5 million, of which $3.4 million is unassigned. As a measure of the general fund's liquidity, it may be useful to compare unreserved fund balance to total fund expenditures. Unreserved fund balance represents 25% of total general fund expenditures.

The General Fund's fund balance increased by $396K during the current fiscal year. City management has embraced a change in philosophy, leaning towards leveling the playing field for residents and businesses by ensuring those who utilize services pay for those services. Fees for services, with the exception of tiered subsidies for youth recreation programs, have been increased to collect more fully the cost of services provided. Additionally, in 2015 the City engaged a professional firm to perform an organizational assessment and financial stability model. Some of these recommendations and tools were implemented in fiscal year 2015/16, and the remaining are subject to review for implementation in future years. Additionally, the City collected $191K in additional transient occupancy taxes and $400K in sales taxes from significantly increased tourism.

Proprietary funds. The City of Morro Bay's proprietary funds provide the same type of information in the government-wide financial statements, but in more detail. At June 30, 2017, unrestricted net position in the Water, Sewer and Harbor Operating Funds amounted to $4.3 million, $4.9 million and $(1 million), respectively. Net position changes in the three funds are an increase of $1.2 million (Water), increase of $2.2 million (Sewer), and decrease of $439K (Harbor). Factors concerning those funds have already been addressed in the discussion of the City's business-type activities.

General Fund Budgetary Highlights

Differences between the original budget and the final amended budget ($1.4 million in expenditures and $1.3 million in revenues) are briefly summarized below:

Table 3: City of Morro Bay General Fund
Departmental Changes to Original Adopted Budget

Revenues		Expenditures	
$ 119	Property Tax	$ 25	City Council
65	Transient Occupancy Tax	74	Human Resources
171	Other Fire Services	52	Accounting & Treasury
530	Other Misc	171	Fire Department
375	Transfers In	50	Public Works
		25	Consolidated Maitenance
		530	Electricity
		517	Transfers Out
$ 1,260		$ 1,444	

Capital Asset and Debt Administration

Capital assets.

The City of Morro Bay's net investment in capital assets for its governmental and business-type activities as of June 30, 2017, amounts to $142.1 million. This investment in capital assets includes land, distribution and collection systems, buildings and equipment, improvements, works of art and historical collections, and current year infrastructure.

The major capital asset event that occurred during the current fiscal year was the increase to the Sewer Operating Fund's construction in progress for costs incurred for planning related to the City-owned water reclamation facility.

Table 4: City of Morro Bay Net Capital Assets

	Government Activities		Business-type Activities		Total	
	2017	2016	2017	2016	2017	2016
Land	$ 95,067	$ 95,440	$ 1,496	$ 1,496	$ 96,563	$ 96,936
Artwork	63	63	3	3	66	66
Construction in progress	294	2	4,037	2,608	4,331	2,610
Subtotal	95,424	95,505	5,536	4,107	100,960	99,612
Machinery and equipment	4,302	4,136	9,723	9,708	14,025	13,844
Buildings and strucutres	15,890	15,343	5,316	5,316	21,206	20,659
Infrastructure	27,686	27,566	30,207	30,207	57,893	57,773
Less accum dep	(21,851)	(20,614)	(30,139)	(29,261)	(51,990)	(49,875)
Subtotal	26,027	26,431	15,107	15,970	41,134	42,401
Total	$ 121,451	$ 121,936	$ 20,643	$ 20,077	$ 142,094	$ 142,013

Additional information on the City's capital assets can be found in Note 6 on pages 63-64.

Long-term debt. At the end of the current fiscal year, the City of Morro Bay had total debt outstanding of $4.4 million. Of this amount, $2.5 million comprises debt secured solely by specified revenue sources (e.g., notes payable and certificates of participation). The City maintains a double A ("AA") rating from Standard & Poor's.

Table 5: City of Morro Bay Long-Term Liabilities

	Government Activities		Business-type Activities		Total	
	2017	2016	2017	2016	2017	2016
Certificates Payable	$ 1,355	$ 1,386	$ -	$ -	$ 1,355	$ 1,386
Notes Payable	547	-	592	695	1,139	695
Claims Payable	-	52	-	-	-	52
Compensated Absenses	645	280	157	114	802	394
Other Post-Employment Benefits	482	347	-	-	482	347
Pension-related debt	659	974	-	-	659	974
Total	**$ 3,688**	**$ 3,039**	**$ 749**	**$ 809**	**$ 4,437**	**$ 3,848**

Additional information on the City's long-term liabilities can be found in Note 7 on pages 65-67 of this report.

Economic Factors and Next Year's Budget and Rates

- Tourism in Morro Bay continues to flourish, as demonstrated by the significant increases in Transient Occupancy Tax (TOT). Since the 2011/12 fiscal year, TOT has increased measurably as shown below:

    - 2011/12 – 7.37%
    - 2012/13 – 10.25%
    - 2013/14 – 13.07%
    - 2014/15 – 14.30%
    - 2015/16 - 8.58%
    - 2016/17 - 6.08%

  Our Embarcadero and waterfront are bustling with activity and the normal *off-season* period, from January through April, is seeing some strength. For the fiscal year 2017/18, TOT growth was projected in our budget at 5%, however due to the continued closure of Highway 1 to the north and the devastation that closed Highway 101 to the south during December, a mid-year budget adjustment was authorized to reduce TOT estimates to prior year actuals.

- Sales tax revenue experienced an increase of 26.6% in 2016/17. It is important to note, however, that a significant part of the projected increase is due to the complete unwind of the state imposed "triple flip" and sales tax restoration. We anticipate real sales tax revenue and associated "triple flip" will remain steady in the FY 2017/18.

- Like many cities in the County, Morro Bay is now managing all tourism efforts in house, and we expect revenue from tourism to continue to increase in the near term. While occupancy this year is somewhat flat, average daily rate is up, meaning lodging establishments are selling around the same number of rooms, but at increased revenue levels resulting in the TOT increases noted above.

- Effective in the 2017/18, the City was successful in negotiating three year contracts with the City's Firefighters Association, Service Employees International Union, Confidential Group and unrepresented management designated employees which provided for a 2% cost of living increase effective July 1, 2017 and 2% cost of living adjustment for FY 2018/19 and FY 2019/20 conditioned on revenue and expenditure triggers.

- The City continues to encourage appropriate revitalization efforts that may have moderate positive effect on City revenues in the years ahead. This likely includes new construction on two Tidelands Trust lease sites and reconstruction of Off The Hook and Rose's Landing on the waterfront, all in 2018-2020.

These factors were considered in preparing the City's budget for the 2017/18 fiscal year.

Requests for Information

This financial report is designed to provide a general overview of the City of Morro Bay's finances for all those with an interest in the government's finances. Questions concerning any of the information provided in this report or requests for additional financial information should be addressed to the Finance Department, City of Morro Bay, 595 Harbor Street, Morro Bay, CA 93442.

BASIC FINANCIAL STATEMENTS

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GOVERNMENT-WIDE FINANCIAL STATEMENTS

City of Morro Bay
Statement of Net Position
June 30, 2017

	Primary Government		
	Governmental Activities	Business-Type Activities	Total
ASSETS			
Current Assets:			
Cash and investments	$ 6,883,558	$ 11,140,139	$ 18,023,697
Receivables, net of allowance for doubtful accounts:			
Accounts	757,468	1,910,732	2,668,200
Intergovernmental	692,266	21,083	713,349
Interest	19,075	-	19,075
Notes	1,589,916	-	1,589,916
Other	259	-	259
Investment in Joint Powers Agreement	-	3,333	3,333
Prepaid items and inventories	1,305,678	846,210	2,151,888
Land held for resale	3,062,282	-	3,062,282
Total Current Assets	14,310,502	13,921,497	28,231,999
Noncurrent Assets:			
Capital assets - nondepreciable	95,424,110	5,536,057	100,960,167
Capital assets - depreciable, net	26,027,363	15,106,783	41,134,146
Total Noncurrent Assets	121,451,473	20,642,840	142,094,313
Total Assets	135,761,975	34,564,337	170,326,312
DEFERRED OUTFLOWS OF RESOURCES			
Deferred outflows of resources for pension	4,723,228	1,537,301	6,260,529
Total deferred outflows of resources	4,723,228	1,537,301	6,260,529

City of Morro Bay
Statement of Net Position (Continued)
June 30, 2017

	Primary Government		
	Governmental Activities	Business-Type Activities	Total
LIABILITIES			
Current Liabilities:			
Accounts payable	687,032	345,644	1,032,676
Accrued payroll and benefits	312,575	70,490	383,065
Deposits	-	100,374	100,374
Unearned revenues	397,384	180,640	578,024
Interest payable	225	-	225
Long-term liabilities:			
Due within one year	885,190	199,226	1,084,416
Due in more than one year	2,802,233	549,622	3,351,855
Aggregate net pension liabilities	15,931,202	5,809,475	21,740,677
Total Liabilities	21,015,841	7,255,471	28,271,312
DEFERRED INFLOWS OF RESOURCES			
Deferred inflows of resources for pension	872,643	341,126	1,213,769
Total deferred inflows of resources	872,643	341,126	1,213,769
NET POSITION			
Net investment in capital assets	120,935,723	20,050,832	140,986,555
Restricted for:			
Housing	938,811	-	938,811
Assessment districts	226,194	-	226,194
Police	429,356	-	429,356
Parks and recreation	631,221	-	631,221
Transportation	33,483	-	33,483
Construction	749,000	-	749,000
Other purposes	804,237	-	804,237
Total restricted	3,812,302	-	3,812,302
Unrestricted (Deficit)	(6,151,306)	8,454,209	2,302,903
Total Net Position	$ 118,596,719	$ 28,505,041	$ 147,101,760

City of Morro Bay
Statement of Activities
For the Year Ended June 30, 2017

Functions/Programs	Expenses	Program Revenues: Charges for Services	Program Revenues: Operating Grants and Contributions	Program Revenues: Capital Grants and Contributions
Governmental Activities:				
Administration	$ 1,875,654	$ 207,025	$ -	$ -
Community promotion	1,968,782	1,307,171	1,077,488	-
Finance	972,693	558,760	-	-
Fire	3,071,387	309,551	5,369	-
Housing	4,964	675	5,514	-
Police	2,676,614	41,710	166,340	-
Public works	4,628,228	467,290	234,123	587,072
Rec/parks/maintenance	1,204,622	560,854	-	-
Total Governmental Activities	16,402,944	3,453,036	1,488,834	587,072
Business-Type Activities:				
Water	3,552,515	5,003,322	-	-
Sewer	3,349,156	5,728,001	-	-
Harbor	2,105,182	1,879,283	68,451	-
Local Transportation	272,944	46,205	330,410	-
Total Business-Type Activities	9,279,797	12,656,811	398,861	-
Total Primary Government	$ 25,682,741	$ 16,109,847	$ 1,887,695	$ 587,072

City of Morro Bay
Statement of Activities (Continued)
For the Year Ended June 30, 2017

	Net (Expense) Revenue and Changes in Net Positions		
	Governmental Activities	Business-Type Activities	Total
Functions/Programs			
Governmental Activities:			
Administration	$ (1,668,629)	$ -	$ (1,668,629)
Community promotion	415,877	-	415,877
Finance	(413,933)	-	(413,933)
Fire	(2,756,467)	-	(2,756,467)
Housing	1,225	-	1,225
Police	(2,468,564)	-	(2,468,564)
Public services	(3,339,743)	-	(3,339,743)
Rec/parks/maintenance	(643,768)	-	(643,768)
Total Governmental Activities	(10,874,002)	-	(10,874,002)
Business-Type Activities:			
Water	-	1,450,807	1,450,807
Sewer	-	2,378,845	2,378,845
Harbor	-	(157,448)	(157,448)
Local Transportation	-	103,671	103,671
Total Business-Type Activities	-	3,775,875	3,775,875
Total Primary Government	(10,874,002)	3,775,875	(7,098,127)
General Revenues and Transfers:			
Taxes:			
Property taxes	3,936,256	-	3,936,256
Sales tax	1,970,009	-	1,970,009
Transient occupancy tax	3,327,073	-	3,327,073
Franchise taxes	511,696	-	511,696
Other taxes	93,021	-	93,021
Investment earnings	397,190	86,351	483,541
Miscellaneous	102,880	-	102,880
Gain on sale of property	373,551	-	373,551
Transfers	828,975	(828,975)	-
Total General Revenues and Transfers	11,540,651	(742,624)	10,798,027
Changes in Net Position	666,649	3,033,251	3,699,900
Net Position - beginning of year	117,930,070	25,471,790	143,401,860
Net Position - end of year	$ 118,596,719	$ 28,505,041	$ 147,101,760

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FUND FINANCIAL STATEMENTS

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GOVERNMENTAL FUND FINANCIAL STATEMENTS

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City of Morro Bay
Balance Sheet
Governmental Funds
June 30, 2017

	General Fund	Nonmajor Governmental Funds	Total
ASSETS			
Cash and cash equivalents	$ 3,759,275	$ 2,524,206	$ 6,283,481
Receivables:			
Intergovernmental	338,648	353,618	692,266
Accounts	661,955	95,513	757,468
Interest receivable	19,075	-	19,075
Notes	749,000	840,916	1,589,916
Due from other funds	50,460	-	50,460
Prepaid items	143,435	4,325	147,760
Land held for resale	3,062,282	-	3,062,282
Total Assets	$ 8,784,130	$ 3,818,578	$ 12,602,708
LIABILITIES AND FUND BALANCES			
Liabilities:			
Accounts payable	$ 392,231	$ 289,754	$ 681,985
Accrued payroll and benefits	721,087	16,722	737,809
Interest payable	225	-	225
Due to other funds	-	50,460	50,460
Unearned revenue	184,160	213,224	397,384
Total Liabilities	1,297,703	570,160	1,867,863
Fund Balances:			
Nonspendable	3,205,717	185,116	3,390,833
Restricted	749,000	3,063,302	3,812,302
Committed	109,463	-	109,463
Unassigned (Deficit)	3,422,247	-	3,422,247
Total Fund Balances	7,486,427	3,248,418	10,734,845
Total Liabilities and Fund Balances	$ 8,784,130	$ 3,818,578	$ 12,602,708

City of Morro Bay
Reconciliation of the Governmental Funds Balance Sheet to the Government-wide Statement of Net Position
June 30, 2017

Total Fund Balances - Total Governmental Funds			$ 10,734,845
Amounts reported for governmental activities in the Statement of Net Position were reported differently because:			
Capital assets used in governmental activities were not current financial resources. Therefore, they were not reported in the Governmental Funds Balance Sheet.			
Nondepreciable	$	95,424,110	
Depreciable, net		26,027,363	121,451,473
Internal Service Funds were used by management to charge the costs of certain activities, such as insurance and equipment replacement to individual funds. The assets and liabilities of the Internal Service Funds were included in the governmental activities in the Government-Wide Statement of Net Position.			1,719,321
Long-term liabilities are not due and payable in the current period and accordingly are not reported as fund liabilities. All liabilities, both current and long-term, are reported in the Statement of Net Position:			
Certificates payable	$	(1,355,000)	
Compensated absences		(185,833)	
Other postemployment benefits		(482,089)	
Loan Payable		(546,750)	
Pension related debt		(658,631)	(3,228,303)
Deferred amounts relates to pension net available for current expenditures and are not reported in the governmental fund financial statements:			
Deferred outflows of resources			4,723,228
Deferred inflows of resources			(872,643)
Aggregate net pension liability is not due and payable in the current period and therefore is not reported in the governmental funds.			(15,931,202)
Net Position of Governmental Activities			$ 118,596,719

City of Morro Bay
Statement of Revenues, Expenditures, and Changes in Fund Balances
Governmental Funds
For the Year Ended June 30, 2017

	General Fund	Nonmajor Governmental Funds	Total
Revenues:			
Taxes & special assessments	$ 9,833,253	$ 2,037,298	$ 11,870,551
Intergovernmental revenue	37,147	662,624	699,771
Charges for services	2,230,713	254,509	2,485,222
Revenues from use of money and property	80,926	102,059	182,985
Fines & forfeits	10,292	10,042	20,334
Other revenues	248,245	356,026	604,271
Total Revenues	12,440,576	3,422,558	15,863,134
Expenditures:			
Current:			
Administration	1,772,946	-	1,772,946
Community promotion	809,549	1,160,532	1,970,081
Finance	990,770	-	990,770
Fire	2,953,994	160,149	3,114,143
Housing	-	12,529	12,529
Police	3,094,037	184,555	3,278,592
Public works	2,567,082	1,142,265	3,709,347
Recreation/parks/maintenance	1,093,166	80,011	1,173,177
Capital outlay	653,137	535,945	1,189,082
Debt service:			
Principal	-	31,000	31,000
Interest	225	51,394	51,619
Total Expenditures	13,934,906	3,358,380	17,293,286
Excess (deficiency) of revenues over expenditures	(1,494,330)	64,178	(1,430,152)
Other Financing Sources (Uses):			
Sale of Land	749,000	-	749,000
Proceeds from loans	547,463	-	547,463
Transfers in	1,191,602	277,392	1,468,994
Transfers (out)	(597,683)	(424,693)	(1,022,376)
Total Other Financing Sources (Uses):	1,890,382	(147,301)	1,743,081
Net change in Fund Balances	396,052	(83,123)	312,929
Fund Balances:			
Beginning of year	7,090,375	3,331,541	10,421,916
End of year	$ 7,486,427	$ 3,248,418	$ 10,734,845

City of Morro Bay
Reconciliation of the Governmental Funds Statement of Revenues, Expenditures, and Changes in Fund Balances to the Government-Wide Statement of Activities
For the Year Ended June 30, 2017

Net Change in Fund Balances - Total Governmental Funds	$	312,929
Governmental activities in the Statement of Activities were reported differently because:		
Capital assets used in governmental activities are not financial resources and therefore are not reported in governmental funds.		
Capital outlay, net of $39,215 repairs and maintenance reported as program expenses		1,189,082
Depreciation		(1,297,862)
Net effect on disposal of capital assets		(375,449)
Total		(484,229)
The issuance of long-term liabilities provides current financial resources to governmental funds, while the repayment of the principal of long-term liabilities consumes the current financial resources of governmental funds. Neither transaction, however; has any effect on net position.		
Change in compensated absences		93,821
Change in loan payable		(546,750)
Pension expense		835,999
Change in pension related liabilities		315,520
Change in other postemployment benefits		(134,482)
Payment of certificates payable		31,000
Total		595,108
Internal Service Funds are used by management to charge the costs of certain activities, such as insurance and equipment replacement, to individual funds. The net revenue of the Internal Service Funds is reported in governmental activities.		242,841
Change in Net Position of Governmental Activities	$	666,649

PROPRIETARY FUND FINANCIAL STATEMENTS

City of Morro Bay
Statement of Net Position
Proprietary Funds
June 30, 2017

	Business-Type Activities		
	Major Funds		
	Water Fund	Sewer Fund	Harbor Fund
ASSETS			
Current Assets:			
Cash and cash equivalents	$ 3,981,905	$ 6,401,523	$ 408,453
Accounts receivable, net of allowance for doubtful accounts	708,099	811,662	381,874
Other receivables	6,464	1,925	-
Intergovernmental receivables	-	19,073	-
Investment in Joint Powers Agreement	-	3,333	-
Prepaid items	813,327	22,427	10,456
Total Current Assets	5,509,795	7,259,943	800,783
Noncurrent Assets:			
Capital assets, nondepreciable	473,631	5,015,826	6,600
Capital assets, depreciable	6,712,838	7,614,666	631,385
Total Noncurrent Assets	7,186,469	12,630,492	637,985
Total Assets	12,696,264	19,890,435	1,438,768
DEFERRED OUTFLOWS OF RESOURCES			
Deferred outflows of resources related to pension	253,902	572,812	710,587
Total deferred outflows of resources	253,902	572,812	710,587

City of Morro Bay
Statement of Net Position (Continued)
Proprietary Funds
June 30, 2017

	Business-Type Activities		Governmental Activities
	Nonmajor - Local Transportation Fund	Total	Internal Service
ASSETS			
Current Assets:			
Cash and cash equivalents	$ 348,258	$ 11,140,139	$ 600,077
Accounts receivable, net of allowance for doubtful accounts	708	1,902,343	-
Other receivables	-	8,389	259
Intergovernmental receivables	2,010	21,083	-
Investment in Joint Powers Agreement	-	3,333	-
Prepaid items	-	846,210	1,157,918
Total Current Assets	350,976	13,921,497	1,758,254
Noncurrent Assets:			
Capital assets, nondepreciable	40,000	5,536,057	-
Capital assets, depreciable	147,894	15,106,783	-
Total Noncurrent Assets	187,894	20,642,840	-
Total Assets	538,870	34,564,337	1,758,254
DEFERRED OUTFLOWS OF RESOURCES			
Deferred outflows of resources related to pension	-	1,537,301	-
Total deferred outflows of resources	-	1,537,301	-

City of Morro Bay
Statement of Net Position (Continued)
Proprietary Funds
June 30, 2017

	Business-Type Activities		
	Major Funds		
	Water Fund	Sewer Fund	Harbor Fund
LIABILITIES			
Current Liabilities:			
Accounts payable	89,880	163,553	64,628
Accrued payroll and benefits	23,771	13,710	33,009
Deposits payable	81,854	-	18,520
Unearned revenues	-	-	41,163
Compensated absences, due within one year	25,384	40,496	25,127
Notes payable, due within one year	-	-	108,219
Total Current Liabilities	220,889	217,759	290,666
Noncurrent Liabilities:			
Compensated absences, due in more than one year	20,747	9,584	35,502
Note payable, due in more than one year	-	-	483,789
Aggregate net pension liabilities	1,117,068	2,520,142	2,172,265
Total Noncurrent Liabilities	1,137,815	2,529,726	2,691,556
Total Liabilities	1,358,704	2,747,485	2,982,222
DEFERRED INFLOWS OF RESOURCES			
Deferred inflows of resources related to pension	70,754	159,624	110,748
Total deferred inflows of resources	70,754	159,624	110,748
NET POSITION			
Net investment in capital assets	7,186,469	12,630,492	45,977
Unrestricted	4,334,239	4,925,646	(989,592)
Total Net Position	$ 11,520,708	$ 17,556,138	$ (943,615)

City of Morro Bay
Statement of Net Position (Continued)
Proprietary Funds
June 30, 2017

	Business-Type Activities		Governmental Activities
	Nonmajor - Local Transportation Fund	Total	Internal Service
LIABILITIES			
Current Liabilities:			
Accounts payable	27,583	345,644	5,047
Accrued payroll and benefits	-	70,490	7,570
Deposits payable	-	100,374	-
Unearned revenues	139,477	180,640	-
Compensated absences, due within one year	-	91,007	6,665
Notes payable, due within one year	-	108,219	-
Total Current Liabilities	167,060	896,374	19,282
Noncurrent Liabilities:			
Compensated absences, due in more than one year	-	65,833	19,651
Note payable, due in more than one year	-	483,789	-
Aggregate net pension liabilities	-	5,809,475	-
Total Noncurrent Liabilities	-	6,359,097	19,651
Total Liabilities	167,060	7,255,471	38,933
DEFERRED INFLOWS OF RESOURCES			
Deferred inflows of resources related to pension	-	341,126	-
Total deferred inflows of resources	-	341,126	-
NET POSITION			
Net investment in capital assets	187,894	20,050,832	-
Unrestricted	183,916	8,454,209	1,719,321
Total Net Position	$ 371,810	$ 28,505,041	$ 1,719,321

City of Morro Bay
Statement of Revenues, Expenses, and Changes in Net Position
For the Year Ended June 30, 2017

	Business-Type Activities		
	Water Fund	Sewer Fund	Harbor Fund
Operating Revenues:			
Charges for services	$ 5,003,269	$ 5,725,795	$ 1,867,722
Other revenues	53	2,206	11,561
Total operating revenues	5,003,322	5,728,001	1,879,283
Operating Expenses:			
Employee wages and benefits	930,663	966,509	1,320,740
Insurance costs	60,598	48,711	62,967
Transportation services	-	-	-
Public works	-	1,447,039	-
Depreciation	256,105	476,471	165,133
Maintenance	97,442	4,117	71,555
Administration	2,166,970	235,455	276,685
Supplies	40,737	170,854	176,802
Total operating expenses	3,552,515	3,349,156	2,073,882
Operating income (loss)	1,450,807	2,378,845	(194,599)
Nonoperating Income (loss):			
Intergovernmental	-	-	68,451
Rental income	-	16,011	-
Investment earnings	25,965	35,853	6,131
Interest expense	-	-	(31,300)
Total nonoperating income (loss)	25,965	51,864	43,282
Net income (loss) before transfers	1,476,772	2,430,709	(151,317)
Transfers:			
Transfers in	34,614	-	2,627
Transfers out	(288,679)	(207,476)	(290,286)
Total transfers	(254,065)	(207,476)	(287,659)
Changes in net position	1,222,707	2,223,233	(438,976)
Net Position:			
Beginning of the year	10,298,001	15,332,905	(504,639)
End of the year	$ 11,520,708	$ 17,556,138	$ (943,615)

City of Morro Bay
Statement of Revenues, Expenses, and Changes in Net Position (Continued)
For the Year Ended June 30, 2017

	Business-Type Activities		Governmental Activities
	Nonmajor - Local Transportation Fund	Total	Internal Service
Operating Revenues:			
Charges for services	$ 38,533	$ 12,635,319	$ 1,447,316
Other revenues	7,672	21,492	4,842
Total operating revenues	46,205	12,656,811	1,452,158
Operating Expenses:			
Employee wages and benefits	-	3,217,912	-
Insurance costs	-	172,276	1,136,514
Transportation services	186,399	186,399	-
Public works	-	1,447,039	-
Depreciation	46,589	944,298	-
Maintenance	294	173,408	-
Administration	5,464	2,684,574	427,350
Supplies	34,198	422,591	31,743
Total operating expenses	272,944	9,248,497	1,595,607
Operating income (loss)	(226,739)	3,408,314	(143,449)
Nonoperating Income (loss):			
Intergovernmental	330,410	398,861	-
Rental income	-	16,011	-
Investment earnings	2,391	70,340	3,933
Interest expense	-	(31,300)	-
Total nonoperating income (loss)	332,801	453,912	3,933
Net income (loss) before transfers	106,062	3,862,226	(139,516)
Transfers:			
Transfers in	-	37,241	382,357
Transfers out	(79,775)	(866,216)	-
Total transfers	(79,775)	(828,975)	382,357
Changes in net position	26,287	3,033,251	242,841
Net Position:			
Beginning of the year, as restated (Note 14)	345,523	25,471,790	1,476,480
End of the year	$ 371,810	$ 28,505,041	$ 1,719,321

City of Morro Bay
Statement of Cash Flows
Proprietary Funds
For the Year Ended June 30, 2017

	Business-Type Activities		
	Water Operating Fund	Sewer Fund	Harbor Fund
CASH FLOWS FROM OPERATING ACTIVITIES			
Cash receipts from services provided	$ 4,877,001	$ 5,548,832	$ 1,944,444
Cash paid to suppliers for goods and services	(3,199,318)	(2,050,924)	(562,415)
Cash paid to employees	(674,350)	(575,545)	(1,106,894)
Net Cash Provided by (Used in) Operating Activities	1,003,333	2,922,363	275,135
CASH FLOWS FROM NONCAPITAL FINANCING ACTIVITIES:			
Transfers in (out)	(254,065)	(207,476)	(287,659)
Intergovemmental	-	(19,072)	68,547
Net Cash Provided by (Used in) Noncapital Financing Activities	(254,065)	(226,548)	(219,112)
CASH FLOWS FROM CAPITAL AND RELATED FINANCING ACTIVITIES:			
Payment on long-term debt	-	-	(103,558)
Interest paid	-	-	(31,300)
Acquisition of capital assets	(2,641)	(1,422,781)	(3,801)
Net Cash (Used In) Capital and Related Financing Activities	(2,641)	(1,422,781)	(138,659)
CASH FLOWS FROM INVESTING ACTIVITIES:			
Interest received	25,965	57,205	6,131
Net Cash Provided by Investing Activities	25,965	57,205	6,131
Net Increase (Decrease) In Cash and Cash Equivalents	772,592	1,330,239	(76,505)
CASH AND CASH EQUIVALENTS:			
Beginning of Year	3,209,313	5,071,284	484,958
End of Year	$ 3,981,905	$ 6,401,523	$ 408,453
Reconciliation of Operating Income (Loss) to to Net Cash Provided (Used) by Operating Activities:			
Operating Income (loss)	$ 1,450,807	$ 2,378,845	$ (194,599)
Adjustments to reconcile operating income (loss) to net cash provided (used) by operating activities:			
Depreciation	256,105	476,471	165,133
Changes in assets and liabilities:			
(Increase)/decrease in accounts receivables	(122,748)	(179,169)	50,877
(Increase)/decrease in other receivables	(3,573)	-	-
(Increase)/decrease in prepaid items	(803,045)	(14,151)	129
(Increase)/decrease in deferred outflows of resources related to pension	(145,891)	(278,255)	(444,273)
Increase/(decrease) in accounts payable	(30,238)	(130,597)	15,814
Increase/(decrease) in accrued payroll and benefits	(11,417)	(14,466)	(19,243)
Increase/(decrease) in deposits payable	(288)	-	9,651
Increase/(decrease) in unearned revenue	-	-	14,284
Increase/(decrease) in compensated absences	(12,244)	(848)	(16,875)
Increase/(decrease) in net pension liabilities	390,121	571,459	746,945
Increase/(decrease) in deferred inflows of resources related to pension	35,744	113,074	(52,708)
Net Cash Provided by (Used in) Operating Activities	$ 1,003,333	$ 2,922,363	$ 275,135

City of Morro Bay
Statement of Cash Flows (Continued)
Proprietary Funds
For the Year Ended June 30, 2017

	Business-Type Activities		Governmental Activities
	Nonmajor - Local Transportation Fund	Total	Internal Service
CASH FLOWS FROM OPERATING ACTIVITIES			
Cash receipts from services provided	$ 45,497	$ 12,415,774	$ 1,451,931
Cash paid to suppliers for goods and services	(224,871)	(6,037,528)	(1,806,777)
Cash paid to employees	-	(2,356,789)	400
Net Cash Provided by (Used in) Operating Activities	(179,374)	4,021,457	(354,446)
CASH FLOWS FROM NONCAPITAL FINANCING ACTIVITIES:			
Transfers in (out)	(79,775)	(828,975)	382,357
Intergovemmental	362,403	411,878	-
Net Cash Provided by (Used in) Noncapital Financing Activities	282,628	(417,097)	382,357
CASH FLOWS FROM CAPITAL AND RELATED FINANCING ACTIVITIES:			
Payment on long-term debt	-	(103,558)	-
Interest paid	-	(31,300)	-
Acquisition of capital assets	(80,668)	(1,509,891)	-
Net Cash (Used In) Capital and Related Financing Activities	(80,668)	(1,644,749)	-
CASH FLOWS FROM INVESTING ACTIVITIES:			
Interest received	2,391	91,692	3,933
Net Cash Provided by Investing Activities	2,391	91,692	3,933
Net Increase In Cash and Cash Equivalents	24,977	2,051,303	31,844
CASH AND CASH EQUIVALENTS:			
Beginning of Year	323,281	9,088,836	568,233
End of Year	$ 348,258	$ 11,140,139	$ 600,077
Reconciliation of Operating Income (Loss) to to Net Cash Provided (Used) by Operating Activities:			
Operating Income (loss)	$ (226,739)	$ 3,408,314	$ (143,449)
Adjustments to reconcile operating income (loss) to net cash provided (used) by operating activities:			
Depreciation	46,589	944,298	-
Changes in assets and liabilities:			
(Increase)/decrease in accounts receivables	(708)	(251,748)	(227)
(Increase)/decrease in other receivables	-	(3,573)	-
(Increase)/decrease in prepaid items	-	(817,067)	(166,133)
(Increase)/decrease in deferred outflows of resources related to pension	-	(868,419)	-
Increase/(decrease) in accounts payable	1,484	(143,537)	(19,625)
Increase/(decrease) in accrued payroll and benefits	-	(45,126)	400
Increase/(decrease) in deposits payable	-	9,363	-
Increase/(decrease) in unearned revenue	-	14,284	-
Increase/(decrease) in compensated absences	-	(29,967)	(25,412)
Increase/(decrease) in net pension liabilities	-	1,708,525	-
Increase/(decrease) in deferred inflows of resources related to pension	-	96,110	-
Net Cash Provided by (Used in) Operating Activities	$ (179,374)	$ 4,021,457	$ (354,446)

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FIDUCIARY FUND FINANCIAL STATEMENTS

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City of Morro Bay
Statement of Fiduciary Net Position
Fiduciary Funds
June 30, 2017

	Other Post Employment Irrevocable Trust Fund	Agency Fund
ASSETS		
Current assets:		
Cash and cash equivalents	$ 855,946	$ 1,205,234
Prepaids	-	207
Total assets	855,946	$ 1,205,441
LIABILITIES		
Accounts payable	-	$ 7,911
Agency funds held for others	-	1,197,530
Total liabilities	-	$ 1,205,441
NET POSITION		
Held in trust	855,946	
Total net position	$ 855,946	

City of Morro Bay
Statement of Change in Fiduciary Net Position
Fiduciary Fund
For the Year Ended June 30, 2017

	Other Postemployment Benefits Trust Fund
ADDITIONS:	
Contributions	$ 158,311
Total additions	158,311
Change in net position	158,311
NET POSITION:	
Beginning of year	697,635
End of year	$ 855,946

NOTES TO THE BASIC FINANCIAL STATEMENTS

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City of Morro Bay
Index to the Notes to the Basic Financial Statements
For the Year Ended June 30, 2017

City of Morro Bay
Index to the Notes to the Basic Financial Statements (Continued)
For the Year Ended June 30, 2017

Note 1 – Summary of Significant Accounting Policies

The basic financial statements of the City of Morro Bay, California, (the "City") have been prepared in accordance with accounting principles generally accepted in the United States of America ("U.S. GAAP") as applied to governmental agencies. The Governmental Accounting Standards Board ("GASB") is the accepted standard setting body for establishing governmental accounting and financial reporting principles. The following is a summary of the City's significant policies:

A. Financial Reporting Entity

The City of Morro Bay is a general law city incorporated in 1964. The City operates under a Council-Manager form of government. The mayor and four council members are elected at large. A full range of services is provided, including general government, parks and recreation, police and fire and emergency services, streets and storm drain maintenance, water and sanitary, and transportation. The City also maintains the Morro Bay harbor and manages state-granted tidelands and harbor fee lands within the City limits.

In evaluating how to define the City for financial reporting purposes, management has considered all potential component units. The primary criteria for including a potential component unit within the reporting entity are the governing body's financial accountability and a financial benefit or burden relationship and whether it is misleading to exclude. A primary government is financially accountable and shares a financial benefit or burden relationship, if it appoints a voting majority of an organization's governing body and it is able to impose its will on the organization, or if there is a potential for the organization to provide specific financial benefits to, or impose specific financial burdens on the primary government. A primary government may also be financially accountable if an organization is fiscally dependent on the primary government regardless of whether the organization has a separately elected governing board, a governing board appointed by a higher level of government, or a jointly appointed board, and there is a potential for the organization to provide specific financial benefits to, or impose specific financial burdens on the primary government.

There are no component units for the City that meet the criteria for blended presentation.

The City participates in the California Joint Powers Insurance Authority (the "CJPIA") for its general liability, workers' compensation, property, vehicle and crime insurance. This organization is financed through premium charges to each member. The CJPIA does not meet the aforementioned reporting criteria, and is therefore, not included in the accompanying financial statements.

Note 1 – Summary of Significant Accounting Policies (Continued)

B. Basis of Accounting and Measurement Focus

The accounts of the City are organized on the basis of funds, each of which is considered a separate accounting entity. The operations of each fund are accounted for by providing a separate set of self-balancing accounts that comprise its assets, deferred outflows of resources, liabilities, deferred inflows of resources, and fund balances or net position, revenues and expenditures or expenses, as appropriate. City resources are allocated to and accounted for in individual funds based upon the purposes for which they are to be spent and the means by which spending activities are controlled.

The statement of net position reports separate sections for Deferred Outflows of Resources and Deferred Inflows of Resources, when applicable.

Deferred Outflows of Resources represent outflows of resources (consumption of net position) that apply to future periods and that, therefore, will not be recognized as an expense until that time.

Deferred Inflows of Resources represent inflows of resources (acquisition of net position) that apply to future periods and that, therefore, are not recognized as revenue until that time.

Government-Wide Financial Statements

The government-wide financial statements are reported using the "*economic resources*" measurement focus and the accrual basis of accounting.

Revenues are recorded when earned and expenses are recorded at the time liabilities are incurred, regardless of when the related cash flows take place. Non-exchange transactions, in which the City gives (or receives) value without directly receiving (or giving) equal value in exchange, include property and sales taxes, grants, entitlements and donations. On an accrual basis, revenues from property taxes are recognized in the fiscal year for which the taxes are levied. Revenues from sales taxes are recognized when the underlying transactions take place. Revenues from grants, entitlements and donations are recognized in the fiscal year in which all eligible requirements have been satisfied.

The government-wide financial statements consist of the statement of net position and the statement of activities that report information on all of the non-fiduciary activities of the primary government. Eliminations have been made to minimize the double counting of internal activities. These statements distinguish between the governmental and business-type activities of the City. Governmental activities generally are financed through taxes, intergovernmental revenues and other non-exchange revenues. Business-type activities generally rely, to a significant extent, on fees and charges for services.

Note 1 – Summary of Significant Accounting Policies (Continued)

B. Basis of Accounting and Measurement Focus (Continued)

Government-Wide Financial Statements (Continued)

The statement of activities presents a comparison between direct expenses and program revenues for each function of the City's activities. Direct expenses are (1) expenses that are specifically associated with a program or function, and (2) allocated indirect expenses. Program revenues include (1) fees, fines and charges paid by the recipients of goods or services offered by the programs, and (2) grants and contributions that are restricted to meeting the operational or capital requirements of a particular program. Revenues that are not classified as program revenues, including all taxes, are presented instead as general revenues.

When both restricted and unrestricted net position are available, restricted resources are used only after the unrestricted resources are depleted.

Fund Financial Statements

The fund financial statements report detailed information about the City's funds. Separate statements are provided for each fund category- governmental, proprietary and fiduciary- even though the latter are excluded from the government-wide financial statements. The emphasis of the Governmental and Proprietary Fund financial statements is on major individual funds. Each major fund is presented in a single column. All remaining governmental funds are separately aggregated and reported as nonmajor funds.

Governmental Fund Financial Statements include a Balance Sheet and a Statement of Revenues, Expenditures and Changes in Fund Balances for all major governmental funds and non-major funds aggregated. An accompanying schedule is presented to reconcile and explain the differences in Net Position as presented in these statements to the Net Position presented in the Government-Wide Financial Statements. The City has presented all major funds that met the applicable criteria.

All governmental funds are accounted for on a spending or *"current financial resources"* measurement focus and the modified accrual basis of accounting. Accordingly, only current assets and current liabilities are included on the Balance Sheet. The Statement of Revenues, Expenditures and Changes in Fund Balances presents increases (revenues and other financing sources) and decreases (expenditures and other financing uses) in net current assets. Under the modified accrual basis of accounting, revenues are recognized in the accounting period in which they become both measurable and available to finance expenditures of the current period.

Revenues are recognized as soon as they are both “measurable” and “available”. Revenues are considered to be available when they are collectible within the current period as soon enough thereafter to pay liabilities of the current period. For this purpose, the City considers revenues to be available if they are collected within 60 days of the end of the current fiscal period. The primary revenue sources, which have been treated as susceptible to accrual by the City, are property taxes, sales tax, intergovernmental revenues and other taxes. Expenditures are recorded in the accounting period in which the related fund liability is incurred.

Note 1 – Summary of Significant Accounting Policies (Continued)

B. Basis of Accounting and Measurement Focus (Continued)

Fund Financial Statements (Continued)

The Reconciliation of the Fund Financial Statements to the Government-Wide Financial Statements is provided to explain the differences created by the integrated approach of GASB Statement No. 34.

The City reports the following major governmental fund:

General Fund - The City's primary operating fund. The General Fund is used to account for all revenues and expenditures necessary to carry out the basic governmental activities of the City that are not accounted for through other funds. For the City, the General Fund includes such activities as public protection, public ways and facilities, health and sanitation, public assistance, education and recreational services.

Proprietary Fund Financial Statements include a Statement of Net Position, a Statement of Revenues, Expenses and Changes in Fund Net Position, and a Statement of Cash Flows for each major Proprietary Fund.

Proprietary funds are accounted for using the *"economic resources"* measurement focus and the accrual basis of accounting. Accordingly, all assets, deferred outflows of resources, liabilities, and deferred inflows of resources (whether current or noncurrent) are included on the Statement of Net Position. The Statement of Revenues, Expenses and Changes in Fund Net Position presents increases (revenues) and decreases (expenses) in total Net Position. Under the accrual basis of accounting, revenues are recognized in the period in which they are earned while expenses are recognized in the period in which the liability is incurred. In these funds, receivables have been recorded as revenue and provisions have been made for uncollectible amounts.

Proprietary fund operating revenues, such as charges for services, result from exchange transactions associated with the principal activity of the fund. Exchange transactions are those in which each party receives and gives up essentially equal values. Non-operating revenues, such as subsidies and investment earnings, result from non-exchange transactions or ancillary activities.

The City reports the following major proprietary funds:

Water Enterprise Fund - Accounts for revenues received primarily from water service charges, which are expended for maintenance, operations and improvements to the water system.

Sewer Enterprise Fund - Accounts for revenues received primarily from sewer service charges, which are expended for maintenance, operations and improvements to the sanitary sewer system.

Note 1 – Summary of Significant Accounting Policies (Continued)

B. Basis of Accounting and Measurement Focus (Continued)

Fund Financial Statements (Continued)

The City reports the following major proprietary funds (Continued):

Harbor Enterprise Fund - Accounts for revenues received from harbor leases, rentals, moorings and other sources, which are expended for maintenance, operation, patrolling, and improvements of the harbor.

A separate column representing internal service funds is also presented in these statements. However, internal service balances and activities have been combined with the governmental activities in the Government-Wide Financial Statements.

Internal Service Fund - Accounts for revenues received primarily from charges to City departments on an estimated basis for insurance coverage, and which are expended for insurance purchase, valid claims and related costs. These funds were opened in 1980-81 to account for workers' unemployment compensation and fire insurance costs. They now account for all insurance coverage including health, dental, general liability, and vehicle insurance.

Fiduciary fund financial statements include a Statement of Fiduciary Net Position and a Statement of Changes in Fiduciary Net Position. The City's fiduciary funds represent agency fund and Other Postemployment Benefits (OPEB) trust fund. Both agency fund and the OPEB trust fund are accounted for on the full accrual basis of accounting.

The City reports the following fiduciary funds:

Other Postemployment Benefits (OPEB) Trust Fund – Used to account for assets held by the City as a trustee for pre-funding of OPEB liability.

Agency Funds - Used to account for assets held by the City as an agent for individuals, private organizations, other governments, and/or other funds. Agency Funds are custodial in nature (assets equal liabilities) and do not involve measurement of results of operations.

C. Cash and Investments

Investments are reported in the accompanying balance sheet at fair value, except for certain certificates of deposit and investment contracts that are reported at cost because they are not transferable and they have terms that are not affected by changes in market interest rates.

Changes in fair value that occur during a fiscal year are recognized as investment income reported for that fiscal year. Investment income includes interest earnings, changes in fair value, and any gains or losses realized upon the liquidation, maturity, or sale of investments.

The City pools cash and investments of all funds, except for assets held by fiscal agents. Each fund's share in this pool is displayed in the accompanying financial statements as cash and investments. Investment income earned from pooled investments is allocated to those various funds based on each fund's average cash and investment balance.

Note 1 – Summary of Significant Accounting Policies (Continued)

C. Cash and Investments (Continued)

For purposes of the statement of cash flows, cash equivalents are defined as short-term, highly liquid investments that are both readily convertible to known amounts of cash or were purchased so near their maturity that they present insignificant risk of change in value because of changes in interest rates. Cash and cash equivalents in the accompanying statements include the proprietary funds' share of the cash and investment pool of the City of Morro Bay.

Certain disclosure requirements, if applicable, for Deposits and Investment Risks in the following areas:

- Interest Rate Risk
- Credit Risk
  - Overall
  - Custodial Credit Risk
  - Concentration of Credit Risk
- Foreign Currency Risk

In addition, other disclosures are specified including use of certain methods to present deposits and investments, highly sensitive investments, credit quality at year-end and other disclosures.

D. Fair Value Measurement

U.S. GAAP defines fair value, establishes a framework for measuring fair value and establishes disclosures about fair value measurement. Investments, unless otherwise specified, recorded at fair value in the financial statements, are categorized based upon the level of judgment associated with the inputs used to measure their fair value. Levels of inputs are as follows:

The three levels of the fair value measurement hierarchy are described below:

- Level 1 - Inputs are unadjusted, quoted prices for identical assets and liabilities in active markets at the measurement date.
- Level 2 – Inputs, other than quoted prices included in Level 1, that are observable for the assets and liabilities through corroboration with market data at the measurement date.
- Level 3 – Unobservable inputs that reflect management’s best estimate of what market participants would use in pricing the assets and liabilities at the measurement date.

E. Receivable and Allowance for Doubtful Accounts

Customer accounts receivable consist of amounts owed by private individuals and organizations for services rendered in the regular course of business operations. Receivable are shown net of allowances for doubtful accounts. Uncollectable accounts are based on prior experience and management’s assessment of the collectability of existing accounts.

F. Prepaid Items

Certain payments to vendors applicable to future accounting periods are recorded as prepaid items.

Note 1 – Summary of Significant Accounting Policies (Continued)

G. Inventories

The City maintains an inventory account for fuel. Fuel is valued at June 30 based on the amount of fuel in the storage tanks and the most recent invoices' purchase price. Inventories are valued using first in first out method.

H. Land Held for Resale

Land held for resale is carried at the lower of cost or estimated net realizable value.

I. Property Tax Revenue

Property taxes attach as an enforceable lien at March 1. Taxes are levied on July 1 and payable in two installments, December 10 and April 10. All general property taxes are then allocated by the County Auditor's Office to the various taxing entities per the legislation implementing Proposition 13. The method of allocation used by the County is subject to review by the State of California. City property tax revenues are recognized when levied and received within 60 days of the year end.

J. Capital Assets

Capital assets are recorded at historical cost or estimated historical cost if actual historical cost is not available. Contributed fixed assets are valued at their estimated fair market value on the date contributed. The City defines capital assets as assets with an initial, individual cost of more than $5,000 and an estimated useful life in excess of one year. Capital assets used in operations are depreciated or amortized (assets under capital leases) using the straight-line method over the lesser of the capital lease period or their estimated useful lives in the government-wide statements and proprietary funds. Donated capital assets are valued at their estimated acquisition value on the date donated. The estimated useful lives are as follows:

Structures & improvements	15-30 years
Equipment	4-10 years
Infrastructure	25-75 years

K. Interfund Transactions

Interfund transactions are reflected as loans, services provided, reimbursements or transfers. Loans are reported as receivables and payables, as appropriate, are subject to elimination upon consolidation, and are referred to as either "due to/from other funds' (i.e., the current portion of interfund loans) or "advances to/from other funds (i.e., the noncurrent portion of interfund loans). Any residual balances outstanding between the governmental activities and the business-type activities are reported in the government-wide financial statements as "internal balances."

Advances between funds, as reported in the fund financial statements, are offset by a fund balance reserve account in applicable governmental funds to indicate that they are not available for appropriation and are not available financial resources. There were no advances between funds during the year.

Services provided, deemed to be at market or near market rates, are treated as revenues and expenditures/expenses. Reimbursements occur when one fund incurs a cost, charges the appropriate benefiting fund and reduces its related cost as a reimbursement. All other interfund transactions are treated as transfers. Transfers between governmental or proprietary funds are netted as part of the reconciliation to the government-wide presentation.

Note 1 – Summary of Significant Accounting Policies (Continued)

L. Compensated Absences Payable

City employees have vested interest in varying levels of vacation, sick leave and compensatory time based on their length of employment. It is the policy of the City to pay all accumulated vacation pay and all or a portion of sick pay when an employee retires or terminates. The long-term amount is included as a liability in the governmental activities of the government-wide financial statements. A liability for these amounts is reported in governmental funds only if they have matured, for example, as a result of employee resignations and retirements. All of the liability for compensated absences applicable to proprietary funds is reported in those funds.

M. Pension

For purposes of measuring the net pension liability, deferred outflows of resources and deferred inflows of resources related to pensions, and pension expense, information about the fiduciary net position of the plans and additions to/deductions from the plans' fiduciary net position have been determined on the same basis as they are reported by the plans (Note 8). For this purpose, benefit payments (including refunds of employee contributions) are recognized when due and payable in accordance with benefit terms. Investments are reported at fair value.

The following timeframes are used for pension reporting:

CalPERS	
Valuation Date	June 30, 2015
Measurement Date	June 30, 2016
Measurement Period	June 30, 2015 to June 30, 2016

Gains and losses related to changes in total pension liability and fiduciary net position are recognized in pension expense systematically over time. The first amortized amounts are recognized in pension expense for the year the gain or loss occurs. The remaining amounts are categorized as deferred outflows and deferred inflows of resources related to pensions and are to be recognized in future pension expense. The amortization period differs depending on the source of the gain or loss. The difference between projected and actual earnings is amortized straight-line over 5 years. All other amounts are amortized straight-line over the average expected remaining service lives of all members that are provided with benefits (active, inactive, and retired) as of the beginning of the measurement period.

N. Unearned Revenue

In the government-wide financial statements, unearned revenue is reported for transactions for which revenue has not yet been earned. Typical transactions recorded as unearned revenues in the government-wide financial statements are cell phone site license lease payments received in advance, prepaid charges for services and facility rentals paid in advance.

In the fund financial statements, unearned revenue is recorded when transactions have not yet met the revenue recognition criteria. The City records unearned revenue for transactions for which revenues have not been earned. Typical transactions for which unearned revenue is recorded are lease payments, quarterly encroachment fees and advance registration for recreation classes which were not yet earned.

Note 1 – Summary of Significant Accounting Policies (Continued)

O. Net Position

In the government-wide financial statements and proprietary fund financial statements, net position is classified as follows:

Net Investment in Capital Assets - This component of net position consists of capital assets, net of accumulated depreciation, reduced by the outstanding balances of debt that are attributable to the acquisition, construction, or improvement of those assets.

Restricted - This component of net position consists of restricted assets and deferred outflows of resources reduced by liabilities and deferred inflows of resources related to those assets.

Unrestricted - This component of net position is the amount of the assets, deferred outflows of resources, liabilities, and deferred inflows of resources that are not included in the determination of net investment in capital assets or the restricted component of net position.

P. Fund Balances

In the governmental fund financial statements, fund balances are classified as follows:

Nonspendable – Nonspendable fund balances include amounts that cannot be spent because they are not in a spendable form, such as inventory, prepaid items, land held for resale and long-term receivable or because resources legally or contractually must remain intact.

Restricted – Restricted fund balances are the portion of fund balance that have externally enforceable limitations on their usage through legislation or limitations imposed by creditors, grantor, laws and regulations of other governments or enabling legislation.

Committed – Committed fund balances are self-imposed limitations by the highest level of decision-making authority, namely the City Council, prior to the end of the reporting period. City Council adoption of a resolution is required to commit resources or to rescind the commitment.

Assigned – Assigned fund balances are limitations imposed by management based on the intended use of the funds. Modifications or rescissions of the constraints can be removed by the same type of action that limited the use of the funds. Assignment of resources can be done by the highest level of decision making or by a committee or official designated for that purpose. The City Council has authorized the Finance Director for that purpose.

Unassigned – Unassigned fund balances represent the residual net resources in excess of the other classifications. The general fund is the only fund that reports a positive unassigned fund balance amount. In other governmental funds, it is not appropriate to report a positive unassigned fund balance amount. However, in governmental fund other than general fund, if expenditures incurred for specific purposes exceed the amounts that are restricted, committed, or assigned to those purposes, it may be necessary to report a negative unassigned fund balance in that fund.

Q. Use of Estimates

The preparation of the basic financial statements in accordance with U.S. GAAP requires management to make estimates and assumptions that affect certain reported amounts and disclosures. Accordingly, actual results could differ from those estimates.

Note 1 – Summary of Significant Accounting Policies (Continued)

R. Accounting Changes

GASB has issued Statement No. 77, *Tax Abatement Disclosure*. This Statement requires governments that enter into tax abatement agreements to disclose the following information about the agreements: 1) Brief descriptive information, such as the tax being abated, the authority under which tax abatements are provided, eligibility criteria, the mechanism by which taxes are abated, provisions for recapturing abated taxes, and the types of commitments made by tax abatement recipients. 2) The gross dollar amount of taxes abated during the period 3) Commitments made by a government, other than to abate taxes, as part of a tax abatement agreement. This statement became effective for periods beginning after June 15, 2016 and did not have a significant impact on the City's financial statements for the year ended June 30, 2017.

GASB has issued Statement No. 78, *Pensions Provided through Certain Multiple-Employer Defined Benefit Pension Plans*. This Statement amends the scope and applicability of Statement 68 to exclude pensions provided to employees of state or local governmental employers through a cost-sharing multiple-employer defined benefit pension plan that (1) is not a state or local governmental pension plan, (2) is used to provide defined benefit pensions both to employees of state or local governmental employers and to employees of employers that are not state or local governmental employers, and (3) has no predominant state or local governmental employer (either individually or collectively with other state or local governmental employers that provide pensions through the pension plan). This Statement establishes requirements for recognition and measurement of pension expense, expenditures, and liabilities; note disclosures; and required supplementary information for pensions that have the characteristics described above. This statement became effective for periods beginning after June 15, 2016 and did not have a significant impact on the City's financial statements for the year ended June 30, 2017.

GASB has issued Statement No. 80, *Blending Requirements for Certain Component Units*. The objective of this Statement is to improve financial reporting by clarifying the financial statement presentation requirements for certain component units. This Statement amends the blending requirements for the financial statement presentation of component units of all state and local governments. The additional criterion requires blending of a component unit incorporated as a not-for-profit corporation in which the primary government is the sole corporate member. The additional criterion does not apply to component units included in the financial reporting entity pursuant to the provisions of Statement No. 39, Determining Whether Certain Organizations Are Component Units. This statement became effective for periods beginning after June 15, 2016, and should be applied retroactively. This statement did not have a significant impact on the City's financial statements for the year ended June 30, 2017.

GASB has issued Statement No. 82, *Pension Issues*. The objective of this Statement is to address certain issues that have been raised with respect to Statements No. 67, Financial Reporting for Pension Plans, No. 68, Accounting and Financial Reporting for Pensions, and No. 73, Accounting and Financial Reporting for Pensions and Related Assets That Are Not within the Scope of GASB Statement 68, and Amendments to Certain Provisions of GASB Statements 67 and 68. Specifically, this Statement addresses issues regarding (1) the presentation of payroll-related measures in required supplementary information, (2) the selection of assumptions and the treatment of deviations from the guidance in an Actuarial Standard of Practice for financial reporting purposes, and (3) the classification of payments made by employers to satisfy employee (plan member) contribution requirements. This statement became effective for periods beginning after June 15, 2016, and should be applied retroactively. This statement did not have a significant impact on the City's financial statements for the year ended June 30, 2017.

Note 2 – Cash and Investments

At June 30, 2017, cash and investments are classified in the accompanying financial statements as follows:

	Government-Wide Statement of Net Position			
	Governmental Activities	Business-type Activities	Fiduciary Fund	Total
Cash and investments	$ 6,883,558	$ 11,140,139	$ 2,061,180	$ 20,084,877

At June 30, 2017, cash and investments consisted of the following:

Cash:	
Petty Cash	$ 1,650
Deposits with financial institutions	7,906,152
Total cash and cash equivalents	7,907,802
Investments:	
Local Agency Investment Fund	7,177,443
Mutual Funds	749,810
Non-negotiable Certificates of Deposit	3,253,147
U.S. Government Sponsored Enterprise Securities	996,675
Total investments	12,177,075
Total cash and investments	$ 20,084,877

A. Deposits

The carrying amounts of the City's demand deposits were $7,906,152 at June 30, 2017. Bank balances at that date were $8,747,012, the total amount of which was collateralized or insured with accounts held by the pledging financial institutions in the City's name as discussed below.

The California Government Code requires California banks and savings and loan associations to secure the City's cash deposits by pledging securities as collateral. This Code states that collateral pledged in this manner shall have the effect of perfecting a security interest in such collateral superior to those of a general creditor. Thus, collateral for cash deposits is considered to be held in the City's name.

The market value of pledged securities must equal at least 110% of the City's cash deposits. California law also allows institutions to secure City deposits by pledging first trust deed mortgage notes having a value of 150% of the City's total cash deposits. The City may waive collateral requirements for cash deposits, which are fully insured up to $250,000 by the Federal Deposit Insurance Corporation ("FDIC"). The City, however, has not waived the collateralization requirements.

The City follows the practice of pooling cash and investments of all funds, except for funds required to be held by fiscal agents under the provisions of bond indentures, if applicable. Interest income earned on pooled cash and investments is allocated on an accounting period basis to the various funds based on the period-end cash and investment balances, however, interest is not allocated to funds created to advance costs for utility undergrounding districts, reimbursable grant funds or internal service funds.

Note 2 – Cash and Investments (Continued)

B. Investments

Under the provisions of the City's investment policy, the City's investments are limited to those authorized by the California Government Code, except as follows:

Authorized Investment Type	Maximum Maturity	Maximum Percentage of Portfolio	Maximum Investment in one Issuer
Securities Issued by U.S. Government, or its agencies	5 years	None	None
Local Agency Investment Fund (LAIF)	N/A	None	None
Certificates of Deposit	5 years	None	$250,000
Bankers Acceptances	180 days	40%	None
Mutual Funds and Money Market Mutual Funds	5 years	None	None
Collaterized Deposit	N/A	None	None
Passbook Savings Accounts	5 years	None	None
Repurchase Agreements	5 years	25%	None

The City is a participant in LAIF, which is regulated by California Government Code Section 16429 under the oversight of the Treasurer of the State of California. The City's investments with LAIF at June 30, 2017 included a portion of the pool funds invested in Structured Notes and Asset-Backed Securities, which included the following:

Structured Notes: debt securities (other than asset-backed securities) whose cash flow characteristics (coupon rate, redemption amount, or stated maturity) depend upon one or more indices and/or that have embedded forwards or options.

Asset-Backed Securities: generally, mortgage-backed securities that entitle their purchasers to receive a share of the cash flows from a pool of assets such as principal and interest repayments from a pool of mortgages (for example, collateralized mortgage obligations), or credit card receivables.

As of June 30, 2017, the City had $7,177,443 invested in LAIF, which had invested 2.89% of the pool investment funds in Structured Notes and Asset-Backed Securities.

C. Fair Value Measurement

At June 30, 2017, investments are reported at fair value. The following table presents the fair value measurement of investments on a recurring basis and the levels within GASB 72 fair value hierarchy in which the fair value measurements fall at June 30, 2017:

Investment Type	Significant Other Observable Input (Level 2)	Uncategorized
Local Agency Investment Fund	$ -	$7,177,443
Mutual Funds	-	749,810
Certificates of deposit	3,253,147 (1)	-
U.S. Government Sponsored Enterprise Securities	996,675 (2)	-
Total	$ 4,249,822	$7,927,253

(1) Valued using multi-dimensional relational model
(2) Valued using a series of matrices

Note 2 – Cash and Investments (Continued)

D. Risk Disclosures

Interest Rate Risk - As a means of limiting its exposure to fair value losses arising from rising interest rates, the City's investment policy limits investments to a maximum maturity of five years.

At June 30, 2017, the City had the following investment maturities:

		Investment Maturities (in Years)				
Investment Type	Fair value	Less than 1	1 to 2	2 to 3	3 to 4	4 to 5
Local Agency Investment Fund	$ 7,177,443	$ 7,177,443	$ -	$ -	$ -	$ -
Mutual Funds	749,810	749,810	-	-	-	-
Certificates of deposit	3,253,147	999,806	1,756,383	-	-	496,958
U.S. Government Sponsored Enterprise Securities	996,675	-	498,700	497,975	-	-
Total	$ 12,177,075	$ 8,927,059	$ 2,255,083	$ 497,975	$ -	$ 496,958

Credit Risk – State law limits investments in commercial paper and corporate bonds to the top two ratings issued by nationally recognized statistical rating organizations. It is the City's policy to limit its investments in these investment types to the top rating issued by Standard & Poor's, Fitch Rating's and Moody's Investor Service. At June 30, 2017, the City's credit risks, expressed on a percentage basis, were as follows:

Credit Quality Distribution for Securities
with Credit Exposure as a Percentage of Total Investments

Investment Type	Moody's Credit Rating	S&P's Credit Rating	% of Investments with Interest Rate Risk
Local Agency Investment Fund (LAIF)	Not Rated	Not Rated	58.94%
Mutual Funds	Not Rated	Not Rated	6.16%
Certificates of Deposits	Not Rated	Not Rated	26.72%
U.S. Government Sponsored Enterprise Securities			
Federal Home Loan Mortgage Corporation	AAA	AA+	4.09%
Federal National Mortgage Association	AAA	AA+	4.09%
Total			100.00%

Custodial Risk – For deposits, custodial credit risk is the risk that, in the event of the failure of a depository financial institution, the City will not be able to recover its deposits or will not be able to recover collateral securities that are in the possession of an outside party. For an investment, custodial credit risk is the risk that, in the event of the failure of the counterparty (e.g. broker-dealer), the City will not be able to recover the value of its investments or collateral securities that are in the possession of an outside party.

Concentration of credit risk – The investment policy of the City contains no limitations on the amount that can be invested in any one issuer beyond that stipulated by the California Government Code. There were no investments in any one issuer (other than mutual funds and external investment pools) that represent 5% or more of the City's investments.

Note 3 – Interfund Transactions

Due To/From

	Due From Other Funds	
Due To Other Funds	General Fund	Total
Governmental Funds:		
Nonmajor Funds	$ 50,460	$ 50,460
Total	$ 50,460	$ 50,460

Transfers

For the year ended June 30, 2017, the City had the following transfers:

	Transfers in					
Transfers out	General Fund	Nonmajor Governmental Funds	Water Fund	Harbor Fund	Internal Service Funds	Total
Governmental Funds:						
General Fund	$ -	$ 220,927	$ -	$ 399	$ 376,357	$ 597,683
Nonmajor Funds	366,000	56,465	-	2,228	-	424,693
Enterprise Funds:						
Water Fund	286,679	-	-	-	2,000	288,679
Sewer Fund	170,862	-	34,614	-	2,000	207,476
Harbor Fund	288,286	-	-	-	2,000	290,286
Local Transportation Fund	79,775	-	-	-	-	79,775
Total	$ 1,191,602	$ 277,392	$ 34,614	$ 2,627	$ 382,357	$ 1,888,592

In general, transfers are used to 1) use unrestricted revenues collected in one fund to finance various programs accounted for in other funds in accordance with budgetary authorizations, and 2) to reimburse the General Fund for administration services provided to other funds.

Note 4 – Notes Receivable

On September 30, 2016, the City sold a parcel of land to Morro Bay Ventures, Inc. The City opted to finance the sale as a seller financed sale. The transaction resulted in a note receivable agreement for the amount of $749,000. The interest on the note is 5% and the City will receive monthly payments consisting of interest only. The note matures at the earlier of October 6, 2019, or 30 days following the buyers receipt of all necessary and final land use entitlements. This note is long-term in nature and are recorded as notes receivable in the Statement of Net Position and the governmental Funds Balance Sheet in the governmental funds.

Note 5 – Investment in Joint Powers Agreement

On October 25, 1982, the City entered into Morro Bay/Cayucos Sanitary District Wastewater Treatment Plant Joint Powers Agreement (JPA) for the treatment of wastewater for the benefit of the government's residents and those of Cayucos, an unincorporated community in San Luis Obispo County. The contributions to the JPA were made by the Sewer Enterprise Fund in amount of $2,110,458.

Investment in joint powers agreement as of June 30, 2017 was $3,333.

Note 6 – Capital Assets

The following is a summary of changes in capital assets for the governmental activities for the year ended June 30, 2017:

	Balance July 1, 2016	Additions	Deletions	Reclassification	Balance June 30, 2017
Governmental Activities:					
Nondepreciable capital assets:					
Artwork	$ 63,000	$ -	$ -	$ -	$ 63,000
Land	95,440,286	-	(375,449)	1,853	95,066,690
Construction in progress	1,852	294,421	-	(1,853)	294,420
Total nondepreciable capital assets	95,505,138	294,421	(375,449)	-	95,424,110
Depreciable capital assets:					
Machinery & equipment	4,135,411	227,389	(60,191)	-	4,302,609
Buildings & structures	15,343,131	546,750	-	-	15,889,881
Infrastructure	27,565,758	120,522	-	-	27,686,280
Total depreciable capital assets	47,044,300	894,661	(60,191)	-	47,878,770
Less accumulated depreciation	(20,613,736)	(1,297,862)	60,191	-	(21,851,407)
Total depreciable assets, net	26,430,564	(403,201)	-	-	26,027,363
Governmental activities capital assets, net	$ 121,935,702	$ (108,780)	$ (375,449)	$ -	$ 121,451,473

Note 6 – Capital Assets (Continued)

The following is a summary of changes in capital assets for the business-type activities for the year ended June 30, 2017:

	Balance July 1, 2016	Additions	Deletions	Reclassification	Balance June 30, 2017
Business-Type Activities:					
Nondepreciable capital assets:					
Artwork	$ 2,800	$ -	$ -	$ -	$ 2,800
Land	1,495,855	-	-	-	1,495,855
Construction in progress	2,608,181	1,429,221	-	-	4,037,402
Total nondepreciable capital assets	4,106,836	1,429,221	-	-	5,536,057
Depreciable capital assets:					
Machinery & equipment	9,708,537	80,670	(66,592)	-	9,722,615
Buildings & structures	5,315,603	-	-	-	5,315,603
Infrastructure	30,207,253	-	-	-	30,207,253
Total depreciable capital assets	45,231,393	80,670	(66,592)	-	45,245,471
Less accumulated depreciation	(29,260,982)	(944,298)	66,592	-	(30,138,688)
Total depreciable assets, net	15,970,411	(863,628)	-	-	15,106,783
Business-type activities capital assets, net	$20,077,247	$ 565,593	$ -	$ -	$ 20,642,840

Depreciation expense was charged to governmental activities as follows:

Administration	$ 5,191
Police	109,020
Fire	543,025
Public Works	520,313
Recreation & Parks	120,313
Total depreciation expense, governmental activities	$ 1,297,862

Depreciation expense was charged to business-type activities as follows:

Water	$ 256,105
Sewer	476,471
Harbor	165,133
Transit	46,589
Total depreciation expense, business-type activities	$ 944,298

Note 7 – Long-term Liabilities

Summary of changes in long-term liabilities for the year ended June 30, 2017 is as follows:

	Balance July 1, 2016	Additions	Deletion	Balance June 30, 2017	Amounts due within one Year	Amounts due over a Year
Governmental Activities:						
Certificates payable	$ 1,386,000	$ -	$ (31,000)	$ 1,355,000	$ 33,000	$ 1,322,000
Claims payable	51,728	-	(51,728)	-	-	-
Notes Payable	-	546,750	-	546,750	27,682	519,068
Compensated absences	279,654	841,009	(475,710)	644,953	439,469	205,484
Other postemployment benefits	347,607	194,209	(59,727)	482,089	-	482,089
Pension related debt	974,151	58,304	(373,824)	658,631	385,039	273,592
	$ 3,039,140	$ 1,640,272	$ (991,989)	$ 3,687,423	$ 885,190	$ 2,802,233
Business-Type Activities:						
Notes Payable	$ 695,567	$ -	$ (103,559)	$ 592,008	$ 108,219	$ 483,789
Compensated absences	113,608	152,842	(109,610)	156,840	91,007	65,833
	$ 809,175	$ 152,842	$ (213,169)	$ 748,848	$ 199,226	$ 549,622

Pension-Related Debt

As of June 30, 2003, the California Public Employees' Retirement System ("CalPERS") implemented a risk pool for the City's multiple-employer public employee defined benefit pension plan. The City's Miscellaneous and Safety Plans converted from agent multiple-employer plans to cost-sharing multiple employer plans. In addition to the annual required contributions (see Note 7), the City is also required to make annual payments on a Side Fund, which was created when the City entered the risk pool to account for the difference between the funded status of the pool and the funded status of the City's plans. The responsibility for funding the Side Fund is specific to the City and is not shared by all employers in the risk pool. The annual payments on the Side Fund represent principal and interest payments on the pension-related debt, which are included in the retirement expenditures in the City's various functions.

The amount of pension-related debt outstanding at June 30, 2017 totaled $658,631, which includes $441,294 for the Safety Fire Plan and $217,337 for the Safety Police Plan.

Note 7 – Long-term Liabilities (Continued)

Certificates of Participation

On October 12, 2011, the City entered into an installment sale agreement with the Public Property Financing Corporation of California 2011 Fire Station Financing Project, Series A and B, Certificates of Participation (the "COP") for $1,500,000 and $300,000, respectively. The principal balance of Series A matures commencing from September 2012 to September 1, 2041, interest rates at 3.75%, payable on March 1 and September 1 of each year. Series B was fully paid as of June 30, 2016. Series A had an outstanding balance of $1,355,000 at June 30, 2017.

Year Ending	Certificate of participation		
June 30,	Principal	Interest	Total
2018	$ 33,000	$ 50,194	$ 83,194
2019	34,000	48,937	82,937
2020	35,000	47,644	82,644
2021	37,000	46,293	83,293
2022	38,000	44,888	82,888
2023-2027	215,000	201,319	416,319
2028-2032	260,000	156,937	416,937
2033-2037	318,000	102,938	420,938
2038-2042	385,000	37,638	422,638
	$ 1,355,000	$ 736,788	$ 2,091,788

State of California Energy Resources Conservation and Development Commission Loan Payable

Loan payable to the State of California, Energy Resources Conservation and Development Commission for the replacement of HVAC system Replacement pages for s and installation of solar panels on certain City buildings. Payable annually, beginning December 22, 2017, in the amount of $546,750, including interest at 1.0% annum.

Year Ending	Loan Payable		
June 30,	Principal	Interest	Total
2018	27,682	7,508	35,190
2019	30,073	5,115	35,188
2020	30,362	4,830	35,192
2021	30,679	4,510	35,189
2022	30,987	4,203	35,190
2023-2027	159,646	16,299	175,945
2028-2032	167,813	8,135	175,948
2033-2034	69,508	771	70,279
	$ 546,750	$ 51,371	$ 598,121

Note 7 – Long-term Liabilities (Continued)

Notes Payable

Note payable to the Department of Boating and Waterways for the construction of the T-Pier and other harbor improvements. Payable annually, beginning August 1, 1997, in the amount of $134,859, including interest at 4.7% annum.

Year Ending	Notes Payable		
June 30,	Principal	Interest	Total
2018	108,219	26,640	134,859
2019	113,088	21,771	134,859
2020	118,177	16,682	134,859
2021	123,496	11,363	134,859
2022	129,029	5,806	134,835
	$ 592,009	$ 82,262	$ 674,271

Note 8 – Defined Benefit Pension Plans

The following is a summary of changes in net pension liability, and the related deferred outflows and inflows of resources for the year ended June 30, 2017:

	Governmental Activities	Business-type Activities			Business Type Activities Total
		Water	Sewer	Harbor	
Deferred outflows of resources:					
Pension contribution made after measurement date:					
Miscellaneous	$ 583,718	$ 86,259	$ 194,603	$ 40,549	$ 321,411
Safety	1,014,679	-	-	199,633	199,633
Difference between expected and actual experience:					
Miscellaneous	14,294	2,112	4,765	993	7,870
Difference in projected and actual earnings on pension investments:					
Miscellaneous	913,053	134,926	304,398	63,428	502,752
Safety	1,573,937	-	-	309,664	309,664
Adjustment due to differences in proportions:					
Miscellaneous	207,104	30,605	69,046	14,387	114,038
Safety	195,493	-	-	38,462	38,462
Employer contributions in excess/(under) proportionated contributions:					
Safety	220,950	-	-	43,471	43,471
Total deferred outflows of resources	$ 4,723,228	$ 253,902	$ 572,812	$ 710,587	$ 1,537,301
Net pension liabilities:					
Miscellaneous	$ 7,559,254	$ 1,117,068	$ 2,520,142	$ 525,127	$ 4,162,337
Safety	8,371,948	-	-	1,647,138	1,647,138
Total net pension liabilities	$ 15,931,202	$ 1,117,068	$ 2,520,142	$ 2,172,265	$ 5,809,475
Deferred inflows of Resources:					
Changes of assumptions:					
Miscellaneous	$ 175,429	$ 25,924	$ 58,485	$ 12,187	$ 96,596
Safety	320,366	-	-	63,030	63,030
Difference between expected and actual experience:					
Safety	73,478	-	-	14,456	14,456
Employer contributions in excess/(under) proportionated contributions:					
Miscellaneous	303,370	44,830	101,139	21,075	167,044
Total deferred inflows of Resources	$ 872,643	$ 70,754	$ 159,624	$ 110,748	$ 341,126
Pension expenses:					
Miscellaneous	$ 1,391,581	$ 155,384	$ 69,103	$ 14,399	$ 238,886
Safety	492,330	-	-	96,863	96,863
	$ 1,883,911	$ 155,384	$ 69,103	$ 111,262	$ 335,749

Note 8 – Defined Benefit Pension Plans (Continued)

General Information about the Pension Plan

Plan Description

The City contributes to the California Public Employees' Retirement System ("CalPERS"), a cost-sharing multiple-employer defined benefit pension plan. CalPERS provides retirement and disability benefits, annual cost-of-living adjustments, and death benefits to plan members and beneficiaries. CalPERS acts as a common investment and administrative agent for participating public entities within the State of California. Benefit provisions and all other requirements are established by State statute and City ordinance. Copies of the CalPERS annual financial report may be obtained from their Executive Office located at 400 P Street, Sacramento, California 95814.

Employees Covered by Benefit Terms

At June 30, 2015, the following employees were covered by the benefit terms:

	Misc. Tier 1	Misc. Tier 2	Misc. PEPRA
Active employees	35	12	9
Transferred and terminated employees	33	1	1
Separated	31	2	1
Retired Employees and Beneficiaries	120	-	-
Total	219	15	11

	Plans		
	Police Tier 1	Police Tier 2	Police PEPRA
Active employees	10	9	3
Transferred and terminated employees	14	2	-
Separated	10	-	-
Retired Employees and Beneficiaries	41	-	-
Total	75	11	3

	Plans		
	Fire Tier 1	Fire Tier 2	Fire PEPRA
Active employees	8	2	2
Transferred and terminated employees	5	1	-
Separated	1	-	-
Retired Employees and Beneficiaries	20	-	-
Total	34	3	2

Note 8 – Defined Benefit Pension Plans (Continued)

General Information about the Pension Plan (Continued)

Benefit Provided

CalPERS provide retirement and disability benefits, annual cost-of-living adjustments, and death benefits to plan members and beneficiaries. Following are the benefit provisions for each plan:

- Fire Tier 1: 3% (at age 50) of the highest average final 12 months' compensation
- Fire Tier 2: 3% (at age 55) of the highest average final 36 months' compensation
- Police Tier 1: 3% (at age 50) of the highest average final 12 months' compensation
- Police Tier 2: 3% (at age 55) of the highest average final 36 months' compensation
- Miscellaneous Tier 1: 2-2.7% (at age 55) of the highest average final 12 months' compensation
- Miscellaneous Tier 2: 2% (at age 60) of the highest average final 36 months' compensation
- PEPRA Miscellaneous: 2% (at age 62) of the highest average final 36 months' compensation

Employees may retire from active service once they reach 50 years of age and have five years of CalPERS-credited service.

The City has contracted with CalPERS for pre-retirement death benefits, should an employee die while actively employed, subject to the employee's eligibility to retire. Eligibility is established when an employee reaches 50 years of age, and has a minimum of five years of CalPERS-credited service.

Upon the death of an eligible employee, beneficiary(ies) may choose to receive: 1) the City-contracted CalPERS retirement formula Option 2W, or 2) the basic death benefit (employee contributions plus interest) and one month's salary for each year of current services, up to six months' pay. With either choice, the City-contracted 4th Level 1959 Survivor Benefit, which provides additional allocations to spouses caring for unmarried children, under the age of 22, or incapacitated children, is provided.

If the employee dies prior to attaining retirement eligibility, beneficiary(ies) receive: 1) the lump sum basic death benefit (employee contributions plus interest) and one month's salary for each year of current services, up to six months' pay, and 2) the City-contracted 4th Level 1959 Survivor Benefit.

Upon the death of a retiree, a one-time lump sum payment of $500 will be made to the retirees designated survivor(s), or to the retiree's estate. Depending on the retirement option chosen, beneficiary(ies) may continue to receive lifetime benefits. The City does not contract for Survivor Continuance. Additionally, the City does not participate in Social Security retirement.

Contributions

Section 20814(c) of the California Public Employees' Retirement Law ("PERL") requires that the employer contribution rates for all public employers be determined on an annual basis by the actuary and shall be effective on the July 1 following notice of a change in the rate. The total plan contributions are determined through CalPERS' annual actuarial valuation process. The Public agency cost-sharing plans covered by either the Safety risk pools, the Plan's actuarially determined rate is based on the estimated amount necessary to pay the Plan's allocated share of the risk pool's costs of benefits earned by employees during the year, and any unfunded accrued liability. The employer is required to contribute the difference between the actuarially determined rate and the contribution rate of employees.

Note 8 – Defined Benefit Pension Plans (Continued)

General Information about the Pension Plan (Continued)

Contributions (Continued)

For the measurement period ended June 30, 2016 (the measurement date), the active employee contribution rates were as follows:

Plans	Active Employee Contribution Rate	Employer Contribution Rate
Misc. Tier 1	8.000%	28.775%
Misc. Tier 2	7.000%	7.159%
Misc. PEPRA	6.250%	6.616%
Fire Tier 1	9.000%	58.693%
Fire Tier 2	9.000%	16.656%
Fire PEPRA	11.500%	12.120%
Police Tier 1	9.000%	58.573%
Police Tier 2	9.000%	16.656%
Police PEPRA	11.500%	12.117%

Pension Liabilities, Pension Expenses, and Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pension

Actuarial Methods and Assumptions Used to Determine Total Pension Liability

For the measurement period ended June 30, 2016 (the measurement date), the total pension liability was determined by rolling forward the June 30, 2015 total pension liability. The June 30, 2016 total pension liabilities were based on the following actuarial methods and assumptions:

Actuarial Cost Method	Entry Age Normal
Actuarial Assumptions:	
Discount Rate	7.65%
Inflation	2.75%
Salary Increases	Varies by Entry Age and Service
Investment Rate of Return	7.65% Net of Pension Plan Investment; includes Inflation
Mortality Rate Table	Derived using CalPERS' Membership Data for all Funds.
Post Retirement Benefit Increase	Contract COLA up to 2.75% until Purchasing Power Protection Allowance Floor on Purchasing Power applies, 2.75% thereafter

Note 8 – Defined Benefit Pension Plans (Continued)

Pension Liabilities, Pension Expenses, and Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pension (Continued)

Actuarial Methods and Assumptions Used to Determine Total Pension Liability (Continued)

All other actuarial assumptions used in the June 30, 2015 valuation were based on the results of an actuarial experience study for the period from 1997 to 2011, including updates to salary increase, mortality and retirement rates. The Experience Study report can be obtained at CalPERS' website under Forms and Publications.

Change of Assumption

There were no changes in assumptions for the June 30, 2016 measurement date.

Discount Rate

The discount rate used to measure the total pension liability was 7.65 percent. To determine whether the municipal bond rate should be used in the calculation of a discount rate for each plan, CalPERS stress tested plans that would most likely result in a discount rate that would be different from the actuarially assumed discount rate. Based on the testing of the plans, the tests revealed the assets would not run out. Therefore, the current 7.65 percent discount rate is appropriate and the use of the municipal bond rate calculation is not deemed necessary. The long-term expected discount rate of 7.65 percent is applied to all plans in the Public Employees Retirement Fund. The stress test results are presented in a detailed report called "GASB Crossover Testing Report" that can be obtained at CalPERS' website under the GASB 68 section.

The long-term expected rate of return on pension plan investments was determined using a building-block method in which best-estimate ranges of expected future real rates of return (expected returns, net of pension plan investment expense and inflation) are developed for each major asset class.

In determining the long-term expected rate of return, staff took into account both short-term and long-term market return expectations as well as the expected pension fund (Public Employees' Retirement Fund) cash flows. Such cash flows were developed assuming that both members and employers will make their required contributions on time and as scheduled in all future years. Using historical returns of all the funds' asset classes, expected compound (geometric) returns were calculated over the short-term (first 10 years) and the long-term (11-60 years) using a building-block approach. Using the expected nominal returns for both short-term and long-term, the present value of benefits was calculated for each fund. The expected rate of return was set by calculating the single equivalent expected return that arrived at the same present value of benefits for cash flows as the one calculated using both short-term and long-term returns. The expected rate of return was then set equivalent to the single equivalent rate calculated above and rounded down to the nearest one quarter of one percent.

Note 8 – Defined Benefit Pension Plans (Continued)

Pension Liabilities, Pension Expenses, and Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pension (Continued)

Discount Rate (Continued)

The table below reflects long-term expected real rate of return by asset class. The rate of return was calculated using the capital market assumptions applied to determine the discount rate and asset allocation. The target allocation shown was adopted by the Board effective on July 1, 2015.

Asset Class	New Strategic Allocation	Real Return Years 1-10[1]	Real Return Years 11+[2]
Global Equity	51.00%	5.25%	5.71%
Global Fixed Income	20.00	0.99	2.43
Inflation Sensitive	6.00	0.45	3.36
Private Equity	10.00	6.83	6.95
Real Estate	10.00	4.50	5.13
Infrastructure and Forestland	2.00	4.50	5.09
Liquidity	1.00	-0.55	-1.05

[1]An expected inflation of 2.5% used for this period

[2]An expected inflatin of 3.0% used for this period.

Sensitivity of the City's Proportionate Share of the Net Pension Liability to Changes in the Discount Rate

The following presents the City's proportionate share of the net pension liability of the Plan as of the measurement date, calculated using the discount rate of 7.65%, as well as what the City's proportionate share of the net pension liability would be if it were calculated using a discount rate that is 1 percentage-point lower (6.65%) or 1 percentage-point higher (8.65%) than the current rate:

	Plan's Net Pension Liability/(Asset)		
	Discount Rate - 1% (6.65%)	Current Discount Rate (7.65%)	Discount Rate + 1% (8.65%)
Misc.	$ 18,261,931	$ 11,721,591	$ 6,316,325
Safety	$ 14,998,187	$ 10,019,086	$ 5,931,754

Note 8 – Defined Benefit Pension Plans (Continued)

Pension Liabilities, Pension Expenses, and Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pension (Continued)

Pension Plan Fiduciary Net Position

Detail information about the plan's fiduciary net position is available in the separately issued CalPERS financial report and can be obtained from CalPERS' website under Forms and Publications.

Proportionate Share of Net Pension Liability and Pension Expense

The following table shows the plan's proportionate share of the risk pool collective net pension liability over the measurement period:

	Increase (Decrease)		
	Plan Total Pension Liability	Plan Fiduciary Net Position	Plan Net Pension Liability/(Asset)
Misc.			
Balance at: 6/30/15 (Valuation date)	$ 41,904,645	$ 32,384,000	$ 9,520,645
Balance at: 6/30/16 (Measurement date)	43,468,490	31,746,899	11,721,591
Net Changes during 2015-2016	1,563,845	(637,101)	2,200,946
Safety			
Balance at: 6/30/15 (Valuation date)	$ 33,128,093	$ 24,842,681	$ 8,285,412
Balance at: 6/30/16 (Measurement date)	34,399,543	24,380,457	10,019,086
Net Changes during 2015-2016	1,271,450	(462,224)	1,733,674

Note 8 – Defined Benefit Pension Plans (Continued)

Pension Liabilities, Pension Expenses, and Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pension (Continued)

Proportionate Share of Net Pension Liability and Pension Expense (Continued)

The following is the approach established by the plan actuary to allocate the net pension liability and pension expense to the individual employers within the risk pool.

(1) In determining a cost-sharing plan's proportionate share, total amounts of liabilities and assets are first calculated for the risk pool as a whole on the valuation date (June 30, 2015). The risk pool's fiduciary net position ("FNP") subtracted from its total pension liability ("TPL") determines the net pension liability ("NPL") at the valuation date.

(2) Using standard actuarial roll forward methods, the risk pool TPL is then computed at the measurement date (June 30, 2016). Risk pool FNP at the measurement date is then subtracted from this number to compute the NPL for the risk pool at the measurement date. For purposes of FNP in this step and any later reference thereto, the risk pool's FNP at the measurement date denotes the aggregate risk pool's FNP at June 30, 2016 less the sum of all additional side fund (or unfunded liability) contributions made by all employers during the measurement period (2014-15).

(3) The individual plan's TPL, FNP and NPL are also calculated at the valuation date. TPL is allocated based on the rate plan's share of the actuarial accrued liability. FNP is allocated based on the rate plan's share of the market value assets.

(4) Two ratios are created by dividing the plan's individual TPL and FNP as of the valuation date from (3) by the amounts in step (1), the risk pool's total TPL and FNP, respectively.

(5) The plan's TPL as of the Measurement Date is equal to the risk pool TPL generated in (2) multiplied by the TPL ratio generated in (4). The plan's FNP as of the Measurement Date is equal to the FNP generated in (2) multiplied by the FNP ratio generated in (4) plus any additional side fund (or unfunded liability) contributions made by the employer on behalf of the plan during the measurement period.

(6) The plan's NPL at the Measurement Date is the difference between the TPL and FNP calculated in (5).

Deferred outflows of resources, deferred inflows of resources, and pension expense is allocate based on the City's share of contributions during measurement period.

The City's proportionate share of the net pension liability was as follows:

	Plans	
	Safety	Misc.
June 30, 2015	0.12071%	0.13871%
June 30, 2016	0.11579%	0.13546%
Change - Increase (Decrease)	-0.00492%	-0.00324%

Note 8 – Defined Benefit Pension Plans (Continued)

Pension Liabilities, Pension Expenses, and Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pension (Continued)

Proportionate Share of Net Pension Liability and Pension Expense (Continued)

For the year ended June 30, 2017, the City recognized pension expense as follows:

Misc.	$	238,886
Safety		96,863
	$	335,749

The amortization period differs depending on the source of the gain or loss. The difference between projected and actual earnings is amortized over 5-years straight line. All other amounts are amortized straight-line over the average expected remaining service lives of all members that are provided with benefits (active, inactive and retired) as of the beginning of the measurement period.

The expected average remaining service lifetime ("EARSL") is calculated by dividing the total future service years by the total number of plan participants (active, inactive, and retired) in the risk pool. The EARSL for risk pool for the 2015-16 measurement period is 3.7 years, which was obtained by dividing the total service years of 475,689 (the sum of remaining service lifetimes of the active employees) by 127,009 (the total number of participants: active, inactive, and retired).

At June 30, 2017, the City reported deferred outflows of resources and deferred inflows of resources related to pensions from the following sources:

	Misc.		Safety		Totals	
	Deferred outflows of Resources	Deferred inflows of Resources	Deferred outflows of Resources	Deferred inflows of Resources	Deferred outflows of Resources	Deferred inflows of Resources
Pension contribution after measurement date	$ 905,129	$ -	$ 1,214,312	$ -	$ 2,119,441	$ -
Changes of assumptions	-	(272,025)	-	(383,396)	-	(655,421)
Difference between expected and actual experience	22,164	-	-	(87,934)	22,164	(87,934)
Difference between projected and actual earning on pension plan investments	1,415,805	-	1,883,601	-	3,299,406	-
Adjustment due to differences in proportions	321,142	-	233,955	-	555,097	-
Difference between City contributions and proportionate share of contributions	-	(470,414)	264,421	-	264,421	(470,414)
Total	$ 2,664,240	$ (742,439)	$ 3,596,289	$ (471,330)	$ 6,260,529	$ (1,213,769)

Note 8 – Defined Benefit Pension Plans (Continued)

Pension Liabilities, Pension Expenses, and Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pension (Continued)

Proportionate Share of Net Pension Liability and Pension Expense (Continued)

Reported deferred outflows of resources related to pensions resulting from City's contributions subsequent to the measurement date will be recognized as a reduction of the net pension liability in the year ended June 30, 2018. Other amounts reported as deferred outflows of resources and deferred inflows of resources related to pensions will be recognized in pension expense as follows:

	Deferred Outflows/ (Inflows) of Resources		
Year Ended June 30,	Misc	Safety	Total
2018	$ 57,610	$ 273,905	$ 331,515
2019	40,801	256,016	296,817
2020	551,550	890,371	1,441,921
2021	366,711	490,355	857,066
2022	-	-	-
Thereafter	-	-	-
	$ 1,016,672	$ 1,910,647	$ 2,927,319

Note 9 –Other Postemployment Benefits Plan

Defined Benefit Plan

Plan Description

The City contributes to a multi-employer cost-sharing defined benefit plan to provide post-employment medical benefits. Specifically, the City provides postretirement medical benefits to all employees who retire from the City after attaining age 50 with at least 5 years of service. The plan does not provide a publicly available financial report.

Funding Policy

The contribution requirements of plan members and the City are established and may be amended by the City's City Council, and/or the employee associations. The required employer contribution was $128 per person for months in 2016 and $125 per person per month in 2017. Retirees pay the differential monthly amount of the premium, which varies depending on the health benefits they select. The City implemented GASB 45 for the fiscal year ended June 30, 2010, establishing a liability in its Risk Management Fund for the value of the annual required contribution (ARC), an amount actuarially determined in accordance with the parameters of GASB Statement 45. The ARC represents a level of funding that, if paid on an ongoing basis, is projected to cover normal cost each year and amortize any unfunded actuarial liabilities over a closed period not to exceed thirty years. The ARC and contribution total for year ended June 30, 2017 was $194,209 and $59,727, respectively.

Note 9 –Other Postemployment Benefits Plan (Continued)

Defined Benefit Plan (Continued)

Annual OPEB Cost and Net OPEB Asset

The City's annual OPEB cost is calculated based on the ARC. The ARC represents a level of funding that, if paid on an ongoing basis, is projected to cover normal cost each year and amortize any unfunded actuarial liabilities (or funding excesses) over a period not to exceed thirty years. The following table shows the components of the City's annual OPEB cost for the year, the amount actually contributed to the plan, and changes in the City's net OPEB Obligation:

Annual Required Contribution	$ 191,821
Interest Adjustment	25,201
Adjustment to Annual Required Contribution	(22,813)
Annual OPEB Cost	194,209
Contribution made	(59,727)
Change in Net OPEB Obligation	134,482
Net OPEB Obligation, Beginning of Year	347,607
Net OPEB Obligation, End of Year	$ 482,089

The City's annual OPEB cost, the percentage of annual OPEB cost contributed to the plan, and the net OPEB obligation for the year ended June 30, 2017 and the two preceding years were as follows:

Year Ended	OPEB Cost	OPEB Cost Contributed	Percentage of Annual OPEB cost Contributed	Net OPEB Obligation
June 30, 2015	$ 146,217	$ 49,658	33.96%	$ 206,590
June 30, 2016	193,497	52,480	27.12%	347,607
June 30, 2017	194,209	59,727	30.75%	482,089

Funded Status and Funding Progress

As of August 1, 2015, the latest actuarial valuation date, there were no plan assets on the valuation date. The actuarial accrued liability for benefits was $1,938,928, and the actuarial value of assets was $614,048, resulting in an unfunded actuarial accrued liability (UAAL) of $1,324,880. The covered payroll (annual payroll of active employees covered by the plan) was $6,509,854 and the ratio of the UAAL to the covered payroll was negative 20.35%.

Note 9 –Other Postemployment Benefits Plan (Continued)

Defined Benefit Plan (Continued)

Funded Status and Funding Progress (Continued)

Actuarial valuations of an ongoing plan involve estimates of the value of reported amounts and assumptions about the probability of occurrence of events far into the future. Examples include assumptions about future employment, mortality, and the healthcare cost trend. Amounts determined regarding the funded status of the plan and the annual required contributions of the City are subject to continual revision as actual results are compared with past expectations and new estimates are made about the future. The schedule of funding progress, presented as required supplementary information following the notes to the financial statements, presents multi-year trend information about whether the actuarial value of plan assets is increasing or decreasing over time relative to the actuarial accrued liability for benefits.

Actuarial Methods and Assumptions

Projections of benefits for financial reporting purposes are based on the substantive plan (the plan as understood by the employer and the plan members) and include the types of benefits provided at the time of each valuation and the historical pattern of sharing of benefit costs between the employer and the plan members at that point. The actuarial methods and assumptions used include techniques that are designed to reduce the effects of short-term volatility in actuarial accrued liabilities and the actuarial value of assets consistent with the long-term perspective of the calculations.

The required contribution for the year ended June 30, 2017 was determined as part of the August 1, 2015 actuarial valuation using the entry age normal actuarial cost method. The actuarial assumptions included a 4.5% investment rate of return (net of administrative expenses), payroll increase of 2.75% per annum, and inflation rate of 2.75% per annum, and the City's share of premium cost will increase at rates of 4% per annum. The level percentage of payroll method is used to allocate amortization cost by year, closed 30-year amortization period is used for the initial UAAL, and open 24-year amortization period is used for any residual UAAL.

Defined Contribution Plan

The City participates in a defined contribution benefit plan with Vantagecare RHS plan through ICMA-RC. The City has substantial control, meaning the City has authority to establish, amend, or terminate. All classes of full time employees are eligible to participate. During fiscal year ending June 30, 2017, there were 41 participants in the City's plan.

Note 10 – Liability, Workers' Compensation, and Purchased Insurance

A. Description of Self-Insurance Pool Pursuant to Joint Powers Agreement

The City of Morro Bay is a member of the CALIFORNIA JOINT POWERS INSURANCE AUTHORITY (Authority). The Authority is composed of 117 California public entities and is organized under a joint powers agreement pursuant to California Government Code §6500 et seq. The purpose of the Authority is to arrange and administer programs for the pooling of self-insured losses, to purchase excess insurance or reinsurance, and to arrange for group purchased insurance for property and other lines of coverage. The California JPIA began covering claims of its members in 1978. Each member government has an elected official as its representative on the Board of Directors. The Board operates through a nine-member Executive Committee.

Note 10 – Liability, Workers' Compensation, and Purchased Insurance (Continued)

B. Self-Insurance Programs of the CJPIA

Each member pays an annual contribution at the beginning of the coverage period. A retrospective adjustment is then conducted annually thereafter, for coverage years 2012-13 and prior. Coverage years 2013-14 and forward are not subject to routine annual retrospective adjustment. The total funding requirement for self-insurance programs is based on an actuarial analysis. Costs are allocated to individual agencies based on payroll and claims history, relative to other members of the risk-sharing pool.

Liability

Claims are pooled separately between police and general government exposures. (1) The payroll of each member is evaluated relative to the payroll of other members. A variable credibility factor is determined for each member, which establishes the weight applied to payroll and the weight applied to losses within the formula. (2) The first layer of losses includes incurred costs up to $30,000 for each occurrence and is evaluated as a percentage of the pool's total incurred costs within the first layer. (3) The second layer of losses includes incurred costs from $30,000 to $750,000 for each occurrence and is evaluated as a percentage of the pool's total incurred costs within the second layer. (4) Incurred costs from $750,000 to $50 million, are distributed based on the outcome of cost allocation within the first and second loss layers.

For 2016-17 the Authority's pooled retention is $2 million per occurrence, with reinsurance to $20 million, and excess insurance to $50 million. The Authority's reinsurance contracts are subject to the following additional pooled retentions: (a) $2.5 million annual aggregate deductible in the $3 million in excess of $2 million layer, and (b) $3 million annual aggregate deductible in the $5 million in excess of $10 million layer. There is a third annual aggregate deductible in the amount of $2.5 million in the $5 million in excess of $5 million layer, however it is fully covered under a separate policy and therefore not retained by the Authority. The overall coverage limit for each member, including all layers of coverage, is $50 million per occurrence. Costs of covered claims for subsidence losses have a sub-limit of $30 million per occurrence.

Workers' Compensation

Claims are pooled separately between public safety (police and fire) and general government exposures. (1) The payroll of each member is evaluated relative to the payroll of other members. A variable credibility factor is determined for each member, which establishes the weight applied to payroll and the weight applied to losses within the formula. (2) The first layer of losses includes incurred costs up to $50,000 for each occurrence and is evaluated as a percentage of the pool's total incurred costs within the first layer. (3) The second layer of losses includes incurred costs from $50,000 to $100,000 for each occurrence and is evaluated as a percentage of the pool's total incurred costs within the second layer. (4) Incurred costs from $100,000 to statutory limits are distributed based on the outcome of cost allocation within the first and second loss layers.

For 2016-17 the Authority's pooled retention is $2 million per occurrence, with reinsurance to statutory limits under California Workers' Compensation Law. Employer's Liability losses are pooled among members to $2 million. Coverage from $2 million to $5 million is purchased as part of a reinsurance policy, and Employer's Liability losses from $5 million to $10 million are pooled among members.

Note 10 – Liability, Workers' Compensation, and Purchased Insurance (Continued)

C. Purchased Insurance

Property Insurance

The City of Morro Bay participates in the all-risk property protection program of the Authority. This insurance protection is underwritten by several insurance companies. City of Morro Bay property is currently insured according to a schedule of covered property submitted by the City of Morro Bay to the Authority. City of Morro Bay property currently has all-risk property insurance protection in the amount of $95,122,372. There is a $5,000 deductible per occurrence except for non-emergency vehicle insurance which has a $2,500 deductible.

Earthquake and Flood Insurance

The City of Morro Bay purchases earthquake and flood insurance on a portion of its property. The earthquake insurance is part of the property protection insurance program of the Authority. City of Morro Bay property currently has earthquake protection in the amount of $50,661,461. There is a deductible of 5% per unit of value with a minimum deductible of $100,000.

Crime Insurance

The City of Morro Bay purchases crime insurance coverage in the amount of $1,000,000 with a $2,500 deductible. The fidelity coverage is provided through the Authority.

Special Event Tenant User Liability Insurance

The City of Morro Bay further protects against liability damages by requiring tenant users of certain property to purchase low-cost tenant user liability insurance for certain activities on agency property. The insurance premium is paid by the tenant user and is paid to the City of Morro Bay according to a schedule. The City of Morro Bay then pays for the insurance. The insurance is facilitated by the Authority.

D. Adequacy of Protection

During the past three fiscal years, none of the above programs of protection experienced settlements or judgments that exceeded pooled or insured coverage. There were also no significant reductions in pooled or insured liability coverage in 2016-17.

Note 11 – Lease Revenues

In September of 2008 the City entered into a lease agreement to lease the property located at 1700 Embarcadero. The lease term is from the commencement date, September 1, 2008 to August 30, 2028. In consideration for the lease the JPA between the City and District will received minimum annual lease payments of $175,000 that is payable in equal semiannual installments. The parties agreed that at the start of each fiscal year the annual minimum lease payments will be increased in direct proportion to any upward movement in the Consumer Price Index. These lease revenues are recorded in the General Fund of the City.

In January 2014 the City entered into a 49-year lease, terminating in 2062, for lease site 82-85. Annual minimum rent was originally set at $58,587. The lease agreement included a clause for the CPI adjustment of the annual minimum rent each July 1. Annual minimum rent for fiscal year 2018 is $118,434.

In January 1993 the City entered into a 40-year lease, terminating in 2032, for lease site 78-81. Annual minimum rent was originally set as $30,062 with a CPI adjustment every July 1 and an initial adjustment to six percent of the fair market value of the property during fiscal year 2014. Annual minimum rent for fiscal year 2018 is $125,942.

In January 2006 the City entered into a 46-year lease, terminating in 2052, for lease site 91-92. Annual minimum rent was originally set at $30,000 with a CPI adjustment every July 1. Annual minimum rent for fiscal year 2018 is $114,520.

In July 1998 the City entered into a 20-year lease, terminating in 2018, for lease site 122-123. Annual minimum rent was originally set at $30,000 with a CPI adjustment every July 1. In 2009 the City and tenant agreed to extend the lease until June 30, 2023. Annual minimum rent for fiscal year 2018 is $100,359.

All of the above leases are accounted for as operating leases by the City.

The future minimum rental revenues under these leases are as follows:

Year ending June 30,	Amounts
2018	$ 1,941,181
2019	1,843,151
2020	1,728,115
2021	1,692,148
2022	1,692,048
2023-2027	8,332,467
2028-2032	17,503,594
Total	$ 34,732,704

Note 12 – Classification of Fund Balances

At June 30, 2017, fund balances are classified in the governmental funds as follows:

	General Fund	Nonmajor Governmental Funds	Total
Nonspendable:			
Prepaid Items	$ 143,435	$ 4,262	$ 147,697
Notes Receivable	-	180,854	180,854
Land Held for Resale	3,062,282	-	3,062,282
	3,205,717	185,116	3,390,833
Restricted:			
Community Development Grants	-	822,011	822,011
Gas Tax	-	4,552	4,552
Tourism Business Improvement	-	276,735	276,735
Lower Cost Visitor Accommodations	-	53,611	53,611
Traffic Safety Grant	-	1,244	1,244
Special Safety Grants	-	62,695	62,695
Parking In-lieu	-	365,417	365,417
Non-Transit LTF - Bike Paths	-	11,959	11,959
Special Assessment Districts	-	71,379	71,379
Government Impact Fees	-	727,150	727,150
State Park Marina Grants	-	290,950	290,950
Affortable Housing	-	116,800	116,800
Cloister Special Assessment Districts	-	154,815	154,815
LTF Roads	-	21,524	21,524
District Transaction Tax	-	72,535	72,535
Park In-lieu (Quimby) Fees	-	9,925	9,925
Notes Receivable	749,000	-	749,000
	749,000	3,063,302	3,812,302
Committed:			
Facility Maintenance Fund	109,463	-	109,463
	109,463	-	109,463
Unassigned (deficit)	3,422,247	-	3,422,247
	$ 7,486,427	$ 3,248,418	$ 10,734,845

Note 13 – Commitments and Contingencies

A. Commitments

The City had several outstanding or planned constructions as of June 30, 2017. However, those constructions neither were contractual nor carried over in a budget. Open constructions are re-budgeted and adopted in a new fiscal year.

B. Contingencies

The City is subject to various legal matters incidental to the ordinary course of City operations. At this time, the outcome of these matters and the potential loss, if any, that might result are uncertain. No provision for any liability that may result has been made in the financial statements for these matters.

C. Grants

Amounts received or receivable from granting agencies are subject to audit and adjustment by grantor agencies. While no matters of noncompliance were disclosed by the audit of the financial statements or single audit of the Federal grant programs, grantor agencies may subject grant programs to additional compliance tests, which may result in disallowed costs. In the opinion of management, future disallowances of current or prior grant expenditures, if any, would not have a material adverse effect on the financial position of the City.

Note 14 – Other Required Disclosure

Excess of Expenditures over Appropriations

Excess of expenditures over appropriations occurred in individual funds during the year ended June 30, 2017 as follows:

	Expenditures	Appropriations	Expenditure in Excess of Appropriations
General Fund			
Administration	$ 1,772,946	$ 1,554,486	$ (218,460)
Finance	990,770	972,951	(17,819)
Fire	2,953,994	2,730,774	(223,220)
Public works	2,567,082	2,380,068	(187,014)
Capital outlay	653,137	637,500	(15,637)
Nonmajor Special Revenue Funds:			
Special Safety Grant			
Police	99,084	50,086	(48,998)
Capital outlay	85,382	49,914	(35,468)
Parking In-Lieu			
Police	13,246	-	(13,246)
District Transaction Tax			
Fire	160,149	155,179	(4,970)
Public works	1,132,607	1,062,777	(69,830)
Nonmajor Capital Projects Funds:			
Capital Improvement Capital Projects			
Community promotion	259,048	200,000	(59,048)
Public works	6,389	-	(6,389)

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REQUIRED SUPPLEMENTARY INFORMATION (UNAUDITED)

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City of Morro Bay
Required Supplementary Information (Unaudited)
For the Year Ended June 30, 2017

Budgetary Information

Budgets are annually adopted for all governmental and proprietary fund types on a basis consistent with generally accepted accounting principles. The City is required by its municipal code to adopt an annual budget on or before June 30 for the ensuing fiscal year. From the effective date of the budget, the amounts become the "*annual appropriated budget*."

The appropriated budget is prepared by fund, department and division. The City Council may amend the budget by motion during the fiscal year. Expenditures may not legally exceed appropriations at the fund level. The City Manager is authorized to transfer budgeted amounts between departments within the same fund; however, any transfers between funds or revisions that alter total appropriations of any fund require City Council approval. The legal level of control is therefore at the fund level.

Supplemental appropriations, which increase appropriations, were made during the fiscal year, therefore, "final" budgeted revenue and appropriation amounts shown in the financial statements represent the original budget, modified for adjustments during the year. Appropriations lapse at the end of the fiscal year.

Encumbrances - Under encumbrance accounting, purchase orders, contracts and other commitments for expenditures are recorded to reserve that portion of the applicable appropriation. Encumbrance accounting is employed as an extension of formal budgetary accounting. Unexpended appropriations lapse at year-end.

No budgets were adopted for the Lower Cost Visitor Accommodation, Parking In-Lieu and Park Fees Special Revenue Funds.

City of Morro Bay
Required Supplementary Information (Unaudited) (Continued)
For the Year Ended June 30, 2017

Budgetary Comparison Schedule - General Fund

	Budgeted Amounts		Actual	Variance with Final Budget Positive
	Original	Final	Amounts	(Negative)
Revenues:				
Taxes & special assessments	$ 9,446,898	$ 9,631,004	$ 9,833,253	$ 202,249
Intergovernmental revenue	39,990	39,990	37,147	(2,843)
Charges for services	2,171,973	2,343,822	2,230,713	(113,109)
Revenues from use of money and property	20,000	20,000	80,926	60,926
Fines & forfeits	5,800	5,800	10,292	4,492
Other revenues	344,035	911,535	248,245	(663,290)
Total Revenues	12,028,696	12,952,151	12,440,576	(511,575)
Expenditures:				
Current:				
Administration	1,529,486	1,554,486	1,772,946	(218,460)
Community promotion	989,173	989,173	809,549	179,624
Finance	846,911	972,951	990,770	(17,819)
Fire	2,558,925	2,730,774	2,953,994	(223,220)
Police	3,135,986	3,135,986	3,094,037	41,949
Public works	2,305,068	2,380,068	2,567,082	(187,014)
Recreation/parks/maintenance	1,156,351	1,156,351	1,093,166	63,185
Capital outlay	70,000	637,500	653,137	(15,637)
Interest	225	225	225	-
Total Expenditures	12,592,125	13,557,514	13,934,906	(377,392)
Excess(deficiency) of revenues over expenditures	(563,429)	(605,363)	(1,494,330)	(888,967)
Other Financing Sources (Uses):				
Sale of property	-	-	749,000	749,000
Loan proceeds	-	-	547,463	547,463
Transfers in	1,497,537	2,219,643	1,191,602	(1,028,041)
Transfers out	(736,357)	(1,253,463)	(597,683)	655,780
Total Other Financing Sources (Uses):	761,180	966,180	1,890,382	924,202
Net change in Fund Balance	$ 197,751	$ 360,817	396,052	$ 35,235
Fund Balances, July 1			7,090,375	
Fund Balances, June 30			$ 7,486,427	

City of Morro Bay
Required Supplementary Information (Unaudited) (Continued)
For the Year Ended June 30, 2017

Schedule of the City's Proportionate Share of the Net Pension Liabilities and Related Ratios

Last Ten Fiscal Years

California Public Employees' Retirement System ("CalPERS") Safety Plan

Measurement Date	June 30, 2016	June 30, 2015[1]
City's Proportion of the Net Pension Liability/(Asset)	0.11579%	0.12071%
City's Proportionate Share of the Net Pension Liability/(Asset)	$ 10,019,086	$ 8,285,412
City's Covered Payroll	$ 2,797,071	$ 2,715,263
City's Proportionate Share of the Net Pension Liability/(Asset) as a Percentage of its Covered Payroll	358.20%	305.14%
Plan's Proportionate Share of the Fiduciary Net Position as a Percentage of the Total Pension Liability	70.87%	74.99%

California Public Employees' Retirement System ("CalPERS") Miscellaneous Plan

Measurement Date	June 30, 2016	June 30, 2015[1]
City's Proportion of the Net Pension Liability/(Asset)	0.13546%	0.13871%
City's Proportionate Share of the net Pension Liability/(Asset)	$ 11,721,591	$ 9,520,645
City's Covered Payroll	$ 3,689,974	$ 3,632,297
City's Proportionate Share of the Net Pension Liability/(Asset) as a Percentage of its Covered Payroll	317.66%	262.11%
Plan's Proportionate Share of the Fiduciary Net Position as a Percentage of the Total Pension Liability	73.03%	77.28%

[1] Historical information is presented only for measurement periods for which GASB 68 is applicable.

Notes to Schedule

Changes of Assumptions: Discount rate was changed from 7.50% to 7.65% for the June 30, 2015 measurement date.

City of Morro Bay
Required Supplementary Information (Unaudited) (Continued)
For the Year Ended June 30, 2017

Schedule of the City's Contributions

Last Ten Fiscal Years

California Public Employees' Retirement System ("CalPERS") Safety Plan

	2016-17	2015-16	2014-15[1]
Actuarially Determined Contribution	$ 501,801	$ 464,239	$ 914,780
Contribution in Relation to the Actuarially Determined Contribution	(1,214,312)	(1,116,271)	(914,780)
Contribution Deficiency (Excess)	$ (712,511)	$ (652,032)	$ -
Covered Payroll	$ 2,880,623	$ 2,796,721	$ 2,715,263
Contributions as a Percentage of Covered Payroll	17.42%	16.60%	33.69%

California Public Employees' Retirement System ("CalPERS") Miscellaneous Plan

	2016-17	2015-16	2014-15[1]
Actuarially Determined Contribution	$ 414,186	$ 345,848	$ 771,191
Contribution in Relation to the Actuarially Determined Contribution	(905,129)	(804,512)	(771,191)
Contribution Deficiency (Excess)	$ (490,943)	$ (458,664)	$ -
Covered Payroll	$ 3,853,504	$ 3,741,266	$ 3,632,297
Contributions as a Percentage of Covered Payroll	10.75%	9.24%	21.23%

[1] Historical information is presented only for measurement periods for which GASB 68 is applicable.

Notes to Schedule

Changes of Assumptions: Discount rate was changed from 7.50% to 7.65% for the June 30, 2015 measurement date.

Schedule of Funding Progress – Other Postemployment Benefits Plan

The schedule of funding progress for the past two available actuarial valuations is presented below:

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (b)	Unfunded AAL (UAAL) [(b) - (a)]	Funded Ratio [(a) / (b)]	Covered Payroll (c)	UAAL as a % of Covered Payroll [(b) - (a)] / (c)
August 1, 2010	$ -	$ 1,272,897	$ 1,272,897	0.00%	$ 6,609,575	19.26%
August 1, 2012	326,933	1,616,609	1,289,676	20.2%	6,154,925	20.95%
August 1, 2015	614,048	1,938,928	1,324,880	31.7%	6,347,560	20.87%

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SUPPLEMENTARY INFORMATION

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NONMAJOR SPECIAL REVENUE FUNDS

Morro Bay Tourism Business Improvement District (MBTBID) Special Revenue Fund - to account for the marketing activities of the MBTBID and the Visitors Center.

Gas Tax Special Revenue Fund - to account for monies received from gasoline taxes.

Lower Cost Visitor Accommodation Special Revenue Fund – to accounts for collections in-lieu mitigation fees for lower cost visitor serving overnight accommodations, such as hostels and tent campground units, as required by California Coastal Commission actions on coastal development permits.

Traffic Safety Grant Special Revenue Fund – to account for fines and forfeitures collected from any person charged with a misdemeanor.

Special Safety Grant Special Revenue Fund – To account for the Supplemental Law Enforcement Services Fund (SLESF) grant.

Parking In-Lieu Special Revenue Fund – To account for in-lieu fees charged for parking spaces required to adequately service a new business establishment, or the expansion of an existing one.

Bike Path Special Revenue Fund – To account for two percent of Transportation Development Act funds received by the City that are specifically set aside for bike path.

Special Assessment District Special Revenue Fund – to account for parcel assessments and expenditures associated with certain housing developments within the City limits.

Governmental Impact Fees Special Revenue Fund – to account for fees collected to ensure that new development pays the cost of infrastructure expansion required to meet the needs of that new development, effectively transferring the cost burden of growth from the existing rate and taxpayers.

State Park Marina Special Revenue Fund – To account for marina concessions revenues that are received for the planning and environmental review of the proposed dredging and renovation of the State Park Marina.

Affordable Housing In-lieu Special Revenue Fund – To account for collection of impact fees for affordable housing.

Cloisters Special Assessment District Special Revenue Fund – To account for parcel assessments and expenditures associated with the Cloisters housing developments within the City limits.

Local Transportation Funds ("LTF") Roads Special Revenue Fund – To account for Transportation Development Act (TDA) money for roads projects, under TDA Article 8, 99400(a)).

Park Fees Special Revenue Fund – To account for special revenue fees collected under the 1975 Quimby Act (California Government Code §66477).

District Transaction Tax Special Revenue Fund – To account for ½ cent district sales tax, commonly known as “Measure Q”.

Community Development Grants Special Revenue Fund – To account for financial resources to be used for offering low or no interest-bearing loans to income-qualifies homeowners for the acquisition or rehabilitation of owner-occupied site built or manufactured homes.

Capital Improvement Capital Projects Fund - To account for financial resources to be solely used for the construction of capital assets.

City of Morro Bay
Combining Balance Sheet
Nonmajor Governmental Funds
June 30, 2017

	Special Revenue Funds			
	MB Tourism Business Improvement District	Gas Tax	Lower Cost Visitor Accommodation	Traffic Safety Grant
ASSETS				
Cash and cash equivalents	$ 283,001	$ -	$ 53,611	$ -
Receivables:				
Intergovernmental	-	4,552	-	1,244
Accounts	87,542	-	-	-
Notes	-	-	-	-
Prepaid items	2,292	-	-	-
Total Assets	$ 372,835	$ 4,552	$ 53,611	$ 1,244
LIABILITIES AND FUND BALANCES				
Liabilities:				
Accounts payable	$ 82,162	$ -	$ -	$ -
Accrued payroll and benefits	11,646	-	-	-
Due to other funds	-	-	-	-
Unearned revenue	-	-	-	-
Total Liabilities	93,808	-	-	-
Fund Balances:				
Nonspendable	2,292	-	-	-
Restricted	276,735	4,552	53,611	1,244
Total Fund Balances	279,027	4,552	53,611	1,244
Total Liabilities & Fund Balances	$ 372,835	$ 4,552	$ 53,611	$ 1,244

City of Morro Bay
Combining Balance Sheet (Continued)
Nonmajor Governmental Funds
June 30, 2017

	Special Revenue Funds			
	Special Safety Grant	Parking In-Lieu	Bike Path	Special Assessments District
ASSETS				
Cash and cash equivalents	$ 63,713	$ 354,235	$ 11,959	$ 72,104
Receivables:				
Intergovernmental	-	-	-	-
Accounts	-	-	-	-
Notes	-	11,182	-	-
Prepaid items	-	-	-	3
Total Assets	$ 63,713	$ 365,417	$ 11,959	$ 72,107
LIABILITIES AND FUND BALANCES				
Liabilities:				
Accounts payable	$ 648	$ -	$ -	$ 671
Accrued payroll and benefits	370	-	-	54
Due to other funds	-	-	-	-
Unearned revenue	-	-	-	-
Total Liabilities	1,018	-	-	725
Fund Balances:				
Nonspendable	-	-	-	3
Restricted	62,695	365,417	11,959	71,379
Total Fund Balances	62,695	365,417	11,959	71,382
Total Liabilities & Fund Balances	$ 63,713	$ 365,417	$ 11,959	$ 72,107

City of Morro Bay
Combining Balance Sheet (Continued)
Nonmajor Governmental Funds
June 30, 2017

	Special Revenue Funds			
	Governmental Impact Fees	State Park Marina	Affordable Housing In-Lieu	Cloisters Special Assessments District
ASSETS				
Cash and cash equivalents	$ 727,360	$ 282,979	$ 116,800	$ 159,971
Receivables:				
Intergovernmental	-	-	-	1,243
Accounts	-	7,971	-	-
Notes	-	-	-	-
Prepaid items	-	-	-	945
Total Assets	$ 727,360	$ 290,950	$ 116,800	$ 162,159
LIABILITIES AND FUND BALANCES				
Liabilities:				
Accounts payable	$ 210	$ -	$ -	$ 4,372
Accrued payroll and benefits	-	-	-	2,027
Due to other funds	-	-	-	-
Unearned revenue	-	-	-	-
Total Liabilities	210	-	-	6,399
Fund Balances:				
Nonspendable	-	-	-	945
Restricted	727,150	290,950	116,800	154,815
Total Fund Balances	727,150	290,950	116,800	155,760
Total Liabilities & Fund Balances	$ 727,360	$ 290,950	$ 116,800	$ 162,159

City of Morro Bay
Combining Balance Sheet (Continued)
Nonmajor Governmental Funds
June 30, 2017

	Special Revenue Funds			
	LTF Roads	Park Fees	District Transaction Tax	Community Development Grants
ASSETS				
Cash and cash equivalents	$ 21,524	$ 9,925	$ -	$ 168,838
Receivables:				
Intergovernmental	-	-	185,786	5,514
Accounts	-	-	-	-
Notes	-	-	-	829,734
Prepaid items	-	-	1,022	63
Total Assets	$ 21,524	$ 9,925	$ 186,808	$ 1,004,149
LIABILITIES AND FUND BALANCES				
Liabilities:				
Accounts payable	$ -	$ -	$ 60,565	$ 1,083
Accrued payroll and benefits	-	-	2,226	201
Due to other funds	-	-	50,460	-
Unearned revenue	-	-	-	-
Total Liabilities	-	-	113,251	1,284
Fund Balances:				
Nonspendable	-	-	1,022	180,854
Restricted	21,524	9,925	72,535	822,011
Total Fund Balances	21,524	9,925	73,557	1,002,865
Total Liabilities & Fund Balances	$ 21,524	$ 9,925	$ 186,808	$ 1,004,149

City of Morro Bay
Combining Balance Sheet (Continued)
Nonmajor Governmental Funds
June 30, 2017

	Capital Projects	
	Capital Improvement Capital Projects	Total Nonmajor Governmental Funds
ASSETS		
Cash and cash equivalents	$ 198,186	$ 2,524,206
Receivables:		
Intergovernmental	155,279	353,618
Accounts	-	95,513
Notes	-	840,916
Prepaid items	-	4,325
Total Assets	$ 353,465	$ 3,818,578
LIABILITIES AND FUND BALANCES		
Liabilities:		
Accounts payable	$ 140,043	$ 289,754
Accrued payroll and benefits	198	16,722
Due to other funds	-	50,460
Unearned revenue	213,224	213,224
Total Liabilities	353,465	570,160
Fund Balances:		
Nonspendable	-	185,116
Restricted	-	3,063,302
Total Fund Balances	-	3,248,418
Total Liabilities & Fund Balances	$ 353,465	$ 3,818,578

City of Morro Bay
Combining Statement of Revenues, Expenditures, and Changes in Fund Balances
Nonmajor Governmental Funds
For the Year Ended June 30, 2017

	Special Revenue Funds			
	MB Tourism Business Improvement District	Gas Tax	Lower Cost Visitor Accommodation	Traffic Safety Grant
REVENUES:				
Taxes and special assessments	$ 802,468	$ -	$ -	$ -
Intergovernmental revenues	-	217,657	-	-
Charges for services	300	-	-	-
Revenue from use of money and property	1,722	-	385	-
Fines and forfeitures	-	-	-	10,042
Other revenues	71,225	-	-	-
Total revenues	875,715	217,657	385	10,042
EXPENDITURES:				
Current:				
Community promotion	901,484	-	-	-
Fire	-	-	-	-
Housing	-	-	-	-
Police	-	-	-	-
Public works	-	-	-	-
Recreation and parks	-	-	-	-
Capital outlay	-	-	-	-
Debt service:				
Principal	-	-	-	-
Interest	-	-	-	-
Total expenditures	901,484	-	-	-
REVENUE OVER (UNDER) EXPENDITURES	(25,769)	217,657	385	10,042
OTHER FINANCING SOURCES (USES):				
Transfers in	60,000	-	-	-
Transfers out	(15,957)	(217,657)	-	(10,192)
Total Other Financing Sources (Uses)	44,043	(217,657)	-	(10,192)
NET CHANGE IN FUND BALANCES	18,274	-	385	(150)
FUND BALANCES:				
Beginning of Year	260,753	4,552	53,226	1,394
End of Year	$ 279,027	$ 4,552	$ 53,611	$ 1,244

City of Morro Bay
Combining Statement of Revenues, Expenditures, and Changes in Fund Balances (Continued)
Nonmajor Governmental Funds
For the Year Ended June 30, 2017

	Special Revenue Funds			
	Special Safety Grant	Parking In-Lieu	Bike Path	Special Assessments District
REVENUES:				
Taxes and special assessments	$ -	$ -	$ -	$ 8,477
Intergovernmental revenues	129,324	-	7,858	-
Charges for services	-	52,500	-	-
Revenue from use of money and property	627	3,040	59	-
Fines and forfeitures	-	-	-	-
Other revenues	-	-	-	
Total revenues	129,951	55,540	7,917	8,477
EXPENDITURES:				
Current:				
Community promotion	-	-	-	-
Fire	-	-	-	-
Housing	-	-	-	-
Police	99,084	13,246	-	-
Public works	-	-	-	-
Recreation and parks	-	-	-	4,295
Capital outlay	85,382	-	-	-
Debt service:				
Principal	-	-	-	-
Interest	-	-	-	-
Total expenditures	184,466	13,246	-	4,295
REVENUE OVER (UNDER) EXPENDITURES	(54,515)	42,294	7,917	4,182
OTHER FINANCING SOURCES (USES):				
Transfers in	-	2,845	-	-
Transfers out	-	-	-	-
Total Other Financing Sources (Uses)	-	2,845	-	-
NET CHANGE IN FUND BALANCES	(54,515)	45,139	7,917	4,182
FUND BALANCES:				
Beginning of Year	117,210	320,278	4,042	67,200
End of Year	$ 62,695	$ 365,417	$ 11,959	$ 71,382

City of Morro Bay
Combining Statement of Revenues, Expenditures, and Changes in Fund Balances (Continued)
Nonmajor Governmental Funds
For the Year Ended June 30, 2017

	Special Revenue Funds			
	Governmental Impact Fees	State Park Marina	Affordable Housing In-Lieu	Cloister Special Assessments District
REVENUES:				
Taxes and special assessments	$ -	$ -	$ -	$ 148,865
Intergovernmental revenues	-	-	-	-
Charges for services	187,772	-	12,862	-
Revenue from use of money and property	4,736	84,982	777	971
Fines and forfeitures	-	-	-	-
Other revenues	-	-	-	-
Total revenues	192,508	84,982	13,639	149,836
EXPENDITURES:				
Current:				
Community promotion	-	-	-	-
Fire	-	-	-	-
Housing	-	-	5,000	-
Police	-	-	-	-
Public works	-	3,269	-	-
Recreation and parks	-	-	-	75,716
Capital outlay	-	-	-	-
Debt service:				
Principal	-	-	-	-
Interest	-	-	-	-
Total expenditures	-	3,269	5,000	75,716
REVENUE OVER (UNDER) EXPENDITURES	192,508	81,713	8,639	74,120
OTHER FINANCING SOURCES (USES):				
Transfers in	8,561	-	-	-
Transfers out	(45,059)	-	-	-
Total Other Financing Sources (Uses)	(36,498)	-	-	-
NET CHANGE IN FUND BALANCES	156,010	81,713	8,639	74,120
FUND BALANCES:				
Beginning of Year	571,140	209,237	108,161	81,640
End of Year	$ 727,150	$ 290,950	$ 116,800	$ 155,760

City of Morro Bay
Combining Statement of Revenues, Expenditures, and Changes in Fund Balances (Continued)
Nonmajor Governmental Funds
For the Year Ended June 30, 2017

	Special Revenue Funds			
	LTF Roads	Park Fees	District Transaction Tax	Community Development Grants
REVENUES:				
Taxes and special assessments	$ -	$ -	$ 1,077,488	$ -
Intergovernmental revenues	-	-	38,424	5,514
Charges for services	-	-	400	675
Revenue from use of money and property	148	70	1,701	2,841
Fines and forfeitures	-	-	-	-
Other revenues	-	-	-	-
Total revenues	148	70	1,118,013	9,030
EXPENDITURES:				
Current:				
Community promotion	-	-	-	-
Fire	-	-	160,149	-
Housing	-	-	-	7,529
Police	-	-	72,225	-
Public works	-	-	1,132,607	-
Recreation and parks	-	-	-	-
Capital outlay	-	-	-	-
Debt service:				
Principal	-	-	31,000	-
Interest	-	-	51,394	-
Total expenditures	-	-	1,447,375	7,529
REVENUE OVER (UNDER) EXPENDITURES	148	70	(329,362)	1,501
OTHER FINANCING SOURCES (USES):				
Transfers in	-	-	-	-
Transfers out	-	-	(97,194)	-
Total Other Financing Sources (Uses)	-	-	(97,194)	-
NET CHANGE IN FUND BALANCES	148	70	(426,556)	1,501
FUND BALANCES:				
Beginning of Year	21,376	9,855	500,113	1,001,364
End of Year	$ 21,524	$ 9,925	$ 73,557	$ 1,002,865

City of Morro Bay
Combining Statement of Revenues, Expenditures, and Changes in Fund Balances (Continued)
Nonmajor Governmental Funds
For the Year Ended June 30, 2017

	Capital Projects	
	Capital Improvement Capital Projects	Total Nonmajor Governmental Funds
REVENUES:		
Taxes and special assessments	$ -	$ 2,037,298
Intergovernmental revenues	263,847	662,624
Charges for services	-	254,509
Revenue from use of money and property	-	102,059
Fines and forfeitures	-	10,042
Other revenues	284,801	356,026
Total revenues	548,648	3,422,558
EXPENDITURES:		
Current:		
Community promotion	259,048	1,160,532
Fire	-	160,149
Housing	-	12,529
Police	-	184,555
Public works	6,389	1,142,265
Recreation and parks	-	80,011
Capital outlay	450,563	535,945
Debt service:		
Principal	-	31,000
Interest	-	51,394
Total expenditures	716,000	3,358,380
REVENUE OVER (UNDER) EXPENDITURES	(167,352)	64,178
OTHER FINANCING SOURCES (USES):		
Transfers in	205,986	277,392
Transfers out	(38,634)	(424,693)
Total Other Financing Sources (Uses)	167,352	(147,301)
NET CHANGE IN FUND BALANCES	-	(83,123)
FUND BALANCES:		
Beginning of Year	-	3,331,541
End of Year	$ -	$ 3,248,418

City of Morro Bay
Schedule of Revenues, Expenditures, and Changes in Fund Balance - Budget and Actual
MB Tourism Business Improvement District Special Revenue Fund
For the Year Ended June 30, 2017

	Budgeted Amounts		Actual	Variance with Final Budget Positive
	Original	Final	Amounts	(Negative)
Revenues:				
Taxes and special assessments	$ 831,606	$ 864,606	$ 802,468	$ (62,138)
Charges for services	20,000	20,000	300	(19,700)
Revenues from use of money and property	-	-	1,722	1,722
Other revenues	-	-	71,225	71,225
Total revenues	851,606	884,606	875,715	(8,891)
Expenditures:				
Current:				
Community Promotion	892,974	925,974	901,484	24,490
Total expenditures	892,974	925,974	901,484	24,490
Excess of Revenues Over (Under) Expenditures	(41,368)	(41,368)	(25,769)	15,599
Other Financing Sources (Uses):				
Transfers in	60,000	60,000	60,000	-
Transfers out	(18,632)	(18,632)	(15,957)	2,675
Total Other Financing Sources	41,368	41,368	44,043	2,675
Net change in fund balances	$ -	$ -	18,274	$ 18,274
FUND BALANCES:				
Beginning of Year			260,753	
End of Year			$ 279,027	

City of Morro Bay
Schedule of Revenues, Expenditures, and Changes in Fund Balance - Budget and Actual
Gas Tax Special Revenue Fund
For the Year Ended June 30, 2017

	Budgeted Amounts		Actual	Variance with Final Budget Positive
	Original	Final	Amounts	(Negative)
Revenues:				
Intergovernmental revenues	$ 237,562	$ 237,562	$ 217,657	$ (19,905)
Total revenues	237,562	237,562	217,657	(19,905)
Other Financing Sources (Uses):				
Transfers out	(237,562)	(237,562)	(217,657)	19,905
Total Other Financing Sources (Uses)	(237,562)	(237,562)	(217,657)	19,905
Net change in fund balances	$ -	$ -	-	$ -
FUND BALANCES:				
Beginning of Year			4,552	
End of Year			$ 4,552	

City of Morro Bay
Schedule of Revenues, Expenditures, and Changes in Fund Balance - Budget and Actual
Traffic Safety Grant Special Revenue Fund
For the Year Ended June 30, 2017

	Budgeted Amounts		Actual	Variance with Final Budget Positive
	Original	Final	Amounts	(Negative)
Revenues:				
Fines and forfeitures	$ 13,000	$ 13,000	$ 10,042	$ (2,958)
Total revenues	13,000	13,000	10,042	(2,958)
Other Financing Sources (Uses):				
Transfers out	(13,000)	(13,000)	(10,192)	2,808
Total Other Financing Sources (Uses)	(13,000)	(13,000)	(10,192)	2,808
Net change in fund balances	$ -	$ -	(150)	$ (150)
FUND BALANCES:				
Beginning of Year			1,394	
End of Year			$ 1,244	

City of Morro Bay
Schedule of Revenues, Expenditures, and Changes in Fund Balance - Budget and Actual
Special Safety Grant Special Revenue Fund
For the Year Ended June 30, 2017

	Budgeted Amounts		Actual	Variance with Final Budget Positive
	Original	Final	Amounts	(Negative)
Revenues:				
Intergovernmental revenues	$ 100,000	$ 100,000	$ 129,324	$ 29,324
Revenues from use of money and property	-	-	627	627
Total revenues	100,000	100,000	129,951	29,951
Expenditures:				
Current:				
Police	50,086	50,086	99,084	(48,998)
Capital Outlay	49,914	49,914	85,382	(35,468)
Total expenditures	100,000	100,000	184,466	(84,466)
Net change in fund balances	$ -	$ -	(54,515)	$ (54,515)
FUND BALANCES:				
Beginning of Year			117,210	
End of Year			$ 62,695	

City of Morro Bay
Schedule of Revenues, Expenditures, and Changes in Fund Balance - Budget and Actual
Bike Path Special Revenue Fund
For the Year Ended June 30, 2017

	Budgeted Amounts		Actual	Variance with Final Budget Positive
	Original	Final	Amounts	(Negative)
Revenues:				
Intergovernmental revenues	$ 7,858	$ 7,858	$ 7,858	$ -
Revenues from use of money and property	-	-	59	59
Total revenues	7,858	7,858	7,917	59
Expenditures:				
Current:				
Public works	15,000	15,000	-	15,000
Total expenditures	15,000	15,000	-	15,000
Net change in fund balances	$ (7,142)	$ (7,142)	7,917	$ 15,059
FUND BALANCES:				
Beginning of Year			4,042	
End of Year			$ 11,959	

City of Morro Bay
Schedule of Revenues, Expenditures, and Changes in Fund Balance - Budget and Actual
Special Assessments Special Revenue Fund
For the Year Ended June 30, 2017

	Budgeted Amounts		Actual	Variance with Final Budget Positive
	Original	Final	Amounts	(Negative)
Revenues:				
Taxes and special assessments	$ 8,477	$ 8,477	$ 8,477	$ -
Total revenues	8,477	8,477	8,477	-
Expenditures:				
Current:				
Recreation and parks	4,800	4,800	4,295	505
Total expenditures	4,800	4,800	4,295	505
Net change in fund balances	$ 3,677	$ 3,677	4,182	$ 505
FUND BALANCES:				
Beginning of Year			67,200	
End of Year			$ 71,382	

City of Morro Bay
Schedule of Revenues, Expenditures, and Changes in Fund Balance - Budget and Actual
Governmental Impact Fees Special Revenue Fund
For the Year Ended June 30, 2017

	Budgeted Amounts		Actual	Variance with Final Budget Positive
	Original	Final	Amounts	(Negative)
Revenues:				
Charges for services	$ 226,000	$ 226,000	$ 187,772	$ (38,228)
Revenues from use of money and property	-	-	4,736	4,736
Total revenues	226,000	226,000	192,508	(33,492)
Other Financing Sources (Uses):				
Transfers in	-	-	8,561	8,561
Transfers out	(180,000)	(180,000)	(45,059)	134,941
Total Other Financing Sources (Uses)	(180,000)	(180,000)	(36,498)	143,502
Net change in fund balances	$ 46,000	$ 46,000	156,010	$ 110,010
FUND BALANCES:				
Beginning of Year			571,140	
End of Year			$ 727,150	

City of Morro Bay
Schedule of Revenues, Expenditures, and Changes in Fund Balance - Budget and Actual
State Park Marina Special Revenue Fund
For the Year Ended June 30, 2017

	Budgeted Amounts		Actual	Variance with Final Budget Positive
	Original	Final	Amounts	(Negative)
Revenues:				
Revenues from use of money and property	$ 80,000	$ 80,000	$ 84,982	$ 4,982
Total revenues	80,000	80,000	84,982	4,982
Expenditures:				
Current:				
Public works	35,000	35,000	3,269	31,731
Total expenditures	35,000	35,000	3,269	31,731
Net change in fund balances	$ 45,000	$ 45,000	81,713	$ 36,713
FUND BALANCES:				
Beginning of Year			209,237	
End of Year			$ 290,950	

City of Morro Bay
Schedule of Revenues, Expenditures, and Changes in Fund Balance - Budget and Actual
Affordable Housing In-lieu Special Revenue Fund
For the Year Ended June 30, 2017

	Budgeted Amounts		Actual	Variance with Final Budget Positive
	Original	Final	Amounts	(Negative)
Revenues:				
Charges for services	$ -	$ -	$ 12,862	$ 12,862
Revenues from use of money and property	700	700	777	77
Total revenues	700	700	13,639	12,939
Expenditures:				
Current:				
Housing	5,000	5,000	5,000	-
Total expenditures	5,000	5,000	5,000	-
Net change in fund balances	$ (4,300)	$ (4,300)	8,639	$ 12,939
FUND BALANCES:				
Beginning of Year			108,161	
End of Year			$ 116,800	

City of Morro Bay
Schedule of Revenues, Expenditures, and Changes in Fund Balance - Budget and Actual
Cloisters Reserve Special Revenue Fund
For the Year Ended June 30, 2017

	Budgeted Amounts		Actual	Variance with Final Budget Positive
	Original	Final	Amounts	(Negative)
Revenues:				
Taxes and special assessments	$ 148,944	$ 148,944	$ 148,865	$ (79)
Revenues from use of money and property	-	-	971	971
Total revenues	148,944	148,944	149,836	892
Expenditures:				
Current:				
Recreation and parks	140,500	140,500	75,716	64,784
Total expenditures	140,500	140,500	75,716	64,784
Excess of Revenues Over (Under) Expenditures	$ 8,444	$ 8,444	74,120	$ 65,676
FUND BALANCES:				
Beginning of Year			81,640	
End of Year			$ 155,760	

City of Morro Bay
Schedule of Revenues, Expenditures, and Changes in Fund Balance - Budget and Actual
LTF Roads Special Revenue Fund
For the Year Ended June 30, 2017

	Budgeted Amounts		Actual	Variance with Final Budget Positive
	Original	Final	Amounts	(Negative)
Revenues:				
Intergovernmental revenues	$ 73,292	$ 73,292	$ -	$ (73,292)
Revenues from use of money and property	-	-	148	148
Total revenues	73,292	73,292	148	(73,144)
Net change in fund balances	$ 73,292	$ 73,292	148	$ (73,144)
FUND BALANCES:				
Beginning of Year			21,376	
End of Year			$ 21,524	

City of Morro Bay
Schedule of Revenues, Expenditures, and Changes in Fund Balance - Budget and Actual
District Transaction Tax Special Revenue Fund
For the Year Ended June 30, 2017

	Budgeted Amounts		Actual	Variance with Final Budget Positive
	Original	Final	Amounts	(Negative)
Revenues:				
Taxes and special assessments	$ 1,019,199	$ 1,019,199	$ 1,077,488	$ 58,289
Intergovernmental revenues	-	-	38,424	38,424
Charges for services	-	-	400	400
Revenues from use of money and property	-	-	1,701	1,701
Total revenues	1,019,199	1,019,199	1,118,013	98,814
Expenditures:				
Current:				
Fire	155,179	155,179	160,149	(4,970)
Police	88,997	88,997	72,225	16,772
Public works	587,196	1,062,777	1,132,607	(69,830)
Debt service				
Principal	39,240	39,240	31,000	8,240
Interest	51,394	51,394	51,394	-
Total expenditures	922,006	1,397,587	1,447,375	(49,788)
Excess of Revenues Over (Under) Expenditures	97,193	(378,388)	(329,362)	49,026
Other Financing Sources (Uses):				
Transfers out	(97,194)	(97,194)	(97,194)	-
Total Other Financing Sources (Uses)	(97,194)	(97,194)	(97,194)	-
Net change in fund balances	$ (1)	$ (475,582)	(426,556)	$ 49,026
FUND BALANCES:				
Beginning of Year			500,113	
End of Year			$ 73,557	

City of Morro Bay
Schedule of Revenues, Expenditures, and Changes in Fund Balance - Budget and Actual
Community Development Grant Special Revenue Fund
For the Year Ended June 30, 2017

	Budgeted Amounts		Actual	Variance with Final Budget Positive
	Original	Final	Amounts	(Negative)
Revenues:				
Intergovernmental revenues	$ 168,530	$ 168,530	$ 5,514	$ (163,016)
Charges for services	-	-	675	675
Revenues from use of money and property	-	-	2,841	2,841
Total revenues	168,530	168,530	9,030	(159,500)
Expenditures:				
Current:				
Housing	68,530	68,530	7,529	61,001
Total expenditures	68,530	68,530	7,529	61,001
Net change in fund balances	$ 100,000	$ 100,000	1,501	$ (98,499)
FUND BALANCES:				
Beginning of Year			1,001,364	
End of Year			$ 1,002,865	

City of Morro Bay
Schedule of Revenues, Expenditures, and Changes in Fund Balance - Budget and Actual
Capital Improvement Capital Projects Fund
For the Year Ended June 30, 2017

	Budgeted Amounts		Actual	Variance with Final Budget Positive
	Original	Final	Amounts	(Negative)
Revenues:				
Intergovernmental revenues	$ -	$ 678,000	$ 263,847	$ (414,153)
Other revenues	-	60,550	284,801	224,251
Total revenues	-	738,550	548,648	(189,902)
Expenditures:				
Current:				
Community promotion	-	200,000	259,048	(59,048)
Public works	-	-	6,389	(6,389)
Capital outlay	-	835,550	450,563	384,987
Total expenditures	-	1,035,550	716,000	319,550
Excess of Revenues Over (Under) Expenditures	-	(297,000)	(167,352)	129,648
Other Financing Sources (Uses):				
Transfers in	-	60,000	205,986	145,986
Transfers out	-	-	(38,634)	(38,634)
Total Other Financing Sources (Uses)	-	60,000	167,352	107,352
Net change in fund balances	$ -	$ (237,000)	-	$ 237,000
FUND BALANCES:				
Beginning of Year			-	
End of Year			$ -	

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AGENCY FUND
FINANCIAL STATEMENTS

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City of Morro Bay
Statement of Changes in Assets and Liabilities
Agency Fund
For the Year Ended June 30, 2017

	Balance June 30, 2016	Additions	Deletions	Balance June 30, 2017
Community Services Fund				
Assets:				
Cash and investments	$ 1,403,630	$ 380,483	$ (808,009)	$ 976,104
Miscellaneous receivables	2,771	15,000	(17,771)	-
Prepaid items	2,770	-	(2,770)	-
Total assets	$ 1,409,171	$ 395,483	$ (828,550)	$ 976,104
Liabilities:				
Accounts payable	$ 117,746	$ 618,252	$ (728,294)	$ 7,704
Agency funds held for others	1,291,425	461,462	(784,487)	968,400
Total liabilities	$ 1,409,171	$ 1,079,714	$ (1,512,781)	$ 976,104
Unfunded Compensable Leave				
Assets:				
Cash and investments	$ -	$ 466,000	$ (236,870)	$ 229,130
Prepaid items	-	207	-	207
Total assets	$ -	$ 466,207	$ (236,870)	$ 229,337
Liabilities:				
Accounts payable	$ -	$ 70,022	$ (69,815)	$ 207
Agency funds held for others	-	1,382,181	(1,153,051)	229,130
Total liabilities	$ -	$ 1,452,203	$ (1,222,866)	$ 229,337
Total				
Assets:				
Cash and investments	$ 1,403,630	$ 846,483	$ (1,044,879)	$ 1,205,234
Miscellaneous receivables	2,771	15,000	(17,771)	-
Prepaid items	2,770	207	(2,770)	207
Total assets	$ 1,409,171	$ 861,690	$ (1,065,420)	$ 1,205,441
Liabilities:				
Accounts payable	$ 117,746	$ 688,274	$ (798,109)	$ 7,911
Agency funds held for others	1,291,425	1,843,643	(1,937,538)	1,197,530
Total liabilities	$ 1,409,171	$ 2,531,917	$ (2,735,647)	$ 1,205,441

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STATISTICAL SECTION

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STATISTICAL SECTION OVERVIEW

This part of the City's comprehensive annual financial report is not covered by the Independent Auditor's Report, but presents supplemental detailed information for the benefit of readers in understanding what the information in the financial statements, note disclosures, and required supplementary information says about the government's overall financial health.

Contents

Financial Trends (pages 130-142)
These schedules contain trend information to help the reader understand how the City's financial performance and well-being have changed over time.

Revenue Capacity (pages 148-160)
These schedules contain information to help the reader assess the City's most significant local revenue sources, transient occupancy tax ("TOT") and property taxes.

Debt Capacity (pages 162-164)
These schedules present information to help the reader assess the affordability of the City's current levels of outstanding debt and the City's ability to issue additional debt in the future.

Demographic and Economic Information (page 166)
These schedules offer demographic and economic indicators to help the reader understand the environment with which the City's financial activities take place.

Operating Information (pages 167-170)
These schedules contain service and infrastructure data to help the reader understand how the information in the City's financial report relates to the services the government provides and the activities it performs.

City of Morro Bay
Net Position by Component
Last Ten Fiscal Years
(Accrual Basis of Accounting)
(in thousands of dollars)

	Fiscal Year				
	2008	2009	2010	2011	2012
Governmental Activities:					
Net investment in capital assets	$ 117,498	$ 120,699	$ 120,545	$ 120,485	$ 121,492
Restricted	-	-	-	-	-
Unrestricted	9,079	7,022	7,916	9,068	8,681
Total governmental activities net position	$ 126,577	$ 127,721	$ 128,461	$ 129,553	$ 130,173
Business-Type Activities:					
Net investment in capital assets	$ 20,355	$ 20,748	$ 19,502	$ 19,684	$ 19,603
Restricted	-	-	-	-	-
Unrestricted	12,321	12,090	12,245	10,860	9,789
Total business-type activities net position	$ 32,676	$ 32,838	$ 31,747	$ 30,544	$ 29,392
Primary Government:					
Net investment in capital assets	$ 137,853	$ 141,447	$ 140,047	$ 140,169	$ 141,095
Restricted	-	-	-	-	-
Unrestricted	21,400	19,112	20,161	19,928	18,470
Total Primary Government Net Position	$ 159,253	$ 160,559	$ 160,208	$ 160,097	$ 159,565

(Continued)

Source: City of Morro Bay Administrative Services Department

City of Morro Bay
Net Position by Component (Continued)
Last Ten Fiscal Years
(Accrual Basis of Accounting)
(in thousands of dollars)

	Fiscal Year				
	2013	2014	2015	2016	2017
Governmental Activities:					
Net investment in capital assets	$ 121,839	$ 122,002	$ 121,871	$ 120,550	$ 120,936
Restricted	113	128	1,774	3,148	3,819
Unrestricted	7,023	7,218	(6,486)	(5,767)	(6,164)
Total governmental activities net position	$ 128,975	$ 129,348	$ 117,159	$ 117,931	$ 118,591
Business-Type Activities:					
Net investment in capital assets	$ 20,246	$ 19,629	$ 17,836	$ 19,382	$ 20,051
Restricted	9,196	-	46	13	-
Unrestricted	-	9,479	5,857	6,077	8,454
Total business-type activities net position	$ 29,442	$ 29,108	$ 23,739	$ 25,472	$ 28,505
Primary Government:					
Net investment in capital assets	$ 142,085	$ 141,631	$ 139,707	$ 139,932	$ 140,987
Restricted	9,309	128	1,820	3,160	3,819
Unrestricted	7,023	16,697	(629)	310	2,290
Total Primary Government Net Position	$ 158,417	$ 158,456	$ 140,898	$ 143,402	$ 147,096

(Concluded)

Source: City of Morro Bay Administrative Services Department

City of Morro Bay
Changes in Net Position
Last Ten Fiscal Years
(Accrual Basis of Accounting)
(in thousands of dollars)

	Fiscal Year				
	2008	2009	2010	2011	2012
Expenses:					
Governmental activities:					
Administration	$ 1,330	$ 2,306	$ 2,707	$ 1,910	$ 2,718
Community promotion	-	-	-	713	661
Finance	736	859	776	606	748
Fire	1,785	2,012	2,041	2,127	2,132
Housing	223	138	67	7	605
Police	3,180	3,387	3,369	3,236	3,443
Public works	2,825	2,462	2,142	2,030	1,229
Recreation	1,794	2,292	2,057	2,948	3,061
Total governmental activities expenses	11,873	13,456	13,159	13,577	14,597
Business-type activities:					
Water operations	3,694	3,976	4,537	4,363	4,864
Wastewater collection operations	2,282	2,792	2,827	3,466	3,101
Harbor operations	1,628	1,520	1,672	1,753	1,682
Local transportation	456	453	510	320	274
Total business-type activities expenses	8,060	8,741	9,546	9,902	9,921
Total primary government expenses	$ 19,933	$ 22,197	$ 22,705	$ 23,479	$ 24,518
Program Revenues:					
Governmental activities:					
Charges for services:					
Administration	$ 190	$ 1,402	$ 1,809	$ 2,065	$ 1,936
Community promotion	-	-	-	399	1
Finance	50	736	370	248	278
Fire	239	410	175	112	140
Housing	23	-	7	7	8
Police	139	106	52	77	57
Public works	929	451	432	513	543
Recreation	396	547	736	711	755
Operating grants and contributions	3,514	582	641	909	911
Capital grants and contributions	4,777	963	267	725	991
Total governmental activities program revenues	10,257	5,197	4,489	5,766	5,620
Business-type activities:					
Charges for services:					
Water operations	3,843	3,730	3,574	3,410	3,391
Wastewater collection operations	2,046	3,168	3,340	3,511	3,654
Harbor operations	2,048	1,579	1,813	1,772	1,836
Local transportation	60	59	63	38	36
Operating grants and contributions	18	382	413	454	442
Capital grants and contributions	542	530	143	215	170
Total business-type activities program revenues	8,557	9,448	9,346	9,400	9,529
Total primary government program revenues	$ 18,814	$ 14,645	$ 13,835	$ 15,166	$ 15,149

Source: City of Morro Bay Administrative Services Department

(Continued)

City of Morro Bay
Changes in Net Position (Continued)
Last Ten Fiscal Years
(Accrual Basis of Accounting)
(in thousands of dollars)

	Fiscal Year				
	2013	2014	2015	2016	2017
Expenses:					
Governmental activities:					
Administration	$ 851	$ 1,393	$ 2,773	$ 1,556	$ 1,876
Community promotion	848	905	1,167	1,481	1,969
Finance	680	710	630	1,117	973
Fire	2,656	1,873	2,658	3,220	3,071
Housing	20	184	53	69	5
Police	3,490	3,348	3,392	3,271	2,676
Public works	2,979	2,532	2,985	3,714	4,628
Recreation	4,400	2,768	1,819	1,235	1,205
Total governmental activities expenses	15,924	13,713	15,477	15,663	16,403
Business-type activities:					
Water operations	4,066	4,377	4,113	4,405	3,553
Wastewater collection operations	2,882	3,575	4,167	3,227	3,349
Harbor operations	1,746	2,032	2,234	1,783	2,105
Local transportation	288	282	270	295	273
Total business-type activities expenses	8,982	10,266	10,784	9,710	9,280
Total primary government expenses	$ 24,906	$ 23,979	$ 26,261	$ 25,373	$ 25,683
Program Revenues:					
Governmental activities:					
Charges for services:					
Administration	$ 652	$ 250	$ 1,920	$ 140	$ 207
Community promotion	-	-	471	1,326	1,307
Finance	-	-	344	367	559
Fire	149	188	212	423	310
Housing	56	37	40	-	1
Police	94	49	-	31	42
Public works	562	883	494	637	467
Recreation	577	818	535	589	561
Operating grants and contributions	1,889	757	442	1,745	1,489
Capital grants and contributions	652	354	1,602	343	587
Total governmental activities program revenues	4,631	3,336	6,060	5,601	5,530
Business-type activities:					
Charges for services:					
Water operations	3,399	3,504	3,312	4,460	5,003
Wastewater collection operations	3,918	4,166	4,330	4,989	5,728
Harbor operations	1,926	2,015	1,911	1,927	1,879
Local transportation	41	40	42	49	46
Operating grants and contributions	494	182	455	315	399
Capital grants and contributions	-	764	-	-	-
Total business-type activities program revenues	9,778	10,671	10,050	11,740	13,055
Total primary government program revenues	$ 14,409	$ 14,007	$ 16,110	$ 17,341	$ 18,585

Source: City of Morro Bay Administrative Services Department

(Concluded)

City of Morro Bay
Changes in Net Position (Continued)
Last Ten Fiscal Years
(Accrual Basis of Accounting)
(in thousands of dollars)

	Fiscal Year				
	2008	2009	2010	2011	2012
Net (Expense) Revenue:					
Governmental activities	$ (1,616)	$ (8,259)	$ (8,670)	$ (7,811)	$ (8,977)
Business-type activities	497	707	(200)	(502)	(392)
Total primary government	$ (1,119)	$ (7,552)	$ (8,870)	$ (8,313)	$ (9,369)
General Revenues and Other Changes in Net Position:					
Governmental activities:					
Property taxes	$ 3,635	$ 3,918	$ 3,566	$ 3,620	$ 3,576
Sales tax	1,260	1,955	1,792	1,903	1,963
Transient occupancy tax	1,956	1,914	2,208	1,888	2,537
Franchise taxes	785	603	496	543	513
Other taxes	46	58	52	53	47
Investment earnings	274	151	106	80	104
Gain (loss) on disposition of capital assets	-	25	3	(11)	5
Miscellaneous	-	-	-	-	-
Transfers	790	780	1,280	785	851
Total governmental activities	8,746	9,404	9,503	8,861	9,596
Business-type activities:					
Investment earnings	573	278	186	102	91
Gain (loss) on disposition of capital assets	-	14	12	(17)	1
Miscellaneous	-	-	-	-	-
Transfers	(789)	(838)	(1,088)	(786)	(851)
Total business-type activities	(216)	(546)	(890)	(701)	(759)
Total primary government	$ 8,530	$ 8,858	$ 8,613	$ 8,160	$ 8,837
Change in Net Position:					
Governmental activities	$ 7,130	$ 1,145	$ 833	$ 1,050	$ 619
Business-type activities	281	161	(1,090)	(1,203)	(1,151)
Total primary government	$ 7,411	$ 1,306	$ (257)	$ (153)	$ (532)

Source: City of Morro Bay Administrative Services Department

(Continued)

City of Morro Bay
Changes in Net Position (Continued)
Last Ten Fiscal Years
(Accrual Basis of Accounting)
(in thousands of dollars)

	Fiscal Year				
	2013	2014	2015	2016	2017
Net (Expense) Revenue:					
Governmental activities	$ (11,293)	$ (10,377)	$ (9,417)	$ (10,062)	$ (10,873)
Business-type activities	796	405	(734)	2,030	3,776
Total primary government	$ (10,497)	$ (9,972)	$ (10,151)	$ (8,032)	$ (7,097)
General Revenues and Other Changes in Net Position:					
Governmental activities:					
Property taxes	$ 4,521	$ 4,745	$ 3,940	$ 4,054	$ 3,936
Sales tax	1,286	1,346	2,318	1,556	1,970
Transient occupancy tax	2,802	3,171	3,630	3,136	3,327
Franchise taxes	513	506	493	513	512
Other taxes	65	70	81	96	93
Investment earnings	97	104	375	267	397
Gain (loss) on disposition of capital assets	15	7	42	-	374
Miscellaneous	-	-	83	203	103
Transfers	795	803	807	1,008	829
Total governmental activities	10,094	10,752	11,769	10,833	11,541
Business-type activities:					
Investment earnings	44	55	91	104	86
Gain (loss) on disposition of capital assets	5	8	10	-	-
Miscellaneous	(795)	-	-	-	-
Transfers	-	(803)	(807)	(1,008)	(829)
Total business-type activities	(746)	(740)	(706)	(904)	(743)
Total primary government	$ 9,348	$ 10,012	$ 11,063	$ 9,929	$ 10,798
Change in Net Position:					
Governmental activities	$ (1,199)	$ 375	$ 2,352	$ 771	$ 668
Business-type activities	50	(335)	(1,440)	1,126	3,033
Total primary government	$ (1,149)	$ 40	$ 912	$ 1,897	$ 3,701

Source: City of Morro Bay Administrative Services Department

(Concluded)

City of Morro Bay
Fund Balances of Governmental Funds
Last Ten Fiscal Years
(Modified Accrual Basis of Accounting)
(in thousands of dollars)

	Fiscal Year				
	2008	2009	2010	2011	2012
General fund:					
Nonspendable:					
Prepaids	$ 17	$ 3	$ 2	$ 14	$ 112
Inventory	9	9	11	10	12
Notes receivable	-	-	-	-	-
Land held for resale	-	-	-	-	-
Restricted:					
Notes receivable	-	-	-	-	-
Committed:					
Facility maintenance	-	-	-	-	-
Unassigned	5,085	1,656	4,500	5,135	3,832
Total general fund	$ 5,111	$ 1,668	$ 4,513	$ 5,159	$ 3,956
All other governmental funds:					
Nonspendable (prepaids):					
Prepaids:					
Capital Improvement	$ -	$ -	$ -	$ -	$ -
District Trans Tax (Meas Q)	-	-	-	-	-
Notes Receivable:					
Community Devel	-	-	-	-	-
Restricted:					
Community Development Grants	78	55	52	93	162
District Trans Tax (Meas Q)	287	775	1,003	1,089	1,545
Gas Tax	-	-	-	-	-
Tourism Business Improv Dist	-	47	67	-	52
Highway Users (Gas) Tax	19	-	46	-	-
Traffic Safety	-	-	4	-	-
Lower Cost Visitor Accommodations	-			15	36
Safety Grants	65	-	-	-	14
Parking In Lieu	365	139	134	145	388
LTF, Non-Transit - Bike Path	-	-	-	-	13
LTF, Non-Transit - Roads	-	-	-	-	-
Assessment Districts	-	42	52	28	5
Cloisters Accumulation	8	-	-	-	-
Gov'l Impact Fees	-	106	201	336	402
Park In Lieu (Quimby Act)	117	110	175	25	21
Gov'l Capital Improvement	(455)	48	-	-	-
State Park Marina	(39)	(15)	2	108	162
Affordable Housing In Lieu	-	638	655	667	120
Committed:					
Government Impact Fees	35	-	-	-	-
Affordable Housing In Lieu	654	-	-	-	-
Unassigned	-	-	-	-	-
Total all other governmental funds	$ 1,134	$ 1,945	$ 2,391	$ 2,506	$ 2,920

(Continued)

Source: City of Morro Bay Administrative Services Department

City of Morro Bay
Fund Balances of Governmental Funds (Continued)
Last Ten Fiscal Years
(Modified Accrual Basis of Accounting)
(in thousands of dollars)

	Fiscal Year				
	2013	2014	2015	2016	2017
General fund:					
Nonspendable:					
Prepaids	$ 118	$ 112	$ 140	$ 164	$ 143
Inventory	12	17	10	-	-
Notes receivable	-	-	1,178	-	-
Land held for resale	-	1,340	1,340	2,712	3,062
Restricted:					
Notes receivable	-	-	-	-	749
Committed:					
Facility maintenance	-	1,291	1,277	80	109
Unassigned	2,744	1,932	2,131	4,134	3,422
Total general fund	$ 2,874	$ 4,692	$ 6,076	$ 7,090	$ 7,485
All other governmental funds:					
Nonspendable (prepaids):					
Prepaids:					
Capital Improvement	$ -	$ -	$ 1	$ -	$ -
District Trans Tax (Meas Q)	-	-	2	2	1
Notes Receivable:					
Community Devel	-	-	176	176	174
Restricted:					
Community Development Grants	171	129	780	825	822
District Trans Tax (Meas Q)	738	355	97	499	73
Gas Tax	-	-	-	5	5
Tourism Business Improv Dist	54	70	80	261	277
Highway Users (Gas) Tax	-	-	-	-	-
Traffic Safety	-	-	-	1	1
Lower Cost Visitor Accommodations	37	37	53	53	54
Safety Grants	50	93	29	117	63
Parking In Lieu	400	411	406	320	365
LTF, Non-Transit - Bike Path	20	30	-	4	12
LTF, Non-Transit - Roads	-	-	29	21	22
Assessment Districts	26	58	59	67	71
Cloisters Accumulation	-	50	76	82	155
Gov'l Impact Fees	552	654	318	571	727
Park In Lieu (Quimby Act)	65	85	10	10	10
Gov'l Capital Improvement	-	-	-	-	-
State Park Marina	15	73	154	209	291
Affordable Housing In Lieu	176	160	163	108	117
Committed:					
Government Impact Fees	-	-	-	-	-
Affordable Housing In Lieu	-	-	-	-	-
Unassigned	-	-	(1)	-	-
Total all other governmental funds	$ 2,304	$ 2,205	$ 2,432	$ 3,331	$ 3,240

(Concluded)

Source: City of Morro Bay Administrative Services Department

City of Morro Bay
Revenues, Expenditures, and Changes in Fund Balances of Governmental Funds
Last Ten Fiscal Years
(Modified Accrual Basis of Accounting)
(in thousands of dollars)

	Fiscal Year				
	2008	2009	2010	2011	2012
Revenues:					
Taxes	$ 8,875	$ 8,462	$ 8,092	$ 8,331	$ 8,426
Intergovernmental	5,209	1,497	852	1,547	1,836
Charges for services	1,075	1,093	900	1,052	965
Special assessments and fees	176	206	538	556	732
Fines and forfeitures	102	66	55	47	38
Revenues from use of money and property	363	346	385	327	411
Miscellaneous	576	683	639	554	616
Total revenues	16,376	12,353	11,461	12,414	13,024
Expenditures:					
Community/Economic development	223	432	721	721	1,266
General government	2,066	1,883	1,648	1,417	1,478
Recreation and parks	1,601	2,111	2,061	2,719	2,864
Public safety:					
Fire	1,757	1,918	2,034	2,127	2,132
Police	2,998	3,380	3,345	3,235	3,507
Public works	2,380	1,888	1,842	1,244	1,426
Capital outlay	5,386	4,146	195	1,014	1,989
Debt service:					
Principal	-	-	-	-	-
Interest and other charges	3	8	3	2	2
Total expenditures	16,414	15,766	11,849	12,479	14,664
Excess of revenues over (under) expenditures	(38)	(3,413)	(388)	(65)	(1,640)
Other Financing Sources (Uses)					
Transfers in	1,543	8,624	6,167	1,670	3,510
Transfers out	(754)	(7,844)	(2,487)	(885)	(2,659)
Other debt issued	-	-	-	-	-
Total other financing sources (uses)	789	780	3,680	785	851
Net change in fund balances	$ 751	$ (2,633)	$ 3,292	$ 720	$ (789)
Debt service as a percentage of noncapital expenditures	0.018%	0.051%	0.025%	0.016%	0.014%

(Continued)

Source: City of Morro Bay Administrative Services Department

City of Morro Bay
Revenues, Expenditures, and Changes in Fund Balances of Governmental Funds (Continued)
Last Ten Fiscal Years
(Modified Accrual Basis of Accounting)
(in thousands of dollars)

	Fiscal Year				
	2013	2014	2015	2016	2017
Revenues:					
Taxes	$ 8,903	$ 9,502	$ 10,457	$ 11,106	$ 10,908
Intergovernmental	2,246	1,042	2,069	1,051	700
Charges for services	1,094	1,141	1,766	2,247	2,485
Special assessments and fees	722	802	157	157	963
Fines and forfeitures	36	28	24	17	20
Investment earnings	408	436	515	386	183
Miscellaneous	195	171	641	506	604
Total revenues	13,604	13,122	15,629	15,470	15,863
Expenditures:					
Community/Economic development	868	1,088	1,213	1,520	1,970
General government	1,593	2,145	1,950	2,552	2,776
Recreation and parks	2,638	2,705	1,845	1,151	1,173
Public safety:					
Fire	2,211	1,427	2,389	2,686	3,114
Police	3,399	3,300	3,605	3,182	3,279
Public works	3,768	1,876	2,417	3,062	3,709
Capital outlay	1,796	540	2,427	-	1,189
Debt service:					
Principal	-	838	71	30	31
Interest and other charges	3	8	54	53	52
Total expenditures	16,276	13,927	15,971	14,236	17,293
Excess of revenues over (under) expenditures	(2,672)	(805)	(342)	1,234	(1,430)
Other Financing Sources (Uses)					
Transfers in	4,841	5,468	2,974	2,602	1,469
Transfers out	(3,867)	(4,393)	(1,901)	(1,923)	(1,022)
Other debt issued	-	1,449	-	-	1,296
Total other financing sources (uses)	974	2,524	1,073	679	1,743
Net change in fund balances	$ (1,698)	$ 1,719	$ 731	$ 1,913	$ 313
Debt service as a percentage of noncapital expenditures	0.018%	6.467%	0.789%	0.586%	0.482%

(Concluded)

Source: City of Morro Bay Administrative Services Department

City of Morro Bay
General Fund Operating Expenditure Trends By Category
Last Ten Fiscal Years

	Fiscal Year				
	2007-08	2008-09	2009-10	2010-11	2011-12
Staffing:					
Salaries and wages:					
Regular	$ 4,758	$ 4,898	$ 4,695	$ 4,454	$ 4,499
Temporary	530	571	596	600	690
Overtime	219	305	270	279	236
Benefits:					
Total employer benefits					
Retirement	1,333	1,422	1,426	1,304	1,374
Health	780	831	830	778	820
Other	403	429	337	490	614
Total staffing	8,023	8,456	8,154	7,905	8,233
Contract services	732	823	741	539	639
Other operating expenditures:					
Supplies	385	534	494	529	527
Services	809	964	845	836	831
Insurance	230	219	212	211	212
Miscellaneous	48	30	98	31	35
Total operating expenditures	1,472	1,747	1,649	1,607	1,605
Capital repairs	6	5	1	14	6
Total General Fund expenditures	$ 10,233	$ 11,031	$ 10,545	$ 10,065	$ 10,483

(Continued)

Notes:
Other benefits are unemployment, medicare, matching contributions to deferred comp, long term disability, workers compensation.
By the end of FY 2010, the City laid off four employees, and three employees retired.

City of Morro Bay
General Fund Operating Expenditure Trends By Category (Continued)
Last Ten Fiscal Years

	Fiscal Year				
	2012-13	2013-14	2014-15	2015-16	2016-17
Staffing:					
Salaries and wages:					
Regular	$ 4,444	$ 4,863	$ 4,734	$ 4,695	$ 5,075
Temporary	772	750	794	925	921
Overtime	299	312	350	370	398
Benefits:					
Total employer benefits					
Retirement	1,301	1,299	1,399	1,610	1,751
Health	804	805	854	902	968
Other	513	545	464	526	518
Total staffing	8,133	8,574	8,595	9,028	9,631
Contract services	430	717	880	1,375	1,729
Other operating expenditures:					
Supplies	578	514	537	606	683
Services	926	856	891	878	1,038
Insurance	120	130	132	142	144
Miscellaneous	49	102	140	77	59
Total operating expenditures	1,673	1,602	1,700	1,703	1,924
Capital repairs	45	51	10	-	-
Total General Fund expenditures	$ 10,281	$ 10,944	$ 11,185	$ 12,106	$ 13,284

(Concluded)

Notes:
In FY 2012, City employees, except sworn Police, either paid an additional percentage of the employee contribution to CalPERS or had their salaries reduced. All City employees are now paying 100% of the CalPERS employee-paid contribution.

City of Morro Bay
Changes in Fund Balances of Proprietary Funds
Water, Sewer and Harbor
Last Ten Fiscal Years

	Fiscal Year				
	2007-08	2008-09	2009-10	2010-11	2011-12
WATER FUND					
Operating revenue:					
Water services	$ 3,705,020	$ 3,588,500	$ 3,451,279	$ 3,323,916	$ 3,325,454
Penalties	42,702	66,141	66,944	75,069	59,973
Reconnection fees	6,944	4,797	4,779	4,829	3,936
Service application fees	11,588	11,070	10,628	11,175	9,750
Connection/impact fees	66,827	53,977	29,177	28,911	32,866
Other local income	10,251	6,014	11,512	6,467	1,259
Total operating revenues	3,843,332	3,730,499	3,574,319	3,450,367	3,433,238
Operating Expenses:					
Employee wage and benefits	633,138	655,077	728,891	762,780	793,391
Insurance costs	14,050	94,841	64,285	62,134	69,352
State water contract/maint	1,877,733	2,062,878	1,955,757	2,133,080	2,145,319
Depreciation	630,274	641,566	694,579	710,577	699,196
Maintenance	67,146	95,771	172,151	185,916	174,064
Administration	377,230	386,461	837,349	467,515	959,024
Supplies	90,801	39,136	66,960	40,859	23,990
Total expenses	3,690,372	3,975,730	4,519,972	4,362,861	4,864,336
Operating income (loss)	152,960	(245,231)	(945,653)	(912,494)	(1,431,098)
Non-Operating Income (Loss):					
Intergovernmental	-	-	-	-	169,625
Refunds and adjustments	(3,963)	-	(17,190)	(40,344)	(42,126)
Investment earnings	355,027	163,405	90,476	47,412	43,148
Gain (loss) on sale of capital assets	350	(1,115)	-	-	(169)
Other non-operating	-	-	-	-	-
Total non-operating	351,414	162,290	73,286	7,068	170,478
Net income (loss) before transfers	504,374	(82,941)	(872,367)	(905,426)	(1,260,620)
Transfers:					
Transfers in	5,698,821	3,139,003	77,664	427,341	866,760
Transfers out	(5,976,681)	(3,567,945)	(570,885)	(694,974)	(1,140,898)
Total transfers	(277,860)	(428,942)	(493,221)	(267,633)	(274,138)
Change in net position	226,514	(511,883)	(1,365,588)	(1,173,059)	(1,534,758)
Net Position:					
Beginning of year, restated	18,248,614	18,475,128	17,963,245	16,597,657	15,424,598
Ending of year	$ 18,475,128	$ 17,963,245	$ 16,597,657	$ 15,424,598	$ 13,889,840

(Continued)

City of Morro Bay
Changes in Fund Balances of Proprietary Funds (Continued)
Water, Sewer and Harbor
Last Ten Fiscal Years

	Fiscal Year				
	2012-13	2013-14	2014-15	2015-16	2016-17
WATER FUND					
Operating revenue:					
Water services	$ 3,273,369	$ 3,391,983	$ 3,127,845	$ 4,164,080	$ 4,783,124
Penalties	56,572	64,443	68,164	67,686	78,449
Reconnection fees	4,770	6,340	7,047	6,106	6,984
Service application fees	9,960	9,400	7,900	9,095	10,208
Connection/impact fees	76,921	55,192	79,111	183,478	120,055
Other local income	813	734	21,903	29,573	4,501
Total operating revenues	3,422,405	3,528,092	3,311,970	4,460,018	5,003,321
Operating Expenses:					
Employee wage and benefits	767,758	751,605	727,156	706,412	930,663
Insurance costs	69,414	70,009	73,394	73,759	60,598
State water contract/maint	2,143,326	2,119,397	2,208,691	2,608,377	1,641,132
Depreciation	642,814	318,793	273,878	268,052	256,105
Maintenance	140,342	191,095	138,451	99,930	97,442
Administration	264,837	912,947	632,741	613,410	525,838
Supplies	37,609	13,552	58,317	34,463	40,737
Total expenses	4,066,100	4,377,398	4,112,628	4,404,403	3,552,515
Operating income (loss)	(643,695)	(849,306)	(800,658)	55,615	1,450,806
Non-Operating Income (Loss):					
Intergovernmental	-	429,108	-	-	-
Refunds and adjustments	(23,029)	(23,701)	-	-	-
Investment earnings	19,848	22,003	20,388	27,558	25,965
Gain (loss) on sale of capital assets	-	-	-	-	-
Other non-operating	-	-	-	-	-
Total non-operating	(3,181)	427,410	20,388	27,558	25,965
Net income (loss) before transfers	(646,876)	(421,896)	(780,270)	83,173	1,476,771
Transfers:					
Transfers in	-	-	28,410	-	34,614
Transfers out	(271,188)	(276,340)	(279,105)	(358,518)	(288,679)
Total transfers	(271,188)	(276,340)	(250,695)	(358,518)	(254,065)
Change in net position	(918,064)	(698,236)	(1,030,965)	(275,345)	1,222,706
Net Position:					
Beginning of year, restated	13,889,840	12,971,776	11,604,311	10,573,346	10,298,001
Ending of year	$ 12,971,776	$ 12,273,540	$ 10,573,346	$ 10,298,001	$ 11,520,707

(Continued)

City of Morro Bay
Changes in Fund Balances of Proprietary Funds (Continued)
Water, Sewer and Harbor
Last Ten Fiscal Years

	Fiscal Year				
	2007-08	2008-09	2009-10	2010-11	2011-12
SEWER FUND					
Operating revenue:					
Sewer services	$ 2,016,213	$ 3,119,479	$ 3,274,721	$ 3,448,925	$ 3,612,159
Penalties	11,147	19,204	25,633	29,947	25,578
Other local income	18,682	28,841	19,723	29,145	17,760
Total operating revenues	2,046,042	3,167,524	3,320,077	3,508,017	3,655,497
Operating expenses:					
Employee wage and benefits	368,094	396,104	455,345	524,378	566,121
Insurance costs	12,352	47,133	30,752	29,932	38,058
Wastewater treatment	1,225,855	1,546,314	1,568,081	2,151,514	1,853,768
Depreciation	397,585	444,511	413,503	426,966	406,948
Maintenance	21,928	17,050	13,947	15,701	26,395
Administration	166,429	274,954	262,811	272,583	171,465
Supplies	89,162	66,423	82,468	44,858	37,956
Total expenses	2,281,405	2,792,489	2,826,907	3,465,932	3,100,711
Operating income (loss)	(235,363)	375,035	493,170	42,085	554,786
Non-operating income (loss):					
Intergovernmental	-	66,721	76,472	214,930	24,688
Rental income	-	-	19,582	19,582	19,665
Refunds and adjustments	329	-	(329)	(16,735)	(21,455)
Investment earnings	147,485	73,632	67,677	41,024	34,200
Gain (loss) on sale of capital assets	-	-	100	-	508
Other non-operating	3,788	-	-	-	-
Total non-operating	151,602	140,353	163,502	258,801	57,606
Net income (loss) before transfers	(83,761)	515,388	656,672	300,886	612,392
Transfers:					
Transfers in	993,595	1,955,748	464,523	108,711	4,364,048
Transfers out	(1,196,605)	(2,132,981)	(751,837)	(268,419)	(4,543,961)
Total transfers	(203,010)	(177,233)	(287,314)	(159,708)	(179,913)
Change in net position	(286,771)	338,155	369,358	141,178	432,479
Net Position:					
Beginning of year	12,504,378	12,217,607	12,555,762	12,925,120	13,066,298
Ending of year	$ 12,217,607	$ 12,555,762	$ 12,925,120	$ 13,066,298	$ 13,498,777

(Continued)

City of Morro Bay
Changes in Fund Balances of Proprietary Funds (Continued)
Water, Sewer and Harbor
Last Ten Fiscal Years

	Fiscal Year				
	2012-13	2013-14	2014-15	2015-16	2016-17
SEWER FUND					
Operating revenue:					
Sewer services	$ 3,834,348	$ 4,124,770	$ 4,295,577	$ 4,955,153	$ 5,725,795
Penalties	25,368	26,496	28,409	30,618	-
Other local income	53,422	6,834	6,267	2,752	2,206
Total operating revenues	3,913,138	4,158,100	4,330,253	4,988,523	5,728,001
Operating expenses:					
Employee wage and benefits	507,848	535,091	500,328	593,544	966,509
Insurance costs	38,142	38,310	38,980	38,996	48,711
Wastewater treatment	1,611,817	2,099,474	2,643,944	1,670,756	1,447,039
Depreciation	440,051	499,826	497,122	490,316	476,471
Maintenance	26,088	112,682	65,907	51,597	4,117
Administration	176,666	234,678	265,191	247,630	235,455
Supplies	81,417	55,246	155,867	134,291	170,854
Total expenses	2,882,029	3,575,307	4,167,339	3,227,130	3,349,156
Operating income (loss)	1,031,109	582,793	162,914	1,761,393	2,378,845
Non-operating income (loss):					
Intergovernmental	42,534	-	-	-	-
Rental income	20,078	18,704	23,370	15,790	16,011
Refunds and adjustments	(15,746)	(9,904)	-	-	-
Investment earnings	17,366	24,627	36,007	46,179	35,853
Gain (loss) on sale of capital assets	-	-	-	-	-
Other non-operating	-	-	-	-	-
Total non-operating	64,232	33,427	59,377	61,969	51,864
Net income (loss) before transfers	1,095,341	616,220	222,291	1,823,362	2,430,709
Transfers:					
Transfers in	-	-	-	-	-
Transfers out	(161,629)	(164,701)	(194,757)	(269,072)	(207,476)
Total transfers	(161,629)	(164,701)	(194,757)	(269,072)	(207,476)
Change in net position	933,712	451,519	27,534	1,554,290	2,223,233
Net Position:					
Beginning of year	13,498,777	14,432,489	13,144,718	13,778,615	15,332,905
Ending of year	$ 14,432,489	$ 14,884,008	$ 13,172,252	$ 15,332,905	$ 17,556,138

(Continued)

City of Morro Bay
Changes in Fund Balances of Proprietary Funds (Continued)
Water, Sewer and Harbor
Last Ten Fiscal Years

	Fiscal Year				
	2007-08	2008-09	2009-10	2010-11	2011-12
HARBOR FUND					
Operating revenue:					
Harbor leases	$ 1,430,305	$ $ 1,235,135	$ 1,358,185	$ 1,387,292	$ 1,440,227
North T-Pier dockage	56,919	62,929	61,440	56,777	74,309
South T-Pier dockage	33,758	50,317	60,374	52,482	71,982
Mooring	67,437	74,705	73,806	88,106	80,154
Slip rental	187,410	123,313	179,057	83,269	114,203
Other services	34,773	24,139	33,902	52,948	48,245
Penalties	-	-	-	-	-
Other local income	46,719	8,059	45,957	51,391	6,688
Total operating revenues	1,857,321	1,578,597	1,812,721	1,772,265	1,835,808
Operating expenses:					
Employee wage and benefits	891,420	922,648	1,007,712	917,442	923,603
Insurance costs	23,051	30,814	43,862	50,886	66,420
Depreciation	213,107	194,360	164,562	174,031	163,036
Maintenance	122,676	83,310	148,370	216,392	172,839
Administration	302,876	175,373	224,592	298,810	286,093
Supplies	9,837	20,045	24,132	39,908	18,021
Total expenses	1,562,967	1,426,550	1,613,230	1,697,469	1,630,012
Operating income (loss)	294,354	152,047	199,491	74,796	205,796
Non-operating income (loss):					
Intergovernmental	331,323	212,959	18,820	99,098	144,462
Rental income	-	-	-	-	-
Refunds and adjustments	7,361	(30,790)	(2)	130	-
Investment earnings	63,619	35,556	25,115	12,768	12,251
Gain (loss) on sale of capital assets	-		(150)		350
Interest on debt	(65,174)	(62,038)	(58,761)	(55,337)	(51,758)
Other non-operating	-	-	-	-	-
Total non-operating	337,129	155,687	(14,978)	56,659	105,305
Net income (loss) before transfers	631,483	307,734	184,513	131,455	311,101
Transfers:					
Transfers in	1,398,648	195,595	-	141,600	-
Transfers out	(1,640,953)	(437,482)	(273,704)	(376,570)	(281,986)
Total transfers	(242,305)	(241,887)	(273,704)	(234,970)	(281,986)
Change in net position	389,178	65,847	(89,191)	(103,515)	29,115
Net Position:					
Beginning of year	1,261,161	1,650,339	1,716,186	1,626,995	1,523,480
End of year	$ 1,650,339	$ 1,716,186	$ 1,626,995	$ 1,523,480	$ 1,552,595

(Continued)

City of Morro Bay
Changes in Fund Balances of Proprietary Funds (Continued)
Water, Sewer and Harbor
Last Ten Fiscal Years

	Fiscal Year				
	2012-13	2013-14	2014-15	2015-16	2016-17
HARBOR FUND					
Operating revenue:					
Harbor leases	$ 1,505,513	$ 1,653,448	$ 1,471,057	$ 1,484,070	$ 1,461,696
North T-Pier dockage	62,077	51,750	38,221	43,404	47,481
South T-Pier dockage	51,642	66,956	65,979	66,475	58,999
Mooring	85,036	84,908	97,428	101,606	96,604
Slip rental	105,583	127,430	123,783	142,764	145,543
Other services	48,437	47,799	59,675	62,892	48,544
Penalties	60,416	59,571	38,033	14,924	8,855
Other local income	7,232	34,781	16,786	11,243	11,561
Total operating revenues	1,925,936	2,126,643	1,910,962	1,927,378	1,879,283
Operating expenses:					
Employee wage and benefits	911,089	937,228	931,222	977,764	1,320,740
Insurance costs	67,824	77,491	80,783	77,012	62,967
Depreciation	236,536	139,350	202,219	167,591	165,133
Maintenance	101,659	114,642	122,692	62,870	71,555
Administration	347,925	697,359	780,903	373,252	276,685
Supplies	33,327	21,635	76,189	88,774	176,802
Total expenses	1,698,360	1,987,705	2,194,008	1,747,263	2,073,882
Operating income (loss)	227,576	138,938	(283,046)	180,115	(194,599)
Non-operating income (loss):					
Intergovernmental	151,715	181,604	147,262	11,904	68,451
Rental income	-	260	-	-	-
Refunds and adjustments	246	(111,669)	-	-	-
Investment earnings	6,178	7,537	9,823	10,792	6,131
Gain (loss) on sale of capital assets	4,644	7,902	9,500	-	-
Interest on debt	(48,019)	(44,111)	(40,027)	(35,760)	(31,300)
Other non-operating	-	-	-	-	-
Total non-operating	114,764	41,523	126,558	(13,064)	43,282
Net income (loss) before transfers	342,340	180,461	(156,488)	167,051	(151,317)
Transfers:					
Transfers in	-	-	-	-	2,627
Transfers out	(281,986)	(281,986)	(281,986)	(300,236)	(290,286)
Total transfers	(281,986)	(281,986)	(281,986)	(300,236)	(287,659)
Change in net position	60,354	(101,525)	(438,474)	(133,185)	(438,976)
Net Position:					
Beginning of year	1,552,595	1,612,949	67,020	(371,454)	(504,639)
End of year	$ 1,612,949	$ 1,511,424	$ (371,454)	$ (504,639)	$ (943,615)

(Concluded)

City of Morro Bay
Governmental Activities Tax Revenues by Source
Last Ten Fiscal Years
(In Thousands)

Fiscal Year	Property Tax [1]	Franchise Tax	Transient Occupancy Tax [2]	Sales Tax [3]	Business Tax	Total
2007-08	3,615	785	1,956	2,092	254	8,702
2008-09	3,760	603	1,914	1,955	156	8,388
2009-10	3,566	496	2,212	1,792	292	8,358
2010-11	3,620	543	2,287	1,904	240	8,594
2011-12	3,575	513	2,537	1,963	223	8,811
2012-13	3,658	513	2,803	2,196	230	9,400
2013-14	3,875	506	3,171	2,267	248	10,067
2014-15	3,940	493	3,630	2,317	306	10,686
2015-16	4,054	513	3,911	2,537	351	11,366
2016-17	3,936	512	4,129	3,047	347	11,971

Notes:

[1] Contains General Fund net property taxes and in lieu property taxes (Sales and VLF)

[2] Contains General Fund Transient Occupancy Tax and Morro Bay Tourism Business Improvement District Special Revenue Fund lodging assessment

[3] Contains General Fund sales tax and District Transaction Tax (Measure Q) 1/2 cent sales tax

City of Morro Bay
Assessed Value and Estimated Actual Value of Taxable Property
Last Ten Fiscal Years

Fiscal Year	Homeowners Exemption	Secured Roll Gross Value	Unsecured Roll	Unitary	Total	Total Direct Tax Rate	Market Value	Percentage of Market Value
2008	14,393,533	1,738,587,996	26,244,393	52,361,721	1,817,194,110	1.00%	1,817,194,110	100%
2009	14,284,126	1,823,330,491	27,686,187	44,617,274	1,895,633,952	1.00%	1,895,633,952	100%
2010	14,116,682	1,888,384,363	29,594,504	46,217,274	1,964,196,141	1.00%	1,964,196,141	100%
2011	13,938,842	1,874,127,718	29,939,053	53,117,274	1,957,184,045	1.00%	1,957,184,045	100%
2012	13,764,237	1,833,454,294	33,317,458	51,217,274	1,917,989,026	1.00%	1,917,989,026	100%
2013	13,550,249	1,836,656,977	33,778,074	37,881,190	1,908,316,241	1.00%	1,908,316,241	100%
2014	13,222,865	1,907,683,084	40,361,469	23,581,190	1,971,625,743	1.00%	1,971,625,743	100%
2015	13,209,761	2,009,556,995	36,269,646	17,497,190	2,063,323,831	1.00%	2,063,323,831	100%
2016	13,273,217	2,060,506,332	36,522,496	14,381,190	2,111,410,018	1.00%	2,111,410,018	100%
2017	13,269,035	2,181,351,574	35,134,661	13,161,701	2,229,647,936	1.00%	2,229,647,936	100%

Note:

In 1978, the voters of the State of California pass Proposition 13, which limited the property taxes to a total maximum rate of 1% based upon the assessed value of the property being taxed. Each year, the assessed value of property may be increased by an "inflation factor," which is limited to a maximum increase of 2%. With few exceptions, property is only re-assessed at the time it is sold to a new owner. At that point, the new assessed value is re-assessed at the purchase price of the property sold.

The assessed valuation data, shown above, represents the only data currently available with respect to the actual market value of taxable property, and is subject to the limitations described above.

Source: Hunderlitel, deLllamas (HdL) report based on the SLO County Assessor 2007/08-2016/17 combined tax rolls.

City of Morro Bay
Direct and Overlapping Property Tax Rates
Last Ten Fiscal Years

	Fiscal Year				
	2008	**2009**	**2010**	**2011**	**2012**
Prop 13 maximum tax rate	1.00000	1.00000	1.00000	1.00000	1.00000
Voter approved indebtedness:					
State Water Project	0.00220	0.00220	0.00220	0.00290	0.00300
Cuesta Community College District 2014 bond					
School District:					
San Luis Coastal 2014 GO	-	-	-	-	-
Total for taxpayers in San Luis Coastal District	1.00220	1.00220	1.00220	1.00290	1.00300
Prop 13 maximum tax rate	1.00000	1.00000	1.00000	1.00000	1.00000
Voter approved indebtedness:					
State Water Project	0.00220	0.00220	0.00220	0.00290	0.00300
Cuesta Community College District 2014 bond					
School District:					
Coastal Unified (Cayucos Elementary)	0.04915	0.04915	0.04915	0.04990	0.05035
Total for taxpayers in Coastal Unified District	1.05135	1.05135	1.05135	1.05280	1.05335

(Continued)

Notes:
Property tax rates are levied per $100 of assessed valuation. The tax rate information provided is for Tax Rate Area 006-000 (Coast Unified) and 006-001 (San Luis Coastal District).

On June 6, 1978, Proposition 13 passed, which established a maximum County-wide levy, for general revenue purposes, of 1% of market value.

Source: Hunderlitel, deLlamas (HdL) report based on the SLO County Assessor 2007/08-2016/17 combined tax rolls.

City of Morro Bay
Direct and Overlapping Property Tax Rates (Continued)
Last Ten Fiscal Years

	Fiscal Year				
	2013	2014	2015	2016	2017
Prop 13 maximum tax rate	1.00000	1.00000	1.00000	1.00000	1.00000
Voter approved indebtedness:					
State Water Project	0.00400	0.00400	0.00400	0.00374	0.00400
Cuesta Community College District 2014 bond				0.01925	0.01925
School District:					
San Luis Coastal 2014 GO	-	-	-	0.04900	0.04900
Total for taxpayers in San Luis Coastal District	1.00400	1.00400	1.00400	1.07199	1.07225

Prop 13 maximum tax rate	1.00000	1.00000	1.00000	1.00000	1.00000
Voter approved indebtedness:					
State Water Project	0.00400	0.00400	0.00400	0.00374	0.00400
Cuesta Community College District 2014 bond				0.01925	0.01925
School District:					
Coastal Unified (Cayucos Elementary)	0.05095	0.05095	0.05095	0.04954	0.04214
Total for taxpayers in Coastal Unified District	1.05495	1.05495	1.05495	1.07253	1.06539

(Concluded)

Notes:
Property tax rates are levied per $100 of assessed valuation. The tax rate information provided is for Tax Rate Area 006-000 (Coast Unified) and 006-001 (San Luis Coastal District).

On June 6, 1978, Proposition 13 passed, which established a maximum County-wide levy, for general revenue purposes, of 1% of market value.

Source: Hunderlitel, deLlamas (HdL) report based on the SLO County Assessor 2007/08-2016/17 combined tax rolls.

City of Morro Bay
Principal Property Taxpayers
Current Year and Nine Fiscal Years Ago

	2017			2008		
Taxpayer	Taxable Assessed Value	Rank	Percentage of Total Taxable Assessed Value	Taxable Assessed Value	Rank	Percentage of Total Taxable Assessed Value
Dynegy Morro Bay, LLC	$ 13,925,427	1	0.66%	$ 52,361,721	1	2.88%
Imperial Coast LP	9,179,734	2	0.43%	-		0.00%
ABS California -O, LLC	8,920,409	3	0.42%	8,837,680	2	0.49%
Seashell Communities Asset Corp	8,578,447	4	0.41%	7,673,240	4	0.42%
GE Mobile Water Inc.	6,972,194	5	0.33%	-		0.00%
Bartfield Family Trust	5,931,683	6	0.28%	5,094,571	8	0.28%
Morro Bay Marina	5,865,769	7	0.28%	5,199,228	7	0.29%
ABC Investments, LLC	5,841,000	8	0.28%	-		0.00%
Capci Family Partnership ETAL	5,684,685	9	0.27%	-		0.00%
Someo Properties, LLC	4,696,483	10	0.22%	-		0.00%
Amitage Corp	-		0.00%	8,205,910	3	0.45%
George & Charlotte Salwasser	-		0.00%	7,157,377	5	0.39%
Inn at Morro Bay LLC	-		0.00%	6,824,557	6	0.38%
Norman Martignoni Trust ETAL	-		0.00%	4,909,127	9	0.27%
Cihan Corporation	-		0.00%	4,032,879	10	0.22%
Subtotal	75,595,831		3.58%	110,296,290		6.07%
Total taxable assessed value of other taxpayers	2,035,814,187		96.42%	1,706,897,820		93.93%
Total taxable assessed value	$ 2,111,410,018		100.00%	$ 1,817,194,110		100.00%

Source: Hunderlitel, deLllamas (HdL) report based on the SLO County Assessor 2007/08-2016/17 combined tax rolls.

City of Morro Bay
Property Tax Levies and Collections
Last Ten Fiscal Years

Fiscal Year	Total Secured Tax Levy (Notes 1 & 2)	Current Year Collections	Percent Collected	Current Year Delinquencies (Note 3)	Percent Delinquent (Note 3)
2008	2,107,156	2,107,156	100.00%	-	-
2009	2,193,391	2,193,391	100.00%	-	-
2010	2,212,638	2,212,638	100.00%	-	-
2011	2,205,675	2,205,675	100.00%	-	-
2012	2,161,276	2,161,276	100.00%	-	-
2013	2,146,559	2,146,559	100.00%	-	-
2014	2,219,874	2,219,874	100.00%	-	-
2015	2,328,969	2,328,969	100.00%	-	-
2016	2,447,638	2,447,638	100.00%	-	-
2017	2,947,371	2,947,371	100.00%	-	

Notes:

1. The secured property tax roll is composed of ad valorem taxes, as well as special assessments, and is calculated by the San Luis Obispo County Auditor-Controller. The San Luis Obispo County Tax collector is responsible for all property tax roll collections within the City of Morro Bay. The amount reported is before the SB2557 County administrative fees of approximately 3% of total property tax revenues.

2. The secured levy does not include supplemental assessments, unsecured tax revenues or prior year adjustments. In 2012/13, a one-time refund of $104,903 was received from the County Auditor-Controller, for prior year overcharges of the SB2557 fee.

3. The City has elected the Teeter Plan-method of property tax collection, whereby the County remits 100% of taxes levied to the City, pursues collection of unpaid/delinquent taxes, and retains the taxes collected, as well as related penalties and interest.

Source: San Luis Obispo County Auditor-Controller

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City of Morro Bay
Transient Occupancy Tax Revenues and Assessments Data
Last Ten Years

	Hotels/Motels/Inns/B & B						RV Parks & Campgrounds		Vacation Rentals	
		Annual Average								
Fiscal Year	Taxable Receipts	Rooms Available	Occupancy Rate	Room Rate	10% Tax	TBID Assessment	Taxable Receipts	10% Tax	Taxable Receipts	10% Tax
2007-08	17,152,824	833	50.17%	56	1,715,282	-	1,529,098	152,910	918,877	91,888
2008-09 [1]	15,976,250	913	48.67%	48	1,597,625	44,874	1,564,187	156,419	887,288	88,729
2009-10 [2]	15,285,777	915	47.42%	46	1,528,578	458,573	1,588,335	158,834	1,362,896	136,290
2010-11 [3]	15,713,492	919	49.83%	47	1,571,349	397,301	1,578,353	157,835	138,615	13,862
2011-12	17,105,133	917	51.58%	51	1,710,513	513,154	1,641,084	164,108	1,545,374	154,537
2012-13	18,891,852	912	55.00%	57	1,889,185	566,756	1,731,895	173,190	1,707,402	170,740
2013-14	21,422,442	903	59.67%	65	2,142,244	642,673	1,815,442	181,544	1,914,618	191,462
2014-15	24,346,340	910	63.00%	73	2,434,634	730,390	2,005,807	200,581	2,666,152	266,615
2015-16	25,936,031	914	75.00%	78	2,593,603	778,081	2,220,232	222,023	3,245,301	324,530
2016-17	26,757,406	916	74.00%	80	2,675,741	802,722	2,259,546	225,955	4,211,501	421,150

[1] May 2008 was the beginning of the Morro Bay Tourism Business Improvement District (TBID). The assessment was set by Ordinance to be 2%, but the City Council took action to increase the collection rate to 3% for one year.

[2] TBID's first full year of operation; assessment rate was 3%, until May 2010, when it returned to 2%, per the Ordinance.

[3] TBID collected assessments at 2% through October; Council action set the rate at 3% for November and until further Council action was taken to change it.

Source: City of Morro Bay Finance Department - Transient Occupancy Reports; these reports may vary from fiscal year-to-year to the TOT reported in the financials, due to reporting method differences. Financials accrue the entire month of July, and may pick up small amounts that apply to the future period. Additionally, net TOT audit results are included in the financial statement amount, and not recorded in these reports.

City of Morro Bay
Schedule of Taxable Sales by Type, Category and Geographic Area
Last Ten Calendar Years
(in thousands of dollars)

	2008	2009	2010	2011	2012
All sales tax by major category:					
Autos And Transportation	$ 59	$ 56	$ 58	$ 55	$ 53
Building And Construction	166	131	105	95	103
Business And Industry	64	69	58	55	60
Food And Drugs	204	202	199	193	194
Fuel And Service Stations	315	340	231	268	296
General Consumer Goods	243	207	204	195	194
Restaurants And Hotels	369	353	358	349	365
Total all sales	$ 1,420	$ 1,358	$ 1,213	$ 1,210	$ 1,265
Performance by Geographic Area					
Embarcadero retailers	$ 277	$ 263	$ 247	$ 252	$ 267
Downtown shopping district	93	92	83	81	81
Quintana Road business area	275	267	268	269	267
No. Morro Bay business area	164	164	120	130	127
Total geographic areas	809	786	718	732	742
Sales by others	568	611	643	468	482
Total all sales	$ 1,377	$ 1,397	$ 1,361	$ 1,200	$ 1,224
District Transaction Tax (DTT) - Measure Q [1]:					
Autos And Transportation	$ 86	$ 102	$ 99	$ 97	$ 101
Building And Construction	53	71	63	57	68
Business And Industry	42	70	60	53	62
Food And Drugs	78	101	98	98	97
Fuel And Service Stations	122	168	117	136	151
General Consumer Goods	99	118	112	112	112
Restaurants And Hotels	140	180	180	175	181
Total DTT	$ 620	$ 810	$ 729	$ 728	$ 772
Total number of businesses by category:					
Autos And Transportation	32	31	32	33	35
Building And Construction	32	27	27	25	25
Business And Industry	95	95	88	87	97
Food And Drugs	28	23	24	26	23
Fuel And Service Stations	10	11	10	10	9
General Consumer Goods	343	329	326	327	321
Restaurants And Hotels	75	79	72	74	79
Total	615	595	579	582	589
Number of businesses located in Geographic Areas:					
Embarcadero retailers	88	83	78	86	84
Downtown shopping district	81	86	83	80	84
Quintana Road business area	53	56	53	53	54
No. Morro Bay business area	43	39	39	34	37
Total	265	264	253	253	259

(Continued)

[1] The City of Morro Bay's District Transaction Tax (Measure Q) passed with the November 2006 election; collections began April 1, 2007.

City of Morro Bay
Schedule of Taxable Sales by Type, Category and Geographic Area (Continued)
Last Ten Calendar Years
(in thousands of dollars)

	2013	2014	2015	2016	2017
All sales tax by major category:					
Autos And Transportation	$ 55	$ 56	$ 56	$ 61	$ 61
Building And Construction	104	100	100	106	117
Business And Industry	57	64	74	77	74
Food And Drugs	197	202	215	225	236
Fuel And Service Stations	362	361	334	286	252
General Consumer Goods	205	221	215	206	208
Restaurants And Hotels	408	441	464	533	510
Total all sales	$ 1,388	$ 1,445	$ 1,458	$ 1,494	$ 1,458
Performance by Geographic Area					
Embarcadero retailers	$ 281	$ 309	$ 330	$ 341	$ 333
Downtown shopping district	86	92	95	102	113
Quintana Road business area	268	275	285	302	313
No. Morro Bay business area	135	140	145	140	140
Total geographic areas	770	816	855	885	899
Sales by others	514	547	566	561	559
Total all sales	$ 1,284	$ 1,363	$ 1,421	$ 1,446	$ 1,458
District Transaction Tax (DTT) - Measure Q [1]:					
Autos And Transportation	$ 121	$ 139	$ 143	$ 154	$ 179
Building And Construction	70	66	68	79	75
Business And Industry	63	78	84	97	103
Food And Drugs	98	103	107	112	114
Fuel And Service Stations	184	182	172	144	131
General Consumer Goods	123	129	133	136	138
Restaurants And Hotels	202	218	235	267	255
Total DTT	$ 861	$ 915	$ 942	$ 989	$ 995
Total number of businesses by category:					
Autos And Transportation	33	36	36	32	33
Building And Construction	22	27	28	28	25
Business And Industry	101	122	122	128	142
Food And Drugs	23	23	22	26	28
Fuel And Service Stations	9	9	7	6	8
General Consumer Goods	335	373	373	397	395
Restaurants And Hotels	81	84	87	94	88
Total	604	674	675	711	719
Number of businesses located in Geographic Areas:					
Embarcadero retailers	80	90	88	96	101
Downtown shopping district	82	85	86	91	90
Quintana Road business area	53	54	52	62	62
No. Morro Bay business area	32	34	37	45	39
Total	247	263	263	294	292

(Concluded)

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City of Morro Bay
Schedule of Historic Sales and Use Tax Rates

Effective Date	End Date	State Jurisdiction	Local Transportation Fund	City Rate	Combined Rate
7/17/1964	7/31/1967	3.00%		1.00%	4.00%
8/1/1967	6/30/1972	4.00%		1.00%	5.00%
7/1/1972	6/30/1973	3.75%	0.25%	1.00%	5.00%
7/1/1973	9/30/1973	4.75%	0.25%	1.00%	6.00%
10/1/1973	3/31/1974	3.75%	0.25%	1.00%	5.00%
4/1/1974	11/30/1989	4.75%	0.25%	1.00%	6.00%
12/1/1989	12/31/1990	5.00%	0.25%	1.00%	6.25%
1/1/1991	7/14/1991	4.75%	0.25%	1.00%	6.00%
7/15/1991	12/31/2000	6.00%	0.25%	1.00%	7.25%
1/1/2001	12/31/2001	5.75%	0.25%	1.00%	7.00%
1/1/2002	6/30/2004	6.00%	0.25%	1.00%	7.25%
7/1/2004	3/31/2007	6.25%	0.00%	1.00%	7.25%
4/1/2007	3/31/2009	6.25%	0.00%	1.50%	7.75%
4/1/2009	6/30/2011	7.25%	0.00%	1.50%	8.75%
7/1/2011	12/31/2015	6.25%	0.00%	1.50%	7.75%
1/1/2013	12/31/2015	6.50%	0.00%	1.50%	8.00%
1/1/2016	12/31/2016	6.25%	0.25%	1.50%	8.00%
1/1/2017		6.00%	0.25%	1.50%	7.75%

Notes:

1 The Bradley-Burns Uniform Local Sales and Use Tax Law was enacted in 1955. The law authorizes cities and counties to impose a sales and use tax.

2 In March 2004, a State ballot measure was passed, issuing deficit reduction bonds for State purposes. Funding was provided, effective July 1, 2004, by repealing 25% of the local 1% sales tax, and adopting a new 1/4 cent sales tax, dedicated to repayment of the deficit reduction bonds. Cities and counties would be made whole by the state from increased property tax allocations, via reduced contributions to ERAF. This *triple flip* is theoretically revenue-neutral, and as such, the effective rate, for revenue purposes, remains at 1%.

3 In November 2006, voters in Morro Bay approved a local sales tax measure (Measure Q), increasing the City rate by 1/2%, which became effective April 1, 2007.

Source: State Board of Equalization, State of California; Hinderliter, deLlamas (HdL)

Source: State Board of Equalization, State of California; Hinderliter, deLlamas (HdL)

City of Morro Bay
Schedule of Business Tax Certificates by Category
Last Ten Fiscal Years

Category	2007-08	2008-09	2009-10	2010-11	2011-12
Autos And Transportation	32	31	32	33	35
Building And Construction	32	27	27	25	25
Business And Industry	95	95	88	87	97
Food And Drugs	28	23	24	26	23
Fuel And Service Stations	10	11	10	10	9
General Consumer Goods	343	329	326	327	321
Restaurants And Hotels	75	79	72	74	79
Vacation rentals	52	76	93	110	140
Total certificates	667	671	672	692	729

Source: City of Morro Bay Finance Department; Hinderliter de Llamas

Source: City of Morro Bay Finance Department; Hinderliter de Llamas

City of Morro Bay
Schedule of Business Tax Certificates by Category (Continued)
Last Ten Fiscal Years

Category	2012-13	2013-14	2014-15	2015-16	2016-17
Autos And Transportation	33	36	36	32	33
Building And Construction	22	27	28	28	25
Business And Industry	101	122	122	128	142
Food And Drugs	23	23	22	26	28
Fuel And Service Stations	9	9	7	6	8
General Consumer Goods	335	373	373	397	395
Restaurants And Hotels	81	84	87	94	88
Vacation rentals	153	157	165	167	250
Total certificates	757	831	840	878	969

Source: City of Morro Bay Finance Department; Hinderliter de Llamas

City of Morro Bay
Ratios of Outstanding Debt by Type
Last Ten Fiscal Years
(amounts expressed in thousands, except per capita amount)

	Fiscal Year									
	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
Governmental activities:										
Certificates of Participation (Fire)	$ -	$ -	$ -	$ -	$ 51	$ 24	$ 1,445	$ 1,416	$ 1,386	$ 1,355
Business-type activities:										
Harbor So T-Pier construction loan	1,379	1,306	1,230	1,150	1,067	980	889	795	696	592
Total primary government	$ 1,379	$ 1,306	$ 1,230	$1,150	$1,118	$ 1,004	$ 2,334	$ 2,211	$ 2,082	$ 1,947
Percentage of personal income	0.5%	0.4%	0.4%	0.4%	0.4%	0.3%	0.7%	0.6%	0.6%	0.6%
Per capita	$ 131	$ 125	$ 117	$ 109	$ 105	$ 98	$ 226	$ 215	$ 203	$ 182

Notes:

Details regarding the city's outstanding debt can be found in the notes to the financial statements.

City of Morro Bay
Direct and Overlapping Long-Term Debt
Fiscal Year ended June 30, 2017

	Percent Applicable to the City of Morro Bay	Amount Applicable to the City of Morro Bay as of June 30, 2016
Direct long-term debt:		
City of Morro Bay 2011 Certificates of Participation	100.00%	$ 1,355,419
City of Morro Bay Harbor Construction Loan	100.00%	592,008
Subtotal direct debt		1,947,427
Overlapping long-term debt (percentage of overlapping agency's assessed valuation located within boundaries of the City):		
San Luis Obispo County General Fund Obligations	4.643%	$ 1,186,352
San Luis Obispo County Pension Obligations	4.636%	4,359,203
San Luis Community College District Certificates of Participation	4.623%	333,420
Subtotal over-lapping debt		5,878,975
Total gross direct and overlapping long-term debt		$ 7,826,402

City of Morro Bay
Legal Debt Margin Information
Last Ten Fiscal Years
(amounts expressed in thousands)

	Fiscal Year				
	2007-08	2008-09	2009-10	2010-11	2011-12
Debt Limit	$ 272,579	$ 284,345	$ 294,629	$ 293,578	$ 287,698
Total net debt applicable to limit	-	-	-	-	-
Legal debt margin	$ 272,579	$ 284,345	$ 294,629	$ 293,578	$ 287,698
Total net debt applicable to the limit as a percentage of debt limit	-	-	-	-	-

(Continued)

Section 43605 of the State of California Government Code limits the amount of indebtedness for public improvements to no more than 15% of the assessed valuation of all taxable property in the City.

The City of Morro Bay does not have any general obligation debt.

City of Morro Bay
Legal Debt Margin Information (Continued)
Last Ten Fiscal Years
(amounts expressed in thousands)

	Fiscal Year				
	2012-13	2013-14	2014-15	2015-16	2106-17
Debt Limit	$ 286,247	$ 295,744	$ 309,499	$ 316,712	$ 334,447
Total net debt applicable to limit	-	-	-	-	-
Legal debt margin	$ 286,247	$ 295,744	$ 309,499	$ 316,712	$ 334,447
Total net debt applicable to the limit as a percentage of debt limit	-	-	-	-	-

(Concluded)

Legal Debt Margin Calculation for Fiscal Year 2015-16

Total assessed value of taxable property	$	2,229,647,936
Debt limit (15% of total assessed value)	$	334,447
Debt applicable to limit		-
Legal debt margin	$	334,447

Section 43605 of the State of California Government Code limits the amount of indebtedness for public improvements to no more than 15% of the assessed valuation of all taxable property in the City.

The City of Morro Bay does not have any general obligation debt.

City of Morro Bay
Demographic and Economic Statistics
Last Ten Fiscal Years

Fiscal Year	Population	Personal Income (in thousands)	Per Capita Personal Income	Median Age (2)	% of Pop 25+ with High School Degree	% of Pop 25+ Bachelor's Degree	Unemployment Rate (5)
2008	10,485	$ 297,311	$ 28,356				5.7%
2009	10,521	301,325	28,640				8.9%
2010	10,576	293,474	27,749	50.5	90.7%	28.9%	10.0%
2011	10,608	311,101	29,327	55.5	89.6%	30.2%	9.9%
2012	10,274	323,878	31,524	54.1	92.6%	30.5%	8.7%
2013	10,317	340,079	32,963	51.1	92.5%	32.6%	7.0%
2014	10,276	359,999	35,033	51.2	93.1%	34.7%	5.4%
2015	10,254	329,023	32,087	51.1	91.9%	36.2%	4.5%
2016	10,722	338,618	31,582	50.8	92.9%	37.7%	4.5%
2017	10,762	341,644	31,745	49.2	91.2%	36.8%	3.7%

Sources:

Population from California State Department of Finance, provided by HdL

Unemployment rates are from the Bureau of Labor and Statistics, Local Area Unemployment Statistics, for the San Luis Obispo-Paso Robles-Arroyo Grande metropolitan area.

City of Morro Bay
Principal Employers
Current Year and Nine Fiscal Years Ago

Employer	2016-17 Number of Full-Time Equivalent Employees [1]	2016-17 Ranking	2016-17 Percentage of Total City Labor Force	2007-08 Number of Full-Time Equivalent Employees [1]	2007-08 Ranking	2007-08 Percentage of Total City Labor Force
City of Morro Bay	97	1	1.70%	97	2	1.87%
Albertsons	88	2	1.54%	121	1	2.33%
Dorn's Original Breakers Café	42	3	0.74%	26	7	0.50%
Mission Linen Supply	41	4	0.72%	41	5	0.79%
Miner's Ace Hardware	38	5	0.67%	47	4	0.90%
McDonald's	36	6	0.63%	24	9	0.46%
The Inn at Morro Bay	33	7	0.58%	57	3	1.10%
Giovanni's Fish Market	30	8	0.53%	25	8	0.48%
Tognazzini's Dockside Restaurants & Fish Market	26	9	0.46%	19	14	0.37%
Bayside Café	25	10	0.44%	11	19	0.21%
Rite-Aid	23	11	0.40%	18	15	0.35%
Spencer's Fresh Market	22	12	0.39%	21	12	0.40%
Harbor Hut	22	13	0.39%	-	20	0.00%
Great American Fish Company	22	14	0.39%	24	10	0.46%
Total	545			531		
City labor force	5,700			5,200		

[1] The number of full-time equivalent employees is calculated by dividing annual hours worked by 2080, which is the normal total for annual hours worked by one full-time employee.

Source:

FTE: City of Morro Bay payroll records; HdL Business Tax records

Labor Force: California Employment Development Department "Unemployment Rates and Labor Force," at www.labormarketinfo.edd.ca.gov

City of Morro Bay
Full-Time City Government Employees By Function
Last Ten Fiscal Years

	Fiscal Year				
	2007-08	2008-09	2009-10	2010-11	2011-12
GENERAL FUND:					
City Council	5.00	5.00	5.00	5.00	5.00
City Manager	5.00	3.00	1.00	1.00	1.00
Deputy City Manager	-	-	-	-	-
Economic Development	-	-	-	-	-
City Clerk/Legal	1.75	1.75	2.75	2.75	2.75
Accounting & Treasury	5.00	4.00	4.00	3.00	3.00
Human Resources	-	1.00	1.00	1.00	1.00
Information Services	1.00	1.00	1.00	1.00	1.00
Police Department					
Sworn	18.50	18.50	18.50	18.00	18.00
Non-sworn	5.00	5.00	5.00	5.00	5.00
Fire Department					
Sworn	10.00	10.00	11.00	11.00	11.00
Non-sworn	1.00	1.00	1.00	0.50	0.50
Public Works Department	10.00	9.00	11.00	9.75	9.75
Consolidated Maintenance Division	8.50	9.50	10.00	10.00	11.00
Recreation and Parks Administration	4.00	3.00	3.00	2.00	2.00
Recreation Programs	4.00	3.50	2.00	2.00	2.00
Community Development Department	-	-	-	-	-
ENTERPRISE FUNDS:					
Water Revenue Fund	8.00	8.50	7.50	7.50	7.50
Sewer Revenue Fund	4.00	4.50	4.50	4.50	5.50
Harbor Fund	8.00	8.00	8.00	8.00	7.75
MB/CSD Wastewater Treatment Plant	8.00	8.00	8.00	8.00	8.00
TOTAL STAFF MEMBERS	106.75	104.25	104.25	100.00	101.75

Notable changes:

2010-11: layoff and reduction in workforce due to the economic downturn.

Source: City of Morro Bay, Human Resources Division

City of Morro Bay
Full-Time City Government Employees By Function (Continued)
Last Ten Fiscal Years

	Fiscal Year				
	2012-13	2013-14	2014-15	2015-16	2016-17
GENERAL FUND:					
City Council	5.00	5.00	5.00	5.00	5.00
City Manager	1.00	1.00	1.00	1.00	1.00
Deputy City Manager	-	-	-	1.00	1.00
Economic Development	-	-	-	-	1.00
City Clerk/Legal	3.00	3.00	1.00	2.00	2.00
Accounting & Treasury	3.00	3.00	3.00	4.00	4.00
Human Resources	1.00	1.00	1.00	1.00	1.00
Information Services	1.00	1.00	1.00	1.00	1.00
Police Department					
Sworn	18.00	18.00	18.00	18.00	18.00
Non-sworn	5.00	5.00	5.00	2.00	2.00
Fire Department					
Sworn	11.00	11.00	11.00	12.00	12.00
Non-sworn	0.50	0.50	0.50	0.50	0.75
Public Works Department	9.75	9.75	9.75	7.00	7.00
Consolidated Maintenance Division	10.00	10.00	10.00	9.00	10.00
Recreation and Parks Administration	2.00	2.00	2.00	-	2.00
Recreation Programs	2.00	2.00	2.00	2.00	2.00
Community Development Department	-	-	-	5.00	6.00
ENTERPRISE FUNDS:					
Water Revenue Fund	7.38	7.50	7.50	5.50	5.50
Sewer Revenue Fund	5.37	5.50	5.50	5.50	5.50
Harbor Fund	7.00	7.00	7.00	7.00	7.00
MB/CSD Wastewater Treatment Plant	8.00	8.00	8.00	8.00	8.00
TOTAL STAFF MEMBERS	100.00	100.25	98.25	96.50	101.75

Notable changes:

2015/16: Deputy City Manager position established for economic development; one additional firefighter was hired; City dispatch services were transferred to the SLO County Sheriff and County Fire, reducing Police non-sworn personnel to support services/records only.

Source: City of Morro Bay, Human Resources Division

City of Morro Bay
Operating Indicators By Function
Last Ten Fiscal Years

	Fiscal Year				
	2007-08	2008-09	2009-10	2010-11	2011-12
Police [1]					
Number of Stations	1	1	1	1	1
Patrol units:					
In service	N/A	N/A	N/A	N/A	N/A
Volunteer	N/A	N/A	N/A	N/A	N/A
Crimes:					
Homicide	N/A	2	-	-	-
Rape	N/A	2	1	3	2
Robbery	N/A	4	1	2	3
Assaults	N/A	60	71	62	45
Burglary	N/A	36	39	29	44
Larceny	N/A	125	124	119	91
Vehicle theft	N/A	8	15	3	5
Domestic violence	N/A	14	10	30	23
Driving under the influence	N/A	113	82	123	93
Drunk in public	N/A	125	95	98	133
Forgery/Fraud	N/A	30	35	24	20
Sex offenses	N/A	8	11	13	12
Vandalism/Graffiti	N/A	47	38	28	41
Weapons offenses	N/A	9	6	11	3
All other offenses	N/A	852	874	826	689
Traffic collisions:					
Non-injury	N/A	101	158	125	92
Injury	N/A	27	25	21	17
Fatal	N/A	1	-	-	-
Calls for service/Officer-initiated activity	14,923	13,723	13,873	14,371	12,866
Reports & citations:					
Incident reports	1,767	1,521	1,474	1,371	1,291
Citations - parking	N/A	364	414	230	220
Citations - traffic	N/A	639	500	480	294
Warnings	N/A	2,121	1,704	2,402	1,483
Other citations	N/A	13	120	165	110
Arrests:					
Adult	N/A	601	548	535	502
Juvenile	N/A	46	32	22	45

N/A = NOT AVAILABLE

(Continued)

[1] Police statistics are for the calendar years 2008 - 2015

City of Morro Bay
Operating Indicators By Function (Continued)
Last Ten Fiscal Years

	Fiscal Year				
	2012-13	2013-14	2014-15	2015-16	2016-17
Police [1]					
Number of Stations	1	1	1	1	1
Patrol units:					
In service	N/A	N/A	N/A	7	5
Volunteer	N/A	N/A	N/A	1	2
Crimes:					
Homicide	-	-	-	N/A	2
Rape	3	3	3	N/A	1
Robbery	1	1	6	N/A	-
Assaults	47	52	80	N/A	67
Burglary	57	49	62	N/A	36
Larceny	105	72	219	N/A	144
Vehicle theft	10	9	11	N/A	122
Domestic violence	17	29	51	N/A	24
Driving under the influence	60	44	45	N/A	54
Drunk in public	129	116	134	N/A	143
Forgery/Fraud	24	31	30	N/A	34
Sex offenses	6	4	10	N/A	11
Vandalism/Graffiti	31	39	68	N/A	40
Weapons offenses	4	6	5	N/A	3
All other offenses	156	138	185	N/A	N/A
Traffic collisions:					
Non-injury	146	114	112	N/A	103
Injury	25	32	10	N/A	28
Fatal	-	-	-	N/A	-
Calls for service/Officer-initiated activity	13,340	12,959	12,264	N/A	12,727
Reports & citations:					
Incident reports	1,263	1,386	1,546	N/A	N/A
Citations - parking	227	149	205	N/A	N/A
Citations - traffic	376	70	116	N/A	N/A
Warnings	291	258	375	N/A	N/A
Other citations	16	17	295	N/A	N/A
Arrests:					
Adult	461	454	555	N/A	N/A
Juvenile	18	17	11	N/A	N/A

N/A = NOT AVAILABLE

(Continued)

[1] Police statistics are for the calendar years 2008 - 2015

City of Morro Bay
Operating Indicators By Function (Continued)
Last Ten Fiscal Years

	Fiscal Year				
	2007-08	2008-09	2009-10	2010-11	2011-12
Fire					
Number of Stations [1]	2	2	2	2	2
Trucks:					
Suppression	1	1	1	1	1
Ladder	1	1	1	1	1
Rescue	1	1	1	1	1
Emergency responses:					
Fires	58	70	44	43	39
Basic Life Support	457	433	457	357	374
Advanced Life Support (Paramedic)	598	649	655	723	701
Rescues / Traffic Collisions	51	60	43	38	35
False Alarm	63	50	49	38	53
Haz Mat	36	31	10	19	10
Electrical	13	25	20	23	16
Public Service and Agency Assists	440	410	409	444	452
Fire prevention:					
Inspections	N/A	N/A	N/A	N/A	N/A
Plan reviews	N/A	N/A	N/A	N/A	N/A
Fire Code Enforcement cases/violations	N/A	N/A	N/A	N/A	N/A
Harbor					
Number of Stations	1	1	1	1	1
Calls for service	N/A	N/A	N/A	N/A	N/A
Officer-initiated activity	N/A	N/A	N/A	N/A	N/A
Emergency responses	N/A	N/A	N/A	N/A	N/A
Assists of other agencies ("AOA")	N/A	N/A	N/A	N/A	N/A
Enforcement actions (warnings, citations)	N/A	N/A	N/A	N/A	N/A
Maintenance actions	N/A	N/A	N/A	N/A	N/A
Community Development					
Building permits:					
Number of permits issued	219	199	178	209	198
Valuation of const/impv (in thousands of dollars)	$10,997	$5,007	$4,372	$4,746	$8,792
Fees paid (in thousands of dollars)	$374	$241	$281	$348	$289

N/A = NOT AVAILABLE

(Continued)

[1] The Bonita Street Fire Station is unmanned; it is used for storing equipment

City of Morro Bay
Operating Indicators By Function (Continued)
Last Ten Fiscal Years

	Fiscal Year				
	2012-13	2013-14	2014-15	2015-16	2016-17
Fire					
Number of Stations [1]	2	2	2	2	2
Trucks:					
Suppression	1	1	1	1	1
Ladder	1	1	1	1	1
Rescue	1	1	1	1	1
Emergency responses:					
Fires	37	48	40	49	46
Basic Life Support	410	414	414	364	355
Advanced Life Support (Paramedic)	749	799	825	847	884
Rescues / Traffic Collisions	34	38	21	20	59
False Alarm	36	37	40	51	125
Haz Mat	12	18	14	24	34
Electrical	19	12	20	23	27
Public Service and Agency Assists	412	492	501	529	407
Fire prevention:					
Inspections	84	153	139	121	149
Plan reviews	72	76	102	125	131
Fire Code Enforcement cases/violations	19	25	20	28	34
Harbor					
Number of Stations	1	1	1	1	1
Calls for service	259	1,441	1,466	1,541	1,583
Officer-initiated activity	699	4,156	4,553	4,579	4,378
Emergency responses	32	140	186	191	140
Assists of other agencies ("AOA")	88	426	419	430	498
Enforcement actions (warnings, citations)	53	236	331	308	295
Maintenance actions	330	2,144	2,271	1,780	1,855
Community Development					
Building permits:					
Number of permits issued	195	216	294	480	460
Valuation of const/impv (in thousands of dollars)	$6,729	$6,899	$12,252	$15,986	$12,365
Fees paid (in thousands of dollars)	$483	$398	$734	$1,135	$840

N/A = NOT AVAILABLE

(Continued)

[1] The Bonita Street Fire Station is unmanned; it is used for storing equipment

City of Morro Bay
Operating Indicators By Function (Continued)
Last Ten Fiscal Years

	Fiscal Year				
	2007-08	2008-09	2009-10	2010-11	2011-12
Public works					
Streets:					
Miles:					
Arterial	7.6	7.6	7.6	7.6	7.6
Collector	12.2	12.2	12.2	12.2	12.2
Local Commercial/Industrial	N/A	N/A	N/A	N/A	N/A
Local/Residential	33.3	33.3	33.3	33.3	33.3
Street resurfacing (miles)	N/A	N/A	N/A	N/A	1.86
Traffic signals	1	1	1	1	1
Street lights	-	-	-	-	-
Solid waste - Recycling:					
Curbside Recycling (tons/year)	2,552	2,157	2,103	2,232	2,150
Greenwaste (tons/year)	1,642	1,879	1,808	1,499	1,709
Construction & Demolition Debris (tons/year)	324	225	142	101	207
Solid Waste - Garbage:					
Residential (tons/year)	1,735	1,892	2,420	2,857	3,092
Commercial (tons/year)	5,003	4,730	4,578	4,316	4,558
Transit					
Dial-A-Ride (rides/year) [1]	34,347	30,973	26,143	-	-
Morro Bay Transit:					
Fixed Route (riders/year)	-	-	-	10,965	15,703
Call-A-Ride (rides/year)	-	-	-	1,410	1,707
Trolley (riders/year)	19,071	23,752	20,877	21,247	20,647
Water:					
Number of consumers	5,513	5,440	5,370	5,399	5,399
Water introduced into system (millions of gallons)	462	446	426	407	404
Metered water deliveries (millions of gallons)	412	409	432	379	383
Unmetered water (million gallons)	51	37	-	28	20
Wastewater [2]					
Average daily sewage treatment (millions of gallons)	1.09	1.10	1.09	1.19	1.24

N/A = NOT AVAILABLE

(Continued)

[1] In Fiscal Year 2010-11, the Dial-A-Ride program changed to a Fixed Route plus Call-A-Ride system

[2] Averages are calculated as calendar year, not fiscal

City of Morro Bay
Operating Indicators By Function (Continued)
Last Ten Fiscal Years

	Fiscal Year				
	2012-13	2013-14	2014-15	2015-16	2016-17
Public works					
Streets:					
Miles:					
Arterial	7.6	7.6	7.6	7.6	7.6
Collector	12.2	12.2	12.2	12.2	12.2
Local Commercial/Industrial	N/A	N/A	N/A	N/A	N/A
Local/Residential	33.3	33.3	33.3	33.3	33.3
Street resurfacing (miles)	7.37	3.24	4.54	N/A	10.00
Traffic signals	1	1	1	1	1
Street lights	-	-	-	-	-
Solid waste - Recycling:					
Curbside Recycling (tons/year)	2,121	1,802	1,588	1,736	2,131
Greenwaste (tons/year)	1,768	1,077	862	1,504	1,941
Construction & Demolition Debris (tons/year)	263	346	288	528	320
Solid Waste - Garbage:					
Residential (tons/year)	3,271	4,137	4,407	3,191	2,752
Commercial (tons/year)	4,224	4,771	4,609	5,010	5,100
Transit					
Dial-A-Ride (rides/year) [1]	-	-	-	-	-
Morro Bay Transit:					
Fixed Route (riders/year)	21,716	21,618	21,445	22,625	20,649
Call-A-Ride (rides/year)	1,623	1,497	1,492	1,612	1,481
Trolley (riders/year)	18,866	18,072	17,572	16,395	19,474
Water:					
Number of consumers	5,411	5,418	5,447	5,466	5,453
Water introduced into system (millions of gallons)	394	417	367	335	319
Metered water deliveries (millions of gallons)	379	390	356	324	19
Unmetered water (million gallons)	16	27	11	11	-
Wastewater [2]					
Average daily sewage treatment (millions of gallons)	1.10	0.96	0.94	0.93	0.99

N/A = NOT AVAILABLE

(Continued)

[1] In Fiscal Year 2010-11, the Dial-A-Ride program changed to a Fixed Route plus Call-A-Ride system

[2] Averages are calculated as calendar year, not fiscal

City of Morro Bay
Operating Indicators By Function (Continued)
Last Ten Fiscal Years

	Fiscal Year				
	2007-08	2008-09	2009-10	2010-11	2011-12
Recreation services					
Number of parks	11	11	11	11	11
Acreage	N/A	N/A	N/A	N/A	N/A
Community centers [1]	3	3	3	3	3
Lila Keiser athletic field permits (hours reserved)	2,397	2,469	2,645	1,811	1,960
Facility rentals (hours reserved)					
Community Center/Veterans Memorial Building	18,602	17,857	18,749	17,943	15,844
Park pavilions/Barbeque areas	1,207	1,227	1,144	1,140	1,052
Recreation program enrollment:					
Kids Club Before/After School	15,121	17,151	19,846	15,181	14,029
Sports Leagues/Classes	40,147	38,418	39,499	40,208	42,828
Junior Lifeguards	2,129	2,285	1,791	1,603	2,256
Kids Camp	2,395	2,584	2,386	2,378	2,325
Teen Center	6,597	7,005	6,215	7,283	7,379
Skate Park [2]	1,083	532	-	-	-
Enrichment [3]	11,092	10,162	7,591	8,883	6,100
Coast Summer Slam	360	360	360	435	420
Rock to Pier Run	826	871	950	1,037	1,115
Labor Day	390	360	360	360	360
Oktoberfest [4]	225	225	225	135	-

(Continued)

N/A = NOT AVAILABLE

1 Kennedy Way Community Center, Veterans Memorial Building, Teen Center

2 Skate Park moved to Teen Center Parking Lot; not staffed, but open during teen center hours

3 In fiscal year 2012-13, classes were moved from Sports Division to Administration

4 Discontinued due to declining enrollment

City of Morro Bay
Operating Indicators By Function (Continued)
Last Ten Fiscal Years

	Fiscal Year				
	2012-13	2013-14	2014-15	2015-16	2016-17
Recreation services					
Number of parks	11	13	13	13	13
Acreage	N/A	N/A	N/A	N/A	N/A
Community centers [1]	3	3	3	3	3
Lila Keiser athletic field permits (hours reserved)	2,828	2,799	3,477	3,667	1,862
Facility rentals (hours reserved)					
Community Center/Veterans Memorial Building	17,606	14,756	10,439	12,173	17,920
Park pavilions/Barbeque areas	1,019	1,110	1,200	1,027	5,262
Recreation program enrollment:					
Kids Club Before/After School	14,131	13,771	13,459	13,521	13,417
Sports Leagues/Classes	30,519	34,736	34,005	32,425	30,938
Junior Lifeguards	2,778	2,586	2,193	2,500	2,610
Kids Camp	2,197	2,231	2,108	2,418	2,805
Teen Center	8,573	8,781	6,243	5,329	4,822
Skate Park [2]	-	-	-	-	-
Enrichment [3]	15,626	12,747	10,392	9,346	7,622
Coast Summer Slam	465	480	480	420	336
Rock to Pier Run	1,173	1,072	992	1,188	1,067
Labor Day	330	315	315	255	270
Oktoberfest [4]	-	-	-	-	-

(Concluded)

N/A = NOT AVAILABLE

1 Kennedy Way Community Center, Veterans Memorial Building, Teen Center

2 Skate Park moved to Teen Center Parking Lot; not staffed, but open during teen center hours

3 In fiscal year 2012-13, classes were moved from Sports Division to Administration

4 Discontinued due to declining enrollment

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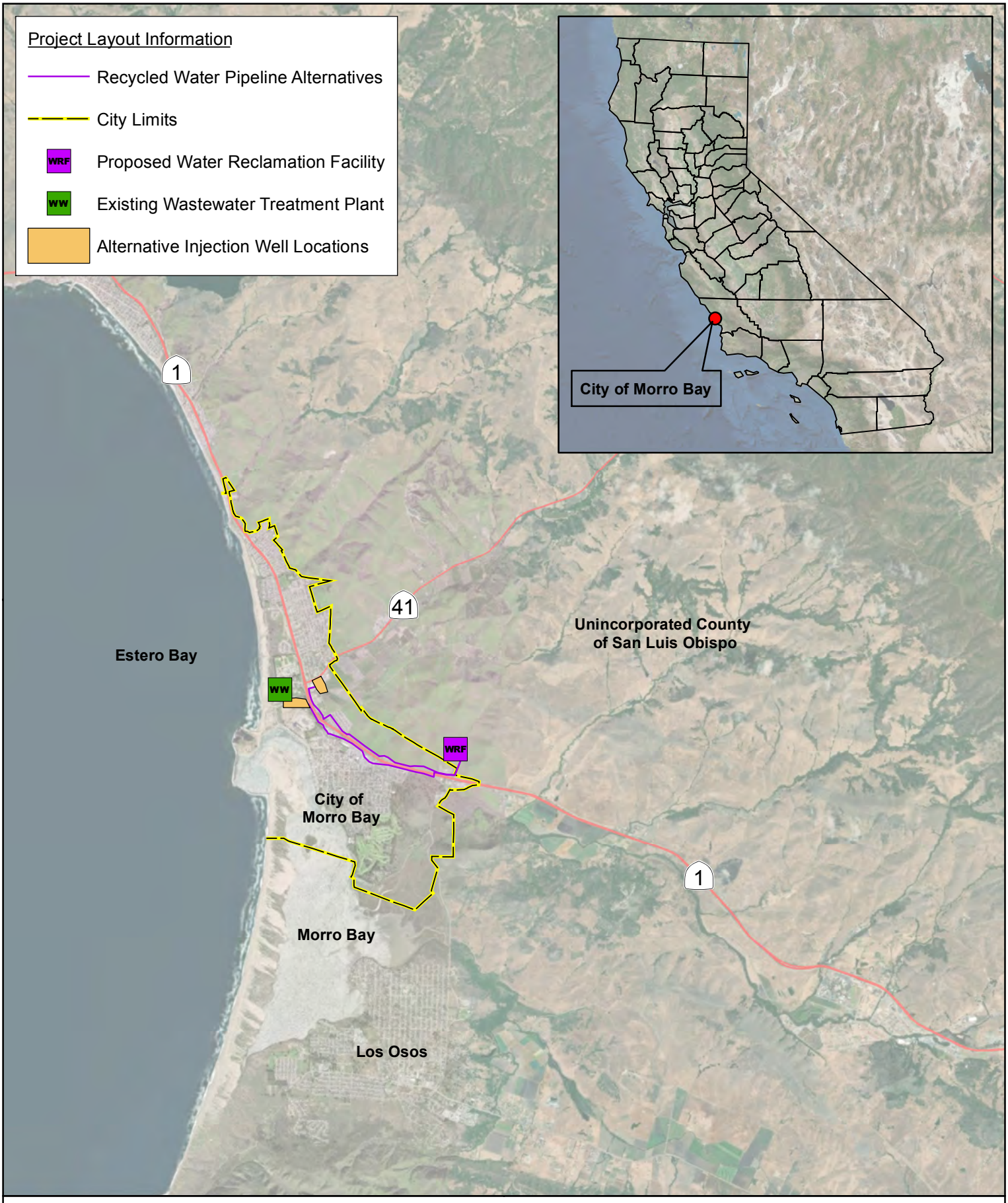
EXHIBIT IV. PROJECT MAP

A Project Location Map and Site Map are included in **Exhibit IV.**



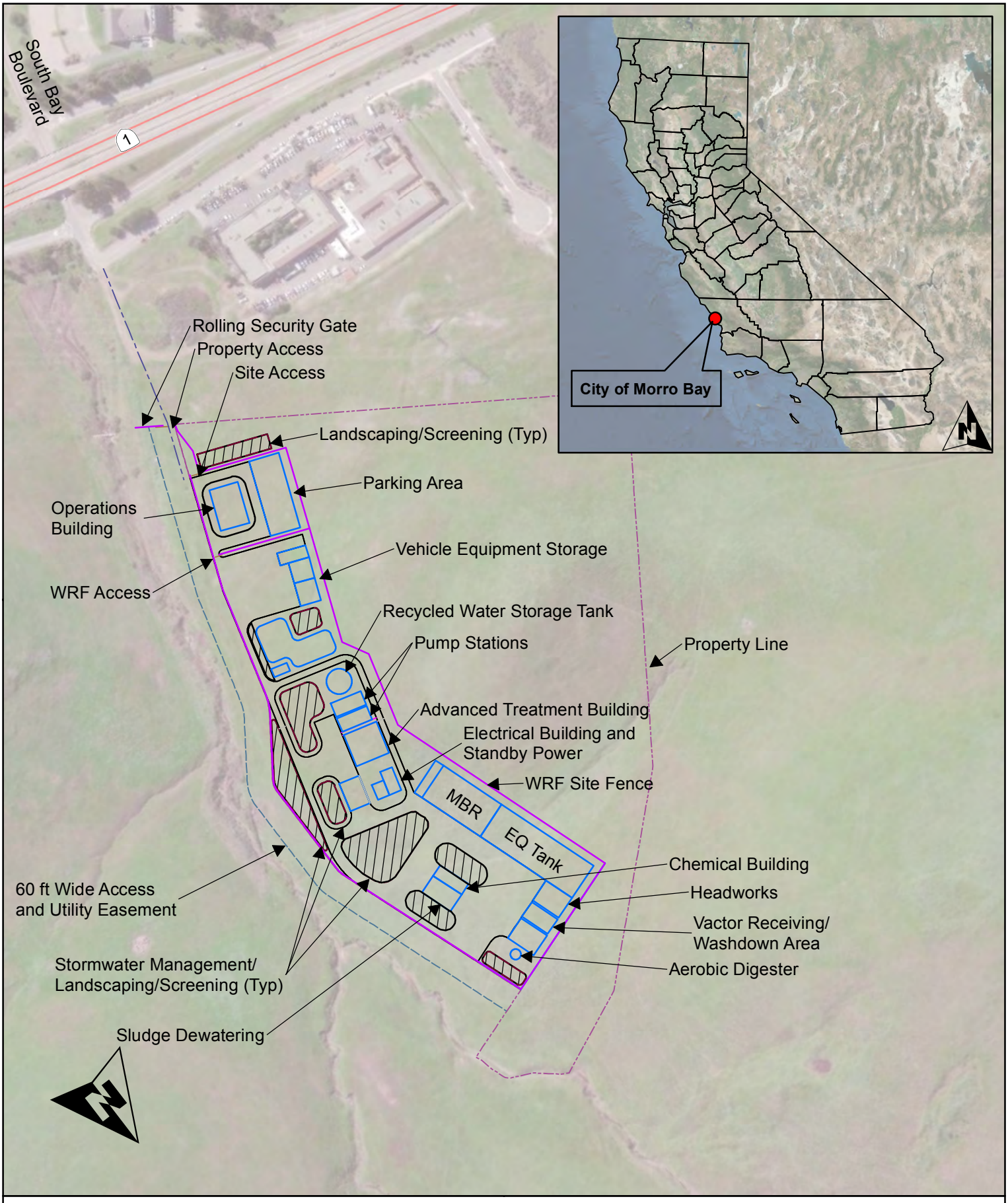
CITY OF MORRO BAY WATER RECLAMATION FACILITY PROJECT

Exhibit IV:
Project Location Map
WIFIA ID: N17108CA

1 inch = 8,000 feet

0 4,000 8,000 Feet

N



CITY OF MORRO BAY WATER RECLAMATION FACILITY PROJECT

Exhibit IV:
Project Site Map
WIFIA ID: N17108CA

1 inch = 300 feet

Feet
0 150 300

EXHIBIT V. CONSTRUCTION PLANS AND SPECIFICATIONS

The City will use a design-build project delivery method for this project. The Design-Build Contractor will be responsible for preparing construction plans and specifications, and the City will submit these as soon as they are available. The Request for Proposals, selected proposal, and rationale for selection of the design-build contractor are included as **Exhibit V.**

CITY OF MORRO BAY
WATER RECLAMATION FACILITY PROJECT

City of Morro Bay

Request for Proposals

for

DESIGN-BUILD SERVICES of the

WATER RECLAMATION FACILITY (WRF) ONSITE IMPROVEMENTS

January 24, 2018

Issued by:

REGISTERED PROFESSIONAL ENGINEER
ROBERT A. LIVICK
C 61057
CIVIL
STATE OF CALIFORNIA

X_____

Rob Livick, PE/PLS – Public Works Director/City Engineer

Request for Proposals

The Owner has selected three teams from the interested teams who submitted SOQs for the Project described below to submit Proposals pursuant to this **REQUEST FOR PROPOSALS** ("RFP"). By submitting a Proposal, the Proposer represents that it has carefully read the terms and conditions of this RFP, including all attachments and addenda, and agrees to be bound by them. Only those teams selected by the Owner (shortlisted) are eligible to submit Proposals for this RFP. Submissions by others or non-shortlisted teams will not be considered.

OWNER: **City of Morro Bay**
MAILING ADDRESS: **595 Harbor Street**
PHYSICAL ADDRESS: **955 Shasta Avenue**
Morro Bay, CA 93442

PROJECT: Water Reclamation Facility (WRF) Onsite Improvements
Morro Bay, CA

OWNER CONTACT PERSON: **Rob Livick, PE/PLS**
Public Works Director/City Engineer
955 Shasta Avenue
Morro Bay, CA 93442

PROPOSAL DUE DATE AND TIME:

Proposals shall be submitted no later than: April 24, 2018 at 2:00 PM

All Proposals must be submitted pursuant to the instructions below. It is the Proposer's sole responsibility to ensure that the Proposal is delivered in the manner required in this RFP by the Due Date and Time. Owner has the right to reject any Proposals not properly delivered.

SECTION 1 GENERAL INFORMATION

1.1 General

The City of Morro Bay is soliciting proposals from previously qualified design-build entities for the design-build of the Water Reclamation facility Project Onsite Improvements at the South Bay Boulevard site ("Project").

The Proposal requirements are detailed in this RFP. This RFP process is the second step in the two-step procurement process for the Project. This RFP incorporates the terms, definitions, and schedules set forth in the Request for Qualifications ("RFQ") and any Addenda issued thereto; however, to the extent that the RFP conflicts with the RFQ and any Addenda thereto, the RFP shall prevail and shall be considered an addendum to previously published information. Proposers must submit their Proposals pursuant to the schedule set forth in this RFP. This RFP is not an offer to enter into a contract, but is merely a solicitation of entities interested in submitting a Proposal to the Owner for the Project.

1.2 Pre-Proposal Conference

A pre-proposal conference will be held at 10:00 a.m., on Tuesday February 6, 2018 in the Studio Room at Morro Bay Community Center, 1001 Kennedy Way, Morro Bay, California 93442. Prospective Proposers are required to attend since City Staff will be present to answer any questions regarding the Proposal Specifications; there will also be a project site tour.

1.3 Proposal Submission and Deadline

Proposals shall be submitted with all documents required in this RFP properly signed by the Proposer, delivered under sealed cover, and plainly marked:

DESIGN-BUILD OF THE WATER RECLAMATION FACILITY ONSITE IMPROVEMENTS FOR THE CITY OF MORRO BAY

DESIGN-BUILD ENTITY'S NAME

SUBMITTAL DEADLINE: APRIL 24, 2018, AT 2:00 PM

The Proposals shall be submitted to the Public Works Director/City Engineer electronically through the City's Procore system and at the addresses below for the hard copies prior to the date and time specified in the Procurement Schedule in Section 1.4 of this RFP. At that time all proposals will be publicly opened and recorded. Proposals received after the deadline will not be accepted.

CITY OF MORRO BAY
ATTN: ROB LIVICK, PUBLIC WORKS DIRECTOR
Mailing Address: 595 Harbor Street, Morro Bay, California 93442
Physical Address: 955 Shasta Avenue, Morro Bay, California 93442

Each Proposer shall carefully examine each term of this Request for Proposal; and each Proposer shall judge all the circumstances and conditions affecting his/her proposal. Failure on the part of any Proposer to make such examination and to investigate thoroughly shall not be grounds for any declaration that the Proposer did not understand the conditions of this Request for Proposal.

The Proposer shall comply with all federal, state or local laws which apply to the services and products herein specified.

Proposers will submit eight (8) printed copies of their technical proposal and cost proposal, including life cycle costs marked clearly with "PROPOSAL FOR WRF ONSITE IMPROVEMENTS OFFERED BY" and the Proposer's name to the City's address provide; and one electronic copy of the technical proposal and cost proposal, including life cycle costs, in fully searchable pdf format through the City's Procore System. Each proposal must contain the sections as detailed in this RFP.

This solicitation for proposals does not commit the City of Morro Bay to enter into a Contract. The City of Morro Bay reserves the right to accept or reject any proposals, and to negotiate with any qualified source, or to cancel in part or in its entirety this Request for Proposals. It may accept the proposal that it considers to be in the interest of the City of Morro Bay, with or without negotiation.

The City reserves the right to waive any informality or minor irregularity when it is in the best interest of the City to do so, to negotiate for the modification of any proposal with mutual consent of the Proposer, to re-advertise for proposals if desired, and to accept the proposal which in the judgment of the City, even though it does not offer the lowest cost, is nevertheless deemed to offer the best value for the public and City. Any proposal which is incomplete, conditional, obscure, or which contains irregularities of any kind, may be cause for rejection.

1.4 Procurement Schedule

The following is the anticipated Procurement Schedule for the City. The Owner reserves the right to modify the schedule via Addenda.

Task	Date
Issue RFP	January 24, 2018
Pre-Proposal Conference and Site Walk	February 6, 2018 at 10:00 AM
Last Day for Formal Questions	March 23, 2018 at 5:00 PM
Proposals Due/Opening	April 24, 2018 at 2:00 PM
Proposal Review Process	April 24 – June 18, 2018
Interviews	May 2018
EIR Certification	June 2018
Contract Negotiations	June-July 2018
Contract Award	August 2018
Construction Complete	Fall 2021
Commissioning Complete	Spring 2022

1.5 Owner's Program

1.5.1 Attachment A to this RFP is the Performance Criteria Report. The Performance Criteria Report describes the Project scope and contains the City Project goals and objectives as well as the performance criteria for the Project. The Performance Criteria Report will become part of the Performance Requirements, which are defined in Article 1 Paragraph 1.21 of the attached Design Build Contract (Attachment B). All submittals from Proposers must be consistent with and designed to achieve the goals and objects set forth in the Performance Criteria Report.

1.5.2 Proposers shall be entitled to reasonably rely on the accuracy of the information represented in the design or prescriptive specifications set forth in the RFP and their compatibility with other information set forth in Performance Criteria Report for the purposes of developing the Proposer's Technical and Price Proposals. However, the selected Design Build Entity (DB) will be required to perform an independent evaluation of all information provided by the Owner, including but not limited to such design or prescriptive specifications to validate the information provided by the Owner. Further, regardless of the inclusion of design or prescriptive specifications, the selected DB shall remain responsible for meeting the performance requirements of the Project, including but not limited to the requirements described in the Performance Criteria Report as well as all applicable Legal Requirements. Provided the selected DB complies with all requirements set forth in the Contract, including but not limited to those regarding notice of claims to the Owner and identification of differing site conditions, and only to the extent that the Contract allows the selected DB to an adjustment in the Contract Price and Project Schedule, the selected DB will be entitled to an adjustment in the Contract Price and Project Schedule. Such adjustment shall be limited to the extent DB's actual documented costs or the critical path of the Project Schedule have been adversely impacted by materially inaccurate design or prescriptive specifications that are inconsistent with meeting the Project's performance requirements.

1.5.3 The Owner assumes no responsibility for conclusions or interpretations made by the Proposer based on the information provided by the Owner. Oral statements made by the Owner representatives are not binding on the Owner unless the Owner confirms the statements and changes by written Addendum to the RFP. In the event of a conflict between codes, industry standards and the Performance Criteria Report, the most stringent requirements shall apply and Proposers shall submit their Proposals based on the most stringent requirements.

1.6 Sample Contract Documents

Attachment B to this RFP is the proposed form of Contract between the Owner and DB. The Contract Documents will also include at a minimum the Attachments to the RFP, all Appendices to the Performance Criteria Report, and the finalized proposals submitted by the DB.

1.7 Expenses of the Proposers and Payment of an Honorarium

The City will pay an honorarium equal to $75,000 to each Proposer who provides a responsive, but unsuccessful, Proposal. If the City does not award the Design Build Contract following receipt of Proposals, all responsive Proposers will receive the honorarium amount.

The City will pay the honorarium to each eligible Proposer within 90 days after the award of the Design Build Contract or the decision not to award the Design Build Contract. Acceptance of the honorarium shall constitute a full, final, and complete release of all rights, claims, and demands of the Proposer against the City arising out of or pertaining to the Project. In consideration for paying the honorarium, the City may use any of the ideas or information contained in the Proposals in connection with any contract awarded for the

Project, or in connection with any subsequent procurement, without any obligation to pay any additional compensation to the unsuccessful Proposers.

A Proposer may elect to waive payment of the honorarium within 30 days after the award of the Design Build Contract, in which case the City will be precluded from using any ideas or information contained in its Proposal. The City will not be precluded, however, from using any idea or information that is common to a Proposal received from another Proposer accepting the honorarium, or otherwise is publicly available.

With the exception of payment of the honorarium as described in the subsequent paragraph, if applicable, the City accepts no liability for the costs and expenses incurred by the Proposers in responding to this RFP, responding to clarification requests and discussion meetings, preparing resubmittals and any other activities included as part of this procurement process. In addition, if a Proposer performs any additional investigations as part of the Proposal preparation activities, these costs shall be at the sole cost and expense of the Proposer. Each Proposer that enters into the procurement process shall prepare the required materials and submittals at its own expense and with the express understanding that they cannot make any claims whatsoever for reimbursement from the City for the costs and expenses associated with the process.

SECTION 2 RFP PROCUREMENT PROCESS

To be responsive to the RFP and obtain the stipend/honorarium set forth in the RFP, Proposers must submit responsive Proposals and participate fully in the following RFP Procurement Process.

2.1 Pre-Proposal Conference

A pre-proposal conference will be held at 10:00 a.m., on Tuesday February 6, 2018 in the Studio Room at the Morro Bay Community Center at 1001 Kennedy Way, Morro Bay, California 93442. Short-listed Proposers are required to attend. City Staff will be present to provide an overview of the Proposal Specifications; there will also be a project site walk. Any questions presented at this mandatory meeting will be recorded and responded to via Addendum. Proposers must follow the City safety procedures while attending the Site Walk. City safety procedures require that PPE including work boots and high visibility vests be worn during this site tour.

2.2 Proposed Changes in the Design-Build Contract Documents

2.2.1 Submission of a Proposal pursuant to this procurement is a representation by the Proposer that it has reviewed the Contract Documents, including but not limited to the Performance Criteria Report (including Appendices) and all attachments to this RFP, and the Proposer is willing to perform any and all work necessary including such technical, construction and any other work necessary to provide a fully operational facility that meets or exceeds those criteria detailed in the Performance Criteria Report for the terms set forth in the Contract Documents.

2.2.2 Prior to the date set forth in the schedule, Proposers may propose changes to the Contract Documents, including but not limited to the insurance requirements, bonding requirements, Performance Criteria Report, and Design-Build Contract. The Owner's goals in requesting such proposed changes are: i) to discover provisions in the Contract Documents that unnecessarily increase the cost of the Project or complicate the performance of the Work, and ii) to identify contract provisions and commercial terms the DB intends to negotiate if selected. Therefore, with every proposed change, Proposers must include the following information:

- The document and section number
- Proposed alternate language
- An explanation for the requested change
- Any impact the requested change has on any commercial term in the Contract Documents or Performance Criteria Report

2.2.3 The Owner may discuss any proposed changes at any point during the interview or negotiation process. The Owner reserves the right to reject any and all proposed changes and to accept any proposed change to the Contract Documents via Addendum to the RFP. The Owner also reserves the right to negotiate such provisions with the selected Proposer.

2.3 Alternative Technical or Management Concepts

2.3.1 Prior to the date set forth in the schedule, Proposers may submit Alternative Technical or Management Concepts ("Alternative Concepts" or "ATCs") that may offer alternative means in achieving the required performance criteria. The Owner's goal in requesting Alternative Concepts is to encourage innovation by Proposers to better meet the Owner's Project Objectives set forth in Section 2.B of the RFQ.

2.3.2 ATCs should meet or exceed the performance requirements set forth in the Performance Criteria Report; however, Proposers may submit ATCs that contain solutions that are substantially equal to the performance requirements set forth in the Performance Criteria Report if the solution provides a guaranteed cost savings for the Project. ATCs that merely cut a portion of the scope of Work or provide a lesser standard of performance or materials will not be considered.

2.3.3 Proposers must identify the portion of the Performance Criteria Report that is inconsistent with the solution presented in the ATC. By identifying any cost savings because of the Owner's acceptance of the ATC, the Proposer guarantees both performance and cost savings to the Owner if the ATC is accepted.

2.3.4 The City will respond in writing to each ATC to let the proposer know if the ATC is rejected or if it may be submitted as an acceptable alternative to the Performance Criteria. The Owner reserves the right to consider Alternative Concepts and accept or reject such Alternative Concepts in whole or in part. If the Owner accepts an Alternative Concept that is contrary to the Performance Criteria Report, the Owner shall issue an Addendum to this RFP altering that portion of the RFP that is inconsistent with the accepted Alternative Concept. Such Addenda will be issued prior to the date set forth in the schedule.

2.3.5 The Owner will make an independent determination with respect to the extent to which the Alternative Concept is consistent with the Performance Criteria Report as well as any changes necessary to the Performance Criteria Report to allow the Owner to accept the Alternative Concept. Notwithstanding any consideration, acceptance, or rejection of an Alternative Concept as part of the procurement, the Owner reserves the right to consider such Alternative Concepts during the performance of the Project and amend the Performance Criteria Report to include the Alternative Concept.

2.3.6 If an Proposer claims that any portion of a submitted Alternative Concept is proprietary or confidential information, the Proposer shall identify that portion of the Alternative Concept that it considers to be proprietary. The Owner will consider the request to keep such information proprietary but reserves the right to make its own determination regarding the proprietary nature of the Alternative Concept. If the Owner disagrees with the Proposer's designation of the information as proprietary, the Owner will provide written notice to the Proposer and an opportunity to withdraw or modify the proprietary information prior to disclosure.

2.4 Confidential Individual Meetings with the Owner

2.4.1 Proprietary Meetings

- The Owner will conduct up to two (2) Proprietary Meetings with each Proposer individually. The Proprietary Meetings will provide an opportunity for the Proposer to ask the Owner questions regarding the Proposal, Alternative Technical Concepts, and/or proposed changes in the form of contract. The Proprietary Meeting(s) will last no more than two (2) hour(s) and will occur before the submission of the Technical Proposal.

- The Short Listed Proposers will have an opportunity to describe their Proposal and any Alternative Technical Concepts or proposed changes in the Contract Documents. Proposers are encouraged to focus on how their proposed approach for the Project will distinguish themselves from other Proposers, meet the Owner's needs and objectives as well as achieve Design Excellence. The Owner will have an opportunity to ask questions regarding the submitted Proposals and/or proposed changes in the Contract Documents.
- Proposers may not rely on any oral statement to accept an ATC or Proposal in the Proprietary Meeting unless such oral statement is contained in a written Addendum to the RFP issued by the Owner.
- Any presentations at the Proprietary Meetings should be in Microsoft PowerPoint with paper handouts of the presentation.
- The intent of the Proprietary Meeting is to discuss the Proposal, Alternative Technical Concepts, and proposed changes to the Contract; therefore, the Proposers will not be scored with respect to the Proprietary Meeting itself. However, the Owner reserves the right to evaluate the interaction of the proposed Design-Build Team with the Owner with respect to the Proposer's ability to collaborate with the Owner.

2.4.2 Interview

- The Owner shall conduct an individual Interview with each Short-Listed Proposer. The Interview shall be approximately 2 hours and will occur after the submission of the Technical Proposal. The Proposers will be allowed 1 hour and 15 minutes for a project management and technical proposal presentation, followed by 45 minutes for questions from the Owner.
- Proposers should include in the presentation an explanation of the design solution and how the design solution meets or exceeds the Owner's Project Goals and the definition of Design Excellence for this Project. The presentation should include the project management approaches that will ensure the project is completed within the scheduled duration and within the project budget.
- The Owner reserves the right to ask questions of the Proposer, including but not limited to questions regarding the Proposer's SOQ and/or Technical Proposal.
- Any presentations at the Proprietary Meetings should be in in Microsoft PowerPoint with paper handouts of the presentation.
- Proposers will have access to the following equipment for their presentations: A laptop computer and a large monitor connected to the laptop.

2.5 Technical Proposal

Proposers shall submit the Technical Proposal pursuant to the instructions set forth herein (refer to section 3) at or before the time set forth in the schedule. Proposers are encouraged to focus on the concerns of the Owner as set forth below in submitting their Proposal.

2.6 Price Proposal

2.6.1 Proposers will submit Price Proposals (per section 1.3 above) with the other proposal documents pursuant to the Schedule and in compliance with the instructions set forth in Attachment C. Price Proposals shall be based on the RFP and Contract Documents as amended by Addenda. The prices submitted in the Price Proposals will be inserted into the appropriate sections of the Design-Build

Agreement with the selected Proposer. Proposers shall keep their Price Proposals open for 1 year after submission of their Price Proposal. Proposers shall be entitled to rely on the written information provided by the Owner in the RFP and any Addenda in developing their Price Proposal; however, the selected DB will be required to validate all Project information as set forth in the Contract Documents. By submitting a Price Proposal, the Proposer represents and warrants that it will enter into the Agreement set forth in Attachment B for the amount set forth in the Price Proposal, subject only to changes as allowed under the Agreement.

2.6.2 The Proposer has carefully examined the RFP and the Performance Criteria Report and ascertained the nature, scope, and location of the Work. The Proposer has investigated and assured itself as to the general and local conditions that can affect the Work or its cost, all geotechnical and existing site conditions data, and all Plans, Specifications, Addenda, and Contract forms. The submittal of the Technical and Price Proposals shall be conclusive evidence that the Proposer has made such examinations and understands all the requirements for the performance of the completed Work. Failure of the Proposer to take these actions will not relieve it of responsibility for properly estimating the difficulty and cost of successfully completing the Work, or for proceeding to successfully complete the Work without additional cost to the Owner. The Proposer shall determine the methods, materials, labor, and equipment required to perform the completed Work and shall reflect their cost in the Price Proposal.

2.7 Selection of Preferred Proposer

The Owner will evaluate each Proposer pursuant to the selection criteria and weights established herein. The Owner will determine the Preferred Proposer and notify all Proposers in writing of its determination. The "Preferred Proposer" is the Proposer that the Owner determines achieves the apparent best value to the City.

Criterion	Possible Score
Technical Proposal	
Management Approach	3
Quality Assurance and Quality Control	3
Schedule and Cost Controls	4
Team/City Collaboration and Integration	3
Design Development and Management	3
Project Sequencing and Scheduling	4
Proposed Design and Performance Guarantees	20
Price Proposal and Life-Cycle Cost	60
Total	100

2.7.1 At the Owner's discretion, the Owner will initiate negotiations with the highest ranked Proposer. If the Owner cannot reach agreement with the highest ranked Proposer, the Owner may cease negotiations with the highest ranked Proposer and provided that such negotiations are terminated in writing, shall initiate negotiations with the next highest ranked Proposer. The Owner shall continue with this process with each such Proposer until it reaches agreement or cancels the procurement. Negotiations are at the Owner's sole discretion. Proposers should not anticipate that any portion of the proposed Contract will be changed or modified. By submitting a Proposal pursuant to the RFP, the Proposer represents and warrants that it will enter into the contract provided by the Owner subject to the terms set forth in its Proposal.

2.8 Selection DeBriefing

All Proposers may request a debriefing from the Owner with respect to the Procurement; however, Owner shall conduct no such debriefings until it has either reached an agreement on the Project or canceled the Procurement.

2.9 Public Records

All records, documents, drawings, plans, specifications and other material relating to the Project including materials submitted by the Proposer in its Proposal and if selected during the course of performing under the Contract shall become the exclusive property of City and shall be deemed public records. Said materials are subject to the provisions of the California Public Records Act (Government Code sections 6250 et. Seq.). City's use and disclosure of its records are governed by this Act.

City will not advise as to the nature or content of documents entitled to protection from disclosure under the California Public Records Act, including interpretations of the Act or the definitions of "TRADE SECRET" or "CONFIDENTIAL" or "PROPRIETARY" as determined by the Proposer. City will endeavor to notify Proposer of any request of the disclosure of such materials.

Under no circumstances, however, will City be liable or responsible for the disclosure of any such labeled materials whether the disclosure is required by law or a court order or occurs through inadvertence, mistakes or negligence on the part of City, its officials, officers, employees, agents, contractors or volunteers.

In the event of litigation concerning the disclosure of any material submitted by Proposer, City's sole involvement will be as a stake holder, retaining the material until otherwise ordered by a court.

Proposer, at its sole expense and risk, shall be responsible for prosecuting or defending any action concerning the materials, and shall indemnify and hold City harmless from all costs and expenses including attorneys' fees, in connection with such action.

2.10 Questions, Clarifications, and Concerns

The Proposal Performance Criteria Report describing this project has been carefully prepared. Any questions or concerns relating to these requirements shall be directed in writing to the Public Works Director (see cover page) and shall be sent by email. A Proposal Question form for this purpose has been included as Attachment D.

Questions will be accepted only up to March 23, 2018 by 5:00 PM, to allow the City, if necessary, to issue an addendum to all proposers stating revisions, deletions, or additions to be made to the Proposal requirements as a result of any questions. If questions arise after the deadline, please contact the Public Works Director, Rob Livick, at rlivick@morrobayca.gov, but the City will not guarantee a response.

Any communications initiated by a Design-Build Team with the City, City's representatives, and/or project stakeholders other than via email with Mr. Livick about the Water Reclamation Facility may result in disqualification. All communications shall be directed to Rob Livick. If a community member or group, or any other entity reportedly representing the City other than Rob Livick, initiates communications with a Design-Build Team regarding the project during the proposal period, the Design-Build Team shall note the day, time, and entity's information if provided, decline to discuss the project, and request that they contact Mr. Livick. DB Team shall also inform Mr. Livick about the communication.

The City will not be responsible for verbal responses made by City staff.

2.11 Notification of Staff Determination

Once the City has reviewed and evaluated the proposals received and has determined for award the responsible proposal that provides the best value to the City, that determination will be posted on the City's website, **morrobaywrf.com**. It is the sole responsibility of interested Proposers to seek this information.

Any protests shall be received by the City Clerk at 595 Harbor Street, Morro Bay, California 93442, by 5:00 PM PT on the 10th day following the City's written notice of the selected Design-Build Teams. The protest shall be a letter correspondence submitted via US Mail or hand-delivery (not email or fax) and state the specific grounds for the protest, including facts supporting those specific grounds. Protests received after the stated deadline will not be considered.

Protests will be reviewed by the Public Works Director/City Engineer, and the City's response to protests will be issued within 20 business days from receipt of the protest. The Public Works Director/City Engineer will make the final determination, and no further appeals will be allowed.

SECTION 3 DOCUMENTATION REQUIREMENTS

3.1 Submittal Process

3.1.1 Proposers must submit eight hard copies of the Proposal documents and two copies of the Price Proposal. In addition to the hard copies of the Proposal documents and Price Proposal the Proposer must submit one copy electronically on a USB memory device.

- The submittal shall be sealed and include on the outside of the package the Request for Proposal number, title, Proposer's Name and due date and time. The Price Proposals must be included in the package an enclosed separate envelope in compliance with sections 1.3 and 2.6 above.
- The Owner will stamp the submittals with a date and time stamp to record timeliness.
- Proposers are responsible for ensuring timely delivery of submittals. The Owner is not responsible for late submittals.
- The electronic version must be submitted in a searchable .pdf format.

3.2 Submittal Format Requirements

All submittals shall comply with the following format requirements:

3.2.1 Organized in accordance with the RFP.

3.2.2 When printed, shall be limited to the page limitation set forth in the instructions for each section.

- The **only** documentation that is **not** included in the page count is the following:
    - Cover Letter
    - Appendices (provided that each Appendix meets the page count set forth in the requirement for the Appendix)
    - Table of contents or tabs will not be counted against the page count as long as these items are used exclusively for organization and contain no substantive written or graphic content
    - Attachment E Proposal Forms
    - Design proposal plans or drawings
- In the event that the page limit is exceeded, the Owner, at its sole discretion, reserves the right to remove pages from the sections of any non-conforming submittals to bring each non-conforming submittal within the page count requirement.
- A "page" shall be defined as one single-sided piece of paper that has words, charts, tables, pictures, or graphics. Pages shall be 8.5 x 11 inches, with the exception of 15 total pages, which may be presented in 11 x 17-inch format; however, larger pages may only contain graphics and/or designs and may not be used for a Proposer's narrative.
- The font on any portion of the submittal, including graphics, should be no smaller than 11 point.

3.3 Cover Letter

Proposers must include a cover letter that includes the following: (1) name, address, telephone number, and e-mail address for each Proposed Design-Build Team Member that has been added to the Proposed Design-

Build Team since submission of the SOQ and (2) any requested changes to the Proposed Design-Build Team since submission of the SOQ. Note that changes to the Proposed Design-Build Team continue to be subject to the RFQ, and Proposers should include an explanation justifying the changes to the Proposed Design-Build Team. The cover letter shall be a maximum of two (2) pages.

3.4 Technical Proposal

The Technical Proposal may not be longer than 60 pages. Proposers should focus their discussions in the Technical Proposal on their approach to the Project.

3.4.1 Overall Management Approach

- Describe the Proposer's overall management approach to the Project. In responding to this evaluation factor, Proposers should address the following:
    - Based on the information provided in the RFQ, RFP, and Proprietary Meetings, what is the Proposer's current understanding of the goals and objectives of this Project?
    - What strategies will the Proposed Design-Build Team employ to achieve a thorough and clear understanding of the Owner's goals and objectives?
    - Identify three (3) key challenges to the Project, and for each challenge identified, propose a strategy to mitigate the potential negative impacts of the challenge.
- Provide a Risk Register including mitigation strategies for the Top 5 Risks to the Owner's Goals and Objectives identified by the Proposer.
- Identify any unique approaches, strengths, and/or differentiating resources (including specific Key Team Members) that will assist the Proposed Design-Build Team to implement the strategy and assist the Owner in achieving its goals.
- The Owner recognizes the importance of the entire design-build team, including specialty design-build subcontractors. For those subcontractors and subconsultants not proposed as part of the Design-Build Team,
    - Describe the Design-Build Team's overall approach to subcontractor and subconsultant procurement for the Project.
    - Identify the challenges in the selection of subcontractors and subconsultants for the Project and how the Design-Build Team will address those challenges.
    - Identify how the Proposer will ensure compliance with DBE, MBE, WBE, and SBE requirements as well as any other procurement requirements as referenced in the Draft Design Build Agreement.
    - If applicable, describe in detail the Design-Build Team's approach to early subcontractor involvement, including proposed design-build and design-assist subcontractors, and identify which scopes of Work are candidates for design-build or design-assist subcontracts.

3.4.2 Quality Assurance/Quality Control ("QA/QC")

- Provide the following information regarding the Proposed Design-Build Team's approach on QA/QC. Proposer will present QA/QC approach for both design and construction, since the approaches for each stage of project development may differ significantly. Include the following information:

- The overall approach to both design and construction QA/QC
- The Proposed Design-Build Team's processes and tools to facilitate QA/QC
- The reporting and functional relationship(s) between the Quality Management personnel and the Proposed Design-Build Team as a whole
- Description of the Design-Build Team's commitment to safety and what innovations the Team will bring to the Project to enhance safety.
- Description of the different safety plans for the proposed project for the Design-Build staff, City Staff, and public

The information provided in response to this Section of the RFP will be scored based on the following:

- The Proposed Design-Build Team's understanding of the delivery method
- The Proposer's technical approach to providing a project which meets all the project objectives
- The degree to which the Proposed Design-Build Team understands the Owner's goals and objectives with respect to the Project
- The strength of the Proposed Design-Build Team's management plan for the Project, including not only the specific topics and specialized components outlined in the RFP or discussed in the Confidential Individual Meetings, but also any other component or element that the Proposed Design-Build Team deems essential to the success of the Project
- The approach to overall project safety
- The approach to project staffing and potential benefits to co-location of Proposed Design-Build Team with Owner's management team

3.4.3 Project Controls, Cost Tracking

Describe the DB's processes and tools for monitoring, reporting, and managing cost, including but not limited to:

- Design to budget control and reporting processes
- Scope, cost, and schedule baseline development
- Management/change control processes and the participation and interaction among the scheduling and estimating teams, project, design, construction, and operations management teams to execute these processes
- Risk management processes and how quantified risk cost and schedule values are factored into the cost and schedule baseline, projected cost and schedule performance, and cash flow reporting
- Cash flow reporting processes and basis for monthly cash flow estimated values
- Process to plan, track, and manage Disadvantaged, Minority, Small, and Woman owned businesses
- Process to plan, track, cash flow, and correctly bill Federal and State Grant and Loan eligible and ineligible work in place
- Document control system integration with work breakdown structure and responsibility assignment matrix or organizational structure
- Ensuring compatibility with City's Procore Project Management System

- Providing payroll and other cost information necessary for State and Federal regulatory compliance and funding agency requirements

The information provided in response to this Section of the RFP will be evaluated based on the following considerations:

- The robust nature of the Proposed Design-Build Team's plan for tracking and measuring the metrics for the Project, including but not limited to costs and schedule
- The Proposed Design-Build Team's plan to collaborate in the development and communication of budget, costs, and schedule to the Owner
- The differentiating resources that the Proposed Design-Build Team provides for the Project

3.4.4 Collaboration and Integration

One of the primary goals for the Project is to create a highly functioning, collaborative, and integrated team as early as possible and to incorporate the Owner's staff and consultants as part of that team.

- Explain the Design-Build Team's approach to creating a collaborative environment for the Project
- Describe how the Design-Build Team will engage City Staff and program management support team and incorporate their input into the Project
- Provide the DB's approach to conflict resolution between the Owner and the DB and among members of the Design-Build Team

The information provided in response to this Section of the RFP to will be evaluated based on the following considerations:

- The strength and viability of the Design-Build Team's plan to communicate and collaborate with the Owner, including not only the specific topics on which the Owner has requested discussion but any other topics that the Proposed Design-Build Team deems essential to the success of the Project
- The ideas and innovations submitted by the Design-Build Team that will enhance and foster collaboration and integration
- The differentiating resources that the Design-Build Team will bring to the Project and how those differentiating resources will enhance the Project

3.4.5 Design Development and Management

In developing the design for the Project, the DB will be required to seamlessly incorporate the new buildings and facilities; coordinate and integrate Owner information systems; obtain and incorporate design input from multiple external stakeholders as well as multiple stakeholders within the Owner; and satisfy the safety, regulatory, and security requirements of multiple governmental entities, all while satisfying the Performance Criteria Report requirements.

- Describe the Design-Build Team's overall approach to Design Excellence, design commitment, design development, and management for the Project. Include a description of the design management process and the communications between the Owner and the DB during this process
- Identify the challenges in developing the design for the Project and how the Design-Build Team will address those challenges

- Provide details regarding the tools used in the design process, including any modeling, and how those tools will assist the DB in achieving those goals
- Describe the Proposed Design-Build Team's approach to value engineering for the Project
- Describe the Proposed Design-Build Team's process for managing quality assurance and quality control during the design process and identify the Key Team Members who will be tasked with the review and coordination of all phases of design documents
- Describe the Proposed Design-Build Team's approach for managing the permitting process. (for those permits under responsibility of Design-Build Team)

<u>The information provided in response to this Section of the RFP will be evaluated based on the following considerations:</u>

- The strength and viability of the Proposed Design-Build Team's design management plan, including not only the specific topics on which the Owner has requested discussion but any other topics that the Proposed Design-Build Team deems essential to the success of the Project
- The quality of the Proposed Design-Build Team's approach to design excellence for the Project and the ideas and innovations proposed to achieve design excellence
- The differentiating resources that the Proposed Design-Build Team will bring to the Project and how those differentiating resources will enhance the Project

3.4.6 Project Sequencing and Scheduling

Provide a project schedule showing all key project milestones and include a list of all assumptions used in developing the schedule for the services presented in Section 3 and other potentially driving factors including but not limited to the following:

- Project Meetings
- Design Phase
- Submittal Review
- Equipment Procurement
- Civil Construction
- Equipment Erection
- Mechanical Construction
- Electrical Construction
- Controls Installation
- Controls System Integration
- Training
- Submission of O&M Manuals
- Point of Substantial Completion
- As Built Drawings
- Point of Final Completion
- Performance and Operational Testing

The construction schedule should meet the Owner's estimated completion date, promote efficiency, and have the least amount of impact on Owner operations and the Project stakeholders as possible. Primavera P6 shall be used for scheduling.

- Describe the Proposed Design-Build Team's overall approach to scheduling and construction sequencing for the Project, in addition to the overall approach, include a description as to how the Design-Build Team will address regulatory and stakeholder approvals for the permitting process

- Identify the challenges in scheduling the construction for the Project and how the Design-Build Team will address those challenges
- Provide details regarding the tools used in developing optimal sequencing and coordination of the Work and how those tools will assist the DB in achieving those goals including but not limited to administration of the consultants, subconsultants, suppliers, UV validation testing, and subcontractors
- Describe the assumptions and constraints under which the proposed schedule was based, including proposed durations, sequencing and logic, and skilled labor availability for determining manpower projections

The information provided in response to this Section of the RFP will be evaluated based on the following considerations:

- The strength and viability of the Design-Build Team's project sequencing and scheduling plan, including not only the specific topics on which the Owner has requested discussion but any other topics that the Design-Build Team deems essential to the success of the Project
- The differentiating resources that the Design-Build Team will bring to the Project and how those differentiating resources will enhance the Project

3.4.7 Proposed Design

Proposers shall submit a Design Proposal that meets or exceeds the criteria set forth in the Performance Criteria Report. The Design Proposal shall be submitted as follows:

- The Design Proposal shall include a written description of the facility design, a description of the operation strategies, and drawings
- The Design Proposal must be included in the format detailed in 3.2.2 above

The Proposed Design should be developed to the schematic phase and specifically include the following elements:

- Process flow diagram
- Hydraulic profile for the facility from influent through pump stations
- Facility, process, and equipment unit capacities including:
    - Influent characteristics with flow rates and constituent loading limits
    - Effluent characteristics with flow rates and constituent loading limits
- Major equipment to be purchased (over $75K)
- Preliminary facility site plan
- Preliminary equipment layouts
- Complete a proposal form for each system (refer to Attachment E – Sample Proposal Forms). The proposal form should at minimum include the following: system description, types and number of major equipment items; size including volume, height, and footprint; manufacturer and model number; and other information necessary to provide the City with sufficient information to understand the proposed systems

- Projected power consumption requirements
- Single line electrical drawings
- Projected Operational and Maintenance costs
- Projected Lifecycle costs

The Owner, in its sole discretion, will determine whether the Proposed Design:

- Meets the Owner's goals and objectives and is consistent with the Performance Criteria Report
- Describes an achievable strategy to meet the Owner's Budget and Schedule

3.4.8 Performance Guarantee

The Proposer shall include with the proposal a performance guarantee for the WRF systems which provides a detailed description of their performance. The performance guarantee is to be provided for City review and will be included in the final contract documents. These guarantees must be applicable for all flow rates and loadings included in the performance requirements. All assumptions and constraints must be included with each guarantee. The guarantees must include a stated quantifiable performance level and tolerances for the following:

- WRF Wastewater Influent Maximum/minimum process inputs – This guarantee is intended to provide the City and DB the ability to ensure the processes are compatible with the upstream processes enabling the WRF to effectively treat wastewater. The guarantee shall include all applicable inputs to the WRF and each treatment unit process.
- WRF Wastewater Effluent Maximum/minimum process outputs - This guarantee is intended to provide the City and DB the ability to ensure the processes will complement downstream processes enabling the WRF to effectively treat wastewater. This guarantee shall include all applicable process (max/min) outputs for the WRF and each treatment unit process.
- Power consumption and efficiencies (for all equipment over 10 hp) – This guarantee is intended to provide the City a guaranteed contractual benchmark to gage the efficient operation of the WRF. The power consumption (kWh) shall be stated per each piece of equipment with the WRF at steady state operation at both anticipated initial and future average day design flows.
- Consumables use rates – This guarantee is intended to provide the City with a guaranteed bench mark to ensure efficient use of consumables and operation of the WRF treatment systems. All consumable guarantees should be standardized to a base of per hour/mgd/etc. with the WRF at steady state operation at both anticipated initial and future average day design flows.
- Major Equipment availability (including at minimum rough and fine screening with conveyance and dewatering, membranes, blowers, UV system trains, advanced oxidation system, biosolids dewatering, and chemical systems). The purpose of this guarantee it to provide the City a guarantee of equipment availability to continuously treat wastewater. Equipment availability is the amount of time equipment is guaranteed to be in "Auto" operational mode. The amount of time necessary for maintenance, component rebuild, breakdowns and similar are not included in the time available.

SECTION 4 ATTACHMENTS TO THIS RFP

Attachment A: Performance Criteria Report

Attachment B: Proposed Contract Documents (Design-Build Agreement)

Attachment C: Price Proposal and Life-Cycle Instructions

Attachment D: Proposal Question Form

Attachment E: Sample Proposal Forms

City of Morro Bay
Request for Proposals
for

DESIGN-BUILD SERVICES of the

WATER RECLAMATION FACILITY (WRF) ONSITE IMPROVEMENTS

Attachment A:

Performance Criteria Report

January 2018

Rob Livick, PE/PLS
Public Works Director/City Engineer
955 Shasta Avenue
Morro Bay, California 93442

CITY OF MORRO BAY
WATER RECLAMATION FACILITY PROJECT

CITY OF MORRO BAY
REQUEST FOR PROPOSALS FOR DESIGN-BUILD SERVICES OF THE WATER RECLAMATION FACILITY (WRF) ONSITE IMPROVEMENTS

Attachment A: Performance Criteria Report

Rob Livick, PE/PLS

Public Works Director/City Engineer

955 Shasta Avenue

Table of Contents

List of Tables

List of Figures

Appendices

List of Acronyms and Abbreviations

AABC	Associated Air Balance Council
AAF	Average Annual Flow
AC	Air Conditioning
AF	Acre-Foot
AFY	Acre-Feet per Year
AHRI	Air Conditioning, Heating, and Refrigeration Institute
AMCA	Air Moving and Conditioning Association
ANSI	American National Standards Institute
AOP	Advanced Oxidation Process
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigerating, and Air Conditioning Engineers, Inc.
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWS	American Welding Society
AWWA	American Water Works Association
BMP	Best Management Practice
BOD	Biochemical Oxygen Demand
BOD_5	5-Day Biochemical Oxygen Demand
CBC	California Building Code
CCR	California Code of Regulations
CDP	Coastal Development Permit
CEnC	California Energy Code
CEQA	California Environmental Quality Act
CF	Cartridge Filter
CFC	California Fire Code
CL2	Chlorine
CMC	California Mechanical Code
CMMS	Computerized Maintenance Management System
CMU	Cement Mortar Unit
CPVC	Chlorinated Polyvinyl Chloride
CSD	Cayucos Sanitary District
CWI	Certified Welding Inspector
DB	Design Build Entity
DC	Direct Current
DDW	Department of Drinking Water
DHS	Department of Homeland Security
DO	Dissolved Oxygen
EQ	Equalization
ESA	Environmental Science Associates
FAT	Full Advanced Treatment
FMP	Facility Master Plan
FRP	Fiber-Reinforced Plastic
GFCI	Ground Fault Circuit Interrupter
GFD	Gallon per Square Foot per Day
GRRP	Groundwater Replenishment Reuse Project
H2S	Hydrogen Sulfide
HID	Host Intrusion Detector
HMI	Human Machine Interface
HVAC	Heating, Ventilation, and Air Conditioning
IES	Illumination Engineers Society
IPR	Indirect Potable Reuse
LAN	Local Area Network
LCP	Local Control Panel
LEL	Lower Explosive Limit
MBCSD	City of Morro Bay & Cayucos Sanitary District
MBR	Membrane Bioreactor
MCP	Master Control Panel
MFR	Manufacturer
mg/L	Milligrams per liter
MGD	Million Gallons per Day
mL	Milliliter
mm	Millimeter
MMF	Maximum Monthly Flow
MSS	Manufacturer's Standardization Society
NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association
NOV	Notice of Violation
NPDES	National Pollution Discharge Elimination System
O&M	Operation and Maintenance

OEM	Original Equipment Manufacturer
OIT	Operator Interface Terminal
OSHA	Occupational Safety and Health Administration
PDF	Peak Daily Flow
PFD	Process Flow Diagram
PG&E	Pacific Gas and Electric
PHF	Peak Hour Flow
PID	Proportional, Integral, Derivative
PLC	Programmable Logic Controller
ppm	Parts per million
psf	Pounds per Square Foot
psi	Pounds per Square Inch
PVC	Polyvinyl Chloride
RO	Reverse Osmosis
RWQCB	Regional Water Quality Control Board
SBB	South Bay Boulevard
SCADA	Supervisory Control and Data Acquisition
SMACNA	Sheet Metal and Air Conditioning Contractors National Association
SS	Stainless Steel
SSRV	Solid State Reduced Voltage
SWRCB	State Water Resources Control Board
TOC	Total Organic Carbon
TKN	Total Kjeldahl Nitrogen
TMP	Trans-Membrane Pressure
TSS	Total Suspended Solids
TVSS	Transient Voltage Surge Suppression
UL	Underwriters Laboratories, Inc.
UPS	Uninterruptible Power Supply
UV	Ultraviolet
UVAOP	Ultraviolet Advanced Oxidation Process
UVT	Ultraviolet Transmissivity
VFD	Variable Frequency Drive
WAN	Wide Area Network
wc	Water Column
WDR	Waste Discharge Requirements
WRF	Water Reclamation Facility
WWE	Waterworks Engineers
WWTP	Wastewater Treatment Plant

SECTION 1 INTRODUCTION

This Performance Criteria Report (PCR) is Attachment A of the Request for Proposals (RFP) for the City of Morro Bay Water Reclamation Facility (WRF) Onsite Improvements Project.

1.1 Background and Project Goals

The existing WWTP was originally constructed in 1953, and the WWTP was upgraded in 1964, 1982, and 1984. The WWTP is jointly owned and operated by the City of Morro Bay and Cayucos Sanitary District (CSD) under a Joint Powers Agreement, and currently serves approximately 14,000 people between the two communities. The WWTP has been operated under National Pollutant Discharge Elimination System (NPDES) Permit No. CA007881 and a 301(h) modified discharge permit since its last upgrade in 1984. The Central Coast Regional Water Quality Control Board (RWQCB) recently renewed the NPDES permit, which includes removal of the 301(h) waiver, meaning compliance with the California Ocean Plan and Federal Clean Water Act (including full secondary treatment) will be required. The permit indicates a time schedule order will be developed, with a time limit not to exceed 5 years.

After the California Coastal Commission denied a Coastal Development Permit (CDP) for construction to upgrade the wastewater treatment plant at its existing location in 2013, the City of Morro Bay began planning a new WRF. During 2013 and the beginning of 2014, the community defined goals to guide the planning and design process for the new WRF. From 2014 through 2016, the City evaluated many potential locations for the new WRF, before choosing the South Bay Boulevard site near Highway 1, based on detailed technical analysis and broad communitywide input. A draft Water Reclamation Facility Master Plan (FMP) that addressed adopted community goals was prepared for that site based on a series of technical workshops, and released in November 2016. A draft Master Water Reclamation Plan (MWRP) that addressed the most effective approach to water reuse was released in March 2017.

Following the release of these documents, the WRF program management team presented how the resulting cost estimates contained in those documents could translate into increased user rates. Both the City Council and many members of the general public expressed concern about the high project costs and their potential effect on user rates.

On April 25, 2017, the City Council explored this issue, seeking ways to reduce project costs, before committing to moving forward on the project described in the draft FMP and MWRP, including its analysis in the required Environmental Impact Report (EIR). As a result, the Council directed City staff to work to with other local public works departments and convene a study session with key public works officials for the purpose of reviewing the assumptions contained in the City's draft master planning documents. The effort was to provide an outside professional perspective on the City's project, its inherent assumptions, and methodologies used in developing the cost estimates. The intent was for such a review to be a candid assessment, based on the experience of these public works professionals. The review workshop, consisting of a panel of four public works officials from around the County with relevant wastewater project experience occurred on June 7, 2017. The panel drew some key conclusions and findings and provided recommendations for potential cost cutting measures to consider for the project at the South Bay Boulevard. These recommendations, coupled with City Council's direction, resulted in revisions to the conceptualized project and reduced the engineer's opinion of the total program cost by approximately $17M. The main revisions from the project described in the Draft FMP are summarized as follows:

a. Minimize odor control from extensive to moderate, focusing on raw wastewater locations.
b. Locate the WRF on the portion of the site that requires less grading, where space for the corporation yard was proposed, and do not save space for potential future public facilities.

c. Remove the septage receiving station and remote operations building, and reduce the size of fire pump facility.

These changes are incorporated in the Project described in this RFP.

The WRF will be solely owned and operated by the City of Morro Bay, and will serve residents of the City as well as any customers under contract with the City. The CSD is pursuing their own wastewater treatment project.

The project goals were developed and revised throughout the planning process. The original project goals were adopted in December 2013 and were most recently amended on October 24, 2017 to emphasize the need to reduce impacts to ratepayers. These amended goals are below:

- All aspects of the WRF project shall be completed ensuring economic value with a special emphasis on minimizing rate payer and City expense
- Communicate WRF project progress including general project status, milestones, and budget/cost information to our community members regularly
- Produce tertiary disinfected wastewater in accordance with the California Code of Regulations (CCR) Title 22 requirements for unrestricted urban irrigation
- Design to produce reclaimed wastewater to augment the City's water supply, by either direct or indirect means, as described in a master water reclamation plan and to maximize funding opportunities
- Include features in the WRF project to maximize the City's opportunities to secure funding and maximize efficiencies, including energy generation and recovery.
- Design to minimize the impacts from contaminants of emerging concern in the future
- Ensure compatibility with neighboring land uses

1.2 Overview

The City of Morro Bay WRF will be designed to treat an annual average flow of 0.97 million gallons per day (MGD) of wastewater through full advanced treatment (FAT). The WRF will provide primary, secondary, tertiary, and advanced treatment, and will produce recycled water meeting standards for a groundwater replenishment reuse project (GRRP) using subsurface application, as defined in California Code of Regulations (CCR) Title 22 recycled water requirements. The WRF will be located at the South Bay Boulevard (SBB) site (Figure 1-1). Flow equalization may be required to handle high summer and winter wastewater peaks. FAT recycled water will be conveyed to injection wells in the Morro Valley. An effluent pipeline will convey advanced treatment waste streams, including brine, to the existing Morro Bay Cayucos Sanitary District (MBCSD) jointly-owned ocean outfall at the site of the existing wastewater treatment plant (WWTP).

A new lift station near the existing wastewater treatment plant (WWTP) will convey raw wastewater through a force main to the WRF. The lift station and offsite pipelines will be designed and constructed by others under different contracts, provided in Appendix A for reference. At this time, preliminary design of the offsite improvements has begun, but the construction contract will not be advertised for bidding until 2019. Additionally, the City is pursuing development of a SCADA Master Plan for the water and sewer utilities, including the WRF. The SCADA Master Plan RFP is provided in Appendix B. The WRF, access road to the WRF, and all design and construction within the SBB site and adjacent area north of Highway 1 right-of-way (ROW) are collectively referred to herein as the WRF Onsite Improvements Project (Project).

Figure 1-1: South Bay Boulevard WRF Site

The following table summarizes the current and anticipated WRF Project efforts and coordination of work. Additional details on the division of responsibilities are provided in the following Sections of this Report.

Work Effort	Responsible Party	Comments
Environmental Documents: CEQA plus	Environmental Science Associates (ESA)	Draft EIR scheduled for March 2018; Certification anticipated in June 2018
WRF Lift Station and Offsite Pipeline Improvements Design	Waterworks Engineers (WWE)	
Program Management Support, Design-Build Owner's Representative, and Construction Administration/Management	City and City's Consultants	
WRF Lift Station and Offsite Pipelines Construction	TBD	
Injection Well Pilot Study, Design, and Construction	TBD	
Land Use Permitting and Planning Agency Coordination	City and City's Consultants	

The WRF Onsite Improvements will consist of the following main components within the SBB site and adjacent access easement:

- Influent Screening
- Grit Removal
- Flow Equalization
- Fine Screening
- Membrane Bioreactor (or comparable activated sludge and membrane filtration)
- Aerobic Sludge Digester
- Sludge Dewatering
- Reverse Osmosis
- Ultraviolet Advanced Oxidation Process
- Odor Control
- Effluent Pump Station and Connection
- Recycled Water Tank, Pump Station, and Connection
- Influent Force Main Connection
- Operations and Maintenance Buildings
- Access Road and Site Access
- Utility Extension Through Site

The City plans to provide is full onsite WRF staffing 40 hours per week with remote and on-call operations on nights and weekends. A preliminary site layout showing property lines, planned easements, and preferred adjacency of the components is provided in Figure 1-2.

This WRF Performance Criteria Report includes the City's minimum design requirements. The City welcomes creativity in alternative solutions that provide capital or life cycle cost savings without sacrificing level of quality or performance during this proposal process and throughout design. The Report is not inclusive of all design requirements and does not relieve the Design Build Entity (DB) from its responsibility to execute the work according to the Contract Documents, reasonable engineering practices applicable to WRFs for GRRPs, and in full compliance with all regulations and laws including the NPDES Permit, WDRs, and Title 22 requirements. The DB is expected to complement these criteria with all needed facilities for a complete and operable WRF meeting the objectives of the Project and Contract.

Legend

1. Operation Building
2. WRF Parking
3. WRF Parking Canopy
4. Collection Vehicles Equipment Storage
5. Water Vehicles Equipment Storage
6. General Laydown Area
7. Wash Rack
8. Outdoor Storage Aisles
9. WRF Maintenance
10. Standby Emergency Power
11. Electrical Building
12. Advanced Treatment
13. Brine/Effluent Pump Station
14. Recycled Water Pump Station
15. Recycled Water Storage
16. Secondary Equalization Storage
17. Membrane Bioreactor
18. Equalization Basin
19. Aerobic Digester
20. Dewatering
21. Headworks
22. Fire Protection Pump Station
23. Chemical Building
24. Vactor Receiving Station

Notes:

1. Access for maintenance, repairs, and major equipment replacement will be provided around all processes and facilities.
2. Providing a functional layout is the responsibility of design build entity (DB).
3. City will approve final layout before building permit planset is developed and before issuing Notice to Proceed for Construction.
4. Consider offsite drainage in site design.
5. Maintain setback of 25' from top of creek banks.
6. Drainage easements may be required to convey site flows from detention or stormwater quality facilities to existing swales. Easements to be identified by DB and negotiated by City with property owner.
7. Refer to Figure 5-1 for Preliminary Access Road Alignment and Typical Road Section.
8. Site plan to include space planning for future solar panels by others.

Dry Swale

See Note 4

Potential cut-off swale or pipe. (Note 4)

Landscaping/Screening

Property Line

Stormwater Management/Landscaping

Landscaping/Screening

Landscaping/Screening

Access Road. See Note 7.

Rolling gate with electric gate operator

Rolling Gate

Rolling Gate

88'

140'

Dry Swale

Stormwater Management/Landscaping/Screening

60' WIDE ACCESS & UTILITY EASEMENT

Property Line

Stormwater Management/Landscaping/Screening

0 150' 300'

1 SITE PLAN LAYOUT

Scale: 1:150

CITY OF MORRO BAY WATER RECLAMATION FACILITY PROJECT

City of Morro Bay
Water Reclamation Facility Project

CONCEPTUAL LAYOUT

FIGURE 1-2

DWG: \\MKN01\Company\Projects\Morro Bay\MB-2015-001-002-003 WRF Program Management Services\300 Engineering\301 CAD\Exhibits\Figure 1-2.dwg USER: JimFroelicher
DATE: Jan 22, 2018 2:58pm XREFS: 2D-C-SITE-PLAN-01 IMAGES: Morro Bay WRF_10.6.jpg

1.3 Design-Build Entity & City Responsibilities

The table below identifies responsibilities for main components of the Project. This list may not represent all responsibilities, since the DB is responsible for designing and constructing a complete and operable WRF meeting the objectives of the Project and Contract. Specific requirements for additional studies, reports, plans, and design submittals are identified in the RFP, contract documents, and PCR. DB will submit written results from all testing, analyses, and studies required in this PCR or in Contract Documents.

Project Management/Administration	DB	City
Project Management	Lead	
Report of Waste Discharge and Title 22 Report	Support	Lead
Air Pollution Control District permit application for temporary and permanent facilities	Lead	Support
Reporting/correspondence with 3rd parties (stakeholders)	Support	Lead
Environmental Impact Report	Support	Lead
Progress reporting to Owner	Lead	
Conditional Use Permit/Coastal Development Permit	Support	Lead
Engineering and Design Activities	**DB**	**City**
Civil sitework	Lead	
Site layout	Lead	
Highway 1/South Bay Boulevard access	Lead	Support
Entrance road	Lead	Support
Building Permit	Lead	Support
Geotechnical investigations	Lead	
Utility connections	Lead	
Connections to influent force main, recycled water pipeline, dedicated City fiber optic line, and effluent pipe 20 feet north of access easement boundary at Highway 1 ROW	Lead	
All process systems and all support/ancillary systems, including components identified below (unless specifically identified as “Support”)	Lead	
Flow equalization	Lead	
Odor control	Lead	
Screening and grit removal	Lead	
Membrane bioreactor	Lead	
Reverse osmosis	Lead	
Chemical feed systems	Lead	
Chemical clean in place system and chemical storage	Lead	
UVAOP system	Lead	
Dewatering	Lead	
Aerobic digestion/Storage	Lead	
Post treatment	Lead	
Recycled water pump station	Lead	
Effluent pump station	Lead	
On-site reclaimed water system	Lead	
Site ingress from Highway 1	Lead	
Recycled water storage	Lead	
Stormwater facilities including compliance with applicable City, County, State Requirements, Local Ordinances, and local development standards	Lead	

Structural	Lead	
Building plumbing	Lead	
Fire protection/detection/alarm systems and Fire Department compliance	Lead	
Standby emergency power	Lead	
HVAC	Lead	
Electrical/electrical building(s)	Lead	
Instrumentation and controls	Lead	
Valves	Lead	
Process and field piping	Lead	
Pumping	Lead	
Electrical metering equipment	Lead	
Electrical control panels	Lead	
Cables, conduits & trays	Lead	
Power and control wiring	Lead	
Transformers	Lead	
Switchgear	Lead	
PG&E Electrical Service Application and Handout	Support	Lead
Southern California Natural Gas Service Application	Support	Lead
Communications on site and with remote lift station PLC via fiber optic	Lead	
Communication service (internet/phone) from offsite to the access easement boundary at Highway 1 ROW	Support	Lead
Communication with lift station/outfall/injection well sites	Lead	
Process equipment layout	Lead	
System integration	Lead	
Security	Lead	
Operation building	Lead	
Maintenance building	Lead	
Equipment and vehicle storage	Lead	
Outdoor storage areas	Lead	
Covered and uncovered parking	Lead	
Existing facility demolition	Lead	
Existing facility decommissioning (See **Existing WWTP Decommissioning/Demolitio**n below for additional detail)	Support	Lead
Indoor/outdoor lighting	Lead	
Grounding/earthing	Lead	
Cathodic protection	Lead	
Lightning protection systems	Lead	
Specifications	Lead	
Project drawings	Lead	
As-built drawings	Lead	
Operations and maintenance equipment (cranes, hoist, etc.)	Lead	
Spare parts development	Lead	
Asset management program, Computerized Management and Maintenance System (CMMS), and development and implementation of proposed system(s)	Lead	
Operations and maintenance manuals	Lead	
Operations and Maintenance Buildings	**DB**	**City**

Operations Building equipment - DB to coordinate requirements with City	Lead	Support
Office equipment – DB to coordinate requirements with City	Lead	Support
Furnishing laboratory equipment	Support	Lead
Design, fit-out & permitting of laboratory		
Conference/training/break room – DB to coordinate requirements with City	Lead	Support
General Construction Activities	**DB**	**City**
Supply of power, water and other utilities, services, chemicals and all consumables necessary during the time of plant construction through to acceptance testing	Lead	
Equipment installation	Lead	
Temporary site access	Lead	
Outdoor lighting	Lead	
Fencing	Lead	
Equipment Procurement	**DB**	**City**
Specification development, equipment selection, procurement documentation development, purchase, delivery and installation	Lead	
Review and analysis for compliance with specifications	Lead	
Placement of purchase orders and issuance of subcontracts	Lead	
Critical item factory inspections and testing	Lead	Support
Equipment inspection upon arrival	Lead	
Processing of invoices for payment	Lead	
Spare parts list development and inventory	Lead	
Site Construction Work	**DB**	**City**
Site preparation	Lead	
Site security, signage, safety items	Lead	
South Bay Boulevard access improvements	Lead	
Access roadway improvements	Lead	
Civil sitework (grading, paving, drainage, fencing)	Lead	
On-site utility installations and connections	Lead	
Foundation and slab installation	Lead	
Building construction and installation	Lead	
Plumbing installation	Lead	
HVAC installation	Lead	
Fire protection equipment installation	Lead	
All process equipment installation	Lead	
Non-process equipment installation	Lead	
Connections to influent force main, recycled water pipeline, and treated effluent pipe at 20 feet inside site boundary	Lead	
Landscaping and Irrigation	Lead	
Perimeter fencing	Lead	
Signage and installation of signage	Lead	
Systems testing and approvals	Lead	
Site cleanup	Lead	
Stormwater management and SWPPP	Lead	
Construction Management	**DB**	**City**
Construction supervision	Lead	

Construction inspection	Lead	
Project quality control	Lead	
City interface/communication	Lead	
Public communication	Support	Lead
Permit support and adherence (construction)	Lead	
Permit support and adherence (occupancy and operation)	Lead	
Field generated Request for Information	Lead	
Shop drawing reviews	Lead	
Punch listing	Lead	Support
Commissioning and Acceptance/Performance Testing	**DB**	**City**
Startup/commissioning plan	Lead	Support
Factory acceptance tests	Lead	Support
Manufacturers' Certificate of Proper Installation	Lead	
Functional tests	Lead	Support
30-Day performance test	Lead	Support
Training of operations staff	Lead	Support
Operations plan	Lead	Support
Operations manual	Lead	Support
CMMS development and implementation	Lead	Support
Asset management program	Lead	Support
Spare parts inventory and management	Lead	Support
Supply of consumables during functional testing; acceptance testing; and performance and operation testing: power, water, chemicals, etc.	Lead	Support
Final acceptance	Lead	Support
Final project documentation	Lead	Support
Initial fill and all first oil changes on equipment	Lead	
6 Month Transitional Operation	**DB**	**City**
Plant operations	Support	Lead
Plant staffing	Support	Lead
City personnel training	Lead	Support
CMMS usage	Support	Lead
Plant maintenance activities, including costing & documenting	Support	Lead
Warranty repair items (1st year)	Lead	
Asset management implementation	Support	Lead
Chemical deliveries		Lead
Electrical/mechanical/process/civil and environmental support	Lead	
Permit regulatory compliance	Lead	Support
Plant tours	Support	Lead
Existing WWTP Decommissioning/Demolition	**DB**	**City**
Existing WWTP shutdown/decommissioning		Lead
Tank cleaning	Lead	
Plant demolition	Lead	

1.4 Influent Flows and Water Quality

Influent flows and loading have long been studied for the existing MBCSD WWTP. Table 1-1 and 1-2 summarize the most recent basis of design for start-up and build-out flows and loads, which have been provided as a reference. Historical WWTP influent water quality information is included as Appendix C. Flow and loading analyses were performed as part of the City's Draft Water Reclamation Facility Master Plan

(Black & Veatch, November 2016), as part of the 2007 Wastewater Treatment Plant Facility Master Plan Report (Carollo, September 2007), the 2009 Wastewater Treatment Plant Facility Master Plan Amendment 1 (Carollo, August 2009), and 2010 Wastewater Treatment Plant Facility Master Plan Amendment 2 (MWH, July 2010), and a flow analysis was performed in the 2006 Sewer Collection System Master Plan Update (Wallace Group, May 2006). Additional, more recent flow information is available in the 2017 Sewer Flow Monitoring and Inflow/Infiltration Study (V&A, September 2017), which will be provided to the proposers. The DB will be responsible for reviewing, and verifying or revising the WRF basis of design for flows and loads.

Table 1-1: Example Start-up Flow and Load Basis of Design Summary

Parameter	Unit	Annual Average	Minimum 2-Hour	Minimum Day	Maximum Month	Peak Day *	Peak Hour
Flow	MGD	0.85	0.28	0.64	1.02	2.35	6.16
BOD5 Concentration	mg/L	440			470		
BOD5 Load	lb/day	3,200	975	2,000	4,000	5,250	
BOD5 Load peaking factor	--	--	0.30	0.63	1.26	1.65	
TSS Concentration	mg/L	490			540		
TSS Load	lb/day	3,500	770	1,600	4,600	6,600	
TSS Load peaking factor	--	--	0.22	0.45	1.33	1.90	
TKN Concentration	mg/L	70			74		
TKN Load	lb/day	500	150	320	630	830	
TKN Load peaking factor	--	--	0.30	0.63	1.26	1.65	

Note: Adapted from Draft Morro Bay Water Reclamation Facility Master Plan (Black & Veatch, November 2016, Table 6-4)

*Peak Day flow and loads may not coincide. DB to confirm design criteria.

Table 1-2: Example Build-out Flow and Load Basis of Design Summary							
Parameter	**Unit**	**Annual Average**	**Minimum 2-Hour**	**Minimum Day**	**Maximum Month**	**Peak Day***	**Peak Hour**
Flow	MGD	0.97	0.32	0.67	1.16	2.75	7.03
BOD5 Concentration	mg/L	440			470		
BOD5 Load	lb/day	3,600	1,100	2,250	4,500	5,900	
BOD5 Load peaking factor	--	--	0.30	0.63	1.26	1.65	
TSS Concentration	mg/L	490			540		
TSS Load	lb/day	4,000	880	1,800	5,300	7,500	
TSS Load peaking factor	--	--	0.22	0.45	1.33	1.90	
TKN Concentration	mg/L	70			74		
TKN Load	lb/day	570	170	360	720	940	
TKN Load peaking factor	--	--	0.30	0.63	1.26	1.65	
Note: Adapted from Draft Morro Bay Water Reclamation Facility Master Plan (Black & Veatch, November 2016, Table 3-17) *Peak Day flow and loads may not coincide. DB to confirm design criteria.							

1.5 General Requirements

1.5.1 Overarching Requirements

DB to submit written results from all testing, analyses, and studies required in this PCR or in Contract Documents.

Item	Parameter	Criteria	Notes
1	Integrated Design	The WRF must meet all requirements as an integrated facility and as a whole	
2	Overall Guarantees	• Provide guarantees as specified for the entire facility. Provide documentation verifying the overall guarantee is built up from vendor performance guarantees. Provide documentation that the life cycle cost of operating and maintaining the facility is minimized including: o Power used per volume of water delivered o Chemicals used per volume of water delivered o Operator time required o Maintenance costs	

		○ Downtime for planned and unplanned maintenance	
3	Equipment Warranty Period	Unless longer warranty requirements are specified in the contract documents, all equipment warranties shall be valid and in effect for 1 year after project substantial completion regardless of manufacturer's stated warranty start date	
4	Confined Spaces	• Minimize confined spaces in design • Identify all confined spaces and provide three sets of necessary gear for entry by O&M staff	
5	Intermediate Pumping	Minimize intermediate pumping	
6	Transitional Operation Period	• Operate and maintain the WRF to: ○ Maximize the amount of recycled water produced ○ Minimize costs, and in any case keep power use, chemical use, operator attendance and other costs and inputs to below guaranteed values	
7	Material of Construction/Durability	• Select material of construction to meet the life cycle performance criteria • Include corrosion as a main criterion in detailed design	
8	PG&E Savings by Design Incentives	Incorporate PG&E Savings by Design into design and coordinate with City to optimize its incentives	
9	Access for Haulers and Chemical Delivery	Design and construct access for routine maintenance (including but limited to sludge hauling, chemical deliveries, screenings hauling, and other routine activities) to minimize reversing and back and forth movements by vehicles.	

1.6 Effluent Quality Requirements

This section summarizes existing available information for the effluent quality requirements for the WRF. The effluent quality requirements will be set by the Department of Drinking Water (DDW) and the RWQCB as part of the permit (WDR/NPDES) for the WRF. The DB will work with the City, DDW, and RWQCB to determine the effluent water quality requirements for the Project.

The existing MBCSD WWTP operates under WDR Order No. R3-2017-0050, NPDES No. CA0047881 (Appendix D). However, a new permit will be developed for the WRF. At this time, the existing WDR/NPDES permit for the existing WWTP represents the best available information on anticipated permit requirements for the new

WRF with respect to ocean discharges through the existing ocean outfall. However, the City has established a goal of tertiary treatment for water discharged to the ocean.

Table 1-3: Effluent Limits for Ocean Discharge for Selected Pollutants (WDR for Existing MBCSD WWTP Discharge to the Ocean, Order No. R3-2017-050)

Parameter	Units	Effluent Limitations		
		Average Monthly	Average Weekly	Maximum Daily
Biochemical Oxygen Demand 5-day @ 20°C (BOD_5)[1]	mg/L	30	45	--
	lbs/day[2]	515	773	--
Total Suspended Solids (TSS)[1]	mg/L	30	45	--
	lbs/day[2]	515	773	--
Oil and Grease	mg/L	25	40	75
	lbs/day[2]	430	687	1,289
Settleable Solids	ml/L	1.0	1.5	3.0
pH	standard units	6.0 – 9.0 at all times		
Turbidity	NTU	75	100	225

[1] The average monthly percent removal for BOD5 and TSS shall not be less than 85 percent.
[2] Mass based effluent limitations were calculated using the following formula:
lbs/day = pollutant concentration (mg/L) * Design flow (2.06 MGD) * conversion factor (8.34)

In addition to the effluent limitations summarized in the table above, effluent limitations are included for metals, cyanide, phenolic compounds, endosulfan, endrin, hexachlorocyclohexane (HCH) and radioactivity for the protection of marine aquatic life. Limitations on levels of carcinogens and non-carcinogens regulated for the protection of human health are also specified in the NPDES permit.

The ultimate permit for the WRF will include recycled water requirements. The minimum requirements can be anticipated to be defined by CCR Title 22, Division 4, Chapter 3 Water Recycling Criteria, as applicable for Indirect Potable Reuse: Groundwater Replenishment – Subsurface Application (injection wells).

1.7 Treatment Capacity

The WRF shall be designed to receive, store (as needed to equalize), and treat the full influent wastewater flows from the City of Morro Bay in accordance with the effluent requirements described above. Available information on the anticipated influent wastewater flows and water quality characteristics is provided in Section 1.3. DB shall be responsible for reviewing and confirming design influent wastewater flows and water quality.

1.8 Plant Production Requirements

The WRF shall be designed and constructed to produce a volume of recycled water for indirect potable reuse groundwater injection equal to 76% of the influent flow. This is estimated to be approximately 723 AFY at startup and 825 AFY at buildout; however, the DB shall determine design influent flows. The Lower Morro Valley Basin Screening-Level Groundwater Modeling for Injection Feasibility, prepared by GSI Water Solutions and dated May 16, 2017, is available on the project website (morrobaywrf.com).

1.9 Durability Requirements

The minimum design life requirements for the different project components are listed below. The DB shall consider the location of the project in the coastal environment when selecting materials, coatings and equipment. The DB may consider the project components and facilities will be operated and maintained by qualified staff. The necessary maintenance, repair and replacement will also occur in accordance with warranty requirements and other procedures specified by the DB and equipment manufacturers.

Item	Parameter	Criteria	Notes
1	Overall WRF Design Life	30 Years	
2	Civil Component	• Use concrete corrosion inhibitor in all structures in lieu of protective coatings to meet design life requirements • Pavement: 50 years • Site Fencing: 15 years • Concrete Structures, Tanks, etc.: 75 years • Chemical Storage Tanks: 20 years	
3	Mechanical Components	• Yard/Buried Piping: 50 years • In-Plant/Aboveground Piping: 30 years • Chemical Piping: 10 years • Chemical Pumps: 10 years • Pumps: 30 years • Control Valves: 25 years • Blowers: 25 years • Pressure Vessels: 30 years • Cartridge Filter Vessels: 30 years • Cartridge Filters: DB to define • Membrane Elements and Cleaning System: DB to define (minimum 10 years) • Pressure Vessels: 30 years • UV Reactors: 30 years • UV System Components i.e., lamps, ballasts, etc.: DB to define • RO System: 30 years • AOP System: 20 years • HVAC Systems: 25 years	• Durations assume regular maintenance, calibration, testing and certification per manufacturer's recommendations • Unless longer warranty requirements are specified in the contract documents, all equipment warranties shall be valid and in effect for 1 year after project substantial completion regardless of manufacturer's stated warranty start date
4	Structural	• Building Structure: 50 years • Structural Steelwork: 50 years • Membrane Skid Frame: 50 years • Pre-treatment System Structures: 50 years • RO Skid Frame: 50 years • AO Skid Frame: 50 years	

		• Metalwork, i.e. ladders, stairs and walkways: 25 years	
5	Electrical and I&C Components	• Motor Control Center: 30 years • Switchgear: 30 years • Dry-Type Transformer(s): 30 years • Instruments: 15 years • PLC System: 15 years • SCADA Hardware: 15 years • Electrical, general: 25 years • Telemetry: 25 years • Power electronics i.e. VFDs, UPS, etc.: 15 years	• Durations assume regular maintenance, calibration, testing and certification per manufacturer recommendations. Assumes all firmware and software updates are implemented when released. All systems with battery-backup batteries will be replaced as necessary • All equipment warranties will be in effect for 1 year after project substantial completion regardless of manufacturer's warranty to the DB

1.10 Anticipated Environmental Mitigation Measures

The environmental analysis and CEQA documents are currently being prepared. The Draft Environmental Impact Report (EIR) is anticipated to be available in March 2018, with certification of the final EIR expected in June 2018. Refer to Appendix M for additional information and anticipated mitigation measures.

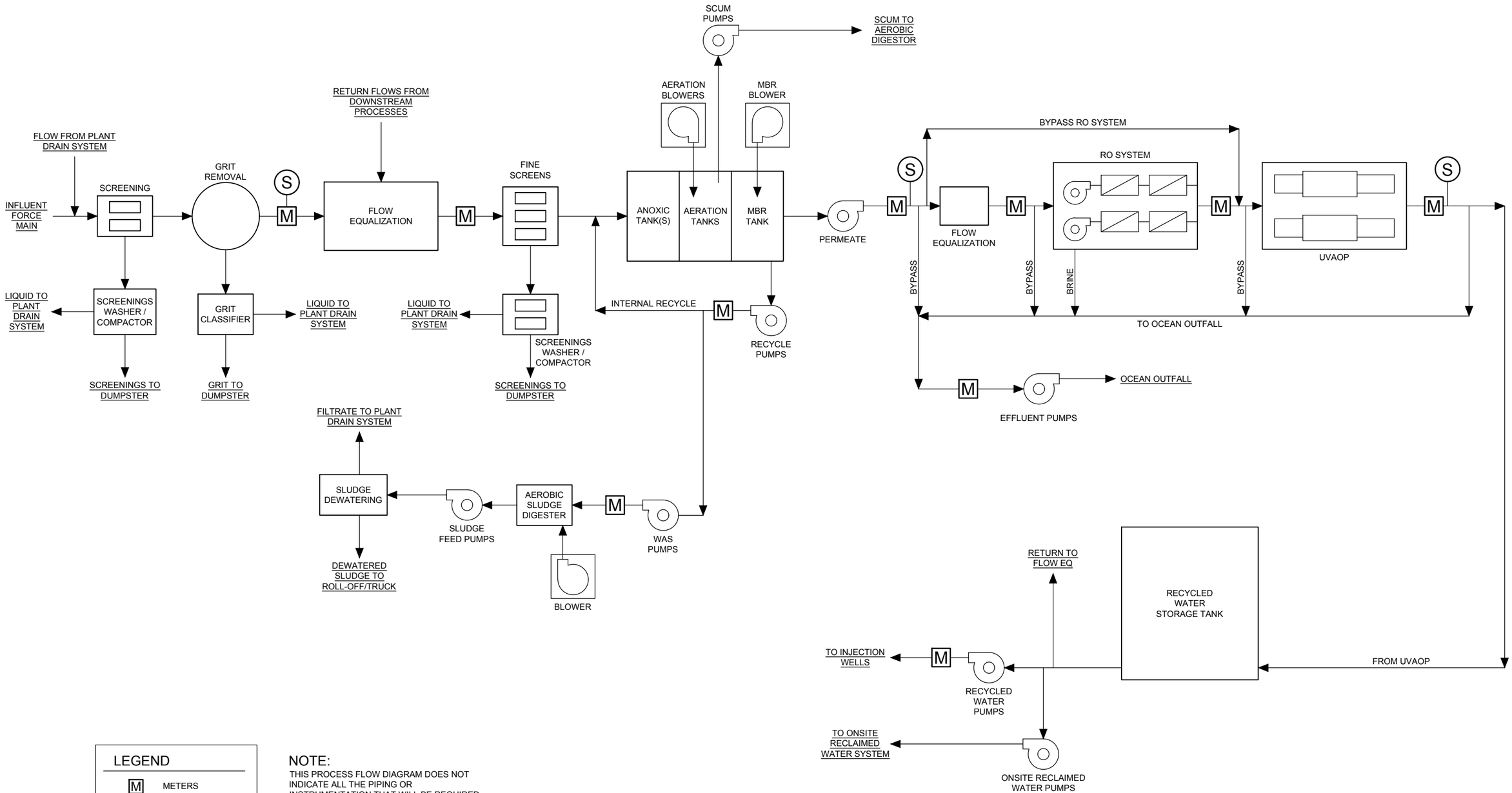
SECTION 2 TREATMENT PROCESS CRITERIA

2.1 General

The WRF shall provide primary, secondary, tertiary, and full advanced treatment, with processes integrated to work as a whole and with operational flexibility to provide efficient treatment. The main treatment processes are summarized in the table below. Ancillary support facilities will also be required. A basic process flow diagram (PFD) is included as Figure 2-1.

Item	Process	Alternative	Notes
1	Influent (Coarse) Screening		
2	Grit Removal		
3	Flow Equalization		
4	Fine Screening		
5	Membrane Bioreactor (MBR)	Activated sludge and membrane filtration	
6	Aerobic Sludge Digester		
7	Sludge Dewatering		
8	Reverse Osmosis (RO)		
9	Ultraviolet Advanced Oxidation Process (UVAOP)		
10	Chemical Storage and Feed Facilities		
11	Odor Control		

The WRF treatment processes shall be integrated to work as a whole. Control systems throughout the WRF Treatment Processes shall be compatible with the overall site control system. Process monitoring shall be provided to allow for full regulatory compliance, monitoring, and recording of water quality and flow trends, evaluation of unit process performance, and evaluation of equipment condition.



LEGEND

- M METERS
- S SAMPLE STATION
- PUMPS

NOTE:

THIS PROCESS FLOW DIAGRAM DOES NOT INDICATE ALL THE PIPING OR INSTRUMENTATION THAT WILL BE REQUIRED FOR THE WRF. THE DB IS RESPONSIBLE FOR MEETING ALL OF THE PERFORMANCE CRITERIA AND CONTRACT REQUIREMENTS.

CITY OF MORRO BAY WATER RECLAMATION FACILITY PROJECT

City of Morro Bay

WRF PROCESS FLOW DIAGRAM

FIGURE 2-1

DWG: \\WKN01\Company\Projects\Morro Bay\MB-2015-001-002-003 WRF Program Management Services\300 Engineering\301 CAD\Exhibits\Figure 2.1.dwg USER: JmF
DATE: Dec 17, 2017 10:38am XREFS: IMAGES: Morro Bay WRF -10.6.jpg

2.2 Influent (Coarse) Screening

The Influent (Coarse) Screening System shall collect, wash, dewater, compress, convey, bag, and discharge solids to a rolling dumpster. Discharge area is to be paved with curbs and drainage to the WRF plant drain system. Conveyance, compaction, dewatering, and screening systems shall be provided by the same manufacturer. Minimize the distance and lift from screens to dumpsters to prevent conveyance system failures. Protect the screenings from wind, rain, and wet weather.

Item	Parameter	Criteria	Notes
1	Total Number of Units	• 2 Screens: 1 duty and 1 standby • 1 Screenings Washer/Compactor	
2	Design Flow	Peak Hour Flow (PHF)	Meet PHF. DB to determine design flow.
3	Cutoff Size	6 mm or smaller	Coordinate with fine screening and downstream treatment process requirements. DB to select cutoff size.
4	Type	Mechanically-cleaned bar screen	
5	Materials	Type 316 Stainless Steel (SS)	
6	Allowable Manufacturers/Vendors	Huber, Vulcan, Headworks Inc., Westech, Parkson, Duperon, Hydrodyne, or equal	
7	Approach Velocity	Within MFRs recommended min./max.	
8	Odor Control	Provide Odor Control to treat odorous air from Influent Screening System per Section 2.12 Odor Control	Provide removable covers for influent screening channels, and ductwork and fans to transport air to future treatment
7	Operational Flexibility	Provide valves and/or gates and piping to allow bypassing of the screening system to the flow equalization basin	
8	Freeboard	2-feet at PHF	

9	Compactor	Minimum 50% weight reduction and 50% volume reduction in screenings	

2.3 Grit Removal

The Grit Removal System shall remove grit from influent wastewater and discharge collected grit via automated valve(s) to a grit dewatering and conveyance system. Grit discharge area is to be paved with curbs and drainage to the WRF plant drain system. Conveyance, dewatering, and grit removal systems to be provided by the same manufacturer. Minimize the distance from grit removal system to dumpsters to minimize conveyance system failures.

Item	Parameter	Criteria	Notes
1	Total Number of Units	• 1 Grit Removal System • 2 Grit Pumps: 1 duty and 1 standby • 1 Grit Washer/Classifier	
2	Design Flow	PHF	Meet PHF. DB to determine design flow.
3	Performance	At Average Annual Flow (AAF): 95% of grit greater than 50 mesh; 85% of grit greater than 70 mesh but less than 50 mesh; 65% of grit greater than 100 mesh but less than 80 mesh	AAF is estimated at 0.97 MGD per Draft FMP. DB to determine design flow.
4	Type	Vortex-type	
5	Allowable Manufacturers/Vendors	Westech, Fluidyne, Smith & Loveless, Hydro-International, or equal	
6	Odor Control	Provide Odor Control to treat odorous air from Grit Removal System per Section 2.12 Odor Control	Provide removable covers for grit channels, and ductwork and fans to transport air to future treatment
7	Operational Flexibility	Provide valves and/or gates and piping to allow bypass of the grit system to the flow equalization basin	
8	Freeboard: Channels and Basins	2-feet minimum	

2.4 Flow Equalization Basin

The Flow Equalization Basin will receive primary influent and is intended to buffer flows to the treatment processes to promote steady flows through the treatment process. DB shall provide evaluation of the cost/benefit of reducing the capacity of downstream processes (MBR, RO, UV, and AOP) by balancing equalization, recycled water production, and controlled release of treated effluent to the outfall during peak flows.

Provide floor slopes, sumps, and spray systems to allow operators from a catwalk to remove solids and clean the equalization bays when they are not in use. Solids and washdown water shall run to the Aerobic Sludge Digester. Provide above ground electric actuators on all control gates. The Flow Equalization Basin will be provided as part of the full WRF treatment process.

Item	Parameter	Criteria	Notes
1	Geometry	• Rectangular with at least 4 equivalent sized bays and optimal length-to-width ratio to promote mixing and reduce settling • The primary EQ bay shall be covered	At least one bay will be in service at all times to receive return/recycle flows and to buffer daily peaks to the MBR
2	Materials	Portland Cement Concrete with sulfide-resistant coating (wet areas only); 316 SS gates; aluminum or fiberglass for grating, hatches, and support	
3	Mixing System	Pump mix or coarse air	
4	Size	To be determined by DB	
5	Design Capacity	100% of influent flow into the basin; provide constant outflow to coordinate with downstream processes and production requirements	Provide steady flow to MBR
6	Pumps	Provide one pump per bay and one redundant pump	
7	Freeboard	Provide two feet freeboard; allow flow above two feet of freeboard in one bay to overflow into the next bay, such that all bays will be filled before an overflow occurs	
8	Odor Control	Provide odor control on primary EQ bay	Provide cover to contain odorous air, and ductwork and fans to transport air to

			treatment. Include provisions in cover to allow sufficient access for cleaning of bay.
9	Operational Flexibility	Provide valves and/or gates and piping to allow operators to direct flows to different and/or multiple bays. Provide flexibility to direct return flows from downstream processes to different bays	Provide optional flow path to return flows back to the equalization basin from each downstream process.

2.5 Fine Screening

The Fine Screening System shall collect, wash, dewater, compress, convey, and discharge solids to a rolling dumpster. Discharge area is to be paved with curbs and drainage to the WRF plant drain system. Conveyance, compaction, dewatering, and screening systems to be provided by the same manufacturer. Minimize the distance and lift from screens to dumpsters to prevent conveyance system failures. Protect the screenings from wind, rain, and wet weather.

Item	Parameter	Criteria	Notes
1	Total Number of Units	• 3 Screens: each capable of handling 50% of equalized PDF • 2 Washer/ Compactor Systems: 1 duty and 1 standby	
2	Design Flow	Equalized Peak Day Flow (2.75 MGD)	Meet equalized Peak Day Flow. Example flow rate shown in parentheses. DB to determine design flow.
3	Cutoff Size	2 mm, or size confirmed by MBR system provider	Coordinate with influent screening and downstream treatment process requirements. DB to select cutoff size
4	Type	Perforated Plate,	
5	Materials	Type 316 SS	
6	Allowable Manufacturers/Vendors	Huber, Vulcan, Headworks Inc., Westech, Parkson, Duperon, Hydrodyne, or equal	
7	Approach Velocity	Within MFRs recommended min./max.	

8	Compactors	Minimum 50% weight reduction and 50% volume reduction in screenings	

2.6 Membrane Bioreactor

The Membrane Bioreactor (MBR) System will receive equalized flows from the Flow Equalization Basin and provide biological treatment and filtration. Pumps, control valves, compressors, blowers, instrumentation, controls, and other equipment necessary for operation shall be furnished as part of a single MBR manufacturer's package. Provide the following as part of the MBR System:

- Scum and foam control measures
- Fine bubble diffusion for aeration basins with blowers independent of the MBR blowers
- Scouring system for MBR basins
- Mixing system for anoxic basins
- Chemical addition systems, as needed
- DO probes in each aeration basin (minimum of three), tied to SCADA
- Level indicators in each basin, tied to SCADA
- Complete clean in place (CIP) system to be furnished
- RO Permeate will be used for CIP
- Absolute and pro-rated warranty, along with Fiber Breakage Warranty
- Roofing system for protection from weather and UV degradation
- Bridge crane system for lifting cassette modules for maintenance

Item	Parameter	Criteria	Notes
1	Design Flow	Equalized Peak Day Flow (PDF)	Meet equalized Peak Day Flow. DB to determine design flow.
2	Configuration	Biological nutrient removal/MBR	
3	Design Flux	• 17 gallons per square foot per day (GFD) at MMF • 10 GFD at AAF	Example rates provided in Criteria. DB to determine design rates.
4	Allowable Manufacturers/Vendors	Koch, Suez, Enviroquip, Siemens, Evoqua, or equal	Suez formerly known as GE Water
5	Cleaning Cycles	• Maintenance: No more than once/week to return to within 0.2 pounds per square inch (psi) of	

		starting trans-membrane pressure (TMP) • Recovery: No more than 4 times/year to return within 1 psi of starting TMP	
6	Regulatory Approvals	DDW Approval letter for pathogen reduction	
7	Water Quality Goals	Turbidity less than 0.5 NTU; Total Nitrogen (as N) less than 3 mg/L	
8	Mixed Liquor Suspended Solids	8,000 to 10,000 mg/L	
9	Biological Nutrient Removal Redundancy Requirements	• AAF: 1 train out of service • MMF: All trains in service • PDF: All trains in service	
10	Membrane Bioreactor Redundancy Requirements	AAF, MMF, PDF: 1 train out of service for maintenance	
11	Minimum Blower Efficiency	75%	
12	Allowable Blower Manufacturers	APG Neuros, Atlas Copco, Hoffman, Piller, Sulzer, or equal	Blower Manufacturer shall provide blower, motor, air intake filters, silencers, valves, VFD, pipe connections, gauges, acoustic enclosure, MCP, LCP, and all other appurtenances as required
13	MBR Ancillary Equipment	Each treatment train shall be provided with: magnetic type flowmeter, motorized isolation valves, chemical addition systems as needed to meet treatment requirements, and all necessary equipment for periodic chemical cleaning of membranes. Provide access platform for ease of operation and maintenance, per manufacturer recommendations.	
14	Freeboard: Channels and Basins	2-feet minimum	

15	Other	WRF design shall reduce the potential for fats, oil, and grease to reach the MBR system	

2.7 Aerobic Sludge Digester

The Aerobic Sludge Digester will receive, store, aerate, and digest activated sludge wasted from the MBR process. Minimize freeboard/head space in Aerobic Sludge Digester to reduce potential for odor accumulation. Provide a system that allows for installation of a future cover and connection to odor control.

Item	Parameter	Criteria	Notes
1	Total Number of Units	• 1 Digester • 3 Blowers: 2 duty and 1 standby	
2	Materials	Portland cement concrete with fiberglass grating	
3	Minimum Volume	14 days of storage at MMF conditions	
4	Safety Factor	1.15	Applied to volume
5	Aeration Type	Coarse bubble diffusion	
6	Minimum Blower Efficiency	75%	
7	Allowable Blower Manufacturers	APG Neuros, Atlas Copco, Hoffman, Piller, Sulzer, or equal	Blower Manufacturer shall provide blower, motor, air intake filters, silencers, valves, VFD, pipe connections, gauges, acoustic enclosure, MCP, LCP, and all other appurtenances as required

2.8 Sludge Dewatering

The Sludge Dewatering System will pump waste sludge from the Aerobic Sludge Digester, or directly from the MBR system, and perform dewatering to remove water and increase total solids concentration. Pumps, conveyance, polymer storage and feed system, and dewatering systems to be provided by the same manufacturer. Design the pumping, conveyance, and dewatering system to convey solids from dewatering equipment to rolloff container with minimal exposure for odor release. Design system to allow waste activated sludge to bypass the Aerobic Sludge Digester and be pumped directly to Sludge Dewatering System. Minimize the distance and lift between the Aerobic Sludge Digester, dewatering equipment, and rolloff container. Provide a design that achieves even distribution of dewatered sludge from conveyor into dumpster, such as Dumpster-veyor or equal, and tied to SCADA. Provide polymer storage and feed system to achieve required solids concentration. The Dewatering Building shall comply with the structural and architectural performance criteria specified in Sections 3 and 4.

Item	Parameter	Criteria	Notes
1	Total Number of Units	2: 1 duty and 1 standby	
2	Type	Screw Press or Belt Filter Press	
3	Materials	316 Stainless Steel	
4	Allowable Manufacturers/Vendors	BDP, Huber, FKC, Ashbrook or equal	
5	Operating Schedule	• Belt Filter Press: 8 hours per day • Screw Press: 24 hours per day • Maximum days per week: 2	
6	Solids Loading Rate	To be determined by DB	
7	Minimum Solids Concentration	20% total dry solids	
8	Minimum Capture Efficiency	95%	
9	Ancillary Equipment	Provide polymer storage and feed system, and sludge feed pumps	Provide spill containment
10	Odor Control	Provide Odor Control to treat odorous air from Sludge Dewatering System per Section 2.12 Odor Control	Provide Dewatering Building with full ventilation and provisions to connect to odor control in future for dewatering unit, conveyance, and rolloff container/truck loading area for containment

2.9 Reverse Osmosis

The Reverse Osmosis (RO) System will receive water from the MBR System. The RO System shall be housed within a building, together with the UVAOP System. The Advanced Treatment Building shall comply with the structural and architectural performance criteria specified in Sections 3 and 4.

Item	Parameter	Criteria	Notes
RO System General			
1	Design Approach	• Conventional 2 stage RO system housed in a building	Storage will be required to buffer PDF and diurnals. No bolted steel tanks unless glass-lined.

		• Provide 3 trains, any 1 train will meet 33% of MMF • Trains shall be configured to meet minimum capacity of 0.67 MGD by shutting off one train	
2	RO Energy Rebates	Provide evaluation of energy rebate programs, etc. that may offset some of the capital costs of Energy Recovery devices on the RO system.	
3	Post-Treatment	Provide post-treatment systems as required	If acid addition is required, provide a decarbonator.
RO System Flows			
1	Maximum RO Feed Flow	MMF (1.16 MGD)	Meet maximum month flow. Example flow rate shown in parentheses. DB to determine design flow
2	Overall RO Recovery	80% minimum	DB shall provide cost/benefit evaluation of increased recovery, including evaluation of independent 3rd stage, energy recovery devices, and pretreatment chemical addition alternatives as indicated.
3	Total RO Permeate Flow	0.93 MGD	Example Design Criteria, DB to make final determination
4	RO Permeate Diverted for MBR and RO CIP	0.01 MGD	Example Design Criteria, DB to make final determination
5	Net RO Permeate Flow	0.92 MGD	Example Design Criteria, DB to make final determination
6	Total RO Concentrate Flow	0.23 MGD	Example Design Criteria, DB to make final determination
Main RO Equipment			
1	Technology	Spiral Wound Reverse Osmosis	
2	Supplier	Original Equipment Manufacturer (OEM)	

3	Allowable OEMs	Suez, Biwater, H2O Innovation, Evoqua, Harn RO	Suez formerly known as GE Water
4	Allowable RO Membrane Manufacturers	Suez, Toray, Dow, Hydranautics, CSM	
5	Membrane Type	Thin Film Polyamide	
6	Membrane Element Diameter	8 inches	
7	Pressure Vessels	Fiber-Reinforced Plastic (FRP), ASME Stamped	
8	System Configuration	Conventional 2-stage array	
9	Skid Height/Element Access	Skid height and element loading and unloading to be coordinated with building height limitations and other constraints	
RO Design Flux & Recovery			
1	Flux	• Maximum average design flux: 12 GFD • Maximum single-element flux: 16 GFD	
2	Recovery	• Design Recovery: 80% • DB to determine and demonstrate, via desktop analysis, maximum safe recovery	
RO System Ancillary Equipment			
1	Pretreatment Chemical Addition	Sulfuric acid and antiscalant as required	Avoid acid if possible
2	Cartridge Filter Housings	316L SS or better, ASME Code with stamp	Maximum 5 gpm per 10-inch equivalent cartridge filter (CF)
3	Cartridge Filters	10-micron polypropylene, maximum	
4	RO High Pressure Pump	Vertical Turbine	

5	Energy Recovery	DB to determine and demonstrate, via desktop analysis, the optimum use of Energy Recovery Devices	Submit analysis
RO System Ancillary Equipment – for Optional 3rd Stage			
1	Pretreatment Chemical Addition	Maintain scaling indices as non-scaling as determined by antiscalant manufacturer	Provide cost-benefit analysis of increasing recovery with acid addition versus reduced recovery using scale inhibitor. City will determine preferred approach.
2	RO High Pressure Pump	Horizontal multistage centrifugal	Coordinate with Section 7
RO System Chemicals			
1	Pretreatment	Sulfuric Acid, Antiscalant as required	
2	CIP: Primary RO System	CIP System to allow for various high and low pH formulations, made from both powder and liquid. Include an eductor for delivery of dry powders, and transfer pumps for delivery of liquids from totes. CIP tank to include heater.	
RO System Product Water Quality			
1	Minimum Requirements	Recycled Water Requirements in Waste Discharge Order, CCR Title 22 for Indirect Potable Reuse: Groundwater Replenishment - Subsurface Application	
2	Total Organic Carbon (TOC)	Below 0.25 mg/L	
3	Ultraviolet Transmissivity (UVT)	95%	
RO System - Other			
1	Train Sizing	Provide 3x33% trains and meet MMF with all trains	Use storage to buffer flows from MBR

2	Minimum Capacity	Minimum Daily Flow (0.67 MGD)	Example flow rate shown in parentheses. DB to determine design flow
3	RO Train Flush System	A Flush Tank and pump(s) shall be provided to allow for complete flushing of all RO Trains upon sequential plant shutdown with RO permeate. In addition, Tank shall be sized, at a minimum, to allow for flushing all stages without a sequential plant shutdown (e.g. Emergency Shutdown).	• DB to incorporate gravity flushing during emergency shutdowns, if possible • Flushing with RO permeate minimizes biogrowth during shutdown period
4	Sample Taps	Each RO Train to be equipped with suitable sample taps for feed, concentrate and permeate lines. Each individual RO vessel must be equipped with a permeate sample tap. Route all sample taps to a common panel with a trough connected to a drain.	
5	Off Spec Water Discharge	Provide piping and valving to allow for off spec product water to be discharged to the ocean outfall or Flow Equalization Basin during start-up and normal operation	
6	Flow Equalization	Provide concrete tank for flow equalization upstream of RO System to allow for steady flow to the RO System	

2.10 Ultraviolet Advanced Oxidation Process (UVAOP)

The Ultraviolet Advanced Oxidation Process (UVAOP) System will receive water from the Reverse Osmosis (RO) system, or directly from the MBR System. UVAOP System to be capable of disinfecting MBR product water for disinfection prior to ocean outfall, and capable of providing final treatment for Indirect Potable Reuse. The UVAOP system shall be provided by a single system supplier and shall be installed in the same building as the RO System. The Advanced Treatment Building shall comply with the structural and architectural performance criteria specified in Sections 3 and 4.

Item	Parameter	Criteria	Notes
1	UV Technology	Low pressure, high output lamp	
2	Oxidant	Hydrogen Peroxide	

3	Approved Suppliers	Wedeco, Trojan, Calgon Carbon, Evoqua, or equal	
4	Standby capacity	100%	
5	UV Reactor Type	Closed vessel	
6	Minimum Number of Treatment Trains	2	Provide a minimum of 2 trains with N+1 redundancy
7	UV Treatment Train Capacity, Each	Equalized Peak Day Flow (2.75 MGD), minimum	Meet equalized Peak Day Flow, at a minimum. Example flow rate shown in parentheses. DB to determine final flow.
8	UV Reactor Materials	316L Stainless Steel	
9	Ancillary Equipment	Each treatment train shall be provided with magnetic type flowmeters and motorized isolation valves. Provide all necessary equipment for periodic chemical cleaning of UV reactor. Provide access platform for ease of operation and maintenance, per manufacturer recommendations.	
10	Sample Taps	Provide sample taps on each train to allow for adequate performance monitoring. Route all sample taps to a common panel with a trough connected to a drain to the WRF Plant Drain System.	
11	1,4-Dioxane Reduction	0.5 log	
12	Product Water Quality Requirements	Meet Recycled Water Requirements in Waste Discharge Order, CCR Title 22 for GRRP subsurface injection	
13	Off Spec Water Discharge	Provide piping and valving to allow for off spec product water to be discharged to the ocean outfall or Flow Equalization Basin during start-up and normal operation	

2.11 Chemical Storage and Feed Facilities

The following section includes the performance criteria associated with chemical storage and feed facilities of the WRF.

Item	Parameter	Criteria	Notes
General			
1	Safety Considerations	• Design systems to allow safe operation • Provide all necessary Personal safety equipment, conveniently located at chemical facilities	
2	Materials Compatibility	Select materials which are compatible with a wide range of chemicals, and specifically compatible with the selected chemical	
3	Design Coordination with Equipment and Chemical Vendors	Submit written approval from equipment and chemical vendors that the design meets their requirements for safe and optimized O&M	
Chemical Storage			
1	Storage Area Sizing	• Establish one loading station for all chemicals with secondary containment, with one containment area in the access road suitable for the largest chemical delivery tank available • Chemical storage must be designed to allow forklift access for loading and unloading of chemical totes • Optimize size and number of totes for each chemical, complete with the necessary fittings and pipework to ensure connectivity between the totes • Provide isolated containment for incompatible chemicals	
2	Quantity and Size of Totes	• For chemicals using less than 1 tote in 15 days provide space for 2 totes • For chemicals using more than 1 tote in 15 days provide space for twice the number of totes used in 15 days • Consider the rate of chemical degradation when sizing totes • All chemical tote sizes must be commonly available to the industry. • Review chemical concentrations available to determine if higher concentrations are able to be delivered and diluted in process, and if so provide facilities and equipment for dilution • Size chemical storage tote quantities for both current flow and maximum WRF capacity	Provide uniform tank heights in chemical storage design to the extent possible

3	Ancillary Facilities	• Equip each tank with ultrasonic level transmitter connected to SCADA and magnetic level indicator. • Totes must be stored higher than chemical pumps to provide positive pressure to the pump suction. • Provide proper heating tapes/insulations for chemicals as needed.	
4	Safety	• Safety Handrails and Kickplates meeting current code requirements including OSHA, shall be provided where required • Provide Safety Shower/Eyewash per OSHA requirements • Provide safety chemical splash shields between chemical secondary containment areas and access walkways • Provide PVC spray sleeves on exposed chemical tubing • Provide safety bollards to protect chemical facilities from nearby traffic areas	Coordinate with awning height requirements
5	SCADA Alarms	• High Level--90 percent • Low Level--15 percent • Low-Low Level--10 percent	Coordinate with SCADA alarm actions
6	Sumps and Washdown Areas	• Each secondary containment area and truck loading area shall be provided with a sump. Establish plan for sump collection and discharge without need to enter the containment areas. • Provide concrete steps and rails to facilitate access and service to equipment within secondary containment areas. • Provide washdown facilities that can safely be used to access all areas. • Provide drains, sumps, pumping and dosing equipment from all areas and tote storage areas which allow chemicals to be neutralized, and/or collected and trucked off-site.	
7	Piping Layout	• Arrange chemical piping from loading area to and from chemical storage area to processes or buildings in specific corridors • Chemical piping between locations shall be below grade i.e., either in pipe trench or buried	

8	Coating/Painting	• Provide a chemical resistant coating to all surfaces within the containment area. The coating must be compatible for the chemical being stored. • Lining shall cover tops of tote storage pads, tops of equipment pedestals, and front vertical faces of steps and stairs, floors, steps, stair treads, sump floors, sump walls, and field-formed, non-prefabricated, trenches. • Consider staining property of the chemical when specifying coating and paint color.	
9	Other O&M Requirements	• Allow for ease of future installations/replacements of equipment e.g., provide forklift access to replace chemical totes	
Feed Pumps			
1	Pump Type	• Use peristaltic pumps only. • Equip with compression rollers that are retractable for tube loading. One roller shall be fully engaged with the tubing at all times to prevent backflow or siphoning. • Use no check valves or diaphragms and shall require no dynamic seals in contact with the pumped liquid. • Pump tubing shall be rated 60 psi back pressure for 1000 hours at 200 rpm. • Must be microprocessor controlled, variable speed, pulse-type pumps. • Dry self-priming, capable of being run dry without damaging effects to pump or tube, with a maximum suction lift of 15 feet water column (wc). • Provide a tubing element with molded fittings. • Removable cartridge-type tubing dispenser to allow for changing of pump head and tubing elements. • Liquid shall be contained within the tubing and not contact other pump elements.	
2	Pump Materials	• Housing including track, cradle, and side plates shall be fluoropolymer powder-coating aluminum • Shaft – Type 316 stainless	

		• Rotor – Type 316 stainless or coated with fluoropolymer powder-coated carbon steel • Rollers – Type 316 stainless or reinforced Delrin • Roller Bearings – Carbon steel • Tube Clamps and Double Y element location Knobs - Aluminum	
3	Chemical Pump Sizing	All chemical pumps shall be designed to have a flow rate safety factor of 1.25 over the maximum feed rate.	
4	Control Panels	• Pumps shall contain an integral microprocessor with local control keypad • Locate pump remote control panels adjacent to secondary containment areas for the respective pumps • Pumps, Electrical supply, and Controls must have quick disconnects to facilitate replacement with spare pumps • All pumps must be controllable through the SCADA system with on/off/Auto and speed adjustments • Pumps shall have flow monitor sensors installed to communicate with the SCADA system • SCADA must maintain resettable pump runtime	
5	Number of Pumps	One per injection/transfer point	
6	Pump Redundancy	• No mandatory online redundant pumps • Supply 20% of each chemical pump type as spare parts, 1 minimum	Spare pump capacities shall span the range of all chemical feed pumps
7	Pump Supply and Discharge Tubing	• Discharge shall have pulsation dampers to maintain even flow and pressure • Tubing shall be chemically compatible with pumped liquids. • Tubing shall be specifically for use with peristaltic pumps with pressure rating of 30 psi. • Materials shall be Norprene or Tygon as required for service • Tubing lubrication shall be food grade silicon grease • Equip each flexible influent and effluent tubing sections, to and from each pump,	

		with tri-clamp or cam-and groove couplings quick disconnects. • Provide a tubing element with molded fittings, which shall be self-locating when fitted into the pump head. • Replaceable with no disassembly of the pump head.	
8	Spare Tubes for Pump Heads	• Supply 2 spare pump tubes for each continuous feed pump • Provide a flexible spare tubing for each chemical system with quick disconnects • The length of the tubing shall be suitable to allow any pump discharge to be directed to any injection/transfer point for that chemical • The spare tubing shall be stored in a durable case and marked properly	
9	Ancillary Facilities	• Each chemical feed pump shall be equipped with quick disconnect flush connections, Pressure Relief Valve, Pressure Indicator/Pressure Switch High, Calibration Column, Leak Detection connected to SCADA • Provide a common 2" deep FRP drip/drain pan for each pump system which incorporates any leakage potential from the pump or suction and discharge tubing connections • Each pump must have isolation valves such that it is removable by disconnecting only the inlet and outlet connections	
10	Manufacturers	Prominent, Watson Marlow -Flex-Pro by Blue-White Ind. or equal	
11	Chemical Piping	• Use CPVC piping with clear PVC secondary containment with leak detection and alarm • Double wall containment fittings shall be prefabricated • Provide minimum of one redundant feed line and injection point for each chemical injection system	

2.12 Odor Control

Odor control shall be provided for each process where indicated in this Report. Odorous air shall be contained and treated onsite.

Item	Parameter	Criteria	Notes
1	Treatment Type	Non-chemical Scrubber or Biofilter	
2	Hydrogen Sulfide Removal	More stringent of either 99% minimum, or 0.1 ppm max discharge for biofilter system and 0.025 ppm max discharge for activated carbon system	
3	Negative Pressure	Under equipment covers and decks: Maintain at 0.1 inches water and < 0.5 inches water	
4	Ventilation	• Minimum 6 air changes per hour for tanks, channels, and/or within process enclosures • Minimum of 12 air changes per hour for process areas where personnel perform routine O&M • Ducts for odor control ventilation shall be FRP	• Provide air changes in accordance with NFPA 820. • Coordinate with architectural requirements. In the event of conflict, the more stringent shall prevail.

2.13 Effluent Pump Station

The Effluent Pump Station will convey reverse osmosis concentrate discharge, bypass flows, and treated effluent that exceeds injection capacity and/or does not meet specification for groundwater injection to the ocean outfall. The Effluent Pump Station may be co-located with the Recycled Water Pump Station and shall be housed in a building, which shall meet the structural and architectural performance criteria specified in Sections 3 and 4.

Item	Parameter	Criteria	Notes
1	Flow Capacity	Equalized Peak Day Flow	Meet equalized Peak Day Flow, at a minimum. DB to determine design flow
2	Total Dynamic Head	DB to determine	• DB to coordinate with Offsite Pipeline Designer to define TDH requirements • Elevation high point of preliminary pipeline route is near intersection of Quintana Rd and Kings Ave, approximately 150 feet
3	Treated Effluent Discharge Pipeline Diameter	16 inches	Conceptual size. Pipeline size to be confirmed by DB, in coordination with the Offsite Pipeline Designer.

4	Redundancy	N +1	At a minimum, provide redundancy such that the design flow can be handled with the largest pump out of service
5	Materials of Construction	Non-metallic materials or duplex stainless steel	Provide life cycle cost analysis for various materials, including materials compatible with high salinity RO Concentrate
6	Other	• Provide Variable Frequency Drives and speed control through SCADA • Provide isolation valves, slow-closing check valves, sample taps, magnetic type flow meters, and additional appurtenances to allow for efficient and effective operation • Provide surge control facilities to minimize transient events	See Section 7 Mechanical Piping Criteria

2.14 Recycled Water Pump Station

The Recycled Water Pump Station will convey recycled water to injection wells located in the Morro Valley. Include provisions in the design and construction to allow for sodium hypochlorite addition in the future, in the case that the City desires it for recycled water pipeline maintenance. At a minimum these provisions should include space for chemical storage, feed system, and controls, and the pipeline alignment should provide a location for easy addition of chemical injection and mixing.

The Recycled Water Pump Station may be co-located with the Effluent Pump Station and shall be housed in a building, which shall meet the structural and architectural performance criteria specified in Sections 3 and 4.

Item	Parameter	Criteria	Notes
1	Flow Capacity	Coordinate with recycled water production requirements (0.92 MGD)	Example flow provided in parentheses. DB to determine design flow.
2	Total Dynamic Head	DB to determine	• DB to coordinate with Recycled Water Pipeline Designer to define TDH requirements • Elevation high point of preliminary pipeline route is near intersection of Quintana Rd and Kings

			Ave, approximately 150 feet
3	Recycled Water Pipeline Diameter	16 inches	Conceptual pipe size. Pipeline size to be confirmed by DB. Recycled Water Pipeline design will be performed by others under separate contract.
4	Redundancy	N duty +1 standby	Provide minimum redundancy such that the design flow can be handled with the largest pump out of service.
5	Materials of Construction	Compatible with the fluid pumped	
6	Other	• Provide Variable Frequency Drives and speed control through SCADA • Provide isolation valves, slow-closing check valves, sample taps, magnetic type flow meters, and additional appurtenances to allow for efficient and effective operation • Provide surge control facilities to minimize transient events	See Section 7 for Mechanical Piping Criteria

2.15 Recycled Water Storage Tank

The Recycled Water Storage Tank shall provide operational storage for the recycled water.

Item	Parameter	Criteria	Notes
1	Minimum Volume	500,000 gallons	
2	Materials of Construction	Pre-stressed Concrete	
3	Level Sensor	Provide two level sensors connected to SCADA: 1 duty, 1 redundant	See Section 9 for Instrumentation Criteria
4	Other	• Meet AWWA D-110 requirements • Meet Structural Criteria for tanks	See Section 4 for Structural Criteria

2.16 On-site Reclaimed Water System

The On-site Reclaimed Water System shall be designed and constructed to provide for washdown, foam and scum control, screening/grit washing, landscape irrigation and any other suitable application. The on-Site Reclaimed Water System shall be designed to operate between 60 and 80 psi, adjusted as appropriate per final design as determined by the DB.

Item	Parameter	Criteria	Notes
1	Design Approach	• Design system as a loop. • Provide isolation valves at all tee fittings on each downstream piping	Pipe materials per Section 7 Mechanical Piping Criteria
2	On-site Reclaimed Water Uses	Washdown, foam and scum control, screening/grit washing, landscaping, and other suitable applications to be determined by DB	
3	Washdown Areas	• Provide cleaning/washdown areas for proper maintenance of treatment equipment. • Clearly mark all reclaimed water hose racks and landscaped areas with signs complying with Title 22 requirements. • Provide hoses w/ racks in locations allowing ease of access near walkways or platforms, sufficient for full coverage of process areas. • Provide proper drainage and discharge of wash water so all wash water runoff is collected and discharged into the plant drain system and returned to headworks. Wash water runoff cannot enter the storm drainage collection system. • Provide heavy duty 50-ft flexible hose and adjustable nozzles at each hose bib.	
4	Pipe Sizing	Prepare and provide pipe capacity hydraulic calculations to demonstrate the proposed pipe sizes are adequate	
5	Water Demand	The reclaimed water system shall be able to supply the determined water demands at each point of connection while meeting the minimum and maximum pressure requirements	
6	Flow Meter	Provide a magnetic-type flow meter on the on-site reclaimed water system to record	

		total on-site demands. Tie to SCADA system.	

2.17 Vactor Washdown Area

The Vactor Washdown Area shall be designed and constructed to provide a location for dumping sewage from the City's vactor trucks. The Vactor Washdown Area shall be paved with curbs, and include two areas, each sized to allow washdown of a full vactor truck, with sloping concrete floors draining to a sump. The sump shall be connected to the plant drain system to transport materials to the headworks. Provide hoses and hose racks for washdown.

SECTION 3 ARCHITECTURAL AND LANDSCAPING CRITERIA

3.1 General

Provide a facility that is durable, low maintenance, and aesthetically compatible with the community. Provide buildings that meet the space needs as described herein. Architectural finishes are specified to provide an example of the quality and durability that the City desires. DB is encouraged to provide alternatives that offer comparable life-cycle cost value, while meeting or exceeding the performance criteria requirements.

3.2 Applicable Codes

All facilities provided shall comply with all the current building, fire, or other health and safety codes and regulations applicable to the project site including:

- California Building Code
- California Plumbing Code
- California Mechanical Code
- California Fire Code
- California Electrical Code
- California Building Energy Efficiency Standards
- California Green Building Standards Code
- California Coastal Zone Management Act

Note that the project site is currently located within a Moderate Fire Hazard Severity Zone in a State Responsibility Area and the provisions of CBC Chapter 7A apply. The project site is also located within a Coastal Zone and is located off of a designated State Scenic Highway. The provisions of the Coastal Zone Management Act and the local Coastal Zone Land Use Ordinance also apply.

3.3 Buildings

3.3.1 Operations Building

The Operations Building will serve as the administrative hub for the facility. It will be the location at which visitors to the facility check in when arriving at the facility. The entrance to the building should be apparent when approaching the facility. The rear entry to the building should be approachable by vehicles for staff and for pick up and return of samples to the sample storage rooms. The break room should be adjacent to an outdoor patio area of similar size for use by staff. The patio area should be shielded from view by an enclosure. The Operations Building shall be fully ADA accessible throughout.

3.3.2 Maintenance Building

The Maintenance Building will have a drive through bay for service vehicles. Coordinate height requirements with City. All roll up door jambs to be protected by concrete filled steel pipe bollards on the exterior. The bottom 48 inches of the shop and storage area walls shall be solid grout CMU or concrete on the interior. The lab should incorporate the City's existing lab equipment and provide sufficient counter top work surfaces to support the function of the lab. City will provide DB with list of existing equipment.

3.4 Aesthetic Design

The building site will be visible from Highway 1, which is designated as a Scenic Corridor. Building forms and exterior materials shall be consistent with the character and themes described herein. Generally, the building forms used should be recognizably agricultural, using simple rectangular floor plates and gable roofs of varying slopes that reflect the use of the enclosed volumes. These building shapes are articulated where appropriate with clerestories or roof vents, again in familiar proportions. The orientation and relationship between roofs should maximize solar exposure and the potential future application of photovoltaics on the roof for power generation.

While individual buildings should reflect their use, the overall impression of the complex from the public right of way should be of a dairy farm or ranch. Colors should be muted off whites and earth tones on the buildings and roofs should be a soft terra cotta red or similar color.

Architectural design themes shall be approved by the City.

3.5 Exterior Materials

3.5.1 Walls

Exterior wall finishes are to be durable, noncombustible, and perform well in the coastal environment such as exposed concrete, exposed CMU, metal siding, fiber cement siding, or plaster. There shall be no ferrous metal siding or wood exposed on the exterior of the structures.

Exposed concrete walls are to have reveals at control joints and at cold joints. See Structural requirements below for additional requirements for exposed concrete walls.

Masonry walls or veneer shall generally be integral colored split face where exposed to view. Precision block is not allowed where it is exposed to view. Control and expansion joints shall be located to control cracking. CMU walls or veneer shall conform to ACI 530. See also Structural requirements below for CMU walls.

Metal siding shall be aluminum shall have a minimum thickness of 0.040 inches and shall conform to ASTM B209. Siding shall have a high performance organic coating finish such as Kynar 500 and shall come with a manufacturer's 20-year warranty for watertightness, color fading, and chalking. Metal siding shall not be used within 48 inches of the finished grade.

Fiber cement siding, trim, and soffit materials shall be conform to ASTM C1186 and shall be covered by a manufacturer's 30-year warranty. If panel siding is used it shall be finished with fiber cement battens at no more than 12 inches on center. If lap siding is used it shall have a maximum exposure of 7 inches. All trim is to be fiber cement.

Plaster shall conform to ASTM C296 and shall be installed over metal lath as part of a three coat system and shall have a smooth troweled 100% acrylic based finish. Lath shall conform to ASTM C847 and ASTM C1063. Casing beads, corner beads, expansion joints, control joints and other exposed lath accessories shall be aluminum or PVC. Control joints and reveals shall be located to minimize cracking. Fiber reinforced plaster systems may be used to reduce or minimize control and expansion joints following manufacturer's recommendations.

Weather barrier provided under any siding shall be a vapor permeable membrane, either spun polyolefin fabric or liquid applied. Weather barrier shall be approved by manufacturer for up to 210 days of weather exposure. All window, door, and other openings shall be flashed with a compatible system as recommended

by the weather barrier manufacturer. Grade D building paper is only acceptable as the second layer under a lath and plaster system.

3.5.2 Roof

The roof is to be low maintenance and long lasting. The preferred roofing would be metal standing seam roofing where exposed to view. In other areas where a flat roof is not visible a single ply roof membrane would be acceptable.

Metal roofing shall be aluminum, shall have a minimum thickness of 0.040 inches, and shall conform to ASTM B209. Roofing shall have a high performance organic coating finish such as Kynar 500 and shall come with a manufacturer's 20-year warranty for water tightness, color fading, and chalking. Roof panels shall have a minimum seam height of 2 inches and installation shall follow manufacturer's recommendations to obtain the specified warranty.

Thermoplastic membrane roofing shall be a minimum of 80 mil and shall be UL Class A and shall conform with FM DS 1-28. Installation, including deck sheathing and insulation shall conform to manufacturer's recommendations. Provide a 20-year non-prorated warranty including materials and labor and not excluding ponding water or wind speeds less than 90 mph for the roof.

Roof accessories such as roof hatches, flashings, and gutters shall be aluminum. Roof hatches shall be thermally broken and shall be provided with a minimum of a 5-year warranty. Gutters shall be provided with means to prevent the accumulation of leaves and debris as required by CBC chapter 7A. Flashings and gutters shall have the same finish as the roofing.

3.5.3 Windows

Windows shall comply with the requirements of the California's Title 24 and may be aluminum or fiberglass. Clear or minimally tinted glazing is preferred. Tempered glazing shall be provided where required. Windows shall comply with the performance requirements of AAMA and shall include a system for internal weep drainage and shall be thermally broken. Windows shall be fixed or operable hopper windows and shall not project past the inside face of the wall more than 4 inches. The On-Call room shall be provided with a window that complies with CBC 1030. All operable windows shall be provided with non-ferrous insect screens.

3.5.4 Louvers and Vents

Louvers and vents shall comply with CBC chapter 7A and shall comply with ASTM E2886. Louvers and vents shall be aluminum or fiberglass.

3.5.5 Doors

Exterior doors shall be molded fiberglass reinforced plastic and shall have fiberglass reinforced plastic frames with no metal or wood components. Accessories such as glazing stops and louvers shall be fiberglass. Doors and frames shall have an ultraviolet stabilized polyester, marine grade NPG-isophthalic, with low luster unpatterned final finish a minimum of 25 mils thick. Doors and frames shall have a manufacturer's standard 10-year warranty covering degradation or failure due to chemical attack.

Overhead coiling doors shall be capable of withstanding maximum positive and maximum negative wind loads as described in the California Building Code design criteria without undue deflection or damage to components. Doors shall be of standard construction for normal use of up to 20 cycles a day and an expected lifetime of a minimum of 50,000 operating cycles. Doors shall be insulated with a minimum R value of 8.0 and a STC rating of 22 for the entire door assembly. The steel curtain shall be minimum of 18 gauge on the exterior face. Guides and other exposed components shall be galvanized steel. Operation shall be manual via

a chain and shall lock with a slide bolt from the inside. Installation shall comply with manufacturer's recommendations. Shop doors shall have a minimum clear width of 14 feet and a clear height of 14 feet.

3.5.6 Exterior Steel

Exterior steel items are generally to be avoided due to the highly corrosive coastal atmosphere however there are times when there is no suitable alternative, such as bollards to protect roll up door openings. When used in exterior applications all steel shall be hot dip galvanized, coated with an epoxy paint and then a finish paint. Assemblies shall be fabricated such that components can be joined together with slip jointed fittings or bolted together. Field welding of assemblies is to be avoided. If provided, exterior barrier and handrails shall be hot dip galvanized but are not generally required to be painted.

3.6 Interior Materials and Building Elements

3.6.1 Walls

Gypsum board walls shall be constructed following GA-216 with 5/8 inch board. Interior finishes, per ASTM C840, shall be level 3 in service areas and areas to receive a wall covering, level 4 in areas to receive a light textured finish and egg shell or matt paint (typical), and level 5 in areas to receive a semi-gloss finish. Mold resistant gypsum products shall be used within 10 feet of a sink or other plumbing fixture. Textured surfaces should receive a light to medium orange peel finish. Walls at offices shall be acoustically sealed at the floor and at penetrations in the wall. Where possible penetrations shall be staggered.

Tile on walls shall follow the Tile Council of North America (TCNA) recommended procedures for each application and substrate. Wall tiles shall be standard 4x4 ANSI A137.1 semi-gloss glazed wall tile. Tile on walls in toilet and shower rooms shall be a minimum of 7 feet tall and shall run continuously behind any applied fixtures such as mirrors. Utilize tiles with matching bead, bullnose, cove, and base shapes. Grout shall be polymer modified cement per ANSI A118.7. Provide waterproof membrane at all showers and within 24 inches of sinks.

Fiberglass reinforced paneling shall comply with ASTM D5319. Trim should be PVC in a color to match panel. Panels to be installed as per manufacturer's recommendations.

Insulation shall be installed at all interior partition walls for acoustics. Insulation shall fill the cavity space and shall comply with ASTM C665. Insulation shall be formaldehyde free.

Corner guards shall be provided on outside corners of walls unless covered in tile. Corner guards shall be stainless steel or vulcanized rubber consistent with ASTM F1861.

3.6.2 Ceilings

Gypsum board ceilings shall be constructed following GA-216 with 5/8-inch board. Interior finishes, per ASTM C840, shall be level 3 in service areas and areas to receive a wall covering, level 4 in areas to receive a light textured finish and egg shell or matt paint (soffits), and level 5 in areas to receive a semi-gloss finish (toilets and showers). Mold resistant gypsum products shall be used within 10 feet of a shower. Textured surfaces should receive a light to medium orange-peel finish.

Acoustic tile ceilings and suspension systems shall comply with ASTM C635, ASTM 636, and ASTM E1264. Installation of grid shall conform to ASTM E580 for areas subject to earthquake ground motions and shall be heavy duty. Ceiling tiles shall be tegular and shall have minimum NRC of 0.75 and a CAC of at least 35.

3.6.3 Floors

Polished concrete floors shall be consistent with the Retroplate system as a level of quality. Concrete floors shall be stained, utilizing a minimum of two colors. Concrete after treatment for polishing shall exhibit a uniform level of grind in each space or area. Final polish shall have a hard-shell satin finish (400 grit).

Sealed concrete shall be achieved with a liquid densifier hardener that penetrates into the concrete and reacts with the concrete to create a dustproof sealed finish.

Tile on floors shall follow TCNA recommended procedures for a full mortar bed application in a wet location. Floor tiles shall be ANSI A137.1 standard grade ceramic mosaic tile. Grout shall be polymer modified cement per ANSI A118.7 and shall be sealed with a water based colorless silicone. Provide waterproof cleavage membrane at all floors.

Wall base shall be consistent with ASTM F1861, Type TS vulcanized rubber a minimum of 4 inches tall and shall have a satin finish.

Underslab vapor barrier shall be provided continuously under all floor slabs and shall comply with ASTM E1745 Class A with a minimum thickness of 15 mils and a water vapor permeance of not more than 0.010 perms.

3.6.4 Doors

Interior doors and frames shall be hollow metal and shall conform to SDI-100 standards for Level 2 heavy duty doors. Doors shall be full flush with a face gage of at least 18 and shall have an A60/ZF180 galvannealed coating. Hollow metal door frames shall be full profile, continuously welded type with a minimum of 16-gauge steel. Doors and frames shall be rated as required by code.

At shower room provide removable fixed door and frame capable of being relocated without the use of any special tools to adjust the ratio of men's and women's shower stalls.

Access doors shall be provided where required to access plumbing or attic spaces. The minimum size of an access door shall be 12 inches by 12 inches. Access doors in drywall or plaster shall use a bead type frame. Access doors shall be factory fabricated doors and frame units with welded corners, filled and ground flush. Minimum thickness of frames shall be 16 gauge and of doors shall be 14 gauge. Doors located in wet areas or in tile shall be stainless steel. Doors shall be equipped with a latch with a screw driver slot to operate. Doors that are intended for the passage of a person shall have a latch that is operable from an interior space.

3.6.5 Casework

Cabinets shall be constructed per AWI/WI standards for premium grade with Style A frameless construction with flush overlay door and drawer fronts. Millwork supplier shall furnish a W.I. certificate of compliance. Installer shall provide a Certified Seismic Installation Report confirming that acceptable backing is provided in all locations. Cabinet faces, doors, and exposed surfaces shall have NEMA LD 3 type high pressure laminate faces. Interior surface shall have a melamine finish. Doors and drawer fronts shall have a 3mm PVC edge. Pulls shall be closed wire loop type with a stainless steel finish. Drawer sides shall be commercial grade, side mounted. Drawer slides for drawers deeper than 6 inches shall be side mounted self-closing type with full extension. Hinges shall be stainless steel 5 knuckle 270-degree swing hospital type. Clear silencers shall be installed at each cabinet door.

Countertops

Plastic laminate countertops shall be NEMA LD 3 type high pressure laminate with a minimum nominal thickness of 0.048 inches. Countertops shall have a front edge laminate built up to 1 ¼ inch thick with a raised radiused edge, integral coved backsplash and radiused top edge. The back and end splashes shall be of the same construction. Backsplash shall be a minimum of 4 inches tall. Exterior grade plywood backing shall be used at all wet locations. Provide backer sheet on underside of countertop substrate. No seams shall occur within 18 inches of a sink and sink cut outs shall be sealed.

Lab Countertops

Solid epoxy resin countertops shall be used in the lab. The physical properties of the lab surface shall be consistent with Durcon epoxy resin countertops as a standard of quality. Countertops shall have a marine edge and shall be a minimum of 1 inches deep. Material shall be covered by a manufacturer's standard 10-year warranty to repair or replace any defective material at no cost to the City.

3.6.6 Hardware

Provide each type of door hardware from only one manufacturer. All hardware shall comply with provisions of CBC chapter 11B for accessibility. All doors to be commissioned prior to occupancy to assure that all the aforementioned requirements are met in the installed doors. All door hardware shall be satin finish stainless steel.

Locks and latches shall be provided for each door with appropriate function for the space. Locks shall be standard interchangeable core and shall utilize Schlage Everest 29 7 pin cylinders.

Hinges shall be stainless steel five-knuckle full mortise butt hinges. Provide non-removable pins and security studs at all exterior out-swinging doors. Hinges shall allow doors to open to maximum width. Provide ball-bearing hinges at all doors having closers.

Exit devices shall be push-through push-pad design and shall be independent lab tested to 1,000,000 cycles. No exposed push-pad fasteners, no exposed cavities when operated. Lever shall be breakaway type.

Closers shall be full rack-and-pinion type cylinder with removable non-ferrous cover and cast iron body and shall be independent lab tested to 1,000,000 cycles. Closer to have double heat-treated pinion shaft, single piece forged piston, and chrome-silicon steel spring. Closer to have separate adjusting valves for closing speed, latching speed and backcheck, fourth valve for delayed action where required. Exterior door closers shall have been tested to 100 hours of ASTM B117 salt spray test. Pressure Relief Valves (PRV) not permitted. Closers to be installed on each door that leads to the exterior. Doors from break room to exterior and from shop to exterior are to be equipped with a hold open function.

Gaskets are to be provided at each exterior door at top, sides, and meeting stile or pairs. At each exterior door provide door bottom sweep.

Protection plates are to be provided on the push side of each door equipped with a closer.

Floor stop, overhead stop, or wall protection bumper are to be provided for each door.

Thresholds shall be provided at all exterior doors and shall comply with CBC Chapter 11B.

Door silencers are to be provided at all doors not otherwise provided with gasketing.

3.6.7 Stretched Fabric Wall Panels

Stretched fabric wall panels are to be provided in the break room and the conference room. Field installed, fabric is stretched and set into framework and laid over acoustic material anchored to substrate. Framework consists of continuous perimeter and intermediate mounting frames anchored to substrate, and designed to permit removal and replacement of fabric within framed areas without affecting adjacent areas. Installed system shall have a NRC of 0.70 minimum, when tested in accordance with ASTM C423, Type A mounting. Prefabricated, fabric covered and individually framed panels are not permitted. Fabric to be installed over acoustic material and into framework without use of adhesives, tapes, or fasteners. Seams in fabric are not permitted; base the frame layout dimensions on fabric at least 66-inch-wide. Fabric shall be class I per ASTM E84. Acoustic material shall be 100% polyester with zero volatile organic compounds or formaldehyde.

3.6.8 Marker Boards

Marker boards shall be proved as indicated on the room forms. Marker boards to be porcelain enamel on minimum 24 gauge steel, laminated to core. Frame to be extruded aluminum with concealed fasteners and corner guards. Each markerboard shall include a full-length aluminum tray. Markerboard to be covered by manufacturer's 20-year warranty against discoloration due to cleaning, crazing or cracking, and staining.

3.6.9 Signage

Signage for identification and wayfinding shall be provided. Signage shall be visible at the entrance road to the facility and another sign shall be visible at the exterior of the building. Entry and building identification signage shall be free standing.

Signage for room identification shall be provided at the facility to identify each space at each door. Space identification signage shall comply with CBC Chapter 11B, Division 7. Signs shall be of engraved construction on fiberglass (exterior) or melamine (interior) plastic. Acrylic and photopolymer substrate are not acceptable.

Signage for parking stalls as required by CBC Chapter 11B shall conform to the requirements of the code.

3.6.10 Toilet Compartments

Toilet compartments shall be provided as described on plans or as required. Partition configurations shall comply with the requirements of CBC Chapter 11B. Partitions may be HDPE or solid phenolic. All hardware shall be aluminum or stainless steel. Partitions shall be overhead braced.

3.6.11 Toilet, Bath, and Laundry Accessories

Toilet, bath, and laundry accessories shall be manufactured by a company specializing in the manufacture of such accessories with a minimum of 10 years' experience. All accessories shall be ASTM A666 type 304 stainless steel with a number 4 brushed finish.

Accessories to be provided include:

Toilet Paper Dispensers: Two roll capacity
Paper Towel Dispensers: Fan fold
Electric Hand Dryers: High velocity capable or drying hands in 12 seconds
Soap Dispensers: liquid
Mirrors: Stainless steel framed, full height at locker rooms, 18 by 36 inches at each lavatory.
Seat Cover Dispensers
Grab Bars: Satin finish, concealed fasteners
Sanitary Napkin Disposal Units

Utility Shelf with Mop and Broom Holder
Shower Rods
Shower Curtains
Robe Hooks
Flip up Shower Seat at Fully Accessible Shower Stalls

3.6.12 Lockers

Lockers at shower rooms shall be HDPE with antimicrobial additive tested per JIS Z2801 to be greater than 4.0 efficacy rating. Lockers shall be single tier a minimum of 15 inches wide by 18 inches deep and 72 inches tall. Lockers shall have sloped tops, shall be fully ventilated, standard hasps, and shall include a stainless steel coat rod. Lockers shall be placed on a raised concrete curb with a tiled face.

Lockers for gear and personal equipment storage shall be HDPE with antimicrobial additive tested per JIS Z2801 to be greater than 4.0 efficacy rating. Lockers shall be single tier a minimum of 24 inches wide by 24 inches deep and 72 inches tall. Lockers shall have sloped tops, shall be fully ventilated, standard hasps, and shall include a stainless steel coat rod.

3.6.13 Fire Protection Specialties

Fire extinguishers shall be provided as required by code and shall comply with NFPA 10. Extinguishers may be surface mounted.

3.6.14 Residential Equipment

Residential equipment shall be provided as shown on conceptual layouts and described herein. Finishes shall be stainless steel or similar color painted finish at washer and dryer.

Microwaves
- Countertop style
- 1000 watt minimum
- 1.1 cubic foot minimum

Range
- Size: 30 inches
- Capacity: Minimum of 5.0 cubic foot
- Type: Electric radiant heat elements with porcelain top
- Controls to be mounted on front surface of range

Refrigerator
- Energy Star rated
- Bottom freezer
- Ice maker
- LED lighting
- Ice/water filter
- Interior filtered water dispenser no higher than 48 inches to controls
- Minimum capacity 24.5 cubic feet

Hood
- Wall mounted standard range hood
- 2-speed fan
- 180 CFM minimum at high
- 4.5 Sones maximum at low speed
- Filters: Washable grease
- Ducted to exterior via 7” diameter duct

Provide remote switches for fan within reach range

Dishwasher
- Energy Star rated
- Internal water heater

Washer
- Energy Star qualified
- Front loading
- Minimum capacity of 4.5 cubic feet

Dryer
- Electric
- Controls located on the front face
- Dryer and Washer to be a matched set by the same manufacturer

3.6.15 Furnishings

Furnishings shall be provided in all spaces to support the intended use of the room. Including desks, tables, chairs, work benches, lab benches, and other office furnishings equipment to support the intended use of the room and as described.

Shop and storage areas shall be provided with work benches, storage cabinets, storage shelves, a work sink, a compressor and permanently mounted compressed air lines with quick connect couplings compatible with the City's existing tools and equipment. The DB shall coordinate with City for relocation and reuse of any existing equipment.

Bridge crane shall be provided at shop for use in drive through bay. Crane shall be overhead supported with a capacity of 4 tons minimum. Controls shall be located on pendant suspended from sliding track. Crane clearance shall be a minimum of 14 feet with a minimum hoist lift of 10 feet. Bridge, trolley, and hoist shall be electrically controlled at pendant. Bridge and trolley motors shall be variable frequency drive with sealed dust-proof brakes. Crane shall be protected from overload with weight limit switches and limit switches to prevent running crane beyond its boundaries Crane shall be fully compliant with OSHA standard 1910.179.

Lab area shall be furnished with all cabinetry and ventilation systems to provide an efficient and effective working area. The DB shall coordinate the relocation and reuse of existing City laboratory equipment necessary to perform the on-site sample analysis required for compliance with all applicable agencies and process control. An eyewash/shower station shall be provided near the Lab and Shop.

3.6.16 Fire Protection System

Fire Sprinkler system shall be provided as required by CBC and shall include everything required for a complete system including underground supply lines, backflow preventer, fire department connection, and valve tamper switches tied into fire alarm system. All equipment shall be in compliance with NFPA #13 standards. Furnish and install signs as required. Sprinkler heads shall be aligned with ceiling components.

For electrical supply rooms the fire sprinkler system provided shall be a double interlocking preaction system. This system shall consist of a dry pipe valve and a pre-action valve. To activate water flow, both the preaction valve must be activated by the supplemental detection system and the sprinklers must activate. The system shall be NFPA approved.

For computer and communication rooms the fire protection system must be a waterless system approved for use with sensitive computer equipment. The system shall be fully self-contained with cylinders and control panel located within the room. The system must include a warning alarm that the system is pending activation. The system shall be NFPA approved.

The fire alarm shall simultaneously contact the fire department and annunciate in the operations control room when any alarm is activated.

3.6.17 Domestic Plumbing

Plumbing systems shall be complete as required by CBC. Toilet and restroom fixtures (toilets, lavatories, urinals) shall be vitreous china. Sinks shall be stainless steel. Showers shall be furnished with single piece terrazzo shower receptors including at fully ADA compliant shower provided for each locker room. Water in recessed box shall be provided for ice maker at break room. Floor drains with automatic trap primers shall be provided in all restrooms and locker rooms. Provide water hammer arrestors as needed. Provide key operated hose bibs on each accessible face of buildings. Provide hot water supply sufficient for each building's needs including lab and shop sinks. Provide telephone shower near staff entry to Operations Building for wash down of boots or protective clothing. Wash down shower to be connected to the sanitary sewer and protected from storm water.

Waste, vent, sewer and storm lines shall be of cast iron soil pipe and fittings and shall conform to the requirements of CISPI Standard 301, ASTM A-888 or ASTM A-74 for all pipe and fittings.

Domestic Water Service

Below grade (water service) shall be as follows:

- 3" NPS and smaller: Schedule 40 PVC Plastic Pipe and fittings. ASTM D1785, D2466, with Solvent Cement Joints ASTM D2564.
- 2" NPS and smaller: Type K Soft Annealed Temper Copper Tube ASTM B88 with wrought copper pressure fittings, ANSI B16.22. SIL-FOS - High Temperature Brazing Metal Filler.

Above grade (distribution system) shall be as follows:

- Pipe: For soldered, brazed and mechanical joints, 4" and smaller Copper Water Tube Type L Annealed Temper (Hard Drawn) ASTM B75 or ASTM B88. All underground water piping within the building boundaries shall be ASTM B88-93a Type "L" annealed (soft) copper tube made up without fittings below the floor level.
- Fittings: Wrought copper pressure solder fittings, ASME B16.22 or ASME B16-25,95-5 Tin-Antimony Filler Metal.

3.6.1 Heating Ventilation and Air Conditioning

Heating ventilation and air conditioning systems shall be in conformance with CBC/Title 24 requirements. All regularly occupied spaces in the Operations Building shall be provided with both heat and air conditioning. Shop support spaces and Lab shall be provided with heat and ventilation. Shop shall be provided with provision for radiant heaters to be installed at some time in the future at work areas.

Sheet Metal Ductwork including Rectangular supply, return, outside air and exhaust ducts, single leaf dampers and plenums shall be fabricated from prime grade galvanized steel sheets of lock form quality and shall be constructed in accordance with appropriate tables of the latest ASHRAE "Guide and Data Book" and SMACNA "HVAC Duct Construction Standards" handbook and Chapter 6 of the California Mechanical Code, current edition. Each duct or plenum shall be diagonally cross-broken for rigidity.

3.6.1.1 Flexible Ductwork

Flexible ductwork shall consist of an inner core having two layers of polyester film encapsulating a steel wire helix surrounded by a blanket of fiberglass insulation and sheathed in a metalized polyester vapor barrier reinforced with fiberglass scrim. All air ducts shall be UL listed under the UL-181 standard as a Class 1 Air Duct also conforming to NFPA standards 90A and 90B. This air duct shall have a certified thermal resistance rating of R-8 in accordance with ASTM C518 at 75 degrees F and carry the ADC "Thermal Performance" seal. Use only the minimum length required to make the connection. In no case shall any section of flexible duct exceed 7 feet in length. The number of bends shall not exceed a combined total of 90 degrees. 90-degree bends will not be allowed at diffuser connections.

3.6.1.2 Damper Regulators and Bearings

Lever type with matching end bearing. Regulator set shall include rubber gasket between regulator and duct, spring washer between core and housing, wedge pin, dial indicator and handle. Matching end bearing shall be closed end with rubber gasket.

3.6.1.3 Access Panels

Access panels shall be located at all points where adjustable mechanisms are installed internal to or on the surfaces of the ductwork. Where adjustable mechanisms are concealed by walls or ceilings, access doors shall be installed. Size shall be suitable for convenient servicing.

3.6.1.4 Fire Dampers

Fire dampers shall be installed where required, and shall be of a type approved by the U.L. Laboratories, Inc. and the State of California Fire Marshal. Dampers shall be installed per manufacturer's instructions. Provide access door in duct at each fire damper such that damper is easily accessible.

3.6.1.5 Volume Dampers

- Rectangular ducts greater than 1.5 sq. ft.: Provide factory fabricated opposed blade damper, 16 gauge blades, and brass bearings. Blade width shall not exceed six inches.
- Rectangular ducts 1.5 sq. ft. and less: Provide single leaf dampers as described.
- Round ducts 15" in diameter and less: Provide shop fabricated galvanized sheet metal plate dampers. Plate shall be 18 gauge or shall be two even gauges heavier than duct; minimum thickness 22 gauge. Provide stiffening beads at 1/3 points in dampers lighter than 18 gauge.
- Round ducts 16" and greater: Provide opposed blade damper.
- Round ducts 4" – 24" in diameter above "hard" ceilings: Provide cable operated damper. Cable length to be between 3 and 15 FT long.

3.6.1.6 Flexible Connections

Provide fireproof, insulated, non-porous, flexible connections between fans and ducts or casings and where ducts are of dissimilar metals. For round ducts, securely fasten flexible connections by zinc coated steel clinch-type drawbands. Provide a duct support next to each flex connector to prevent any strain on connection.

3.6.1.7 Condensate Drains and Drain Pans

- Air conditioning cooling coils shall have a condensate drain pipe, type "M" copper, to drain the condensate.
- Fan coils or DX cooling coils located in an attic or furred space shall have a secondary drain pan constructed of 20 gauge galvanized steel sheet metal. This pan shall have a drain line discharging to a conspicuous location. This pan and drain is in addition to the normal condensate drain line from the coil.

3.6.1.8 Motor Starters

Motor starters shall be provided complete with properly sized thermal overload protection and other appurtenances necessary for motor control. Mount starter adjacent to equipment. Maintain minimum of 3' clearance to front of devices. Motor starters shall be NEMA I or III as appropriate, general purpose, weather-resistant, with watertight enclosure where required.

3.6.1.9 Insulation

Insulation of heating and cooling ducts shall conform to requirements of CMC. Insulation shall be installed after the required tests have been applied to the piping and duct systems, and the systems have been inspected and approved.

3.6.1.10 Temperature Controls

Temperature controls shall be provided for zones with similar use, loads and exposure. Thermostats shall be capable of 7 day programming and shall incorporate a minimum 5 degree deadband.

3.6.1.11 Labeling

Labels shall be provided for all equipment and switches. Labels shall be 2" x 1" x 1/8" thick plastic engraving stock beveled on both sides and with two 3/16" diameter holes near the top uppermost tag corners. Labels shall be white with 3/8" high red engraved letters. Labels shall be attached to the equipment with adhesive or screws.

3.6.1.12 Mechanical Systems Balancing

Mechanical systems balancing shall be performed by an independent balancing company certified by Associated Air Balance Council (AABC) or National Environmental Balancing Bureau (NEBB). Testing and balancing shall be performed by a company other than the mechanical system installers/contractor. Upon completion of the balancing operation and prior to final acceptance of the systems, the balancing firm shall submit an Air Side Report certifying to the proper performance of the system for approval by the City.

Air Side Report

The following information shall be included in the Air Side Report:

- Fan speeds.
- Motor current readings and voltage readings.
- Air quantities in CFM at supply, return, exhaust terminals, and outside air intakes, both at design value and actual measured value. Test and adjust each terminal to within +10% of design requirements.

- Air velocities in FPM at supply, return, and exhaust terminals at design value and actual measured value.
- Positive static pressure, negative and total pressures and total air quantities for each fan system.
- Equipment nameplate data.

3.6.2 Electrical and Lighting

Electrical and Lighting systems shall be in conformance with CBC/Title 24 requirements.

Lighting shall meet IES recommended levels for each space and use. All lighting fixtures to be manufactured by a company with a minimum of 10 years' experience. Interior lighting controls (daylighting and occupancy sensors) shall be produced by the same manufacturer as light fixtures. All light fixtures shall be independently tested to verify manufacturer's listed light levels. All exterior light fixtures shall be housed in non-ferrous housings with stainless steel fittings. All exterior light fixtures shall be full cut off. Exterior lighting shall be provided with dual light levels and controls to allow light levels to be dropped to minimum levels when the facility is not actively occupied.

Power shall be provided as required for the intended use of each space and as required by code. Power outlets controlled by switches shall be identified with permanent labels or color-coded outlets. Three phase power shall be provided in shop area for anticipated service equipment. Power outlets shall be provided for wall mounted display screens.

3.6.3 Telecommunication Systems

Telecommunication system shall be provided as required for the anticipated use of each space including voice and data communications. Each workstation or office shall be provided with a minimum of four data outlets. Data outlets shall also be provided for provision of Wi-Fi access points, printers, security cameras, and the SCADA system. All materials shall be UL Listed and shall be marked as such. If UL has no published standards for a particular item, then other national independent testing standards shall apply and such items shall bear those labels. Where UL has an applicable system listing and label, the entire system shall be so labeled. All modular jacks, patch cords, consolidation point, and patch cords performance shall be verified (not just tested) by a third party to be category 6 component and channel compliant. All data outlets shall be permanently labeled with a printed label identifying the outlet.

Telecommunications cabling shall adhere to the current version of the following standards

ANSI/TIA/EIA - 568-C.0, Generic Telecommunications Cabling for Customer Premises
ANSI/TIA/EIA - 568-C.1, Commercial Building Telecommunications Cabling Standard.
ANSI/TIA/EIA - 568-C.2, Balanced Twisted Pair Cabling Components, Addendum 1 –
ANSI/TIA/EIA - 568-C.3, Optical Fiber Cabling Components
ANSI/TIA/EIA – 569-A, Commercial Building Standard for Telecommunications Pathways and Spaces
ANSI/TIA/EIA – 606-A, Administration Standard for Telecommunications Infrastructure of Commercial Buildings
ANSI/TIA/EIA – 607-A, Commercial Building Grounding and Bonding Requirements for Telecommunications
ANSI/ TIA/EIA – 758, Customer-Owned Outside Plant Telecommunications Cabling Standard
BICSI - TDMM, Building Industries Consulting Services International, Telecommunications Distribution Methods Manual (TDMM)
National Fire Protection Agency (NFPA – 70)

California Electrical Code

3.7 Plantings

Planting shall be provided to enhance the visual appeal of the entrance to the facility and around the public areas of the Operations building and to provide a screening buffer for the neighboring property to the east.

3.7.1 Visual Aesthetic

The project landscaping shall generally serve to enhance the visual corridor of the entrance to the site and provide a screening buffer for the neighboring property to the east. Plants shall be grouped in masses to appeal to the aesthetics as viewed at vehicular speeds. The overall plant palette does not require more than 10 to 15 plant species to convey the aesthetic.

3.7.2 Drought Tolerance

Landscaping shall primarily comprise of heavily drought tolerant species suitable for the coastal exposure. A good target percentage for the landscape palette is 80% drought tolerant low water using plants (based on WUCOLS standards), and 20% moderate water using plant material.

3.7.3 Plant Sizes

As a general rule of thumb, the following guidelines are provided for container sizes:

- Shrub: 1-gallon size minimum. 40% of plant material shall be upsized to a minimum of 5 gallon.
- Trees: 15-gallon size minimum. 50% of plant material shall be upsized to a minimum of 24" box. Trees intended to provide shade, or with slow growing habits shall be considered for upsizing first.
- Ground cover: 1-gallon size minimum. Large spreading groundcovers (5-6 ft on center spacing minimum) shall be 5-gallon size minimum.

3.7.4 Planter Mulch

All landscape areas shall be dressed with a non-combustive, weed free, organic mulch. No eucalyptus material is acceptable. The mulch shall be installed in a 3" minimum layer.

3.7.5 Plant Layout

Plant material shall be designed and located such that larger/taller plant material creates a backdrop for shorter lower growing plant material in the foreground. Accent plant material is encouraged at focal points like street intersections, and entry ways. Plant material shall be spaced at ¾ of anticipated full spread. This will avoid large void spaces between plant material and allow plants to fill in quicker.

3.7.6 Soil Preparation

Soils shall be amended per the requirements of the State or local Model Water Efficient Landscape Ordinance. Soil samples shall be taken and tested for fertility. Soil amendments shall conform to the requirements obtained through this testing. Where soils are non-conducive to plant life, due to heavy thick clay, contaminants or rock, the top 6" of existing soils in planted areas shall be exported off site and topsoil imported. Topsoil shall conform to SSPWC standards for Grade A topsoil.

3.7.7 Plant Establishment

An establishment period of 90 days (minimum) shall be required for initial maintenance and warranty of plant material. Site observation meetings shall be scheduled at 30-day intervals to observe plant material. Repairs shall be provided on an ongoing basis.

3.7.8 Plant Warranty

The installer shall warranty all trees for a minimum of 1 year. All shrubs shall be warrantied for a minimum of 30 days beyond the completion of the establishment period.

3.8 Irrigation

Irrigation System shall comprise of equipment selected from manufacturer's having been in the business a minimum of 15 years and have a good track record of long lasting equipment. Equipment shall be comprised of components designed to perform with high water efficiency.

3.8.1 Irrigation Emission Devices

- The following guidelines are provided for the design/implementation of the irrigation system.
- Large slopes – Low flow rotors or rotary nozzles shall be utilized to keep runoff down. Dripline is discouraged in this application.
- Large landscape areas – Low flow rotors or rotary nozzles shall be utilized. Drip may be utilized if approved by City.
- Small and Linear planters – Low flow rotary nozzles or drip irrigation shall be utilized. Drip may be required when parkway planter sizes are less than 10 ft in width.

3.8.2 Piping

PVC pipe shall be SCH 40 minimum. Do not use pipe sizes less than ¾" for laterals. Mainlines should have a minimum size of 1½".

3.8.3 Remote Control Valves

Utilize brass globe valves intended for dirty water use.

3.8.4 Ball Valves

Bronze or brass, not plastic. Locate along mainline periodically and at crossings to allow for mainline shut off for maintenance.

3.8.5 Valve Boxes

Shall be locking. Purple where dirty water is in use.

3.8.6 Controller

Weather based controller capable of adjusting runtimes based on live input data and historical data. Shall have ports for a master valve, flow sensor, rain sensor/moisture sensor. Shall have minimum 48 stations to allow for future expansion. 2 wire is acceptable.

3.8.7 Flow Sensor

Manufactured by same company as the controller. Shall be able to read high and low flows of the design system.

3.8.8 Master Valve

Brass normally closed valve intended for dirty water use.

3.8.9 Quick Couplers

Locate periodically for maintenance purposes. Dirty water compatible.

3.9 Decorative Fences and Gates

Decorative fences and gates shall be provided at the public face of the facility facing Highway 1. Fence shall be capable of resisting vertical load, horizontal load and infill performance requirements for fence categories defined in ASTM F2408. Fence shall be hot dip galvanized steel, epoxy primed, and painted with a total minimum coating thickness of 2 mils. Fence shall be assembled from panels joined to posts, with no field welding. Gates to be lockable in both the open and closed position. Spacing between pickets shall result in a clear space between them of not more than 4 inches.

3.10 Space Needs

See Appendix E for a summary of space needs of the Operations and Maintenance Buildings.

3.11 Space Needs Identification Forms

See Appendix G for Space Needs Identification Forms with specific requirements for the rooms identified.

3.12 Equipment and Furniture List

See Appendix H for an equipment and furniture list for rooms identified.

3.13 Landscape Plan

See Appendix I for a conceptual landscape plan of the front entry and access road.

SECTION 4 STRUCTURAL CRITERIA

4.1 General

All structural design shall be prepared under the direct supervision of a Structural Engineer licensed by the State of California. Design all structures for a service life of not less than 50 years, in accordance with the most current applicable codes and standards.

The structural criteria presented in this section define the general requirements. Variation from any standards shall be identified in a report and provided to the City for consideration. City acceptance shall be obtained prior to implementing such variations, and shall be provided at the sole discretion of the City.

4.2 Load and Deflection

Item	Parameter	Criteria	Notes
1	Loads	All loads to structures and components shall be developed with the latest version of the ASCE 7 referenced by the CBC	
2	Live Loads	• Conform to ASCE-7 with traffic loads per AASHTO. • Use minimum live loads for structures that will allow equipment to be moved to other locations or additional equipment to be added. • Floor live loads in equipment rooms, pump rooms, electrical rooms and areas where equipment may be moved to various locations shall be not less than those given in ASCE-7 for light manufacturing: 150 pounds per square foot uniform load and 2,000 pound concentrated load. • Where the loads of specific equipment give higher design forces and stress for a specific area, the higher loading shall be used. No live load reduction may be used. • For heavy equipment greater than five tons, floor live loads shall be designed for the greater of 250 pounds per square foot uniform load or the load of the specific equipment.	
3	Wind Loads	ASCE-7 wind load design forces and wind load detailing requirements shall apply for all buildings, equipment anchorage, and hydraulic or water-holding structures.	

4	Seismic Loads	• ASCE 7 seismic load design forces and seismic load detailing requirements shall apply for all buildings, equipment anchorage, and hydraulic or water-holding structures • All structures and components shall be designed with the values below: o Latitude = 35.3707 o Longitude = -120.8217 o Site Class = C o S_S = 1.135 o S_1 = 0.421 o Importance Factor = 1.25 o Component Importance = 1.0 to 1.5	Refer to Geotechnical Baseline Report
5	Deflection	Serviceability design shall ensure against deflections causing adverse functional or aesthetic effects over the life of the plant. The live load and total load deflections criteria given in the CBC for general loading combination and specific to the various design material (concrete, steel, CMU, timber, etc.) shall be the minimum for buildings, building-like structures, and for structural and material types not specifically covered elsewhere.	

4.3 Building Structure Types

Item	Parameter	Criteria	Notes
1	Operations Building	• Steel-framed with no internal columns • Provide a CMU wainscot exterior, to a height of 4 feet from top of slab • Concrete slab on grade shall be 4 inches, minimum • If a Pre-Engineered Metal Building system is used, it shall be designed for the following dead loads: o Self-weight o Weight of steel framing and deck o Collateral Load made up of: o 5-PSF partition wall load o mechanical, electrical, and plumbing load o ceiling and ceiling support system load o insulation load	

		○ 4 pounds per square foot solar panels ○ 5 pounds per square foot additional load	
2	Maintenance Building	• Steel-framed with no internal columns. CMU wainscot exterior, to a height of 4 feet from top of slab • 4-ton overhead structure-supported bridge crane in Shop	
3	Advanced Treatment Building	Steel framing on a concrete slab on grade. Structure shall be one story, but designed for gravity and lateral loads from a second-story addition of the same floor area.	
4	Miscellaneous Covered Structures	• Steel-framed and consistent with architectural features and structural elements of other facilities on the site • Where adjacent to other structures, covered structures shall be separated by 6 inches or seismic separation required by the ASCE 7, whichever is greater	
5	Miscellaneous Building Structures	Constructed in a style consistent with architectural features and structural elements of other facilities on the site	Unless otherwise specified, all other structures shall be consistent with performance criteria stated for Operations Building

4.4 Tanks and Basins

Item	Parameter	Criteria	Notes
1	Material	• No steel or aluminum tanks shall be allowed for the storage of any water, sludge or other materials. • Process tanks and facilities shall be of reinforced concrete. Process chemical tanks may be of FRP or similar materials.	
2	Tank Wall Design	• The walls of water-containing structures, including tanks and basins, shall be designed for the following conditions: o Tank or basin at full liquid level without soil backfill. o Empty tank or basin with soil backfill and maximum ground water. o Basin or tank cells in any combination of empty and full. o Increased soil backfill pressures and liquid pressures due to seismic conditions. o Seismic impulsive and convective loading under operating conditions. o Operational level shall include maximum flooded condition unless passive methods are provided to prevent flooding. Passive methods include overflow weirs, upstream or downstream hydraulic controls not dependent on pumps, monitors, electronic controlled valves, or operators. o If passive level controls are present, then the maximum operational level is defined as the liquid elevation when those controls are in effect.	
3	Backfilling	Water-containing structures shall not be backfilled until the basin passes the watertightness testing	
4	Uplift Loads	• Tanks and basins shall be designed for uplift based on the following safety factors and groundwater conditions:	• These conditions only apply to the uplift calculations.

		o Maximum groundwater levels expected during a 100-year storm and/or 199-year flood events in the structure area, as a minimum, with basins at normal minimum operating levels and a minimum safety factor of 1.1. Groundwater elevation: 10 feet below existing grade. Floodwater elevation: 3 feet above existing grade. o Groundwater at normal levels with basins empty and a minimum safety factor of 1.5. o In all cases side friction shall not be considered as resisting uplift.	• Maximum ground water level is the level that can be obtained adjacent to the structure being evaluated. Drain systems, external to the structure, may be provided to reduce the maximum ground water level. The reduced level shall only be used in uplift calculation when the drain system is entirely passive, i.e. relying only on gravity. The reduced ground water levels from drain systems that rely on pumping, monitoring, or operator intervention shall not be substituted for the maximum ground water level obtainable if components of such a drains system did not operate.

4.5 Non-Building and Miscellaneous Structural Elements

Item	Parameter	Criteria	Notes
1	Headworks and Equalization Basin	The Headworks and Equalization Basin shall be partially buried basin structures with a concrete slab on grade, and concrete walls/retaining walls and a concrete lid where specified	
2	Site Retaining Walls	• Walls shall be at least 8-inch thick cast-in-place concrete construction • Where grade behind wall exceeds 1:1 slope, retaining wall shall be designed and detailed for 1.5 feet in additional retained height, in anticipation of erosion that will occur over the service life of the site	Reference Geotechnical Baseline Report for preliminary soils design values. DB may find it necessary to update and expand on current Geotechnical Baseline Report for values that fit each

			specific retained condition.
3	Anchorage for Equipment	Anchorage shall be designed in accordance with ASCE 7, Chapters 13 and 15. Slab and housekeeping pad thicknesses must be coordinated with anchorage depth during design of the structure. All supporting concrete edges must be at least 8 inches from any anchor location.	
4	Equipment Pads	• All equipment and associated panels and cabinets shall be installed on reinforced concrete equipment pads, a minimum of 6 inches above grade, or 3.5 inches above adjacent floor or slab • All pads shall extend a minimum three inches outside the equipment, panels or cabinets, while also meeting the anchor edge distance specified above	
5	Vehicle and Equipment Wash Rack	• Concrete slab on grade, with a CMU wall on three sides • Slab on grade shall be 8 inches thick minimum and capable of withstanding maintenance vehicle and equipment loads. • CMU wall shall be capable of withstanding 2,000-pound point load at 2 feet from top of slab at any location along the wall	

4.6 Foundations

Item	Parameter	Criteria	Notes
1	Design	• Foundations shall be designed in accordance with the Geotechnical Baseline Report • Structures shall be located on the site such that foundations for each structure are of the same type • If it is necessary to locate foundation partially in rock, the design of the foundation shall be such that the expected settlement of the portion founded in soil is equivalent to the portion founded in rock	The DB may need to update and expand on current Geotechnical Baseline Report for values that fit each specific foundation condition

4.7 Structural Materials

Item	Parameter	Criteria	Notes
1	Concrete Design	Concrete structures, including tanks and buildings, shall be designed and constructed in accordance with all applicable codes. The concrete mix design shall meet the requirements of ACI 318 and ACI 350. Ground water shall be sampled and tested for salinity and sulfate levels. The concrete mix design shall be adjusted to provide appropriate sulfate resistance per ACI 318 and ACI 350.	
2	Structural Steel	Structural steel shall be designed, fabricated and erected according to the latest applicable CBC Chapter 22 as modified by ESP 550.1.	
3	Connections	• Structural connections shall be shop welded and field bolted. Welds shall be designed and executed in accordance to ANSI/AWS D1.1 Structural Welding Code — Steel. Welding procedures shall be qualified in accordance to ANSI/AWS DI. I Section 5. Welders, Welding Operators and Tack Welders shall be currently qualified in accordance to ANSI/AWS D1.1 Section 5. Welders' certifications should be made available to City. Welding inspectors shall have current certification as an AWS Certified Welding Inspector (CWI) in accordance with AWS QCI Standard and Guide for Qualification and Certification of Welding Inspectors. • Bolted connections for steel buildings, building-like structures and platforms that enclose or support process equipment, shall be designed as snug-tightened connections with the threads included in the shear plane. The actual bolts provided for the connection shall have the threads excluded from the shear plane. Bolted connections shall conform to AISC Specifications for Structural Joints Using ASTM A325 or A490 Bolts.	
4	Metal Roof Deck	Design and fabrication of metal roof deck shall be in accordance with the latest specifications of the Steel Deck Institute. Steel used in the fabrication of deck units shall conform to the	

		requirements of the AISI Light Gage Cold-Formed Steel Design Manual.	
5	Miscellaneous Metals	• Miscellaneous metals shall include such items as gratings, metal floor plates, railings and toe plates, loose lintels and miscellaneous framing and ladders. Materials of construction shall be selected to provide maximum service life for the expected environmental conditions, including exposure to corrosive atmospheres and marine conditions. Any metal item that is submerged shall be 316 stainless steel unless the corrosivity of the environment requires different. Any metal item located in a corrosive atmosphere shall be 316 stainless steel, unless noted otherwise or if aluminum or another material is suitable and complies with the reference standards. No dissimilar metal items what would result in corrosion if in contact shall be used. • Aluminum shall be insulated from direct contact with concrete. • Miscellaneous metal shall be fabricated in accordance with the most recent applicable CBC, OSHA, or ASTM standards. All metal fabrications exposed in the finished construction, both interior and exterior, whether painted or not, shall be hot-dip galvanized (heavy duty type coating) except in aluminum only for railings, toe plates and stairways. Galvanizing of miscellaneous metal after fabrication shall be in conformance with ASTM A123 and A153. • Cadmium plating of miscellaneous metals shall be in accordance with ASTM A165, Type TS. • All anchor bolts shall be stainless steel Type 316. • Cages, ladders, and fall protection devices shall conform to applicable OSHA regulations.	
6	Aggregate	Structural concrete materials shall have certification of compliance for meeting ASTM specifications and test reports certifying that no material contains asbestos and that all aggregates are non-reactive to alkalinity. All certifications, submittals, and reports shall be current within three months of use and shall be	

		identifiable to the materials supplied for both fine and coarse aggregate. Provide reports for aggregate tests performed specifically for this project, for each source of aggregate including chemical tests (ASTM 289) and accelerated mortar bar expansion tests (ASTM C1260).	
7	Cement	• The Geotechnical Baseline Report identified a potential for soil corrosivity towards concrete. DB shall either perform additional soils testing, to verify that corrosive soils do not exist, or shall furnish corrosion resistant concrete using Type II/V cement. • Structural Concrete Class A Concrete f'c = 4000 psi • Shall contain a mineral admixture fly ash Class F not to exceed or replace more than 15 percent of the cement material required without the mineral admixture. Mineral admixture shall conform to ASTM A618.	

SECTION 5 CIVIL CRITERIA

5.1 General

The following section includes the performance criteria associated with site-civil elements of the WRF.

5.2 Site Improvements

Item	Parameter	Criteria	Notes
1	Finish Surface Type	• Concrete: sidewalks, equipment pads, foundations, site entrance, truck stopping and parking areas • Asphalt: paved roads • Crushed rock: unpaved areas • Native material: unimproved areas	All improved areas within the site that are not concrete, asphalt, or landscaping shall be crushed rock
2	Backfill and Compaction	Refer to Geotechnical Baseline Report	See Appendix J: Geotechnical Baseline Report for additional geotechnical information
3	Existing Finished Surface	Native vegetation	Existing site has not been developed
4	Site Setbacks	Building and process areas shall be located to comply with San Luis Obispo County and the City of Morro Bay Building standards	Maintain setback for creeks/drainages
5	Bollards	where equipment maintenance is necessary bollards shall be removeable	
6	Perimeter Fence	The WRF perimeter shall be enclosed with a 6-foot tall galvanized chain-link fence with 3 strands of barbed wire on the top	Coordinate with Section 3.9
7	Survey and Utility Information	The City will provide the survey files and available utility information for informational purposes. The DB is responsible for validating the information provided by the City. The DB is responsible for obtaining additional survey and utility information.	

5.3 Site Layout

Item	Parameter	Criteria	Notes
1	Building/Facility Locations	Proximity of buildings to Highway 1, nearest to furthest: • Operations Building • Storm Drainage Facilities • Equipment/Vehicle Storage • Material Laydown Areas • Maintenance Building • Treatment/Process Facilities	• Reduce the visibility of the storage and process areas from the Highway. • Locate headworks, EQ basins, and other processes subject to odor as far from the Operations Building as feasible.
2	Future 800 kW solar Facility	The site planning must include space for a future 800 kW solar facility	Provisions for a future solar facility are to be included in the site layout to facilitate future constructability and access
3	Site Vehicle Circulation	The WRF facility shall be designed to allow truck and service vehicle traffic to flow smoothly without creating areas of congestion and dead-ends The WRF facility shall be designed such that chemical delivery and biosolids hauling trucks are not required to backup.	
4	Fire Equipment Access	The WRF facility must be designed to allow full access for emergency responder vehicles and equipment. Emergency responder vehicles shall be able to drive continuously throughout the site without any reverse movements.	

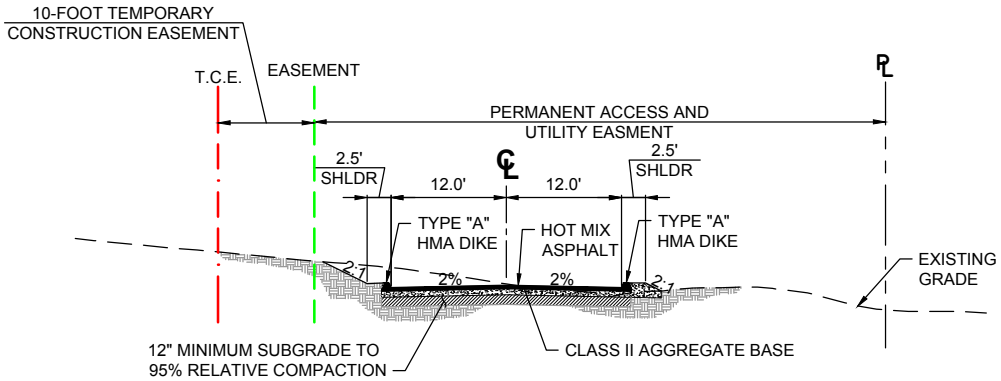
5.4 Site Access Road

Item	Parameter	Criteria	Notes
1	Site Access Road Design	Access road shall provide vehicular access to the WRF site from the Highway 1 on and off ramps. Design of the access road shall match the geometrics and pavement section defined in Figure 5-1.	
2	Site Access Road Location	The access road shall be generally located per Figure 5-1	

3	Geotechnical Investigation	Geotechnical information for past projects located near the access road has been provided for informational purposes and can be found in Appendix N. The DB is responsible for performing additional geotechnical investigations if determined to be necessary.	

ACCESS ROAD SITE PLAN

Scale: 1:100



TYPICAL ROAD SECTION

Scale: 1:20

GENERAL NOTES

1. EXTEND EDGE OF ROAD AND ADJUST CENTERLINE AS SHOWN. SUBGRADE, BASE AND ASPHALT TO MATCH THICKNESS AND MATERIAL SPECIFICATION FOR ACCESS ROAD.
2. DB WILL BE RESPONSIBLE FOR PROTECTING EXISTING INFRASTRUCTURE. ASSUME 4,890 SF OF ROAD REPAIR WILL BE REQUIRE TO REPAIR EXISTING ROADWAY IMPACTED DURING CONSTRUCTION. SUBGRADE, BASE AND ASPHALT TO MATCH THICKNESS AND MATERIAL SPECIFICATION FOR ACCESS ROAD.

CITY OF MORRO BAY WATER RECLAMATION FACILITY PROJECT

City of Morro Bay
Water Reclamation Facility Project

Preliminary Access Road Alignment

FIGURE
5-1

5.5 Offsite Pipeline Coordination

Item	Parameter	Criteria	Notes
1	Connection point	• Connect to the influent force main, recycled water pipeline, dedicated City fiber optic line, and effluent pipe, at approximately 20 feet north of the access and utility easement boundary at Highway 1 ROW • The exact location and connection details within the access and utility easement to the WRF site shall be determined as part of the access road improvements and provided to the City by the 30% (Schematic) design submittal • DB to connect to City potable water main offsite and extend throughout WRF property • Refer to Utility Coordination Plan (Figure 5-2)	
2	Stubs	Any temporary or permanent stubs should be capped, blind-flanged, or protected in a manner to prevent foreign materials from entering the pipeline.	

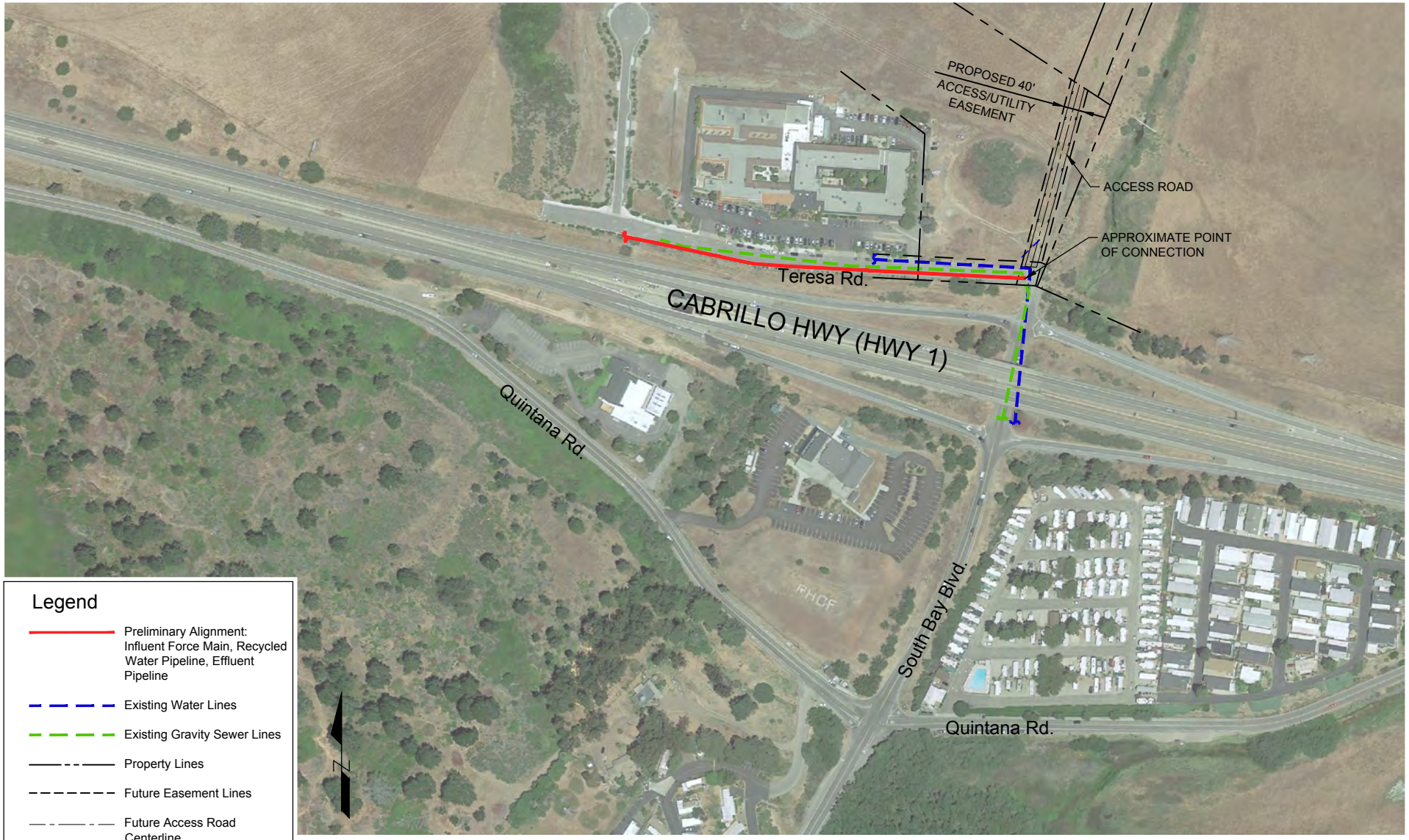
5.6 Potable Water

Provide on-site water distribution facilities for domestic water services at the WRF. Provide connection(s) to City water supply as shown on Figure 5-1. City will provide water meter and DB will install service and connect to City water main. System shall be completely separated and isolated from the fire water and process water systems.

Item	Parameter	Criteria	Notes
1	Design Approach	• Design system as a loop. • Provide isolation valves at all tee fittings on each downstream piping. • Potable water system design shall be based on a connection to City's water main. DB to extend water line from City water main offsite then throughout WRF property.	
2	Potable Water Uses	• Operations Building, Maintenance Building, and Fire Water System • Emergency eyewash, fire, personal hygiene, kitchen, and laboratory	DB to confirm final service uses

3	Separation of Buried Piping	Horizontal and vertical separation between potable water pipelines and non-potable water pipelines shall meet the requirements of the SWRCB Division of Drinking Water's (formerly the Department of Health Services) Criteria for the Separation of Water Mains and Non-Potable Pipelines guidance memo	
4	Backflow Prevention	• Provide appropriate backflow prevention systems for the potable water supply to site • Where potable water is used for landscape irrigation or process usage, provide a reduced pressure principle backflow assembly system complete with test cock and isolation valves	Backflow devices must be testable.
5	Air Release/Vacuum Valves and Blow Offs	• Provide air and vacuum relief valves at high points on pressure pipes • Provide drains or blow-offs at low points	Consider location of actual points of discharge/ disposal when placing drains or blow-offs.
6	Piping Layout	• Lay piping in utility corridors that are at least 10' wide and accessible for service or repairs. Include overhead and peripheral clearance to allow for work by excavating and lifting equipment such as backhoes. • Where feasible, align utility corridors along roadways or other corridors to avoid conflicts and future construction areas. • Utility corridors shall be placed outside the mature dripline of trees. • High and low points in the fire water system shall be minimized to reduce the need for ARVs and prevent sediment buildup.	
7	Pipe Sizing	Prepare and provide pipe capacity hydraulic calculations to demonstrate the proposed pipe sizes are adequate	Include 20 percent spare capacity
8	Water Demand	• The water demand shall be determined based on the applicable building and fire codes • The potable water system shall be able to supply the determined water demands at each point of connection	

		while meeting the minimum and maximum pressure requirements	
9	Water Meter	• Potable water service connection shall be metered and independent of the fire water service connection	



Note: Dry utilities not shown. See Performance Criteria Report for connection details.

CITY OF MORRO BAY WATER RECLAMATION FACILITY PROJECT

City of Morro Bay
Water Reclamation Facility Project

Utility Coordination Plan

FIGURE

5-2

5.7 Fire Protection

Provide on-site water distribution facilities for fire water services at the WRF. Fire water system shall include storage, booster pumps, distribution piping, fire sprinklers, and fire department connections, capable of meeting the requirements of Cal Fire and the City Morro Bay Fire Protection requirements for isolated structures that are not served by a water utility. Fire water system shall be separate and isolated from the potable water system.

Item	Parameter	Criteria	Notes
1	Code	Comply with National Fire Protection Association (NFPA) Standard 13 for a "light hazard" and local fire codes	
2	Source Water	Fire water shall be provided from the potable water supply system	
3	Fire Hydrant Locations	• Submit fire hydrant locations for review and approval by City and local Fire Department. • Fire hydrants shall be placed throughout the WRF Site at a distance of no more than three hundred (300) feet. • Place fire hydrants near access roads with fire truck access and where they are readily visible. Mark with reflective blue dot street markers located in the center of the access road adjacent to the fire hydrant. • Provide bollards for fire hydrants that are vulnerable to vehicular damage.	
4	Design Flow and Pressure	• Fire water system shall be capable of supplying 1500 gpm @ 20 psi (minimum) to any point within the fire water system for a period of 2 hours. • Provide additional storage and/or booster pumps to meet the fireflow requirement.	
5	Pipe Velocity	Velocities in pipes shall not exceed 12 feet per second during a fire flow scenario	
6	System Layout	High and low points in the fire water system shall be minimized to reduce the need for ARVs and prevent sediment buildup	
7	Fire Alarm	• Design of the system shall be coordinated with the fire detection/alarm system and	

		communicate status to the SCADA system, see Section 8.8 • The fire alarm shall simultaneously contact the fire department and annunciate in the operations control room when any alarm is activated	
8	Water Tank	• Tank storage shall include required fire storage plus at least 1000 gallons of storage for the process water system • Tank shall have a level detection instrument that is connected to SCADA, with an alarm that alerts when water level is at or below the minimum fire storage requirement	
9	Water Meter	Fire water service connection shall be metered and independent of the potable water service connection	
10	Fire Protection for Electrical Equipment	See Section 3.6 for fire protection criteria for electrical, computer, and communication areas	

5.8 Grading and Drainage

Provide grading improvements and a stormwater collection system consisting of gutters, swales, storm drain piping, and catch basins that collect stormwater runoff from the improved WRF Site and discharge into a detention basin. For the control of stormwater discharge from the project site the DB shall meet the requirements of the State Water Resources Control Board's Water Quality Order 97-03-DWQ, NPDES General Permit No. CAS000001 Waste Discharge Requirements for Discharges of Stormwater Associated with Industrial Activities Excluding Construction activities.

Item	Parameter	Criteria	Notes
1	Code Requirements	Grading activities shall be in compliance with: • San Luis Obispo County Code, Title 22 – Land Use Ordinance, Article 5 – Site Development Standards, Chapter 22.52 – Grading and Drainage • Provisions of the latest edition of the Uniform Building Code Appendix Chapter 33 • Latest edition of the California Building Code.	Any conflict with geotechnical baseline report shall be provided in a written report and presented to the City for consideration. Geotechnical Engineer Transfer of Responsibility Form will be required for any deviations from the GBR.

2	Design Requirements	Grading design shall meet the requirements of the City of Morro Bay Building Permit Application and Minimum Building Permit Submittal Requirements	Grading permits will be processed by the City
3	Design Approach	• Grading plan shall direct runoff away from walkways, buildings, cut and fill slopes, and yard activities • Slopes of unpaved areas shall not exceed 3:1 (horizontal to vertical)	
4	Gutters	Minimize use of cross gutters or ribbon gutters.	Adding catch basins and laterals shall be used in lieu of cross gutters, unless an unmovable obstruction prevents the use of subsurface drainage facilities
5	Site Access Road Grades	Longitudinal grades along roadways shall generally not exceed 5%, and shall be designed to be as uniform as possible to minimize grade breaks	
6	Accessibility Requirements	All building entrances for the Operations Building shall be universally accessible	See Section 3
7	Finished Grade	• Finished grades around structures, slabs, and buildings shall be at least 6-inches below floor or slab elevation • Grading shall be performed to accommodate process areas to maintain drainage away from all structures • Water from treatment process areas should be routed to the WRF headworks • The site shall be graded such that all facilities and accessible walkways and roadways are not inundated by a 100-year rainfall event	
8	Drainage Piping	Drainage piping shall be at least 6-inch nominal size for connections to roof downspouts and 15-inch for main collection lines	
9	Culverts	Provide culverts where collected drainage must cross walkways	

10	Inlet Structures	• Design inlet structures where it will not hinder facility operation • Provide a design to eliminate soil or debris from entering storm drain system for large areas • Drain inlet openings shall be a minimum 2 feet in length	
11	Storm Drain and Catch Basin Laterals	Storm drains and catch basin laterals shall be a minimum of 18-inches diameter	
12	Detention Basins	• Provide a detention basin capable of retaining all on-site runoff • Detention basin shall also serve as the emergency overflow pond storage for untreated wastewater, and provide the City the ability to evacuate the entire pond by pumping stormwater or untreated wastewater back into the headworks	
13	Hydrologic Analysis Criteria	• Stormwater pipes and drain inlets shall be capable of collecting and conveying a ten-year, twenty-four-hour event without causing nuisance flooding or surcharging of any pipe • The stormwater system shall be capable of conveying a 100-year,24-hour rainfall event without flooding any facility or building • Use rainfall intensity data from the San Luis Obispo County Department of Public Works & Transportation Improvement Standards • Stormwater detention requirements shall comply with City and County development standards	

5.9 Pavement/Roadways

Provide asphalt roadways and concrete pavement to provide vehicular access and circulation throughout the WRF Project site.

Item	Parameter	Criteria	Notes
1	Type	• Concrete pavement may be used in lieu of asphalt pavement • Use concrete paving where truck parking, loading, washdown, or unloading is anticipated and where asphalt paving is incompatible with the	

		materials handling requirements for the area	
2	Pedestrian Walkways	• Construct pedestrian walkways between structures and buildings of concrete with a minimum width of 4 feet and minimum thickness of 4 inches • All pedestrian paving shall be designed to accommodate service and maintenance vehicles up to twenty-two thousand (22,000) pounds	
3	Access to Process Areas	• Extend pavement to all process areas to provide for maintenance access by forklift and maintenance vehicles • Design all hauling access, including but not limited to sludge and screenings, and chemical delivery access to minimize reverse and back and forth movements by vehicles.	
4	Equipment Areas Not Abutted by AC Paving	• Provide 3" thick layer of ¾" crushed rock compacted to 85% relative compaction conforming to Caltrans standards in and around these areas. • Unless specified otherwise, provide minimum 4-foot gravel apron adjacent to concrete areas. Native vegetation shall not abut concrete areas.	
5	Road Width	• Use a minimum width of 24 feet for two-way traffic • Use a minimum width of 14 feet for single lane roads	Include provisions for a turn-around at dead ends
6	Curb Turning Radius	• Site access roads shall accommodate the minimum turning paths for AASHTO Intermediate Semitrailer vehicles for facilities requiring semitrailer access • All other site access roads shall accommodate the minimum turning paths for AASHTO Single-Unit Trucks • Fire access roads shall accommodate minimum turning paths for fire trucks	
7	Fire Truck Access	• Design buildings to be accessible to fire department apparatus by roads with a minimum unobstructed width of 20 feet, and vertical clearance of 15 feet.	To be defined during Planning Permit application

		• Roadway design criteria and layout shall be approved by local Fire Department	
8	Signs and Marking	Provide directional and traffic signs and markings for all roads and direct traffic to key buildings	
9	Design Approach	• Design pavements for a 50-year design life • R values for subgrade soils under pavement shall be determined by a State of California Registered Geotechnical Engineer • All paving shall be uniform vehicular quality paving, constructed with appropriate subgrade preparation, subbase, and base to handle all anticipated traffic demands for loading, speed, turning, stopping and starting with no rutting or buckling • All paving designs shall be based on a Traffic Index (TI) calculation determined in accordance with Caltrans Highway Design Manual (2012) • Design access roads with a maximum traffic index of 7.0	Coordinate with Geotechnical Baseline Report
10	Curb and Gutter	Portland cement concrete curb and gutter meeting City of Morro Bay standards shall be provided on established roadways and parking areas	

5.10 Construction Dust Control and SWPPP Stormwater Management

5.10.1 Dust Control

Prepare, obtain approval and implement all the requirements of the latest Fugitive Dust Control Plan (FDCP) in accordance with the San Luis Obispo County Air Pollution Control District Regulations. Also, the DB shall prepare, obtain approval, and implement all of the requirements of the latest State National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities Order No. 2009-0009-DWQ and industry standards according to the State Water Quality Control Board (SWQCB).

Item	Parameter	Criteria	Notes
1	Fugitive Dust Control Plan	• Prepared using latest APCD regulations. • DB must obtain APCD Approval • After APCD approval of FDCP amend as required	Public requests to review the approved

		• Supply approval and amendments to City, DB general office and in job site construction office • Approved copies and amendments shall be available for US EPA	FDCP shall go to the City's Representative
2	Air Pollution Control District Rules	DB shall be familiar with APCD requirements and maintain a copy at the Construction Sites	
3	Earthmoving Activity	• DB must notify the City 48-hours in advance of activity • Keep daily record of dust control measures every day earthmoving is conducted	

5.10.2 Stormwater Management During Construction

Comply with all of the requirements of the latest NPDES General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities Order No. 2009-0009-DWQ according to SWQCB and standard industry practice. This includes, but is not limited to, preparing plans and application, maps as well as all necessary reporting on the SWQCB's Stormwater Multiple Application and Report Tracking System (SMARTS System).

Item	Parameter	Criteria	Notes
1	Stormwater Pollution Prevention Plan (SWPPP)	• DB must have a Certified Qualified Stormwater Pollution Prevention Plan (SWPPP) Developer (QSD) prepare a SWPPP • DB must submit SWPPP to City's Construction Manager for Approval • DB to submit NOI and necessary documents in SWQCB's SMARTS system for approval by LRP • DB shall implement SWPPP and start Construction activity only after written approval from SWQCB • Supply SWPPP approval and amendments to City, DB general office and in job site construction office	Must comply with latest State NPDES General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities Order No. 2009-0009-DWQ
2	SWPPP Implementation	• DB shall implement SWPPP and start Construction activity only after written approval from SWQCB • During project DB shall have a Quality SWPPP Practitioner (QSP)conduct audits, inspections, testing, and prepare reports • QSP shall coordinate with the QSD any updates	

		• The SWPPP shall be made available upon request of a representative of the Flood Control District, Regional Water Quality Control Board, State Water Resources Control Board or U. S. Environmental Protection Agency. Requests by the public shall be directed to the Owner's representative	

Notice of violation and/or fines for any non-compliance will be the responsibility of the DB.

5.11 Facility Stormwater Management Post-Construction Requirements

Stormwater management for the WRF shall meet the requirements of the City of Morro Bay Stormwater Management Guidance Manual for Low Impact Development & Post-Construction Requirements, Main Manual (Dated March 6, 2014 and updated July 1, 2017).

5.12 Noise Control

Incorporate noise reduction measures into the project design and construction. Retain an acoustical engineer to measure or calculate post-project operational noise levels at the nearest sensitive receptor based upon the final project design as implemented. If the project results in noise levels exceeding the City of Morro Bay or San Luis Obispo County Noise Ordinance thresholds, the DB shall develop additional sound-attenuation measures which may include additional enclosures for noise generating equipment to ensure that noise levels at nearby sensitive receptors are reduced to the acceptable noise levels as identified in the County thresholds for noise generators.

Item	Parameter	Criteria	Notes
1	General Requirements	• Sound pressure level guidelines are provided by the Code of Federal Regulations Title 29, Part 1910.95 (29 CFR 1910.95) and enforced by OSHA. • These guidelines provide acceptable sound pressure levels for different frequencies and durations. Comply with City of Morro Bay Noise Ordinance regulations regarding community impacts and San Luis Obispo County Noise regulations.	
2	Construction Methods and Equipment	• Utilize construction methods or equipment that will meet local ordinances for the maximum decibel rating at the property line • All construction vehicles and fixed or mobile equipment shall be equipped with properly operating and maintained mufflers • Schedule construction such that the minimum number equipment would be operating at the same time	

3	Portable Noise Barriers	If equipment used can cause hearing damage, portable noise barriers shall be installed to reduce noise levels below hearing damage thresholds	
4	Hearing Protection to Construction Staff	Provide all employees that will be exposed to noise levels greater than 75 dB over an extended period with adequate hearing protection devices to mitigate hearing damage	
5	Staging Areas	Locate vehicle staging areas and stockpiling as far as is practicable from the existing buildings along Teresa Road	
6	Noise Control Design	• Noise control shall be accomplished by a combination of isolating mechanical, equipment in mechanical rooms, properly selecting equipment to meet noise criteria requirements for all equipment and components • Blower and compressor equipment associated with the MBR system shall be located within a dedicated mechanical room in the process building to mitigate noise levels • The RO feed pumps, may require individual noise enclosures to control noise levels in consideration for operators who may be working on the RO system	
7	Sound Attenuation	Exterior mechanical equipment such as air cooled condensing units shall be provided with sound attenuating features (i.e. compressor blankets). The sound power levels from mechanical equipment shall meet minimum requirements.	
8	Construction Hours	Construction shall be limited to between the hours of 07:00 AM and 04:00 PM to reduce construction generated noise.	Exceptions may be requested in writing from the City for work requiring special accommodations. See Appendix M for limitations to mitigate noise impacts for hours outside of those listed.

SECTION 6 GEOTECHNICAL CRITERIA

A Preliminary Geotechnical Baseline Report was performed for the Project site to identify geotechnical and geologic conditions and establish design performance criteria for the new plant. See Appendix J. The DB is responsible for performing additional geotechnical investigations if determined to be necessary.

SECTION 7 MECHANICAL PIPING CRITERIA

7.1 General

Item	Parameter	Criteria	Notes
1	Equipment Design Approach	• Maximize consistency and optimize spare part requirements for mechanical equipment such as valves, actuators, flowmeter and other equipment across packaged treatment systems • Maximize access to mechanical equipment for O&M purposes • Provide necessary isolation valves to facilitate hydro testing; taking into account different pipe pressure classes	
2	Special Tools	Provide special tools required for equipment repair	
3	Equipment Pads	Provide housekeeping/plinth pads for all equipment	
4	Pipe Mounting in Trenches	Mount pipes in pipe trenches in trench walls, to the extent possible	
5	Pipe Labeling/Flow Direction	Provide painted pipe labeling, and painted flow direction arrows for proper operation for all pipework	• Labels for piping 2 inches and larger shall bear the full piping system name as shown in the Piping Schedule. Provide separate flow directional arrows next to each label. Color, size, and labeling shall conform to ANSI A13.1 and Z535.1. • Labels for piping shall be painted.
6	Joint Restraint	Provide restrained fittings for all pressure piping	
7	Spare Sample Taps	Include convenient spare sample taps throughout treatment process trains	• Sample taps shall be accessible and properly labeled • Locate sample taps in common areas with drains
8	Valve Arrangements	Provide isolation valves and bypass piping for critical mechanical	

		equipment that require removal for routine maintenance/calibration	
9	Equipment Tagging and Labeling	Submit comprehensive tag program for all mechanical equipment and as specified in the individual sections of this Performance Criteria Report	• Provide a label for each pump, blower, compressor, tank, feeder, flocculator, flash mixer, clarifier mechanism, or other piece of mechanical equipment. Label shall show the equipment name and tag number. Labels shall be 1 1/2 inches (minimum) by 4 inches (minimum) brass, stainless steel, or aluminum. • Tag shall show the tag number and/or name or designation in coordination with the asset management criteria. • Provide stainless steel wire for tags.

7.2 Piping

Item	Parameter	Criteria	Notes
1	Piping Schedule	Submit comprehensive piping schedule indicating size, information, type, material of construction, lining, coating, and other critical information	See partial piping schedule below indicating minimum requirements
2	Unions	Provide unions on threaded exposed piping 3 inches and smaller: at every change in direction (horizontal and vertical); 6 to 12 inches downstream of valves; Every 40 feet in straight pipe runs	
3	Painting and Coating: General	• Required for the interior and exterior surfaces of ferrous pipe • Pipe lining shall be appropriate for the application	• All pipe color shall be gray, with the exception of color-coded chemical piping. • Cement-mortar lining shall be per AWWA C104. Lining thickness shall be the double thickness listed in AWWA C104, Section 4.7.

	Painting and Coating: Buried Pipes	• Asphaltic or epoxy coated and wrapped with polyethylene encasement • Epoxy thickness: 50 mils, 100 mils on nuts, bolts, and sharp projections	
	Painting and Coating: Above-Ground Pipes	Provide epoxy with polyurethane topcoat on exposed pipe. Follow manufacturer's recommendations for surface prep for topcoating of fusion bonded epoxy surfaces	• Provide polyurethane topcoat on exposed pipe • All pipe color shall be gray, with the exception of color-coded chemical piping
4	Underground Pipe Marking	All buried non-metallic pipe must include an electronic detectable underground warning tape	

Partial Piping Schedule

Item	Process Service	Minimum Piping Material	Remarks
1	Sanitary Sewer	PVC	
2	Equipment/Truck Wash Station	C900 PVC	
3	Raw Wastewater	DIP	
4	Screened Influent	DIP	
5	On-site Reclaimed Water	C900 PVC	4" and Larger Buried
6	On-site Reclaimed Water	PVC	Smaller than 4" Buried
7	On-site Reclaimed Water	Steel	Exposed
8	Chemical Piping	PVC/CPVC	Refer to Section 2
9	Return Activated Sludge	DIP	
10	Waste Activated Sludge	DIP	
11	Scum	DIP	
12	Air	Stainless Steel	
13	Grit Classifier Drain	DIP	Exposed
14	Grit Classifier Drain	PVC	Buried

15	Grit Pump Piping	Glass Lined DIP	
16	Plant Drain	PVC	
17	Mixed Liquor	DIP	
18	MBR Filtrate	DIP	
19	Recycled Water	DIP	Conveyance to reuse project
20	Potable Water	C900 PVC	4" and Larger, Buried
21	Potable Water	Steel	Smaller than 4" Buried
22	Potable Water	Steel	Exposed
23	Effluent	PVC, HDPE	Conveyance to ocean outfall
24	High Pressure RO Feed/RO Concentrate	Stainless Steel, minimum 316L	• High Pressure: >150 psi • DB to select final materials with approval from Owner. Final piping material of construction to be coordinated with Durability Requirements
25	Low Pressure RO Feed/RO concentrate	Schedule 80 PVC	Less than 150 psi
26	RO Permeate and Flushing	Schedule 80 PVC	
27	Clean-in-Place /Chemical Addition	Schedule 80 PVC, CPVC, or other as required	
28	Stormwater Piping	HDPE	Smaller than 18"
29	Stormwater Piping	Concrete	18" and larger

7.3 Valves

Item	Parameter	Criteria	Notes
1	Valve Location	Valves shall be accessible (i.e., not buried), unless otherwise necessary. Minimize locating valves with actuators in confined areas, when possible.	

2	Valve and Gate Automation	Provide automation on all equipment needed for remote normal operation	
3	Valve Maintenance	• Incorporate dismantling joints where necessary into design layout to facilitate removal of valves • Provide access hatches, building entry, and lifting devices for large and critical valves	
4	Surge Control	Specify speed of opening and closing to avoid significant increase in pressures	
5	Factory Testing Data	Submit Factory Acceptance Test data before shipment of the valve. The data shall also include certification of quality and test results for factory-applied coatings.	
6	Labeling and Valve Tags	Label all valves with manufacturer's name and working pressure cast in raised letters on valve body	• Provide each valve of size 2 inches and larger with an identification tag. Tag shall be 2-inch-square or circular aluminum or 316 SS: W. H. Brady B-60, Seton Name Plate Corp. Series SVT, or equal. Aluminum tags shall have black-filled letters. • Tag shall show the valve tag number and/or name or designation in coordination with the asset management criteria. • Provide stainless steel wire for tags.
7	Painting and Coating: General	Required for the interior and exterior surfaces of valves	All exterior pipe color shall be gray, with the exception of color-coded chemical piping
	Painting and Coating: Buried Valves	• Epoxy coated and wrapped with polyethylene encasement • Thickness: 50 mils, 100 mils on nuts, bolts, and sharp projections	
	Painting and Coating: Above-Ground Valves	• Ferrous interior surfaces: epoxy. • Provide polyurethane topcoat on exposed valves and pipe. Follow manufacturer's	• Provide polyurethane topcoat on exposed valves and pipe

		recommendations for surface prep for topcoating of fusion bonded epoxy surfaces.	• All pipe color shall be gray, with the exception of color-coded chemical piping
8	End Connections	• 2.5-inch and smaller may be provided with threaded or flanged end connections • 3-inches and larger require flanged end connections • Unless otherwise shown or otherwise specified, all flanged valves shall have ends conforming to AWWA C115, 125 lb flange	All pressurized connections shall have restrained fittings
9	Manufacturer	• All valves shall be by a single manufacturer to the extent possible • Manufacturer shall have a successful record of not less than 5 years in the manufacture of the valves selected	
10	Acceptable Manufacturers	• Gate Valves: Clow, AVK, American Flow Control, Waterous, Kennedy, DeZurik, or equal • Check Valves: M&H, Clow, DeZurik, or equal • Check Valves (Chemicals): Ryan Herco, GF Plastic Systems, Asahi/America • Butterfly Valves: Pratt, DeZurik, or equal • Pressure Reducing and Pressure Relief Valves: Cla-Val Company • Diaphragm Valves: ITT Grinnel, Asahi/America • Air release, Air and Vacuum, and Combination Air Valves: DeZurik, A.R.I. Flow Control Accessories • Solenoid Valves: Hayward, ASCO, DeZurik, or equal • Gates: Rodney-Hunt, Waterman, Whipps, Golden Harvest, or equal • Plug valves – Victaulic, Clow, DeZurik, Pratt, Milliken, or equal • Telescoping Valve - Waterman Industries, Inc., Coldwell-Wilcox Company, or equal	

		• Knife Gate Valve - DeZurik, ITT Fabri-Valve, or equal	
11	Ball Valves: PVC, CPVC	• Line size ball valve and union shall be installed upstream of each solenoid valve, in-line flow switch, or other in-line electrical device for isolation during maintenance • Body, ball, stem and connector: Schedule 80 PVC • Manufacturers: Hayward, Spears, Ryan Herco Products Corp, or equal	Provide vented ball for all valves in hypochlorite service
12	Ball Valves: Bronze, SS	Manufacturers: Apollo Ball Valve Division, Wall, or equal	
13	Material	• Select corrosion resistant and chemically compatible material and maximize durability of equipment selected • Gates, including body, gate, and trim, shall be 316L SS	
14	Valve Schedule	Submit comprehensive valve schedule indicating size, tag information, type, material of construction, manufacturer, and other critical information.	

7.4 Valve Actuators

Item	Parameter	Criteria	Notes
1	Electric Actuators	• Provide on all equipment needed for remote normal operation • Manufacturers: AUMA, Rotorque, or equal	• Provide actuators from the same manufacturer throughout the facility • Must meet area classification requirements
2	Spur Gear and Hand Wheel	Required for gate valves 18-inches and larger	
3	Actuator Sizing	Oversize actuator to allow for aging, corrosion, scaling, clogging of equipment	Oversize 20 percent
4	Manual Operator: Exposed	• Worm gear drive and nut • Chain wheel, sprocket, and aluminum chain required if mounted more than 7 feet above the operating floor	

5	Manual Operator: Buried Valves	• Provide valve box, 2-inch square operating nut, and position indicator • Extension: required if top of valve nut is greater than 12-inches below the top of valve box	
6	Portable Valve Operator	Provide a portable electric non-rising stem valve operator with torque limiting adapter rated at 250 ft-lb	

7.5 Pumps

Item	Parameter	Criteria	Notes
1	Configuration	The pumps and pumping appurtenances shall be by a single manufacturer responsible for furnishing and functional operation of complete pump system	All pumps in plant shall be by same manufacturer to the extent possible
2	Testing	Submit non-witnessed Factory Acceptance Test data before shipment of the pump	
3	Design	Specify pump type and identify process. Specify performance curve and pump data. Specify electrical requirements and controls. Assemble drawings showing location and process. Specify pump drive and motor and provide bearing calculations, indicate points on H/Q curves, pump detailed description, installation drawings.	
4	Seals	• Provide mechanical and double mechanical seals wherever possible • Mechanical seals shall be of the best quality, using the Manufacturer's suggested materials best suited for the specific application	
5	Flanges: Suction and Discharge	Cast Iron (ANSI/ASME B16.1), Class 25, 125, 250, and 800. Or ANSI/ASME B16.5	

6	Lubrication	• Vertical pump shafts (clean water): Product water lubricated • Deep-well/dry barrels: Water or oil lubricated bearings, seals, and enclosed line shafts • Vertical propeller, mixed-flow, and turbine pumps or bowl sizes 10-inches and larger (other than deep well pumps): stainless steel tube attached to the column for grease lubrication of the bottom bearing	
7	Vortex Suppressors	Provide for vertical pumps with marginal submergence	

8	Pump Casing	• Select materials based on specific application. Minimum material requirements include:
		  • Ductile Iron, Austenitic (ASTM A 439)
		  • Cast Iron, Stainless Steel or Bronze
		  • Stainless Steel, Type 416 or 316, SAE63 Bronze
		  • Hot-dipped galvanized (not buried or submerged), stainless steel (buried or submerged)	

9	Material	Select corrosion resistant and chemically compatible material and maximize durability of equipment selected	Provide duplex SS for RO concentrate pump materials
10	Pump Schedule	Submit comprehensive pump schedule indicating size, tag information, type, material of construction, manufacturer, and other critical information	
11	Labeling and Pump Tags	Label all pumps with manufacturer's name and working pressure cast in raised letters on valve body	• Provide each pump with an identification tag. Tag shall be 2-inch-square or circular aluminum or 316 SS: W. H. Brady B-60, Seton Name Plate Corp. Series SVT, or equal. Aluminum tags shall have black-filled letters. • Tag shall show the valve tag number and/or name or designation in coordination

			with the asset management criteria. • Provide stainless steel wire.

7.6 Nuts and Bolts

Item	Parameter	Criteria	Notes
1	Bolts and Nuts for Flanges	Bolts and nuts for buried or submerged Class 125 or 150 flanges and Class 125 or 150 flanges located indoors, outdoors above ground or in vaults and structures shall be Type 316 stainless steel conforming to ASTM A193, Grade B8M for bolts and ASTM A194, Grade 8M for nuts	Bolts used in flange insulation kits shall conform to ASTM A193 (Grade B7). Nuts shall conform to ASTM A194 (Grade 2H).
2	Lubricant for Stainless Steel Bolts and Nuts	Prior to assembly, coat threaded portions of stainless steel bolts and nuts with lubricant	Lubricant shall be chloride free and shall be RAMCO TG-50, Anti-Seize by RAMCO, Specialty Lubricants Corporation Husky™ Lube O'Seal, or equal

SECTION 8 ELECTRICAL SYSTEM CRITERIA

8.1 Utility Electrical Service

The City is coordinating the effort to obtain the electrical service from Pacific Gas & Electric (PG&E). Service voltage shall be obtained at 480Y/277V, three-phase four-wire. Install the on-site infrastructure for the primary service to a utility pad-mounted transformer and for the transformer secondary lateral to the service switchboard as identified on the drawings prepared by PG&E.

8.2 Data Service

The City is coordinating the effort to obtain the data service from the local utility. Install the on-site infrastructure.

8.3 Alternative Solar Power

Provide sufficient floor area, headroom space, and clearances adjacent to the main service switchboard for installation of a future photovoltaic inverter, minimum 800kW, and future net energy metering switchboard for connection to the PG&E grid. Conduits of adequate sizes shall be installed between the inverter and grade mounted handholes outside of the main electrical building, in quantities and locations as required for connection to the future photovoltaic strings. All monitor points and alarms for the proposed photovoltaic system shall be transmitted to the SCADA system.

8.4 Electrical Distribution

Provide a radial distribution network for both of the normal and emergency 480Y/277V, three-phase, four wire systems and the 208Y/120V, three-phase, four-wire systems. The main electrical building will house the main service switchboard and transfer switch, a motor control center for the dewatering area and chemical storage, and a transformer for serving the panel that will provide the 120V branch-circuits at and near the equipment. The generator shall be located in an exterior enclosure. Radial feeds from the service board distribution section shall be provided to motor control centers. The motor control centers and distribution switchboards shall include the feeders for distribution transformers and 208Y/120V, three-phase, four-wire panelboards in each electrical room.

8.5 Basic Electrical Work

8.5.1 Raceways

Item	Parameter	Criteria	Notes
1	Exposed	PVC coated rigid steel conduit shall be used for all exposed locations around process areas, in vaults and structures, and in corrosive locations	
2	Concealed	Concealed conduits shall be rigid galvanized steel except in the Operations and Maintenance Buildings, where electrical metallic tubing may be used	

3	Underground	• Bury underground conduits containing maximum 600-volt conductor insulation a minimum depth of 24" from surface of finished grade to the top surface of the conduit. Where they run under roadways or parking areas, depth shall be 30" minimum from finished grade. • Conduits shall be PVC coated rigid steel conduit. Schedule 40 PVC conduits shall be permissible where encased in a minimum two inch concrete envelope.	
4	Final Connections	Use liquid-tight non-metallic flexible conduit for final connection to equipment	

8.5.2 Conductors

Item	Parameter	Criteria	Notes
1	Indoor Feeders and Indoor and Outdoor Brand-Circuits	Use 600V copper conductors with THWN/THHN insulation	
2	Outdoor Feeders and Load Side of VFDs	Use 600V copper conductors with XHHW insulation	
3	Terminations	Branch-circuit terminations in wet locations shall be listed for the applications. Provide insulated tap blocks for feeder splices.	

8.5.3 Wiring Devices

Provide power to receptacles from 208Y/120V panel boards. Feed adjacent receptacles from alternate panelboard circuits. Locate separately powered receptacles adjacent to HVAC and other specialized equipment. In interior and exterior process areas locate receptacles every 50 feet, and every 12 feet of wall space in occupied areas. Ground fault circuit interrupting (GFCI) type receptacles shall be located in lavatories, outdoors, wash-down process areas, below-grade structures, rooftops and tunnels.

8.5.4 Grounding

Provide a maximum 2 ohm resistance earth to ground and conform to IEEE Standard 142. Structures shall have perimeter ground grid with rods in test wells. Interconnect individual structure grounding systems. Building steel, process equipment, electrical equipment and enclosures, and exposed metal which might become a current conductor shall be connected to the ground grid. Exposed ground connections shall be compression lug type. Concealed, buried, or embedded ground connections shall be made by the exothermic method, except for the connection to the ground rod which shall be compression lug type. All conduits shall contain an equipment grounding conductor.

8.5.5 Boxes

Item	Parameter	Criteria	Notes
1	Underground Manholes and Handholes	• Provide concrete handholes with sufficient depth to accommodate the branch-circuits and/or feeders. Provide with steel lid in traffic areas and concrete lids in parkways and planters. • Provide concrete manholes with a minimum size of 4'6" x 8' x 8'd, permanent galvanized ladder, and pulling rings. • Provide fiberglass racks in each handhole with a footprint equal to or larger than 2'6" x 3'0" and in all manholes.	Provide H20 bridge loading in all areas with incidental or regular traffic
2	Cast-Iron Outlet Boxes	Install cast-iron outlet boxes in surface mounted applications. Provide explosion-proof boxes and fittings as required by the hazard classifications.	
3	Sheet-Metal Outlet Boxes	Provide sheet-metal outlet boxes at dry non-hazardous locations in the Operations and Maintenance buildings	
4	Pull Boxes	Provide IP 68 NEMA 4X boxes in all locations. Pull boxes subject to damage shall be stainless steel. Pull boxes in hazardous locations shall be listed explosion-proof.	Locate pull boxes above grade to the extent possible

8.5.6 Identification

Item	Parameter	Criteria	Notes
1	Conduit Identification	Where electrical conduit is exposed in spaces with exposed mechanical piping that is identified by a color-coded method, provide color-coded identification on electrical conduit in a manner similar to piping identification	
2	Cable/Conductor Identification	Provide method for cable/conductor identification including voltage, phase, and feeder number on each cable and conductor in each box/enclosure/cabinet where wires of more than one lighting or power circuit occur or where alarm	

		conductors of communication, signal, or alarm systems are present, except where another form of identification (such as color-coded conductors) is provided	
3	Equipment Labeling	Submit comprehensive labeling schedule indicating tag information, type, material of construction, manufacturer, and other critical information	

8.5.7 Supports and Anchors

Provide seismic anchorage for all floor, wall, and rack mounted electrical equipment. Base-specific seismic criteria shall use values determined in accordance with ASCE 7-102 as amended by the 2016 CBC, Chapter 16. Arrange for grouping of parallel runs of horizontal conduits to be supported together on seismically braced trapeze type hangers where possible.

8.6 Distribution Equipment

8.6.1 General

Certify distribution equipment for base-specific seismic criteria using values determined in accordance with ASCE 7-102 as amended by the 2016 CBC, Chapter 16. Provide withstand ratings greater than the maximum short-circuit current available at the line terminals of the equipment. Series rated systems shall not be used.

8.6.2 Switchboards

Item	Parameter	Criteria	Notes
1	Service Switchboard	Provide 480Y/277V, three-phase, four-wire switchboard with adequate capacity to carry the calculated load. Include pull section, distribution section, and automatic transfer section bussed together for a complete unit.	
2	Circuit Breakers	Provide main circuit breaker and distribution circuit breakers rated for the calculated load. Provide insulated case power circuit breakers with zone selective interlocking for system selectivity.	
3	Ground-Fault Protection	Provide ground-fault protection for the main circuit breaker and distribution circuit breakers immediately downstream of the main circuit breaker	
4	Bus Material	Provide fully rated tin plated copper bus bars. Tapered bus shall not be used.	

		Provide with full rated neutral. Provide copper ground bus.	
5	Enclosure	• All cabinetry located outdoors should be fully enclosed, no false fronts or HMI on outside doors. • Provide NEMA 4X enclosure for exterior locations and in process areas. Install in a dry non-hazardous location where possible.	Any internal equipment requiring regular maintenance shall be out of arc flash area

8.6.3 Motor Control Centers

Item	Parameter	Criteria	Notes
1	General	Provide grouped motor controls in a motor control center including supporting structures, bus systems, starter units, controllers, disconnects, overload protection, and motor control accessories	
2	Standards	The control centers shall be NEMA Class II, Type B, plug-in, designed, manufactured, and tested to meet the latest IEEE and NEMA standard	
3	Controls	• Selector switches and pilot lights shall be heavy-duty, oil-tight, and have the number of positions and poles indicated • Control relays shall be machine tool type with 115-volt AC coils	
4	Starters	Except where VFDs are provided, magnetic starters shall be combination motor circuit protector type, full voltage, single speed or two speed, reversing or non-reversing	
5	Bus Material	Provide fully rated tin plated copper bus bars. Provide with full rated neutral. Provide copper ground bus.	
6	Enclosure	• All cabinetry located outdoors should be fully enclosed, no false fronts or HMI on outside doors. • Provide NEMA 4X enclosure for exterior locations and in process areas. Install in a dry non-hazardous location where possible.	Any internal equipment requiring regular maintenance must be out of arc flash area

8.6.4 Distribution Transformers

Provide dry-type distribution transformers with aluminum windings and enclosures suitable for the installed environment. Transformers shall have 480V primary and 208Y/120V three-phase, four-wire secondary.

8.6.5 Panelboards

Item	Parameter	Criteria	Notes
1	Enclosures	• All cabinetry located outdoors should be fully enclosed, no false fronts or HMI on outside doors. • Provide NEMA 4X enclosure for exterior locations and in process areas. Install in a dry non-hazardous location where possible.	Any internal equipment requiring regular maintenance shall be out of arc flash area
2	Circuit breakers	Provide bolt fastened thermal magnetic circuit breakers with ratings appropriate for the calculated loads. Provide 30% spare breakers in each panel.	
3	Bus Material	Provide fully rated tin plated copper bus bars. Provide with full rated neutral. Provide copper ground bus.	

8.6.6 Motors

Item	Parameter	Criteria	Notes
1	Motor Selection	Select motors to permit the connected load to develop its specified output continuously without encroaching on the service factor under normal operating conditions. The service factor shall be 1.15 for motors 200 horsepower and less. Motors larger than 200 horsepower shall have a service factor of 1.0.	
2	Motor Design	• Design motors for full voltage starting and frequent starting, where required. Provide motors suitable for continuous duty in the specified ambient conditions. Intermittent duty motors will be selected where recognized and defined as standard by the equipment standards and codes. • The following design parameters shall be considered: Motor manufacturer, environment, including special enclosure requirements, voltage,	

		frequency, and phases, running and starting requirements and, limitations and duty cycle, motor type (synchronous, induction, DC, etc.) and construction, power factor, service factor, speed and direction of rotation, insulation, bearing construction, rating life of rolling elements, and external lube oil system for sleeve or plate bearings, ambient noise level and noise level for motor and driven equipment, termination provisions for power, grounding, and accessories, installation, testing, and maintenance requirements, special features (shaft grounding, temperature and vibration monitoring, etc.), and motor space heater requirements.	
3	Motor Starting	The torque of all induction motors will be required to accelerate inertia loads of both motor and driven equipment to full speed without damage to the motor or other equipment. Provide maximum 20 percent voltage drop from the specified motor nameplate rating for motor starting. Provide minimum NEMA size 1 starters.	
4	VFDs	Motors connected to VFDs shall be inverter duty rated	

8.6.7 Motor Controls

Item	Parameter	Criteria	Notes
1	Combination Starters	• Provide full voltage starting for all motors less than 25 HP that are not operated with a VFD. Minimum size starter shall be NEMA size 1. • Unless motor is operated with a VFD, Solid State Reduced-Voltage (SSRV) soft starters shall be used for motors larger than 25 HP	
2	Variable Frequency Drives (VFDs)	Provide 18 pulse VFDs where specified	
3	Manual Motor Starters	Where fractional horsepower motors are not automatically started, provide manual motor starters using toggle switch mechanism and enclosure rated for the	

		environment. Provide with or without overcurrent protection as required by the installation.	
4	Enclosures	• All cabinetry located outdoors should be fully enclosed, no false fronts or HMI on outside doors. • Provide NEMA 4X enclosure for exterior locations and in process areas. Install in a dry non-hazardous location where possible.	
5	Pilot Lights and Switches	• Selector switches and pilot lights shall be heavy-duty, oil-tight, and have the number of positions and poles indicated • Control relays shall be machine tool type with 115-volt AC coils	

8.6.8 Standby Generator

Item	Parameter	Criteria	Notes
1	Capacity	Provide a standby generator rated 480Y/277V, three-phase, four-wire with capacity to carry the entire treatment plant electrical load. The generator shall be connected and operated as a separately derived system.	
2	Fuel Source	Provide diesel powered generator. The generator shall have a double containment separate aboveground double containment fuel tank, with leak detection and sufficient fuel storage to operate the plant on backup power for a minimum of 24 hours without refueling. Provide alarm contacts for reporting to the SCADA system.	
3	Main Circuit Breaker	• Provide a main circuit breaker rated to carry the calculated load. Provide insulated case power circuit breakers with zone selective interlocking for system selectivity. • The circuit breaker shall be either wall or rack mounted at a location adjacent to the generator enclosure.	
4	Enclosure	Provide a sound-attenuated weatherproof generator enclosure meeting 70dB(A) at fifty feet	

5	Accessories	Provide generator enclosure complete with battery charger, engine block heater, and generator condensation heater, battery, and exhaust silencer	
6	Engine Oil	DB to provide initial fill of oil and the first oil change, including oil filters	
7	Alarms	Provide electronic generator control panel with discrete alarm contacts for each alarm for reporting on the SCADA system. Comply with NFPA 110 for remote alarm annunciation.	Coordinate with Section 9
8	Alternative Generator Proposal	Provide an option for a natural gas-powered generator supplied by the natural gas service with a liquid propane tank system as backup fuel supply. The liquid propane tank shall provide fuel storage to operate the plan on backup power for a minimum of 24 hours without refueling.	

8.6.9 Automatic Transfer Switch

Provide a 480V four-pole transfer switch for connecting the plant load to the standby generator upon loss of utility company power. Transfer switch shall be solenoid operated and mounted in a bussed lineup with the main service switchboard for installation in a dry non-hazardous location.

8.7 Lighting Equipment

Item	Parameter	Criteria	Notes
1	Illumination Engineering Society (IES)	Comply with the IES Recommended Practice for Lighting Industrial Facilities RP-7-17.	
2	Interior Lighting	• Provide LED strip lighting with door switch inside control panels if the enclosure size is greater than or equal to 30” wide and greater than or equal to 12” deep. • Adequate lighting, ventilation and access for maintenance or removal of equipment and screenings shall be provided. Adequate lighting throughout the wastewater treatment facility shall be provided, particularly in areas of operation and maintenance activities.	

		• Provide metallic or non-metallic luminaire housings appropriate for the classification of the area. • Lighting shall be included in all treatment buildings. Battery operated emergency lights shall be provided at all confined spaces. Lights shall be located in an area that is easily accessible to replace components.	
3	Exterior Lighting	• Provide full cutoff LED site lighting in each process area. Lighting standards adjacent to any open process structure flush or below grade shall be provided with hinged pole base. Provide poles with 316SS anchors and hardware. • Aim exterior pole and building lighting to avoid any light trespass on adjacent property lines. All pole and building luminaires shall be full cutoff and located to minimize glare.	Coordinate with Section 9
4	Lighting Controls	• Provide switches, photocells, and receptacles at all lighting poles. Provide for automated lighting control through the SCADA system so that the facility is only illuminated to the degree necessary to maintain safe operation. • Provide lighting software calculations showing compliance with California Title 24 Energy Standard requirements in all areas.	

8.8 Fire Alarm System

Provide a plant-wide addressable fire detection and alarm system, with audible as well as visual alarm signals, conforming to the requirements of the local fire marshal, NFPA, and Factory Mutual requirements. System shall be connected to SCADA and, through the SCADA System, simultaneously contact the fire department and annunciate in the operations control room when any alarm is activated.

8.9 Hazardous and Environmental Locations

Item	Parameter	Criteria	Notes
1	Classified Locations	Classify areas where flammable and combustible liquids, gases, and dusts are handled and stored for determining the minimum criteria for design and installation of electrical equipment to minimize the possibility of ignition. Use the latest edition of NFPA 820 and Article 500 of the latest	

		California Electrical Code for determining the appropriate classification.	
2	NFPA 820	Enclosed areas with exposure to raw wastewater, wastewater sludges, and corrosive or hazardous atmospheres will require that the lighting and electrical systems be of the appropriate hazard classification as defined in NFPA 820	
3	Electrical Code	Install electrical equipment in areas classified as hazardous in accordance with the requirements of Articles 501 and 502 of the California Electrical Code (latest edition)	
4	Drawing Notations	Identify classified locations in all process areas on the construction drawings	
5	Confined Spaces	The design shall minimize confined spaces to the extent possible.	
6	Environmental Locations	All electrical equipment shall be rated for the environment in the installed locations. Outdoor installations shall include equipment rated for wet locations. Identify all other indoor wet, damp, and dry locations on the drawings. All cabinetry installed outdoors or in damp or wet locations shall be fully enclosed, with no false fronts or HMI on outside doors. Only lights are allowed on top of cabinetry.	
7	Equipment Maintenance	Locate all electrically operated equipment requiring regular maintenance outside of arc-flash equipment boundaries	

8.10 Electrical System Studies

Item	Parameter	Criteria	Notes
1	Preliminary Short-Circuit Study	During the design phase, prepare a preliminary short-circuit study based on maximum available fault current provided by the utility. The results of this study will determine the minimum withstand and interrupting ratings of the electrical equipment.	

2	Final Short-Circuit Study	Prepare a final short-circuit study using the as installed feeder lengths. The results of this study will be used to complete the Coordination Study.	
3	Coordination Study	Prepare a Coordination Study showing required selective coordination between the installed overcurrent devices. The results of this study will be used to complete the Arc-Flash Study.	
4	Arc-Flash Study	Prepare an Arc-Flash Study to determine the incident energy levels, protection boundaries and personnel protective equipment	Any internal equipment requiring regular maintenance shall be out of arc flash area
5	Computer Program	Perform each electrical system study using software purchased from industry recognized organizations. Provide for submittal of the project specific software results for each electrical system study.	

8.11 Electrical Testing

Item	Parameter	Criteria	Notes
1	Manufacturer Requirements	Perform all field testing per manufacturer's instructions. Submit results of testing.	
2	ANSI/NETA	Provide electrical system testing as identified in Standard for Acceptance Testing Specifications ANSI/NETA ATS, Latest Edition. Submit results of testing.	
3	NFPA 110	Test generator and generator alarms per the requirements of Standard for Emergency and Standby Power System NFPA-110-2016. Submit results of testing.	
4	NFPA 72	Test fire alarm system per the requirements of National Fire Alarm and Signaling Code NFPA 72 (latest edition). Submit results of testing.	

SECTION 9 INSTRUMENTATION AND CONTROLS

9.1 General

The City is in the process of developing a SCADA system Master Plan (by others) to develop a standardized platform of PLCs, Operator Interface Terminals (OITs), SCADA software, and telemetry for the Water and Wastewater Divisions. The City intends to upgrade the remote sites with the new SCADA system (by others). It is assumed that all remote sites will communicate to a central location located at the existing WWTP site. From this location, communications will be relayed to the new WRF via fiber-optic. Water and Wastewater Division SCADA facilities including software and hardware will be located at the new WRF.

The SCADA Master Plan is scheduled for completion in June 2018. The new WRF SCADA system shall meet the following performance criteria, and be based upon and fully compatible with the recommendations in the SCADA Master Plan.

9.2 System Description

9.2.1 Plant Architecture and Software

This section describes the plant architecture, from the Wide Area Network (WAN), through the Plant Local Area Network (LAN) and the PLC network to the instrumentation networking.

Item	Parameter	Criteria	Notes
City Wide Area Network			
1	Communications Medium	• Data transmission to be via encrypted packet-switched network communications over the telecommunications provider network • City will provide phone/internet service facilities and connection point at the front gate of the WRF site for connection to plant by DB.	SCADA Master Plan is being developed by the City and will be available June 2018. Summary requirements of the Master Plan are included in this section.
2	Bandwidth	Sufficient bandwidth will be provided by City for ultimate plant capacity	
3	Transitional Operation and Commissioning	• Remote monitoring shall be integrated into the design as necessary for the DB to monitor the plant during the Transitional Operation period • The DB design shall address any security concerns associated with additional communications link(s) • Secure access procedures, protocols, and any operations communications access required for the Transitional Operation period and during commissioning shall require approval by the City	For example, a View Client license on a nominated, dedicated machine in another operations facility may be required

		• Any licenses purchased for Transitional Operation period shall be transferred to the City when the Transitional Operation period is completed	
Plant Local Area Network			
1	Server Hardware	• Two (2) local redundant servers with secondary network cards and Redundant Message Channel between the two servers installed in a server rack • Hot standby required for backup server • Server operational status to be rotated monthly	Coordinate manufacturer with SCADA Master Plan
2	Human Machine Interface (HMI)	• HMI software shall be as defined in the SCADA Master Plan. • Workstations with full control and monitoring of the WRF. • Wireless access points throughout the plant to enable full coverage to the perimeter of the facility. Operators shall be able to access the full software HMI system via tablet computers. • Tablet computers to be provided by the City. DB to install software and integrate tablet computers. • Wireless network shall be a fully encrypted, secure network. • Application Objects Servers running on primary and redundant server hardware.	SCADA Master Plan is being developed by the City and will be available June 2018.
3	Historian	• Historian by manufacturer of HMI Software. • License shall include sufficient tags for the entire plant and 20% spare at the end of the Transitional Operation period. • Redundant arrangement, with a historian running on each of the two (2) local servers (main and backup). The primary historian will be a full historian and the backup will be a local (7-day) historian. • Historian client shall run on each of the workstations.	SCADA Master Plan is being developed by the City and will be available June 2018
4	Interface with PLC Network	A data access server and device communication drivers shall run on each of the primary and backup servers to communicate with the PLC network	SCADA Master Plan is being developed by the City and will be available June 2018

5	Dial-out Alarms	Alarm notification software shall be installed on both servers, only running on the active server	Coordinate software with SCADA Master Plan
6	Licensing	• All licensing required for the local Historian, Alarming and SCADA system software shall be furnished by the DB • During the operations period the City shall cover the update costs for the local equipment as new versions of the software are released, however the DB Transitional Operation staff shall be responsible for coordinating and scheduling the installation of updates • The DB shall be responsible for costs associated with any upgrade required to the software licenses arising from incorrect specification, or changes initiated by the DB during the Transitional Operation period • At the end of the Transitional Operation period all software shall be fully updated to the latest version	
7	Business Network	Provide access to City Business Network in all offices in Operations Building	• City utilizes Cityworks at City Hall • Fiber-optic service to WRF site will be provided by others
8	Computerized Maintenance Management System (CMMS) and Implementation	• The DB is required to provide a CMMS to allow the City to manage its resources, work orders, delivery of services, and monthly costings for payment purposes to manage and report its operational, minor maintenance, and major maintenance works. • The DB shall be responsible for providing a CMMS system that can publish data and reports. • The DB shall be responsible for inputting all asset data into the CMMS. • The DB shall provide integration services focused on publishing of data from the SCADA system to the CMMS in batch or real time, to support the following: o Asset or equipment statistics that would be captures in the CMMS to trigger preventative maintenance	Asset ID to align with SCADA and asset labeling/tagging program by DB

		work, including: run hours, flows, pressure readings (or pressure differentials) o Triggering of a work or service request when an alarm is identified in the process (identifying the type of alarm (e.g. high bearing temperature), SCADA location and SCADA tag) o Triggering of a simple work order when a fault is identified in the process (identifying the type of fault (e.g. electrical failure), SCADA location and SCADA tag) o Ability to assess data from the SCADA historian on an ad hoc basis to analyze equipment process data e.g. availability, pressures, flows, and temperatures. • Include all spare parts into the CMMS for the real-time tracking of Capitalized Assets spare parts until installed as fixed working assets.	
Programmable Logic Controller (PLC) Network			
1	Communications	• Ethernet shall be used for communications between PLCs and the SCADA server. • A self-healing Ethernet fiber optic ring shall be installed for Ethernet communications around the plant. Convergence time after failure of a single component or switch shall be adequate to prevent plant shutdown. • Ensure bandwidth is suitable for ultimate data requirements.	
2	Locations of PLCs and Remote IO	• Consolidate operation of multiple HMIs by providing operator access nodes located throughout the plant utilizing simple computer workstations • Remote IO and PLCs shall be installed in a manner that minimizes hardwire and field network cabling to instruments. Install in locations with a high density of I/O	
3	Vendor Packages	• Vendor PLCs for each package system shall communicate via Ethernet with a local area PLC	DB shall ensure fully integrated and tested communications with all

		• All vendor system PLCs shall be of the same manufacturer per the SCADA Master Plan	vendor systems. Coordinate with SCADA Master Plan.
4	Access to PLC information	All PLC information shall be accessible to the operator via the workstations in the control room, and at operator access nodes located throughout plant. This shall include vendor package system PLCs.	
Field Bus Device Network			
1	Field Connections	Hardwired, or network connected, to the nearest area MCC or Control Panel	
2	Requirement for Networking Devices	• Devices shall communicate via Ethernet or an appropriate field bus protocol, instead of analog and digital hard-wired I/O, unless otherwise approved • Diagnostics and setup for networked field devices and instruments shall be available from the control room	
3	Field Bus Compatibility	• If a field bus protocol is used this shall be limited to a single protocol at the plant • Compatible with the PLC and field devices with a minimal number of converters • Any device installed onto the Ethernet IP network shall be IEEE 802.3 compliant	
4	Industry Standard	• Industry standard field bus protocol used extensively in the water industry in California • Commissioning, configuration, operations support and replacement parts shall be readily available for the life of the equipment	

9.2.2 Redundancy, Reliability, and Spares

Item	Parameter	Criteria	Notes
1	Requirement	The inventory of spares shall be maintained during the DB Transitional Operation period such that all spares noted in the original inventory are still available at the conclusion of the Transitional Operation period	

2	PLC	Online redundant PLCs may be required for critical processes	
3	PLC Uninstalled Spares	• Provide spares sufficient to allow any of the following to be swapped out on failure: o PLC IO cards (hot-swapped) o backplane o CPU o Power supply	
4	I/O Cards	Duty/standby unit I/O and equipment from separate process trains shall be connected to separate I/O cards	
5	I/O Capacity	Installed spare IO capacity of 25% in all PLCs, excluding vendor-supplied PLCs associated with specific equipment	
6	Program Backup	• Programs and configuration backups shall be stored for fast upload into new modules or CPUs if they are replaced • During Transitional Operation period backup copies of the PLC programs will be made every 2 months, minimum	
7	Server Redundancy	Provide redundant servers for HMI Application Servers, Device Integration Servers and Historian	Provide hot standby for SCADA server
8	Power Supply	PLC Hardware Racks shall have adequate power supplies installed to support a minimum of 25 percent I/O expansion	
9	Reliability	The network system shall be designed to be robust and reliable and shall meet latest Department of Homeland Security (DHS) Best Management Practices (BMPs)	Coordinate with SCADA Master Plan
10	Battery Backup & UPS	All control CPU's, PLC's and additional hardware necessary to keep the WRF functioning or automatically restart after a power loss shall be powered through UPS power circuit(s). This requirement includes the main operation control room computers and monitors.	

9.3 Cyber Security

Item	Parameter	Criteria	Notes

1	Software	• Provide Host Intrusion Detection (HID) and Malicious Intrusion detection software on all SCADA computers hosting operating systems, as well as computers identified as functioning only as Human Machine Interface (HMI) nodes • Configure the software to interface with the SCADA system software, such that abnormal conditions or intrusions are annunciated on SCADA operator PCs • Make all log files accessible on SCADA operator PCs	Coordinate software with SCADA Master Plan
2	SCADA Login and Passwords	• Require user specific operator login credentials for access at all computerized host access points • Provide prescribed automatic logout functionality (i.e. logout upon programmable period of inactivity) • Coordinate login credential protocol with Owner • Provide unique login identification for all users with programmable access rights	Coordinate with SCADA Master Plan
3	Default Passwords	Delete all default login credentials, and store passwords in a secure location, once	
4	Secure Design	• Apply network architecture design elements that effectively implement firewall appliances, data diodes, data encryption appliances, and data encrypted communications mediums to prevent network intrusion and unauthorized data access • Utilize industry best practice and design in accordance with ISA/IEC-62443 Industrial Network and System Security • Provide system operator notification indicating system and device status, with controls that permit manual and automatic blocking of network access points • Comply with latest Department of Homeland Security (DHS) Best Management Practices (BMPs)	Coordinate with SCADA Master Plan

9.4 Control System Hardware

9.4.1 Programmable Logic Controllers

Item	Parameter	Criteria	Notes
1	Manufacturer	Area PLC Manufacturer shall be by same manufacturer	Coordinate with SCADA Master Plan
2	Operator Controls	All PLC programs shall be configured to allow modification to set points, pump sequencing, timers, etc. readily by Plant personnel	
3	Vendor Package Systems	• Vendor PLCs shall be the same type and manufacturer as the rest of the site. • Vendor PLCs shall have processor program and vital configuration information backed up in a similar manner to the other site PLCs.	
4	Latest Equipment	Each PLC shall utilize the latest CPU processors, communications modules and the latest I/O modules	
5	Programming Software	The PLCs shall be programmed using the latest version of software identified in the SCADA Master Plan	
6	Input/Output	• Input modules shall be 24 volts Direct Current (DC) modules only • Output modules shall be relay modules used to trigger interposing relays • Analog modules shall be 4-20 mA 24VDC isolated input and output channel design • Analog input isolators shall be used • Utilize RTD modules for RTD monitoring • All analog inputs shall be scaled into specified engineering units at the PLC • High and low alarm trip points shall be provided at 90% and 10% of span for all analog points	
7	Transient Voltage Surge Suppression (TVSS)	All analog signals exiting buildings to or from devices or instruments shall have transient voltage surge suppression (TVSS) to reduce risk of lightning or power surge conditions	
8	Startup Procedure	• All PLCs shall be configured to have a startup procedure in the event that a PLC needs to be shut down and restarted	

		• The startup program shall have either a fixed startup procedure or have retentive values	
9	Programming	• Use object-oriented programming, based on function blocks for all typical equipment and functions, in accordance with IEC 61131-3 • Configured to allow modification using the programming and integration devices and software installed in the system	

9.4.2 Instrumentation and Field Devices

Item	Parameter	Criteria	Notes
1	Level: Radar	• Manufacturer: ABB, Siemens, Rosemount, Endress & Hauser or equal • Measurement Range: 0 % through 100 % level • Measurement Resolution: 0.1 inch or less • Measurement Accuracy: +/- 0.25 % of measured distance for distances greater than 3.3 feet	Consider where foaming may be an issue, especially in cases where ultrasonic LT may not be suitable
2	Level: Ultrasonic	• Manufacturer: ABB, Siemens, Rosemount, Endress & Hauser or equal • Measurement Range: 0 % through 100 % level • Measurement Resolution: 0.1 inch or less • Measurement Accuracy: +/- 0.25 % of measured distance for distances greater than 3.3 feet	Non-contact level monitoring
3	Level: Pressure	• Manufacturers: ABB, Siemens, Rosemount, Endress & Hauser or equal • Measurement Accuracy: +/- 0.1 % of range.	Where non-contact level monitoring is not required and ease of access to the transmitter is desired e.g. water tanks
4	Level: Submersible Hydrostatic	• Manufacturers: ABB, Siemens, Rosemount, Endress & Hauser or equal • Measurement Accuracy: +/- 0.25 %	Covered basins
5	Level: Conductivity Probe	Manufacturers: Warrick or equal	
6	Level: Float Switch	• Manufacturers: Magnetrol, Kari, Flygt, or equal • Mercury shall not be acceptable in float switch devices	Level alarm detection. Not used for primary process control applications.
7	Pressure: Absolute, Diaphragm Type	• Manufacturers: ABB, Siemens, Rosemount, Endress & Hauser or equal. • Accuracy: +/- 0.1 % of range	Pipe pressure, pump discharge/suction, general process pressure

		• Chemical Installation: Isolation Diaphragm Seal • Calibration/Testing: 3-way valve manifold for calibration/testing and tapping point for pressure gauge	
8	Pressure: Differential	• Manufacturers: ABB, Siemens, Rosemount, Endress & Hauser or equal • Accuracy: +/- 0.1 % of range • Chemical Installation: Isolation Diaphragm Sea • 3-way valve manifold for calibration/testing and tapping point for pressure gauge	Pressure drop across filters, etc
9	Pressure Switch	Manufacturers: Ashcroft or equal.	
10	Flow: Electromagnetic, Full Pipe	• Manufacturers: ABB, Siemens, Rosemount, Endress & Hauser or equal • Installation: Vault or above ground. Shall not be direct buried • Maintenance: Provide maintenance bypass for critical applications where a bypass or standby does not exist • Accuracy: Max 1 % of measured, for flow velocities between 10 % and 100 % of full scale • Grounding: Provide grounding rings on all installations • Repeatability: Max 0.25 % of full scale	Primary and secondary process flows
11	Flow: Open Channel	• Manufacturers: ABB, Siemens, Rosemount, Endress & Hauser or equal • Accuracy: Product shall be chosen for maximum accuracy based on the dimensions and flow pattern of the channel	
12	Flow: Air	Manufacturers: FCI Insertion, or equal	
13	Flow: Liquid Switch	Manufacturers (thermal flow switch): Dwyer, IFM, or equal	Pump no flow, sample line no flow, etc.
14	Flow: Air Switch	Manufacturers: FCI, or equal	Ventilation/extraction fan no flow, etc.
15	Limit: Switch	Manufacturer: Square D, Class 9007 Type C, or equal	
16	Temperature: Transmitter	Manufacturer: ABB, Siemens, Rosemount, Endress & Hauser or equal	Process temperature
17	Temperature: Switch	Manufacturer: Ashcroft, Allen Bradley, or equal	

18	Vibration: Transmitter	Manufacturer: Bently Nevada, or equal	Vibration monitoring for large pumps, motors, blowers, etc.
19	Online Analyzers: General	All online analyzers should be same manufacturer to extent possible	Hach is preferred
20	Residual Chlorine Analyzer	• Manufacturer: Hach, or equal • Type: Free chlorine type • Accuracy: Max + 0.5% of reading • Repeatability: Max 0.2% of reading.	
21	Turbidity Analyzer	• Manufacturer: Hach, or equal • Accuracy: Max 2% of NTU reading • Repeatability: Max 1% of NTU reading	
22	TOC Analyzer	• Manufacturer: Hach or equal • Accuracy/reliability: Max + 3% of reading or 0.3 mg C/L • Compensation: Automatic compensation for atmospheric pressure changes • Other Requirements: In addition to the above requirements, DB specification shall include requirements for self-testing and self-cleaning requirements, sample system and pumps, service frequency, cycle time, etc.	Regulatory monitoring for plant product water
23	pH Analyzer	• Manufacturer: Hach, or equal • Accuracy: Max + 0.5% of reading • Repeatability: Max 0.2% of reading	
24	Conductivity Analyzer	• Manufacturer: Hach, or equal • Accuracy: Max 3% of reading • Repeatability: Max 0.2% of reading	
25	Exterior Lighting	All exterior lighting shall be SCADA controllable (on-off times)	

9.4.3 Junction Boxes

Item	Parameter	Criteria	Notes
1	Mounting	Shall be accessible from floor or platforms	
2	Doors	Doors shall be able to open without interference	
3	Pull Boxes	Provide above-grade pull boxes to the extent feasible	

9.4.4 Local Control Panels

Item	Parameter	Criteria	Notes
1	Location	• Located close to the equipment • Local control switches and indicators only where required to address specific safety or maintenance concerns, otherwise all manual control shall be available via SCADA only (accessible locally via wireless tablet or operator node computers)	
2	Local-Off-Remote Switch and Control Devices, Indicator Lights and Pushbuttons	• Where required, LOR switch shall allow an operator to take manual control of a device or piece of equipment and operate it from that panel manually. • LCPs should be protected from the weather and/or be appropriate for the environment that they are operated in. All exterior enclosures shall be NEMA 4X.	
3	Enclosures	• All cabinetry located outdoors should be fully enclosed, no false fronts or HMI on outside doors. • Any internal equipment requiring regular maintenance shall be out of arc flash area.	

9.4.5 Instrument Mounting and Access

Item	Parameter	Criteria	Notes
1	Housing	All outdoor process instruments shall be housed in IP68, NEMA 4X enclosures, or vendor requirements, whichever is more stringent	
2	Access	Access shall be considered in the selection of instrumentation. For example, tanks shall be measured using pressure at the base of the tank wherever practical, to eliminate the need for maintenance access to the top of tanks.	
3	Instrument Height	Instruments mounted at a working level between 3 and 5 feet above the operating floor	
4	Indicator Height	Process indicators and indicating transmitters mounted in a position that is readable by an operator without requiring the use of a ladder or the building of platforms	
5	Capillary Tube Installation	Temperature and pressure instruments capillary sensors shall be installed and clamped in tube racks. Excess capillary tube shall be	

		coiled and clamped to the mounting stand below the instrument.	
6	Grouping	Instruments located near each other shall be grouped to the maximum extent possible on a common mounting stand, wall bracket or instrument rack	
7	Dirt/Moisture Removal	Instrument impulse lines shall incorporate a blowdown leg or contamination accumulation leg for the removal of dirt and moisture	
8	Isolation Valves	• Instrumentation taps to process lines shall be isolated by a root valve at the connection • Isolation valves for taps to process lines shall be 1/4-turn ball valves of materials compatible with the process fluid • Isolation valves for chemical service shall match isolation valves used in other portions of that chemical piping	
9	Analyzers	• Analyzers for primary process lines shall be installed in bypass assemblies external to the main process headers to allow routine maintenance • Analyzer assemblies shall include an isolation valve at each process connection tap, pressure regulator, manual sample valve, rotameter flow element with integral flow metering valve, check valve, miscellaneous piping and fittings • Generally, panel mounted and located in close proximity to the relevant sample point in a designated analyzer room (where possible) for improved access for common operational and maintenance activities on these units • The analyzer waste streams shall be discharged into a tundish and drained to a common collection point for either pumped return to a specified point along the process or drained to waste • All analyzers shall have zero flow detection and pressure and flow control valves on the inlet to ensure a constant rate of feed through the analyzer • Manual sample points shall be provided for sampling water at various points through the main process, typically with each change in process unit and upstream and	

		downstream of chemical dose points for manual checks of water quality and chemistry • Assemblies for analyzer sensors which must remain wetted at all times (e.g., pH sensors) shall incorporate a vacuum breaker in the drain piping • Sample drain shall be routed to a hub drain	

9.5 Monitoring and Control

9.5.1 Control Philosophy

Item	Parameter	Criteria	Notes
1	Vendor Packaged Systems	• Duplicate functionality of vendor HMI screens on the SCADA HMI, such that all parameters can be monitored and controlled except were safety concerns dictate local control only or where controls are related to maintenance tasks that can only be carried out locally • Preliminary vendor supplied screens shall be provided to the City for approval before final screen development • Vendor screens shall be developed in accordance with City SCADA standard	SCADA Master Plan is being developed by the City and will be available June 2018
2	Level of Automation	• Fully automated such that, as far as practical, all day-to-day operational adjustments and reporting can be conducted from the SCADA screens • Provide sufficient automation such that critical processes can be controlled remotely	The plant will be staffed 40 hours per week and will be operated remotely on nights and weekends
3	Network Communications Alarms	Failure of Ethernet switches, PLCs, or any network communications shall be alarmed	
4	Local Control	• Local manual override shall be accomplished with a hard-wired switch except where personnel, equipment or the process are protected by equipment software interlocks that need to be maintained at all times. • The system shall not be able to create a safety issue for the local operator. For example, do not allow remote operation if local manual override is selected.	

		• Automatically indicate on SCADA screens when a device in automatic or local control.	
5	Startup/Shutdown	• Shutdown of the Plant units shall be fully automated • Recovery after a power outage or shutdown shall be mostly automatic, but shall require operator intervention in order for the process to begin, and may require additional operator intervention through the startup sequence as determined during the plant design in order to ensure safety and compliance requirements are met	
6	Control Locations	• Allow the automatic and manual operation of the new system from the Operator Workstations and from wireless tablet devices • Additional remote-control access may be incorporated during the Transitional Operation period, with limited secure control access, subject to approval by the City	Coordinate operator privileges with login program
7	Downtime	Minimize the down time due to monitoring and control component failure	
8	Future	• Use the latest available technology to efficiently and responsibly ensure ease of expansion or modification in the future as requirements change • Allow bandwidth in the control system infrastructure for future monitoring, control and diagnostics	
9	Power Monitoring	Monitor and alarm standby power and alternative power (solar)	

9.5.2 SCADA HMI

Item	Parameter	Criteria	Notes
1	Scope and Type	Refer to section "Plant Architecture & Software"	
2	Integration	• Submit written control descriptions and sample control screens for City approval prior to integration • Duplicate functionality of vendor HMI screens on the SCADA HMI, such that all parameters can be monitored and	City shall attend factory performance testing

		controlled except were safety concerns dictate local control only or where controls are related to maintenance tasks that can only be carried out locally	
3	Standards	New HMI screens shall be developed following City SCADA standards	SCADA Master Plan is being developed by the City and will be available June 2018.
4	Analog Signal Monitoring	• All analog and discrete inputs to the PLC shall be displayed on the SCADA screens • Real-time and historical trending for all analog inputs to the PLC shall be available from the local screens	
5	Alarm Hierarchy	• A hierarchy of alarms shall be specified, which shall be adjustable by the operators. • Each alarm shall be classified with a corresponding value representing criticality. The system shall present the alarms in different ways based on the criticality, per City SCADA standards.	SCADA Master Plan is being developed by the City and will be available June 2018
6	Alarms	• All alarm functions shall be carried out at the PLC level. • All alarms shall display on a common alarm screen. • All alarms must be acknowledged by the Plant operating staff before they can be cleared. • Some alarms may be cleared from SCADA. Others shall need local reset. Philosophy shall be based on safety and equipment protection. • No alarm shall clear automatically until it has been properly acknowledged.	
7	Alarm/Interlock Effect on MANUAL/AUTO Control	• Equipment safety interlocks specified to shutdown equipment “independent of control mode” or other like description shall be active regardless of PLC (MANUAL/AUTO) or field control station (ON, LOCAL/REMOTE) operating status • Other software generated alarms shall remain active independent of operating mode, but only effect specified control actions in AUTO (PLC) and REMOTE (field) operating modes	

8	Equipment Monitoring	• For all equipment controlled by the PLC, the equipment shall receive and display applicable status and alarm signals, such as operating mode (LOCAL, REMOTE, etc.), operating status (ON, OPEN, CLOSED, etc.) and alarm status (FAIL, LOCKED-OUT, etc.). • For multistate devices where an actual digital input is not provided, provide PLC logic based on the status of the other inputs to develop the remaining status. For example, for LOR switches use the status of the LOCAL and REMOTE inputs to develop and display the status of the OFF position.	
9	SCADA AUTO/MANUAL	For all equipment controlled by the PLC, DB shall provide separate displays and poke points for selection of AUTO/MANUAL operating modes. In AUTO mode, the device shall be controlled by the PLC. In MANUAL mode, the device shall be operated by START/STOP, OPEN/CLOSE poke points, as appropriate. The workstation shall display the current operating status of each device and an alarm if the equipment fails to respond to a command signal after an operator adjustable time period.	
10	Proportional, Integral, Derivative (PID) Control	• PID control functions shall be performed at the PLC with controller faceplate displays at the workstation • Standard PID control operator interface shall be provided, including AUTO/ MANUAL mode selection: o In AUTO, the controller output shall be based on the PID control function at the PLC o In MANUAL, the output of the controller shall be based on an operator set value o Transfer between MANUAL and AUTO shall be bumpless o At the workstation, DB shall provide AUTO/MANUAL selection poke points for PID controlled equipment, with graphic loading displays for manual control	

		• PID loop tuning parameters shall be available via SCADA, but shall require engineering login to make adjustments	
11	Enclosures	• All cabinetry located outdoors should be fully enclosed, no false fronts or HMI on outside doors • Any internal equipment requiring regular maintenance shall be out of arc flash area	

9.5.3 Typical Monitoring and Control

Item	Parameter	Criteria	Notes
1	All Analog Transmitters	Transmitter fail alarm	
2	Level Transmitters	• Continuous level monitoring • PLC calculated high/low level alarm • PLC calculated high-high/low-low level alarm	
3	Level Switches	• High/ low level alarms • High-high/low-low level alarms	
4	Flow Transmitters	• Continuous flow monitoring • PLC calculated flow totals • PLC calculated high/low flow alarms	
5	Flow Switches	Flow alarms where applicable	
6	Pressure Transmitters	• Continuous pressure monitoring • PLC calculated high/low pressure alarms	
7	Analyzers (pH/LEL/H2S/CL2/DO etc.)	• Continuous signal monitoring • Dry contact high/low level alarm • PLC calculated high-high/low-low level alarm	
8	Temperature Transmitters	• Continuous temperature indication • PLC calculated high/low temperature alarm	
9	Temperature Switches	• High temperature alarm • Low temperature alarm	
10	Open/Close Valve or Gate	• Valve open/close command • Valve open/close position indication • Valve in Auto or Remote indication • Valve fault indication	
11	Modulating Flow Control Valve	• Valve position set point • Valve position feedback • Valve open/close position indication if applicable • Valve fault indication	
12	Constant Speed Drive	• Drive start/stop command • Drive running indication	

		• Drive in auto or remote indication • Drive faulted: General Fault or Multiple Fault Indicators, etc. • PLC calculated drive run time • Failure to respond to command or change of status when not commanded • Diagnostics, DB to confirm specific parameters	
13	Variable Speed Drive	• VFD start/stop command • VFD running indication • VFD in auto indication • VFD faulted • VFD speed set point • VFD speed feedback • PLC calculated VFD run time • Diagnostics, DB to confirm specific parameters	
14	Chemical Dosing/Feed System	• Chemical dosing/feed systems • Chemical volume/quantity used calculated values	

9.5.4 Labeling

Item	Parameter	Criteria	Notes
1	Equipment Labeling	Submit comprehensive labeling schedule indicating tag information, type, material of construction, manufacturer, and other critical information	

SECTION 10 MECHANICAL HVAC CRITERIA

10.1 General

The following section includes the performance criteria for the mechanical HVAC systems for the WRF. Coordinate these requirements with Section 9.

10.1.1 Code Requirements

All work shall conform to the requirements of the latest edition of the following codes:

Item	Parameter	Criteria	Notes
1	Building	California Building Code (CBC)	
2	Mechanical	California Mechanical Code (CMC)	
3	Energy	California Energy Code (CEnC)	
4	Fire	California Fire Code (CFC)	
5	Ventilation	NFPA 820	

10.1.2 Referenced Standards

All work shall comply with the latest edition of the referenced standards from the following organizations:

Item	Parameter	Criteria	Notes
1	Organizations	• Air Conditioning, Heating, and Refrigeration Institute (AHRI) • Air Moving and Conditioning Association (AMCA) • American National Standards Institute (ANSI) • American Society of Heating, Refrigerating and Air Conditioning Engineers, Inc. (ASHRAE) • American Society of Mechanical Engineers (ASME) • American Society for Testing Materials (ASTM) • American Welding Society (AWS) • Associated Air Balance Council (AABC) • Manufacturer's Standardization Society (MSS) • National Electrical Manufacturers Association (NEMA). • National Fire Protection Association (NFPA)	

		• Sheet Metal and Air Conditioning Contractors National Association (SMACNA) • Underwriters Laboratories, Inc. (UL)	

10.1.3 Installation Requirements

Conform to the manufacturers' installation requirements for materials and equipment furnished.

10.1.4 Design Criteria - Temperature

Item	Parameter	Criteria	Notes
1	Outdoor Design Temperatures	• Buildings containing WRF processes or equipment: o Summer: 88/65 degrees F dry bulb/wet bulb o Winter: 31 degrees F • Operations Building and Maintenance Building: o Summer: 82/64 degrees F dry bulb/wet bulb o Winter: 31 degrees F • Electrical building, electrical rooms, and server room: o Summer - 95/63 degrees F dry bulb/wet bulb o Winter - 31 degrees F	Confirm requirements and conform to ASHRAE standards
2	Indoor Design Temperatures	• Buildings containing WRF processes or equipment: o Cooling: design outdoor temperature plus 10 degrees F • Operations Building and Maintenance Building (non-shop and storage areas): o Cooling: 70 to 76 degrees F and 20 to 60% relative humidity o Heating: 65 to 68 degrees F and 20 to 60% relative humidity • Maintenance Building Shop and Storage Area: o 60 degrees F minimum • Electrical building and electrical rooms: o 85 degrees F maximum • Server Room: o 68 to 74 degrees F dry bulb and 40 to 60% relative humidity	

10.1.5 Design Criteria - Ventilation

Item	Parameter	Criteria	Notes
1	Buildings Containing WRF Processes or Equipment	Supply air and exhaust air ventilation in accordance with NFPA 820, latest edition	
2	Operations Building and Maintenance Building	• Outdoor air ventilation in accordance with the 2016 CEnC and ASHRAE 62 • Exhaust air ventilation in accordance with 2016 CMC and ASHRAE 62, minimum 10 air changes per hour • Provide a minimum of 6 air changes per hour for tanks, channels, and/or within process enclosures	
3	Electrical Building, Electrical Rooms, and Server Room	Outdoor air ventilation sufficient to maintain the spaces at a positive differential pressure of 0.1 inches water column relative to ambient	

10.1.6 Configuration of Systems

Item	Parameter	Criteria	Notes
1	Buildings Containing WRF Processes or Equipment	HVAC systems serving buildings containing WRF processes or equipment shall provide sufficient ventilation to achieve the lowest electrical hazardous location classification indicated in NFPA 820. Centrifugal fans and air cleaning devices should be used for ventilation. Multiple fans shall be employed with one supply fan and one exhaust fan on standby to become operations if a supply fan or exhaust fan fails.	
2	Operations Building and Maintenance Building: Non-Shop and Storage Areas	Rooftop package air conditioning (AC) units, power ventilators, and air cleaning devices should be used for HVAC systems	Minimum four AC units
3	Maintenance Building Shop and Storage Area: 60 degrees F minimum	Power ventilators and air cleaning devices should be used	
4	Electrical Building and Electrical Rooms	Split system air conditioner, (100% redundant), power ventilators, and air	

		cleaning devices should be used for HVAC systems	
5	Server Room	Split system air conditioner, (100% redundant), power ventilator, and air cleaning devices should be used for HVAC system	

10.2 Basic Mechanical HVAC Work

Item	Parameter	Criteria	Notes
1	Listing	All equipment, devices, and control panels furnished as part of this work shall be listed, labeled, or certified for the intended use by a Nationally Recognized Testing Laboratory as recognized by the United States Department of Labor, Occupational Safety, and Health Administration	
2	Motors	All motors shall conform to NEMA Standards MG 1	
3	Supports and Anchors	Pipe supports and anchors shall conform to the requirements of MSS SP-58, SP-69, and SP-89	
4	Identification	All piping, valves, ductwork, and equipment shall be label in accordance with ANSI A13.1	
5	Insulation	Insulate refrigerant piping, condensate drain piping within buildings, and supply and return ductwork	
6	Access	Provide permanent access via ladders or stairs for all equipment	

10.3 Fuel Storage for Emergency Generator

Item	Parameter	Criteria	Notes
1	Storage Tank	Provide propane backup tank and dual fuel generator with sufficient volume to provide full plant power for minimum 12 hours	

10.4 Mechanical HVAC Equipment

Item	Parameter	Criteria	Notes
1	Rooftop Package Air Conditioning Units	Unit shall be outdoor type, rooftop mounted, electrically controlled, cooling unit utilizing a hermetic scroll compressor and gas heating. Unit shall use R-410A refrigerant. Unit shall meet ASHRAE 90.1 minimum efficiency requirements, be rated in accordance with AHRI Standards 210/240 and 340/360, be designed to conform to ASHRAE 15, 2001, and be UL-tested and certified in accordance with ANSI Z21.47 Standards and UL-listed. Roof curb shall be designed to conform to NRCA Standards. Unit shall be designed in accordance with UL Standard 1995, including tested to withstand rain. High efficient motors shall meet section 313 of the Energy Independence and Security Act of 2007 (EISA 2007). Interior cabinet surfaces of evaporator compartment shall be insulated with a minimum 1/2 inch thick, minimum 1-1/2 lb. density, flexible fiberglass insulation. Controls shall be complete with self-contained low-voltage control circuit protected by a resettable circuit breaker on the 24V transformer side. Safeties shall include compressor over-temperature and over-current and low-pressure switch, and high-pressure switch. Unit shall use 2-inch disposable filter. Unit shall be furnished with enthalpy economizer, barometric relief dampers, and hinged access panels.	
2	Split System Air Conditioning Units	Indoor Unit: Unit includes a chassis, coil, insulation, drain pan assembly, fan, and motor. Unit shall be horizontal, ductless, indoor system with field-installed condensate pump, automatic fan speed control, auto restart after power outage, self-check function, and integral diagnostics. Cabinet is heavy gauge with formed edges and access panels. Cooling coils shall be copper tube with aluminum fins and copper tube connections. All coils shall be burst tested at 450 psig air pressure and leak tested at 100 psig air	

		pressure under water. The maximum working pressure shall be 300 psig. Fan wheel shall be centrifugal forward curved double width. Fan wheel and housing shall be formed material and corrosion resistant. Fan speed control is automatic. Motors shall be brushless, permanently lubricated, have characteristics as scheduled, and be furnished with integral thermal overload protection. Motors shall be factory run tested and assembled prior to shipping. Controls shall be wall-mounted wireless. Outdoor Unit includes chassis, coil, compressor, refrigerant piping, condenser fan and motor, and controls. Cabinet is heavy gauge galvanized steel with formed edges and access openings for piping and conduit. Compressor is twin rotor with inverter drive. Refrigerant type is R410A. Piping connections are flared. Controls include automatic condenser fan speed control, auto restart after power outage, self-check function, integrated diagnostics, anti-recycle timer, defrost, and low-ambient lock out.	
3	Centrifugal Fans	Fans for ventilation systems serving hazardous areas classified under provisions of Article 500 of NFPA 70 shall be fabricated in accordance with AMCA Type A or Type B spark-resistant construction. Provide centrifugal vent sets. Fan shall be manufactured in an ISO 9001 certified facility. Fan shall be listed by Underwriters Laboratories in conformance with UL 705. Fan shall bear the AMCA Certified Ratings Seal for Sound and Air Performance. The housing shall be able to be rotated in the field to eight discharge positions. Construction shall be bolted and welded utilizing corrosion resistant fasteners. Bearing support shall be 10-gauge welded steel. Fan shall include a weather cover with latched side access inspection ports for the motor compartment. Provide an engrave nameplate indicating fan performance and model number.	
4	Power and Gravity Ventilators	Spun aluminum housing, roof-mounted, belt-driven, upblast centrifugal exhaust	

		ventilator. Fan shall be manufactured in an ISO 9001 certified facility. Fan shall be listed by Underwriters Laboratories in conformance with UL 705. Fan shall bear the AMCA Certified Ratings Seal for Sound and Air Performance. Gravity ventilator shall have spun aluminum housing similar to exhaust ventilator.	
5	Air Cleaning Devices	Factory fabricated, replaceable, dry, pleated air filters in the, minimum 2" thick, minimum MERV 8 in accordance with ASHRAE Test Standard 52.2-2007. Filters shall be listed as UL 900. Factory-assembled side servicing housings with flanges for insertion into ductwork. Construct of 16-gauge galvanized steel. Provide access doors with continuous gasketing.	

10.5 Ductwork and Appurtenances

Item	Parameter	Criteria	Notes
1	Ductwork	• Construct rigid ducts using ASTM A653M-2003 G90 sheet metal in accordance with recommendations of the ASHRAE Guide, SMACNA 1985 HVAC Duct Construction Standards Metal and Flexible, NFPA 90A, and the California Mechanical Code. Flexible ducts with an exterior reinforced vapor barrier, minimum R = 8.0 insulation, encapsulated steel wire helix, and impervious, smooth, non-perforated interior polymer liner. The maximum length shall be seven feet. Flexible ducts shall be limited to use at the terminal ends of the duct system only. Flexible ducts shall conform to UL-181. • Ducts for odor control ventilation shall be FRP.	
2	Ductwork Accessories	Round ducts and rectangular ducts with maximum dimension 16” or smaller shall have butterfly type balancing damper with quadrant locks, fabricated according to SMACNA standards. Rectangular ducts with maximum dimension greater than or equal to 17” shall have opposed blade configuration with quadrant locks. Provide	

		flexible connections and sunshields (if outdoor) for each duct connection to a piece of equipment.	
3	Air Outlets and Inlets	Construct with steel backpans and removable perforated steel faces, and compatible with the ceiling system in which installed. Diffusers shall be equipped with four cores consisting of pattern control vanes that individually pivot to adjust air pattern from horizontal to vertical. The air pattern can be adjusted further by rotating the cores in the field to provide a 1-way, 2-way, 3-way, or 4-way air pattern. Provide volume dampers in the necks of the devices.	Provide plastic materials in corrosive areas

10.6 Mechanical Controls and Monitoring

Item	Parameter	Criteria	Notes
1	Controls	Controls shall be based on digital equipment and shall monitor and control space temperature and/or space humidity to maintain indoor temperatures within the ranges established in the design criteria.	
2	Setpoints	Setpoints shall be adjustable by occupants but shall be limited within a range determined by the City	
3	Monitoring	All continuously operating ventilation systems serving WRF processes shall include flow detector devices connected to alarm signaling systems to indicate inadequate ventilation and ventilation system failure. The flow detection devices shall monitor both the supply and exhaust fans. Distinct local and remote alarms shall be provided in accordance with NFPA 820.	

10.7 Startup, Commissioning, and Testing

Item	Parameter	Criteria	Notes
1	Startup	Startup for all equipment addressed by this section is required. Startup shall be performed by factory trained technicians and shall address all requirements in the	

		manufacturers' installation and startup documentation.	
2	Commissioning	Commissioning is required for all HVAC systems addressed by this section. Requirements for system commissioning shall be based on the guidelines established by ASHRAE 202-2013.	
3	Testing	Testing required by codes, referenced standards, and installation instructions shall be performed in accordance with those requirements	
4	Testing, Adjusting, and Balancing	Testing, adjusting, and balancing of all equipment and HVAC systems addressed by this section is required. Work shall be in accordance with the 7th Edition of the AABC National Standards for Total System Balance and the requirements of ASHRAE Standard 111-2008 (RA 2017).	

SECTION 11 DEMOLITION AND REMOVAL OF EXISTING WWTP

11.1 General

The DB shall be responsible for the sequencing and coordination of the shutdown and demolition of the existing WWTP. The DB shall conduct a planning meeting with the City of Morro Bay and the Cayucos Sanitary District (CSD) and then prepare and submit a shutdown and demolition plan to the City of Morro Bay for review and approval. The existing 5.7-acre WWTP must remain in full operation until the new WRF is in full operation and the collection system is no longer delivering flow to the WWTP from the City of Morro Bay or the CSD. CSD is currently pursuing a new wastewater treatment facility. It is assumed the self-contained electronic and household hazardous waste collection facility operated by the San Luis Obispo Integrated Waste Management Association (IWMA) will be relocated by the IWMA prior to the demolition of the WWTP. The City of Morro Bay has completed lead and asbestos analyses of the existing WWTP. The lead testing report is included in Appendix K of this document. The asbestos testing report is included in Appendix L of this document. Additional information regarding existing WWTP facilities is available in the City's Draft Water Reclamation Facility Master Plan available on the project website (morrobaywrf.com).

11.2 Decommissioning and Demolition

Once influent has ceased in the liquid treatment train, City plant operators will take processes out of service. DB will empty and clean the existing basins and process units. Liquid from the treatment train may be conveyed to the new WRF. After the remaining sludge is processed the DB shall empty and clean the digesters and sludge drying beds. Waste from the digester shall be screened to ¼-inch, dewatered, and disposed of at an appropriate facility. Filtrate from dewatering may be transferred to the WRF.

The decommissioning of the existing WWTP will include the shutdown, demolition and complete removal of all WWTP facilities. Only piping below 6 feet in depth may remain. The DB may abandon in place piping deeper than 6 feet and fill it with a low strength cement slurry. After demolition and removal, the DB shall backfill, compact and regrade the site leaving the site cleared, clean and available for other purposes. The DB's regrading shall fit the basic drainage pattern of the surrounding facility and be surfaced with a 1" layer of gravel.

The following table lists all the structures to be demolished and removed by the DB from the existing WWTP site. The outfall air release structure, outfall piping, and related junction box(es) used for the WRF and the new CSD treatment facility are expected to remain.

Existing WWTP Structures to be Demolished	
Administration Building	Chlorine Building/Storage Room
Primary Sedimentation Tanks	Chlorine Contact Tank
Biofilter Pump Station & Motor Control Center Building	Digesters
Biofilters	Maintenance Building
Secondary Sedimentation Tank	Hydropneumatic Tank
Secondary MCC Building	Waste Gas Burner
Sludge Drying Beds	Collection Shed

11.3 Disposal

The DB will either salvage or dispose of all materials in appropriately classed landfills. Demolition rubble will be disposed of at a nearby Class 3 landfill , while hazardous waste will be transported to a Class 1 or Class 2 landfill.

SECTION 12 FACILITY STARTUP AND COMMISSIONING AND TRANSFER OF OPERATIONS

12.1 General

Equipment testing and startup are required for satisfactory completion of the construction phase of the contract and therefore shall be completed prior to operation of the facility.

12.2 Definitions

For purposes of facility startup and commissioning, the following definitions shall apply:

- *Manufacturer's Representative*: Employee of manufacturer who is factory trained and knowledgeable in the technical aspects of the products and systems.
- *Functional Testing*: Tests necessary to demonstrate that the installed equipment and systems function as specified and operate in the manner intended.
- *Startup Period*: Startup of any portion of the entire facility will be considered complete when the facility or designated portion has properly operated 2 weeks without interruption. This period is in addition to any specified functional or performance testing and training.
- *Acceptance Testing*: The operation of the entire facility to demonstrate the successful operation and integration of all the elements including ancillary systems.
- *Performance and Operation Testing:* The operation of the entire facility to demonstrate the facility's ability to meet performance requirements of the RFP, design documents generated by the DB, and finally to verify the performance guarantees submitted by the DB.

12.3 Facility Testing Plan

The DB shall organize and conduct a meeting to coordinate the development of the factory acceptance tests, manufacturers installation certification, functional tests, performance testing, and 6-month operational verification plan. The meeting must have participation from manufacturers' representatives, the City, and DB. After the planning meeting but no later than 3 months prior to the acceptance testing, the DB shall submit a draft Facility Testing Plan to the City. The Facility Testing Plan shall include the Functional Testing plan, the Acceptance Testing plan, and the Performance and Operation Testing plan. All permit-required confirmation testing shall be done by a third-party ELAP certified lab, to be paid for by the DB during the acceptance testing period. The DB shall submit the results of each testing program.

All testing plans and protocols shall define the procedures to be used, methods to verify compliance with the performance criteria, and include the following minimum components:

- The specific measurements that will be made, including identification of permanent and temporary measurement devices
- Calibration procedures for measuring devices
- Redundancy of any measuring device to demonstrate accuracy
- Organization of the testing team, including responsibilities
- The testing program and schedule
- Operations and maintenance schedule during the test period
- Specific detailed sampling protocols to be used in conducting the acceptance test

- Include testing plan to conduct all necessary facility and system performance tests to meet DDW and Title 22 testing and reporting requirements for GRRP's using subsurface application
- The quantities of influent that will be used and selected equipment that will demonstrate the capability of equipment to handle the design flows

12.4 Functional Testing

- The DB shall furnish the services of a manufacturer's representative for each piece of major equipment, to inspect, to check, and to adjust, if necessary, the equipment installation. In each case, the DB shall arrange to have the manufacturer's representative revisit the project site as often as necessary until any issues have been corrected, and the equipment installation and operation is acceptable to the manufacturer's representative. The DB shall conduct, with the assistance of the manufacturer's representative, startup and field tests on equipment, systems, and subsystems.
- Functional testing shall be required for all mechanically or electrically operated equipment and process systems, including but not limited to mechanical, electrical, instrumentation, and controls. Functional testing shall also be required for all control equipment and meters. Testing shall include checking for proper rotation, alignment, speed excessive vibration, quiet operation, and full capability of all other required functions. The DB shall perform initial equipment and system adjustments and calibrations in the presence and with the assistance of the manufacturer's representative.
- The DB shall furnish the manufacturer's representative a written report certifying that the equipment has been properly installed and lubricated, is in accurate alignment, is free from any undue stress imposed by connecting piping or anchor bolts, and has been operated satisfactorily under full-load conditions.
- The DB shall schedule all manufacturer certification testing. The manufacturer's representative and the operating personnel and the owner's representative will witness manufacturer certification testing.

12.5 Acceptance Testing

- The acceptance test shall demonstrate the ability of the WRF to meet contract requirements.
- After all certification, functional and equipment tests have been performed and all equipment has successfully met startup requirements, the facility shall be operated as a complete system for two weeks prior to entering the Transitional Operation Phase.
- The acceptance test shall not be conducted until the acceptance test plan is approved by the City and Regulatory agencies, and authorization is received from the City. The acceptance test plan shall describe the provisions for disposal of non-compliant effluent that may be generated during the execution of the acceptance test.
- All labor (excluding certified operators), materials, and equipment necessary to perform the acceptance test shall be provided by the DB. Once the facility is treating wastewater, the City will provide certified operators. During the acceptance test, the DB will operate, and be responsible for all costs for all systems under normal operating conditions, including but not limited to, routine equipment operation, maintenance services, and chemicals. Electricity will be paid by the City.
- The acceptance test shall also demonstrate the WRF's ability to operate on the emergency generator, in the event of total plant power failure, including automatic transfer to the emergency

generator. The system should demonstrate that the quality of effluent, and capability to process the influent is not diminished due to an automatic transfer to the emergency generator.

- The acceptance test should demonstrate the UPS for power and controls performing without loss of data and control.
- The acceptance test shall demonstrate manual shutdown, manual start-up, automatic shutdown, automatic start-up, and automatic transfer of equipment that requires any or all of those functions, without interruption of flow, or quality of effluent.
- Acceptance test shall include all necessary facility and system performance tests to meet DDW and Title 22 testing and reporting requirements for GRRP's using subsurface application.
- The City operational staff and owner's representative will witness acceptance testing. The City will provide at least one operator for eight hours per day, during the acceptance test period.
- The DB shall provide reports in accordance with the requirements of the regulatory agencies, with certification of the results demonstrating performance, all relevant data measured and recorded during the testing, and any calculations that were used in determining test results, and any certifications from equipment manufacturers that equipment was operated according to manufacturer's recommendations, any other available documentation reasonably requested by the City or regulatory agencies.
- DB shall provide initial oil fill and first oil change on all equipment as required by manufacturers recommendations prior to the facility transfer to City for Performance and Operation Testing.

12.6 Performance and Operation Testing

- After all startup, certification, functional, and acceptance testing is complete the performance and operational testing of the WRF as a whole system will commence. The purpose of the testing is to demonstrate the ability of the equipment and fully integrated system to meet the performance requirements as identified in the RFP, meet manufacturers specifications, design documents generated by the DB, and finally to verify the performance guarantees submitted by the DB.
- The performance and operations testing will be conducted by the City at the direction of the DBs representative in accordance with the approved performance and operations plan.
- All labor, materials, and equipment necessary for the performance and operation testing shall be provided by the City. During performance and operation testing the City is responsible for all costs for all systems under normal operating conditions, including but not limited to routine equipment operation, maintenance services, and chemical and electric usage. During performance and operation testing DB will be responsible for all warranty repairs. DB is responsible for any costs associated with permit violations.
- The Performance and Operational Testing period shall be 6 months in duration. The City reserves the right to extend the performance and operation testing period upon a failure to reach the performance guarantees.

SECTION 13 SECURITY

13.1 General

Provide a security system that gives the City the ability to remotely monitor key areas within the site and notify the City of any intrusions. The completed security system shall be integrated with the City's SCADA system.

Item	Parameter	Criteria	Notes
1	Construction/Work Area	Make adequate provision for the protection of the work area against fire, theft, and vandalism, and for the protection of the public against exposure to injury	
2	General Design Principles	• Discrete security measures shall be planned into the facility • Site design shall address security issues related to access control; electronic protection; and protection against man-made and natural disasters • Security measures shall be consistent with Department of Homeland Security (DHS) Best Management Practices (BMPs)	
3	Security Measures	Intrusion detection, access control and CCTV video surveillance system security zoning shall provide a defensible perimeter and provide visual surveillance and defensible perimeter space to deter trespassing and vandalism	Do not monitor perimeter fence integrity i.e. cut wire or short circuit detection
4	Intrusion Detection System (IDS)	• An IDS shall be provided. IDS field devices shall be connected to alarm panel. Alarm signals shall be relayed and integrated with SCADA system. • Provide IDS devises on all exterior doors on Operations and Maintenance Buildings. • Provide motion detectors on interior of Operations and Maintenance Buildings. • Provide IDS with capability of assigning unique staff identification numbers and logging time and individual staff input to IDS system. Provide ability to activate and inactivate unique staff IDs.	
5	Access Control System (ACS)	• An ACS at the gate to the non-public portions of the plant shall be comprised of an electrically operated vehicle gate, the gate shall be operated by	Fire Department access and keypad entry station shall be

		contactless badges, and hardwired gate opener switch at the reception desk. Exiting vehicles shall trigger the gate to open automatically. • Automatic Security Gates shall be equipped with pre-emptive equipment. This shall satisfy the following conditions: • During power loss, the device shall be capable of manual operation to unlock and open the gates. • Confirm device is suitable with local Fire Department.	available at the gate for entry.
6	Closed Circuit Television (CCTV)	• CCTV security cameras for main front gate access and site security purposes. • The system shall include weatherproof high-resolution IP or panoramic video cameras. • The video surveillance system shall provide recording capacity of 30 days. • The system shall have night vision capability and utilize video motion detection for alarm recording. Video motion detection events shall be recorded at full speed and camera resolution. • The video surveillance system shall be available through the SCADA network. • Provide video surveillance at critical points throughout the plant.	
7	Battery Backup & UPS	• All electronic security systems shall be powered from an UPS/generator supported power circuit(s) • IDS and ACS systems shall have power supplies with minimum of 8 hours of battery power backup • Video surveillance system shall be supported with UPS system with a minimum of 2-hour run time	
8	Supervisory Control and Data Acquisition (SCADA) Integration	• The SCADA system shall incorporate intrusion detection alarms from following electronic security systems: o Main Gate o Operations Building o Maintenance Building o Space Motion Detection	
9	Main Access Gate	Main gate to the plant shall be manually operated and locked with a padlock.	

		Coordinate manual access and entry with Emergency Services.	
10	Exterior Lighting	All exterior lighting shall be SCADA controllable (on-off times)	

Works Cited

(Wallace Group, May 2006): Sewer Collection System Master Plan Update, Wallace Group, May 2006.

(Carollo, September 2007) Wastewater Treatment Plant Facility Master Plan Report, Carollo Engineers, P.C., September 4, 2007.

(Carollo, August 2009) Morro Bay/Cayucos Sanitary District Wastewater Treatment Plant Facility Master Plan – Amendment No. 1, Carollo Engineers, P.C., August 6, 2009.

(MWH, July 2010) Wastewater Treatment Plant Upgrade Project Facility Master Plan Draft Amendment No. 2, MWH, July 2010.

(V&A, September 2017) 2017 Sewer Flow Monitoring and Inflow/Infiltration Study, V&A Consulting Engineers, September 2017.

(MKN, April 2017) Draft Master Water Reclamation Plan, Michael K. Nunley and Associates, Inc., April 2017.

(Black & Veatch, November 2016) Draft Water Reclamation Facility Master Plan Black & Veatch, November 9, 2016.

(Yeh, November 2017) Preliminary Geotechnical Baseline Report Water Reclamation Facility South Bay Boulevard Site APN 073-101-017 Morro Bay, California, Yeh and Associates, Inc., November 28, 2017.

Appendix A:
Lift Station and Offsite Piping Design Contract

CITY OF MORRO BAY

AGREEMENT FOR CONSULTANT SERVICES

THIS AGREEMENT is made, by and between, the City of Morro Bay, a municipal corporation ("City") and Water Works Engineers, LLC, an Arizona Limited Liability Company ("Consultant"). In consideration of the mutual covenants and conditions set forth herein the parties agree as follows:

1. TERM

This Agreement shall commence on November 15, 2017, and shall remain and continue in effect until tasks described herein are completed, but in no event later than March 30, 2022, unless sooner terminated pursuant to the provisions of this Agreement.

2. SERVICES

Consultant shall perform the tasks described and set forth in Exhibit A, attached hereto and incorporated herein as though set forth in full. Consultant shall complete the tasks according to the schedule of performance which is also set forth in Exhibit A.

3. PERFORMANCE

Consultant shall at all times faithfully, competently and to the best of their ability, experience, and talent, perform all tasks described herein. Consultant shall employ, at a minimum, generally accepted standards and practices utilized by persons engaged in providing similar services as are required of Consultant hereunder in meeting its obligations under this Agreement.

4. CITY MANAGEMENT

City's Public Works Director shall represent City in all matters pertaining to the administration of this Agreement, review and approval of all products submitted by Consultant, but not including the authority to enlarge the Tasks to Be Performed or change the compensation due to Consultant. City's City Manager shall be authorized to act on City's behalf and to execute all necessary documents which enlarge the Tasks to Be Performed or change Consultant's compensation, subject to Section 5 hereof.

5. PAYMENT

(a) City agrees to pay Consultant monthly, in accordance with the payment rates and terms and the schedule of payment as set forth in Exhibit A, attached hereto and incorporated herein by this reference as though set forth in full, and based upon actual time spent on the above tasks. That amount shall not exceed One Million, Three Hundred Fifty Three Thousand, Five

Hundred Seventy-Four Dollars and No Cents ($1,353,574.00) for the total term of the Agreement unless additional payment is approved as provided in this Agreement.

(b) Consultant shall not be compensated for any services rendered in connection with its performance of this Agreement which are in addition to those set forth herein, unless such additional services are authorized in advance and in writing by the City Manager. Consultant shall be compensated for any additional services in the amounts and in the manner as agreed to by City Manager and Consultant at the time City's written authorization is given to Consultant for the performance of said services. The City Manager may approve additional work not to exceed ten percent (10%) of the amount of the Agreement, but in no event shall such sum exceed One Hundred Thirty Five Thousand Three Hundred Fifty Seven Dollars and No Cents ($135,357). Any additional work in excess of this amount shall be approved by the City Council.

(c) Consultant will submit invoices monthly for actual services performed. Invoices shall be submitted on or about the first business day of each month, or as soon thereafter as practical, for services provided in the previous month. Payment shall be made within thirty (30) days after receipt of each invoice as to all non-disputed fees. If City disputes any of Consultant's fees, then it shall give written notice to Consultant within fifteen (15) days of receipt of an invoice of any disputed fees set forth on the invoice.

6. SUSPENSION OR TERMINATION OF AGREEMENT WITHOUT CAUSE

(a) City may at any time, for any reason, with or without cause, suspend or terminate this Agreement, or any portion hereof, by serving upon Consultant at least ten-days' (10-days') prior written notice. Upon receipt of said notice, Consultant shall immediately cease all work under this Agreement, unless the notice provides otherwise. If City suspends or terminates a portion of this Agreement, then such suspension or termination shall not make void or invalidate the remainder of this Agreement.

(b) In the event this Agreement is terminated pursuant to this Section, City shall pay to Consultant the actual value of the work performed up to the time of termination. Upon termination of the Agreement pursuant to this Section, Consultant will submit an invoice to City pursuant to Section 5.

7. DEFAULT OF CONSULTANT

(a) Consultant's failure to comply with the provisions of this Agreement shall constitute a default. In the event Consultant is in default for cause under the terms of this Agreement, City shall have no obligation or duty to continue compensating Consultant for any work performed after the date Consultant is notified of default and can terminate this Agreement immediately by written notice to Consultant. If such failure by Consultant to make progress in the performance for work hereunder arises out of causes beyond Consultant's control, and without fault or negligence of Consultant, then it shall not be considered a default.

(b) If the City Manager of his/her delegate determines that Consultant is in default in the performance of any of the terms or conditions of this Agreement, then he/she shall cause to be

served upon Consultant a written notice of the default. Consultant shall have ten (10) days after service upon it of said notice in which to cure the default by rendering a satisfactory performance. In the event that Consultant fails to cure its default within such period of time, City shall have the right, notwithstanding any other provision of this Agreement, to terminate this Agreement without further notice and without prejudice to any other remedy to which it may be entitled at law, in equity or under this Agreement.

8. OWNERSHIP OF DOCUMENTS

(a) Consultant shall maintain complete and accurate records with respect to sales, costs, expenses, receipts, and other such information required by City that relate to the performance of services under this Agreement. Consultant shall maintain adequate records of services provided in sufficient detail to permit an evaluation of services. All such records shall be maintained in accordance with generally accepted accounting principles and shall be clearly identified and readily accessible. Consultant shall provide free access to the representatives of City or its designees at reasonable times to such books and records; shall give City the right to examine and audit said books and records; shall permit City to make transcripts therefrom as necessary; and shall allow inspection of all work, data, documents, proceedings, and activities related to this Agreement. Such records, together with supporting documents, shall be maintained for a period of three (3) years after receipt of final payment.

(b) Upon completion of, and full payment by City for services performed pursuant to, this Agreement, all final work product such as documents, designs, drawings, maps, models, computer files, surveys, notes, and other documents prepared in the course of providing the services to be performed pursuant to this Agreement shall become the sole property of City and may be used, reused, or otherwise disposed of by City without the permission of Consultant. With respect to computer files, Consultant shall make available to City, as a service in addition to those set forth herein, at Consultant's office and upon reasonable written request by City, the necessary computer software and hardware for purposes of accessing, compiling, transferring, and printing computer files.

9. INDEMNIFICATION

(a) Indemnification for Professional Liability. When the law establishes a professional standard of care for Consultant's Services, to the fullest extent permitted by law, Consultant shall indemnify, protect, defend and hold harmless City and any and all of its officials, employees and agents ("Indemnified Parties") from and against any and all losses, liabilities, damages, costs and expenses, including reasonable attorney's fees and costs to the extent same are caused by any negligent act, error or omission of Consultant, its officers, agents, employees or subconsultants (or any entity or individual that Consultant shall bear the legal liability thereof) in the performance of professional services under this agreement. City agrees to hold harmless and indemnify Consultant from and against all claims, liabilities, losses, damages, and costs, including but not limited to attorney's fees, arising out of or in any way connected with the modification, misinterpretation, misuse or reuse by others of the computer files or any other document provided by Consultant under this Agreement.

(b) Indemnification for Other Than Professional Liability. Other than in the performance of professional services and to the full extent permitted by law, Consultant shall indemnify, defend and hold harmless City, and any and all of its employees, officials and agents from and against any liability (including liability for claims, suits, actions, arbitration proceedings, administrative proceedings, regulatory proceedings, losses, expenses or costs of any kind, whether actual, alleged or threatened, including attorneys' fees and costs, court costs, interest, defense costs, and expert witness fees), where the same arise out of, are a consequence of, or are in any way attributable to, in whole or in part, the performance of this Agreement by Consultant or by any individual or entity for which Consultant is legally liable, including but not limited to officers, agents, employees or subconsultants of Consultant.

(c) General Indemnification Provisions. Consultant agrees to obtain executed indemnity agreements with provisions identical to those set forth here in this section from each and every subconsultant or any other person or entity involved by, for, with or on behalf of Consultant in the performance of this agreement. In the event Consultant fails to obtain such indemnity obligations from others as required here, Consultant agrees to be fully responsible according to the terms of this section. Failure of City to monitor compliance with these requirements imposes no additional obligations on City and will in no way act as a waiver of any rights hereunder. This obligation to indemnify and defend City as set forth here is binding on the successors, assigns or heirs of Consultant and shall survive the termination of this agreement or this section.

10. INSURANCE

Consultant shall maintain prior to the beginning of and for the duration of this Agreement insurance coverage as specified in Exhibit B attached to and part of this agreement.

11. INDEPENDENT CONSULTANT

(a) Consultant is and shall at all times remain as to City a wholly independent Consultant. The personnel performing the services under this Agreement on behalf of Consultant shall at all times be under Consultant's exclusive direction and control. Neither City nor any of its officers, employees, or agents shall have control over the conduct of Consultant or any of Consultant's officers, employees, or agents, except as set forth in this Agreement. Consultant shall not at any time or in any manner represent that it or any of its officers, employees, or agents are in any manner officers, employees, or agents of City. Consultant shall not incur or have the power to incur any debt, obligation, or liability whatever against City, or bind City in any manner.

(b) No employee benefits shall be available to Consultant in connection with the performance of this Agreement. Except for the fees paid to Consultant as provided in the Agreement, City shall not pay salaries, wages, or other compensation to Consultant for performing services hereunder for City. City shall not be liable for compensation or indemnification to Consultant for injury or sickness arising out of performing services hereunder.

12. LEGAL RESPONSIBILITIES

Consultant shall keep itself informed of State and Federal laws and regulations which in any manner affect those employed by it or in any way affect the performance of its service pursuant to this Agreement. Consultant shall at all times observe and comply with applicable legal requirements in effect at the time the drawings and specifications are prepared. City, and its officers and employees, shall not be liable at law or in equity occasioned by failure of Consultant to comply with this Section.

13. UNDUE INFLUENCE

Consultant declares and warrants that no undue influence or pressure is used against or in concert with any officer or employee of City in connection with the award, terms or implementation of this Agreement, including any method of coercion, confidential financial arrangement, or financial inducement. No officer or employee of City will receive compensation, directly or indirectly, from Consultant, or from any officer, employee or agent of Consultant, in connection with the award of this Agreement or any work to be conducted as a result of this Agreement. Violation of this Section shall be a material breach of this Agreement entitling City to any and all remedies at law or inequity.

14. NO BENEFIT TO ARISE TO LOCAL EMPLOYEES

No member, officer, or employee of City, or their designees or agents, and no public official who exercises authority over or responsibilities with respect to the Project during his/her tenure or for one year thereafter, shall have any interest, direct or indirect, in any agreement or sub-agreement, or the proceeds thereof, for work to be performed in connection with the Project performed under this Agreement.

15. RELEASE OF INFORMATION/CONFLICTS OF INTEREST

(a) All information gained by Consultant in performance of this Agreement shall be considered confidential and shall not be released by Consultant without City's prior written authorization. Consultant, its officers, employees, agents, or subconsultants, shall not without written authorization from the City Manager or unless requested by the City Attorney, voluntarily provide declarations, letters of support, testimony at depositions, response to interrogatories, or other information concerning the work performed under this Agreement or relating to any project or property located within City. Response to a subpoena or court order shall not be considered "voluntary" provided Consultant gives City notice of such court order or subpoena.

(b) Consultant shall promptly notify City if Consultant, or any of its officers, employees, agents, or subconsultants are served with any summons, complaint, subpoena, notice of deposition, request for documents, interrogatories, request for admissions, or other discovery request, court order, or subpoena from any person or party regarding this Agreement and the work performed thereunder or with respect to any project or property located within City. City retains the right, but has no obligation, to represent Consultant or be present at any deposition, hearing, or similar proceeding. Consultant agrees to cooperate with City by providing the

opportunity to review any response to discovery requests provided by Consultant. However, City's right to review any such response does not imply or mean the right by City to control, direct, or rewrite said response.

16. NOTICES

Any notices which either party may desire to give to the other party under this Agreement must be in writing and may be given either by (i) personal service, (ii) delivery by a reputable document delivery service, such as but not limited to, Federal Express, which provides a receipt showing date and time of delivery, or (iii) mailing in the United States Mail, certified mail, postage prepaid, return receipt requested, addressed to the address of the party as set forth below or at any other address as that party may later designate by notice:

To City:	City of Morro Bay 595 Harbor Street Morro Bay, CA 93442 Attention: Robert S. Livick, PE/LS Public Works Director
To Consultant:	Water Works Engineering, LLC 1730 S. El Camino Real Suite 280 San Mateo, CA 94402 Attention: Michael J. Fisher, PE

17. ASSIGNMENT

Consultant shall not assign the performance of this Agreement, nor any part thereof, nor any monies due hereunder, without prior written consent of City.

18. LICENSES

At all times during the term of this Agreement, Consultant shall have in full force and effect, all licenses required of it by law for the performance of the services described in this Agreement.

19. GOVERNING LAW

City and Consultant understand and agree that the laws of the State of California shall govern the rights, obligations, duties, and liabilities of the parties to this Agreement and also govern the interpretation of this Agreement. Any litigation concerning this Agreement shall take place in the municipal, superior, or federal district court with jurisdiction over City.

20. ENTIRE AGREEMENT

This Agreement contains the entire understanding between the parties relating to the obligations of the parties described in this Agreement. All prior or contemporaneous agreements, understandings, representations, and statements, oral or written, are merged into this Agreement and shall be of no further force or effect. Each party is entering into this Agreement based solely upon the representations set forth herein and upon each party's own independent investigation of any and all facts such party deems material.

21. AUTHORITY TO EXECUTE THIS AGREEMENT

The person or persons executing this Agreement on behalf of Consultant warrants and represents he/she has the authority to execute this Agreement on behalf of Consultant and has the authority to bind Consultant to the performance of its obligations hereunder.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed the day and year first above written.

CITY OF MORRO BAY

By: _____
Scott Collins, City Manager

Attest:

_____
Dana Swanson, City Clerk

CONSULTANT (2 signatures required)

By: _____
(Signature)

SAMI KADER
(Typed Name)

Its: PRINCIPAL
(Title)

By: _____
(Signature)

MICHAEL J FISHER
(Typed Name)

Its: PRINCIPAL
(Title)

Approved As To Form:

Joseph W. Pannone by DMK
Joseph W. Pannone, City Attorney

Exhibit A

City of Morro Bay (CITY or CLIENT)
Consultant Services Agreement with
Water Works Engineers (CONSULTANT, ENGINEER, Water Works, or WWE)

Scope of Engineering Services for the Water Reclamation Facility (WRF) Lift Station and Offsite Pipelines

PROJECT DESCRIPTION

The project specifics are as follows:

Location	Morro Bay, CA
Facility Name	WRF Lift Station and Offsite Pipelines
Facility Type	Wastewater (WW) Pump Station and Raw WW and Treated Effluent Pipelines
Facility Components	• 0.5 to 7 MGD WW Pump Station with Sanks trench style self-cleaning wet well with separate electrical controls building with Radio SCADA communications • Electrical generator for backup power • ~14,500-lineal feet of raw wastewater forcemain from LS to WRF property line • ~14,500-lineal feet of treated effluent pipeline from WRF property line to ocean outfall connection structure (assumed to be on Atascadero Rd just west of the existing City WWTP) • WW gravity pipeline(s) from existing collection system to Pump Station • Trenchless crossing of California State Highway 1 (and potentially Morro Creek and Morro Bay Blvd & Quintana Rd. intersection) • Connection structure for effluent pipeline to existing ocean outfall
General Project Objectives	• Develop, Assess, Identify and Recommend: ○ Site and design criteria for WRF Lift Station ○ Alignment and design criteria for forcemain and effluent pipeline ○ Clearance considerations for future recycled water main that may be added in future (or for which design contract may be amended) • Complete final design of recommended lift station and pipelines with focus on cost effectiveness; long term quality and viability; and schedule compliance. ○ Incorporate City staff input into final design ○ Coordinate final design with WRF design and construction ○ Consider transition from existing lift station to future lift station in developing the contractor's coordination requirements for the contract documents • Provide field and office support for final design, including: ○ Survey ○ Geotechnical ○ Existing utility research and potholing ○ Easement identification, recommendations, and assistance (Property acquisition by other City resources) ○ Permitting and Environmental assistance (EIR by other City resources) • Deliver construction phase oversite to support successful implementation of design

ASSUMPTIONS

The following assumptions have been made in the development of this scope and fee. Additional Task Orders would be required to perform any of the work which is not listed in this scope or has been specifically identified as out of scope in the assumptions below:

1. Environmental Permitting assumptions: This project is covered under the WRF project specific Environmental Impact Report (EIR). ENGINEER will support CITY in limited areas of EIR development, however, no special studies or CEQA document preparation is included in this scope of work except as specifically delineated.
2. Special Use and Building Permitting assumptions: ENGINEER will develop plans and technical specifications in accordance with design criteria developed and delineated during preliminary and final design with input from City staff. 100% design submittal shall be used by City to acquire special use and/or building permits, as required by City and other 3rd party building officials and/or stakeholders. ENGINEER shall rely on City to identify and assist with scheduling a review meeting with the building and permitting officials to address 100% design submittal review comments (if any) from those officials. The cost of building permits will be paid for by City and all permits will be applied for with City as the applicant. If re-submittal for building department approval is required, Final Bid Documents shall be used for this purpose and shall address building review comments. Re-submittals to address new comments (if any) on Final Bid Documents shall be considered additional services.
3. Geotechnical, surveying and potholing assumptions: These services have been scoped in this project based on preliminary site and alignment alternatives. Should the preferred site and/or alignment require additional survey, field potholing and geotechnical investigations beyond those defined herein, those shall be completed as additional services.
4. Project Funding assumptions: City is handling all project funding. If a project funding source has specific contractual requirements, City shall inform ENGINEER and ENGINEER will address those requirements in the development of the design. ENGINEER shall assume funding will be provided by the State Revolving Fund and/or WIFIA programs. City also intends to pursue a United States Bureau of Reclamation WaterSmart grant.
5. Project Bid Packaging assumptions: The project will be packaged as one project (WRF LS and Pipelines). Splitting the project into multiple bid packages shall be considered additional services.
6. Engineering Services During Construction assumptions: The duration of construction and level of on-site Engineering Services During Construction specifically defined in the scope will be adequate for all parties (accommodating Contractor schedule, Regulatory Agency requirements, City requirements, etc.). Additional project duration or requirements for Services During Construction will require additional scope. This scope of services assumes that Construction Management Services (Quality Control, Inspection and documentation of construction, Contract Management, Negotiations and Payment of Change Orders, Contractor correspondence coordination, etc.) will be provided separately by City personnel, under a separate consultant services agreement, or as an additional service to this consultant services agreement.

SCOPE

The following services will be provided by CONSULTANT:

Task	Title
1	Project Management
2	Site Alternatives Evaluation
3	Easement Acquisition Support
4	Survey, Geotechnical Investigation, and Potholing
5	Concept Design Report
6	Construction Documents and Specifications
7	Permitting Support
8	Engineering and Services during Construction

Task 1: Project Management

Water Works Engineers will be responsible for providing project management and quality control for the services described herein. The following outline describes the services that will be provided under this task:

1. Project Communication and Control
   A. Coordination/documentation of key team activities & meetings, including agenda and meeting notes
   B. Coordination and consultation with appropriate regulatory agencies (Caltrans,
   C. Coordination and consultation with project stakeholders (City, WRFCAC, City Council, Caltrans, PG&E)
   D. Schedule maintenance
   E. Monthly communication of project progress and issues to City staff / WRF Program Manager
      - Summary of work accomplished each month
      - Description of current / future activities and schedule update for each task/sub-task
      - Identification of problem areas and corrective actions
      - Invoice showing total contract, invoice amounts, cumulative amounts and remaining budget, as well as the following:
        - Hours billed by individual Water Works staff member for the billing period, including dates.
        - Subconsultant invoices.
        - Receipts for direct costs.
      - Invoice shall be submitted within 90 days of work being performed, unless authorized by PM team or City in advance. It is understood that services provided by Water Works subconsultants will be billed as expeditiously as possible, but in some instances, may be delayed based on receipt of invoice for completed work. The City operates and manages budget based on their fiscal year, so an invoice that covers all ENGINEER's remaining expenses through the end of the City's fiscal year (June 30) will be required within 60 days of the end of the fiscal year.
   F. Availability to City staff for meetings, updates or to discuss concerns at <u>any time</u>
   G. Communication and file maintenance
      - Standardized electronic and hard copy file maintenance by entire WWE team
      - Water Works will promote communication and exchange of files, including use of City's Procore project management system.
        - City will provide Water Works access to Procore
2. Quality Assurance/Quality Control
   A. Assign QA/QC Manager for project – Sami Kader
   B. Develop and implement project specific work plan with the entire project team, including Water Works Engineers Quality Assurance/Quality Control Policy
   C. Ensure QA/QC procedures are being followed, recorded and reported to the City at each step in the design process
3. Facilitation of progress / coordination meeting with City staff and WRF Program Manager. Drafts of all major deliverables will be reviewed with the CLIENT at Workshops. Following the Workshop, comments from the CLIENT will be addressed and the document made FINAL and delivered to CLIENT.
   A. Kick-off Meeting
   B. Alternatives Site Analysis Workshop (coordinated with pertinent Task 2 workshops)
   C. Route Study / Lift Station Site Selection Review Workshop (coordinated with Task 2 workshops)
   D. Design Confirmation Meeting (coordinated with pertinent Task 2 workshops)
   E. Concept Design Report Workshop
   F. 60% Design Submittal Review Workshop
   G. 90% Design Review Workshop
4. Presentation to Public Entities
   ENGINEER will submit draft presentation materials to City staff / Program Manager one week prior to presentation date. Mutually agreed upon revisions will be incorporated and final documents produced.
   A. WRFCAC (Qty. 2)
   B. City Council (Qty. 2)
   C. City Planning Commission (LS architecture) (Qty. 2)

Task 2: Site Alternatives Evaluation

WWE will conduct a series of focused, topic-specific workshops in the development of the Site Alternatives Assessment. These workshops will not have specific deliverables, but are intended to be information gathering and detailed discussion meetings regarding each topic. At the City's option, several workshop topics can be combined into a single workshop. However, breaking up these topics is our proposed approach to keep workshops relatively short and make best use of time. The proposed workshops are as follows:

1. Workshop 1: Site Alternatives, Pipeline Routes and Construction Methodology Review
   A. WRF LS Sites Confirmation
      i. WRF MP Site 1A
      ii. WRF MP Site 5A
   B. Pipeline Route Alternatives Confirmation
      i. WRF MP "west" Alignment
      ii. Modified "west" alignment along Embarcadero to by-pass Quintana / Morro Bay Blvd
2. Workshop 2: Hydraulics, WRF Master Plan Design Criteria Review and Modifications
   A. Detailed review of flow analyses from the WRF MP to confirm Peak Hour Flow and Peak Day Flow to ensure "feasible" alternatives are vetted and potential savings identified and realized in design.
   B. Wetwell Design, Pump Type and Quantity (3+1 same size or 2+1 Wet & 1+1 Dry or other arrangements as deemed appropriate by ENGINEER and City)
      i. Example 3D "Rotators" of similar station layouts
   C. Pipeline Design, Size and Quantity (single versus redundant / pressurized & gravity segments)
3. Workshop 3: Desktop Geotechnical Evaluation and Trenchless Feasibility, Pipeline Route Fatal Flaws
4. Workshop 4: Environmental Constraints and EIR Support Review and Confirmation
5. Workshop 5: Pipeline Route Analysis
   A. Discussion of pipeline route constraints:
      i. Accessibility / O&M
      ii. Constructability / Traffic Impacts
      iii. Construction Method
      iv. Environmental / Permitting
      v. Utility Coordination
      vi. Right-of-Way / Easement / Encroachment
      vii. Geotechnical
      viii. Key stakeholder coordination
      ix. Other identified constraints
   B. Project Location (Map of project location and key areas of concern)
   C. Project Hydraulics (System design flows, peaking factors, dry weather versus wet weather, cleaning velocities, hydraulic profile, maximizing capacity versus minimizing depth, etc.);
   D. Pipeline Planning (Connections/transition between existing and new pipe segments, alignment, pipe materials, trenchless versus traditional construction – with emphasis on congested areas, transportation crossings, and deep segments, etc.);
   E. Construction standards and project delivery (review City standards and if deemed necessary possible modifications required, etc.);
   F. Schedule confirmation (confirm critical path items, Environmental processing, encroachment permit processing, Right-of-Way procurement, etc.);
   G. Confirm stakeholders (City, gas pipe operators, Caltrans, etc.) design requirements, discuss key areas of concern, and requirements of specific areas (bike path behind power plant, creek, roundabout, Hwy 1, etc.);
   H. Analysis Methodology and Results
      i. "Hard" Construction Costs (25% contingency level)
      ii. "Soft" Constraint Costs
6. Workshop 6: Pump Selections Discussion and General Mechanical Layout
   A. Updated DRAFT 3D "Rotators" of station layouts

7. Workshop 7: Control Building Architectural, Odor Control, Back-Up Power, Aesthetics
   A. Draft visual simulations of building produced and delivered at this workshop
   B. Final Draft visual simulation of building will be prepared under Task 5 in Design Concept Report.
   C. FINAL visual simulation of building will be based on Final Design and produced under Task 6.
8. Workshop 8: Operations Planning (Bypass System, Pump and Electrical System Redundancy, Pigging, etc.)
9. Workshop 9: Electrical Systems, Local Controls and SCADA
10. Workshop 10: Construction Sequencing

Workshop presentations shall be a succinct, clear, and concise with alternatives and resultant design criteria presented as PowerPoint slides to the City at the Workshop. Water Works will field and address City questions and comments during the workshop. Discussion and decisions made at the Workshop(s) will serve several key functions as follows:

1. Identify all engineering issues and constraints and recommended resolutions;
2. Provide detailed guidance for effective and efficient execution of preliminary and final design;
3. Illustrate tie-in requirements and expectations so City can confirm;
4. Calculate cost estimations for each alternative (including both "hard" construction costs and "soft" non-construction constraint costs);
5. Coordinate environmental constraints and requirements into site assessment and route selection;
6. Confirm field studies and analysis included in scope of services is sufficient to provide design criteria for Final Design of preferred lift station and pipeline alternatives; and
7. Provide a detailed guidance on any permit, encroachment, right-of-way, easement requirements.

The resulting information gathered from the workshops, supported with select field investigations and office evaluations (Tasks 3 & 4) will be used to produce draft and final Concept Design Report (Task 5).

Task 2 Deliverables:

- ✓ Workshop PowerPoint (or similar electronic deliverable), workshop summary notes and decision log (15 copies of final work products and PDF electronic copy)

Task 3: Easement Acquisition Support

WWE will provide property rights procurement support for the Project. For the CLIENT to complete the proposed sewer project permanent easement (PE), temporary construction easement (TCE), and access rights (right of entry, ROE) must be acquired from several separate parcels. Water Works and our survey Subconsultant, Praxis Consolidated International, Inc., will assist with easement and property rights research; preparation of schematics, maps and descriptions necessary for the City's acquisition agent to complete notice, appraisal, negotiation and easement procurement.

1. Preliminary Title Report(s)
   Praxis Consolidated International, Inc. will obtain preliminary title reports as soon possible for the following assessor parcels to identify existing easements, leases, and other encumbrances that may affect the alignment of the pipeline. Most the proposed pipeline route(s) appear to be in existing public road right of way. Small portions of the proposed lift station and pipeline route will affect about eight parcels. Praxis will obtain Preliminary Title Reports (PTR) from a local title company that will cover the affected parcels. Review PTR to confirm ownership information and plot exception items to evaluate possible impact on design and right of way acquisition. The intent of this work is to identify potential significant delays related to easement procurement (potentially "fatal flows") for final design. The WRF MP "west" route assumes the pipeline(s) will follow a bike path after crossing the creek near the City ballfields. Preliminary analysis indicates the underlying property is owned by the power plant company and City ownership of an existing easement or other agreement for the bike path may be key to the feasibility of this alignment and associated construction cost and timeline.
   i. 066-331-040
   ii. 066-331-036

iii. 068-411-002
iv. 068-411-007
v. 068-411-017
vi. 068-412-001
vii. 068-412-010
viii. 073-100-017

The remaining segments of the proposed "west" pipeline appears to fall within street right of ways. If that changes (or if the alternate Embarcadero alignment does not have similar characteristics), we recommend obtaining preliminary title report for any other parcels affected by an alignment change. Eight PTRs at an assumed cost of $750/PTR are included in this scope of services and fee.

2. Plat and Legal Description(s)
   Praxis Consolidated International, Inc. will use proposed right of way from design team to calculate permanent and temporary easements. Prepare proposed right of way and appraisal maps. Coordinate with City during appraisal and acquisition process. Prepare legal descriptions and plats for each negotiated permanent and temporary easement or acquisition. ENGINEER has included preparation of up to nine legal descriptions with map exhibits.

Task 3 Deliverables:

- ✓ PTRs (scanned electronic copies)
- ✓ Plat and Legal Description (PDF electronic copies of Draft, 1 hard copy of FINAL signed and wet stamped and PDF electronic copy)

Task 4: Survey, Geotechnical Investigation, and Potholing

WWE teaming partners will provide the requested field studies in support of preliminary and final design.

1. Topographical Survey and Base Mapping for Design – Praxis Consolidated International, Inc. will complete topographic mapping utilizing aerial mapping augmented by ground survey and research. The area to be mapped will be the pipeline corridor from the existing WWTP area to the "South Bay Boulevard", as well as the selected WRF Lift Station Site. The pipeline reach will include a strip approximately between edges of existing right of way (from property boundary, fence or other inaccessible or immovable feature to similar limit on alternate side) along the proposed route.
   A. Aerial Mapping
      Services will be executed using softcopy digital stereo plotters. The mapping scale will be 1"=40' with 1' CI. This job will consist of approx. 2.97 miles 150' wide and developed in an AutoCAD (.dwg) format. (Note that while mapping scale will be 1"=40', pipeline plan and profile design sheets will be produced at a more refined scale, likely 1"=20', to promote ease of viewing existing utilities and proposed improvements in tight utility corridors along the pipe alignment.)
   B. Ground Survey
      Services will include development of a control network survey that will serve as the basis of mapping surveys and future construction layout and as-built surveys. Notification of affected landowners and arrange access for ground survey. Set ground control and coordinate with aerial mapping subconsultant. Perform supplemental field surveys to obtain additional detail as directed by WWE. Work will include "dipping" of storm drainage and culverts crossing of roads to obtain inverts.
   C. Existing Utility Research and Subsurface Utility Engineering
      Services will include coordination with existing utility providers to obtain mapping necessary to display these utilities on base mapping. ENGINEER team will request record drawings and schematics from City, utilities, locate paint markings by City and other utilities if available, request record drawings and schematics from Caltrans, SLO County, and other identified utility providers near the project work. ENGINEER team will identify utility providers in the project area and prepare utility information request letters on City letterhead. Follow up and organize maps and atlases received and post for use by the project team. Perform field survey of visible surface utility features, including cover, paint, patches and signs. Open sewer and storm manholes and inlets to measure invert depths. Compute alignments of subsurface utilities from record maps and atlases. Subsurface alignments will be

oriented and adjusted to the topographic mapping using the surveyed locations of surface features where possible. (Quality Level C&D) Consultant team will perform field survey as deemed necessary by ENGINEER after utility location consultant uses underground locating techniques, or performs air vacuum potholing. Adjust subsurface mapping with information. (Quality Level B & A)

D. Right of Way Mapping
Services will include research record maps, right of way maps, and recorded deeds. Perform field survey to search for existing monuments and obtain measurements. Analyze measurements, maps and found monuments, and determine location of existing public street right of way and parcel lines along pipeline route and lift station site. ENGINEER team will prepare Record of Survey map to document land net and right of way survey as required by PLS Act. These services will be provided in two phases. Phase 1 will include initial records research and mapping analysis in support of pipeline alignment feasibility assessment. Phase 2 will include record deed research and Record of Survey map to document land net and right of way survey in support of Design Concept Report and Final Desing of selected alignment.

E. Biological & Cultural Resource Mapping
ENGINEER team will add existing and readily available biological and cultural resource features (provided in AutoCAD compatible electronic format) from EIR consultants to project mapping as deemed necessary by ENGINEER and City. An allowance has been included in the scope of services and fee under Task 7 specific to additional mapping and work related to environmental requirements that may be requested by City. See Task 7 for additional details.

2. Geotechnical Investigation – Yeh and Associates, Inc will perform a program of data review, field exploration, laboratory testing and engineering analysis and prepare a Preliminary Geotechnical Report and a Geotechnical Report for the design of the new lift station and pipelines. Services will be provided in two phases. Phase 1 - Preliminary Geotechnical Services to support lift station site selection and preferred pipeline route, and Phase 2 - Design Geotechnical Services for design of preferred improvements.
   A. Phase 1 - Preliminary Geotechnical Services
      i. Initiation and Review Existing Data. Consult with the design team and City to coordinate project initiation, collect project information and existing geotechnical data available from the site, and to request a map showing the layout of the improvements and pipeline alignment be provided for use in planning the field exploration program. Collect available geologic and geotechnical data from published maps; reports for the existing wastewater treatment facility; Caltrans Log of Test Borings for the Highway 1 bridges over Morro Creek, the Main Street Undercrossing at Highway 1, the South Bay Boulevard Overcrossing at Highway 1; and previous geotechnical studies prepared for the City for public improvements along the alignment if available. Update and submit a Field Exploration Plan for the project showing the locations of planned field explorations and phasing of exploration.
      ii. Coordination, Health and Safety, and Permits. Coordinate the locations of field exploration with the design team and City relative to access and existing buried utilities or structures. Mark the locations along the alignment and contact Underground Services Alert (USA) to notify utility companies. Prepare a health and safety plan for the field work to be performed by Yeh. Procure an encroachment permit from the City of Morro Bay for work in city streets. Coordinate field exploration with the subcontractors and procure well permits from the County of San Luis Obispo for qualifying borings.
         a. Borings for the Highway 1 pipeline crossing will be drilled outside of the Caltrans right-of-way and no encroachment permit with that agency will be required. We assume that if any environmental studies, reports or monitors are required for this work that those will be provided by others. Yeh will not be responsible for locating utilities or buried structures or damages resulting from encountering unmarked or improperly marked utilities for the project.
      iii. Field Exploration Program. Yeh will provide a 3-day drilling program to explore the subsurface conditions at the lift station site, Morro Creek Crossing, Quintana Road/Morro Bay Boulevard

Crossing, and Highway 1 Crossing. During this period, we expect to drill one (1) boring for the lift station and three (3) borings (one each) at the trenchless crossings to depths of 40 to 60 feet. Traffic control will be provided by a subcontractor (Associated Traffic Safety of Atascadero, California) and will consist of lane closures with flagging for boring locations. The multi-use path should be closed during drilling operations because of the restricted width of the path relative to the rig.

a. Drilling will be subcontracted to S/G Drilling Company of Lompoc, California. The borings for the pipeline and lift station will be drilled using hollow-stem augers and supplemented with drilling mud when needed. Borings will typically be sampled at 5-foot intervals by driving 2-inch or 3-inch split spoon samplers using Standard Penetration Test protocols or by pushing thin-walled (Shelby) tubes. The types and depths of the samples may be varied depending on subsurface conditions. Bulk samples will be collected from auger flights during drilling. Pavement sections will be measured and documented where borings are drilled in pavement. Excess spoils and drill fluid from the drilling will be drummed and Yeh will arrange for disposal of drummed material as needed. The cost for required testing and disposal of drums has been included.
b. Borings for the preliminary phase of work will be completed as standpipe piezometers (2-inch diameter PVC) equipped with flush mount or elevated locking well-heads as needed. Yeh will obtain field measurements of groundwater depths in the piezometers using a hand-held well-sounder on a monthly basis for 12 months. Data will be presented as updated in monthly memorandums and in the design Geotechnical Report.
c. Perform laboratory tests on selected samples collected from the drilling. Tests for classification, strength, corrosion, consolidation, and compaction will be performed on selected samples recovered from the borings. The types and numbers of tests will be selected based on the results of the field exploration program.

iv. Geotechnical Constraints Report. Yeh will prepare a Preliminary Geotechnical Report (Geotechnical Constraints Report / Desktop Study) for the design of the project. The report will describe the project understanding, existing site conditions, work performed, and subsurface conditions encountered. The report will include the data collected during the field and laboratory test program including boring logs, laboratory test results, and graphics showing the boring locations. The report will be prepared and issued in portable document file (PDF) format to the City and design team. The report will provide conclusions and recommendations regarding:

a. Geologic setting;
b. Soil and groundwater conditions encountered;
c. Potential for the pipeline alignment to be impacted by geologic hazards such as from seismic shaking, faulting, liquefaction, coastal flooding or tsunamis, or landsliding based on review of published data and the work performed;
d. Subsurface conditions and suitability of using jack and bore, HDD, or microtunneling to complete the installation;
e. Ground conditions relative to groundwater, hard rock, presence of cobbles or boulders, heading stability, caving or running ground;
f. Preliminary gassy estimation per tunneling guidelines;
g. Results of preliminary seismic hazard analyses;
h. Estimated liquefaction potential and seismic settlement based on the results of the field exploration program and the need to include any special geotechnical considerations or mitigation in the design of the project;
i. Suitable foundation type(s) for the subsurface conditions encountered; and
j. Construction considerations regarding excavation characteristics of soil encountered, temporary slopes and shoring, and construction dewatering.

B. Phase 2 – Design Geotechnical Services

Once the final LS site layout and preferred pipeline route for the project has been determined, Yeh will prepare a design-level Geotechnical Report for the design of the project. The scope of the design-level work should be reviewed at that time to evaluate of the scope of the proposed geotechnical services is sufficient to address the proposed improvements, any special mitigations that should be included in the project based on the results of the preliminary study, or changes that may occur to the project.

i. Initiation and Review Existing Data. Consult with the design team and City to update project alignment and design. Update and submit a Field Exploration Plan for the project showing the locations of planned field explorations for Phase II.

ii. Coordination, Health and Safety, and Permits. Coordinate the locations of field exploration with the design team and City relative to access and existing buried utilities or structures. Mark the locations along the alignment and contact Underground Services Alert (USA) to notify utility companies. Prepare a health and safety plan for the field work to be performed by Yeh. Procure an encroachment permit from the City of Morro Bay for work in city streets. Coordinate field exploration with the subcontractors and procure well permits from the County of San Luis Obispo for qualifying borings.

   a. We assume that if any environmental studies, reports or monitors are required for this work that those will be provided by others. Yeh will not be responsible for locating utilities or buried structures or damages resulting from encountering unmarked or improperly marked utilities for the project.

iii. Field Exploration Program. Yeh will provide a 3-day drilling program to explore the subsurface conditions along pipeline alignment not investigated in Phase I. The field exploration program will consist of drilling and sampling at no more than approximately 1,500-foot intervals along the pipeline alignment. During this period, we expect to drill twelve (12) borings along the offsite pipeline route to depths ranging from 20 to 40 feet. Traffic control will be provided by a subcontractor (Associated Traffic Safety of Atascadero, California) and will consist of lane closures with flagging for boring locations along Main Street, Quintana Road and on Atascadero Road. The multi-use path should be closed during drilling operations because of the restricted width of the path relative to the rig.

   a. Drilling will be subcontracted to S/G Drilling Company of Lompoc, California. The borings for the pipeline will be drilled using hollow-stem augers and supplemented with drilling mud when needed. Borings will typically be sampled at 5-foot intervals by driving 2-inch or 3-inch split spoon samplers using Standard Penetration Test protocols or by pushing thin-walled (Shelby) tubes. The types and depths of the samples may be varied depending on subsurface conditions. Bulk samples will be collected from auger flights during drilling. Pavement sections will be measured and documented where borings are drilled in pavement. Coring of boring locations will also be provided for borings on Quintana Road south of the intersection of Morro Bay Boulevard where concrete is known to be under the asphalt concrete pavement. Borings will be backfilled with bentonite cement grout, cement slurry and/or approved native fill in accordance with permit requirements. Borings drilled in roadway areas will be capped with rapid setting quickcrete. Excess spoils and drill fluid from the drilling will be drummed and Yeh will arrange for disposal of drummed material as needed. The cost for required testing and disposal of drums has been included.

   b. Perform laboratory tests on selected samples collected from the drilling. Tests for classification, strength, corrosion, consolidation, and compaction will be performed on selected samples recovered from the borings. The types and numbers of tests will be selected based on the results of the field exploration program.

iv. Evaluation and Draft – Geotechnical Report. Yeh will prepare a Geotechnical Report for the design of the project. The report will describe the project understanding, existing site conditions,

work performed, and subsurface conditions encountered. The report will include findings presented in the Preliminary Geotechnical Report, the data collected during the field and laboratory test program in both phases of work including boring logs, laboratory test results, and graphics showing the boring locations. Interpreted subsurface profiles will be prepared summarizing boring information along the pipeline route and at the trenchless installations. A draft of the report will be prepared and issued in portable document file (PDF) format for review by the City and design team. The report will provide conclusions and recommendations regarding:

a. Geologic setting;
b. Soil and groundwater conditions encountered;
c. Groundwater elevations from standpipe piezometers;

The design of the new pipelines:

a. Foundation support for the pipe and subexcavation of the trench bottom, if needed;
b. Material and compaction requirements for bedding, pipe zone and trench backfill;
c. Suitability of the materials encountered in the borings for reuse as fill or backfill material;
d. Pipe buoyancy considerations relative to groundwater, flooding and liquefaction, if needed;
e. Typical trench detail for use with City standards;
f. Existing pavement thicknesses encountered and pavement structural section(s) for trench patching;
g. Backfill loading on underground conduits;
h. Soil moduli (E') for estimating pipe deflection;
i. Passive resistance, Ko and pipe-backfill friction to resist thrust along the pipe and for sizing thrust blocks, if needed;
j. Corrosion test data; and
k. Construction considerations regarding excavation characteristics of soil and rock encountered, temporary excavations, shoring requirements, and groundwater.

The design of trenchless pipe installations at Morro Creek, Quintana Road/Morro Bay Boulevard Roundabout, and Highway 1:

- Subsurface conditions and suitability of using jack and bore, HDD, or microtunneling to complete the installation;
- Ground conditions relative to groundwater, hard rock, presence of cobbles or boulder, heading stability, caving or running ground;
- Preliminary gassy estimation per tunneling guidelines;
- Jacking or thrust resistance for launching the pipe;
- Monitoring requirements for settlement or heave; and
- Frac-out potential and response planning.

Recommendations for design of the lift station and control building:

- Seismic data for use with the California Building Code;
- Mitigation of liquefaction using seismic settlement considerations, deepened foundations, pile support, or compaction grouting, if needed;
- Grading and site preparation for surface structures (generator pad, odor control pad, and control building);
- Stabilization and foundation preparation for the lift station considering depth of excavation, groundwater and subgrade conditions encountered;
- Material and compaction requirements for backfill around the lift station;
- Resistance to buoyancy forces associated with groundwater or flooding;
- Shallow foundation design (allowable bearing resistance, estimated total and differential settlements considering static and seismic loads, and minimum footing embedment and widths);

- Mat foundation design (allowable bearing resistance and subgrade modulus (spring constant) from settlement analyses);
- Expansive soil considerations;
- Resistance to lateral loads from friction and passive resistance;
- Lateral earth pressures for buried structures;
- Downdrag due to seismic settlement on buried structures, if needed;
- Construction considerations regarding excavation characteristics of soil encountered, temporary slopes and shoring, and construction dewatering.

v. Final - Geotechnical Report. Prepare and issue the final Geotechnical Report incorporating comments and input from the design team. This scope of work assumes that the final report will not involve addressing new alignments, changes in the project or additional field exploration. One PDF and one (1) hard copy of the final report will be submitted unless otherwise requested.

vi. Plan and Specification Review. Provide consultation and review project plans and specifications to confirm the geotechnical recommendations have been incorporated into the construction documents. Provide comments via email or memorandum, and review the revised plans to confirm the comments have been addressed. Issue a letter confirming that the construction plans have been prepared in general accordance with the Geotechnical Report.

3. Potholing - Based on previously completed tasks, ENGINEER will identify select utility locations where the proposed pipe improvements are near one another and more precise utility location data is required to avoid or mitigate conflict. ENGINEER will communicate these locations to CLIENT and confirm that expenditure of funds to locate utility is consistent with Client's desire to mitigate utility conflict risk on this project. Water Works utility potholing subconsultant, EXARO Technologies Corporation or other local utility locating firm as deemed appropriate by ENGINEER at time of work, will complete vacuum excavation to confirm underground utility location and depth. For budgeting purposes, our team has included three (3) days of vacuum excavation in the budget, where typical production is 4-8 pothole locations per day.

Task 4 Deliverables:

- ✓ Survey (AutoCAD electronic files incorporated into and delivered with FINAL Design)
- ✓ Geotechnical Report(s) (PDF electronic copies of Draft, 1 hard copy of FINAL signed and wet stamped and PDF electronic copy)

Task 5: Concept Design Report

The resulting information gathered from the workshops, field investigations and office analysis will be used as the basis for the Concept Design Report, which shall include, at a minimum, the following:

1. Description of existing facilities, proposed new facility alternatives and the selected improvements;
    a. Lift Station Site Alternatives and Selection Summary, including copies and/or reference to pertinent Task 2 workshop materials, meeting notes and decision logs.
    b. Pipeline Route Study and Preferred Alignment Selection Summary, including copies and/or reference to pertinent Task 2 workshop materials, meeting notes and decision logs.
2. Design criteria;
3. Hydraulic analysis and pump schematic;
4. Electrical, controls, instrumentation, SCADA, HVAC, and power supply / backup power details;
5. Flood protection
6. Pipeline leak detection
7. Site layout considerations including vactor truck access
8. Construction sequencing plan;
9. Schedule;

10. Cost opinion (with design and construction contingencies)
11. Major equipment cut sheets and catalog cuts; and
12. Summary of all field investigations (including survey, Geotech and potholing).

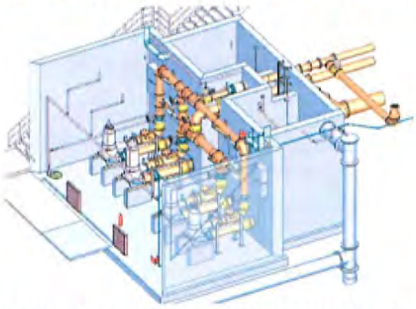
Task 5 Deliverables:

- ✓ WRF Lift Station and Offsite Pipelines Concept Design Report (15 hard copies, Draft and Final, 1 hard copy of FINAL signed and wet stamped and PDF electronic copy)

Task 6: Construction Documents and Specifications

WWE will prepare contract documents (improvement plans, technical specifications and cost estimates) in three submittals: 60%, 90% and 100% (Final Bid Documents). The Concept Design Report will serve as the foundation for detailed design and the effort put into producing a very high quality and detailed preliminary design will pay off exponentially in detailed design execution. Prior to each submittal, the work product will be reviewed and revised through Water Works QA/QC process. Submittal of the 60% and 90% review documents will occur at Project Review Workshops with the entire project team. The submittal will be presented to City staff to familiarize the group with the information submitted and the design thought process behind the work. Following the Project Review Workshop, City staff will have a 2-week review period to provide any additional comments which were not brought forward in the Project Review Workshop. In our experience, this kind of active review of submittal documents more fully engages the entire project team in the design process.

60% Improvement Plans and Technical Specifications



3-Dimensional CADD Modeling - WWE will perform all detailed design using 3-dimensional CADD tools. This is our standard practice and leads to better coordination, integrated cross-checking and clearer contract documents. The 3-dimensional CADD models also function as an invaluable communications tool, especially at the 60% design stage. At this stage, all the facilities will be completely modeled. Water Works Engineers design staff will present the model to City staff so that staff can more easily and thoroughly visualize how the finished facilities will look and function. This approach to the 60% submittal allows for a clearer understanding of facility geometry, access and clearance issues, and overall system functionality. The 3-dimensional design model is provided in addition to the standard drawings and specifications for the 60% deliverable (the 3-dimensional design model is used to create the plans and sections presented in the 60% design drawings).

90% Improvement Plans and Technical Specifications

In general, the 90% design submittal will be a complete project package, with all design drawings, details and specifications completed. The period between 90% and 100% will solely be dedicated to minor inter-disciplinary coordination and final QA/QC checking of all documents. In the 90% submittal, we incorporate both 2-dimensional plan and section drawings with 3-dimensional isometrics to clearly show how complex piping systems are to be constructed. This provides for clear drawings and reduced risk on the bidding contractors' part. The 90% design will be reviewed the City and each review comment that was received during the design process and how it was addressed will be discussed to ensure that all comments have been recognized and addressed. Updated cost opinion will be provided.

100% Design and Bid Documents

The 100% Bid-Ready Design Documents Submittal incorporates comments provided by the CLIENT at the 90% design stage and/or QA/QC comments generated by WWE's QA/QC review team. The result is clear, complete, cross-checked bid-ready design documents. The City will complete one final review of the 100% set to confirm compliance with all permitting and other final coordination items, and ENGINEER will make minimal final revisions and produce a Final set of Bid Documents.

The following is a preliminary technical specification list and sheet count for the anticipated improvements.

Technical Specifications:

SUMMARY OF WORK
SPECIAL PROJECT CONSTRAINTS
MEASUREMENT AND PAYMENT
PROJECT MEETINGS
PROGRESS SCHEDULE
SUBMITTAL PROCEDURES
QUALITY CONTROL
REFERENCE STANDARDS AND ABBREVIATIONS
TEMPORARY CONSTRUCTION FACILITIES AND UTILITIES
MOBILIZATION
GENERAL PRODUCT REQUIREMENTS
OPERATIONAL COMPLETION AND PROJECT CLOSEOUT
CLEANING
SITE PREPARATION
EARTHWORK
PIPE BORE AND JACK REQUIREMENTS
RIPRAP
ASPHALT CONCRETE PAVEMENT
FABRICATED STEEL GATES AND OPERATORS
HYDROSEEDING
CONCRETE FORMWORK
CONCRETE REINFORCING
CONCRETE JOINTS
CAST-IN-PLACE CONCRETE
PRECAST CONCRETE
GROUT
CONCRETE UNIT MASONRY
ANCHORS, INSERTS, AND DOWELS
MISCELLANEOUS METALS
ALUMINUM HANDRAILS AND RAILINGS
GRATING AND CHECKERED PLATE
ROUGH CARPENTRY
PLASTIC LINER FOR CONCRETE PIPE AND STRUCTURES
CEMENTITIOUS WATERPROOFING
BUILDING INSULATION
CONCRETE ROOF TILE
METAL FLASHING, GUTTERS, DOWNSPOUTS AND OTHER ROOFING SPECIALTIES
JOINT SEALANTS
METAL DOORS
ACCESS HATCHES
DOOR HARDWARE
GYPSUM WALLBOARD
CONCRETE COATINGS FOR WASTEWATER STRUCTURES
PAINTING
IDENTIFICATION DEVICES
SAFETY EQUIPMENT
FABRICATED SLIDE GATE
SUBMERSIBLE SEWAGE PUMPS
RAW SEWAGE GRINDER
MISCELLANEOUS FURNISHINGS
ODOR CONTROL UNIT
PIPING SUPPORT SYSTEMS
PIPING INSULATION
PIPE AND FITTINGS
PIPE SCHEDULE
PIPING SYSTEM DATA SHEET – COPPER PIPE
PIPING SYSTEM DATA SHEET – DUCTILE IRON PIPE
PIPING SYSTEM DATA SHEET – FUSIBLE POLYVINYL CHLORIDE PIPE
PIPING SYSTEM DATA SHEET – GALVANIZED STEEL PIPE
PIPING SYSTEM DATA SHEET – FUSIBLE HIGH DENSITY POLYETHYLENE PIPE
PIPING SYSTEM DATA SHEET – HIGH DENSITY POLYETHYLENE DRAINAGE PIPE
PIPING SYSTEM DATA SHEET – SOLVENT WELDED POLYVINYL CHLORIDE PIPE
PIPING SYSTEM DATA SHEET – POLYVINYL CHLORIDE DRAIN, WASTE AND VENT PIPE
PVC SEWER PIPE
PIPING SYSTEM DATA SHEET – REINFORCED CONCRETE PRESSURE PIPE
PIPING SPECIALTIES
VALVES AND OPERATORS
VALVE SCHEDULE
PLUMBING FIXTURES
HEATING, VENTILATION AND AIR CONDITIONING EQUIPMENT
DUCTWORK AND ACCESSORIES
PRESSURE TESTING OF PIPING SYSTEMS
ELECTRICAL GENERAL
CONDUIT, BOXES AND GROUNDING
WIRE, FUSES AND TERMINAL BOXES
ENGINE GENERATOR
AUTOMATIC TRANSFER SWITCH
LOW VOLTAGE SWITCHBOARD
PANELBOARD AND POWER TRANSFORMER
VARIABLE FREQUENCY DRIVE
FACTORY AND FIELD TESTING
TEST FORMS
CONTROL PANEL
PLC & OI HARDWARE
INSTRUMENTATION

General Sheets (qty 12)
COVER SHEET, VICINITY AND LOCATION MAPS
INDEX TO DRAWINGS
ABBREVIATIONS
GENERAL DESIGNATIONS
CIVIL LEGEND
ARCHITECTURAL LEGEND AND MATERIAL SYMBOLS
STRUCTURAL LEGEND ABBREVIATIONS AND NOTES
STRUCTURAL NOTES
STRUCTURAL NOTES
STRUCTURAL SPECIAL INSPECTIONS TABLES
MECHANICAL LEGEND
BUILDING SERVICES LEGEND
GENERAL NOTES
PROCESS FLOW DIAGRAM

Civil / Yard Piping (Qty. 24-38)
OVERALL PLAN
DEMOLITION PLAN
TREE REMOVAL AND PRESERVATION PLAN
PUMP STATION SITE PLAN
PUMP STATION SECTIONS
PLAN AND PROFILE (14-28 sheets)
BORE AND JACK DETAIL (2 Sheets)
HDD DETAIL
YARD PIPING
EMERGENCY STORAGE DETAIL

Structural / Mechanical (Qty. 15)
LIFT STATION RENDERING
LIFT STATION TOP PLAN- STRUCTURAL
LIFT STATION LOWER PLAN AND SECTION-STRUCTURAL
LIFT STATION SECTIONS - STRUCTURAL (5 sheets)
LIFT STATION TOP PLAN- MECHANICAL
LIFT STATION LOWER PLAN AND SECTION-MECHANICAL
LIFT STATION SECTIONS - MECHANICAL (5 sheets)

Electrical/Instrumentation (Qty. 18)
PROCESS AND INSTRUMENTATION DIAGRAM
FLOOR AND ROOF PLAN
SECTION – ELECTRICAL
ELEVATIONS – ELECTRICAL
NOTES, SYMBOLS AND ABBREVIATIONS
MASTER / MAIN ONE-LINE AND ELEVATION
ATS AND DISTRIBUTION ONE-LINE AND ELEVATION
ELEMENTARY DIAGRAMS
CONTROL PANEL ELEVATION AND BACKPANEL LAYOUT
POWER DISTRIBUTION AND COMMUNICATION BLOCK DIAGRAMS
CONTROL PANEL ELEVATION AND BACKPANEL LAYOUT
BACK-UP CONTROLS AND PLC WIRING DIAGRAMS
ELECTRICAL ROOM, DRY WELL/ WET WELL POWER AND CONTROL PLAN
DRY WELL/WET WELL LIGHTING AND RECEPTACLE PLAN
BUILDING LIGHTING AND RECEPTACLE PLAN, TOP DECK ELECTRICAL PLAN
AREA ELECTRICAL PLAN
ELECTRICAL DETAILS
CONDUIT SCHEDULE

Standard Details (8 sheets)
Water Works standard details can be provided within the Plans or Technical Specifications as directed by City. It has been our experience that City Building Department Reviewers prefer that the standard details are included within the Plans, so we have made that assumption for this scope of services.

Task 6 Deliverables shall include:

- ✓ 60% Design Submittal (PDF)
- ✓ 90% Design Submittal (PDF)
- ✓ 100% Design Submittal (PDF)
- ✓ Bid Documents (PDF and source files)
- ✓ Final cost opinion

Task 7: Permitting Support

Water Works team shall be available to provide support for permitting efforts related to the WRF Lift Station and Offsite Pipeline Project. Work shall be completed on an as-needed / on-call basis as directed by the City or the WRF Program Manager (as approved by the City). ENGINEER will provide technical information, exhibits and other requested items as part of the Permitting Support allowance budget.

Also included under this task as part of the Permitting Support allowance budget and as requested in Addendum 2, Water Works subconsultant, Praxis, will shall be available on an as-needed basis to complete mapping of biological and cultural resources depicted by the City's environmental consultant.

Also included under this task as part of the Permitting Support allowance budget, Water Works shall be available to provide support for Planning Commissions review and approval efforts related to the WRF Lift Station and Offsite Pipeline Project. Participation in two (2) Planning Commission Meeting(s) is included as part of Task 1: Project Management under Presentation to Public Entities. However, it is anticipated that additional services shall be completed on an as-needed / on-call basis as directed by the City or the WRF Program Manager (as approved by the City) to support efforts related to Planning Commission approval outside of these meetings. ENGINEER will provide coordination, technical information, exhibits and other requested items to support these activities.

Task 8: Engineering and Services during Construction

ENGINEER will provide the following Engineering Services During Construction for the project. This assumes an 18-month concurrent construction schedule for both Lift Station and Forcemain construction.

Bid Period Assistance

WWE will provide bid period assistance for the Lift Station and Offsite Pipelines as follows:

1. Participate in Pre-bid Conferences and preparation (assume 1 meeting) – to be led by PM team
2. Provide responses to contractor inquiries during bid advertisement for City use (assume qty. 4)
3. Prepare addenda as required for City use (assume qty. 2)
4. Review bids received with City

Construction Phase Assistance

1. Pre-Construction Conference Attendance (assume 1 meeting)
2. It is understood that the City intends to use Procore as the construction management software for tracking and documentation of RFIs, submittals, etc. Procore software platform will be provided and maintained by the City and PM team. ENGINEER will be responsible for inputting responses via this software platform.
3. Complete all submittal reviews (assume qty. 80)
4. Request for Information (RFI) and Request for Clarification (RFC) review, documentation and tracking (assume qty. 30)
    a.
5. Change Order Request review, documentation and tracking (assume qty, 6)
6. Attend Weekly Jobsite Meetings (assume 12 months at 2x per month = qty. 24)
7. Assist in observing operational test of lift station (assume 3 site visits, one each for planning, initial, and final operational test)
8. Final Inspection, Report and Project Completion Recommendation Letter (assume 3 site visits, one each for development, progress review, and final punch list acceptance)
9. Record Drawings (assume redlines provided from Contractor and City Inspector, assume 80 hours for pump station and 40 hours for pipelines)

The following additional post-construction services could be provided by WWE should the City request additional services:

1. Arc-Flash and Device Coordination Study (per NFPA 70E and IEEE 1584)
2. O&M Manual Preparation

WRF Lift Station and Offsite Pipelines Project Schedule

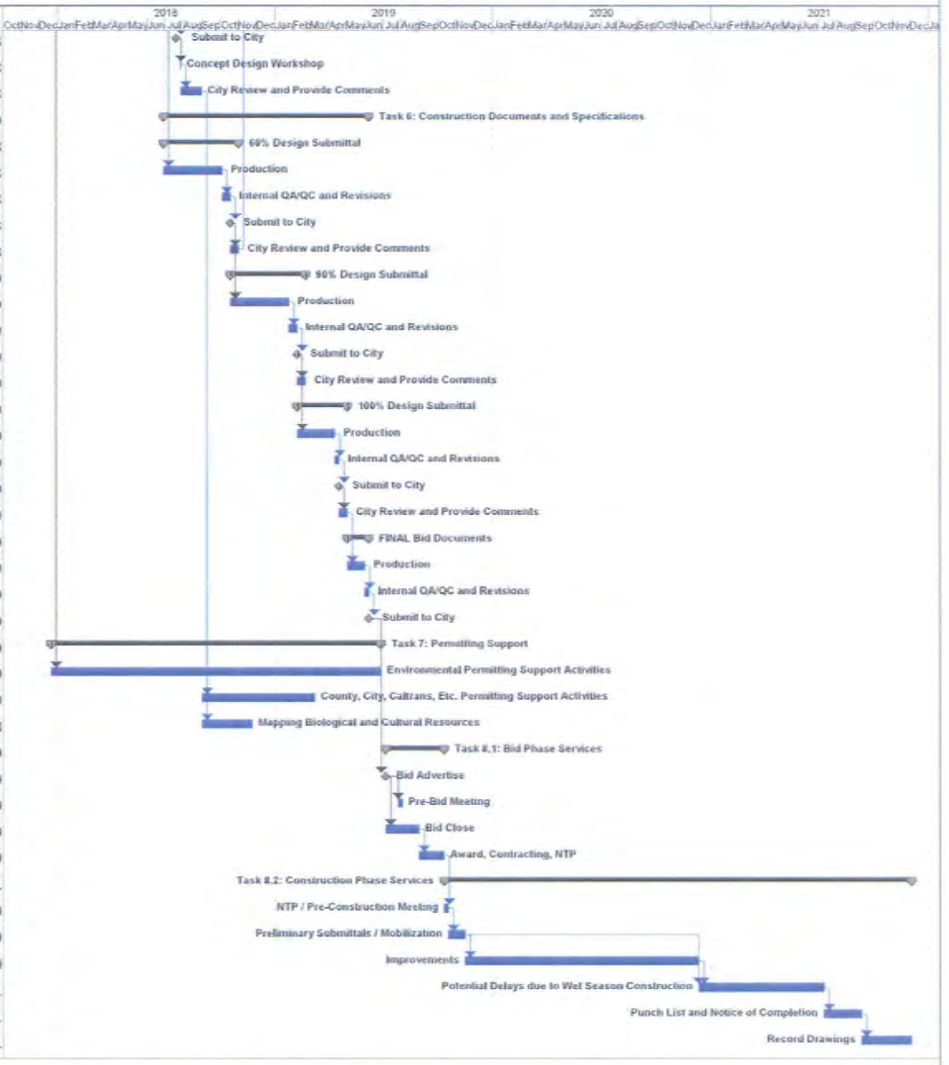
ID	Task Name	Duration	Start	Finish
1	**City of Morro Bay WRF Lift Station and Offsite Pipelines**	**1058 days**	**Tue 11/14/17**	**Thu 12/2/21**
2	Notice to Proceed	0 days	Tue 11/14/17	Tue 11/14/17
3	**Kick-off Meeting**	**1 day**	**Wed 11/15/17**	**Wed 11/15/17**
4	**Task 2: Site Alternatives Evaluation**	**91 days**	**Wed 11/15/17**	**Thu 3/22/18**
5	Data Collection, Review and Analysis	90 days	Fri 11/17/17	Thu 3/22/18
6	**Workshops**	**75 days**	**Wed 11/15/17**	**Wed 2/28/18**
7	Workshop 1: Site Alternatives, Pipeline Routes and Construction Methodology Review	0 days	Wed 11/15/17	Wed 11/15/17
8	Workshop 2: Hydraulics, WRF Master Plan Design Criteria Review and Modifications	0 days	Wed 12/20/17	Wed 12/20/17
9	Workshop 3: Desktop Geotechnical, Trenchless Feasibility, Pipeline Route Fatal Flaws	0 days	Wed 1/24/18	Wed 1/24/18
10	Workshop 4: Environmental Constraints and EIR Support Review and Confirmation	0 days	Wed 12/20/17	Wed 12/20/17
11	Workshop 5: Pipeline Route Analysis	0 days	Wed 2/14/18	Wed 2/14/18
12	Workshop 6: Pump Selections Discussion and General Mechanical Layout, Grinders	0 days	Wed 1/17/18	Wed 1/17/18
13	Workshop 7: Control Building Architectural, Odor Control, Back-Up Power, Aesthetics	0 days	Wed 2/7/18	Wed 2/7/18
14	Workshop 8: Operations Planning	0 days	Wed 2/28/18	Wed 2/28/18
15	Workshop 9: Electrical Systems, Local Controls and SCADA	0 days	Wed 2/28/18	Wed 2/28/18
16	Workshop 10: Construction Sequencing	0 days	Wed 2/28/18	Wed 2/28/18
17	**Workshop: Task 2 Results Summary**	**0 days**	**Wed 3/21/18**	**Wed 3/21/18**
18	Lift Station Site Alternatives and Selection & Design Criteria Summary	0 days	Wed 3/21/18	Wed 3/21/18
19	Pipeline Route Study and Preferred Alignment & Design Criteria Summary	0 days	Wed 3/21/18	Wed 3/21/18
20	**Task 3: Easement Acquisition Support**	**415 days**	**Thu 11/16/17**	**Wed 6/19/19**
21	Support Activities	240 days	Thu 11/16/17	Wed 10/17/18
22	Preliminary Title Reports	30 days	Thu 11/16/17	Wed 12/27/17
23	Complete Legal and Plats, QA/QC and Revisions	90 days	Thu 11/1/18	Wed 3/6/19
24	Submit to City	0 days	Wed 3/6/19	Wed 3/6/19
25	City Review, Provide Comments, Updates to Agent, Property Acquisition	75 days	Thu 3/7/19	Wed 6/19/19
26	**Task 4: Survey, Geotechnical Investigation, and Potholing**	**210 days**	**Thu 11/16/17**	**Wed 9/5/18**
27	Topographical Survey and Base Mapping for Design	210 days	Thu 11/16/17	Wed 9/5/18
28	Existing Utility Research	45 days	Thu 11/16/17	Wed 1/17/18
29	Preliminary Biological & Cultural Mapping Needs Assessment	120 days	Thu 12/21/17	Wed 6/6/18
30	Phase 1 - Right of Way Mapping	45 days	Thu 11/16/17	Wed 1/17/18
31	Aerial Mapping	60 days	Thu 3/22/18	Wed 6/13/18
32	Ground Survey	90 days	Thu 3/22/18	Wed 7/25/18
33	Subsurface Utility Engineering	120 days	Thu 3/22/18	Wed 9/5/18
34	Phase 2 - Right of Way Mapping	120 days	Thu 3/22/18	Wed 9/5/18
35	Phase 1 - Preliminary Geotechnical Services	40 days	Thu 11/16/17	Wed 1/10/18
36	Phase 2 - Design Geotechnical Services	90 days	Thu 3/22/18	Wed 7/25/18
37	Potholing	30 days	Thu 3/22/18	Wed 5/2/18
38	**Task 5: Concept Design Report**	**116 days**	**Thu 3/22/18**	**Thu 8/30/18**
39	Production	70 days	Thu 3/22/18	Wed 6/27/18
40	Internal QA/QC and Revisions	15 days	Thu 6/28/18	Wed 7/18/18

Date: Thu 11/2/17

Task · Split · Milestone · Summary · Project Summary · External Tasks · External Milestone · Inactive Task · Inactive Milestone · Inactive Summary · Manual Task · Duration-only · Manual Summary Rollup · Manual Summary · Start-only · Finish-only · Progress · Deadline

WRF Lift Station and Offsite Pipelines Project Schedule

ID	Task Name	Duration	Start	Finish
41	Submit to City	0 days	Wed 7/18/18	Wed 7/18/18
42	Concept Design Workshop	1 day	Thu 7/26/18	Thu 7/26/18
43	City Review and Provide Comments	25 days	Fri 7/27/18	Thu 8/30/18
44	**Task 6: Construction Documents and Specifications**	**246 days**	**Thu 6/28/18**	**Thu 6/6/19**
45	**60% Design Submittal**	**90 days**	**Thu 6/28/18**	**Wed 10/31/18**
46	Production	70 days	Thu 6/28/18	Wed 10/3/18
47	Internal QA/QC and Revisions	10 days	Thu 10/4/18	Wed 10/17/18
48	Submit to City	0 days	Wed 10/17/18	Wed 10/17/18
49	City Review and Provide Comments	10 days	Thu 10/18/18	Wed 10/31/18
50	**90% Design Submittal**	**90 days**	**Thu 10/18/18**	**Wed 2/20/19**
51	Production	70 days	Thu 10/18/18	Wed 1/23/19
52	Internal QA/QC and Revisions	10 days	Thu 1/24/19	Wed 2/6/19
53	Submit to City	0 days	Wed 2/6/19	Wed 2/6/19
54	City Review and Provide Comments	10 days	Thu 2/7/19	Wed 2/20/19
55	**100% Design Submittal**	**60 days**	**Thu 2/7/19**	**Wed 5/1/19**
56	Production	45 days	Thu 2/7/19	Wed 4/10/19
57	Internal QA/QC and Revisions	5 days	Thu 4/11/19	Wed 4/17/19
58	Submit to City	0 days	Wed 4/17/19	Wed 4/17/19
59	City Review and Provide Comments	10 days	Thu 4/18/19	Wed 5/1/19
60	**FINAL Bid Documents**	**26 days**	**Thu 5/2/19**	**Thu 6/6/19**
61	Production	21 days	Thu 5/2/19	Thu 5/30/19
62	Internal QA/QC and Revisions	5 days	Fri 5/31/19	Thu 6/6/19
63	Submit to City	0 days	Thu 6/6/19	Thu 6/6/19
64	**Task 7: Permitting Support**	**395 days**	**Thu 12/21/17**	**Wed 6/26/19**
65	Environmental Permitting Support Activities	395 days	Thu 12/21/17	Wed 6/26/19
66	County, City, Caltrans, Etc. Permitting Support Activities	135 days	Fri 8/31/18	Thu 3/7/19
67	Mapping Biological and Cultural Resources	60 days	Fri 8/31/18	Thu 11/22/18
68	**Task 8.1: Bid Phase Services**	**70 days**	**Thu 7/4/19**	**Thu 10/10/19**
69	Bid Advertise	0 days	Thu 7/4/19	Thu 7/4/19
70	Pre-Bid Meeting	5 days	Fri 7/26/19	Thu 8/1/19
71	Bid Close	40 days	Fri 7/5/19	Thu 8/29/19
72	Award, Contracting, NTP	30 days	Fri 8/30/19	Thu 10/10/19
73	**Task 8.2: Construction Phase Services**	**560 days**	**Fri 10/11/19**	**Thu 12/2/21**
74	NTP / Pre-Construction Meeting	5 days	Fri 10/11/19	Thu 10/17/19
75	Preliminary Submittals / Mobilization	20 days	Fri 10/18/19	Thu 11/14/19
76	Improvements	280 days	Fri 11/15/19	Thu 12/10/20
77	Potential Delays due to Wet Season Construction	150 days	Fri 12/11/20	Thu 7/8/21
78	Punch List and Notice of Completion	45 days	Fri 7/9/21	Thu 9/9/21
79	Record Drawings	60 days	Fri 9/10/21	Thu 12/2/21



Date: Thu 11/2/17

Task | Summary | External Milestone | Inactive Summary | Manual Summary Rollup | Finish-only
Split | Project Summary | Inactive Task | Manual Task | Manual Summary | Progress
Milestone | External Tasks | Inactive Milestone | Duration-only | Start-only | Deadline

PROPOSED COMPENSATION

Water Works Engineers proposes to complete the services described herein on a Time and Expense basis not to exceed $1,353,574 without written consent from CLIENT and invoiced in accordance with our Hourly Billing Rates table below.

The total budget for each task will be as follows:

Subtask	Title	Budget*
1	Task 1: Project Management	$64,090
2	Task 2: Site Alternatives Evaluation	$106,236
3	Task 3: Easement Acquisition Support (Allowance)	$34,090
4	Task 4: Survey, Geotechnical Investigation, and Potholing	$254,423
5	Task 5: Concept Design Report	$159,806
6	Task 6: Construction Documents and Specifications	$506,749
7	Task 7: Permitting Support (Allowance)	$45,500
8	Task 8: Engineering and Services during Construction	$182,680
	Total Budget	**$1,353,574**

*A detailed fee basis work plan is provided on the following page for reference.

Classification	Title	Hourly Rate
AA	Administrative	$96
E1	Staff Engineer	$119
E2	Associate Engineer	$146
E3	Project / Structural Engineer	$165
E4	Senior Project Engineer / Manager	$191
E5	Principal Engineer	$221
I1	Field Inspector	$129
I2	Senior Inspector	$144
I3	Supervising Inspector	$160
T1	CADD Tech 1	$81
T2	CADD Tech 2	$109
T3	CADD Tech 3	$133

Notes:

1. A markup of 10% will be applied to all project related Direct Costs and Expenses.
2. An additional premium of 25% will be added to the above rates for Expert Witness and Testimony Services.
3. Rate effective through December 31, 2017. A 3% increase will be added for any services performed in each year thereafter.

Water Works Engineers Fee Estimate

Client	City of Morro Bay
Project	WRF List Station and Offsite Pipelines
Prepared by	Mike Fisher
Date	11/2/2017

Hours and Fee

			Phase 1												Phase 2			
			Subtask 1		Subtask 2		Subtask 3		Subtask 4		Subtask 5		Subtask 6		Subtask 7		Subtask 8	
		Year	2017		2017		2017		2018		2018		2018		2018		2019	
			PM & QAQC / Meetings & Workshops		Site Alternatives Evaluation		Easement Acquisition Support		Survey, Geotechnical Investigation, and Potholing		Concept Design Report		Construction Documents and Specifications		Permitting Support		Engineering and Services during Construction	
Water Works Engineers		2017	hrs	fee	hrs	fee	hrs	fee	hrs	fee	hrs	fee	hrs	fee	hrs	fee	hrs	fee
Classification	**Title**	**Hourly Rate**																
E4	Mike Fisher - PM & Technical Lead	$191	176	$33,616	84	$16,044					64	$12,591	210	$41,313			20	$4,053
E5	Sami Kader - QAQC & Technical Oversight	$221	48	$10,608	8	$1,768					16	$3,642	40	$9,105			8	$1,876
E4	Joe Riess - Process / Mechanical	$191	40	$7,640	84	$16,044					104	$20,460	370	$72,790			40	$8,105
E3	Kristina Alacon - Civil / Mechanical	$165			92	$15,180					172	$29,231	360	$61,182			241	$42,187
E3	Jeremy Kellogg - Structural / Architectural	$165			24	$3,960					48	$8,158	80	$13,596			32	$5,602
E3	Jigar Shah - Pipeline / Trenchless	$165			88	$14,520					168	$28,552	172	$29,231			121	$21,181
E3	Alma Reantaso - E&C / SCADA	$165			24	$3,960					48	$8,158	412	$70,019			102	$17,855
E4	Steve Hooper - Constructability / CM	$191			8	$1,528					16	$3,148	24	$4,722				
E1	Staff Engineer	$119			120	$14,280					240	$29,417	440	$53,931			340	$42,924
T3	Senior Designer	$133											600	$82,194			40	$5,644
T1	Drafter / Technician	$81											520	$43,384			136	$11,687
AA	Administrative	$96	24	$2,304	16	$1,536					40	$3,955	120	$11,866			24	$2,444
ALLOWANCE	Included per RFP and Addendum 1&2			$500				$13,850								$40,000		
	WWE Expenses (including mark-up)			$5,000		$2,500						$3,750		$1,250				$2,029
Praxis	Easement Acquisition Support (qty. 8 PTRs)	LS						$8,560										
Praxis	Plat & legal (qty. 9)	LS						$9,840										
Praxis	Aerial Mapping (CCAM)	LS								$10,140								$5,000
Praxis	Ground Survey (Mapping)	LS								$27,120								
Praxis	Existing Utility Research & Engineering	LS								$17,960								
Praxis	Right of Way Mapping	LS								$56,560								
Praxis	Biological & Cultural Resource Mapping	LS														$5,000		
Yeh and Associates, Inc. - Geotechnical Studies and Analysis																		$5,000
	Preliminary Geotechnical Services	LS								$37,080								
	Design Geotechnical Services	LS								$55,614								
DCM Consulting, Inc. (Dave Mathy) Trenchless Geotechnical																		
	Trenchless Feasibility Assessment	$210	8	$1,680	36	$7,560			32	$6,720	20	$4,200						
	Trenchless Geotechnical Design	$210	4	$840									36	$7,560			24	$5,040
	Expenses			$1,500														$500
ZZ Technologies (Larry Crosley) - Transient Analysis						$3,500						$1,250		$2,250				
Environmental Management Consulting (Tom Card) - Odor Control						$2,500						$2,500		$1,250				
Exaro Technologies (Jose Dominguez) - Potholing										$20,100								
Subconsultant Markup		10%		$402		$1,356		$1,840		$23,129		$795		$1,106		$500		$1,554
		Subtask Totals	*300*	*$64,090*	*584*	*$106,236*	*0*	*$34,090*	*32*	*$254,423*	*936*	*$159,806*	*3384*	*$506,749*	*0*	*$45,500*	*1128*	*$182,680*

Subtask 1	Subtask 2	Subtask 3	Subtask 4	Subtask 5	Subtask 6	Subtask 7	Subtask 8	Total
$64,090	$106,236	$34,090	$254,423	$159,806	$506,749	$45,500	$182,680	**$1,353,574**

Exhibit B

INSURANCE REQUIREMENTS

Prior to the beginning of and throughout the duration of the Agreement, Consultant will maintain insurance in conformance with the requirements set forth below. Consultant will use existing coverage to comply with these requirements. If that existing coverage does not meet the requirements set forth here, Consultant agrees to amend, supplement or endorse the existing coverage to do so. Consultant acknowledges that the insurance coverage and policy limits set forth in this section constitute the minimum amount of coverage required. Any insurance proceeds available to City in excess of the limits and coverage required in this agreement and which is applicable to a given loss, will be available to City.

Consultant shall provide the following types and amounts of insurance:

Commercial General Liability Insurance using Insurance Services Office "Commercial General Liability" policy from CG 00 01 or the exact equivalent. Defense costs must be paid in addition to limits. There shall be no cross liability exclusion for claims or suits by one insured against another. Limits are subject to review but in no event less than $1,000,000 per occurrence.

Business Auto Coverage on ISO Business Auto Coverage from CA 00 01 including symbol 1 (Any Auto) or the exact equivalent. Limits are subject to review, but in no event to be less than $1,000,000 per accident. If Consultant owns no vehicles, this requirement may be satisfied by a non-owned auto endorsement to the general liability policy described above. If Consultant or Consultant's employees will use personal autos in any way to perform the Scope of Services, then Consultant shall provide evidence of personal auto liability coverage for each such person.

Property Damage Insurance in an amount of not less than $1,000,000 for damage to the property of each person on account of any one occurrence.

Workers Compensation on a state-approved policy form providing statutory benefits as required by law with employer's liability limits.

Excess or Umbrella Liability Insurance (Over Primary) if used to meet limit requirements, shall provide coverage at least as broad as specified for the underlying coverages. Any such coverage provided under an umbrella liability policy shall include a drop down provision providing primary coverage above a maximum $25,000 self-insured retention for liability not covered by primary but covered by the umbrella. Coverage shall be provided on a "pay on behalf" basis, with defense costs payable in addition to policy limits. Policy shall contain a provision obligating insurer at the time insured's liability is determined, not requiring actual payment by the insured first. There shall be no cross liability exclusion precluding coverage for claims or suits by one insured against another. Coverage shall be applicable to City for injury to employees of Consultant, subContractors or others involved in the Work. The scope of coverage provided is subject to approval of City following receipt of proof of insurance as required herein. Limits are subject to review but in no event less than $1,000,000 per occurrence.

Professional Liability or Errors and Omissions Insurance as appropriate shall be written on a policy

form coverage specifically designated to protect against acts, errors or omissions of the Consultant and "Covered Professional Services" as designated in the policy must specifically include work performed under this agreement. The policy limit shall be no less than $2,000,000 per claim and in the aggregate. The policy must "pay on behalf of" the insured and must include a provision establishing the insurer's duty to defend. The policy retroactive date shall be on or before the effective date of this agreement.

Insurance procured pursuant to these requirements shall be written by insurer that are admitted carriers in the state California and with an A.M. Bests rating of A- or better and a minimum financial size VII.

General conditions pertaining to provision of insurance coverage by Consultant. Consultant and City agree to the following with respect to insurance provided by Consultant:

1. Consultant agrees to have its insurer endorse the third party general liability coverage required herein to include as additional insureds the City of Morro Bay and its officials, employees and agents, using standard ISO endorsement No. CG 2010 with an edition prior to 1992. Consultant also agrees to require all Consultants, and sub-Contractors to do likewise.

2. No liability insurance coverage provided to comply with this Agreement shall prohibit Consultant, or Consultant's employees, or agents, from waiving the right of subrogation prior to a loss. Consultant agrees to waive subrogation rights against City regardless of the applicability of any insurance proceeds, and to require all Consultants and sub-Contractors to do likewise.

3. All insurance coverage and limits provided by Consultant and available or applicable to this agreement are intended to apply to the full extent of the policies. Nothing contained in this Agreement or any other agreement relating to the City or its operations limits the application of such insurance coverage.

4. None of the coverages required herein will be in compliance with these requirements if they include any limiting endorsement of any kind that has not been first submitted to City and approved of in writing.

5. No liability policy shall contain any provision or definition that would serve to eliminate so-called "third party action over" claims, including any exclusion for bodily injury to an employee of the insured or of any Consultant or subcontractor.

6. All coverage types and limits required are subject to approval, modification and additional requirements by the City, as the need arises. Consultant shall not make any reductions in scope of coverage (e.g. elimination of contractual liability or reduction of discovery period) that may affect City's protection without City's prior written consent.

7. Proof of compliance with these insurance requirements, consisting of certificates of insurance evidencing all of the coverages required and an additional insured endorsement to

Consultant's general liability policy, shall be delivered to City at or prior to the execution of this Agreement. In the event such proof of any insurance is not delivered as required, or in the event such insurance is canceled at any time and no replacement coverage is provided, City has the right, but not the duty, to obtain any insurance it deems necessary to protect its interests under this or any other agreement and to pay the premium. Any premium so paid by City shall be charged to and promptly paid by Consultant or deducted from sums due Consultant, at City's option.

8. It is acknowledged by the parties of this agreement that all insurance coverage required to be provided by Consultant or any sub-Contractor, is intended to apply first and on a primary, noncontributing basis in relation to any other insurance or self-insurance available to City.

9. Consultant agrees to ensure that subcontractors, and any other party involved with the Scope of Services who is brought onto or involved in the Scope of Services by Consultant, provide the same minimum insurance coverage required of Consultant. Consultant agrees to monitor and review all such coverage and assumes all responsibility for ensuring that such coverage is provided in conformity with the requirements of this section. Consultant agrees that upon request, all agreements with subcontractors and others engaged in the Scope of Services will be submitted to City for review.

10. Consultant agrees not to self-insure or to use any self-insured retentions or deductibles on any portion of the insurance required herein and further agrees that it will not allow any Consultant, subContractor, Architect, Engineer or other entity or person in any way involved in the performance of the Scope of Services to self-insure its obligations to City. If Consultant's existing coverage includes a deductible or self-insured retention, the deductible or self-insured retention must be declared to the City. At the time the City shall review options with the Consultant, which may include reduction or elimination of the deductible or self-insured retention, substitution of other coverage, or other solutions.

11. The City reserves the right at any time during the term of the contract to change the amounts and types of insurance required by giving the Consultant ninety (90) days advance written notice of such change. If such change results in substantial additional cost to the Consultant, the City will negotiate additional compensation proportional to the increase benefit to City.

12. For purposes of applying insurance coverage only, this Agreement will be deemed to have been executed immediately upon any party hereto taking any steps that can be deemed to be in furtherance of or towards performance of this Agreement.

13. Consultant acknowledges and agrees that any actual or alleged failure on the part of City to inform Consultant of non-compliance with any insurance requirements in no way imposes any additional obligations on City nor does it waive any rights hereunder in this or any other regard.

14. Consultant will renew the required coverage annually as long as City, or its employees or agents face an exposure from operations of any type pursuant to this agreement. This obligation applies whether or not the agreement is canceled or terminated for any reason.

Termination of this obligation is not effective until City executes a written statement to that effect.

15. Consultant shall provide proof that policies of insurance required herein expiring during the term of this Agreement have been renewed or replaced with other policies providing at least the same coverage. Proof that such coverage has been ordered shall be submitted prior to expiration. A coverage binder or letter from Consultant's insurance agent to this effect is acceptable. A certificate of insurance and/or additional insured endorsement as required in these specifications applicable to the renewing or new coverage must be provided to City within five days of the expiration of the coverages.

16. The provisions of any workers' compensation or similar act will not limit the obligations of Consultant under this agreement. Consultant expressly agrees not to use any statutory immunity defenses under such laws with respect to City, its employees, officials and agents.

17. Requirements of specific coverage features or limits contained in this section are not intended as limitations on coverage, limits or other requirements nor as a waiver of any coverage normally provided by any given policy. Specific reference to a given coverage feature is for purposes of clarification only as it pertains to a given issue, and is not intended by any party or insured to be limiting or all-inclusive.

18. These insurance requirements are intended to be separate and distinct from any other provision in this agreement and are intended by the parties here to be interpreted as such.

19. The requirements in this Section supersede all other sections and provisions of this Agreement to the extent that any other section or provision conflicts with or impairs the provisions of this Section.

20. Consultant agrees to be responsible for ensuring that no contract used by any party involved in any way with the Scope of Services reserves the right to charge City or Consultant for the cost of additional insurance coverage required by this agreement. Any such provisions are to be deleted regarding City. It is not the intent of City to reimburse any third party for the cost of complying with these requirements. There shall be no recourse against City for payment of premiums or other amounts with respect thereto.
21. Consultant agrees to provide immediate notice to City of any claim or loss against Consultant arising out of the work performed under this agreement. City assumes no obligation or liability by such notice, but has the right (but not the duty) to monitor the handling of any such claim or claims if they are likely to involve City.

Appendix B:
SCADA Master Plan RFP

NOTICE TO CONSULTANTS
REQUEST FOR PROPOSAL
FOR
PROFESSIONAL SERVICES FOR
SCADA SYSTEM MASTER PLAN

October 27, 2017

Issued by:

X_____
Rob Livick, PE/PLS – Public Works Director/City Engineer

CITY OF MORRO BAY

Mailing Address: 595 Harbor Street, Morro Bay, California 93442
Physical Address: 955 Shasta Avenue, Morro Bay, California 93442
Telephone (805) 772-6261 FAX (805) 772-6268
http://www.morrobayca.gov/

October 27, 2017

Subject: Notice Requesting Proposals for Professional Services for the City of Morro Bay SCADA System Master Plan

The City of Morro Bay (City) is requesting sealed proposals from professional controls and instrumentation service providers for the development of the City of Morro Bay SCADA System Master Plan.

All proposals must be received by the City of Morro Bay Public Works Department by 2:00 PM on Friday, December 1, 2017.

Proposals received after said time will not be considered. To guard against premature opening, each proposal shall be submitted to the City of Morro Bay Public Works Department in a sealed envelope plainly marked with the proposal title proposer's name, address, and time and date of the proposal submittal deadline.

Questions may be submitted to the City's Utilities Division Manager, Joe Mueller, via e-mail at jmueller@morrobayca.gov until November 17, 2017, at 5:00 PM. Responses and addenda will be posted to the City's website (http://www.morro-bay.ca.us) by November 27, 2017.

Onsite review of information related to the City's SCADA Master Plan Project will be provided at a non-mandatory Pre-Proposal Meeting to be held at 10 AM on November 10, 2017, at the Veteran's Memorial Building (209 Surf Street, Morro Bay).

Table of Contents

I. INSTRUCTIONS TO PROPOSERS

A. Pre-Proposal Meeting

A non-mandatory pre-proposal meeting for this request for proposal (RFP) will be held at 10:00 AM on November 10, 2017, at the Veteran's Memorial Building, located at 209 Surf Street, Morro Bay, CA 93442.

B. Receipt and Opening of Proposals

The City invites qualified firms to submit sealed proposals for professional services for the City of Morro Bay SCADA System Master Plan. Proposals will be received at the City's Public Works Department by 2:00 PM on Friday, December 1, 2017, located at:

City of Morro Bay Public Works Department
595 Harbor Street
Morro Bay, CA 93442

An envelope containing five (5) hard copies and one electronic copy of the proposal must be sealed and clearly labeled "Proposal for Professional Services for the City of Morro Bay SCADA Master Plan." Include the electronic copy in Adobe PDF format on a CD, DVD, or flash drive. FAX submittals will not be accepted.

C. Examination of Requirements

Each proposer must carefully examine the requirements of the request for proposal (RFP). Each proposer shall meet all of the terms and conditions of the RFP. By submitting a proposal, the proposer acknowledges acceptance of all provisions of the RFP.

D. Communications and Availability of Staff

All timely requests for information submitted in writing will receive a written response from the City. Any oral communication shall not be binding on the City. All requests for information must be provided in writing and directed to the City's Utilities Division Manager, Joe Mueller, via e-mail at jmueller@morrobayca.gov. To be considered, all requests for information must be received by 5:00 PM on November 17, 2017. Responses and addenda will be posted to the City's website (http://www.morro-bay.ca.us) by November 27, 2017.

The Utilities Division Manager and City staff are available for meetings and/or site visits with each potential proposer to discuss the project. All visits will be scheduled through the Utilities Division Manager by email (above) or by phone at (916) 826-3912.

II. DESCRIPTION OF WORK

A. Project Description

The City of Morro Bay, CA located in San Luis Obispo County, provides water and wastewater services to a population of approximately 10,300. Currently, the City has no system-wide or standardized SCADA system for either the water or wastewater utilities. In addition to the existing wastewater treatment plant (WWTP), the City operates multiple remote sites, including:

- Four brackish water wells (Morro wells)

- Five seawater wells
- Water treatment plant with separate seawater reverse osmosis and brackish water reverse osmosis treatment systems with associated automatic control system
- Wastewater treatment plant, which is expected to be replaced by a new Water Reclamation Facility
- State Water Project turnout, Coastal Branch
- Four water storage facilities
- Two water booster stations
- Three lift stations

The WWTP and remote sites operate primarily on Allen Bradley Programmable Logic Controllers (PLCs) and Opto-22 programmable automation controllers (PACs) from variety of manufacturers. With the exception of the four water storage facilities, alarms and reporting are accomplished via telephone auto-dialers and monitored alarm service. Water storage facilities communicate to the Corporation Yard via serial radio.

It is the City's intent to develop a standardized platform of PLCs, Operator Interface Terminals (OITs), SCADA software, and telemetry for the Water and Wastewater Divisions. The City intends to upgrade the remote sites and the existing WWTP (to the extent practicable) with the new SCADA system. It is assumed that all existing telephone or serial radio communication will be replaced with Ethernet radio where feasible.

The City is currently in the planning stages of a major capital improvement project to replace the 60-year-old Morro Bay-Cayucos Wastewater Treatment Plant with a new Water Reclamation Facility (WRF). It is anticipated the project will follow a "Guaranteed Maximum Price" (GMP) design build process. The Master Plan must consider the needs of the new facility during the evaluation of alternatives, and will provide a framework for development of specifications for the SCADA facilities at the new WRF. The new WRF will feature fiber-optic and/or radio communications for remote operation. The WRF will be manned 8 hours per day, five days per week, with full remote operation at all other times.

Decisions regarding recommended SCADA system design will be made based on overall value. New technologies that can reduce labor costs and overall cost of ownership should be considered. However, investment in new control and information systems will be limited to technologies that have been demonstrated on successful installations at similar sites. In addition, technology advances and history will be considered as part of a strategy to minimize risks associated with avoiding costs related to technology obsolescence. City staff have prior positive experience with Modicon and Allen-Bradley PLCs, and iFix, WonderWare, ClearScada, and ControlLogix software packages.

The City is requesting proposals from qualified system integrators to evaluate the existing system and its use by staff and to develop a Master Plan as a guide to update the existing and future SCADA systems. The City prefers a qualified instrumentation and control systems integrator to develop the SCADA Master Plan, as opposed to an engineering firm that only performs design and specifications. The system integrator selected to prepare the SCADA Master Plan will not be

precluded from participating on the Design/Build team that is selected for the construction of the new WRF. If the integrator selected to prepare the SCADA Master Plan is not part of the design/build team, the scope of this work may be expanded to include office engineering support to the City during construction of the new WRF (e.g. submittal review, response to RFIs, etc.).

The City's high-level goals for the SCADA Master Plan include:

- An evaluation of the existing facilities and SCADA system to determine any deficiencies
- Identification of City operational requirements and information / control needs
- Confirming Radio Path performance
- Developing a Master Plan to develop standardized water and wastewater SCADA facilities, upgrades to existing SCADA components to maximize reliability, responsiveness, cost effectiveness, security, and scalability
- Providing recommendations for system-wide software and communication hardware that will be utilized at the City's new WRF (to be designed by others), in order to ensure all systems are compatible

The Consultant selected for this project will be required to provide equipment, materials, and labor to complete the Scope of Work, and to prepare interim technical memoranda as documentation of the project elements. The City will provide the selected consultant with access to staff for interviews as needed throughout the project. Technical memoranda shall be prepared as a draft for City review, followed by final revision that incorporates comments received. It is expected that the Master Plan report will be based upon the interim technical memoranda, and will outline a planned approach and schedule to implement recommended changes or upgrades. Planning level cost estimates for each modification shall be included.

Maps showing City water and wastewater infrastructure are included in Appendix B.

B. Scope of Work

The objective of this Scope of Work is to provide a framework for development of a Master Plan to achieve a flexible, reliable, and comprehensive SCADA environment. The Master Plan shall include specific recommendations with budgetary cost estimates and schedule for the next five to ten years. The Scope of Work anticipates four steps to developing the Master Plan: Assess Current Environment; Identify Goals and Metrics; Perform Radio Path Survey; and Prepare SCADA Master Plan report.

All deliverables will include four (4) hardbound copies and one electronic copy (.pdf) for each element of each deliverable.

1. Project Meetings and Coordination

During project, the Consultant will attend progress/coordination meetings with the City staff to discuss issues related to the project and to update the City regarding progress. Anticipated meetings, at a minimum, are as follows:

- Project kick-off meeting
- WWTP and Remote Sites Visit (Assess Current Environment)
- Goals and Metrics Development Meeting
- Draft Goals and Metrics Tech Memo Review Meeting
- Draft Master Plan Review Meeting

The Consultant shall attend as many other working meetings as needed to complete the Master Plan. The Consultant will coordinate with the City on activities including scheduling meetings, tracking activities, and reporting on work in progress.

2. Assess Current Environment

The assessment will provide an inventory and detailed written and graphical descriptions of the current environment that will enable effective analysis and recommendations.

The assessment shall accomplish the following tasks:

- Review and understand the existing SCADA system currently in use
- Document how the current SCADA system is used by operations staff
- Provide recommendations regarding capabilities that should be considered based on the observed operational practices
- Review and document current SCADA system deficiencies or needed upgrades

Elements to be identified and described at each facility may include:

- Hardware (Servers, HMIs, RTUs, PCs, PLCs, printers, etc.)
- Software (iFix, WonderWare, ClearScada, Financial Edge, Maintenance Connection, Rockwell, MS Office, Alchemy, etc.)
- Networks (cell, routers/switches, SAN-layer, cables/radios, protocols, providers, Internet access)
- Databases (process control (SCADA), financial, work, inventory, location (GIS), spreadsheets, etc.)
- Functions (process control (SCADA), financial management, work management, document management, production, telecommunications, security, reporting, website, backups, etc.)

The assessment report will include graphical presentations of each component in sufficient detail to analyze performance improvement opportunities. The report will document details of each component, including:

- Hardware (brand name, model, CPU type, speed, memory, age of equipment, etc.)
- Software (application vendor, product name, version, number of users, etc.)

- Network (network diagram showing media, number of channels/pairs, and protocols, list of network equipment with brand name, model, age, etc.)
- Databases (conceptual data model showing key indices, applications, interfaces and attributes)
- Functions (brief description of the function and necessary components)

Deliverable: Draft and Final Assessment Report

3. Identify Goals and Metrics

This task will develop SCADA system performance goals and metrics designed to meet the City's needs. Examples of performance goals include:

- Capital cost
- Cost for implementation
- Backup
- Resiliency
- Redundancy/disaster recovery
- Reliability
- Security
- Flexibility
- Functionality
- Hardware
- Software
- Radio systems and frequencies
- Licensing requirements (e.g. FCC, software, support, etc.)
- Support
- Expandability
- Maintenance
- Ease of use
- Integration into enterprise management systems
- Operator interface (cloud-based, local, central, etc.)

During the Goals and Metrics meeting with City staff, the Consultant shall solicit feedback from City staff on goals for the SCADA system and future system upgrades. The Consultant shall discuss options and alternatives with City staff, compile City goals and requirements, and document the Consultant's understanding, along with alternatives and recommendations to meet the identified requirements. The outcome of the Goals and Metrics Task shall provide the Consultant with sufficient information to develop the recommendations of the Master Plan.

The Consultant shall prepare a draft and final Tech Memo (TM) summarizing the understanding of City needs and goals. The TM shall include a thorough discussion of solutions to be carried forward in the Master Plan.

Deliverable: Draft and Final Goals and Metrics Technical Memorandum

4. <u>Radio Path Survey</u>

The existing City water storage facilities communicate to the City Corporation Yard via serial radio. It is anticipated that it will be recommended that all remote City sites (water and wastewater) be upgraded to ethernet radio communication for future improvements. Site-specific field-based radio path surveys shall be performed at all remote sites to provide the City and consultant with information necessary to recommend system hardware and remote telemetry facilities. The survey shall include "as-measured" Remote Signal Strength Indicated (RSSI) values, and "projected" RSSI values to correct for limitations in the test equipment.

The radio survey shall document, at a minimum, the following:

- Test and existing (if present) antenna type, height, location, orientation/bearing
- RSSI
- Signal/Noise ratio
- Path length
- Fade margin (dB)
- Minimum Tx rate (Mbps)
- Antenna direction (degrees)

The outcome of the survey shall provide, at a minimum, recommendations for the following:

- Proposed antenna type, height, location, orientation/bearing
- Radio frequency and licensing requirements
- Radio path
- Gain
- Antenna wind survival rating

Remote sites will communicate to the existing WWTP. The consultant shall coordinate with the City to determine feasible sites and antenna height at the existing WWTP, and maximum allowable height at remote sites. The future WWTP will be connected to the existing WWTP through fiber-optic connection.

Deliverable: Radio Path Survey Report

5. Master Plan Report

Following review and incorporation of the City's comments in all previous tasks, the Consultant shall incorporate all deliverables produced, and prepare a Master Plan Report and executive summary. The executive summary will include a summary description and a Gantt chart showing all action items for a five to ten-year implementation program.

This task shall include an evaluation of a variety of systems, a ranking and discussion of recommended solutions, and shall provide a thorough discussion of final recommendations.

The Master Plan Report shall include:

- Recommendations for replacement SCADA systems
- Information developed in interim Technical Memoranda
- Recommendations that meet Department of Homeland Security (DHS) Best Management Practices (BMPs)
- Written Disaster Recovery Plan meeting DHS requirements
- Recommendations for redundancy requirements (e.g. hot standby for primary PLCs)
- Recommendations that all packaged control systems utilize standardized PLCs recommended for all City facilities
- Recommendations for Factory Performance Testing (FAT) requirements during construction
- Cost estimates for implementation
- Ongoing system maintenance requirements (e.g. staffing needs, licensing, associated cost estimates)
- Estimated system life cycle and strategies to maximize the system life
- Telemetry system block diagrams showing existing and recommended systems
- Remote site instrumentation and PLC I/O lists
- PLC-Based Master Telemetry Unit (Location to be determined by Radio Site Survey)
- Radio Repeater (if required)
- Communication recommendations and installation diagrams
- Recommended Historian and reporting additions
- Timeline for five-year implementation

Deliverables: Draft and Final Master Plan Report

C. Project Schedule

The anticipated project schedule is summarized below.

Milestone	Date
Pre-Proposal Meeting	11/10/17
Written Questions Due	11/17/17
Responses to Questions Posted	11/27/17
Proposals Due	12/1/17
Consultant Interviews (at the City's Option)	12/11/17 – 12/15/17
Consultant Selection / Council Approval	1/9/18
Notice to Proceed	1/12/18
Draft Assessment Report	2/9/18
Final Assessment Report	3/2/18
Draft Goals and Metrics Technical Memorandum	3/23/18
Final Goals and Metrics Technical Memorandum	4/20/18
Draft Master Plan Report	5/4/18
Final Master Plan Report	6/1/18

GENERAL TERMS AND CONDITIONS

A. Proposal Requirements

1. Requirement to Meet All Provisions.

Each individual or firm submitting a proposal shall meet all of the terms and conditions of the Request for Proposals (RFP) package. By virtue of its proposal submittal, proposing consultant acknowledges agreement with and acceptance of all provisions of the RFP specifications.

2. Proposal Submittal.

Each proposal must be submitted on the form(s) provided in the RFP and accompanied by any other required submittals or supplemental materials.

3. Insurance Certificate.

Each proposal must include a current certificate of insurance showing:

a. The insurance carrier and its A.M. Best rating.
b. Scope of coverage and limits.
c. Deductibles and self-insured retention.

The purpose of this submittal is to generally assess the adequacy of the proposing consultant's insurance coverage during proposal evaluation; endorsements are not required until contract award.

4. Proposal Withdrawal and Opening.

A proposing consultant may withdraw its proposal, without prejudice, prior to the time specified for the proposal opening, by submitting a written request to the Public Works Director for its withdrawal, in which event the proposal will be returned to the consultant unopened. The City will not consider proposals received after the time specified or at any place other than that stated in the "Notice Requesting Proposals." The City will open and declare all proposals in public. Proposing consultants or their representatives are invited to be present at the opening of the proposals.

5. Submittal of One Proposal Only.

No individual or business entity of any kind shall be allowed to make or file, or to be interested in more than one proposal, except an alternative proposal when specifically requested in writing by the City; however, an individual or business entity which has submitted a sub-proposal to a proposing consultant submitting a proposal, or who has quoted prices on materials to such proposing consultant, is not thereby disqualified from submitting a sub-proposal or from quoting prices to other proposing consultants submitting proposals.

6. Content:

The Proposal shall be concise, well organized and demonstrate the proposer's understanding of the Project and their applicable qualifications and experience. The proposal shall be limited to twenty (20) pages, double sided, exclusive of resumes, cover letter (2 pages), graphics, fee schedule, project schedule, and covers. Proposals should include the minimum Proposal Content as described in Section IV. Any additional materials that will support your Proposal may be included. However, if they do not directly address the stated requirements, please include them

in a separate appendix. The City will consider all material submitted within the page limit, but concentrate on that which addresses the City's Project requirements.

7. Subconsultants:

Identify all subconsultants to be used during the term of the project and provide a list of responsible staff and their qualifications.

8. Insurance:

The consultant shall obtain at their own cost an insurance policy meeting the City's requirements as described in the City's Standard Agreement (Appendix A).

9. Consultant's Compensation:

The Consultant shall include a breakdown of labor, subconsultants, and other direct costs with estimated fees; a fee schedule with hourly rates; and the basis for charging other direct costs (including materials, travel, and subconsultants).

10. Commitment:

The Proposal shall be signed by the individual with power to bind the company to the scope of work and approach identified in the document. Parts or the entire Proposal will be the basis for the subsequent proposal and contract for the work.

11. Statement of Contract Disqualifications:

Consultant shall include a signed statement of whether it or any of its employees or officers who have a proprietary interest in it has ever been disqualifiers, removed or otherwise prevented from proposing on or completing a municipal government project for any reason. If so, provide a description and explanation of the circumstances.

12. Exceptions:

Consultant shall certify that they take no exceptions to this RFP, including but not limited to the provisions of the City's Standard Agreement (**Appendix A**). If the Consultant takes any exceptions, identify the specific portion and provide a full explanation.

B. Contract Award and Execution

1. The City reserves the right to retain all proposals for a period of 60 days for examination and comparison. The City also reserves the right to waive non-substantial irregularities in any proposal, to reject any or all proposals, to reject or delete one part of a proposal and accept the other, except to the extent that proposals are qualified by specific limitations. The special terms and conditions of these specifications include proposal evaluation and contract award criteria.

2. The City reserves full discretion to determine the competence and responsibility, professionally and/or financially, of proposing consultants. Proposing consultants will provide, in a timely manner, all information that the City deems necessary to make such a decision.

3. The proposing consultant to whom award is made (Consultant) shall execute a written contract with the City within ten (10) calendar days after notice of the award has been sent by mail to it at the address given in its proposal. The contract shall be made in substantially the form adopted by the City and incorporated in these specifications.

4. Even if selected, the City reserves the right to terminate any agreement reached with the selected firm at any time and in an appropriate manner.

5. The proposing consultant to whom award is made (Consultant) shall execute a written contract with the City within ten (10) calendar days after notice of the award has been sent by mail to it at the address given in its proposal. The contract shall be made in substantially the form adopted by the City and incorporated in these specifications.

6. The Consultant shall provide insurance policies and endorsements of insurance policies in the form, coverages, and amounts specified in the Consultant Services Agreement within 10 (ten) calendar days after notice of contract award as a precondition to contract execution.

7. The Consultant must have a valid City of Morro Bay business license prior to execution of the contract. Additional information regarding the City's business license program is available at the City of Morro Bay City Hall at 595 Harbor Street, Morro Bay, CA, 93442, (805) 772-6200.

III. PROPOSAL CONTENT AND SELECTION PROCESS

A. Proposal Content

1. Cover Letter/Executive Summary

2. Project Organization and Key Personnel – Provide a project organization chart showing the names of all key personnel assigned to the Project and their primary responsibility. Any changes in key personnel and subconsultants after the award of contract must be proposed in writing and approved by the City before any change is made.

3. Experience and References - Include professional references for five (5) similar projects performed with the proposed project team members. Provide project descriptions and current contact information for references that illustrate the quality of past performance of the project team.

4. Project Understanding – Describe the consultant’s understanding of the project. Identify the potential challenges and critical tasks, the recommended project approach, and describe how the consultant’s team is best suited to address the key issues.

5. Proposed Scope of Work – Address and detail all the tasks identified in this RFP. Additional tasks identified during development of the RFP that may be applicable may be included as optional. Include a project schedule showing anticipated completion time for each task.

6. Proposed Compensation

7. Exceptions, statement of past disqualifications, insurance certificate, and other items identified in Section III and throughout the remainder of this RFP.

8. Resumes – Include resumes of all key personnel, including subconsultants, tailored for this project.

9. Submittal Forms and Requirements

   - Certificate of insurance
   - Subconsultant list
   - References from at least three firms for whom you have provided similar services (use form in proposal package)
   - Statement and explanation of any instances regarding past governmental agency bidding or contract disqualifications or removal from a project.

B. Proposal Evaluation and Consultant selection

1. Selection Criteria

Proposals will be evaluated by a review committee based on the following criteria:

Criteria	*Points*
1. Understanding of the Scope of Work (e.g. completeness of proposal; demonstrated grasp of work to be completed under this contract; expressed understanding of the project scope, objectives, and complexity).	15
2. Past performance and related experience of firm in planning, implementing, and integrating new water and wastewater SCADA systems with existing and new facilities (e.g. previous experience in performing similar projects, results of reference checks, administrative information)	30
3. Expertise of technical and professional team members assigned to the project (e.g. team qualifications, specialized experience, professional competency of members in critical aspects, proven innovative approaches/techniques, knowledge of issues associated with the facility master plan).	25
4. Proposed project approach (e.g. conceptual and technical approach in preparing the plan, including assurance of the consultant's ability to provide deliverables in a timely fashion and with high quality).	20
6. Demonstrated ability to conform to City contract requirements (The City's standard general consultant contract is attached to this Request for Proposals).	10
Total	100

2. Contract Award

Subject to the reservations set forth in Section B of the General Terms and Conditions of these specifications, the City will award the contract to the most qualified, responsible, responsive proposing consultant, using the proposal evaluation and selection criteria.

Following the award of contract, the consultant will negotiate with the City a final compensation and payment schedule tied to accomplishing key tasks. The proposed compensation and payment schedule shall be tabulated in spreadsheet form, presenting each task complete with the level of effort from each team member. The Consultant shall monitor costs throughout the project. The "not to exceed fee" for this project will not be increased unless the scope of work is amended to include additional consulting services. Any increase in fees for additional consulting services must be confirmed in writing by the City **prior** to undertaking extra work.

3. Failure to Accept Contract

The following will occur if the Consultant whose proposal is accepted fails or refuses to enter into the contract: the City may negotiate with the next most qualified proposing consultant.

4. Ownership of Materials

All original drawings, plan documents, computer models and other materials prepared by or in possession of the Consultant as part of the work or services under these specifications shall become the permanent property of the City. The Consultant shall deliver any or all of these materials and documents to the City upon demand.

5. Release of Reports and Information

Any reports, information, data, or other material given to, prepared by or assembled by the Consultant as part of the work or services under these specifications shall be the property of City and shall not be made available to any individual or organization by the Consultant without the prior written approval of the City.

6. Copies of Reports and Information

If the City request additional copies of reports, drawings, specifications, or any other material in addition to what the Consultant is required to furnish in limited quantities as part of the work or services under these specifications, the Consultant shall provide such additional copies as are requested, and City shall compensate the Consultant for the costs of duplicating of such copies at the Consultant's direct expense.

7. Accuracy of Scope of Consultant Services

The City finds the Scope of Consultant Services for this project to be accurate and to contain no affirmative misrepresentation or any concealment of fact. Although the effect of ambiguities or defects in the Scope will be as determined by law, any patent ambiguity or defect shall give rise to a duty of proposing consultant to inquire prior to proposal submittal. To the extent that the Scope of Consultant Services constitute performance parameters, the City shall not be liable for costs incurred by the successful proposing consultant to achieve the project's objectives or standards beyond the amounts provided therefore in the proposal.

V. PROPOSAL SUBMITTAL FORMS

Subconsultant Listing

References

Statements of Past Contract Disqualification

SUBCONSULTANT LISTING

Describe briefly the work scope of each sub-consultant. Attach additional pages if required.

Sub-consultant

Company Name	
Contact Individual	
Telephone & FAX number	
Street Address	
City, State, Zip Code	
Description of services to be provided.	

Sub-consultant

Company Name	
Contact Individual	
Telephone & FAX number	
Street Address	
City, State, Zip Code	
Description of services to be provided	

Sub-consultant

Company Name	
Contact Individual	
Telephone & FAX number	
Street Address	
City, State, Zip Code	
Description of services to be provided	

REFERENCES

Number of years engaged in providing the services included within the scope of the consultant services under the present business name:_____.

Describe fully the last three contracts performed by your firm that demonstrate your ability to provide the services included with the scope of the consultant services. Attach additional pages if required. The City reserve the right to contact each of the references listed for additional information regarding your firm's qualifications.

Reference No. 1

Customer Name	
Contact Individual	
Telephone & FAX number	
Street Address	
City, State, Zip Code	
Description of services provided including contract amount, when provided and project outcome	

Reference No. 2

Customer Name	
Contact Individual	
Telephone & FAX number	
Street Address	
City, State, Zip Code	
Description of services provided including contract amount, when provided and project outcome	

Reference No. 3

Customer Name	
Contact Individual	
Telephone & FAX number	
Street Address	
City, State, Zip Code	
Description of services provided including contract amount, when provided and project outcome	

STATEMENT OF PAST CONTRACT DISQUALIFICATIONS

The consultant shall state whether it or any of its officers or employees who have a proprietary interest in it, has ever been disqualified, removed, or otherwise prevented from proposing on, or completing a federal, state, or local government project because of the violation of law, a safety regulation, or for any other reason, including but not limited to financial difficulties, project delays, or disputes regarding work or product quality, and if so to explain the circumstances.

- ***Do you have any disqualification as described in the above paragraph to declare?***
  Yes ❑ No ❑

- ***If Yes, explain the circumstances.***

Executed on _____ at _____ under penalty of perjury of the laws of the State of California, that the foregoing is true and correct.

_____

Signature of Authorized Consultant Representative

Appendices

A.

City Consultant Agreement

CITY OF MORRO BAY

AGREEMENT FOR CONSULTANT SERVICES

THIS AGREEMENT is made, by and between, the City of Morro Bay, a municipal corporation ("City") and _____, a California corporation, *and/or [insert individual's name]* dba *[insert business name if not a corporation]* ("Consultant"). In consideration of the mutual covenants and conditions set forth herein the parties agree as follows:

1. TERM

This Agreement shall commence on _____, 20__, and shall remain and continue in effect until tasks described herein are completed, but in no event later than _____, 20__, unless sooner terminated pursuant to the provisions of this Agreement.

2. SERVICES

Consultant shall perform the tasks described and set forth in Exhibit A, attached hereto and incorporated herein as though set forth in full. Consultant shall complete the tasks according to the schedule of performance which is also set forth in Exhibit A.

3. PERFORMANCE

Consultant shall at all times faithfully, competently and to the best of their ability, experience, and talent, perform all tasks described herein. Consultant shall employ, at a minimum, generally accepted standards and practices utilized by persons engaged in providing similar services as are required of Consultant hereunder in meeting its obligations under this Agreement.

4. CITY MANAGEMENT

City's _____ Director shall represent City in all matters pertaining to the administration of this Agreement, review and approval of all products submitted by Consultant, but not including the authority to enlarge the Tasks to Be Performed or change the compensation due to Consultant. City's City Manager shall be authorized to act on City's behalf and to execute all necessary documents which enlarge the Tasks to Be Performed or change Consultant's compensation, subject to Section 5 hereof.

5. PAYMENT

(a) City agrees to pay Consultant monthly, in accordance with the payment rates and terms and the schedule of payment as set forth in Exhibit A, attached hereto and incorporated herein by this reference as though set forth in full, and based upon actual time spent on the above

tasks. That amount shall not exceed {*INSERT AMOUNT IN THE FOLLOWING FORMAT}*. Twenty-five Thousand, Seven Hundred Fifty-three Dollars and No Cents ($25,753.00) for the total term of the Agreement unless additional payment is approved as provided in this Agreement.

(b) Consultant shall not be compensated for any services rendered in connection with its performance of this Agreement which are in addition to those set forth herein, unless such additional services are authorized in advance and in writing by the City Manager. Consultant shall be compensated for any additional services in the amounts and in the manner as agreed to by City Manager and Consultant at the time City's written authorization is given to Consultant for the performance of said services. The City Manager may approve additional work not to exceed twenty five (25%) of the amount of the Agreement, but in no event shall such sum exceed {INSERT AMOUNT 25% OF THE ABOVE TOTAL, IN THE FOLLOWING FORMAT} Six Thousand, Four Hundred Thirty-eight Dollars and Twenty-five cents ($6,438.25). Any additional work in excess of this amount shall be approved by the City Council.

(c) Consultant will submit invoices monthly for actual services performed. Invoices shall be submitted on or about the first business day of each month, or as soon thereafter as practical, for services provided in the previous month. Payment shall be made within thirty (30) days after receipt of each invoice as to all non-disputed fees. If City disputes any of Consultant's fees, then it shall give written notice to Consultant within fifteen (15) days of receipt of an invoice of any disputed fees set forth on the invoice.

6. SUSPENSION OR TERMINATION OF AGREEMENT WITHOUT CAUSE

(a) City may at any time, for any reason, with or without cause, suspend or terminate this Agreement, or any portion hereof, by serving upon Consultant at least ten-days' (10-days') prior written notice. Upon receipt of said notice, Consultant shall immediately cease all work under this Agreement, unless the notice provides otherwise. If City suspends or terminates a portion of this Agreement, then such suspension or termination shall not make void or invalidate the remainder of this Agreement.

(b) In the event this Agreement is terminated pursuant to this Section, City shall pay to Consultant the actual value of the work performed up to the time of termination. Upon termination of the Agreement pursuant to this Section, Consultant will submit an invoice to City pursuant to Section 3.

7. DEFAULT OF CONSULTANT

(a) Consultant's failure to comply with the provisions of this Agreement shall constitute a default. In the event Consultant is in default for cause under the terms of this Agreement, City shall have no obligation or duty to continue compensating Consultant for any work performed after the date Consultant is notified of default and can terminate this Agreement immediately by written notice to Consultant. If such failure by Consultant to make progress in the performance for work hereunder arises out of causes beyond Consultant's control, and without fault or negligence of Consultant, then it shall not be considered a default.

(b) If the City Manager of his/her delegate determines that Consultant is in default in the performance of any of the terms or conditions of this Agreement, then he/she shall cause to be served upon Consultant a written notice of the default. Consultant shall have ten (10) days after service upon it of said notice in which to cure the default by rendering a satisfactory performance. In the event that Consultant fails to cure its default within such period of time, City shall have the right, notwithstanding any other provision of this Agreement, to terminate this Agreement without further notice and without prejudice to any other remedy to which it may be entitled at law, in equity or under this Agreement.

8. OWNERSHIP OF DOCUMENTS

(a) Consultant shall maintain complete and accurate records with respect to sales, costs, expenses, receipts, and other such information required by City that relate to the performance of services under this Agreement. Consultant shall maintain adequate records of services provided in sufficient detail to permit an evaluation of services. All such records shall be maintained in accordance with generally accepted accounting principles and shall be clearly identified and readily accessible. Consultant shall provide free access to the representatives of City or its designees at reasonable times to such books and records; shall give City the right to examine and audit said books and records; shall permit City to make transcripts therefrom as necessary; and shall allow inspection of all work, data, documents, proceedings, and activities related to this Agreement. Such records, together with supporting documents, shall be maintained for a period of three (3) years after receipt of final payment.

(b) Upon completion of, and full payment by City for services performed pursuant to, this Agreement, all final work product such as documents, designs, drawings, maps, models, computer files, surveys, notes, and other documents prepared in the course of providing the services to be performed pursuant to this Agreement shall become the sole property of City and may be used, reused, or otherwise disposed of by City without the permission of Consultant. With respect to computer files, Consultant shall make available to City, as a service in addition to those set forth herein, at Consultant's office and upon reasonable written request by City, the necessary computer software and hardware for purposes of accessing, compiling, transferring, and printing computer files.

9. INDEMNIFICATION

(a) Indemnification for Professional Liability. When the law establishes a professional standard of care for Consultant's Services, to the fullest extent permitted by law, Consultant shall indemnify, protect, defend and hold harmless City and any and all of its officials, employees and agents ("Indemnified Parties") from and against any and all losses, liabilities, damages, costs and expenses, including reasonable attorney's fees and costs to the extent same are caused by any negligent act, error or omission of Consultant, its officers, agents, employees or subconsultants (or any entity or individual that Consultant shall bear the legal liability thereof) in the performance of professional services under this agreement. City agrees to hold harmless and indemnify Consultant from and against all claims, liabilities, losses, damages, and costs, including but not limited to attorney's fees, arising out of or in any way connected with the

modification, misinterpretation, misuse or reuse by others of the computer files or any other document provided by Consultant under this Agreement.

(b) Indemnification for Other Than Professional Liability. Other than in the performance of professional services and to the full extent permitted by law, Consultant shall indemnify, defend and hold harmless City, and any and all of its employees, officials and agents from and against any liability (including liability for claims, suits, actions, arbitration proceedings, administrative proceedings, regulatory proceedings, losses, expenses or costs of any kind, whether actual, alleged or threatened, including attorneys' fees and costs, court costs, interest, defense costs, and expert witness fees), where the same arise out of, are a consequence of, or are in any way attributable to, in whole or in part, the performance of this Agreement by Consultant or by any individual or entity for which Consultant is legally liable, including but not limited to officers, agents, employees or subconsultants of Consultant.

(c) General Indemnification Provisions. Consultant agrees to obtain executed indemnity agreements with provisions identical to those set forth here in this section from each and every subconsultant or any other person or entity involved by, for, with or on behalf of Consultant in the performance of this agreement. In the event Consultant fails to obtain such indemnity obligations from others as required here, Consultant agrees to be fully responsible according to the terms of this section. Failure of City to monitor compliance with these requirements imposes no additional obligations on City and will in no way act as a waiver of any rights hereunder. This obligation to indemnify and defend City as set forth here is binding on the successors, assigns or heirs of Consultant and shall survive the termination of this agreement or this section.

10. INSURANCE

Consultant shall maintain prior to the beginning of and for the duration of this Agreement insurance coverage as specified in Exhibit B attached to and part of this agreement.

11. INDEPENDENT CONSULTANT

(a) Consultant is and shall at all times remain as to City a wholly independent Consultant. The personnel performing the services under this Agreement on behalf of Consultant shall at all times be under Consultant's exclusive direction and control. Neither City nor any of its officers, employees, or agents shall have control over the conduct of Consultant or any of Consultant's officers, employees, or agents, except as set forth in this Agreement. Consultant shall not at any time or in any manner represent that it or any of its officers, employees, or agents are in any manner officers, employees, or agents of City. Consultant shall not incur or have the power to incur any debt, obligation, or liability whatever against City, or bind City in any manner.

(b) No employee benefits shall be available to Consultant in connection with the performance of this Agreement. Except for the fees paid to Consultant as provided in the Agreement, City shall not pay salaries, wages, or other compensation to Consultant for performing services hereunder for City. City shall not be liable for compensation or indemnification to Consultant for injury or sickness arising out of performing services hereunder.

12. LEGAL RESPONSIBILITIES

Consultant shall keep itself informed of State and Federal laws and regulations which in any manner affect those employed by it or in any way affect the performance of its service pursuant to this Agreement. Consultant shall at all times observe and comply with applicable legal requirements in effect at the time the drawings and specifications are prepared. City, and its officers and employees, shall not be liable at law or in equity occasioned by failure of Consultant to comply with this Section.

13. UNDUE INFLUENCE

Consultant declares and warrants that no undue influence or pressure is used against or in concert with any officer or employee of City in connection with the award, terms or implementation of this Agreement, including any method of coercion, confidential financial arrangement, or financial inducement. No officer or employee of City will receive compensation, directly or indirectly, from Consultant, or from any officer, employee or agent of Consultant, in connection with the award of this Agreement or any work to be conducted as a result of this Agreement. Violation of this Section shall be a material breach of this Agreement entitling City to any and all remedies at law or inequity.

14. NO BENEFIT TO ARISE TO LOCAL EMPLOYEES

No member, officer, or employee of City, or their designees or agents, and no public official who exercises authority over or responsibilities with respect to the Project during his/her tenure or for one year thereafter, shall have any interest, direct or indirect, in any agreement or sub-agreement, or the proceeds thereof, for work to be performed in connection with the Project performed under this Agreement.

15. RELEASE OF INFORMATION/CONFLICTS OF INTEREST

(a) All information gained by Consultant in performance of this Agreement shall be considered confidential and shall not be released by Consultant without City's prior written authorization. Consultant, its officers, employees, agents, or subconsultants, shall not without written authorization from the City Manager or unless requested by the City Attorney, voluntarily provide declarations, letters of support, testimony at depositions, response to interrogatories, or other information concerning the work performed under this Agreement or relating to any project or property located within City. Response to a subpoena or court order shall not be considered "voluntary" provided Consultant gives City notice of such court order or subpoena.

(b) Consultant shall promptly notify City if Consultant, or any of its officers, employees, agents, or subconsultants are served with any summons, complaint, subpoena, notice of deposition, request for documents, interrogatories, request for admissions, or other discovery request, court order, or subpoena from any person or party regarding this Agreement and the work performed thereunder or with respect to any project or property located within City. City retains the right, but has no obligation, to represent Consultant or be present at any deposition,

hearing, or similar proceeding. Consultant agrees to cooperate with City by providing the opportunity to review any response to discovery requests provided by Consultant. However, City's right to review any such response does not imply or mean the right by City to control, direct, or rewrite said response.

16. NOTICES

Any notices which either party may desire to give to the other party under this Agreement must be in writing and may be given either by (i) personal service, (ii) delivery by a reputable document delivery service, such as but not limited to, Federal Express, which provides a receipt showing date and time of delivery, or (iii) mailing in the United States Mail, certified mail, postage prepaid, return receipt requested, addressed to the address of the party as set forth below or at any other address as that party may later designate by notice:

To City: City of Morro Bay
595 Harbor Street
Morro Bay, CA 93442
Attention: City Clerk

To Consultant:

17. ASSIGNMENT

Consultant shall not assign the performance of this Agreement, nor any part thereof, nor any monies due hereunder, without prior written consent of City.

18. LICENSES

At all times during the term of this Agreement, Consultant shall have in full force and effect, all licenses and tax certificates required of it by law for the performance of the services described in this Agreement.

19. GOVERNING LAW

City and Consultant understand and agree that the laws of the State of California shall govern the rights, obligations, duties, and liabilities of the parties to this Agreement and also govern the interpretation of this Agreement. Any litigation concerning this Agreement shall take place in the municipal, superior, or federal district court with jurisdiction over City.

20. ENTIRE AGREEMENT

This Agreement contains the entire understanding between the parties relating to the obligations of the parties described in this Agreement. All prior or contemporaneous agreements, understandings, representations, and statements, oral or written, are merged into this Agreement and shall be of no further force or effect. Each party is entering into this Agreement based solely upon the representations set forth herein and upon each party's own independent investigation of any and all facts such party deems material.

21. CONTENTS OF PROPOSAL

Consultant is bound by the contents of the proposal submitted by Consultant, Exhibit A hereto.

22. AUTHORITY TO EXECUTE THIS AGREEMENT

The person or persons executing this Agreement on behalf of Consultant warrants and represents he/she has the authority to execute this Agreement on behalf of Consultant and has the authority to bind Consultant to the performance of its obligations hereunder.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed the day and year first above written.

CITY OF MORRO BAY

By: _____
David Buckingham, City Manager

Attest:

_____
Dana Swanson, City Clerk

CONSULTANT (2 signatures required)

By: _____
(Signature)

_____
(Typed Name)

Its: _____
(Title)

By: _____
(Signature)

_____
(Typed Name)

Its: _____
(Title)

Approved As To Form:

_____
Joseph W. Pannone, City Attorney

EXHIBIT A

TASKS TO BE PERFORMED

EXHIBIT B

PAYMENT SCHEDULE

EXHIBIT C
INSURANCE REQUIREMENTS

Prior to the beginning of and throughout the duration of the Agreement, Consultant will maintain insurance in conformance with the requirements set forth below. Consultant will use existing coverage to comply with these requirements. If that existing coverage does not meet the requirements set forth here, Consultant agrees to amend, supplement or endorse the existing coverage to do so. Consultant acknowledges that the insurance coverage and policy limits set forth in this section constitute the minimum amount of coverage required. Any insurance proceeds available to City in excess of the limits and coverage required in this agreement and which is applicable to a given loss, will be available to City.

Consultant shall provide the following types and amounts of insurance:

Commercial General Liability Insurance using Insurance Services Office "Commercial General Liability" policy from CG 00 01 or the exact equivalent. Defense costs must be paid in addition to limits. There shall be no cross liability exclusion for claims or suits by one insured against another. Limits are subject to review but in no event less than $1,000,000 per occurrence.

Business Auto Coverage on ISO Business Auto Coverage from CA 00 01 including symbol 1 (Any Auto) or the exact equivalent. Limits are subject to review, but in no event to be less than $1,000,000 per accident. If Consultant owns no vehicles, this requirement may be satisfied by a non-owned auto endorsement to the general liability policy described above. If Consultant or Consultant's employees will use personal autos in any way to perform the Scope of Services, then Consultant shall provide evidence of personal auto liability coverage for each such person.

Property Damage Insurance in an amount of not less than $1,000,000 for damage to the property of each person on account of any one occurrence.

Workers Compensation on a state-approved policy form providing statutory benefits as required by law with employer's liability limits.

Excess or Umbrella Liability Insurance (Over Primary) if used to meet limit requirements, shall provide coverage at least as broad as specified for the underlying coverages. Any such coverage provided under an umbrella liability policy shall include a drop down provision providing primary coverage above a maximum $25,000 self-insured retention for liability not covered by primary but covered by the umbrella. Coverage shall be provided on a "pay on behalf" basis, with defense costs payable in addition to policy limits. Policy shall contain a provision obligating insurer at the time insured's liability is determined, not requiring actual payment by the insured first. There shall be no cross liability exclusion precluding coverage for claims or suits by one insured against another. Coverage shall be applicable to City for injury to employees of Consultant, subcontractors or others involved in the Work. The scope of coverage provided is subject to approval of City following receipt of proof of insurance as required herein. Limits are subject to review but in no event less than $1,000,000 per occurrence.

Professional Liability or Errors and Omissions Insurance as appropriate shall be written on a policy form coverage specifically designated to protect against acts, errors or omissions of Consultant and "Covered Professional Services" as designated in the policy must specifically include work performed under this agreement. The policy limit shall be no less than $2,000,000 per claim and in the aggregate. The policy must "pay on behalf of" the insured and must include a provision establishing the insurer's duty to defend. The policy retroactive date shall be on or before the effective date of this agreement.

Insurance procured pursuant to these requirements shall be written by insurer that are admitted carriers in the state California and with an A.M. Best's rating of A- or better and a minimum financial size VII.

General conditions pertaining to provision of insurance coverage by Consultant. Consultant and City agree to the following with respect to insurance provided by Consultant:

1. Consultant agrees to have its insurer endorse the third party general liability coverage required herein to include as additional insureds the City of Morro Bay, its officials, employees and agents, using standard ISO endorsement No. CG 2010 with an edition prior to 1992. Consultant also agrees to require all Consultants, and subcontractors to do likewise.

2. No liability insurance coverage provided to comply with this Agreement shall prohibit Consultant, or Consultant's employees, or agents, from waiving the right of subrogation prior to a loss. Consultant agrees to waive subrogation rights against City regardless of the applicability of any insurance proceeds, and to require all Consultants and subcontractors to do likewise.

3. All insurance coverage and limits provided by Consultant and available or applicable to this agreement are intended to apply to the full extent of the policies. Nothing contained in this Agreement or any other agreement relating to City or its operations limits the application of such insurance coverage.

4. None of the coverages required herein will be in compliance with these requirements if they include any limiting endorsement of any kind that has not been first submitted to City and approved of in writing.

5. No liability policy shall contain any provision or definition that would serve to eliminate so-called "third party action over" claims, including any exclusion for bodily injury to an employee of the insured or of any Consultant or subcontractor.

6. All coverage types and limits required are subject to approval, modification and additional requirements by City, as the need arises. Consultant shall not make any reductions in scope of coverage (e.g. elimination of contractual liability or reduction of discovery period) that may affect City's protection without City's prior written consent.

7. Proof of compliance with these insurance requirements, consisting of certificates of insurance evidencing all of the coverages required and an additional insured endorsement to Consultant's general liability policy, shall be delivered to City at or prior to the execution of this Agreement. In the event such proof of any insurance is not delivered as required, or in the event such insurance is canceled at any time and no replacement coverage is provided, City has the right, but not the duty, to obtain any insurance it deems necessary to protect its interests under this or any other agreement and to pay the premium. Any premium so paid by City shall be charged to and promptly paid by Consultant or deducted from sums due Consultant, at City's option.

8. It is acknowledged by the parties of this agreement that all insurance coverage required to be provided by Consultant or any subcontractor, is intended to apply first and on a primary, noncontributing basis in relation to any other insurance or self-insurance available to City.

9. Consultant agrees to ensure that subcontractors, and any other party involved with the Scope of Services who is brought onto or involved in the Scope of Services by Consultant, provide the same minimum insurance coverage required of Consultant. Consultant agrees to monitor and review all such coverage and assumes all responsibility for ensuring that such coverage is provided in conformity with the requirements of this section. Consultant agrees that upon request, all agreements with subcontractors and others engaged in the Scope of Services will be submitted to City for review.

10. Consultant agrees not to self-insure or to use any self-insured retentions or deductibles on any portion of the insurance required herein and further agrees that it will not allow any Consultant, Subcontractor, Architect, Engineer or other entity or person in any way involved in the performance of the Scope of Services to self-insure its obligations to City. If Consultant's existing coverage includes a deductible or self-insured retention, the deductible or self-insured retention must be declared to City. At the time City shall review options with Consultant, which may include reduction or elimination of the deductible or self-insured retention, substitution of other coverage, or other solutions.

11. City reserves the right at any time during the term of the contract to change the amounts and types of insurance required by giving Consultant ninety (90) days advance written notice of such change. If such change results in substantial additional cost to Consultant, the City will negotiate additional compensation proportional to the increase benefit to City.

12. For purposes of applying insurance coverage only, this Agreement will be deemed to have been executed immediately upon any party hereto taking any steps that can be deemed to be in furtherance of or towards performance of this Agreement.

13. Consultant acknowledges and agrees that any actual or alleged failure on the part of City to inform Consultant of non-compliance with any insurance requirements in no way imposes any additional obligations on City nor does it waive any rights hereunder in this or any other regard.

14. Consultant will renew the required coverage annually as long as City, or its employees or agents face an exposure from operations of any type pursuant to this agreement. This obligation applies whether or not the agreement is canceled or terminated for any reason. Termination of this obligation is not effective until City executes a written statement to that effect.

15. Consultant shall provide proof that policies of insurance required herein expiring during the term of this Agreement have been renewed or replaced with other policies providing at least the same coverage. Proof that such coverage has been ordered shall be submitted prior to expiration. A coverage binder or letter from Consultant's insurance agent to this effect is acceptable. A certificate of insurance and/or additional insured endorsement as required in these specifications applicable to the renewing or new coverage must be provided to City within five days of the expiration of the coverages.

16. The provisions of any workers' compensation or similar act will not limit the obligations of Consultant under this agreement. Consultant expressly agrees not to use any statutory immunity defenses under such laws with respect to City, its employees, officials and agents.

17. Requirements of specific coverage features or limits contained in this section are not intended as limitations on coverage, limits or other requirements nor as a waiver of any coverage normally provided by any given policy. Specific reference to a given coverage feature is for purposes of clarification only as it pertains to a given issue, and is not intended by any party or insured to be limiting or all-inclusive.

18. These insurance requirements are intended to be separate and distinct from any other provision in this agreement and are intended by the parties here to be interpreted as such.

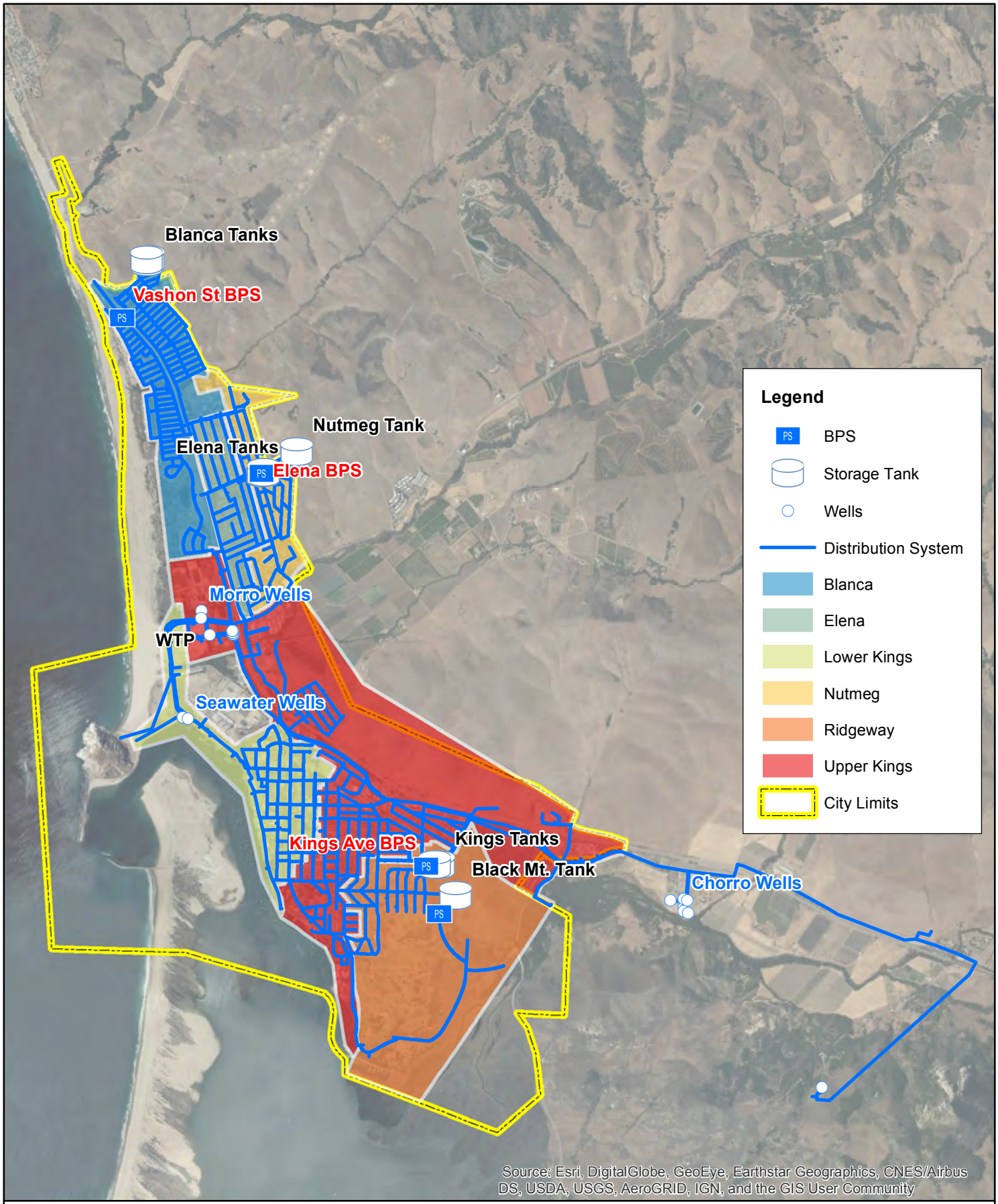
19. The requirements in this Section supersede all other sections and provisions of this Agreement to the extent that any other section or provision conflicts with or impairs the provisions of this Section.

20. Consultant agrees to be responsible for ensuring that no contract used by any party involved in any way with the Scope of Services reserves the right to charge City or Consultant for the cost of additional insurance coverage required by this agreement. Any such provisions are to be deleted with reference to City. It is not the intent of City to reimburse any third party for the cost of complying with these requirements. There shall be no recourse against City for payment of premiums or other amounts with respect thereto.

21. Consultant agrees to provide immediate notice to City of any claim or loss against Consultant arising out of the work performed under this agreement. City assumes no obligation or liability by such notice, but has the right (but not the duty) to monitor the handling of any such claim or claims if they are likely to involve City.

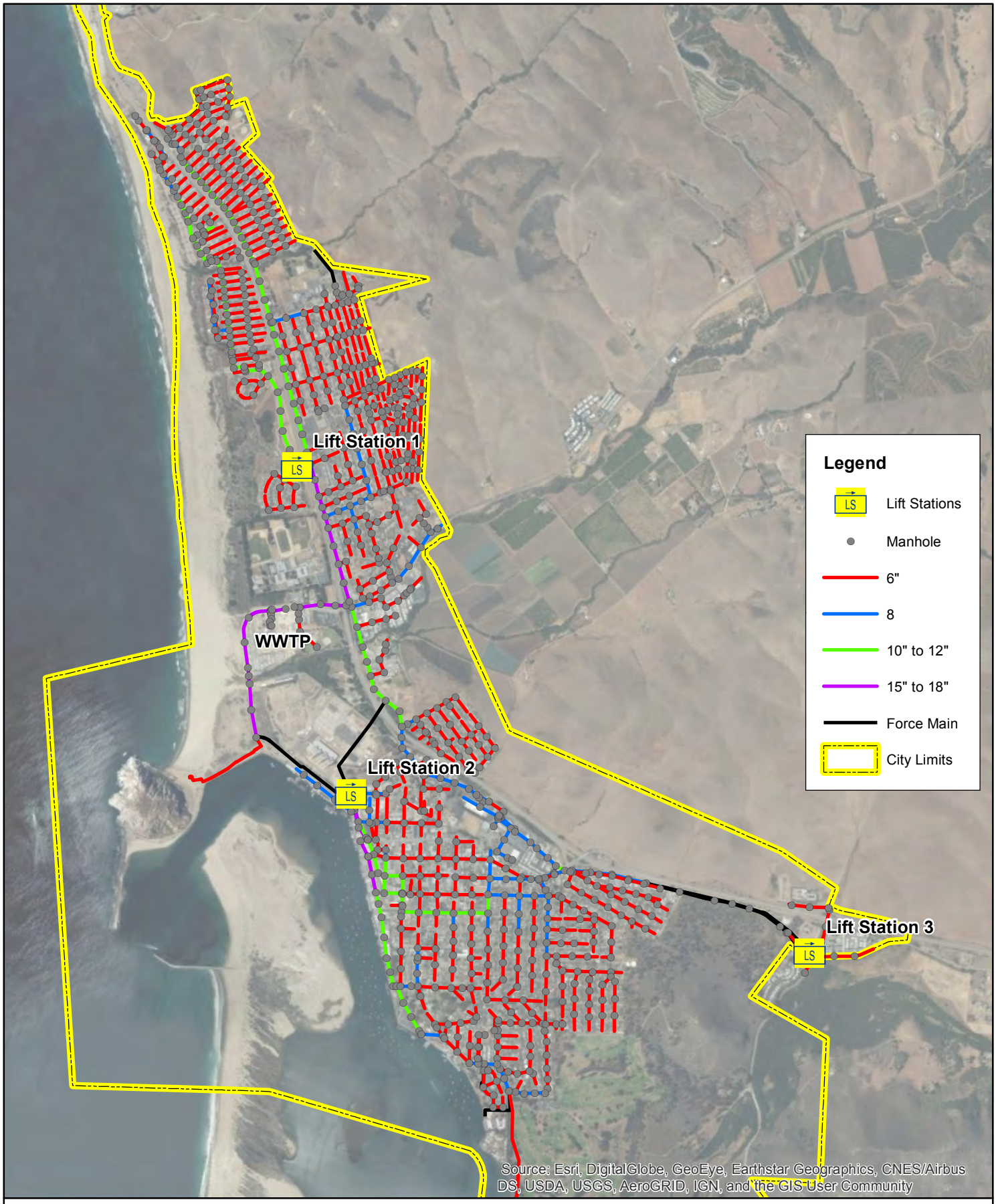
B.

Water and Sewer Collection System Schematics



City of Morro Bay - SCADA Master Plan RFP

Water Distribution System



City of Morro Bay - SCADA Master Plan RFP

Sewer Collection System

Appendix C:
Existing WWTP Influent Quality

Existing Morro Bay/CSD WWTP - Influent Sampling Data

Date	Total BOD5 5210 B (mg/L)	Soluble BOD5 5210 B (mg/L)	Total CBOD5 5210 B (mg/L)	Soluble CBOD5 5210 B (mg/L)	Total COD 5220 B (mg/L)	Filter Floc. COD (ffCOD) 5220 B (mg/L)	Filtered COD 5220 B (mg/L)	Soluble COD 5220 B (mg/L)
12/01/15	375	113	280	80.3	920	130	310	290
12/03/15	330	113	359	82.5	670	130	290	270
12/05/15	348	38.3	248	19.4	640	140	260	260
12/07/15	436	46.8	338	106	680	160	310	280
12/09/15	376	110	301	44	810	160	310	290
12/11/15	265	62.6	246	14.6	820	140	260	250
12/13/15	344	113	296	103	690	150	270	250
05/24/16	296	127	485	110	680	310	160	300
05/26/16	365	124	430	83	700	150	290	260
05/28/16	301	96	327	82.8	730	130	230	220
05/30/16	378	1.32	331	112	770	160	280	260
06/03/16	386	118	308	97.8	780	290	140	260
06/05/16	348	129	340	95.4	720	280	150	240
06/30/16	384	160	343	117	830	150	300	280
07/02/16	346	109	322	114	780	160	280	250
07/05/16	436	152	315	154	980	180	330	300
07/06/16	784	135	363	146	920	180	330	310
07/08/16	187	75.4	278	99.8	930	160	310	270
07/10/16	330	124	277	117	820	160	280	270
08/17/16	165	162	373	73.5	800	120	210	200
08/19/16	280	92.2	256	84.1	820	130	230	220
08/21/16	362	113	317	98.3	1440	140	250	240
08/28/16	338	113	303	77	770	140	260	230
08/31/16	350	98.5	251	99	760	140	280	260
09/02/16	298	42.1	335	92.2	790	150	280	250

Existing Morro Bay/CSD WWTP - Influent Sampling Data

Date	Fixed Suspended Solids 2540D mg/L	Total Suspended Solids 2540 D (mg/L)	Volatile Suspended Solids 2540 E (mg/L)	Total Kjeldahl Nitrogen EPA351.2 (mg/L)	Soluble Total Kjeldahl Nitrogen (mg/L)	Ammonia Nitrogen (NH3-N) 4500-NH3 (mg-N/L)	Nitrite Nitrogen (NO2-N) 4500-NO2-F (mg-N/L)	Nitrate-Nitrogen (NO3-N) 4500-NO3-F (mg-N/L)
12/01/15	41	329	288	65	51	53	ND	ND
12/03/15	40	310	270	51	40	49	ND	ND
12/05/15	30	220	190	56	44	57	ND	0.2
12/07/15	30	310	280	52	39	49	ND	0.1
12/09/15	ND	293	293	46	42	57	ND	ND
12/11/15	34	328	294	39	50	46	ND	0.1
12/13/15	30	270	240	49	51	53	ND	0.1
05/24/16	90	700	610	52	44	42	ND	ND
05/26/16	20	163	143	56	43	46	ND	ND
05/28/16	30	170	140	63	54	43	ND	0.2
05/30/16	50	340	300	59	52	56	ND	0.1
06/03/16	30	360	330	56	44	52	ND	0.2
06/05/16	20	280	260	62	55	55	ND	ND
06/30/16	23	233	210	65	47	45	ND	ND
07/02/16	30	240	210	66	49	41	ND	ND
07/05/16	44	550	506	74	62	47	ND	ND
07/06/16	40	340	300	67	56	50	ND	0.1
07/08/16	30	270	240	64	63	40	ND	0.1
07/10/16	30	310	280	68	64	54	ND	ND
08/17/16	37	369	332	56	37	46	ND	ND
08/19/16	53	374	321	60	47	57	ND	0.1
08/21/16	40	340	300	66	57	46	ND	0.1
08/28/16	30	350	320	57	60	48	ND	ND
08/31/16	46	341	295	67	54	47	ND	ND
09/02/16	37	320	283	73	43	36	ND	0.2

Existing Morro Bay/CSD WWTP - Influent Sampling Data

Date	Total Phosphorous 4500-P (mg/L)	Soluble Phosphorous 4500-P (mg/L)	Ortho Phosphorous 4500-P (mg/L)	Alkalinity 2320 B (mg/L as $CaCO_3$)	Bicarbonate 2320 B (mg/L as $CaCO_3$)	Carbonate 2320 B (mg/L as $CaCO_3$)	Hydroxide 2320 B (mg/L as $CaCO_3$)	pH (Std units)	Temp (deg C)
12/01/15	8.9	5.3	5	380	460	ND	ND	7.4	
12/03/15	6.7	5.5	4	320	390	ND	ND	7.5	
12/05/15	6.6	4.4	5	350	420	ND	ND	Not analyzed	
12/07/15	6.8	4.5	4	310	370	ND	ND	7.4	
12/09/15	6.3	4.1	4	330	400	ND	ND	7.5	
12/11/15	6.8	4.1	4	330	400	ND	ND	7.6	
12/13/15	6.7	4.3	4	290	350	ND	ND	7.5	
05/24/16	7.9	6.3	5.1	340	410	ND	ND	7.68	
05/26/16	9.1	6.4	5	360	430	ND	ND	7.48	
05/28/16	7.9	4.1	3.5	350	430	ND	ND	7.58	
05/30/16	9.1	4.4	4	360	440	ND	ND	7.59	
06/03/16	8.5	4.7	2.8	340	410	ND	ND	7.58	
06/05/16	8.5	5.1	5	340	420	ND	ND	7.52	
06/30/16	8.8	6	8	330	400	ND	ND	7.34	
07/02/16	9.1	4.8	4.7	320	400	ND	ND	7.32	
07/05/16	9	6	8	340	420	ND	ND	7.39	
07/06/16	8.6	5.5	4.7	330	410	ND	ND	7.3	
07/08/16	9.4	5.6	2.8	330	410	ND	ND	7.36	
07/10/16	8.2	4.7	4.1	70	80	ND	ND	7.83	
08/17/16	9.8	4.8	5	250	310	ND	ND	7.42	
08/19/16	9.8	5.3	3.3	240	300	ND	ND	7.4	
08/21/16	9	4.2	8	300	360	ND	ND	7.36	8.7
08/28/16	7.9	4.1	3.9	300	360	ND	ND	7.38	8.6
08/31/16	8.9	5.5	5.2	280	350	ND	ND	7.41	
09/02/16	9.8	5.6	5	290	360	ND	ND	7.3	

Appendix D:

Order No. R3-2017-0050, NPDES No. CA0047881

ORDER NO. R3-2017-0050
NPDES NO. CA0047881

WASTE DISCHARGE REQUIREMENTS FOR THE MORRO BAY AND CAYUCOS WASTEWATER TREATMENT PLANT DISCHARGE TO THE PACIFIC OCEAN

The following Discharger is subject to waste discharge requirements as set forth in this Order:

Table 1. Discharger Information

Discharger	City of Morro Bay and Cayucos Sanitary District
Name of Facility	City of Morro Bay/Cayucos Sanitary Wastewater Treatment Plant
Facility Address	160 Atascadero Road
	Morro Bay, California, 93442
	San Luis Obispo

Table 2. Discharge Location

Discharge Point	Effluent Description	Discharge Point Latitude	Discharge Point Longitude	Receiving Water
001	Municipal Wastewater	35º, 23', 11" N	120º, 52', 29" W	Pacific Ocean

Table 3. Administrative Information

This Order was adopted by the Central Coast Water Board on:	December 7, 2017
This Order shall become effective on:	March 1, 2018
This Order shall expire on:	February 28, 2023
The Discharger shall file a Report of Waste Discharge as an application for reissuance of waste discharge requirements in accordance with title 23, California Code of Regulations, and an application for reissuance of a National Pollutant Discharge Elimination System (NPDES) permit no later than:	September 1, 2022
The U.S. Environmental Protection Agency (U.S. EPA) and the Central Coast Water Board have classified this discharge as follows:	Major

IT IS HEREBY ORDERED, that Order No. R3-2008-0065 is superseded upon the effective date of this Order and, in order to meet the provisions contained in division 7 of the Water Code (commencing with section 13000) and regulations adopted thereunder and the provisions of the federal Clean Water Act (CWA) and regulations and guidelines adopted thereunder, the Discharger shall comply with the requirements in this amended Order.

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John M. Robertson, Executive Officer

Contents

Tables

Attachments

I. FINDINGS

The California Regional Water Quality Control Board, Central Coast Region (hereinafter Central Coast Water Board) finds:

A. Legal Authorities. This Order serves as waste discharge requirements (WDRs) pursuant to article 4, chapter 4, division 7 of the California Water Code (commencing with section 13260). This Order is also issued pursuant to section 402 of the federal Clean Water Act (CWA) and implementing regulations adopted by the U.S. Environmental Protection Agency (U.S. EPA) and chapter 5.5, division 7 of the Water Code (commencing with section 13370). It shall serve as an NPDES permit for point source discharges from this facility to surface waters.

B. Background and Rationale for Requirements. The Central Coast Water Board developed the requirements in this Order based on information submitted as part of the application, through monitoring and reporting programs, and other available information. The Fact Sheet (Attachment F), which contains background information and rationale for the requirements in this Order, is hereby incorporated into and constitutes findings for this Order. Attachments A through E are also incorporated into this Order.

C. Provisions and Requirements Implementing State Law. The provisions/requirements in subsections III.B, III.C, and IV.B are included to implement state law only. These provisions/requirements are not required or authorized under the federal CWA; consequently, violations of these provisions/requirements are not subject to the enforcement remedies that are available for NPDES violations.

D. Notification of Interested Parties. The Central Coast Water Board has notified the Discharger and interested agencies and persons of its intent to prescribe WDRs for the discharge and has provided them with an opportunity to submit their written comments and recommendations. Details of the notification are provided in the Fact Sheet of this Order.

E. Consideration of Public Comment. The Central Coast Water Board, in a public meeting, heard and considered all comments pertaining to the discharge. Details of the Public Hearing are provided in the Fact Sheet of this Order.

THEREFORE, IT IS HEREBY ORDERED, that Order No. R3-2008-0065 is rescinded upon the effective date of this Order except for enforcement purposes, and, in order to meet the provisions contained in division 7 of the Water Code (commencing with section 13000) and regulations adopted thereunder and the provisions of the CWA and regulations and guidelines adopted thereunder, the Discharger shall comply with the requirements in this Order. This action in no way prevents the Central Coast Water Board from taking enforcement action for past violations of the previous Order. If any part of this Order is subject to a temporary stay of enforcement, unless otherwise specified, the Discharger shall comply with the analogous portions of the previous Order, which shall remain in effect for all purposes during the pendency of the stay.

II. DISCHARGE PROHIBITIONS

A. Discharge of treated wastewater to the Pacific Ocean at a location other than 35º 23' 11" N latitude and 120º 52' 29" W longitude is prohibited.

B. The discharge of any radiological, chemical, or biological warfare agent or high level radioactive waste to the Ocean is prohibited.

C. The discharge of municipal or industrial waste sludge to the Pacific Ocean is prohibited. The discharge of sludge digester supernatant, without further treatment, directly to the Ocean or to a waste stream that discharges to the Ocean is prohibited.

D. The overflow of bypass or wastewater from the Discharger's collection, treatment, or disposal facilities and the subsequent discharge of untreated or partially treated wastewater, except as provided for in Attachment D, Standard Provision I.G.a (Bypass), is prohibited.

E. Bypass of the treatment facility and discharge of any wastes not meeting the discharge specifications of this Order and permit are prohibited.

F. The discharge of materials and substances in the wastewater that results in any of the following is prohibited:

1. Float or become floatable upon discharge.

2. May form sediments which degrade benthic communities or other aquatic life.

3. Accumulate to toxic levels in marine waters, sediments, or biota.

4. Decrease the natural light to benthic communities and other marine life.

5. Result in aesthetically undesirable discoloration of the ocean surface.

G. The discharge of chlorine or any other toxic substance used for disinfection and cleanup of sewage overflows to any surface water body is prohibited. This prohibition does not apply to the chlorine in the potable water used for final wash down and cleanup of overflows.

III. EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

A. Effluent Limitations – Discharge Point No. 001

1. Final Effluent Limitations – Discharge Point No. 001

The Discharger shall maintain compliance with the following effluent limitations at Discharge Point No. 001 with compliance measured at Monitoring Location EFF-001 as described in the attached MRP:

Table 4. Effluent Limitations

Parameter	Units	Effluent Limitations		
		Average Monthly	Average Weekly	Maximum Daily
Biochemical Oxygen Demand 5-day @ 20°C (BOD_5)[1]	mg/L	30	45	--
	lbs/day[2]	515	773	--
Total Suspended Solids (TSS)[1]	mg/L	30	45	--
	lbs/day[2]	515	773	--
Oil and Grease	mg/L	25	40	75
	lbs/day[2]	430	687	1,289
Settleable Solids	ml/L	1.0	1.5	3.0
pH	standard units	6.0 – 9.0 at all times		

Parameter	Units	Effluent Limitations		
		Average Monthly	Average Weekly	Maximum Daily
Turbidity	NTU	75	100	225

[1] The average monthly percent removal for BOD_5 and TSS shall not be less than 85 percent.
[2] Mass based effluent limitations were calculated using the following formula:
lbs/day = pollutant concentration (mg/L) * Design flow (2.06 MGD) * conversion factor (8.34)

Table 5. Effluent Limitations, Protection of Marine Aquatic Life

Parameter	Units	Effluent Limitation		
		6-Month Median[1]	Maximum Daily[2]	Instantaneous Maximum[3]
Arsenic, Total Recoverable	µg/L	670	3,890	10,300
	lbs/day	12	67	177
Cadmium, Total Recoverable	µg/L	130	540	1,340
	lbs/day	2.2	9.3	23
Chromium (VI) , Total Recoverable	µg/L	270	1,070	2,680
	lbs/day	4.64	18	46
Mercury, Total Recoverable	µg/L	5.29	21.4	53.5
	lbs/day	0.091	0.37	0.92
Nickel, Total Recoverable	µg/L	670	2,680	6,700
	lbs/day	12	46	115
Silver, Total Recoverable	µg/L	70	350	920
	lbs/day	1.2	6.01	16
Total Chlorine Residual	µg/L	268	1,072	8,040
	lbs/day	4.6	18	138
Acute Toxicity	TUa	--	4.3	--
Chronic Toxicity	TUc	--	134	--
Phenolic Compounds (non-chlorinated)	µg/L	4,020	16,100	40,200
	lbs/day	69	277	691
Phenolic Compounds (chlorinated)	µg/L	130	540	1,340
	lbs/day	2.2	9.3	23
Endosulfan[4]	µg/L	1.21	2.41	3.62
	lbs/day	0.021	0.041	0.062
Endrin	µg/L	0.27	0.54	0.80
	lbs/day	0.0046	0.0093	0.014
HCH[5]	µg/L	0.54	1.07	1.61
	lbs/day	0.0093	0.018	0.028
Radioactivity	[6]			

Parameter	Units	Effluent Limitation		
		6-Month Median[1]	Maximum Daily[2]	Instantaneous Maximum[3]

1] The six-month median shall apply as a moving median of daily values for any 180-day period in which daily values represent flow weighted average concentrations within a 24-hour period. For intermittent discharges, the daily value shall be considered equal to zero for days on which no discharge occurred. The six-month median limit on daily mass emissions shall be determined using the six-month medial effluent concentration Ce and the observed flow rate, Q, in million gallons per day (MGD).

2] The daily maximum shall apply to flow weighted 24-hour composite samples. The daily maximum mass emission shall be determined using the daily maximum effluent concentration limit as Ce and the observed flow rate, Q, in MGD.

3] The instantaneous maximum shall apply to grab sample determinations.

[4] Endosulfan shall mean the sum of endosulfan-alpha and –beta and endosulfan sulfate.

5] HCH shall mean the sum of the alpha, beta, gamma (Lindane) and delta isomers of hexachlorocyclohexane.

6] Not to exceed limits specified in Title 17, Division 1, Chapter 5, Subchapter 4, Group 3, Article 3, section 30253 of the California Code of Regulations.

Table 6. Effluent Limitations – Protection of Human Health – Non-Carcinogens

Parameter	Units	Effluent Limitation
		30-day Average
Acrolein	µg/L	29,500
	lbs/day	507
Antimony	µg/L	160,800
	lbs/day	2,763
Bis(2-chloroethoxy) methane	µg/L	590
	lbs/day	10
Bis(2-chloroisopropyl) ether	µg/L	160,800
	lbs/day	2,763
Chlorobenzene	µg/L	76,400
	lbs/day	1,313
Chromium (III)[1]	µg/L	25,500,000
	lbs/day	438,100
Di-n-butyl phthalate	µg/L	469,000
	lbs/day	8,058
Dichlorobenzenes[2]	µg/L	683,000
	lbs/day	11,734
Diethyl phthalate	µg/L	4,420,000
	lbs/day	75,937
Dimethyl phthalate	µg/L	109,900,000
	lbs/day	1,888,126
4,6-dinitro-2-methylphenol	µg/L	29,500
	lbs/day	507
2,4-dinitrophenol	µg/L	540
	lbs/day	9.3
Ethylbenzene	µg/L	549,000
	lbs/day	9,432
Fluoranthene	µg/L	2,000

Parameter	Units	Effluent Limitation
		30-day Average
	lbs/day	34
Hexachlorocyclopentadiene	µg/L	7,800
	lbs/day	134
Nitrobenzene	µg/L	660
	lbs/day	11
Thallium	µg/L	270
	lbs/day	4.64
Toluene	µg/L	11,400,000
	lbs/day	195,857
Tributyltin	µg/L	0.188
	lbs/day	0.0032
1,1,1-trichloroethane	µg/L	72,400,000
	lbs/day	1,243,860

[1] Discharger may at its option meet this objective as a total chromium objective.

[2] Sum of 1,2- and 1,3-dichlorobenzene.

Table 7. Effluent Limitations – Protection of Human Health – Carcinogens

Parameter	Units	Effluent Limitation
		30-day Average
Acrylonitrile	µg/L	13.4
	lbs/day	0.23
Aldrin	µg/L	0.00295
	lbs/day	5.07×10^{-5}
Benzene	µg/L	791
	lbs/day	14
Benzidine	µg/L	0.00925
	lbs/day	0.00016
Beryllium	µg/L	4.42
	lbs/day	0.076
Bis(2-chloroethyl) ether	µg/L	6.03
	lbs/day	0.10
Bis(2-ethylhexyl) phthalate	µg/L	469
	lbs/day	8.06
Carbon tetrachloride	µg/L	121
	lbs/day	2.08
Chlordane[1]	µg/L	0.00308
	lbs/day	5.3×10^{-5}
Chlorodibromomethane	µg/L	1,152
	lbs/day	20
Chloroform	µg/L	17,400
	lbs/day	299
DDT[2]	µg/L	0.0228
	lbs/day	0.00039

Parameter	Units	Effluent Limitation
		30-day Average
1,4-dichlorobenzene	µg/L	2,410
	lbs/day	41
3,3-dichlorobenzidine	µg/L	1.09
	lbs/day	0.019
1,2-dichloroethane	µg/L	3,750
	lbs/day	64
1,1-dichloroethylene	µg/L	120
	lbs/day	2.06
Dichlorobromomethane	µg/L	830
	lbs/day	14
Dichloromethane	µg/L	60,300
	lbs/day	1,036
1,3-dichloropropene	µg/L	1,190
	lbs/day	20
Dieldrin	µg/L	0.00536
	lbs/day	9.21×10^{-5}
2,4-dinitrotoluene	µg/L	348
	lbs/day	6.0
1,2-diphenylhydrazine	µg/L	21.4
	lbs/day	0.37
Halomethanes[3]	µg/L	17,400
	lbs/day	299
Heptachlor	µg/L	0.0067
	lbs/day	1.15×10^{-4}
Heptachlor epoxide	µg/L	0.00268
	lbs/day	4.6×10^{-5}
Hexachlorobenzene	µg/L	0.0281
	lbs/day	0.00048
Hexachlorobutadiene	µg/L	1,880
	lbs/day	32
Hexachloroethane	µg/L	335
	lbs/day	5.8
Isophorone	µg/L	98,000
	lbs/day	1,684
N-nitrosodimethylamine	µg/L	978
	lbs/day	17
N-nitrosodi-n-propylamine	µg/L	50.9
	lbs/day	0.87
N-nitrosodiphenylamine	µg/L	335
	lbs/day	5.8
PAHs[4]	µg/L	1.18
	lbs/day	0.020
PCBs[5]	µg/L	0.00255

Parameter	Units	Effluent Limitation
		30-day Average
	lbs/day	4.38×10^{-5}
1,1,2,2-tetrachloroethane	µg/L	310
	lbs/day	5.3
Tetrachlorothylene	µg/L	268
	lbs/day	4.6
Toxaphene	µg/L	0.0281
	lbs/day	0.00048
Trichloroethylene	µg/L	3,620
	lbs/day	62
1,1,2-trichloroethane	µg/L	1,260
	lbs/day	22
2,4,6-trichlorophenol	µg/L	39
	lbs/day	0.67
Vinyl chloride	µg/L	4,820
	lbs/day	83

[1] Sum of chlorodane-alpha, chlorodane-gamma, chlorodene-alpha, chlorodene-gamma, nonachlor-alpha, nonachlor gamma, and oxychlorodane.

[2] Sum of 4,4'-DDT, 2,4'-DDT, 4,4'-DDE, 2,4'-DDE, 4,4'-DDD, and 2,4'-DDD.

[3] Sum of bromoform, bromoethane (methyl bromide), chloromethane (methyl chloride), chlorodibromomethane, and dichlorobromomethane.

[4] Sum of acenaphthylene, anthracene, 1,2-benzanthracene, 3,4-benzofluoranthene, benzo[k]fluoranthene, 1,1,2-benzoperylene, benzo[a]pyrene, chrysene, dibenzo[a,h]anthracene, fluorine, ideno[1,2,3-cd]pyrene, phenanthrene, and pyrene.

[5] Sum of chlorinated biphenyls whose analytical characteristics resemble those of Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Aroclor-1254, and Aroclor-1260.

2. **Percent Removal:** The average monthly percent removal of BOD 5-day 20°C and total suspended solids shall not be less than 85 percent.

3. **Dry Weather Flow**. Effluent peak seasonal dry weather flow shall not exceed a monthly average of 2.36 million gallons per day.

4. **Bacteria**

   a. Total Coliform

      i. The total coliform concentrations shall not exceed a 30-day geometric mean of 23 MPN/100 mL.

      ii. No total coliform single sample shall exceed 2,400 MPN/100 mL.

B. Land Discharge Specifications – Not Applicable

C. Recycling Specifications – Not Applicable

IV. RECEIVING WATER LIMITATIONS

A. Surface Water Limitation

Receiving water limitations are based on water quality objectives contained in the Ocean Plan and Basin Plan and are a required part of this Order. The discharge shall not cause the following in the Pacific Ocean:

1. Bacterial Characteristics

a. At all areas where shellfish may be harvested for human consumption, as determined by the Regional Board, the following bacterial objectives shall be maintained throughout the water column.

i. The median total coliform density shall not exceed 70 per 100 mL, and not more than 10 percent of the samples shall exceed 230 per 100 mL.

b. Within a zone bounded by the shoreline and a distance of 1,000 feet from the shoreline or the 30-foot depth contour, whichever is further from the shoreline, and in areas outside this zone used for water contact sports, as determined by the Regional Board (i.e., waters designated REC-1), but including all kelp beds, the following bacterial objectives shall be maintained throughout the water column.

i. 30-day Geometric Mean – The following standards are based on the geometric mean of the five most recent samples from each site:

(a) Total coliform density shall not exceed 1,000 per 100 ml;

(b) Fecal coliform density shall not exceed 200 per 100 ml; and

(c) Enterococcus density shall not exceed 35 per 100 ml.

ii. Single Sample Maximum:

(a) Total coliform density shall not exceed 10,000 per 100 ml;

(b) Fecal coliform density shall not exceed 400 per 100 ml;

(c) Enterococcus density shall not exceed 104 per 100 ml; and

(d) Total coliform density shall not exceed 1,000 per 100 ml when the fecal coliform to total coliform ratio exceeds 0.1.

2. Physical Characteristics

a. Floating particulates and grease and oil shall not be visible on the ocean surface.

b. The discharge of waste shall not cause aesthetically undesirable discoloration of the ocean surface.

c. Natural light shall not be significantly reduced at any point outside the zone of initial dilution as the result of the discharge of waste.

d. The rate of deposition of inert solids and the characteristics of inert solids in ocean sediments shall not be changed such that benthic communities are degraded.

e. Temperature of the receiving water shall not be altered to adversely affect beneficial uses, as set forth in the Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California.

3. Chemical Characteristics

a. The dissolved oxygen concentration shall not, at any time, be depressed more than 10 percent from that which occurs naturally, or fall below 5.0 mg/L, as the result of the discharge of oxygen demanding waste materials. The mean annual dissolved oxygen concentration shall not be less than 7.0 mg/L.

b. The pH shall not be changed at any time more than 0.2 units from that which occurs naturally, and shall be within the range of 7.0 to 8.5 at all times.

c. The dissolved sulfide concentrations of waters in and near sediments shall not be significantly increased above that present under natural conditions.

d. The concentrations of substances set forth in Table 1 of the Ocean Plan shall not be increased in marine sediments to that which would degrade indigenous biota.

e. The concentration of organic materials in marine sediments shall not be increased to that which would degrade marine life.

f. Nutrient materials shall not cause objectionable aquatic growth or degrade indigenous biota.

4. Biological Characteristics

a. Marine communities, including vertebrate, and plant species, shall not be degraded.

b. The natural taste, odor, and color of fish, shellfish, or other marine resources used for human consumption shall not be altered.

c. The concentration of organic materials in fish, shellfish, or other marine resources used for human consumption shall not bioaccumulate to levels that are harmful to human health.

5. Radioactivity

a. Discharge of radioactive waste shall not degrade marine life.

b. Radionuclides shall not be present in concentrations that are deleterious to human, plant, animal, or aquatic life; or result in the accumulation of radionuclides in the food web to an extent that presents a hazard to human, plant, animal, or aquatic life.

6. General Standards

a. The discharge shall not cause a violation of any applicable WQO or standard for receiving waters adopted by the Central Coast Water Board or State Water Board, as required by the CWA and regulations adopted thereunder.

b. Waste management systems that discharge to the ocean must be designed and operated in a manner that will maintain the indigenous marine life and a healthy and diverse marine community.

c. Waste effluents shall be discharged in a manner that provides sufficient initial dilution to minimize the concentrations of substances not removed in the treatment.

B. Groundwater Limitations – Not Applicable

V. PROVISIONS

A. Standard Provisions

1. Federal Standard Provisions. The Discharger shall comply with all Standard Provisions included in Attachment D of this Order.

2. Central Coast Water Board Standard Provisions. The Discharger shall comply with the Central Coast Water Board Standard Provisions included in Attachment D of this Order.

B. Monitoring and Reporting Program (MRP) Requirements

The Discharger shall comply with the MRP, and future revisions thereto, in Attachment E of this Order. All monitoring shall be conducted according to 40 C.F.R. 136, *Guidelines Establishing Test Procedures for Analysis of Pollutants.*

C. Special Provisions

1. Reopener Provisions

a. This Order may be reopened and modified in accordance with NPDES regulations at 40 C.F.R. 122 and 124, as necessary, to include additional conditions or limitations based on newly available information or to implement any U.S. EPA approved, new, State WQO.

b. This Order may be reopened for modification to include an effluent limitation if monitoring establishes that the discharge causes, has the reasonable potential to cause, or contributes to an excursion above a California Ocean Plan (Ocean Plan) Table 1 water quality objective.

2. Special Studies, Technical Reports and Additional Monitoring Requirements

a. Toxicity Reduction Requirements

As indicated in section V.C of the MRP, when chronic toxicity is detected in the effluent above the applicable effluent limitations, the Discharger shall resample immediately, retest, and report the results to the Executive Officer, who will determine whether to initiate an enforcement action, require a Toxicity Reduction Evaluation (TRE) in accordance with the Discharger's TRE Workplan, or implement other measures.

A TRE is a study conducted in a step-wise process designed to identify the causative agents of effluent or ambient toxicity, isolate the sources of toxicity, evaluate the effectiveness of toxicity control options, and then confirm the reduction in toxicity. The first step of the TRE consist of the collection of data relevant to the toxicity, including additional toxicity testing, and an evaluation of facility operations and maintenance practices, and best management practices. A Toxicity Identification Evaluation (TIE) may be required as part of the TRE, if appropriate. A TIE is a set of procedures to identify the specific chemical(s) responsible for toxicity. These procedures are performed in three phases – characterization, identification, and confirmation using aquatic organism's toxicity tests. The TRE shall include all reasonable steps to identify the source of toxicity. The Discharger shall take all reasonable steps to reduce toxicity to the required level once the source of toxicity is identified.

The Discharger shall maintain a TRE Workplan, which describes steps that the Discharger intends to follow in the event that a toxicity effluent limitation established by this Order is exceeded in the discharge. The workplan shall be prepared in accordance with current technical guidance and reference material, including:

i. *Toxicity Reduction Evaluation Guidance for Municipal Wastewater Treatment Plants* (EPA/833/B-99-022).

ii. *Toxicity Identification Evaluation, Phase I* (EPA/600/6-91/005F).

iii. *Methods for Aquatic Toxicity Identification Evaluations, Phase II* (EPA/600/R-92/080).

iv. *Methods for Aquatic Toxicity Identification Evaluations, Phase III* (EPA/600/R-92/081).

At a minimum, the TRE Workplan shall include:

i. Actions that will be taken to investigate/identify the causes/sources of toxicity,

ii. Actions that will be evaluated to mitigate the impact of the discharge, to correct the non-compliance, and/or to prevent the recurrence of chronic toxicity (this list of action steps may be expanded, if a TRE is undertaken), and

iii. A schedule under which these actions will be implemented.

When monitoring measures chronic toxicity above the toxicity trigger of 134 TUc established by this Order, the Discharger shall resample immediately, and retest for chronic toxicity. Results of an initial failed test and results of subsequent monitoring shall be reported to the Executive Officer as soon as possible following receipt of monitoring results, not to exceed 15 days from the conclusion of each test. The Executive Officer will determine whether to initiate enforcement action, whether to require the Discharger to implement a TRE, or to implement other measures. When the Executive Officer requires the Discharger to conduct a TRE, the TRE shall be conducted giving due consideration to guidance provided by the U.S. EPA's Toxicity Reduction Evaluation Procedures, Phases 1, 2, and 3 (EPA document Nos. EPA 600/R-91/003, 600/6/91/005F, and 600/R-92/080, and 600/R-92/081, respectively). A TRE, if necessary, shall be conducted in accordance with the following schedule.

Table 8. Toxicity Reduction Evaluation Schedule

Action Step	When Required
Take all reasonable measures necessary to immediately reduce toxicity, where the source is known.	Within 24 hours of identification of noncompliance.
Initiate the TRE in accordance to the Workplan.	Within 7 days of notification by the Executive Officer.
Conduct the TRE following the procedures in the Workplan.	Within the period specified in the Workplan (not to exceed one year, without an approved Workplan).
Submit the results of the TRE, including summary of findings, required corrective action, and all results and data.	Within 60 days of completion of the TRE.
Implement corrective actions to meet Permit limits and conditions.	To be determined by the Executive Officer.

b. Receiving Water Monitoring for Bacteria

If effluent limitations for total coliform bacteria are exceeded in consecutive monitoring events, the Discharger shall conduct near shore and surf zone monitoring for bacteria in accordance with section VIII.A of the Monitoring and Reporting Program. Results of the increased monitoring for bacteria shall be summarized and submitted in a report to the Executive Officer.

3. Best Management Practices and Pollution Prevention

a. Pollution Prevention Program

The Discharger shall continue to implement a pollution prevention program (approved by the Central Coast Water Board) to prevent the introduction of incompatible pollutants into the Facility. At a minimum, the program shall include:

i. Inventory all chemicals used for the operation and maintenance of the treatment plant that may enter the discharge and classify each according to its potential to cause toxicity to be present in the effluent. If toxicity data is not available for the chemicals used at the plant, and toxicity is found to be present in the effluent, the Discharger should conduct toxicity tests for the individual chemicals that potentially contribute to toxicity.

ii. Develop and implement a public educational program targeted at residential and commercial sources of toxic pollutants emphasizing the need to properly manage and minimize the disposal (i.e., source reduction) of potentially harmful pollutants (oil, antifreeze, herbicides, paints, solvents, etc.).

iii. Develop and implement program(s) which provide convenient means for people to properly dispose of (and/or recycle) oil, antifreeze, pesticides, herbicides, paints, solvents, and other potentially harmful chemicals.

iv. Develop and implement waste minimization measures to reduce or eliminate incompatible pollutants discharged to the treatment plant. Waste minimization measures must address all significant controllable sources of pollutants including residential, industrial, and commercial sources.

v. On an annual basis, to be submitted with the annual report specified in the MRP, the Discharger shall submit a status report to U.S. EPA and Central Coast Water Board detailing efforts of compliance with regard to the Pollution Prevention Program specified herein.

vi. In order to provide adequate legal authority for the Discharger to protect its Facility and to evaluate sources of industrial discharges, the Discharger must perform the following activities:

(a) Develop and implement a sewer use ordinance to provide the legal authorities described in 40 C.F.R. 403.8(f)(1).

(b) Update annually (and summarized in the annual report) industrial waste survey as described in 40 C.F.R. 403.8(f)(2)(i)-(ii).

(c) Update annually (and summarized in the annual report) potential impacts of industrial discharges, identified in section V.C.3.a.ii above, upon the POTW. The report must address the need for regulation of industrial discharges to implement the objectives of the pollution prevention program.

(d) If, in the evaluation of section V.C.3.a.i and section V.C.3.a.ii, above, the Executive Officer determines that a formal pretreatment program is necessary to adequately meet program objectives, then the Discharger shall develop such a program in accordance with 40 C.F.R. 403.9.

(e) The Discharger shall comply, and ensure affected indirect Dischargers comply, with the Reporting Requirements of the Standard Provisions.

b. Pollutant Minimization Program (PMP)

i. Pollutant Minimization Program Goal

The goal of the PMP is to reduce all potential sources of a pollutant through pollutant minimization (control) strategies, including pollution prevention measures, in order to maintain the effluent concentration at or below the effluent limitation.

Pollution prevention measures may be particularly appropriate for persistent bioaccumulative priority pollutants where there is evidence that beneficial uses are being impacted. The completion and implementation of a PMP, required in accordance with CA Water Code section 13263.3(d) will fulfill the PMP requirements in this section.

ii. Determining the Need for a PMP

(a) The Discharger shall develop and conduct a PMP if all of the following conditions are true:

(1) The calculated effluent limitation is less than the reported Minimum Level (ML);

(2) The concentration of the pollutant is reported as DNQ; and,

(3) There is evidence showing that the pollutant is present in the effluent above the calculated effluent limitation. Such evidence may include: health advisories for fish consumption; presence of whole effluent toxicity; results of benthic or aquatic organism tissue sampling; sample results from analytical methods more sensitive than methods included in the permit; and the concentration of the pollutant is reported as DNQ and the effluent limitation is less than the MDL.

(b) Alternatively, the Discharger must develop and conduct a PMP if all of the following conditions are true:

(1) The calculated effluent limitation is less than the Method Detection Limit (MDL);

(2) The concentration of the pollutant is reported as ND; and,

(3) There is evidence showing that the pollutant is present in the effluent above the calculated effluent limitation. Such evidence may include: health advisories for fish consumption; presence of whole effluent toxicity; results of benthic or aquatic organism tissue sampling; sample results from analytical methods more sensitive than methods included in the permit; and the concentration of the pollutant is reported as DNQ and the effluent limitation is less than the MDL.

iii. Elements of a PMP

The Regional Board may consider cost-effectiveness when establishing the requirements of a PMP. The program shall include actions and submittals acceptable to the Central Coast Water Board including, but not limited to, the following:

(a) An annual review and semi-annual monitoring of potential sources of the reportable pollutant, which may include fish tissue monitoring and other bio-uptake sampling;

(b) Quarterly monitoring for the reportable pollutant in the influent to the wastewater treatment system;

(c) Submittal of a control strategy designed to proceed toward the goal of maintaining concentrations of the reportable pollutant in the effluent at or below the calculated effluent limitation;

(d) Implementation of appropriate cost-effective control measures for the pollutant, consistent with the control strategy; and,

(e) An annual status report that shall be sent to the Executive Officer that includes:

(1) All PMP monitoring results for the previous year;

(2) A list of potential sources of the reportable pollutant;

(3) A summary of all action taken in accordance with the control strategy; and,

(4) A description of actions to be taken in the following year.

4. Construction, Operation and Maintenance Specifications

a. The Facility shall be operated as specified under Standard Provision D of Attachment D.

5. Special Provisions for Municipal Facilities (POTWs Only)

a. Biosolids Management

i. The handling, management, and disposal of sludge and solids derived from wastewater treatment must comply with applicable provisions of U.S. EPA regulations at 40 C.F.R. 257, 258, 501, and 503, including all monitoring, record keeping, and reporting requirements.

ii. Sludge and wastewater solids must be disposed of in a municipal solid waste landfill, reused by land application, or disposed of in a sludge-only landfill in accordance with 40 C.F.R. 258 and 503 and Title 23, Chapter 15 of the CCR. If the Discharger desires to dispose of solids and/or sludge in a different manner, a request for permit modification must be submitted to the U.S. EPA and to the Central Coast Water Board at least 180 days prior to beginning the alternative means of disposal.

iii. Sludge that is disposed of in a municipal solid waste landfill must meet the requirements of 40 C.F.R. Part 258 pertaining to providing information to the public. In the annual self-monitoring report, the Discharger shall include the amount of sludge placed in the landfill as well as the landfill to which is was sent.

iv. All requirements of 40 C.F. R. Part 503 and 23 CCR Chapter 15 are enforceable whether or not the requirements of those regulations are stated in an NPDES permit or any other permit issued to the Discharger.

v. The Discharger shall take all reasonable steps to prevent and minimize any sludge use or disposal in violation of this Order that has a likelihood of adversely affecting human health or the environment.

vi. Solids and sludge treatment, storage, and disposal or reuse shall not create a nuisance, such as objectionable odors or flies, and shall not result in ground water contamination.

vii. The solids and sludge treatment and storage site shall have adequate facilities to divert surface water runoff from adjacent areas to protect the boundaries of the site from erosion, and to prevent drainage from the treatment and storage site. Adequate protection is defined as protection, at the minimum, from a 100-year storm and protection from the highest possible tidal stage that may occur.

viii. The discharge of sewage sludge and solids shall not cause waste material to be in position where it is, or can be, conveyed from the treatment and storage sites and deposited in waters of the State.

ix. The Discharger shall submit an annual report to the U.S. EPA and the Central Coast Water Board containing monitoring results and pathogen and vector attraction reduction requirements, as specified by 40 C.F.R. Part 503. The Discharger shall also report the quantity of sludge removed from the Facility and the disposal method. This self-monitoring report shall be submitted by February 19 of each year and report for the period of the previous calendar year.

6. Other Special Provisions

a. Statewide General Waste Discharge Requirements for Sanitary Sewer Systems (State Water Board Order No. 2006-0003-DWQ). This General Permit, adopted on May 2, 2006, is applicable to all "federal and State agencies, municipalities, counties, districts, and other public entities that own or operate sanitary sewer systems greater than one mile in length that collect and/or convey untreated or partially treated wastewater to a publically owned treatment facility in the State of California." The purpose of the General Permit is to promote the proper and efficient management, operation, and maintenance of sanitary sewer systems and to minimize the occurrences and impacts of sanitary sewer overflows. The Dischargers enrolled separately under the General WDR. The City of Morro Bay received enrollment status on January 8, 2007, and Cayucos Sanitary District received enrollment status on January 9, 2007.

b. Loss of Disinfection. As soon as possible after learning of a significant loss of disinfection, the Discharger shall notify the California Department of Public Health's Preharvest Shellfish Protection and Marine Biotoxin Monitoring Program (510-412-4638), the San Luis Obispo Public Health Services (805-781-5553), the Central Coast Water Board (805-549-3147), and any shellfish leaseholders with active shellfish growing operations in the area of the discharge, as set forth in a list to be obtained from DHS, and regularly updated. The Discharger shall determine at its discretion if a loss of disinfection has occurred, and provide notification by fax within four hours of an occurrence during weekday hours of 6:00 AM to 5:00 PM. Notification shall be given by 10:00 AM on the following business day, if a loss of disinfection has occurred, the Discharger shall also conduct monitoring for bacteria in the receiving water in accordance with section VIII.A of the MRP.

VI. COMPLIANCE DETERMINATION

A. General

Compliance with effluent limitations for reportable pollutants shall be determined using sample reporting protocols defined in the MRP and Attachment A of this Order. For purposes of reporting and administrative enforcement by the Central Coast and State Water Boards, the Discharger shall be deemed out of compliance with effluent limitations if the concentration of the reportable pollutant in the monitoring sample is greater than the effluent limitation and greater than or equal to the reported Minimum Level (ML).

B. Multiple Sample Data

When determining compliance with a measure of central tendency (arithmetic mean, geometric mean, median, etc.) of multiple samples analyses and the data set contains one or more reported determinations of "Detected, but Not Quantified" ("DNQ", or "Not Detected" (ND), the Discharger shall compute the median in place of the arithmetic mean in accordance with the following procedure:

1. The data set shall be ranked from low to high, ranking the reported ND determinations lowest, DNQ determinations next, followed by quantified values (if any). The order of the individual ND or DNQ determinations is unimportant.

2. The median value of the data set shall be determined. If the data set has an odd number of data points, then the median is the middle value. If the data set has an even number of data points, then the median is the average of the two values around the middle unless one or both of the points are ND or DNQ, in which case the median value shall be the lower of the two data points where DNQ is lower than a value and ND is lower than DNQ.

C. Average Monthly Effluent Limitation (AMEL)

If the average of daily discharges over a calendar month exceeds the AMEL for a given parameter, an alleged violation will be flagged and the Discharger will be considered out of compliance for each day of that month for that parameter (e.g., resulting in 31 days of non-compliance in a 31-day month). The average of daily discharges over the calendar month that exceeds the AMEL for a parameter will be considered out of compliance for that month only. If only a single sample is taken during the calendar month and the analytical result for that sample exceeds the AMEL, the Discharger will be considered out of compliance for that calendar month. For any one calendar month during which no sample (daily discharge) is taken, no compliance determination can be made for that calendar month.

D. Average Weekly Effluent Limitation (AWEL)

If the average of daily discharges over a calendar week exceeds the AWEL for a given parameter, an alleged violation will be flagged and the Discharger will be considered out of compliance for each day of that week for that parameter, resulting in 7 days of non-compliance. The average of daily discharges over the calendar week that exceeds the AWEL for a parameter will be considered out of compliance for that week only. If only a single sample is taken during the calendar week and the analytical result for that sample exceeds the AWEL, the Discharger will be considered out of compliance for that calendar week. For any one calendar week during which no sample (daily discharge) is taken, no compliance determination can be made for that calendar week.

E. Maximum Daily Effluent Limitation (MDEL)

If a daily discharge exceeds the MDEL for a given parameter, an alleged violation will be flagged and the Discharger will be considered out of compliance for that parameter for that 1 day only within the reporting period. For any 1 day during which no sample is taken, no compliance determination can be made for that day.

ATTACHMENT A – DEFINITIONS

Acute Toxicity

a. Acute Toxicity (TUa)
Expressed in Toxic Units Acute (TUa)

$$TUa = \frac{100}{96\text{-hr LC } 50\%}$$

b. Lethal Concentration 50% (LC 50)

LC 50 (percent waste giving 50% survival of test organisms) shall be determined by static or continuous flow bioassay techniques using standard marine test species as specified in Ocean Plan Appendix III. If specific identifiable substances in wastewater can be demonstrated by the discharger as being rapidly rendered harmless upon discharge to the marine environment, but not as a result of dilution, the LC 50 may be determined after the test samples are adjusted to remove the influence of those substances.

When it is not possible to measure the 96-hour LC 50 due to greater than 50 percent survival of the test species in 100 percent waste, the toxicity concentration shall be calculated by the expression:

$$TUa = \frac{\log (100 - S)}{1.7}$$

where:

S = percentage survival in 100% waste. If S > 99, TUa shall be reported as zero.

Areas of Special Biological Significance (ASBS)
Those areas designated by the State Water Board as ocean areas requiring protection of species or biological communities to the extent that alteration of natural water quality is undesirable. All Areas of Special Biological Significance are also classified as a subset of STATE WATER QUALITY PROTECTION AREAS.

Average Monthly Effluent Limitation (AMEL)
The highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.

Average Weekly Effluent Limitation (AWEL)
The highest allowable average of daily discharges over a calendar week (Sunday through Saturday), calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week.

Chlordane
Shall mean the sum of chlordane-alpha, chlordane-gamma, chlordene-alpha, chlordene-gamma, nonachlor-alpha, nonachlor-gamma, and oxychlordane.

Chronic Toxicity
This parameter shall be used to measure the acceptability of waters for supporting a healthy marine biota until improved methods are developed to evaluate biological response.

a. Chronic Toxicity (TUc)
Expressed as Toxic Units Chronic (TUc)

$$TUc = \frac{100}{NOEL}$$

b. No Observed Effect Level (NOEL)

The NOEL is expressed as the maximum percent effluent or receiving water that causes no observable effect on a test organism, as determined by the result of a critical life stage toxicity test listed in Ocean Plan Appendix II.

Daily Discharge
Daily Discharge is defined as either: (1) the total mass of the constituent discharged over the calendar day (12:00 am through 11:59 pm) or any 24-hour period that reasonably represents a calendar day for purposes of sampling (as specified in the permit), for a constituent with limitations expressed in units of mass or; (2) the unweighted arithmetic mean measurement of the constituent over the day for a constituent with limitations expressed in other units of measurement (e.g., concentration).

The daily discharge may be determined by the analytical results of a composite sample taken over the course of one day (a calendar day or other 24-hour period defined as a day) or by the arithmetic mean of analytical results from one or more grab samples taken over the course of the day.

For composite sampling, if 1 day is defined as a 24-hour period other than a calendar day, the analytical result for the 24-hour period will be considered as the result for the calendar day in which the 24-hour period ends.

DDT
Shall mean the sum of 4,4'DDT, 2,4'DDT, 4,4'DDE, 2,4'DDE, 4,4'DDD, and 2,4'DDD.

Degrade
Degradation shall be determined by comparison of the waste field and reference site(s) for characteristic species diversity, population density, contamination, growth anomalies, debility, or supplanting of normal species by undesirable plant and animal species. Degradation occurs if there are significant differences in any of three major biotic groups, namely, demersal fish, benthic invertebrates, or attached algae. Other groups may be evaluated where benthic species are not affected, or are not the only ones affected.

Detected, but Not Quantified (DNQ)
Sample results that are less than the reported Minimum Level, but greater than or equal to the laboratory's MDL. Sample results reported as DNQ are estimated concentrations.

Dichlorobenzenes
Shall mean the sum of 1,2- and 1,3-dichlorobenzene.

Downstream Ocean Waters
Waters downstream with respect to ocean currents.

Dredged Material
Any material excavated or dredged from the navigable waters of the United States, including material otherwise referred to as "spoil."

Enclosed Bays
Indentations along the coast that enclose an area of oceanic water within distinct headlands or harbor works. Enclosed bays include all bays where the narrowest distance between headlands or outermost harbor works is less than 75 percent of the greatest dimension of the enclosed portion of the bay. This definition includes but is not limited to: Humboldt Bay, Bodega Harbor, Tomales Bay, Drakes Estero, San Francisco Bay, Morro Bay, Los Angeles Harbor, Upper and Lower Newport Bay, Mission Bay, and San Diego Bay.

Endosulfan
The sum of endosulfan-alpha and -beta and endosulfan sulfate.

Estuaries and Coastal Lagoons are waters at the mouths of streams that serve as mixing zones for fresh and ocean waters during a major portion of the year. Mouths of streams that are temporarily separated from the ocean by sandbars shall be considered as estuaries. Estuarine waters will generally be considered to extend from a bay or the open ocean to the upstream limit of tidal action but may be considered to extend seaward if significant mixing of fresh and salt water occurs in the open coastal waters. The waters described by this definition include but are not limited to the Sacramento-San Joaquin Delta as defined by section 12220 of the California Water Code, Suisun Bay, Carquinez Strait downstream to Carquinez Bridge, and appropriate areas of the Smith, Klamath, Mad, Eel, Noyo, and Russian Rivers.

Halomethanes shall mean the sum of bromoform, bromomethane (methyl bromide) and chloromethane (methyl chloride).

HCH shall mean the sum of the alpha, beta, gamma (lindane) and delta isomers of hexachlorocyclohexane.

Initial Dilution
The process that results in the rapid and irreversible turbulent mixing of wastewater with ocean water around the point of discharge.

For a submerged buoyant discharge, characteristic of most municipal and industrial wastes that are released from the submarine outfalls, the momentum of the discharge and its initial buoyancy act together to produce turbulent mixing. Initial dilution in this case is completed when the diluting wastewater ceases to rise in the water column and first begins to spread horizontally.

For shallow water submerged discharges, surface discharges, and non-buoyant discharges, characteristic of cooling water wastes and some individual discharges, turbulent mixing results primarily from the momentum of discharge. Initial dilution, in these cases, is considered to be completed when the momentum induced velocity of the discharge ceases to produce significant mixing of the waste, or the diluting plume reaches a fixed distance from the discharge to be specified by the Regional Board, whichever results in the lower estimate for initial dilution.

Instantaneous Maximum Effluent Limitation
The highest allowable value for any single grab sample or aliquot (i.e., each grab sample or aliquot is independently compared to the instantaneous maximum limitation).

Instantaneous Minimum Effluent Limitation
The lowest allowable value for any single grab sample or aliquot (i.e., each grab sample or aliquot is independently compared to the instantaneous minimum limitation).

Kelp Beds
For purposes of the bacteriological standards of the Ocean Plan, are significant aggregations of marine algae of the genera Macrocystis and Nereocystis. Kelp beds include the total foliage canopy of Macrocystis and Nereocystis plants throughout the water column.

Mariculture
The culture of plants and animals in marine waters independent of any pollution source.

Material
(a) In common usage: (1) the substance or substances of which a thing is made or composed (2) substantial; (b) For purposes of the Ocean Plan relating to waste disposal, dredging and the disposal of dredged material and fill, MATERIAL means matter of any kind or description which is subject to regulation as waste, or any material dredged from the navigable waters of the United States. See also, DREDGED MATERIAL.

Maximum Daily Effluent Limitation (MDEL)
The highest allowable daily discharge of a pollutant.

Method Detection Limit (MDL)
The minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero, as defined in 40 C.F.R. part 136, Attachment B.

Minimum Level (ML)
The concentration at which the entire analytical system must give a recognizable signal and acceptable calibration point. The ML is the concentration in a sample that is equivalent to the concentration of the lowest calibration standard analyzed by a specific analytical procedure, assuming that all the method specified sample weights, volumes, and processing steps have been followed.

Natural Light
Reduction of natural light may be determined by the Central Coast Water Board by measurement of light transmissivity or total irradiance, or both, according to the monitoring needs of the Central Coast Water Board.

Not Detected (ND)
Those sample results less than the laboratory's MDL.

Ocean Waters
The territorial marine waters of the state as defined by California law to the extent these waters are outside of enclosed bays, estuaries, and coastal lagoons. If a discharge outside the territorial waters of the state could affect the quality of the waters of the state, the discharge may be regulated to assure no violation of the Ocean Plan will occur in ocean waters.

PAHs (polynuclear aromatic hydrocarbons)
The sum of acenaphthylene, anthracene, 1,2-benzanthracene, 3,4-benzofluoranthene, benzo[k]fluoranthene, 1,12-benzoperylene, benzo[a]pyrene, chrysene, dibenzo[ah]anthracene, fluorene, indeno[1,2,3-cd]pyrene, phenanthrene and pyrene.

PCBs (polychlorinated biphenyls)
The sum of chlorinated biphenyls whose analytical characteristics resemble those of Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Aroclor-1254 and Aroclor-1260.

Pollutant Minimization Program (PMP)
PMP means waste minimization and pollution prevention actions that include, but are not limited to, product substitution, waste stream recycling, alternative waste management methods, and education of the public and businesses. The goal of the PMP shall be to reduce all potential sources of Ocean Plan Table 1 pollutants through pollutant minimization (control) strategies, including pollution prevention measures as appropriate, to maintain the effluent concentration at or below the water quality-based effluent limitation. Pollution prevention measures may be particularly appropriate for persistent bioaccumulative priority pollutants where there is evidence that beneficial uses are being impacted. The Central Coast Water Board may consider cost effectiveness when establishing the requirements of a PMP. The completion and implementation of a Pollution Prevention Plan, if required pursuant to Water Code section 13263.3(d), shall be considered to fulfill the PMP requirements.

Reported Minimum Level
The reported ML (also known as the Reporting Level or RL) is the ML (and its associated analytical method) chosen by the Discharger for reporting and compliance determination from the MLs included in this Order, including an additional factor if applicable as discussed herein. The MLs included in this Order correspond to approved analytical methods for reporting a sample result that are selected by the Central Coast Water Board either from Appendix II of the Ocean Plan in accordance with section III.C.5.a. of the Ocean Plan or established in accordance with section III.C.5.b. of the Ocean Plan. The ML is based on the proper application of method-based analytical procedures for sample preparation and the absence of any matrix interferences. Other factors may be applied to the ML depending on the specific sample preparation steps employed. For example, the treatment typically applied in cases where there are matrix-effects is to dilute the sample or sample aliquot by a factor of ten. In such cases, this additional factor must be applied to the ML in the computation of the reported ML.

Shellfish
Organisms identified by the California Department of Health Services as shellfish for public health purposes (i.e., mussels, clams and oysters).

Significant Difference
Defined as a statistically significant difference in the means of two distributions of sampling results at the 95 percent confidence level.

Six-Month Median Effluent Limitation
The highest allowable moving median of all daily discharges for any 180-day period.

State Water Quality Protection Areas (SWQPAs)
Non-terrestrial marine or estuarine areas designated to protect marine species or biological communities from an undesirable alteration in natural water quality. All AREAS OF SPECIAL BIOLOGICAL SIGNIFICANCE (ASBS) that were previously designated by the State Water Board in Resolution Nos. 74-28, 74-32, and 75-61 are now also classified as a subset of State Water Quality Protection Areas and require special protections afforded by the Ocean Plan.

TCDD Equivalents
The sum of the concentrations of chlorinated dibenzodioxins (2,3,7,8-CDDs) and chlorinated dibenzofurans (2,3,7,8-CDFs) multiplied by their respective toxicity factors, as shown in the table below.

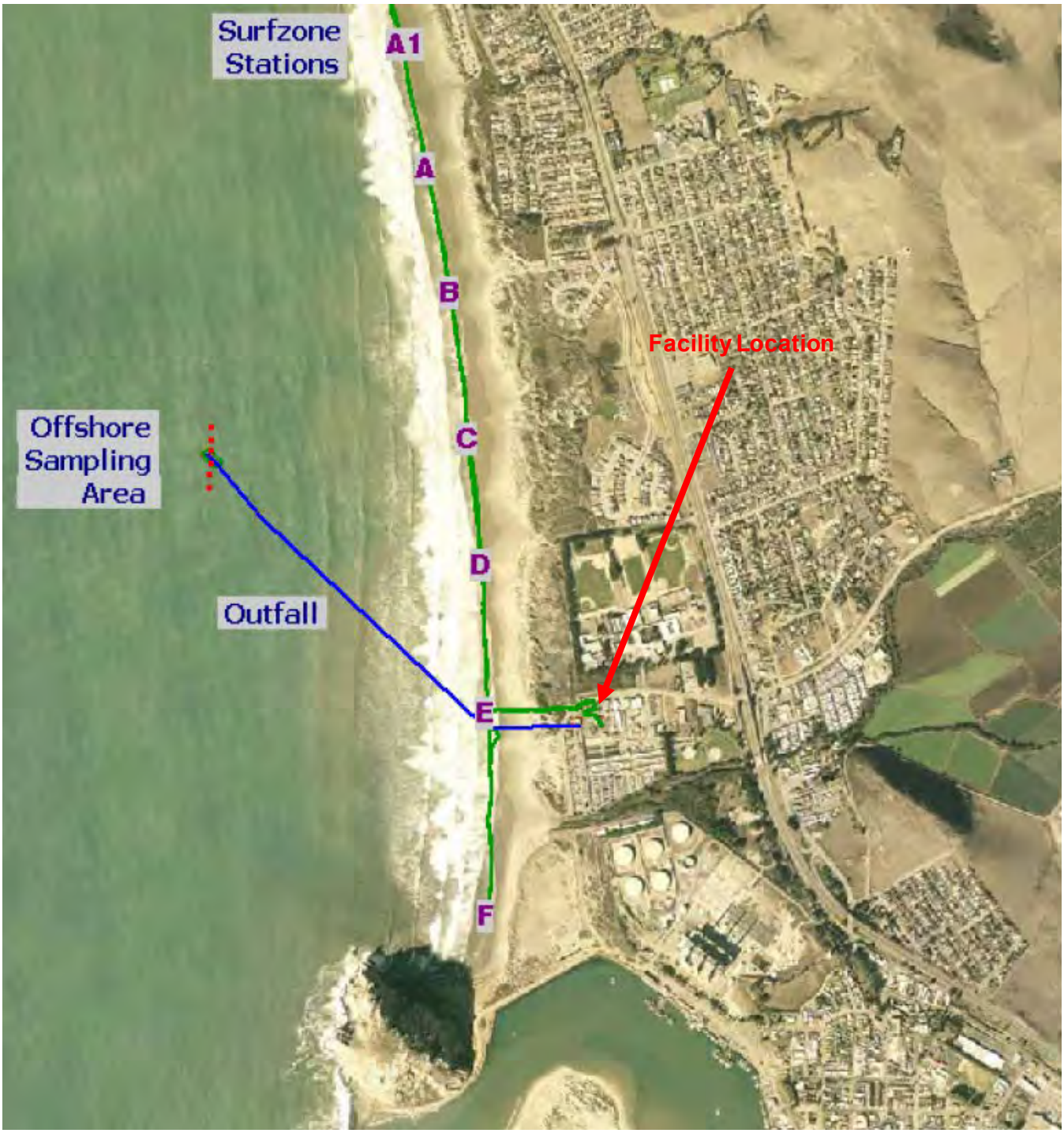
Isomer Group	Toxicity Equivalence Factor
	1.0
2,3,7,8-tetra CDD	
2,3,7,8-penta CDD	0.5
2,3,7,8-hexa CDDs	0.1
2,3,7,8-hepta CDD	0.01
octa CDD	0.001
2,3,7,8 tetra CDF	0.1
1,2,3,7,8 penta CDF	0.05
2,3,4,7,8 penta CDF	0.5
2,3,7,8 hexa CDFs	0.1
2,3,7,8 hepta CDFs	0.01
octa CDF	0.001

Toxicity Reduction Evaluation (TRE)
A study conducted in a step-wise process designed to identify the causative agents of effluent or ambient toxicity, isolate the sources of toxicity, evaluate the effectiveness of toxicity control options, and then confirm the reduction in toxicity. The first steps of the TRE consist of the collection of data relevant to the toxicity, including additional toxicity testing, and an evaluation of facility operations and maintenance practices, and best management practices. A Toxicity Identification Evaluation (TIE) may be required as part of the TRE, if appropriate. (A TIE is a set of procedures to identify the specific chemical(s) responsible for toxicity. These procedures are performed in three phases (characterization, identification, and confirmation) using aquatic organism toxicity tests.)

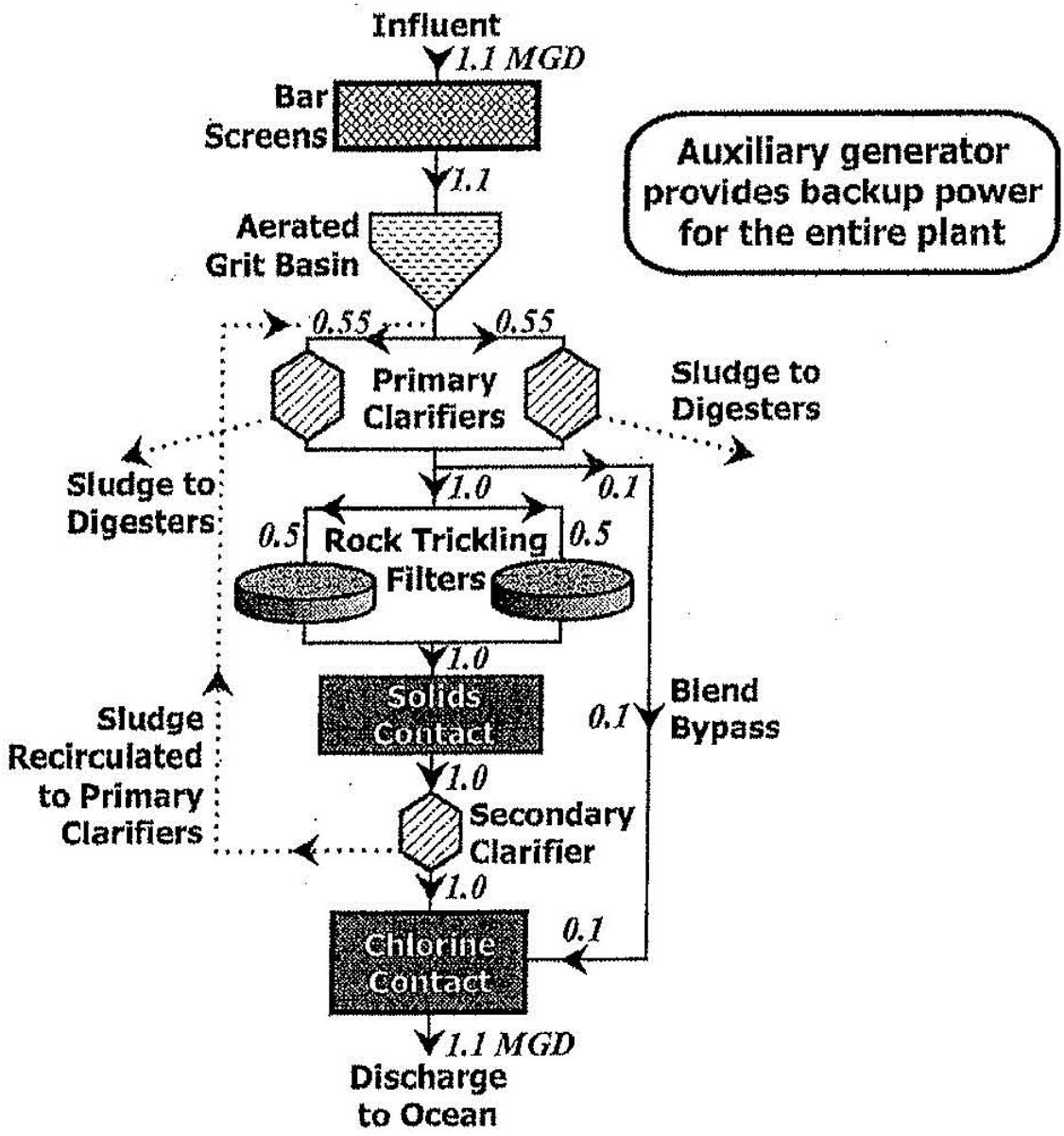
Waste
As used in the Ocean Plan, waste includes a Discharger's total discharge, of whatever origin, i.e., gross, not net, discharge.

Water Recycling
The treatment of wastewater to render it suitable for reuse, the transportation of treated wastewater to the place of use, and the actual use of treated wastewater for a direct beneficial use or controlled use that would not otherwise occur.

ATTACHMENT B – MAP



ATTACHMENT C – FLOW SCHEMATIC



ATTACHMENT D – STANDARD PROVISIONS

I. STANDARD PROVISIONS – PERMIT COMPLIANCE

A. Duty to Comply

1. The Discharger must comply with all of the conditions of this Order. Any noncompliance constitutes a violation of the Clean Water Act (CWA) and the California Water Code and is grounds for enforcement action, for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application. (40 C.F.R. § 122.41(a).)

2. The Discharger shall comply with effluent standards or prohibitions established under section 307(a) of the CWA for toxic pollutants and with standards for sewage sludge use or disposal established under section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions, even if this Order has not yet been modified to incorporate the requirement. (40 C.F.R. § 122.41(a)(1).)

B. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for a Discharger in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this Order. (40 C.F.R. § 122.41(c).)

C. Duty to Mitigate

The Discharger shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this Order that has a reasonable likelihood of adversely affecting human health or the environment. (40 C.F.R. § 122.41(d).)

D. Proper Operation and Maintenance

The Discharger shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Discharger to achieve compliance with the conditions of this Order. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems that are installed by a Discharger only when necessary to achieve compliance with the conditions of this Order. (40 C.F.R. § 122.41(e).)

E. Property Rights

1. This Order does not convey any property rights of any sort or any exclusive privileges. (40 C.F.R. § 122.41(g).)

2. The issuance of this Order does not authorize any injury to persons or property or invasion of other private rights, or any infringement of state or local law or regulations. (40 C.F.R. § 122.5(c).)

F. Inspection and Entry

The Discharger shall allow the Central Coast Water Board, State Water Board, U.S. EPA, and/or their authorized representatives (including an authorized contractor acting as their representative), upon the presentation of credentials and other documents, as may be required by law, to (40 C.F.R. § 122.41(i); Wat. Code, § 13383):

1. Enter upon the Discharger's premises where a regulated facility or activity is located or conducted, or where records are kept under the conditions of this Order (40 C.F.R. § 122.41(i)(1));

2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Order (40 C.F.R. § 122.41(i)(2));

3. Inspect and photograph, at reasonable times, any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order (40 C.F.R. § 122.41(i)(3)); and

4. Sample or monitor, at reasonable times, for the purposes of assuring Order compliance or as otherwise authorized by the CWA or the Water Code, any substances or parameters at any location. (40 C.F.R. § 122.41(i)(4).)

G. Bypass

1. Definitions

a. "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility. (40 C.F.R. § 122.41(m)(1)(i).)

b. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities, which causes them to become inoperable, or substantial and permanent loss of natural resources that can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production. (40 C.F.R. § 122.41(m)(1)(ii).)

2. Bypass not exceeding limitations. The Discharger may allow any bypass to occur which does not cause exceedances of effluent limitations, but only if it is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions listed in Standard Provisions – Permit Compliance I.G.3, I.G.4, and I.G.5 below. (40 C.F.R. § 122.41(m)(2).)

3. Prohibition of bypass. Bypass is prohibited, and the Central Coast Water Board may take enforcement action against a Discharger for bypass, unless (40 C.F.R. § 122.41(m)(4)(i)):

a. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage (40 C.F.R. § 122.41(m)(4)(i)(A));

b. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering

judgment to prevent a bypass that occurred during normal periods of equipment downtime or preventive maintenance (40 C.F.R. § 122.41(m)(4)(i)(B)); and

c. The Discharger submitted notice to the Central Coast Water Board as required under Standard Provisions – Permit Compliance I.G.5 below. (40 C.F.R. § 122.41(m)(4)(i)(C).)

4. The Central Coast Water Board may approve an anticipated bypass, after considering its adverse effects, if the Central Coast Water Board determines that it will meet the three conditions listed in Standard Provisions – Permit Compliance I.G.3 above. (40 C.F.R. § 122.41(m)(4)(ii).)

5. Notice

a. Anticipated bypass. If the Discharger knows in advance of the need for a bypass, it shall submit a notice, if possible at least 10 days before the date of the bypass. (40 C.F.R. § 122.41(m)(3)(i).)

b. Unanticipated bypass. The Discharger shall submit notice of an unanticipated bypass as required in Standard Provisions - Reporting V.E below (24-hour notice). (40 C.F.R. § 122.41(m)(3)(ii).)

H. Upset

Upset means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the Discharger. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation. (40 C.F.R. § 122.41(n)(1).)

1. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of Standard Provisions – Permit Compliance I.H.2 below are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review. (40 C.F.R. § 122.41(n)(2).)

2. Conditions necessary for a demonstration of upset. A Discharger who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs or other relevant evidence that (40 C.F.R. § 122.41(n)(3)):

a. An upset occurred and that the Discharger can identify the cause(s) of the upset (40 C.F.R. § 122.41(n)(3)(i));

b. The permitted facility was, at the time, being properly operated (40 C.F.R. § 122.41(n)(3)(ii));

c. The Discharger submitted notice of the upset as required in Standard Provisions – Reporting V.E.2.b below (24-hour notice) (40 C.F.R. § 122.41(n)(3)(iii)); and

d. The Discharger complied with any remedial measures required under Standard Provisions – Permit Compliance I.C above. (40 C.F.R. § 122.41(n)(3)(iv).)

3. Burden of proof. In any enforcement proceeding, the Discharger seeking to establish the occurrence of an upset has the burden of proof. (40 C.F.R. § 122.41(n)(4).)

II. STANDARD PROVISIONS – PERMIT ACTION

A. General

This Order may be modified, revoked and reissued, or terminated for cause. The filing of a request by the Discharger for modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any Order condition. (40 C.F.R. § 122.41(f).)

B. Duty to Reapply

If the Discharger wishes to continue an activity regulated by this Order after the expiration date of this Order, the Discharger must apply for and obtain a new permit. (40 C.F.R. § 122.41(b).)

C. Transfers

This Order is not transferable to any person except after notice to the Central Coast Water Board. The Central Coast Water Board may require modification or revocation and reissuance of the Order to change the name of the Discharger and incorporate such other requirements as may be necessary under the CWA and the Water Code. (40 C.F.R. § 122.41(l)(3); § 122.61.)

III. STANDARD PROVISIONS – MONITORING

A. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. (40 C.F.R. § 122.41(j)(1).)

B. Monitoring results must be conducted according to test procedures under 40 C.F.R. part 136 or, in the case of sludge use or disposal, approved under 40 C.F.R. part 136 unless otherwise specified in 40 C.F.R. part 503 unless other test procedures have been specified in this Order. (40 C.F.R. § 122.41(j)(4); § 122.44(i)(1)(iv).)

IV. STANDARD PROVISIONS – RECORDS

A. Except for records of monitoring information required by this Order related to the Discharger's sewage sludge use and disposal activities, which shall be retained for a period of at least five years (or longer as required by 40 C.F.R. part 503), the Discharger shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this Order, and records of all data used to complete the application for this Order, for a period of at least three (3) years from the date of the sample, measurement, report or application. This period may be extended by request of the Central Coast Water Board Executive Officer at any time. (40 C.F.R. § 122.41(j)(2).)

B. Records of monitoring information shall include:

1. The date, exact place, and time of sampling or measurements (40 C.F.R. § 122.41(j)(3)(i));

2. The individual(s) who performed the sampling or measurements (40 C.F.R. § 122.41(j)(3)(ii));

3. The date(s) analyses were performed (40 C.F.R. § 122.41(j)(3)(iii));

4. The individual(s) who performed the analyses (40 C.F.R. § 122.41(j)(3)(iv));

5. The analytical techniques or methods used (40 C.F.R. § 122.41(j)(3)(v)); and

6. The results of such analyses. (40 C.F.R. § 122.41(j)(3)(vi).)

C. Claims of confidentiality for the following information will be denied (40 C.F.R. § 122.7(b)):

1. The name and address of any permit applicant or Discharger (40 C.F.R. § 122.7(b)(1)); and

2. Permit applications and attachments, permits and effluent data. (40 C.F.R. § 122.7(b)(2).)

V. STANDARD PROVISIONS – REPORTING

A. Duty to Provide Information

The Discharger shall furnish to the Central Coast Water Board State Water Board, or U.S. EPA within a reasonable time, any information which the Central Coast Water Board, State Water Board, or U.S. EPA may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Order or to determine compliance with this Order. Upon request, the Discharger shall also furnish to the Central Coast Water Board, State Water Board, or U.S. EPA copies of records required to be kept by this Order. (40 C.F.R. § 122.41(h); Wat. Code, § 13267.)

B. Signatory and Certification Requirements

1. All applications, reports, or information submitted to the Central Coast Water Board, State Water Board, and/or U.S. EPA shall be signed and certified in accordance with Standard Provisions – Reporting V.B.2, V.B.3, V.B.4, and V.B.5 below. (40 C.F.R. § 122.41(k).)

2. All permit applications shall be signed by either a principal executive officer or ranking elected official. For purposes of this provision, a principal executive officer of a federal agency includes: (i) the chief executive officer of the agency, or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of U.S. EPA). (40 C.F.R. § 122.22(a)(3).).

3. All reports required by this Order and other information requested by the Central Coast Water Board, State Water Board, or U.S. EPA shall be signed by a person described in

Standard Provisions – Reporting V.B.2 above, or by a duly authorized representative of that person. A person is a duly authorized representative only if:

a. The authorization is made in writing by a person described in Standard Provisions – Reporting V.B.2 above (40 C.F.R. § 122.22(b)(1));

b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.) (40 C.F.R. § 122.22(b)(2)); and

c. The written authorization is submitted to the Central Coast Water Board and State Water Board. (40 C.F.R. § 122.22(b)(3).)

4. If an authorization under Standard Provisions – Reporting V.B.3 above is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Standard Provisions – Reporting V.B.3 above must be submitted to the Central Coast Water Board and State Water Board prior to or together with any reports, information, or applications, to be signed by an authorized representative. (40 C.F.R. § 122.22(c).)

5. Any person signing a document under Standard Provisions – Reporting V.B.2 or V.B.3 above shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations." (40 C.F.R. § 122.22(d).)

C. Monitoring Reports

1. Monitoring results shall be reported at the intervals specified in the Monitoring and Reporting Program (Attachment E) in this Order. (40 C.F.R. § 122.41(l)(4).)

2. Monitoring results must be reported on a Discharge Monitoring Report (DMR) form or forms provided or specified by the Central Coast Water Board or State Water Board for reporting results of monitoring of sludge use or disposal practices. (40 C.F.R. § 122.41(l)(4)(i).)

3. If the Discharger monitors any pollutant more frequently than required by this Order using test procedures approved under 40 C.F.R. part 136, or another method required for an industry-specific waste stream under 40 C.F.R. subchapters N or O, the results of such monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Central Coast Water Board. (40 C.F.R. § 122.41(l)(4)(ii).)

4. Calculations for all limitations, which require averaging of measurements, shall utilize an arithmetic mean unless otherwise specified in this Order. (40 C.F.R. § 122.41(l)(4)(iii).)

D. Compliance Schedules

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this Order, shall be submitted no later than 14 days following each schedule date. (40 C.F.R. § 122.41(l)(5).)

E. Twenty-Four Hour Reporting

1. The Discharger shall report any noncompliance that may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the Discharger becomes aware of the circumstances. A written submission shall also be provided within five (5) days of the time the Discharger becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. (40 C.F.R. § 122.41(l)(6)(i).)

2. The following shall be included as information that must be reported within 24 hours under this paragraph (40 C.F.R. § 122.41(l)(6)(ii)):

a. Any unanticipated bypass that exceeds any effluent limitation in this Order. (40 C.F.R. § 122.41(l)(6)(ii)(A).)

b. Any upset that exceeds any effluent limitation in this Order. (40 C.F.R. § 122.41(l)(6)(ii)(B).)

3. The Central Coast Water Board may waive the above-required written report under this provision on a case-by-case basis if an oral report has been received within 24 hours. (40 C.F.R. § 122.41(l)(6)(iii).)

F. Planned Changes

The Discharger shall give notice to the Central Coast Water Board as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required under this provision only when (40 C.F.R. § 122.41(l)(1)):

1. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in section 122.29(b) (40 C.F.R. § 122.41(l)(1)(i)); or

2. The alteration or addition results in a significant change in the Discharger's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan. (40 C.F.R.§ 122.41(l)(1)(iii).)

G. Anticipated Noncompliance

The Discharger shall give advance notice to the Central Coast Water Board or State Water Board of any planned changes in the permitted facility or activity that may result in noncompliance with this Order's requirements. (40 C.F.R. § 122.41(l)(2).)

H. Other Noncompliance

The Discharger shall report all instances of noncompliance not reported under Standard Provisions – Reporting V.C, V.D, and V.E above at the time monitoring reports are submitted. The reports shall contain the information listed in Standard Provision – Reporting V.E above. (40 C.F.R. § 122.41(l)(7).)

I. Other Information

When the Discharger becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Central Coast Water Board, State Water Board, or U.S. EPA, the Discharger shall promptly submit such facts or information. (40 C.F.R. § 122.41(l)(8).)

VI. STANDARD PROVISIONS – ENFORCEMENT

The Central Coast Water Board is authorized to enforce the terms of this permit under several provisions of the Water Code, including, but not limited to, sections 13385, 13386, and 13387.

VII. ADDITIONAL PROVISIONS – NOTIFICATION LEVELS

A. Publicly Owned Treatment Works (POTWs)

All POTWs shall provide adequate notice to the Central Coast Water Board of the following (40 C.F.R. § 122.42(b)):

1. Any new introduction of pollutants into the POTW from an indirect discharger that would be subject to sections 301 or 306 of the CWA if it were directly discharging those pollutants (40 C.F.R. § 122.42(b)(1)); and

2. Any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of adoption of the Order. (40 C.F.R. § 122.42(b)(2).)

3. Adequate notice shall include information on the quality and quantity of effluent introduced into the POTW as well as any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW. (40 C.F.R. § 122.42(b)(3).)

VIII. CENTRAL COAST WATER BOARD STANDARD PROVISIONS

A. Central Coast Standard Provision – Prohibitions

1. Introduction of "incompatible wastes" to the treatment system is prohibited.

2. Discharge of high-level radiological waste and of radiological, chemical, and biological warfare agents is prohibited.

3. Discharge of "toxic pollutants" in violation of effluent standards and prohibitions established under section 307(a) of the Clean Water Act (CWA) is prohibited.

4. Discharge of sludge, sludge digester or thickener supernatant, and sludge drying bed leachate to drainageways, surface waters, or the ocean is prohibited.

5. Introduction of pollutants into the collection, treatment, or disposal system by and "indirect discharger" that:

3. Inhibit or disrupt the treatment process, system operation, or the eventual use or disposal of sludge; or,

4. Flow through the system to the receiving water untreated; and,

5. Cause or "significantly contribute" to a violation of any requirement of this Order, is prohibited.

6. Introduction of "pollutant free" wastewater to the collection, treatment, and disposal system in amounts that threaten compliance with this order is prohibited.

B. Central Coast Standard Provision – Provisions

1. Collection, treatment, and discharge of waste shall not create a nuisance or pollution, as defined by California Water Code (CWC) 13050.

2. All facilities used for transport or treatment of wastes shall be adequately protected from inundation and washout as the result of a 100-year frequency flood.

3. Operation of collection, treatment, and disposal systems shall be in a manner that precludes public contact with wastewater.

4. Collected screenings, sludges, and other solids removed from liquid wastes shall be disposed in a manner approved by the Executive Officer.

5. Publicly owned wastewater treatment plans shall be supervised and operated by persons possessing certificates of appropriate grade pursuant to Title 23 of the California Administrative Code.

6. After notice and opportunity for a hearing, this order may be terminated for cause, including, but not limited to:

a. Violation of any term or condition contained in this order;

b. Obtaining this order by misrepresentation, or by failure to disclose fully all relevant facts;

c. A change in any condition or endangerment to human health or environment that requires a temporary or permanent reduction or elimination of the authorized discharge; and,

d. A substantial change in character, location, or volume of the discharge.

7. Provisions of this permit are severable. If any provision of the permit is found invalid, the remainder of the permit shall not be affected.

8. After notice and opportunity for hearing, this order may be modified or revoked and reissued for cause, including:

a. Promulgation of a new or revised effluent standard or limitation;

b. A material change in character, location, or volume of the discharge;

c. Access to new information that affects the germs of the permit, including applicable schedules;

d. Correction of technical mistakes or mistaken interpretations of law; and,

e. Other causes set forth under Sub-part D of 40 C.F.R. Part 122.

9. Safeguards shall be provided to ensure maximal compliance with all terms and conditions of this permit. Safeguards shall include preventative and contingency plans and may also include alternative power sources, stand-by generators, retention capacity, operative procedures, or other precautions. Preventative and contingency plans for controlling and minimizing the effect of accidental discharges shall:

a. Identify possible situations that could cause "upset," "overflow," or "bypass," or other noncompliance. (Loading and storage areas, power outage, waste treatment unit outage, and failure of process equipment, tanks and pipes should be considered).

b. Evaluate the effectiveness of present facilities and procedures and describe procedures and steps to minimize or correct any adverse environmental impact resulting from noncompliance with the permit.

10. Physical Facilities shall be designed and constructed according to accepted engineering practice and shall be capable of full compliance with this order when properly operated and maintained. Proper operation and maintenance shall be described in an Operation and Maintenance Manual. Facilities shall be accessible during the wet-weather season.

11. The discharger shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) that are installed or used by the discharger to achieve compliance with the conditions of this order. Electrical and mechanical equipment shall be maintained in accordance with appropriate practices and standards, such as NFPA 70B, *Recommended Practice for Electrical Equipment Maintenance*; NFPA 70E, *Standard for Electrical Safety in the Workplace*; ANSI/NETA MTS *Standard for Maintenance: Testing Specifications for Electrical Power Equipment and Systems*, or procedures established by insurance companies or industry resources.

12. If the discharger's facilities are equipped with SCADA or other systems that implement wireless, remote operation, the discharger should implement appropriate safeguards against unauthorized access to the wireless systems. Standards such as NIST SP 800-53, *Recommended Security Controls for Federal Information Systems*, can provide guidance.

13. Production and use of reclaimed water is subject to the approval of the Central Coast Board. Production and use of reclaimed water shall be in conformance with reclamation criteria established in Chapter 3, Title 22, of the California Administrative Code and Chapter 7, Division 7, of the CWC An engineering report pursuant to section 60323, Title 22, of the California Administrative Code is required and a waiver or water reclamation requirements from the Central Coast Board is required before reclaimed water is supplied for any use, or to any user, not specifically identified and approved either in this Order or another order issued by this Board.

C. Central Coast Standard Provisions – General Monitoring Requirements

1. If results of monitoring a pollutant appear to violate effluent limitations based on a weekly, monthly, 30-day, or six-month period, but compliance or non-compliance cannot be validated because sampling is too infrequent, the frequency of sampling shall be increased to validate the test within the next monitoring period. The increased frequency shall be maintained until the Executive Officer agrees the original monitoring frequency may be resumed.

For example, if copper is monitored annually and results exceed the six-month median numerical effluent limitation in the permit, monitoring of copper must be increased to a frequency of at least once every two months (Central Coast Standard Provisions – Definitions I.G.13.). If suspended solids are monitored weekly and results exceed the weekly average numerical limit in the permit, monitoring of suspended solids must be increased to at least four (4) samples every week (Central Coast Standard Provisions – Definitions I.G.14.).

2. Water quality analyses performed in order to monitor compliance with this permit shall be by a laboratory certified by the State Department of Health Services (DHS) for the constituent(s) being analyzed. Bioassay(s) performed in order to monitor compliance with this permit shall be in accord with guidelines approved by the State Water Resources Control Board (State Water Board) and the State Department of Fish and Game. If the laboratory used or proposed for use by the discharger is not certified by the DHS or, where appropriate, the Department of Fish and Game due to restrictions in the State's laboratory certification program, the discharger shall be considered in compliance with this provision provided:

a. Data results remain consistent with results of samples analyzed by the Central Coast Water Board;

b. A quality assurance program is used at the laboratory, including a manual containing steps followed in this program that is available for inspections by the staff of the Central Coast Water Board; and,

c. Certification is pursued in good faith and obtained as soon as possible after the program is reinstated.

3. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. Samples shall be taken during periods of peak loading conditions.

4. All monitoring instruments and devices used by the discharger to fulfill the prescribed monitoring program shall be properly maintained and calibrated as necessary to ensure their continued accuracy.

D. Central Coast Standard Provisions – General Reporting Requirements

1. Reports of marine monitoring surveys conducted to meet receiving water monitoring requirements of the Monitoring and Reporting Program shall include at least the following information:

a. A description of climatic and receiving water characteristics at the time of sampling (weather observations, floating debris, discoloration, wind speed and direction, swell or wave action, time of sampling, tide height, etc.).

b. A description of sampling stations, including differences unique to each station (e.g., station location, grain size, rocks, shell litter, calcareous worm tubes, evident life, etc.).

c. A description of the sampling procedures and preservation sequence used in the survey.

d. A description of the exact method used for laboratory analysis. In general, analysis shall be conducted according to Central Coast Standard Provisions – C.1 above, and Federal Standard Provision – Monitoring III.B. However, variations in procedure are acceptable to accommodate the special requirements of sediment analysis. All such variations must be reported with the test results.

e. A brief discussion of the results of the survey. The discussion shall compare data from the control station with data from the outfall stations. All tabulations and computations shall be explained.

2. Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule shall be submitted within 14 days following each scheduled date unless otherwise specified within the permit. If reporting noncompliance, the report shall include a description of the reason, a description and schedule of tasks necessary to achieve compliance, and an estimated date for achieving full compliance. A second report shall be submitted within 14 days of full compliance.

3. The "Discharger" shall file a report of waste discharge or secure a waiver from the Executive Officer at least 180 days before making any material change or proposed change in the character, location, or plume of the discharge.

4. Within 120 days after the discharger discovers, or is notified by the Central Coast Water Board, that monthly average daily flow will or may reach design capacity of waste treatment and/or disposal facilities within four (4) years, the discharger shall file a written report with the Central Coast Water Board. The report shall include:

a. the best estimate of when the monthly average daily dry weather flow rate will equal or exceed design capacity; and,

b. a schedule for studies, design, and other steps needed to provide additional capacity for waste treatment and/or disposal facilities before the waste flow rate equals the capacity of present units.

In addition to complying with Federal Standard Provision – Reporting V.B., the required technical report shall be prepared with public participation and reviewed, approved and jointly submitted by all planning and building departments having jurisdiction in the area served by the waste collection, treatment, or disposal facilities.

5. All "Dischargers" shall submit reports electronically to the:

California Regional Water Quality Control Board
Central Coast Region
centralcoast@waterboards.ca.gov
895 Aerovista Place, Suite 101
San Luis Obispo, CA 93401-7906

In addition, "Dischargers" with designated major discharges shall submit a copy of each document to:

Regional Administrator
U.S. EPA, Region 9
Attention: CWA Standards and Permits Office (WTR-5)
75 Hawthorne Street
San Francisco, California 94105

6. Transfer of control or ownership of a waste discharge facility must be preceded by a notice to the Central Coast Water Board at least 30 days in advance of the proposed transfer date. The notice must include a written agreement between the existing "Discharger" and proposed "Discharger" containing specific date for transfer of responsibility, coverage, and liability between them. Whether a permit may be transferred without modification or revocation and reissuance is at the discretion of the Board. If permit modification or revocation and reissuance is necessary, transfer may be delayed 180 days after the Central Coast Water Board's receipt of a complete permit application. Please also see Federal Standard Provision – Permit Action II.C.

7. Except for data determined to be confidential under CWA §308 (excludes effluent data and permit applications), all reports prepared in accordance with this permit shall be available for public inspection at the office of the Central Coast Water Board or Regional Administrator of U.S. EPA. Please also see Federal Standard Provision – Records IV.C.

8. By April 1 of each year, the discharger shall submit an annual report to the Central Coast Water Board. The report shall contain the following:

a. Both tabular and graphical summaries of the monitoring data obtained during the previous year.

6. A discussion of the previous year's compliance record and corrective actions taken, or which may be needed, to bring the discharger into full compliance.

7. An evaluation of wastewater flows with projected flow rate increases over time and the estimated date when flows will reach facility capacity.

8. A discussion of operator certification and a list of current operating personnel and their grades of certification.

9. The date of the facility's Operation and Maintenance Manual (including contingency plans as described in Provision B.9), the date the manual was last reviewed, and whether the manual is complete and valid for the current facility.

10. A discussion of the laboratories used by the discharger to monitor compliance with effluent limits and a summary of performance relative to section C, General Monitoring Requirements.

11. If the facility treats industrial or domestic wastewater and there is no provision for periodic sludge monitoring in the Monitoring and Reporting Program, the report shall include a summary of sludge quantities, analyses of its chemical and moisture content, and its ultimate destination.

12. If appropriate, the report shall also evaluate the effectiveness of the local source control or pretreatment program using the State Water Resources Control Board's "Guidelines for Determining the Effectiveness of Local Pretreatment Program."

E. Central Coast Standard Provisions – General Pretreatment Provisions

1. Discharge of pollutants by "indirect dischargers" in specific industrial sub-categories (appendix C, 40 C.F.R. Part 403), where categorical pretreatment standards have been established, or are to be established, (according to 40 C.F.R. Chapter 1, Subchapter N), shall comply with the appropriate pretreatment standards:

a. By the date specified therein;

13. Within three (3) years of the effective date specified therein, but in no case later than July 1, 1984; or,

14. If a new indirect discharger, upon commencement of discharge

F. Central Coast Standard Provision – Enforcement

1. Any person failing to file a report of waste discharge or other report as required by this permit shall be subject to a civil penalty not to exceed $5,000 per day.

2. Upon reduction, loss, or failure of the treatment facility, the "Discharger" shall, to the extent necessary to maintain compliance with this permit, control production or all discharges, or both, until the facility is restored or an alternative method of treatment is provided.

G. Central Coast Standard Provisions – Definitions (Not otherwise included in Attachment A to this Order)

1. A "composite sample" is a combination of no fewer than eight (8) individual samples obtained at equal time intervals (usually hourly) over the specified sampling (composite) period. The volume of each individual sample is proportional to the flow rate at the time of sampling. The period shall be specified in the Monitoring and Reporting Program ordered by the Executive Officer.

2. "Daily Maximum" limit means the maximum acceptable concentration or mass emission rate of a pollutant measured during a calendar day or during any 24-hour period reasonably representative of the calendar day for purposes of sampling. It is normally compared with results based on "composite samples" except for ammonia, total chlorine, phenolic compounds, and toxicity concentration. For all exceptions, comparisons will be made with results from a "grab sample".

3. "Discharger", as used herein, means, as appropriate: (1) the Discharger, (2) the local sewering entity (when the collection system is not owned and operated by the Discharger), or (3) "indirect discharger" (where "Discharger" appears in the same paragraph as "indirect discharger", it refers to the discharger.)

4. "Duly Authorized Representative" is one where:

a. the authorization is made in writing by a person described in the signatory paragraph of Federal Standard Provision V.B.;

5. the authorization specifies either an individual or the occupant of a position having either responsibility for the overall operation of the regulated facility, such as the plant manager, or overall responsibility for environmental matters of the company; and,

6. the written authorization was submitted to the Central Coast Water Board.

7. A "grab sample" is defined as any individual sample collected in less than 15 minutes. "Grab samples" shall be collected during peak loading conditions, which may or may not be during hydraulic peaks. It is used primarily in determining compliance with the daily maximum limits identified in Central Coast Standard Provision – Provision G.2. and instantaneous maximum limits.

8. "Hazardous substance" means any substance designated under 40 C.F.R. Part 116 pursuant to section 311 of the Clean Water Act.

9. "Incompatible wastes" are:

a. Wastes which create a fire or explosion hazard in the treatment works;

10. Wastes which will cause corrosive structural damage to treatment works, but in no case wastes with a pH lower than 5.0 unless the works is specifically designed to accommodate such wastes;

11. Solid or viscous wastes in amounts which cause obstruction to flow in sewers, or which cause other interference with proper operation of treatment works;

12. Any waste, including oxygen demanding pollutants (BOD, etc), released in such volume or strength as to cause inhibition or disruption in the treatment works and subsequent treatment process upset and loss of treatment efficiency; and,

13. Heat in amounts that inhibit or disrupt biological activity in the treatment works or that raise influent temperatures above 40°C (104°F) unless the treatment works is designed to accommodate such heat.

14. "Indirect Discharger" means a non-domestic discharger introducing pollutants into a publicly owned treatment and disposal system.

15. "Log Mean" is the geometric mean. Used for determining compliance of fecal or total coliform populations, it is calculated with the following equation:

$$\text{Log Mean} = (C1 \times C2 \times ... \times Cn)1/n,$$

in which "n" is the number of days samples were analyzed during the period and any "C" is the concentration of bacteria (MPN/100 ml) found on each day of sampling. "n" should be five or more.

16. "Mass emission rate" is a daily rate defined by the following equations:

mass emission rate (lbs/day) = 8.34 x Q x C; and,

mass emission rate (kg/day) = 3.79 x Q x C,

where "C" (in mg/L) is the measured daily constituent concentration or the average of measured daily constituent concentrations and "Q" (in MGD) is the measured daily flowrate or the average of measured daily flow rates over the period of interest.

17. The "Maximum Allowable Mass Emission Rate," whether for a month, week, day, or six-month period, is a daily rate determined with the formulas in paragraph G.10, above, using the effluent concentration limit specified in the permit for the period and the average of measured daily flows (up to the allowable flow) over the period.

18. "Maximum Allowable Six-Month Median Mass Emission Rate" is a daily rate determined with the formulas in Central Coast Standard Provision – Provision G.10, above, using the "six-month Median" effluent limit specified in the permit, and the average of measured daily flows (up to the allowable flow) over a 180-day period.

19. "Median" is the value below which half the samples (ranked progressively by increasing value) fall. It may be considered the middle value, or the average of two middle values.

20. "Monthly Average" (or "Weekly Average", as the case may be) is the arithmetic mean of daily concentrations or of daily mass emission rates over the specified 30-day (or 7-day) period.

$$\text{Average} = (X1 + X2 + ... + Xn) / n$$

in which "n" is the number of days samples were analyzed during the period and "X" is either the constituent concentration (mg/l) or mass emission rate (kg/day or lbs/day) for each sampled day. "n" should be four or greater.

21. "Municipality" means a city, town, borough, county, district, association, or other public body created by or under State law and having jurisdiction over disposal of sewage, industrial waste, or other waste.

22. "Overflow" means the intentional or unintentional diversion of flow from the collection and transport systems, including pumping facilities.

23. "Pollutant-free wastewater" means inflow and infiltration, stormwaters, and cooling waters and condensates which are essentially free of pollutants.

24. "Primary Industry Category" means any industry category listed in 40 C.F.R. Part 122, Appendix A.

25. "Removal Efficiency" is the ratio of pollutants removed by the treatment unit to pollutants entering the treatment unit. Removal efficiencies of a treatment plant shall be determined using “Monthly averages" of pollutant concentrations (C, in mg/l) of influent and effluent samples collected about the same time and the following equation (or its equivalent):

$C_{Effluent}$ Removal Efficiency (%) = 100 x (1 – $C_{effluent}$ / $C_{influent}$)

26. "Severe property damage" means substantial physical damage to property, damage to treatment facilities which causes them to become inoperable, or substantial and permanent loss to natural resources which can reasonably be expected to occur in the absence of a "bypass”. It does not mean economic loss caused by delays in production.

27. "Sludge" means the solids, residues, and precipitates separated from, or created in, wastewater by the unit processes of a treatment system.

28. To "significantly contribute" to a permit violation means an "indirect discharger" must:

a. Discharge a daily pollutant loading in excess of that allowed by contract with the "Discharger" or by Federal, State, or Local law;

15. Discharge wastewater which substantially differs in nature or constituents from its average discharge;

16. Discharge pollutants, either alone or in conjunction with discharges from other sources, which results in a permit violation or prevents sewage sludge use or disposal; or

17. Discharge pollutants, either alone or in conjunction with pollutants from other sources that increase the magnitude or duration of permit violations.

29. "Toxic Pollutant" means any pollutant listed as toxic under section 307 (a) (1) of the Clean Water Act or under 40 C.F.R. Part 122, Appendix D. Violation of maximum daily discharge limitations are subject to 24-hour reporting (Federal Standard Provisions V.E.).

30. “Zone of Initial Dilution" means the region surrounding or adjacent to the end of an outfall pipe or diffuser ports whose boundaries are defined through calculation of a plume model verified by the State Water Board

ATTACHMENT E – MONITORING AND REPORTING PROGRAM

Contents

Tables

ATTACHMENT E – MONITORING AND REPORTING PROGRAM (MRP)

The Code of Federal Regulations (40 C.F.R. § 122.48) requires that all NPDES permits specify monitoring and reporting requirements. Water Code sections 13267 and 13383 also authorize the Regional Water Quality Control Board (Central Coast Water Board) to require technical and monitoring reports. This MRP establishes monitoring and reporting requirements that implement federal and California regulations.

I. GENERAL MONITORING PROVISIONS

A. Laboratory Certification

Laboratories analyzing monitoring samples shall be certified by the Department of Public Health (DPH), in accordance with the provision of Water Code section 13176, and must include quality assurance/quality control data with their reports.

B. Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge. All samples shall be taken at the monitoring locations specified below and, unless otherwise specified, before the monitored flow joins or is diluted by any other waste stream, body of water, or substance. Monitoring locations shall now be changed without notification to and approval of the Central Coast Water Board.

C. Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to ensure the accuracy and reliability of measurements of the volume of monitored discharges. The devices shall be installed, calibrated, and maintained to ensure that the accuracy of the measurements is consistent with the accepted capability of that type of device. Devices selected shall be capable of measuring flows with a maximum deviation of less than ±10 percent from true discharge rates throughout the range of expected discharge volumes. Guidance in selection, installation, calibration, and operation of acceptable flow measurement devices can be obtained from the following references.

1. *A Guide to Methods and Standards for the Measurement of Water Flow*, U.S. Department of Commerce, National Bureau of Standards, NBS Special Publication 421, May 1975, 96 pp. (Available from the U.S. Government Printing Office, Washington, D.C. 20402. Order by SD Catalog No. C13.10:421.)

2. *Water Measurement Manual*, U.S. Department of Interior, Bureau of Reclamation, Second Edition, Revised Reprint, 1974, 327 pp. (Available from the U.S. Government Printing Office, Washington D.C. 20402. Order by Catalog No. 172.19/2:W29/2, Stock No. S/N 24003-0027.)

3. *Flow Measurement in Open Channels and Closed Conduits,* U.S. Department of Commerce, National Bureau of Standards, NBS Special Publication 484, October 1977, 982 pp. (Available in paper copy or microfiche from National Technical Information Services (NTIS) Springfield, VA 22050. Order by NTIS No. PB-273 535/5ST.

4. *NPDES Compliance Sampling Manual*, U.S. Environmental Protection Agency, Office of Water Enforcement, Publication MCD-51, 1977, 140 pp. (Available from the General Services Administration (8FFS), Centralized Mailing Lists Services, Building 41, Denver Federal Center, CO 80225.)

D. All monitoring instruments and devices used by the Discharger to fulfill the prescribed monitoring program shall be properly maintained and calibrated as necessary to ensure their continued accuracy. All flow measurement devices shall be calibrated at least once per year to ensure continued accuracy of the devices.

E. Monitoring results, including noncompliance, shall be reported at intervals and in a manner specified in this MRP.

F. Unless otherwise specified by this MRP, all monitoring shall be conducted according to test procedures established at 40 C.F.R. 136, Guidelines Establishing Test Procedures for Analysis of Pollutants. All analyses shall be conducted using the lowest practical quantitation limit achievable using the specified methodology. Where effluent limitations are set below the lowest achievable quantitation limits, pollutants not detected at the lowest practical quantitation limits will be considered in compliance with effluent limitations. Analysis for toxic pollutants specified in Table 1 of the California Ocean Plan shall be conducted in accordance with procedures described in the California Ocean Plan and restated in this MRP.

G. Monitoring and sampling periods are defined as follows unless otherwise specified in this MRP:

Daily: Midnight through 11:59 PM, or any 24-hour period that reasonably represents a calendar day for purposes of sampling.

Weekly: Sunday through Saturday (Note: For weekly monitoring and sampling periods that start in one monthly reporting period but end in the next, the Discharger may report the weekly data in the monthly monitoring report containing the last day of the weekly period.)

Monthly: 1st day of calendar month through last day of calendar month.

Annually: January 1st through December 31st

II. MONITORING LOCATIONS

The Discharger shall establish the following monitoring locations to demonstrate compliance with the effluent limitations, discharge specifications, and other requirements in this Order:

Table E-1. Monitoring Station Locations

Discharge Point Name	Monitoring Location Name	Monitoring Location Description (include Latitude and Longitude when available)
--	INF-001 (formally M-INF)	Influent wastewater prior to treatment and following all significant input of wastewater to the treatment system, and upstream of Facility return flows.
001	EFF-001 (formally M-001)	Location where representative sample of effluent, to be discharged through the ocean outfall, can be collected after treatment. Latitude:35° 22' 47" N Longitude: 120° 51' 40" W
--	RSW-001 (formally RW-1)	Upcoast Midfield Latitude: 35° 23' 15" N Longitude: 120° 52' 30" W
--	RSW-002 (formally RW-2)	Upcoast Nearfield Latitude: 35° 23' 14" N Longitude: 120° 52' 30" W

Discharge Point Name	Monitoring Location Name	Monitoring Location Description (include Latitude and Longitude when available)
--	RSW-003 (formally RW-3)	Upcoast ZID Latitude: 35° 23' 13" N Longitude: 120° 52' 30" W
--	RSW-004 (formally RW-4)	Downcoast ZID Latitude: 35° 23' 19" N Longitude: 120° 52' 30" W
--	RSW-005 (formally RW-5)	Downcoast Nearfield Latitude: 35° 23' 10" N Longitude: 120° 52' 30" W
--	RSW-006 (formally RW-6)	Downcoast Midfield Latitude: 35° 23' 9" N Longitude: 120° 52' 30" W
--	SRF-A1 (formally SZ-A1)	Upcoast Reference Latitude: 35° 23' 58" N Longitude: 120° 52' 07" W
--	SRF-A (formally SZ-A)	Upcoast Midfield Latitude: 35° 23' 45" N Longitude: 120° 52' 07" W
--	SRF-B (formally SZ-B)	Upcoast Nearfield Latitude: 35° 23' 31" N Longitude: 120° 52' 00" W
--	SRF-C (formally SZ-C)	Onshore of Diffuser Latitude: 35° 23' 15" N Longitude: 120° 51' 57" W
--	SRF-D (formally SZ-D)	Downcoast Nearfield Latitude: 35° 23' 02" N Longitude: 120° 51' 55" W
--	SRF-E (formally SZ-E)	Downcoast Midfield Latitude: 35° 22' 46" N Longitude: 120° 51' 54" W
--	SRF-F (formally SZ-F)	Downcoast Reference Latitude: 35° 22' 24" N Longitude: 120° 51' 53" W
--	SRF-G (formally SZ-G)	Morro Creek immediately before flowing to the ocean.
--	B-002	Upcoast Reference Latitude: 35° 23' 17" N Longitude: 120° 52' 30" W
--	B-003	Downcoast Nearfield Latitude: 35° 23' 14" N Longitude: 120° 52' 30" W
--	B-004	Upcoast ZID Latitude: 35° 23' 13" N Longitude: 120° 52' 30" W
--	B-005	Downcoast ZID Latitude: 35° 23' 11" N Longitude: 120° 52' 30" W
--	B-006	Downcoast Nearfield Latitude: 35° 23' 10" N Longitude: 120° 52' 30" W
--	B-007	Downcoast Reference Latitude: 35° 23' 7" N Longitude: 120° 52' 30" W

The north latitude and west longitude information in Table E-1 are approximate for administrative purposes.

III. INFLUENT MONITORING REQUIREMENTS

A. Monitoring Location INF-001

1. The Discharger shall monitor influent to the Facility at INF-001 as follows:

Table E-2. Influent Monitoring

Parameter	Units	Sample Type	Minimum Sampling Frequency
Daily Flow	MG	Metered	Daily
Maximum Daily Flow	MGD	Metered	Daily
Mean Daily Flow	MGD	Calculated	Monthly
Biochemical Oxygen Demand 5-day @ 20°C (BOD_5)	mg/L	C-24[1]	Weekly
Total Suspended Solids (TSS)	mg/L	C-24[1]	Weekly

Footnotes to Table E-2:

Units:

mg/L = milligrams per liter
C-24 = 24 hour composite

[1] Composite samples may be taken by a proportional sampling devise approved by the Executive Officer or by grab samples composited in proportion to flow. In compositing grab samples, the sampling interval shall not exceed one hour.

2. Effluent flow metering shall be reported in place of influent flow metering when the flume is surcharged. Monitoring reports shall indicate the dates and times for which the influent flow meter was surcharged and effluent flow is being reported in place of influent flow.

IV. EFFLUENT MONITORING REQUIREMENTS

A. Monitoring Location EFF-001

1. The Discharger shall monitor effluent at Monitoring Location EFF-001, as follows.

Table E-3. Effluent Monitoring

Parameter	Units	Sample Type	Minimum Sampling Frequency
Total Chlorine Residual	µg/L	Grab	1/Day
Chlorine Usage	lbs/day	Recorded	1/Day
Total Coliform	MPN	Grab	5/Week[1]
Temperature	°C	Grab	5/Week
Turbidity	NTU	Grab	5/Week
BOD_5	mg/L	C-24	1/Week
TSS	mg/L	C-24	1/Week
pH	standard units	Grab	1/Week
Settleable Solids	mL/L	Grab	1/Week
Oil and Grease	mg/L	Grab	1/Week
Chronic Toxicity	TUc	C-24	1/Year
Ammonia (as N)	mg/L	Grab	1/Year
Nitrate (as N)	mg/L	Grab	1/Year
Urea (as N)	mg/L	Grab	1/Year
Orthophophate (as P)	mg/L	Grab	1/Year
Dissolved Silica (SiO_2)	mg/L	Grab	1/Year

Parameter	Units	Sample Type	Minimum Sampling Frequency
Protection of Marine Aquatic Life			
Arsenic, Total Recoverable	µg/L	C-24	1/Year
Cadmium, Total Recoverable	µg/L	C-24	1/Year
Chromium (VI) , Total Recoverable	µg/L	C-24	1/Year
Copper, Total Recoverable	µg/L	C-24	1/Year
Lead, Total Recoverable	µg/L	C-24	1/Year
Mercury, Total Recoverable	µg/L	C-24	1/Year
Nickel, Total Recoverable	µg/L	C-24	1/Year
Selenium, Total Recoverable	µg/L	C-24	1/Year
Silver, Total Recoverable	µg/L	C-24	1/Year
Zinc, Total Recoverable	µg/L	C-24	1/Year
Cyanide, Total	µg/L	C-24	1/Permit
Phenolic Compounds (non-chlorinated)	µg/L	Grab	1/Permit
Phenolic Compounds (chlorinated)	µg/L	Grab	1/Permit
Endosulfan[2]	µg/L	C-24	1/Permit
Endrin	µg/L	C-24	1/Permit
HCH[3]	µg/L	C-24	1/Permit
Radionuclide	pCi/L	C-24	1/Permit
Protection of Human Health – Noncarcinogens			
Acrolein	µg/L	C-24	1/Permit
Antimony	µg/L	C-24	1/Permit
Bis(2-chloroethoxy)methane	µg/L	C-24	1/Permit
Bis(2-chloroisopropyl)ether	µg/L	C-24	1/Permit
Chlorobenzene	µg/L	C-24	1/Permit
Chromium (III)	µg/L	C-24	1/Permit
Di-n-butyl phthalate	µg/L	C-24	1/Permit
Dichlorobenzenes[4]	µg/L	C-24	1/Permit
Diethyl phthalate	µg/L	C-24	1/Permit
Dimethyl phthalate	µg/L	C-24	1/Permit
4,6-dinitro-2-methylphenol	µg/L	C-24	1/Permit
2,4-dinitrophenol	µg/L	C-24	1/Permit
Ethylbenzene	µg/L	C-24	1/Permit
Fluoranthene	µg/L	C-24	1/Permit
Hexachlorocyclopentadiene	µg/L	C-24	1/Permit
Isophorone	µg/L	C-24	1/Permit
Nitrobenzene	µg/L	C-24	1/Permit
Thallium	µg/L	C-24	1/Permit
Toluene	µg/L	C-24	1/Permit
Tributyltin	µg/L	C-24	1/Permit
1,1,1-trichlorethane	µg/L	C-24	1/Permit
1,1,2-trichloroethane	µg/L	C-24	1/Permit

Parameter	Units	Sample Type	Minimum Sampling Frequency
Protection of Human Health – Carcinogens			
Acrylonitrile	µg/L	C-24	1/Permit
Aldrin	µg/L	C-24	1/Permit
Benzene	µg/L	C-24	1/Permit
Benzidine	µg/L	C-24	1/Permit
Beryllium	µg/L	C-24	1/Permit
Bis(2-chloroethyl)ether	µg/L	C-24	1/Permit
Bis(2-ethylhexyl)phthalate	µg/L	C-24	1/Permit
Carbon tetrachloride	µg/L	C-24	1/Permit
Chlordane[5]	µg/L	C-24	1/Permit
Chlorodibromomethane	µg/L	C-24	1/Permit
Chloroform	µg/L	C-24	1/Permit
DDT[6]	µg/L	C-24	1/Permit
1,4-dichlorobenzene	µg/L	C-24	1/Permit
3,3-dichlorobenzidine	µg/L	C-24	1/Permit
1,2-dichloroethane	µg/L	C-24	1/Permit
1,1-dichloroethylene	µg/L	C-24	1/Permit
Dichlorobromomethane	µg/L	C-24	1/Permit
Dichloromethane	µg/L	C-24	1/Permit
1,3-dichloropropene	µg/L	C-24	1/Permit
Dieldrin	µg/L	C-24	1/Permit
2,4-dinitrotoluene	µg/L	C-24	1/Permit
1,2-diphenylhydrazine	µg/L	C-24	1/Permit
Halomethanes[7]	µg/L	C-24	1/Permit
Heptachlor	µg/L	C-24	1/Permit
Heptachlor epoxide	µg/L	C-24	1/Permit
Hexachlorobenzene	µg/L	C-24	1/Permit
Hexachlorobutadiene	µg/L	C-24	1/Permit
Hexachloroethane	µg/L	C-24	1/Permit
N-nitrosodimethylamine	µg/L	C-24	1/Permit
N-nitrosodi-N-propylamine	µg/L	C-24	1/Permit
N-nitrosodiphenylamine	µg/L	C-24	1/Permit
PAHs[8]	µg/L	C-24	1/Permit
PCBs[9]	µg/L	C-24	1/Permit
TCDD Equivalents[10]	µg/L	C-24	1/Permit
1,1,2,2-tetrachloroethane	µg/L	C-24	1/Permit
Tetrachloroethylene	µg/L	C-24	1/Permit
Toxaphene	µg/L	C-24	1/Permit

[1] If effluent limitations are exceeded for total coliform, the Discharger shall monitor as specified in section VIII.A.1 of this MRP.

[2] Endosulfan shall mean the sum of endosulfan-alpha and –beta and endosulfan sulfate.

[3] HCH shall mean the sum of alpha, beta, gamma (Lindane) and delta isomers of hexachlorocyclohexane.

[4] Dichlorobenzenes shall mean the sum of 1,2- and 1,3-dichlorobenzene.

[5] Chlorodane shall mean the sum of chlordane-alpha, chlordane-gamma, chlordene-alpha, chlordane-gamma, nonachlor-alpha, nonachlor-gamma, and oxychlordane.

[6] DDT shall mean the sum of 4,4'DDT; 2,4'DDT; 4,4"DDE; 4,4"DDD; and 2,4'DDD.

[7] Halomethanes shall mean the sum of bromoform, bromomethane and chloromethane.

[8] PAHs shall mean the sum of acenaphthylene, anthracene, 1,2-benzanthracene, 3,4-benzofluoranthene, benzo[k]fluoranthene, 1,1,2-benzoperylene, benzo[a]pyrene, chrysene, dibenzo[a,h]anthracene, fluorine, ideno[1,2,3-cd]pyrene, phenanthrene, and pyrene.

[9] Sum of chlorinated biphenyls whose analytical characteristics resemble those of Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Aroclor-1254, and Aroclor-1260.

[10] TCDD equivalents shall mean the sum of the concentrations of chlorinated dibenzodioxins (2,3,7,8-CDDs) and chlorinated dibenzofurans (2,3,7,8-CDFs) multiplied by their respective toxicity factors, as shown below:

Isomer Group	Toxicity Equivalent Factor	Isomer Group	Toxicity Equivalent Factor
2,3,7,8-tetra CDD	1.0	1,2,3,7,8-penta CDF	0.05
2,3,7,8-penta CDD	0.5	2,3,4,7,8-penta CDF	0.5
2,3,7,8-hexa CDDs	0.1	2,3,7,8-hexa CDFs	0.1
2,3,7,8-hepta CDD	0.01	2,3,7,8-hepta CDFs	0.01
octa CDD	0.001	octa CDF	0.001
2,3,7,8-tetra CDF	0.1	--	--

B. Mass Emission Goals

1. The Discharger shall report the mass emission rates for all constituents that have mass emission effluent goals listed below, and the flow used to calculate the mass emission rates for each constituent. Annual mass emissions will be compared to performance based mass emission goals. For compounds with detectable concentrations, exceedances of performance-based mass emission goals shall be considered indicative of a statistically significant increase in loading and will trigger an antidegradation analysis prior to any future permit renewals.

Table E-4. Mass Emission Goals

Constituent	Value	Units
Protection of Marine Life		
Arsenic, Total Recoverable	17	kg/yr
Cadmium, Total Recoverable	88	kg/yr
Chromium, Total Recoverable	93	kg/yr
Copper, Total Recoverable	690	kg/yr
Lead, Total Recoverable	465	kg/yr
Mercury, Total Recoverable	1.4	kg/yr
Nickel, Total Recoverable	142	kg/yr
Selenium, Total Recoverable	65	kg/yr
Silver, Total Recoverable	28	kg/yr
Zinc, Total Recoverable	244	kg/yr
Cyanide, Total	71	kg/yr
Endosulfan[1]	3	kg/yr
Endrin	1	kg/yr

Constituent	Value	Units
HCH[2]	228	kg/yr
Protection of Human Health - Noncarcinogens		
Acrolein	--	--
Antimony	285	kg/yr
Bis(2-chloroethoxy) methane	142	kg/yr
Bis(2-chloroisopropyl) ether	--	--
Chlorobenzene	--	--
Chromium III	--	--
Di-n-butyl phthalate	142	kg/yr
Dichlorobenzene[3]	5.7	kg/yr
1,1-dichloroethene	3	kg/yr
Diethyl phthalate	191	kg/yr
Dimethyl phthalate	142	kg/yr
1-methyl-4,6-dinitrophenol	142	kg/yr
2,4-dinitrophenol	342	kg/yr
Ethylbenzene	3	kg/yr
Fluoranthene	142	kg/yr
Hexachlorocyclopentadiene	--	--
Isophorone	142	kg/yr
Nitrobenzene	142	kg/yr
Thallium	285	kg/yr
Toluene	4	kg/yr
1,1,2,2-tetrachloroethane	3	kg/yr
1,1,1-trichloroethane	3	kg/yr
1,1,2-trichloroethane	3	kg/yr
Protection of Human Health - Carcinogens		
Acrylonitrile	--	--
Aldrin	0.01	kg/yr
Benzene	12	kg/yr
Benzidine	0.03	kg/yr
Beryllium	28	kg/yr
Bis(2-chloroethyl) ether	17	kg/yr
Bis(2-ethylhexyl) phthalate	320	kg/yr
Carbon tetrachloride	3	kg/yr
Chlordane[4]	8.8	kg/yr
Chloroform	5	kg/yr
DDT[5]	60	kg/yr
1,4-dichlorobenzene	57	kg/yr
3,3'-dichlorobenzidene	3.1	kg/yr
1,2-dichloroethane	3	kg/yr
Dichloromethane	--	--
1,3-dichloropropene	--	--
Dieldrin	0.02	kg/yr
2,4-dinitrotoluene	142	kg/yr

Constituent	Value	Units
1,2-diphenylhydrazine	60	kg/yr
Halomethanes[6]	25	kg/yr
Heptachlor	0.27	kg/yr
Hexachlorobenzene	0.08	kg/yr
Hexachlorobutadiene	142	kg/yr
Hexachloroethane	142	kg/yr
N-nitrosodimethylamine	342	kg/yr
N-nitrosodiphenylamine	142	kg/yr
PAHs[7]	3.4	kg/yr
PCBs[8]	7.3	g/yr
Dibenzofuran	57	kg/yr
TCDD Equivalents[9]	1.48	mg/yr
Tetrachloroethene	4	kg/yr
Toxaphene	0.08	kg/yr
Trichloroethene	3	kg/yr
2,4,6-trichlorophenol	114	kg/yr
Vinyl chloride	3	kg/yr

[1] Endosulfan shall mean the sum of endosulfan-alpha and –beta and endosulfan sulfate.

[2] HCH shall mean the sum of alpha, beta, gamma (Lindane) and delta isomers of hexachlorocyclohexane.

[3] Dichlorobenzenes shall mean the sum of 1,2- and 1,3-dichlorobenzene.

[4] Chlorodane shall mean the sum of chlordane-alpha, chlordane-gamma, chlordene-alpha, chlordane-gamma, nonachlor-alpha, nonachlor-gamma, and oxychlordane.

[5] DDT shall mean the sum of 4,4'DDT; 2,4'DDT; 4,4"DDE; 4,4"DDD; and 2,4'DDD.

[6] Halomethanes shall mean the sum of bromoform, bromomethane and chloromethane.

[7] PAHs shall mean the sum of acenaphthylene, anthracene, 1,2-benzanthracene, 3,4-benzofluoranthene, benzo[k]fluoranthene, 1,1,2-benzoperylene, benzo[a]pyrene, chrysene, dibenzo[a,h]anthracene, fluorine, ideno[1,2,3-cd]pyrene, phenanthrene, and pyrene.

[8] Sum of chlorinated biphenyls whose analytical characteristics resemble those of Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Aroclor-1254, and Aroclor-1260.

[9] TCDD equivalents shall mean the sum of the concentrations of chlorinated dibenzodioxins (2,3,7,8-CDDs) and chlorinated dibenzofurans (2,3,7,8-CDFs) multiplied by their respective toxicity factors, as shown below:

Isomer Group	Toxicity Equivalent Factor	Isomer Group	Toxicity Equivalent Factor
2,3,7,8-tetra CDD	1.0	1,2,3,7,8-penta CDF	0.05
2,3,7,8-penta CDD	0.5	2,3,4,7,8-penta CDF	0.5
2,3,7,8-hexa CDDs	0.1	2,3,7,8-hexa CDFs	0.1
2,3,7,8-hepta CDD	0.01	2,3,7,8-hepta CDFs	0.01
octa CDD	0.001	octa CDF	0.001
2,3,7,8-tetra CDF	0.1	--	--

V. WHOLE EFFLUENT TOXICITY TESTING REQUIREMENTS

A. Whole Effluent Chronic Toxicity – Monitoring Location EFF-001

The presence of chronic toxicity shall be estimated as specified in *Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to West Coast Marine and Estuarine Organisms*, EPA-821/600/R-95/136; *Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms*, EPA-600-4-01-003; *Procedures Manual for Conducting Toxicity Tests developed by the Marine Bioassay Project*, SWRCB 1996, 96-1WQ; and/or *Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms*, EPA/600/4-87-028 or subsequent editions.

Chronic toxicity measures a sublethal effect (e.g., reduced growth or reproduction) to experimental test organisms exposed to an effluent compared to that of the control organisms.

Chronic Toxicity (TUc) = 100/NOEL

The no observed effect level (NOEL) is the maximum tested concentration in a medium which does not cause known adverse effects upon chronic exposure in the species in question (i.e., the highest effluent concentration to which organisms are exposed in a chronic test that causes no observable adverse effects on the test organism; e.g., the highest concentration of a toxicant to which the values for the observed responses are not statistically significantly different from the controls). Examples of chronic toxicity include, but are not limited to, measurements of toxicant effects on reproduction, growth, and sublethal effects that can include behavioral, physiological, and biochemical effects.

In accordance with the 2015 Ocean Plan, Appendix III, *Standard Monitoring Procedures*, the Discharger shall use the critical life stage toxicity tests specified in the table below to measure TUc. Other species or protocols will be added to the list after the State Water Board review and approval.

A minimum of three test species with approved test protocols shall be used to measure compliance with the toxicity objective. If possible, the test species shall include a fish, an invertebrate, and an aquatic plant. After a screening period of no fewer than three sampling events, monitoring can be reduced to the most sensitive species. Dilution and control water should be obtained from an unaffected area of the receiving waters. The sensitivity of the test organisms to a reference toxicant shall be determined concurrently with each bioassay test and reported with the test results.

Table E-6. Approved Tests – Chronic Toxicity

Species	Effect	Tier	Reference
Giant Kelp, *Macrocystic pyrifera*	Percent germination; germ tube length	1	a, c
Red abalone, *Haliotis rufesens*	Abnormal shell development	1	a, c
Oyster. *Crassostrea gigast*; Mussels, *Mytilus spp*.	Abnormal shell development; percent survival	1	a, c
Urchin, *Strongylocentrotus purpuratus*; Sand dollar, *Dendraster excentricus*	Percent normal development; percent fertilization	1	a, c
Shrimp, *Holmesimysis costata*	Percent survival; growth	1	a, c
Shrimp, *Mysidopsis bahia*	Percent survival; growth; fecundity	2	b, d
Topsmelt, *Atherinops affinis*	Larval growth rate; percent survival	1	a, c
Silversides, *Menidia beryllina*	Larval growth rate; percent survival	2	b, d

[1] First tier methods are preferred for compliance monitoring. If first tier organisms are not available, the Discharger can use a second tier test method following approval by the Regional Water Board.

[2] Protocol References:

a. Chapman, G.A., D.L. Denton, and J.M. Lazochak. 1995. Short-term methods for estimating the chronic toxicity of effluents and receiving waters to west coast marine and estuarine organisms. U.S. EPA Report No. EPA/600/R-95/136.

b. Klemm, D.J., G.E. Morrison, T.J. Norberg-King, W.J. Pelier, and M.A. Heber. 1994. Short-term methods for estimating the chronic toxicity of effluents and receiving waters to marine and estuarine organisms. U.S. EPA Report No. EPA-600-4-91-003.

c. SWRCB 1996. Procedures Manual for Conducting Toxicity Tests Developed by the Marin Bioassay Project. 96-1WQ.

d. Weber, C.I., W.B. Horning, I.I., D.J. Klemm, T.W. Neiheisel, P.A. Lewis, E.L. Robinson, J. Menkedick and F. Kessler (eds). 1988. Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms. EPA/600/4-87/028. National Information Service, Springfield, VA.

Dilution and control waters shall be obtained from an area of the receiving waters, typically upstream, which is unaffected by the discharge. Standard dilution water can be used, if the receiving water itself exhibits toxicity or if approved by the Central Coast Water Board. If the dilution water used in testing is different from the water in which the test organisms were cultured, a second control sample using culture water shall be tested.

If the effluent to be discharged to a marine or estuarine system (e.g., salinity values in excess of 1,000 mg/L) originates from a freshwater supply, salinity of the effluent must be increased with dry ocean salts (e.g., FORTY FATHOMS®) to match salinity of the receiving water. This modified effluent shall then be tested using marine species.

B. Accelerated Monitoring Requirements

1. When chronic toxicity is detected in the effluent above an effluent limitation established by this Order, and the testing meets all test acceptability criteria, the Discharger shall resample immediately and confirm the effluent toxicity. If the retest results in toxicity greater than the applicable effluent limitation, the Discharger shall initiate accelerated monitoring.

2. Accelerated monitoring frequency consists of performing six toxicity tests (one per week) in a six-week period following the first failed test result (test results exceed effluent limitation or toxicity trigger), or as otherwise instructed by the Executive Officer. Test results shall be submitted to the Central Coast Water Board within 15 days of the conclusion of each test.

3. Unless otherwise specified by the Executive Officer, if the implementation of the generic Toxicity Reduction Evaluation (TRE) work plan indicates the source of the exceedance of the toxicity trigger (for instance, a temporary plan upset), then only one additional test is necessary. If an exceedance of the toxicity effluent limitation or toxicity trigger is detected in this test, the Discharger shall continue with accelerated monitoring requirements or implement the Toxicity Identification and Toxicity Reduction Evaluations.

4. Unless otherwise specified by the Executive Officer, if none of the six accelerated tests indicates exceedances of the toxicity effluent limitation or toxicity trigger, then the Discharger may return to the normal bioassay testing frequency.

C. Conducting Toxicity Identification Evaluations (TIE) and Toxicity Reduction Evaluations (TRE)

1. A TRE shall be implemented by the Discharger as specified by the Executive Officer. A TIE may be required as part of the TRE.

2. The TIE shall be conducted to identify and evaluate toxicity in accordance with procedures recommended by the United States Environmental Protection Agency (U.S. EPA) which include the following:

   a. Toxicity Identification Evaluation: Characterization of Chronically Toxic Effluents, Phase I, (U.S. EPA, 1992a);

   b. Methods for Aquatic Toxicity Identification Evaluations: Phase 1 Toxicity Characterization Procedures, Second Edition (U.S. EPA, 1991a);

   c. Methods for Aquatic Toxicity Identification Evaluations: Phase II Toxicity Identification Procedures for Sampling Exhibiting Acute and Chronic Toxicity (U.S. EPA, 1993a); and

   d. Methods for Aquatic Toxicity Identification Evaluations: Phase III Toxicity Confirmation Procedures for Samples Exhibiting Acute and Chronic Toxicity (U.S. EPA, 1993b).

3. As part of the TIE investigation, the Discharger shall be required to implement its TRE work plan. The Discharger shall take all reasonable steps to control toxicity once the source of the toxicity is identified. A failure to conduct required toxicity tests or a TRE within a designated period may result in the establishment of numerical effluent limitations for chronic toxicity in a permit or appropriate enforcement action. Recommended guidance in conducting a TRE includes the following:

   a. *Toxicity Reduction Evaluation Guidance for Municipal Wastewater Treatment Plants*, August 1999, EPA/833B-99/002; and

   b. *Clarifications Regarding Toxicity Reduction and Identification Evaluations in the National Pollutant Discharge Elimination System Program* dated Mary 27, 2001, U.S. EPA Office of Wastewater Management, Office of Regulatory Enforcement.

D. Toxicity Reporting

1. The Discharger shall include a full report of toxicity test results with the regular monthly monitoring report and include the following information.

   a. Toxicity test results,

   b. Dates of sample collection and initiation of each toxicity test, and

   c. And/or toxicity discharge limitations (or value).

2. Toxicity test results shall be reported according to the appropriate guidance – *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms*, Fifth Edition, U.S. EPA Office of Water, PA821-R-02-012 (2002) or the latest edition, or EPA-821-R-02-012 (2002) or subsequent editions.

3. If the initial investigation TRE workplan is used to determine that additional (accelerated) toxicity testing is unnecessary, these results shall be submitted with the monitoring report for the month in which investigations conducted under the TRE workplan occurred.

4. Within 14 days of receipt of a chronic toxicity test result which exceeds 134 TUc, the Discharger shall provide written notification to the Executive Officer of:

a. Findings of the TRE of other investigation to identify the cause(s) of toxicity,

b. Actions the Discharger has taken/will take to mitigate the impact of the discharge and to prevent the recurrence of toxicity. When corrective actions, including TRE, have not been completed, a schedule under which corrective actions will be implemented, or the reason for not taking corrective action, if no action has been taken.

When corrective actions, including a TRE, have not been completed, a schedule under which corrective actions will be implemented, or the reason for not taking corrective action, if no action has been taken, will be completed.

VI. LAND DISCHARGE MONITORING REQUIREMENTS – NOT APPLICABLE

VII. RECYCLING MONITORING REQUIREMENTS

If reclaimed water is used, the Discharger shall comply with applicable State and local monitoring requirements regarding the production and use of reclaimed wastewater, including requirements established by the DGS at title 22, sections 60301 – 60357 of the CCR, Water Recycling Criteria.

VIII. RECEIVING WATER MONITORING REQUIREMENTS

A. Surf Zone Monitoring – Monitoring Locations SRF-A1 through SRF-G, and RSW-003 and RSW-004

1. If the total coliform limitations specified in section III.A.4 of the Order are exceeded, the Discharger shall monitor for total and fecal coliform and enterococcus bacteria in the receiving water at all surf zone monitoring locations, and at one station directly up coast (RSW-003) and one station directly down coast (RSW-004) of the point of discharge. The Discharger shall monitor these stations daily for a minimum of 7 days at indicated in Table E-7. A report summarizing the results of monitoring, and comparing the results to the Ocean Plan water quality objectives for bacteria shall be submitted to the Executive Officer with the next monitoring report to be submitted to the Central Coast Water Board.

2. In the event of a malfunction of the Discharger's wastewater treatment facility's disinfection process that results in a potential or actual discharge or inadequately disinfected effluent into the receiving water, the Discharger shall monitor receiving water for bacteria as indicated in Table E-7, and provide notice in accordance with requirements established by section V.C.6.b of the Order.

Table E-7. Bacteria Monitoring Schedule

Parameter	Units	Minimum Sampling Frequency
Total Coliform	MPN/100 mL	1/Day for 7 days[1][2]
Fecal Coliform	MPN/100 mL	1/Day for 7 days[1][2]
Enterococcus	MPN/100 mL	1/Day for 7 days[1][2]
Standard Observations	--	1/Day for 7 days[2][3]

[1] For all bacterial analyses, sample dilutions shall be performed so the range of values extends from 2 to 16,000 MPN/100 mL. The detection methods used for each analysis shall be reported with the results of the analysis. Detection methods used for total and fecal coliform shall be those presented in the most recent edition of *Standard Methods for the Examination of Water and Wastewater* or any improved method determined by the Central Coast Water Board (and approved by U.S. EPA) to be appropriate. Detection methods used for enterococcus shall be those presented in U.S. EPA publication EPA 600/4-85/076, *Test Methods for Escherichia coli and Enterococci in Water be Membrane Filter Procedure*, or an improved method determined by the Central Coast Water Board (and approved by U.S. EPA) to be appropriate.

[2] If a single sample exceeds any of the single sample maximum receiving water limitations established in section IV.A.1.b.ii of the Order, repeat sampling at that location shall be conducted to determine the extent and persistence of the exceedance. Repeat sampling shall be conducted within 24 hours of receiving analytical results and continued until the sample result is less than the single sample maximum receiving water limitation or until the source of the high bacterial densities has been identified and positively determined to not be caused or contributed to be discharge of effluent by the Facility. When repeat sampling is required because of an exceedance of any one single sample maximum, values from all samples collected during that 30-day period will be used to determine compliance with the 30-day geometric mean receiving water limitations in section IV.A.1.a.i of the Order.

[3] Standard observations shall include observation of wind direction and speed, weather (e.g., cloudy, sunny, rainy), the quantity of rainfall precipitated over the previous 7 day period, sea conditions, longshore currents (e.g., directions), and tidal conditions (e.g., high, slack, or low tide). Observations of water discoloration, floating oil and grease, turbidity, odor, materials of sewage origin in the water or on the beach, and temperature (°C) shall be recorded and reported.

IX. BENTHIC MONITORING

A. Benthic Sediment Monitoring – Monitoring Locations B-002 through B-007

Sediment monitoring shall be conducted once per pemit term, in October 2018. Three grab samples shall be collected using a 0.1 m^2 Van Veen grab sampler at each benthic monitoring station. A composite of these three samples should be analyzed as follows:

Table E-8. Benthic Sediment Monitoring

Parameter	Units	Minimum Frequency of Sampling/Analysis
Sediment particle size	Phi size (% volume)	Once during permit term (October 2018)
Organic Matter	Volatile solids or TOC (mg/kg)	Once during permit term (October 2018)
Biochemical Oxygen Demand	mg/L	Once during permit term (October 2018)
Total Kjeldahl Nitrogen	mg/L	Once during permit term (October 2018)
Oil and Grease	mg/L	Once during permit term (October 2018)
Aluminum	µg/kg	Once during permit term (October 2018)
Iron	µg/kg	Once during permit term (October 2018)
Arsenic	µg/kg	Once during permit term (October 2018)
Cadmium	µg/kg	Once during permit term (October 2018)
Total Chromium	µg/kg	Once during permit term (October 2018)
Copper	µg/kg	Once during permit term (October 2018)
Lead	µg/kg	Once during permit term (October 2018)
Mercury	µg/kg	Once during permit term (October 2018)
Nickel	µg/kg	Once during permit term (October 2018)
Silber	µg/kg	Once during permit term (October 2018)
Zinc	µg/kg	Once during permit term (October 2018)
Nonchlorinated Phenolics	µg/kg	Once during permit term (October 2018)
Chlorinated Phenolics	µg/kg	Once during permit term (October 2018)
Aldrin	µg/kg	Once during permit term (October 2018)
Dieldrin	µg/kg	Once during permit term (October 2018)

Parameter	Units	Minimum Frequency of Sampling/Analysis
Chlordane	µg/kg	Once during permit term (October 2018)
DDT, DDE, DDD	µg/kg	Once during permit term (October 2018)
Endrin	µg/kg	Once during permit term (October 2018)
PAHs	µg/kg	Once during permit term (October 2018)
PCBs	µg/kg	Once during permit term (October 2018)
Toxaphene	µg/kg	Once during permit term (October 2018)

When processing samples for analysis, macrofauna and large remnants greater than 0.25 inches (0.64 cm) should be removed, taking care to avoid contamination.

Sediment samples shall be analyzed according to *Quality Assurance and Quality Control (QA/QC) for 301(h) Monitoring Programs: Guidance on Field and Laboratory Methods* (EPA 430/9-86-004, 1987) and *Analytical Methods for U.S. EPA Priority Pollutants and 301(h) Pesticides in Estuarine and Marine Sediments* (EPA 503-6-90-004, 1986).

All sediment chemistry results shall be reported in the raw form and expressed on a dry weight basis. For all non-detect results, parameter detection limits shall be reported. Dry weight concentration target detection levels are indicated for National Oceanic and Atmospheric Administration (NOAA) National Status and Trends Program analyses.

Benthic monitoring results shall be included in the report with a complete discussion of benthic sediment survey results and potential influence of the discharge on sediment conditions in the study area. The discussion should be based on graphical, tabular, and/or appropriate statistical analyses of spatial and temporal patterns observed for raw sediment parameters. The report should also present an analysis of natural variation in sediment conditions, etc., which could influence the validity of study results. The Discharger's sediment results may also be compared with the results of other applicable studies, numerical protective levels, etc., as appropriate.

Survey results shall be compared to pre-discharge and/or historical data using appropriate statistical methods.

B. Benthic Community Monitoring

Benthic infaunal organisms shall be monitored once per pemit term in October 2018 at the benthic monitoring stations described in section II, Monitoring Locations, above. Benthic infaunal monitoring shall assess the temporal and spatial status of local benthic communities in relation to the outfall. Sampling shall be conducted as follows:

1. Collection: Five replicate samples shall be collected at each station using a 0.1 m^2 Van Veen grab sampler.

2. For benthic infauna analyses, each replicate sample shall be passed through a 1 mm screen, and the organisms retained and preserved as appropriate for subsequent identification. It is recommended that sample preservation, sample processing, and data analyses be conducted according to *Quality Assurance and Quality Control (QA/QC) for 301(h) Monitoring Programs: Guidance on Field and Laboratory Methods* (EPA 430/9-86-004, 1987).

3. Benthic infauna from each replicate sample shall be counted and identified to the lowest possible taxon. For each replicate sample, number of individuals, number of species,

and number of individuals per species, and within each major taxonomic group (polychaetes, molluscs, crustaceans, echinoderms, and all other macroinvertebrates) shall be recorded.

4. The benthic sampling report shall include a complete discussion of benthic infaunal survey results and (possible) influence of the outfall on benthic infauna communities in the study area. The discussion should be based on graphical, tabular, and/or appropriate statistical analyses of spatial and temporal patterns. Temporal trends in the number of individuals, number of species, number of individuals per species, and community structure indices, species richness (S), Margalef index (d), Shannon-Wiener index (H'), Brillouin index (h), Simpson's Index (SI), Swartz's dominance, and Infaunal Trophic Index (IT) shall be reported. The report should also present an analysis of natural community variation including the effects of different sediment conditions, oceanic seasons, and water temperatures, etc., that could influence the validity of study results. Survey results shall be compared to pre-discharge and/or historical data using appropriate statistical methods.

X. BIOSOLIDS MONITORING

A. The following information shall be submitted with the Annual Report required by Standard Provision C.16. Adequate detail should be included to characterize biosolids in accordance with 40 C.F.R. 503.

1. A representative sample of residual solids (biosolids) shall be obtained from the last point in the handling process (i.e., in the drying beds just prior to removal). All constituents shall be analyzed annually for total concentrations for comparison with total threshold limit concentration (TTLC) criteria. The Waste Extraction Test shall be performed on any constituent when the total concentration of the waste exceeds ten times the STLC limit for that substance. Twelve (12) discrete representative samples shall be collected at separate locations in the biosolids ready for disposal. These 12 samples shall be composited to form one (1) sample for constituent analysis. For accumulated, previously untested biosolids, the Discharger shall develop a representative sampling plan including number and location of sampling points, and collect representative samples. The analysis shall test for the metals required in 40 C.F.R. 503.16 (for land application) or 503.26 (for surface disposal), using the methods in *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* (EPA Publication SW-846, all applicable editions and updates), as required in 503.8(b)(4), at the minimum frequencies established therein, provided in the table below.

Table E-9. Amount of Biosolids and Frequency for Analysis

Amount[1] (dry metric tons/365 day period)	Frequency[2]
Greater than zero, but less than 290	1/Year.
Equal to or greater than 290 but less than 1,500	1/Quarter (four times per year)
Equal to or greater than 1,500 but less than 15,000	1/60 days (six times per year)
Greater than 15,000	1/Month (twelve times per year)

[1] For land application, either the amount of bulk biosolids applied to the land or the amount prepared for sale or give-away in a bag or other container for application to the land (dry weight basis). If the Discharger's biosolids are directly land applied without further treatment by another preparer, biosolids shall also be tested for organic-N, ammonium-N, and nitrate-N at the frequencies required. For surface disposal, the amount of biosolids placed on an active sludge unit (dry weight basis).

[2] Test results shall be expressed in mg pollutants per kg biosolids on a 100% dry weight basis.

Biosolids shall be analyzed annually for the constituents in the following table.

Table E-10. Biosolids Monitoring Requirements

Constituent	Units	Type of Sample	Sampling/Analysis Frequency
Quantity Removed	Tons or yds^3	Measured	Continual
Pathogen Density	--	--	Per 40 C.F.R. 503
Location Reuse/Disposal	General Public or Specific Site	--	--
Moisture Content	%	Grab	1/Year
pH	standard units	Grab	1/Year
Total Kjeldahl Nitrogen	mg/kg (dry)[1]	Grab	1/Year
Ammonia (N)	mg/kg	Grab	1/Year
Nitrate (N)	mg/kg	Grab	1/Year
Total Phosphorus	mg/kg	Grab	1/Year
Oil and Grease	mg/kg	Grab	1/Year
Arsenic	mg/kg	Grab	1/Year
Boron	mg/kg	Grab	1/Year
Cadmium	mg/kg	Grab	1/Year
Copper	mg/kg	Grab	1/Year
Chromium (Hexavalent)	mg/kg	Grab	1/Year
Lead	mg/kg	Grab	1/Year
Mercury	mg/kg	Grab	1/Year
Molybdenum	mg/kg	Grab	1/Year
Nickel	mg/kg	Grab	1/Year
Selenium	mg/kg	Grab	1/Year
Silver	mg/kg	Grab	1/Year
Zinc	mg/kg	Grab	1/Year
Priority Pollutants (excluding asbestos)	mg/kg	Grab	1/Year

[1] Total sample (including solids and any liquid portion) to be analyzed and results reported as mg/kg based on the dry weight of the sample.

2. Prior to land application, the Discharger shall demonstrate that the biosolids meet Class A or Class B pathogen reduction levels by one of the methods listed in 40 C.F.R. 503.32 (unless transferred to another preparer who demonstrates pathogen reduction).

Prior to disposal in a surface disposal site, the Discharger shall demonstrate that the biosolids meet Class B levels or shall ensure that the site is covered at the end of each operating day.

If pathogen reduction is demonstrated using a "Process to Significantly/Further Reduce Pathogens" (PFRP), the Discharger shall maintain daily records of the operating parameters to achieve this reduction.

The following applies when biosolids from the Discharger are directly land applied as Class B, without further treatment by a second preparer. If the Discharger demonstrates pathogen reduction by direct testing for fecal coliforms and/or pathogens, samples must be drawn at the frequency in Table E-7. If the Discharger demonstrates Class B pathogen reduction by testing for fecal coliform, at least seven grab samples must be drawn and analyzed during each monitoring event, and a geometric mean calculated from these seven samples. If the Discharger demonstrates Class A pathogen reduction by testing for fecal coliform and/or salmonella, plus one of the PFRP processes or testing

for enteric viruses and helminth ova at least four samples of fecal coliform or salmonella must be drawn during each monitoring event. All four samples must meet the limits specified in 40 C.F.R. 503.32(a).

3. For biosolids that are land applied or placed in a surface disposal site, the Discharger shall track and keep records of the operational parameters used to achieve Vector Attraction Reduction requirements in 40 C.F.R. 503.33(b).

4. Class 1 facilities (facilities with pretreatment programs or others designated as Class 1 by the regional administrator) and Federal facilities with greater than five MGD influent flow shall sample biosolids for pollutants listed under section 307(a) of the CWA (as required in the pretreatment section of the permit for POTWs with pretreatment programs). Class 1 facilities and Federal facilities greater than five MGD shall test dioxins/dibenzofurans using a detection limit of less than one pg/g at the times of their next priority pollutant scan if they have not done so within the past five years, and once per five years thereafter.

5. The biosolids shall be tested annually, or more frequently if necessary, to determine hazardousness. All constituents regulated under CCR Title 22, division 5, chapter 11, article 3 shall be analyzed for comparison with Total Threshold Limit Concentration (TTCL) criteria. The Waste Extraction Test shall be performed on any constituent when the total concentration of the waste exceeds ten times the Soluble Threshold Limit Concentration Limit Concentration (STLC) limit for that substance.

6. If biosolids are placed in a surface disposal site (dedicated land disposal site or monofill), a qualified groundwater scientist shall develop a groundwater monitoring program for the site, or shall certify that the placement of biosolids on the site will not contaminate an aquifer.

7. Biosolids placed in a municipal landfill shall be tested by the Paint Filter Liquids Test (EPA Methods 9095) at the frequency determined by Table E-8, or more often if necessary to demonstrate that there are no free liquids.

8. The Discharger, either directly or through contractual agreements with their biosolids management contractors, shall comply with the following notification requirements:

a. *Notification of non-compliance*. The Discharger shall notify EPA Region 9, the Central Coast Water Board, and the Regional Board located in the region where the biosolids are used or disposed, of any non-compliance within 24 hours if the non-compliance may seriously endanger health or the environment. For other instances of non-compliance, the Discharger shall notify EPA Region 9 and the affected Regional Water Quality Boards of any non-compliance in writing within five working days of becoming aware of the non-compliance. The Discharger shall require their biosolids management contractors to notify EPA Region 9 and the affected Regional Water Quality Boards of any non-compliance within the same time frames.

b. If biosolids are shipped to another State of Indian lands, the Discharger must send notice at least 60 days prior to the shipment to the permitting authorities in the receiving State or Indian land (the EPA Region Office for that area and the State/Indian authorities).

c. *For land application (in cases where Class B biosolids are directly applied without further treatment):* Prior to reuse of any biosolids from the Discharger's facility to a new or previously unreported site, the Discharger shall notify EPA, the Central Coast Water Board, and any other affected Regional Water Quality Board. The notification shall include description of the crops or vegetation to be grown, proposed loading rates and determination of agronomic rates.

If any biosolids within a given monitoring period do not meet 40 C.F.R. 503.13 metals concentration limits, the Discharger (or its contractor) must pre-notify EPA, and determine the cumulative metals loading to that site to date, as required in 40 C.F.R. 503.12.

The Discharger shall notify the applier of all the applier's requirements under 40 C.F.R. 503, including the requirement that the applier certify that the management practices, site restrictions, and any applicable vector attraction reduction requirements have been met. The Discharger shall require the applier to certify at the end of 38 months following application of Class B biosolids that the harvesting restrictions in effect for up to 38 months have been met.

d. *For surface disposal*: Prior to disposal to a new or previously unreported site, the Discharger shall notify EPA and the Central Coast Water Board. The notice shall include a description and a topographic map of the proposed site, depth to groundwater, whether the site is lined or unlined, site operator, site owner, and any State or local permits. The notice shall describe procedures for ensuring public access and grazing restrictions for three years following site closure. The notice shall include a groundwater monitoring plan or description of why groundwater monitoring is not required.

9. The Discharger shall submit an annual biosolids report to the EPA Region 9 Biosolids Coordinator and Central Coast Water Board by February 19th of each year (per U.S. EPA guidance and 40 C.F.R. 503) for the period covering the previous calendar year. This report shall include:

a. Annual biosolids removed in dry tons and percent solids.

b. If appropriate, a narrative description of biosolids dewatering and other treatment processes, including process parameters, including a schematic diagram showing biosolids handling facilities. For example, if drying beds are used, report depth of application and drying time. If composting is used, report the temperature achieved and duration.

c. A description of disposal methods, including the following information as applicable related to the disposal methods used at the facility. If more than one method is used, include the percentage and tonnage of annual biosolids production disposed by each method.

i. For landfill disposal include: 1) the central Coast Water Board WDR numbers that regulate the landfills used, 2) the present classifications of the landfills used, 3) the results of any groundwater monitoring, 4) certifications of management practices, and 5) the names and locations of the facilities receiving biosolids.

ii. For land application include: 1) the location of the site(s), 2) the Central Coast Water Board's WDR numbers that regulate the site(s), 3) the application rate in lbs/acre/year (specify wet or dry), 4) certifications of management practices and site restrictions, and 5) subsequent uses of the land.

iii. For offsite application by a licensed hauler and composter include: 1) the name, address and U.S. EPA license number of the hauler and composter.

d. Copies of analytical data required by other agencies (i.e., U.S. EPA or County Health Department) and licensed disposal facilities (i.e., landfill, land application, or composting facility) for the previous year.

e. Descriptions of pathogen reduction methods and vector attraction reduction methods. Including supporting time and temperature data, and certifications, as required in 40 C.F.R. 503.17 and 503.27.

f. Names, mailing address, and street addresses of persons who received biosolids for storage, further treatment, disposal in a municipal waste landfill, or for other use or disposal methods not covered above, and amounts delivered to each.

g. For all biosolids used or disposed at the Discharger's facility, the site and management practice information and certification required in 40 C.F.R. 503.17 and 503.27.

h. For all biosolids temporarily stored, the information required in 40 C.F.R. 503.20 is required to demonstrate temporary storage.

i. Reports shall be submitted to:

Regional Biosolids Coordinator
U.S. EPA (WTR-7)
75 Hawthorne St.
San Francisco, CA 94105-3901

Executive Officer
Central Coast Regional Water Quality Control Board
895 Aerovista Place, Suite 101
San Luis Obispo, CA 93401-7906

XI. OTHER MONITORING REQUIREMENTS

A. Ocean Outfall and Diffuser Inspection

The Discharger shall conduct an inspection of the outfall pipe/diffuser system annually to ensure the proper operation and structural integrity of the system. This inspection shall include general observations and photographic records of the outfall pipe/diffuser system and the surrounding ocean bottom in the vicinity of the outfall/diffuser. The inspection shall be conducted along the outfall pipe/diffuser system from landfall to its ocean terminus. A report detailing inspection results shall be submitted to the Central Coast Water Board and U.S. EPA with the annual report required in Standard Provisions C.8.

XII. REPORTING REQUIREMENTS

A. General Monitoring and Reporting Requirements

1. The Discharger shall comply with all Federal Standard Provisions and Central Coast Water Board Standard Provisions (Attachment D) related to monitoring, reporting, and recordkeeping.

B. Self-Monitoring Reports (SMRs)

1. The Discharger shall electronically submit SMRs using the State Water Board's California Integrated Water Quality System (CIWQS) Program Web site (http://www.waterboards.ca.gov/ciwqs/index.html). The CIWQS Web site will provide additional information for SMR submittal in the event there will be a planned service interruption for electronic submittal. The Discharger shall use the current version of the Permittee Entry Template (PET) tool to configure data into the applicable CIWQS Data Format, and shall update that template according to this Order (e.g., add/delete parameters, revise limits, update monitoring locations, etc.). Blank versions of the latest PET tool are available at http://www.waterboards.ca.gov/water_issues/program/ciwqs/chc_npdes.shtml.

2. The Discharger shall report in the SMR the results for all monitoring specified in this MRP under sections III through IX. The Discharger shall submit SMR's including the results of all required monitoring using U.S. EPA-approved test methods or other test methods specified in this Order. If the Discharger monitors any pollutant more frequently than required by this Order, the results of this monitoring shall be included in the calculations and reporting of the data submitted in the SMR.

3. Sampling and monitoring as required by this MRP shall begin on the effective date of this Order. The Discharger shall complete all required monitoring and reporting according to the following schedule unless otherwise directed by the Executive Officer:

Table E-11. Monitoring Periods and Reporting Schedule

SMR Name	Permit Section for Monitoring and Sampling Data Included in Report	SMR Submittal Frequencies	SMR Due Date
NPDES Monitoring Report	MRP sections III (Influent), IV (Effluent) V (Whole Effluent Toxicity), and	Monthly	First day of second calendar month following period of sampling
NPDES Monitoring Report	MRP section IV (Effluent)	Semiannually	March 1st and September 1st (following January and July sampling, respectively)
NPDES Monitoring Report	MRP section IV (Effluent)	Annual	February 1st following calendar year of sampling
NPDES Monitoring Report	MRP section VIII (Receiving Water)	Quarterly	First day of second calendar month following period of sampling
NPDES Monitoring Report	MRP section IX (Benthic)	Once per permit	February 1, 2019

SMR Name	Permit Section for Monitoring and Sampling Data Included in Report	SMR Submittal Frequencies	SMR Due Date
Biosolids Technical Report	MRP section X (Biosolids)	Annually	February 1st following calendar year of sampling
Ocean Outfall Inspection Technical Report	MRP section XI (Ocean Outfall and Diffuser Inspection)	Annually	February 1st following calendar year of sampling
Summary Report	Attachment D, Standard Provision, VIII.D.8	Annually	April 1st following calendar year of sampling
Effluent Bacteria	Order section V.C.2.b Special Provisions	Quarterly	First day of second calendar month following period of sampling

4. Reporting Protocols. The Discharger shall report with each sample result the applicable reported Minimum Level (reported ML, also known as the Reporting Level, or RL) and the current Method Detection Limit (MDL), as determined by the procedure in 40 C.F.R. part 136. For each parameter identified in Table 1 of the Ocean Plan, the Discharger shall use a ML no greater than specified in Appendix II of the Ocean Plan.

The Discharger shall report the results of analytical determinations for the presence of chemical constituents in a sample using the following reporting protocols:

a. Sample results greater than or equal to the reported ML shall be reported as measured by the laboratory (i.e., the measured chemical concentration in the sample).

b. Sample results less than the reported ML, but greater than or equal to the laboratory's MDL, shall be reported as "Detected, but Not Quantified," or DNQ. The estimated chemical concentration of the sample shall also be reported.

For the purposes of data collection, the laboratory shall write the estimated chemical concentration next to DNQ as well as the words "Estimated Concentration" (may be shorted to "Est. Conc.). The laboratory may, if such information is available, include numerical estimates of the data quality for the reported result. Numerical estimates of data quality may be percent accuracy (± a percentage of the reported value), numerical ranges (low to high), or any other means considered appropriate by the laboratory.

c. Sample results less than the laboratory's MDL shall be reported as "Not Detected," or ND.

d. Dischargers are to instruct laboratories to establish calibration standards so that the ML value (or its equivalent if there is differential treatment of samples relative to calibration standards) is the lowest calibration standard. At no time is the Discharger to use analytical data derived from extrapolation beyond the lowest point of the calibration curve.

5. **Compliance Determination**. Compliance with effluent limitations for Ocean Plan Table 1 parameters shall be determined using sample reporting protocols defined above and

Attachment A of this Order. For purposes of reporting and administrative enforcement by the Regional and State Water Board, the Discharger shall be deemed out of compliance with effluent limitations if the concentration of the Ocean Plan Table 1 parameter in the monitoring sample is greater than the effluent limitation and greater than or equal to the reported Minimum Level (ML).

6. **Multiple Sample Data**. When determining compliance with an average monthly effluent limitation (AMEL), average weekly effluent limitation (AWEL), or maximum daily effluent limitation, the Discharger shall compute the arithmetic mean unless the data set contains one or more reported determinations of "Detected, but Not Quantified" (DNQ) or "Not Detected" (ND). In those cases, the Discharger shall compute the median in place of the arithmetic mean in accordance with the following procedure:

   a. The data set shall be ranked from low to high, ranking the reported ND determinations lowest, DNQ determinations next, followed by quantified values (if any). The order of the individual ND or DNQ determinations is unimportant.

   b. The median value of the data set shall be determined. If the data set has an odd number of data points, then the median is the middle value. If the data set has an even number of data points, then the median is the average of the two values around the middle unless one or both of the points are ND or DNQ, in which case the median value shall be the lower of the two data points where DNQ is lower than a value and ND is lower than DNQ.

7. The Discharger shall submit SMR's in accordance with the following requirements:

   a. The Discharger shall arrange all reported data in a tabular format. The data shall be summarized to clearly illustrate whether the facility is operating in compliance with interim and/or final effluent limitations. The Discharger is not required to duplicate the submittal of data that is entered in a tabular format within CIWQS. When electronic submittal of data is required and CIWQS does not provide for entry into a tabular format within the system, the Discharger shall electronically submit the data in a tabular format as an attachment.

   b. The Discharger shall include in their CIWQS upload a cover letter to the SMR. The information contained in the cover letter shall clearly identify violations of the WDRs; discuss corrective actions taken or planned; and the proposed time schedule for corrective actions. Identified violations must include a description of the requirement that was violated and a description of the violation. Uploaded reports must also include laboratory data sheets for the analytical results being presented.

   c. An Annual Self-Monitoring Report Summary shall be due on April 1 following each calendar year and shall include:

      i. All data required by this MRP for the corresponding monitoring period, including appropriate calculations to verify compliance with effluent limitations.

      ii. A discussion of any incident of non-compliance and corrective actions taken.

C. Discharge Monitoring Reports (DMRs)

1. At any time during the term of this permit, the State or Central Coast Water Board may notify the Discharger to electronically submit SMRs that will satisfy federal requirements for submittal of DMRs. Until such notification is given specifically for the submittal of DMR's, the Discharger shall submit DMRs in accordance with the requirements described below.

2. DMRs must be signed and certified as required by the standard provisions (Attachment D). The Discharger shall submit the original DMR and one copy of the DMR to one of the addresses listed below:

STANDARD MAIL	**FEDEX/UPS/ OTHER PRIVATE CARRIERS**
State Water Resources Control Board Division of Water Quality c/o DMR Processing Center PO Box 100 Sacramento, CA 95812-1000	State Water Resources Control Board Division of Water Quality c/o DMR Processing Center 1001 I Street, 15th Floor Sacramento, CA 95814

3. All discharge monitoring results must be reported on the official U.S. EPA pre-printed DMR forms (EPA Form 3320-1). Forms that are self-generated will not be accepted unless they follow the exact same format of EPA Form 3320-1.

D. Other Reports

1. Sanitary sewer overflows associated with the Discharger's collection system are subject to the online reporting and notifications requirements set forth in the Statewide General Waste Discharge Requirements for Sanitary Sewer Systems Order No. 2006-0003-DWQ. The Discharger has enrolled under the statewide waste discharge requirements for sanitary sewer systems. Therefore, all prohibitions, provisions, and monitoring and reporting requirements apply to the Discharger. For any discharges of sewage to a drainage channel or surface water, the Discharger is required to notify the State Office of Emergency Services, the local health officer of directors of environmental health with jurisdiction over affected water bodies, and the Central Coast Water Board within two (2) hours after becoming aware of the discharge. Additionally, within 24-hours the Discharger shall submit to the Central Coast Water Board certification that the appropriate agencies (i.e., Office of Emergency Services and Environmental Health) have been notified of the sewage discharge to surface water bodies.

   Additionally, any sanitary sewer overflows of wastewater (either partially treated or untreated) that are released at the wastewater treatment plant are subject to the same notifications requirements as mentioned above for collections systems.

2. The Discharger shall report the results of any special studies, monitoring, and reporting required by Special Provisions – VI.C. (Special Studies, Technical Reports, and Additional Monitoring) of the Order. The Discharger shall submit reports with the first monthly SMR scheduled to be submitted on or immediately following the report due date.

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ATTACHMENT F – FACT SHEET

Contents

Tables

ATTACHMENT F – FACT SHEET

As described in section I, the Central Coast Water Board incorporates this Fact Sheet as findings of the Central Coast Water Board supporting the issuance of this Order. This Fact Sheet includes the legal requirements and technical rationale that serve as the basis for the requirements of this Order.

This Order has been prepared under a standardized format to accommodate a broad range of discharge requirements for Dischargers in California. Only those sections or subsections of this Order that are specifically identified as "not applicable" have been determined not to apply to this Discharger. Sections or subsections of this Order not specifically identified as "not applicable" are fully applicable to this Discharger.

I. PERMIT INFORMATION

The following table summarizes administrative information related to the facility.

Table F-1. Facility Information

WDID	3 400103001
Discharger	City of Morro Bay/Cayucos Sanitary District
Name of Facility	The City of Morro Bay/Cayucos Sanitary District Wastewater Treatment Plant
Facility Address	160 Atascadero Road
	Morro Bay, CA 93442
	San Luis Obispo
Facility Contact, Title and Phone	Rob Livick, Public Services Director/City Engineer, (805) 772 - 6261
Authorized Person to Sign and Submit Reports	Rob Livick, Public Services Director/City Engineer, (805) 772 - 6261
Mailing Address	955 Shasta Avenue, Morro Bay, CA 93442
Billing Address	955 Shasta Avenue, Morro Bay, CA 93442
Type of Facility	POTW
Major or Minor Facility	Major
Threat to Water Quality	1
Complexity	B
Pretreatment Program	No
Recycling Requirements	None
Facility Permitted Flow	Peak seasonal dry weather flow of 2.36 million gallons per day (MGD)
Facility Design Flow	Annual average of 2.06 MGD, peak seasonal dry weather flow of 2.36 MGD
Watershed	Estero Bay
Receiving Water	Pacific Ocean
Receiving Water Type	Ocean waters

A. The City of Morro Bay and Cayucos Sanitary District (hereinafter Discharger) are the owners and operators of the City of Morro Bay – Cayucos Sanitary District Wastewater Treatment Plant (hereinafter Facility), a publicly owned treatment works (POTW).

For the purposes of this Order, references to the "discharger" or "permittee" in applicable

federal and state laws, regulations, plans, or policy are held to be equivalent to references to the Discharger herein.

B. The Facility discharges wastewater to the Pacific Ocean, a water of the United States. The Discharger was previously regulated by Order No. R3-2008-0065 and National Pollutant Discharge Elimination System (NPDES) Permit No. CA0047881 adopted on December 4, 2008, and expired on January 6, 2014. Attachment B provides a map of the area around the Facility. Attachment C provides a flow schematic of the Facility.

Prior to making any change in the point of discharge, place of use, or purpose of use of treated wastewater that results in a decrease of flow in any portion of a watercourse, the Discharger must file a petition with the State Water Board, Division of Water Rights, and receive approval for such a change. The State Water Board retains the jurisdictional authority to enforce such requirements under Water Code section 1211.

C. The Discharger filed a report of waste discharge and submitted an application for reissuance of its WDRs and NPDES permit on August 26, 2013.

II. FACILITY DESCRIPTION

A. Description of Wastewater and Biosolids Treatment and Controls

The Discharger owns and operates a wastewater treatment plant that provides sewerage service to the communities of the City of Morro Bay and Cayucos Sanitary District, serving approximately 12,835 people. All wastewater goes through primary treatment, including screening, grit removal, and primary sedimentation. A portion of the flow is diverted for secondary treatment process using biofilters, a solids-contact chamber, and a secondary clarifier. The secondary process also includes parallel single-stage, high-rate, trickling filters whose combined outflow goes to a solids contact channel and finally on to a secondary sedimentation tank. When flows exceed 1 MGD, secondary-treated effluent can be blended with primary treated effluent, and the blend is chlorinated and dechlorinated before discharge. This blending process will be discontinued as part of the planned new Facility, and all flows will meet at least full secondary treatment standards.

Biosolids removed by the primary clarifiers is heated in two mixed-primary digesters then transferred to a secondary digester. Stabilized sludge from the secondary digester is transferred to one of 12 sludge-drying beds. Drying times range from two to four months, and once dried, biosolids are removed from the beds and stored in a concrete containment area. Biosolids are stored in this area, usually for less than a year, until they are removed from the WWTP for composting and eventual use as a soil amendment.

B. Discharge Points and Receiving Waters

Wastewater is discharged to the Pacific Ocean through a 170-foot outfall/diffuser system. The outfall is 27 inches in diameter and is 2,900 feet from shore under approximately 50 feet of water. The diffuser was modeled to achieve a minimum initial dilution s of 133 to 1. The zone of initial dilution is approximately 103 feet wide and 240 feet long.

Table F-2. Outfall Location

Discharge Point	Effluent Description	Discharge Point Latitude	Discharge Point Longitude	Receiving Water

001	Municipal Wastewater	35° 23' 11"N	120° 52' 29"W	Estero Bay, Pacific Ocean

C. Regulatory History

The treatment plant was originally constructed in 1954 to provide primary treatment and was upgraded in 1964 to a capacity of 1.0 MGD. In 1982, the outfall was extended further offshore to its current location. A new treatment plant was designed in 1981 to expand treatment capacity and meet full secondary treatment standards. However, financial aid from state and federal agencies and sufficient alternative funding was not available. Consequently, the treatment plant's design was modified to provide biological treatment to a portion of the influent (approximately 1 MGD), of the projected flow. In March 1983, Central Coast Water Board staff tentatively concurred that such a discharge would comply with applicable state laws, including water quality standards, and would not result in requirements for additional treatment, pollution control, or other requirements on any other point or non-point sources.

The treatment plant was upgraded from 1983 to 1985 to a peak seasonal dry weather flow of 2.36 MGD. In 1985, U.S. EPA approved a Clean Water Act section 301(h) modified NPDES permit that waived fully secondary treatment requirements for biochemical oxygen demand (5-day @ 20°C) (BOD_5) and total suspended solids (TSS). The permit required 75% removal of TSS and included a 30-day average TSS effluent limit of 70 mg/L. The permit required 30% removal of BOD_5 and included a 30-day average BOD_5 effluent limit of 120 mg/L. The permit also required an extensive monitoring program.

The permit was reissued in 1992 and the second permit reissuance process began in May 1997. Multiple discussions between the Discharger, Central Coast Water Board staff, and U.S. EPA staff resulted in several revisions to the permit and monitoring program, including a slight reduction in allowed mass-emissions of BOD_5, TSS, and oil and grease; expanded biosolids reporting; revised benthic sampling locations; and a revised receiving water sampling program. In July 1998, staff again determined that the discharge would comply with applicable state laws, including water quality standards, and would not result in requirements for additional treatment, pollution control, or other requirements on any other pollutant sources. U.S. EPA issued a tentative decision to grant another modification of secondary treatment requirements in September 1998. In December 1998 the Central Coast Water Board approved the NPDES permit, waiving secondary treatment requirements. On January 13, 1998, the California Coastal Commission determined the permit was consistent with the Coast Zone Management Act. U.S. EPA issued the permit on January 26, 1999, which became effective March 1, 1999.

The Facility is now one of only two remaining in California that operates under a 301(h) modified permit, the other being Point Loma in San Diego County. In anticipation of the 2004 permit reissuance process, Central Coast Water Board staff met with and sent a letter to the Discharger in January 2003 that requested that it consider upgrading the treatment plant to meet federal secondary treatment standards and forgo its 301(h) modified permit. In a March 20, 2003 response, City of Morro Bay Manager Robert Hendrix wrote:

> "…we are using your correspondence as a catalyst for the formation of a long-term future policy on wastewater treatment. The [Morro Bay] City Council and [Cayucos] Sanitary District Board have selected members to serve on a subcommittee to work with your staff to consider a number of alternatives, formulate a draft policy or policies, and then return to the full legislative body in the late Spring of this year [2003] with a recommended course of action."

In mid-2003, the subcommittee commissioned a study as to whether an equalization basin could be added to improve treatment efficiency and allow the discharge to meet secondary treatment standards. The study concluded that an equalization basin would not accomplish this goal.

The Discharger submitted an application for reissuance of its Clean Water Act section 301(h) modified NPDES permit on July 7, 2003. It also requested a determination ("401 Certification") as to whether the discharge will comply with applicable state laws, including water quality standards, and will not result in requirements for additional treatment, pollution control, or other requirements on any other pollutant sources. In an August 26, 2003 letter, Central Coast Water Board staff declined to make such a determination, instead deferring to the Central Coast Water Board to make such a determination through approval or disapproval of the NPDES permit.

The existing permit expired on March 1, 2004, but continued in force until the effective date of reissuance, in accordance with 40 C.F.R. part 122.6.

In June 2004, after public opposition to the 301(h) modified permit, the Discharger commenced a process to upgrade the treatment plant to meet secondary treatment standards. The Discharger hired Carollo Engineers to assist in development of a detailed timeline to implement the upgrade. Central Coast Water Board staff and U.S. EPA chose to delay the permit reissuance process until the timeline was developed. In April 2005, Carollo Engineers presented a 15-year timeline at a public meeting of the Discharge. After considering many public comments in opposition to the 15-year timeline, the Discharger rejected the 15-year timeline and directed Carollo Engineers to return with a timeline that was as "quick as possible."

In May 2005, Carollo Engineers returned and presented a 9.5-year timeline to the Discharger. The 9.5-year timeline was based on the shortest reasonable time necessary to select an engineering consultant, coordinate between the Dischargers, develop a facility plan, obtain financing and permits, and design and construct the improvements. The 9.5-year timeline required the Discharger to achieve full compliance with secondary treatment standards by June 23, 2015. The Discharger accepted the 9.5-year timeline and formally proposed it to Central Coast Water Board staff on June 15, 2005. Central Coast Water Board staff and the Discharger drafted a tentative settlement agreement that enforces the 9.5-year timeline, and provided for one more 301(h) modified permit. This 301(h) modified permit is necessary because the timeline to achieve compliance with secondary treatment standards exceeds the five-year life of an NPDES permit.

Prior to the May 11, 2006 meeting to present the modified 301(h) waiver NPDES permit, Central Coast Water Board staff and the Discharger entered into a revised settlement agreement that expedited the conversion schedule to 8.5 years. The Central Coast Water Board had questions regarding the potential effects of continued discharges from the Facility; more specifically, whether the continued Facility discharges would affect the southern sea otter and brown pelican. As a result, the Central Coast Water Board continued the hearing to allow U.S. EPA to develop an Endangered Species Act Biological Evaluation (BE) on the potential effects. Furthermore, the BE would be required to receiving concurrence of "no likely adverse effects" pursuant to section 7 of the Federal Endangered Species Act from the United States Fish and Wildlife Service (U.S. FWS).

The U.S. EPA drafted the BE on September 6, 2007, and requested concurrence of "no likely adverse effects" on the brown pelican and southern sea otter from the U.S. FWS. The BE recognizes no likely adverse effects on the southern sea otter and brown pelican provided that the Discharger implements conservation measures, which included:

- Public outreach program to minimize the input of cat litter-box wastes into the municipal sewer systems;
- Regular monitoring of nutrient loading from the facility's ocean outfall; and
- Facility upgrade to at least full secondary or tertiary by 2014.

The U.S. FWS formally responded to the U.S. EPA's request for concurrence in a letter dated December 21, 2007. The U.S. FWS letter concurred with the U.S. EPA's findings indicating that continued discharges from the Facility would not likely have adverse effects to endangered species in the area. The U.S. FWS letter stated, "[w]e concur with your determination that the proposed project is not likely to adversely affect the brown pelican or southern sea otter." However, the U.S. FWS letter recognized that there are material gaps in current data and that additional data gathering would optimize the understanding of potential effects from the continued discharge. The U.S. FWS letter stated, "[w]e recognize that the conservation measures proposed in the Biological Evaluation for this action will assist in gathering information useful in evaluation this issue, as will independent research being conducted by a number of interested parties."

The Discharger submitted to Central Coast Water Board staff drafts for the development and implementation of a nutrient monitoring program and a Cat Litter Public Outreach program consistent with the conservation measures as proposed by U.S. EPA. These conservation measures were incorporated into the NPDES permit. The May 11, 2006 settlement agreement was updated to revise the conversion schedule and make other revisions to reflect new factual information available since the May 11, 2006 hearing. The Dischargers presented the updated settlement agreement to their governing boards for approval on November 19, 2008. In December 2008, the Discharger executed a Settlement Agreement with the Central Coast Water Board to upgrade the existing Facility to eliminate the need for the 301(h) waiver modified permit. The Settlement Agreement stated that the Central Coast Water Board Executive Officer shall recommend that the Central Coast Water Board concur in the issuance of the 2008 301(h) modified permit and that the Discharger shall upgraded the Facility so that all effluent is treated to at least secondary levels.

The 2008 Settlement Agreement contains a conversion schedule outlining the upgrade process and includes milestones for achieving critical phases of the proposed upgrade project.

Table F-3. 2008 Settlement Agreement Conversion Schedule

Task	Required Date of Completion
Preliminary Activities	
Issuance of Request for Consulting Engineering Proposals for Facilities Master Plan	November 11, 2005
Award of Consulting Engineer Contracts	April 27, 2006
Facilities Planning	
Submit Final Draft Facilities Master Plan	November 30, 2007

Task	Required Date of Completion
Submit Final Facilities Master Plan	September 30, 2009
Environmental Review and Permitting	
Complete and Circulate Draft CEQA Document	February 27, 2009
Obtain Coastal Development Permit	May 31, 2011
Financing	
Complete Draft Plan for Project Design and Construction Financing	December 31, 2007
Complete Final Plan for Project Financing	June 30, 2008
Submit proof that all necessary financing has been secured, including compliance with Proposition 218	October 30, 2009
Design and Construction	
Initiate Design	September 30, 2010
Issue Notice to Proceed with Construction	March 29, 2012
Construction Progress Reports	Quarterly (with self monitoring reports)
Complete Construction and Commence Debugging and Startup	January 31, 2014
Achieve Full Compliance with Secondary Treatment	March 31, 2014

The 2008 Settlement Agreement further states that in the second permit cycle following the expiration of the 301(h) modified permit, that the Central Coast Water Board shall issue a NPDES permit that includes effluent limitations consistent with full secondary treatment requirements, or any more stringent requirements that are necessary or that the Discharger agrees to, and concurrently issue a 13385(j)(3) Order. The 13385(j)(3) Order shall include interim effluent limits for BOD_5 and suspended solids that are the same as those in the 301(h) modified permit.

The 2008 Settlement Agreement provides enforcement relief due to a "force majeure event," defined as any event beyond the control of the Discharger, its contractors, or any entity controlled by the Discharger, including, but not limited to third-party litigation that delays the performance of any obligation under the Settlement Agreement despite the Discharger's best efforts to fulfill the obligation. If the Executive Officer agrees that a violation of the Conversion Schedule has been caused by a force majeure event, the time for performance of an affected requirement shall be extended for a period not to exceed the actual delay in performance resulting from such circumstance.

The Discharger ultimately proposed to demolish the existing Facility and to construct a new wastewater treatment plant on the same site in the City of Morro Bay just inland of the beach. On September 20, 2010, the draft CEQA document for the project was completed and publicly noticed for comments, and on January 10, 2011, the Morro Bay City Council certified the final Environmental Impact Report and issued a Coastal Development Permit (CDP). The CDP was immediately appealed to the California Coastal Commission (CCC). On January 10, 2013, the CCC denied the CDP at a de novo hearing for construction of an upgraded wastewater treatment facility at its existing location. The denial was based on zoning inconsistency, failure to avoid coastal hazards, failure to include a sizable reclaimed water component, and the project is located within an LCP-designated sensitive view area.

On February 23, 2011, per the terms of the Settlement Agreement, the Discharger submitted a letter to the Central Coast Water Board stating that the appeal of the CDP to the CCC constituted a force majeure event under the terms of the Settlement Agreement. On March 24, 2011, the Central Coast Water Board responded that it agreed that the appeal constituted

a force majeure event, and in a letter from the same day stated, "In considering the JPA's compliance with the Compliance Schedule, the Water Board will extend the dates of the remaining Conversion Schedule for tasks contained with the Agreement paragraph B.1 for a period not to exceed the actual delay resulting from this force majeure event."

Following the January 10, 2013 CDP denial, on Mary 18, 2013, the City of Morro Bay issued a request for proposal for the preliminary planning consultant for a new water reclamation facility (WRF). On May 14, 2013, the City Council selected the consultant for the preliminary planning of the new WRF. A contract with the contractor was executed on June 10, 2013.

On December 10, 2013, the City of Morro Bay City Council chose three possible sites for development of the new WRF. In February 2014, the City of Morro Bay City Council established the goal of having the new WRF operational in five years.

On May 8, 2014, the consultant submitted to the City of Morro Bay a Report on Reclamation and Council Recommended WRF Sites that provided a comparative analysis of the three proposed sites. Based on the report, the City Council is expected to choose a single site to continue moving forward with a Work Plan and begin due diligence toward the eventual design and construction of the new WRF. The Discharger has made measured and deliberate progress in achieving secondary treatment consistent with the 2008 Settlement Agreement.

Since the time the Discharger originally applied for Order renewal, there have been significant changes in their planning for future treatment facilities to address the need for full secondary treatment, pursuant to the Settlement Agreement. The Discharger will be providing an updated compliance schedule as part of this planning effort, and Water Board staff anticipates preparing a time schedule order of no more than five-years duration to accompany the proposed facilities. No additional extension of schedule is available to meet these final effluent discharge limitations contained within this proposed Order.

Additionally, the Cayucos Sanitary District has moved forward with plans to design, construct, and operate its own wastewater treatment plant, separate from its existing use of the subject Facility. Water Board staff is working with Cayucos Sanitary District on those plans and expects to draft a separate NPDES and WDRs for its facility, when appropriate.

The Discharger has requested that this Order contain revised effluent limitation and monitoring requirements to reflect this changing status. CWA section 301(h) provides for a modification of secondary treatment standards for publicly owned treatment works that discharge into marine waters if the modified requirements do not interfere with the attainment or maintenance of water quality. U.S. EPA has promulgated specific regulations pertaining to CWA section 301(h) in 40 CFR, subpart G.

In order to obtain a 301(h) modified permit, an applicable must demonstrate that:

- There is an applicable water quality standard specific to the pollutant for which the modification is requested (usually BOD_5 and TSS);
- The discharge of pollutants in accordance with such modified requirements will not interfere, alone or in combination with pollutants from other sources, with the attainment or maintenance of that water quality which assures protection of public water supplies and protection and propagation of a balanced indigenous population of shellfish, fish, and wildlife, and allows recreational activities, in and on the water;

- The applicant has established a system for monitoring the impact of such discharge on a representative sample of aquatic biota, to the extent practicable, and the scope of such monitoring is limited to include only those scientific investigations which are necessary to study the effects of the proposed discharge;

- Such modified requirements will not result in any additional requirements on any other point or nonpoint source;

- All applicable pretreatment requirements for sources introducing waste into such treatment works will be enforced;

- In the case of any treatment works serving a population of 50,000 or more, with respect to any toxic pollutant introduced into such works by an industrial discharger for which pollutant there is no applicable pretreatment requirement in effect, sources introducing waste into such works are in compliance with all applicable pretreatment requirements, the applicant will enforce such requirements, and the applicant has in effect a pretreatment program which, in combination with the treatment of discharges from such works, removes the same amount of such pollutant as would be removed if such works were to apply secondary treatment to discharges and if such works had no pretreatment program with respect to such pollutant;

- To the extent practicable, the applicant has established a schedule of activities designed to eliminate the entrance of toxic pollutants from nonindustrial sources into such treatment works;

- There will be no new or substantially increased discharges from the point source of the pollutant to which the modification applies above that volume of discharge specified in the permit;

- The applicant at the time such modification becomes effective will be discharging effluent which has received at least primary or equivalent treatment and which meets the criteria established under section 304(a)(1) [of the CWA] after initial mixing in the waters surrounding or adjacent to the point at which such effluent is discharged [40 CFR part 125.57].

The conditions of the 2008 Settlement Agreement prohibited the Discharger from applying to U.S. EPA for a 301(h) waiver. U.S. EPA has not granted a 301(h) waiver, and full secondary treatment requirements must be implemented within this Order.

Consistent with Part B.2.b of the 2008 Settlement Agreement, this Order contains final effluent limitations and monitoring requirements. Concurrently with the issuance of this Order, the Central Coast Water Board shall consider a 13385(j)(3) order that includes interim effluent limitations for BOD_5 and TSS that are the same as those in the previous 301(h) modified permit. The compliance dates established within the 13385(j)(3) order will consider the 2008 Settlement Agreement Conversion Schedule, the force majeure event (the 2013 CCC denial of the CDP), and a projected five-year schedule.

D. Summary of Existing Requirements and Self-Monitoring Report (SMR) Data

Effluent limitations contained in the existing Order for discharges from Discharge Point No. 001 (Monitoring Location EFF-001) and representative monitoring data from the term of the previous Order are as follows:

Table F-4. Historic Effluent Limitations and Monitoring Data

Parameter	Units	Effluent Limitation			Monitoring Data (From March 2009 – To Sept 2013)		
		Average Monthly	Average Weekly	Instant Max	Highest Average Monthly Discharge	Highest Average Weekly Discharge	Highest Instant Max Discharge
Biochemical Oxygen Demand (5-day @ 20°C) (BOD_5)	mg/L	120	--	180	87.5	--	154
	lbs /day	2,062	--	3,092	NR	--	NR
	kg/ day	936	--	1,404	NR	--	NR
Total Suspended Solids (TSS)	mg/L	70	--	105	37	--	97
	lbs /day	1,203	--	1,804	NR	--	NR
	kg/ day	546	--	819	NR	--	NR
Settleable Solids	mL/L	1.0	1.5	3.0	0.06	0.09	0.3
Turbidity	NTU	75	100	225	41	52	78
Oil and Grease	mg/L	25	40	75	9.5	25	25
	lbs /day	430	687	1,288	NR	NR	NR
	kg/ day	195	312	585	NR	NR	NR
pH	standard units	6.0 – 9.0 at all times			7.2 – 7.9		

NR – Not Reported

Table F-5. Historic Effluent Limitations and Monitoring Data, Protection of Marine Aquatic Life

Parameter	Units	Effluent Limitation			Monitoring Data[1] (From July 2009 – To July 2013)		
		6-Month Median	Maximum Daily	Instant Max	Highest 6-Month Median	Highest Maximum Daily	Highest Instant Max
Arsenic	µg/L	670	3,890	10,300	J 2.0	J 2.0	J 2.0
Cadmium	µg/L	130	540	1,340	J 10	J 10	J 10
Chromium (VI)	µg/L	270	1,070	2,680	J 10	J 10	J 10
Copper	µg/L	140	1,340	3,750	22	22	22
Lead	µg/L	270	1,070	2,680	1.8	1.8	1.8
Mercury	µg/L	5.29	21.4	53.5	J 0.09	J 0.09	J 0.09
Nickel	µg/L	670	2,680	6,700	J 10	J 10	J 10
Selenium	µg/L	2,010	8,040	20,100	2.7	2.7	2.7
Silver	µg/L	70	350	920	J 4.6	J 4.6	J 4.6
Zinc	µg/L	1,620	9,660	25,700	59	59	59
Cyanide	µg/L	130	540	1,340	50	50	50
Total Chlorine Residual	mg/L	0.27	1.07	8.04	7.4	7.4	7.4
Ammonia (as N)	mg/L	80.4	322	804	42	64	64
Acute Toxicity	TUa	--	4.3	--	--	NR	--
Chronic Toxicity	TUc	--	134	--	--	31	--
Phenolic Compounds (non-chlorinated)	µg/L	4,020	16,100	40,200	3.3	3.3	3.3

Phenolic Compounds (chlorinated)	µg/L	130	540	1,340	<0.2	<0.2	<0.2
Endosulfan	µg/L	1.21	2.41	3.62	<0.0014	<0.0014	<0.0014
Endrin	µg/L	0.27	0.54	0.80	<0.0008	<0.0008	<0.0008
HCH	µg/L	0.54	1.07	1.61	<0.0009	<0.0009	<0.0009
Radioactivity	pCi/L	Not to exceed limits specified in Title 17, Division 1, Chapter 5, Subchapter 4, Group 3, Article 3, section 30253 of the California Code of Regulations			19	19	19

NR = Not Reported
[1] Values proceeded with a "J" represent maximum effluent concentrations that were detected, but not quantifiable.

Table F-6. Historic Effluent Limitations and Monitoring Data for Non-Carcinogens and Carcinogens

Parameter	Units	Effluent Limitation	Monitoring Data[1] July 2009– To July 2013
		Average Monthly	Highest Average Monthly Discharge
Non- Carcinogens			
Acrolein	µg/L	29,500	<7.3
Antimony	µg/L	160,800	34
Bis(2-chloroethoxy) methane	µg/L	590	<0.27
Bis(2-chloroisopropyl) ether	µg/L	160,800	<0.3
Chlorobenzene	µg/L	76,400	<0.06
Chromium (III)	µg/L	25,500,000	J 2.6
Di-n-butyl phthalate	µg/L	469,000	<0.39
Dichlorobenzenes	µg/L	683,00	<0.05
Diethyl phthalate	µg/L	4,420,000	<0.33
Dimethyl phthalate	µg/L	109,900,00	<0.39
4,6-dinitro-2-methylphenol	µg/L	29,500	<0.34
2,4-dinitrophenol	µg/L	540	<0.2
Ethylbenzene	µg/L	549,000	J 0.5
Fluoranthene	µg/L	2,000	<0.2
Hexachlorocyclopentadiene	µg/L	7,800	<0.3
Nitrobenzene	µg/L	660	<0.26
Thallium	µg/L	270	<0.08
Toluene	µg/L	11,400,000	<0.5
Tributyltin	µg/L	0.188	<0.03
1,1,1-trichloroethane	µg/L	72,400,00	<0.063
Carcinogens			
Acrylonitrile	µg/L	13.4	<0.75
Aldrin	µg/L	0.00295	<0.0013
Benzene	µg/L	791	<0.061
Benzidine	µg/L	0.00925	<7.1
Beryllium	µg/L	4.42	J 1.2

Parameter	Units	Effluent Limitation	Monitoring Data[1] July 2009– To July 2013
		Average Monthly	Highest Average Monthly Discharge
Bis(2-chloroethyl) ether	µg/L	6.03	<0.68
Bis(2-ethylhexyl) phthalate	µg/L	469	9.2
Carbon tetrachloride	µg/L	121	<0.074
Chlordane	µg/L	0.00308	<0.38
Chlorodibromomethane	µg/L	1,152	<0.067
Chloroform	µg/L	17,400	J 0.97
DDT	µg/L	0.0228	<0.00076
1,4-dichlorobenzene	µg/L	2,410	J 0.1
3,3-dichlorobenzidine	µg/L	1.09	<8.2
1,2-dichloroethane	µg/L	3,750	<0.09
1,1-dichloroethylene	µg/L	120	<0.07
Dichlorobromomethane	µg/L	830	<0.15
Dichloromethane	µg/L	60,300	<0.28
1,3-dichloropropene	µg/L	1,190	<0.07
Dieldrin	µg/L	0.00536	<0.0012
2,4-dinitrotoluene	µg/L	348	<0.26
1,2-diphenylhydrazine	µg/L	21.4	<0.34
Halomethanes	µg/L	17,400	J 0.25
Heptachlor	µg/L	0.0067	<0.0012
Heptachlor epoxide	µg/L	0.00268	<0.00099
Hexachlorobenzene	µg/L	0.0281	<0.2
Hexachlorobutadiene	µg/L	1,880	<0.24
Hexachloroethane	µg/L	335	<0.32
Isophorone	µg/L	98,000	<0.31
N-nitrosodimethylamine	µg/L	978	<0.61
N-nitrosodi-n-propylamine	µg/L	50.9	<1.3
N-nitrosodiphenylamine	µg/L	335	<0.44
PAHs	µg/L	1.18	<0.2
PCBs	µg/L	0.00255	<0.02
TCDD equivalents	µg/L	0.00000052	<0.00000131
1,1,2,2-tetrachloroethane	µg/L	310	<0.17
Tetrachloroethylene	µg/L	268	<0.095
Toxaphene	µg/L	0.0281	<0.42
Trichloroethylene	µg/L	3,620	<0.07
1,1,2-trichloroethane	µg/L	1,260	<0.15
2,4,6-trichlorophenol	µg/L	39	<0.6
Vinyl chloride	µg/L	4,820	<0.11

[1] Values preceded with a "J" represent maximum effluent concentrations that were detected, but not quantifiable.

E. Compliance Summary

The Discharger violated numeric effluent limitations during the term of the previous Order. Three violations were for total chlorine violations due to equipment changes/malfunctions. The fourth violation was for total suspended solids and no further incidences of violation have occurred. The following table summarizes the violations of effluent limitations based on data collected from July 2009 through August 2017.

Table F-7. Effluent Limitations Compliance Summary

Date	Violation Type	Pollutant	Reported Value	Permit Limitation	Units
12/16/2014	Maximum Daily	Chlorine Total Residual	3.0	1.07	mg/L
04/15/2015	Maximum Daily	Chlorine Total Residual	7.2	1.07	mg/L
12/11/2015	Maximum Daily	Chlorine Total Residual	4.5	1.07	mg/L
11/04/2016	Instantaneous Maximum	Total Suspended Solids	106	105	mg/L

F. Planned Changes

The Discharger will begin construction on a new wastewater treatment plant within this permit term. However, the Discharger points out that the current wastewater treatment facility will need to remain in service and continue operations and that significant improvement is required to maintain compliance. The Discharger has thus adopted a Major Repair and Maintenance Plan (MMRP) schedule to ensure compliance is maintained. The draft MMRP schedule provided in the Discharger's Report of Waste Discharge provided projected maintenance and improvement projects from fiscal year 2013 through 2018. The adopted budgets contain maintenance and improvement projects including the installation of new influent screens at the headworks, replacement of chains and flights in the chlorine contact tank, cleaning and repairs to a digester, pump and valve rebuild and replacement project, and the rehabilitation of the chlorine building. These projects have been partially completed, or are scheduled to be completed.

Since the time the Discharger originally applied for Order renewal, there have been significant changes in their planning for future treatment facilities to address the need for full secondary treatment, pursuant to the Settlement Agreement. The Discharger will be providing an updated compliance schedule as part of this planning effort, and Water Board staff anticipates preparing a time schedule order of no more than five-years duration to accompany the proposed facilities. No additional extension of schedule is available to meet these final effluent discharge limitations contained within this proposed Order.

III. APPLICABLE PLANS, POLICIES, AND REGULATIONS

The requirements contained in this Order are based on the requirements and authorities described in this section.

A. Legal Authorities

This Order serves as waste discharge requirements (WDRs) pursuant to article 4, chapter 4, division 7 of the California Water Code (commencing with section 13260). This Order is also issued pursuant to section 402 of the federal Clean Water Act (CWA) and implementing

regulations adopted by the U.S. EPA and chapter 5.5, division 7 of the Water Code (commencing with section 13370). It shall serve as an NPDES permit for point source discharges from this facility to surface waters.

B. California Environmental Quality Act (CEQA)

Under Water Code section 13389, this action to adopt an NPDES permit is exempt from the provisions of Chapter 3 of CEQA, (commencing with section 21100) of Division 13 of the Public Resources Code.

C. State and Federal Laws, Regulations, Policies, and Plans

1. **Water Quality Control Plan.** The Regional Water Quality Control Board (Central Coast Water Board) adopted the *Water Quality Control Plan for the Central Coastal Basin* (hereinafter Basin Plan), the most recent version released in June 2011, that designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for the Pacific Ocean and other receiving waters addressed through the plan. Requirements in this Order implement the Basin Plan.

   Beneficial uses applicable to the Pacific Ocean are as follows:

Table F-8. Basin Plan Beneficial Uses

Discharge Point	Receiving Water Name	Beneficial Use(s)
001	Pacific Ocean	Water Contact (REC-1) Non-Contact Recreation (REC-2) Industrial Supply (IND) Navigation (NAV) Marine Habitat (MAR) Shellfish Harvesting (SHELL) Commercial and Sport Fishing (COMM) Rare, Threatened, or Endangered Species (RARE) Wildlife Habitat (WILD)

2. **California Ocean Plan.** The State Water Board adopted the *Water Quality Control Plan for* Ocean *Waters of California, California Ocean Plan* (Ocean Plan) in 1972 and amended it in 1978, 1983, 1988, 1990, 1997, 2000, 2005, 2009, and 2012. The State Water Board adopted the latest amendment on October 16, 2012, and it became effective on August 19, 2013. The Ocean Plan is applicable, in its entirety, to point source discharges to the ocean. The Ocean Plan identifies beneficial uses of ocean waters of the state to be protected as summarized below:

Table F-9. Ocean Plan Beneficial Uses

Discharge Point	Receiving Water	Beneficial Uses
001	Pacific Ocean	Industrial water supply (IND) Water Contact and non-contact recreation, including aesthetic enjoyment (REC-1 and REC-2) Navigation (NAV) Commercial and sport fishing (COMM)

		Mariculture (MARI) Preservation and enhancement of designated Areas of Special Biological Significance (ASBS) Rare and endangered species (RARE) Marine habitat (MAR) Fish migration (MIGR) Fish spawning and shellfish harvesting (SPWN)

In order to protect the beneficial uses, the Ocean Plan establishes water quality objectives and a program of implementation. Requirements of this Order implement the Ocean Plan.

3. **Antidegradation Policy.** Federal regulation 40 C.F.R. section 131.12 requires that the state water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy in State Water Board Resolution 68-16. Resolution 68-16 is deemed to incorporate the federal antidegradation policy where the federal policy applies under federal law. Resolution 68-16 requires that existing water quality be maintained unless degradation is justified based on specific findings. The Central Coast Water Board's Basin Plan implements, and incorporates by reference, both the state and federal antidegradation policies. The permitted discharge must be consistent with the antidegradation provision of section 131.12 and State Water Board Resolution 68-16.

4. **Anti-Backsliding Requirements.** Sections 402(o) and 303(d)(4) of the CWA and federal regulations at 40 C.F.R. section 122.44(l) restrict backsliding in NPDES permits. These anti-backsliding provisions require that effluent limitations in a reissued permit must be as stringent as those in the previous permit, with some exceptions in which limitations may be relaxed.

5. **Endangered Species Act Requirements.** This Order does not authorize any act that results in the taking of a threatened or endangered species or any act that is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish and Game Code, §§ 2050 to 2097) or the Federal Endangered Species Act (16 U.S.C.A. §§ 1531 to 1544). This Order requires compliance with effluent limits, receiving water limits, and other requirements to protect the beneficial uses of waters of the state, including protecting rare and endangered species. The Discharger is responsible for meeting all requirements of the applicable Endangered Species Act.

D. Impaired Water Bodies on CWA 303(d) List

CWA section 303(d) requires states to identify specific water bodies where water quality standards are not expected to be met after implementation of technology-based effluent limitations on point sources. For all 303(d) listed water bodies and pollutants, the Central Coast Water Board must develop and implement Total Maximum Daily Loads (TMDLs) that will specify Waste Load Allocations (WLAs) for point sources and Load Allocations (LAs) for non-point sources.

The U.S. EPA approved the State's 2010 303(d) list of impaired water bodies on November 12, 2010. The 2010 303(d) list does not identify the coast of the Pacific Ocean at Estero Bay in the vicinity of the point of discharge as being impaired.

E. Other Plans, Polices and Regulations

1. **Statewide General Waste Discharge Requirements for Sanitary Sewer Systems (State Water Board Order No. 2006-0003-DWQ).** The General Permit, adopted on May 2, 2006, is applicable to all "federal and state agencies, municipalities, counties, districts, and other public entities that own or operate sanitary sewer systems greater than one mile in length that collect and/or convey untreated or partially treated wastewater to a publicly owned treatment facility in the State of California." The purpose of the General Permit is to promote the proper and efficient management, operation, and maintenance of sanitary sewer systems and to minimize the occurrences and impacts of sanitary sewer overflows. The Discharger is covered under the General Permit and must comply with its requirements.

IV. RATIONALE FOR EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

The CWA requires point source dischargers to control the amount of conventional, non-conventional, and toxic pollutants that are discharged into the waters of the United States. The control of pollutants discharged is established through effluent limitations and other requirements in NPDES permits. There are two principal bases for effluent limitations in the Code of Federal Regulations: 40 C.F.R. section 122.44(a) requires that permits include applicable technology-based limitations and standards; and 40 C.F.R. section 122.44(d) requires that permits include water quality-based effluent limitations to attain and maintain applicable numeric and narrative water quality criteria to protect the beneficial uses of the receiving water.

A. Discharge Prohibitions

1. **Discharge Prohibition III.A**. (Discharge of treated wastewater at a location or in a manner different from that described in this Order is prohibited). This prohibition is similar to the previous Order and is based on 40 C.F.R. 122.21(a), duty to apply, and CWC section 13260, which requires filing a ROWD before discharges can occur.

2. **Discharge Prohibition III.B**. (Discharges of radiological, chemical, or biological warfare agent or high level radioactive waste to the Ocean is prohibited). This prohibition is based on the 2015 Ocean Plan Discharge Prohibition I.1.a.

3. **Discharge Prohibition III.C.** (The discharge of municipal or industrial waste sludge to the Pacific Ocean is prohibited). This prohibition is retained from the current permit and is based on the 2015 Ocean Plan Discharge Prohibition I.3.

4. **Discharge Prohibition III.D, III.E** (The overflow or bypass of wastewater from the Discharger's collection, treatment, or disposal facilities and the subsequent discharge of untreated or partially treated wastewater, except as provided for in Attachment D, Standard Provision I.G (Bypass), is prohibited.) The discharge of untreated or partially treated wastewater from the Discharger's collection, treatment, or disposal facilities represents an unauthorized bypass pursuant to 40 C.F.R. 122.41(m) or an unauthorized discharge, which poses a threat to human health and/or aquatic life, and therefore, is explicitly prohibited by the Order. Discharge Prohibitions III.E is retained from the current permit.

5. **Discharge Prohibition III.F.** (Materials and substances that are prohibited). This prohibition is based on requirements of the Ocean Plan.

6. **Discharge Prohibition III.G.** (Discharge of chlorine or toxic substances used for disinfection prohibited). This prohibition is retained from the current Order.

B. Technology-Based Effluent Limitations

1. Scope and Authority

CWA section 301(b) requires U.S. EPA to develop secondary treatment standards for publicly-owned treatment works at a level of effluent quality attainably through applying secondary or equivalent treatment. U.S. EPA promulgated such technology-based effluent guidelines at 40 C.F.R. 133. These secondary treatment regulations include the following minimum requirements.

Table F-10. Secondary Treatment Requirements

Parameter	Units	30-Day Average	7-Day Average
BOD[1]	mg/L	30	45
TSS[1]	mg/L	30	45
pH	standard units	6.0 – 9.0	

[1] The 30-day average percent removal for BOD_5 and TSS shall not be less than 85 percent.

In addition to the secondary treatment standards established in 40 C.F.R. 133, the State Water Board, in Table 2 of the Ocean Plan, has supplemented these technology-based requirements with additional requirements for conventional pollutants (settleable matter, oil and grease), which are applicable to the Facility. The Ocean Plan requirements are discussed in section IV.B.2 of this Fact Sheet.

2. Applicable Technology-Based Effluent Limitations

Title 40 C.F.R. 122.45(f)(1) requires effluent limitations be expressed in terms of mass, with some exceptions, and 40 C.F.R. 122.45(f)(2) allows pollutants that are limited in terms of mass to additionally be limited in terms of other units of measurement. This Order includes effluent limitations expressed in terms of mass and concentration. In addition, pursuant to the exceptions to mass limitations provided in 40 C.F.R. 122.45(f)(1), some effluent limitations are not expressed in terms of mass, such as pH and temperature, and when the applicable standards are expressed in terms of concentration and mass limitations are not necessary to protect the beneficial uses of the receiving waters.

a. **BOD_5 and TSS**. Federal Regulations, 40 C.F.R. 133, establish the minimum weekly and monthly average level of effluent quality attainable by secondary treatment for BOD and TSS. Effluent limitations for BOD_5 and TSS have thus been established in this Order based on these standards.

Additionally, 40 C.F.R. 133.102, in describing the minimum level of effluent quality attainable by secondary treatment, states that the 30-day average percent removal shall not be less than 85 percent. This Order includes a limitation requiring an average of 85 percent removal of BOD and TSS over each calendar month.

b. **pH**. Federal Regulations, 40 C.F.R. 133, establishes technology-based effluent limitations for pH. The secondary treatment standards require the pH of the effluent

to be no lower than 6.0 and no greater than 9.0 standard units. This pH range is also consistent with the Ocean Plan Table 2 effluent limitations.

c. Settleable Solids. The Ocean Plan Table 2 establishes the minimum weekly, monthly, and maximum average of effluent quality attainable by secondary treatment for settleable solids. Effluent limitations for settleable solids have been established in this Order based on these requirements.

d. Oil and Grease. The Ocean Plan Table 2 establishes the minimum weekly, monthly, and maximum average of effluent quality attainable by secondary treatment for oil and grease. Effluent limitations for oil and grease have been established in this Order based on these requirements.

e. Turbidity. The Ocean Plan Table 2 establishes the minimum weekly, monthly, and maximum average of effluent quality attainable by secondary treatment for turbidity. Effluent limitations for turbidity have been established in this Order based on these requirements.

The following table summarizes technology-based effluent limitations established by the Order.

Table F-11. Technology-Based Effluent Limitations

Parameter	Units	Effluent Limitations		
		Average Monthly	Average Weekly	Maximum Daily
Biochemical Oxygen Demand 5-day @ 20°C (BOD_5)[1]	mg/L	30	45	--
	lbs/day[2]	515	773	--
Total Suspended Solids (TSS)[1]	mg/L	30	45	--
	lbs/day[2]	515	773	--
Oil and Grease	mg/L	25	40	75
	lbs/day[2]	430	687	1,289
Settleable Solids	mL/L	1.0	1.5	3.0
Turbidity	NTU	75	100	225
pH	standard units	6.0 – 9.0[3]		

[1] The 30-day average percent removal for BOD and TSS shall not be less than 85 percent.
[2] Mass-based effluent limitations were calculated using the following formula:
lbs/day = pollutant concentration (mg/L) * Design flow (2.06 MGD) * conversion factor (8.34)
[3] Applied as an instantaneous minimum and maximum.

C. Water Quality-Based Effluent Limitations

1. Scope and Authority

CWA section 301(b) and 40 C.F.R. section 122.44(d) require that permits include limitations more stringent than applicable federal technology-based requirements where necessary to achieve applicable water quality standards.

Section 122.44(d)(1)(i) of 40 C.F.R. requires that permits include effluent limitations for all pollutants that are or may be discharged at levels that have the reasonable potential to cause or contribute to an exceedance of a water quality standard, including numeric and narrative objectives within a standard. Where reasonable potential has been

established for a pollutant, but there is no numeric criterion or objective for the pollutant, water quality-based effluent limitations (WQBELs) must be established using: (1) U.S. EPA criteria guidance under CWA section 304(a), supplemented where necessary by other relevant information; (2) an indicator parameter for the pollutant of concern; or (3) a calculated numeric water quality criterion, such as a proposed state criterion or policy interpreting the state's narrative criterion, supplemented with other relevant information, as provided in section 122.44(d)(1)(vi).

The process for determining reasonable potential and calculating WQBELs when necessary is intended to protect the designated uses of the receiving water as specified in the Basin Plan, and achieve applicable water quality objectives and criteria that are contained in other state plans and policies, or any applicable water quality criteria contained in the Ocean Plan.

2. Applicable Beneficial Uses and Water Quality Criteria and Objectives

Beneficial uses for ocean waters of the Central Coast Region are established by the Basin Plan and Ocean Plan and are described in section III.C of this Fact Sheet.

Water quality criteria applicable to ocean waters of the Region are established by the Ocean Plan, which includes WQOs for bacterial characteristics, physical characteristics, chemical characteristics, biological characteristics, and radioactivity. The WQOs from the Ocean Plan are incorporated as receiving water limitations in this Order. In addition, Table 1 of the Ocean Plan contains numeric WQOs for 83 toxic pollutants for the protection of marine aquatic life and human health. Pursuant to NPDES regulations at 40 C.F.R. 122.44(d)(1), and in accordance with procedures established by the Ocean Plan (2015), the central Coast Water Board has performed a reasonable potential analysis (RPA) to determine the need for effluent limitations for Table 1 toxic pollutants.

3. Determining the Need for WQBELs

Procedures for performing an RPA for ocean dischargers are described in section III.C and Appendix VI of the Ocean Plan. The procedure is a statistical method that projects an effluent data set while taking into account the averaging period of WQOs, the long term variability of pollutants in the effluent, limitations associated with sparse data sets, and uncertainty associated with censored data sets. The procedure assumes a lognormal distribution of the effluent data set, and compares the 95th percentile concentration at 95 percent confidence of each Table 1 pollutant, accounting for dilution, to the applicable water quality criterion. The RPA results in one of the three following endpoints:

Endpoint 1 - There is "reasonable potential." An effluent limitation must be developed for the pollutant. Effluent monitoring for the pollutant, consistent with the monitoring frequency in Appendix III (Ocean Plan), is required.

Endpoint 2 - There is no "reasonable potential." An effluent limitation is not required for the pollutant. Appendix III (Ocean Plan) effluent monitoring is not required for the pollutant; the Central Coast Board, however, may require occasional monitoring for the pollutant or for whole effluent toxicity as appropriate.

Endpoint 3 - The RPA is inconclusive. Monitoring for the pollutant or whole effluent toxicity testing, consistent with the monitoring frequency in Appendix III, is required. An existing effluent limitation for the pollutant shall remain in the permit, otherwise the permit shall include a reopener clause to allow for subsequent modification of the permit to include an effluent limitation if monitoring establishes that the discharge causes, has the reasonable potential to cause, or contribute to an excursion above a Table 1 water quality objective.

The State Water Board has developed a reasonable potential calculator, which is available at:

http://www.waterboards.ca.gov/water_issues/programs/ocean/docs/trirev/stakeholder050505/rpcalc22_setup.zip

The calculator (RPcalc 2.2) was used in the development of this Order and considers several pathways in the determination of reasonable potential.

a. First Path

If available information about the receiving water or the discharge supports a finding of reasonable potential without analysis of effluent data, the Central Coast Water Board may decide that WQBELs are necessary after a review of such information. Such information may include: the facility or discharge type, solids loading, lack of dilution, history of compliance problems, potential toxic effects, fish tissue data, 303(d) status of the receiving water, the presence of threatened or endangered species or their critical habitat, or other information.

b. Second Path

If any pollutant concentration, adjusted to account for dilution, is greater than the most stringent applicable WQO, there is reasonable potential for that pollutant.

c. Third Path

If the effluent data contains three or more detected and quantified values (i.e., values that are at or above the minimum level (ML), and all values in the data set are at or above the ML, a parametric RPA is conducted to project the range of possible effluent values. The 95th percentile concentration is determined at 95 percent confidence for each pollutant, and compared to the most stringent applicable water quality objective to determine reasonable potential. A parametric analysis assumes that the range of possible effluent values is distributed log-normally. If the 95th percentile value is greater than the most stringent applicable water quality objective, there is reasonable potential for that pollutant.

d. Fourth Path

If the effluent data contains three or more detected and quantified values (i.e., values that are at or above the ML), but at least one value in the data set is less than the ML, a parametric RPA is conducted according to the following steps:

i. If the number of censored values (those expressed as a "less than" value) account for less than 80 percent of the total number of effluent values, calculate the M_L (the mean of the natural log of transformed data) and S_L (the standard deviation of the natural log of transformed data) and conduct a parametric RPA, as described above for the Third Path.

ii. If the total number of censored values account for 80 percent of the total number of effluent values, conduct a non-parametric RPA, as described below for the Fifth Path. (A non-parametric analysis becomes necessary when the effluent data is limited, and no assumptions can be made regarding its possible distribution).

e. Fifth Path

A non-parametric RPA is conducted when the effluent data set contains less than three detected and quantified values, or when the effluent data set contains three or more detected and quantified values but the number of censored values accounts for 80 percent or more of the total of effluent values. A non-parametric analysis is conducted by ordering the data, comparing each result to the applicable WQO, and accounting for ties. The sample number is reduced by one for each tie, when the dilution-adjusted method detection limit (MDL) is greater than the water quality objective. If the adjusted sample number, after accounting for ties, is greater than 15, the pollutant has no reasonable potential to exceed the WQO. If the sample number is 15 or less, the RPA is inconclusive, monitoring is required, and any existing effluent limits in the expiring permit are retained.

In this case, a RPA was conducted using effluent monitoring data from January 2009 to July 2013. The implementation provisions for Table 1 in section III.C of the Ocean Plan specify that the minimum initial dilution is the lowest average initial dilution within any single month of the year. Dilution estimates shall be based on observed waste flow characteristics, observed receiving water density structure, and the assumption that no currents of sufficient strength to influence the initial dilution process flow across the discharge structure. Order No. 2008-0065 determined the minimum initial dilution factor (Dm) for the discharge to be 133 to 1 (seawater to effluent). This Dm of 133:1 will be retained from the current Order and applied to the WQBELs established herein. If the actual dilution ratio is found to be different, then the ratio will be recalculated and this Order may be reopened when and as appropriate.

A summary of the RPA results is provided below.

Table F-12. RPA Results

Parameter	Units	N[1]	MEC[2],[3]	Most Stringent Criteria	Background	RPA Endpoint[4]
Arsenic, Total Recoverable	µg/L	9	J 2	8[5]	3[6]	3
Cadmium, Total Recoverable	µg/L	9	J 10	1[5]	0	3
Chromium (VI), Total Recoverable	µg/L	9	J 10	2[5]	0	3
Copper, Total Recoverable	µg/L	9	22	3[5]	2[6]	2
Lead, Total Recoverable	µg/L	9	1.8	2[5]	0	2
Mercury, Total Recoverable	µg/L	9	0.016	0.04[5]	0.0005[6]	3
Nickel, Total Recoverable	µg/L	9	J 10	5[5]	0	3
Selenium, Total Recoverable	µg/L	9	2.7	15[5]	0	2

Parameter	Units	N[1]	MEC[2],[3]	Most Stringent Criteria	Background	RPA Endpoint[4]
Silver, Total Recoverable	µg/L	9	J 4.6	0.7[5]	0.16[6]	3
Zinc, Total Recoverable	µg/L	9	59	20[5]	8[6]	2
Cyanide, Total	µg/L	28	70	1[5]	0	2
Total Residual Chlorine	µg/L	1,681	7,400	2[5]	0	1
Ammonia	µg/L	63	64,000	600[5]	0	2
Acute Toxicity	TUa	--	--	0.3[7]	0	--
Chronic Toxicity	TUc	12	31.2	1[7]	0	2
Phenolic Compounds[8]	µg/L	6	3.3	30[5]	0	3
Chlorinated Phenolics[9]	µg/L	6	<0.2	1[5]	0	3
Endosulfan[10]	µg/L	5	<0.0014	0.009[5]	0	3
Endrin	µg/L	6	<0.00082	0.002[5]	0	3
HCH[11]	µg/L	5	<0.00094	0.004[5]	0	3
Radioactivity[12]	pCi/L	5	--	[12]	0	3
Acrolein	µg/L	5	<7.3	220[13]	0	3
Antimony	µg/L	5	34	1,200[13]	0	3
Bis(2-chloroethoxy) methane	µg/L	5	<0.27	4.4[13]	0	3
Bis(2-chloroisopropyl) ether	µg/L	5	<0.3	1,200[13]	0	3
Chlorobenzene	µg/L	5	<0.06	570[13]	0	3
Chromium (III)	µg/L	4	J 2.6	190,000[13]	0	3
Di-n-butyl phthalate	µg/L	5	<0.39	3,500[13]	0	3
Dichlorobenzenes[14]	µg/L	5	<0.05	5,100[13]	0	3
Diethyl phthalate	µg/L	5	<0.33	33,000[13]	0	3
Dimethyl phthalate	µg/L	5	<0.39	820,000[13]	0	3
4,6-dinitro-2-methylphenol	µg/L	6	<0.34	220[13]	0	3
2,4-dinitrophenol	µg/L	6	<0.2	4.0[13]	0	3
Ethylbenzene	µg/L	5	J 0.5	4,100[13]	0	3
Fluoranthene	µg/L	5	<0.2	15[13]	0	3
Hexachlorocyclopentadiene	µg/L	5	<0.3	58[13]	0	3
Nitrobenzene	µg/L	5	<0.26	4.9[13]	0	3
Thallium	µg/L	5	<0.08	2[13]	0	3
Toluene	µg/L	5	0.5	85,000[13]	0	3
Tributyltin	µg/L	5	<0.03	0.0014[13]	0	3
1,1,1-trichloroethane	µg/L	5	<0.063	540,000[13]	0	3
Acrylonitrile	µg/L	5	<0.75	0.10[13]	0	3
Aldrin	µg/L	6	<0.0013	0.000022[13]	0	3
Benzene	µg/L	5	<0.061	5.9[13]	0	3
Benzidine	µg/L	5	<7.1	0.000069[13]	0	3
Beryllium	µg/L	5	J 1.2	0.033[13]	0	3
Bis(2-chloroethyl) ether	µg/L	5	<0.68	0.045[13]	0	3
Bis(2-ethylhexyl) phthalate	µg/L	5	9.2	3.5[13]	0	3
Carbon tetrachloride	µg/L	5	<0.074	0.90[13]	0	3
Chlordane[15]	µg/L	5	<0.38	0.000023[13]	0	3
Chlorodibromomethane	µg/L	5	<0.067	8.6[13]	0	3
Chloroform	µg/L	5	J 0.97	130[13]	0	3
DDT[16]	µg/L	6	<0.00076	0.00017[13]	0	3

Parameter	Units	N[1]	MEC[2],[3]	Most Stringent Criteria	Background	RPA Endpoint[4]
1,4-dichlorobenzene	µg/L	6	J 0.1	18[13]	0	3
3,3'-dichlorobenzidene	µg/L	5	< 8.2	0.0081[13]	0	3
1,2-dichloroethane	µg/L	5	< 0.09	28[13]	0	3
1,1-dichloroethylene	µg/L	5	< 0.07	0.9[13]	0	3
Dichlorobromomethane	µg/L	5	< 0.15	6.2[13]	0	3
Dichloromethane	µg/L	5	< 0.28	450[13]	0	3
1,3-dichloropropene	µg/L	6	< 0.07	8.9[13]	0	3
Dieldrin	µg/L	6	< 0.0012	0.00004[13]	0	3
2,4-dinitrotoluene	µg/L	5	< 0.26	2.6[13]	0	3
1,2-diphenylhydrazine	µg/L	5	< 0.34	0.16[13]	0	3
Halomethanes[17]	µg/L	6	J 0.25	130[13]	0	3
Heptachlor	µg/L	6	< 0.0012	0.00005[13]	0	3
Heptachlor epoxide	µg/L	6	< 0.00099	0.00002[13]	0	3
Hexachlorobenzene	µg/L	5	< 0.2	0.00021[13]	0	3
Hexachlorobutadiene	µg/L	5	< 0.24	14[13]	0	3
Hexachloroethane	µg/L	5	< 0.32	2.5[13]	0	3
Isophorone	µg/L	5	< 0.31	730[13]	0	3
N-nitrosodimethylamine	µg/L	5	< 0.61	7.3[13]	0	3
N-nitrosodi-N-propylamine	µg/L	5	< 1.3	0.38[13]	0	3
N-nitrosodiphenylamine	µg/L	5	< 0.44	2.5[13]	0	3
PAHs[18]	µg/L	5	< 0.2	0.0088[13]	0	3
PCBs[19]	µg/L	5	< 0.02	0.000019[13]	0	3
TCDD equivalents[20]	µg/L	14	<0.00000131	0.0000000039[13]	0	2
1,1,2,2-tetrachloroethane	µg/L	5	< 0.17	2.3[13]	0	3
Tetrachloroethylene	µg/L	5	< 0.095	2.0[13]	0	3
Toxaphene	µg/L	5	< 0.42	0.00021[13]	0	3
Trichloroethylene	µg/L	5	< 0.07	27[13]	0	3
1,1,2-trichloroethane	µg/L	5	< 0.15	9.4[13]	0	3
2,4,6-trichlorophenol	µg/L	6	< 0.6	0.29[13]	0	3
Vinyl chloride	µg/L	5	< 0.11	36[13]	0	3

[1] Number of data points available for the RPA.

[2] If there is a detected value, the highest reported value is summarized in the table. If there are no detected values, the lowest MDL is summarized in the table. Values proceeded with a "J" represent maximum effluent concentrations that were detected, but not quantifiable.

[3] Note that the reported MEC does not account for dilution. The RPA does account for dilution; therefore it is possible for a parameter with an MEC in exceedance of the most stringent criteria not to present a RP (i.e., Endpoint 1).

[4] Endpoint 1 – RP determined, limit required, monitoring required.

Endpoint 2 – Discharger determined not to have RP, monitoring may be established.

Endpoint 3 – RPA was inconclusive, carry over previous limits if applicable, establish monitoring.

[5] Based on the 6-Month Median in Table 1 of the Ocean Plan.

[6] Background concentrations contained in Table 3 of the Ocean Plan.

[7] Based on the Daily Maximum in Table 1 of the Ocean Plan.

[8] Non-chlorinated phenolic compounds represent the sum of 2,4-dimethylphenol; 4,6-dinitro-2-methylphenol; 2,4,5-dinitrophenol; 2-methylphenol; 4-methylphenol; 2-nitropheneol; 4-nitrophenol; and phenol.

[9] Chlorinated phenolic compounds represent the sum of 4-chloro-3-methylphenol; 2-chlorophenol; pentachlorophenol; 2,4,5-trichlorophenol; and 2,4,6-trichlorophenol.

Parameter	Units	N[1]	MEC[2],[3]	Most Stringent Criteria	Background	RPA Endpoint[4]

[10] Endosulfan represents the sum of alpha-endosulfan, beta-endosulfan, and endosulfan sulfate.

[11] HCH (hexachlorocyclohexane) represents the sum of the alpha, beta, gamma (Lindane), and delta isomers of hexachlorocyclohexane.

[12] Not to exceed limits specified in Title 17, Division 1, Chapter 5, Subchapter 4, Group 3, Article 3, section 30253 of the California Code of Regulations.

[13] Based on 30-Day Average in Table 1 of the Ocean Plan.

[14] Dichlorobenzenes represent the sum of 1,2- and 1,3-dichlorobenzene.

[15] Chlordane represents the sum of chlordane-alpha, chlordane-gamma, chlordane-alpha, chlordane-gamma, nonachlor-alpha, nonachlor-gamma, and oxychlordane.

[16] DDT represents the sum of 4,4'-DDT; 2,4'-DDT; 4,4'-DDE; 2,4'-DDE; 4,4'-DDD; and 2,4'-DDD.

[17] Halomethanes represent the sum of bromoform, bromomethane (methyl bromide), and chloromethane (methyl chloride).

[18] PAHs (polynuclear aromatic hydrocarbons) represent the sum of acenapthene; anthracene; 1,2-benzanthracene; 2,4-benzofluoranthene; benzo[k]fluoranthen; 1,12-benzoperylene; benzo[a]pyrene; chrysene; dibenzo[a,h]anthracene; fluorine; ideno[1,2,3-cd]pyrene; phenanthrene; and pyrene.

[19] PCBs (polychlorinated biphenyls) represent the sum of chlorinated biphenyls whose analytical characteristics resemble those of Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Aroclor-1254, and Aroclor-1260.

[20] TCDD equivalents represent the sum of concentrations of chlorinated dibenzodioxins (2,3,7,8-CDDs) and chlorinated dibenzofurans (2,3,7,8-CDFs) multiplied by their respective toxicity factors, as shown by the table below. U.S. EPA Method 8280 may be used to analyze TCDD equivalents.

Isomer Group	Toxicity Equivalence Factor
2,3,7,8 – tetra CDD	1.0
2,3,7,8 – penta CDD	0.5
2,3,7,8 – hexa CDD	0.1
2,3,7,8 – hepta CDD	0.01
octa CDD	0.001
2,3,7,8 – tetra CDF	0.1
1,2,3,7,8 – penta CDF	0.05
2,3,4,7,8 – penta CDF	0.5
2,3,7,8 – hexa CDFs	0.1
2,3,7,8 – hepta CDFs	0.01
octa CDF	0.001

4. WQBEL Calculations

a. From the Table 1 WQOs in the Ocean Plan, effluent limitations were calculated according to the following equation for all pollutants, except for acute toxicity and radioactivity:

Ce = CO + Dm (Co – Cs) where,

Ce = the effluent limitation (µg/L)

Co = the WQO to be met at the completion of initial dilution (µg/L)

Cs = background seawater concentration

Dm = minimum probable initial dilution expressed as parts seawater per part wastewater

b. Initial dilution (Dm) has been determined to be 133 to 1 by the Central Coast Water Board.

c. Table 3 of the Ocean Plan establishes background concentrations for some pollutants to be used when determining reasonable potential (represented as "Cs"). In accordance with Table 1 implementing procedures, Cs equals zero for all pollutants not established in Table 3. The background concentrations provided in Table 3 are summarized below:

Table F-13. Pollutants Having Background Concentrations

Pollutant	Background Seawater Concentration
Arsenic	3 µg/L
Copper	2 µg/L
Mercury	0.0005 µg/L
Silver	0.16 µg/L
Zinc	8 µg/L

d. A summary of WQBELs established for Discharge Point No. 001 in this Order are provided in Tables F-14a – F-14c.

Table F-14a. Effluent Limitations, Protection of Marine Aquatic Life

Parameter	Units	Effluent Limitation		
		6-Mo Median[1]	Maximum Daily[2]	Instantaneous Maximum [3]
Arsenic, Total Recoverable	µg/L	670	3,890	10,300
	lbs/day	12	67	177
Cadmium, Total Recoverable	µg/L	130	540	1,340
	lbs/day	2.2	9.3	23
Chromium (VI) , Total Recoverable	µg/L	270	1,070	2,680
	lbs/day	4.64	18	46
Mercury, Total Recoverable	µg/L	5.29	21.4	53.5
	lbs/day	0.091	0.37	0.92
Nickel, Total Recoverable	µg/L	670	2,680	6,700
	lbs/day	12	46	115
Silver, Total Recoverable	µg/L	70	350	920
	lbs/day	1.2	6.01	16
Total Chlorine Residual	µg/L	268	1,072	8,040
	lbs/day	4.6	18	138
Acute Toxicity	TUa	--	4.3	--
Chronic Toxicity	TUc	--	134	--
Phenolic Compounds (non-chlorinated)	µg/L	4,020	16,100	40,200
	lbs/day	69	277	691
Phenolic Compounds (chlorinated)	µg/L	130	540	1,340
	lbs/day	2.2	9.3	23
Endosulfan	µg/L	1.21	2.41	3.62
	lbs/day	0.021	0.041	0.062
Endrin	µg/L	0.27	0.54	0.80
	lbs/day	0.0046	0.0093	0.014

Parameter	Units	Effluent Limitation		
		6-Mo Median[1]	Maximum Daily[2]	Instantaneous Maximum [3]
HCH	µg/L	0.54	1.07	1.61
	lbs/day	0.0093	0.018	0.028
Radioactivity	[4]			

[1] The six-month median shall apply as a moving median of daily values for any 180-day period in which daily values represent flow weighted average concentrations within a 24-hour period. For intermittent discharges, the daily value shall be considered equal to zero for days on which no discharge occurred. The six-month median limit on daily mass emissions shall be determined using the six-month medial effluent concentration Ce and the observed flow rate, Q, in million gallons per day (MGD).

[2] The daily maximum shall apply to flow weighted 24-hour composite samples. The daily maximum mass emission shall be determined using the daily maximum effluent concentration limit as Ce and the observed flow rate, Q, in MGD.

[3] The instantaneous maximum shall apply to grab sample determinations.

[4] Not to exceed limits specified in Title 17, Division 1, Chapter 5, Subchapter 4, Group 3, Article 3, section 30253 of the California Code of Regulations

Table F-14b. Effluent Limitations – Protection of Human Health – Non-Carcinogens

Parameter	Units	Effluent Limitation
		30-day Average
Acrolein	µg/L	29,500
	lbs/day	507
Antimony	µg/L	160,800
	lbs/day	2,763
Bis(2-chloroethoxy) methane	µg/L	590
	lbs/day	10
Bis(2-chloroisopropyl) ether	µg/L	160,800
	lbs/day	2,763
Chlorobenzene	µg/L	76,400
	lbs/day	1,313
Chromium (III)[1]	µg/L	25,500,000
	lbs/day	438,100
Di-n-butyl phthalate	µg/L	469,000
	lbs/day	8,058
Dichlorobenzenes[2]	µg/L	683,000
	lbs/day	11,734
Diethyl phthalate	µg/L	4,420,000
	lbs/day	75,937
Dimethyl phthalate	µg/L	109,900,000
	lbs/day	1,888,126
4,6-dinitro-2-methylphenol	µg/L	29,500
	lbs/day	507
2,4-dinitrophenol	µg/L	540
	lbs/day	9.3
Ethylbenzene	µg/L	549,000
	lbs/day	9,432

Parameter	Units	Effluent Limitation
		30-day Average
Fluoranthene	µg/L	2,000
	lbs/day	34
Hexachlorocyclopentadiene	µg/L	7,800
	lbs/day	134
Nitrobenzene	µg/L	660
	lbs/day	11
Thallium	µg/L	270
	lbs/day	4.64
Toluene	µg/L	11,400,000
	lbs/day	195,857
Tributyltin	µg/L	0.188
	lbs/day	0.0032
1,1,1-trichloroethane	µg/L	72,400,000
	lbs/day	1,243,860

[1] Discharger may at their option meet this objective as a Total Chromium objective.

[2] Sum of 1,2- and 1,3-dichlorobenzene.

Table F-14c. Effluent Limitations – Protection of Human Health –Carcinogens

Parameter	Units	Effluent Limitation
		30-day Average
Acrylonitrile	µg/L	13.4
	lbs/day	0.23
Aldrin	µg/L	0.00295
	lbs/day	5.07×10^{-5}
Benzene	µg/L	791
	lbs/day	14
Benzidine	µg/L	0.00925
	lbs/day	0.00016
Beryllium	µg/L	4.42
	lbs/day	0.076
Bis(2-chloroethyl) ether	µg/L	6.03
	lbs/day	0.10
Bis(2-ethylhexyl) phthalate	µg/L	469
	lbs/day	8.06
Carbon tetrachloride	µg/L	121
	lbs/day	2.08
Chlordane[1]	µg/L	0.00308
	lbs/day	5.3×10^{-5}
Chlorodibromomethane	µg/L	1,152
	lbs/day	20
Chloroform	µg/L	17,400
	lbs/day	299
DDT[2]	µg/L	0.0228

Parameter	Units	Effluent Limitation
		30-day Average
	lbs/day	0.00039
1,4-dichlorobenzene	µg/L	2,410
	lbs/day	41
3,3-dichlorobenzidine	µg/L	1.09
	lbs/day	0.019
1,2-dichloroethane	µg/L	3,750
	lbs/day	64
1,1-dichloroethylene	µg/L	120
	lbs/day	2.06
Dichlorobromomethane	µg/L	830
	lbs/day	14
Dichloromethane	µg/L	60,300
	lbs/day	1,036
1,3-dichloropropene	µg/L	1,190
	lbs/day	20
Dieldrin	µg/L	0.00536
	lbs/day	9.21×10^{-5}
2,4-dinitrotoluene	µg/L	348
	lbs/day	6.0
1,2-diphenylhydrazine	µg/L	21.4
	lbs/day	0.37
Halomethanes[3]	µg/L	17,400
	lbs/day	299
Heptachlor	µg/L	0.0067
	lbs/day	1.15×10^{-4}
Heptachlor epoxide	µg/L	0.00268
	lbs/day	4.6×10^{-5}
Hexachlorobenzene	µg/L	0.0281
	lbs/day	0.00048
Hexachlorobutadiene	µg/L	1,880
	lbs/day	32
Hexachloroethane	µg/L	335
	lbs/day	5.8
Isophorone	µg/L	98,000
	lbs/day	1,684
N-nitrosodimethylamine	µg/L	978
	lbs/day	17
N-nitrosodi-n-propylamine	µg/L	50.9
	lbs/day	0.87
N-nitrosodiphenylamine	µg/L	335
	lbs/day	5.8
PAHs[4]	µg/L	1.18
	lbs/day	0.020

Parameter	Units	Effluent Limitation
		30-day Average
PCBs[5]	µg/L	0.00255
	lbs/day	4.38×10^{-5}
1,1,2,2-tetrachloroethane	µg/L	310
	lbs/day	5.3
Tetrachlorothylene	µg/L	268
	lbs/day	4.6
Toxaphene	µg/L	0.0281
	lbs/day	0.00048
Trichloroethylene	µg/L	3,620
	lbs/day	62
1,1,2-trichloroethane	µg/L	1,260
	lbs/day	22
2,4,6-trichlorophenol	µg/L	39
	lbs/day	0.67
Vinyl chloride	µg/L	4,820
	lbs/day	83

[1] Sum of chlorodane-alpha, chlorodane-gamma, chlorodene-alpha, chlorodene-gamma, nonachlor-alpha, nonachlor gamma, and oxychlorodane.

[2] Sum of 4,4'-DDT, 2,4'-DDT, 4,4'-DDE, 2,4'-DDE, 4,4'-DDD, and 2,4'-DDD.

[3] Sum of bromoform, bromoethane (methylbromide), chloromethane (methyl chloride), chlorodibromomethane, and dichlorobromomethane.

[4] Sum of acenaphthylene, anthracene, 1,2-benzanthracene, 3,4-benzofluoranthene, benzo[k]fluoranthene, 1,1,2-benzoperylene, benzo[a]pyrene, chrysene, dibenzo[a,h]anthracene, fluorine, ideno[1,2,3-cd]pyrene, phenanthrene, and pyrene.

[5] Sum of chlorinated biphenyls whose analytical characteristics resemble those of Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Aroclor-1254, and Aroclor-1260.

5. Whole Effluent Toxicity (WET)

WET limitations protect receiving water from the aggregated toxic effect of a mixture of pollutants in effluent. WET tests measure the degree of response of exposed aquatic test organisms to an effluent. The WET approach allows for protection of the narrative "no toxics in toxic amounts" criterion while implementing numeric criteria for toxicity. There are two types of WET tests – acute and chronic. An acute test is conducted over a short time period and measures mortality. A chronic toxicity test is conducted over a longer period of time and may measure mortality, reproduction, and growth.

Order No. R3-2008-0065 established effluent limitations for both acute and chronic toxicity and semiannual monitoring for chronic toxicity. There was no acute toxicity monitoring requirement, thus an RPA could not be performed. The effluent limitations and monitoring requirements will be retained in this permit. The RPA for chronic toxicity demonstrates that chronic toxicity does not appear to have reasonable potential to exceed water quality objectives. However, effluent data for total residual chlorine indicate reasonable potential to exceed water quality objectives for the protection of marine aquatic life. Due to the potential for toxic impacts to aquatic life, reasonable potential for chronic toxicity is retained based on Step 13 of Appendix VI of the Ocean Plan, which

requires the consideration of all available information to determine if a WQBEL is required. Further, section III.C.4.c of the Ocean Plan requires that chronic toxicity be monitored when dilution is between 100:1 and 350: 1. Monitoring for chronic toxicity has been retained to evaluate compliance with the applicable effluent limitation and based on the available dilution for the discharge location of 133:1.

The Discharger will be required to implement a Toxicity Reduction Evaluation (TRE) Workplan, as described in section V.C.2.a of the Order. When monitoring measures WET in the effluent above the limitation established by the Order, the Discharger must resample, if the discharge is continuing, and retest.

D. Final Effluent Limitation Considerations

1. Anti-Backsliding Requirements

Sections 402(o) and 303(d)(4) of the CWA and federal regulations at 40 C.F.R. section 122.44(l) prohibit backsliding in NPDES permits. These anti-backsliding provisions require effluent limitations in a reissued permit to be as stringent as those in the previous permit, with some exceptions where limitations may be relaxed. All effluent limitations in this Order, with some exceptions discussed below, are at least as stringent as the effluent limitations in the previous Order.

Effluent limitations for ammonia, copper, lead, selenium, and zinc have been removed from this Order. The removal of the effluent limitations for these parameters is based on the availability of new information, including available effluent data, consistent with 40 C.F.R. 122.44(i)(B).

2. Antidegradation Policies

Provisions of this Order are consistent with applicable anti-degradation policy expressed by NPDES regulations at 40 C.F.R. 131.12 and by State Water Board Resolution No. 68-16. The Order does not authorize increases in discharge rates or pollutant loadings, and its limitations and conditions otherwise assure maintenance of the existing quality of receiving waters.

3. Stringency of Requirements for Individual Pollutants

This Order contains both technology-based and water quality-based effluent limitations for individual pollutants. The technology-based effluent limitations consist of restrictions on BOD_5, TSS, oil and grease, turbidity, pH, and settleable solids. Restrictions on these pollutants are discussed in the Fact Sheet, in section IV.B. This Order's technology-based pollutant restrictions implement the minimum, applicable federal technology-based requirements. In addition, this Order contains effluent limitations more stringent than the minimum, federal technology-based requirements that are necessary to meet water quality standards. These limitations are not more stringent than required by the CWA.

4. Summary of Final Effluent Limitations – Discharge Point No. 001

Table F-15. Final Effluent Limitations

Parameter	Units	Effluent Limitations		
		Average Monthly	Average Weekly	Maximum Daily
Biochemical Oxygen Demand 5-day @ 20°C (BOD_5)[1]	mg/L	30	45	--
	lbs/day[2]	515	773	--
Total Suspended Solids (TSS)[1]	mg/L	30	45	--
	lbs/day[2]	515	773	--
Oil and Grease	mg/L	25	40	75
	lbs/day[2]	430	687	1,289
Settleable Solids	ml/L	1.0	1.5	3.0
pH	standard units	6.0 – 9.0 at all times		
Turbidity	NTU	75	100	225

[1] The average monthly percent removal for BOD and TSS shall not be less than 85 percent.
[2] Mass based effluent limitations were calculated using the following formula:
lbs/day = pollutant concentration (mg/L) * Design flow (2.06 MGD) * conversion factor (8.34)

5. **Percent Removal:** The average monthly percent removal of BOD_5 and TSS shall not be less than 85 percent.

6. **Dry Weather Flow**. Effluent peak seasonal dry weather flow shall not exceed a monthly average of 2.36 million gallons per day.

7. **Bacteria**

   a. Total Coliform

   i. The total coliform concentrations shall not exceed a 30-day geometric mean of 23 MPN/100 mL.

   ii. No total coliform single sample shall exceed 2,400 MPN/100 mL.

Table F-16a. Final Effluent Limitations, Protection of Marine Aquatic Life

Parameter	Units	Effluent Limitation		
		6-Mo Median[1]	Maximum Daily[2]	Instantaneous Maximum[3]
Arsenic, Total Recoverable	µg/L	670	3,890	10,300
	lbs/day	12	67	177
Cadmium, Total Recoverable	µg/L	130	540	1,340
	lbs/day	2.2	9.3	23
Chromium (VI), Total Recoverable	µg/L	270	1,070	2,680
	lbs/day	4.64	18	46
Mercury, Total Recoverable	µg/L	5.29	21.4	53.5
	lbs/day	0.091	0.37	0.92
Nickel, Total Recoverable	µg/L	670	2,680	6,700
	lbs/day	12	46	115
Silver, Total Recoverable	µg/L	70	350	920
	lbs/day	1.2	6.01	16
Total Chlorine Residual	µg/L	268	1,072	8,040
	lbs/day	4.6	18	138
Acute Toxicity	TUa	--	4.3	--
Chronic Toxicity	TUc	--	134	--

Parameter	Units	Effluent Limitation		
		6-Mo Median[1]	Maximum Daily[2]	Instantaneous Maximum[3]
Phenolic Compounds (non-chlorinated)	µg/L	4,020	16,100	40,200
	lbs/day	69	277	691
Phenolic Compounds (chlorinated)	µg/L	130	540	1,340
	lbs/day	2.2	9.3	23
Endosulfan	µg/L	1.21	2.41	3.62
	lbs/day	0.021	0.041	0.062
Endrin	µg/L	0.27	0.54	0.80
	lbs/day	0.0046	0.0093	0.014
HCH	µg/L	0.54	1.07	1.61
	lbs/day	0.0093	0.018	0.028
Radioactivity	[4]			

[1] The six-month median shall apply as a moving median of daily values for any 180-day period in which daily values represent flow weighted average concentrations within a 24-hour period. For intermittent discharges, the daily value shall be considered equal to zero for days on which no discharge occurred. The six-month median limit on daily mass emissions shall be determined using the six-month medial effluent concentration Ce and the observed flow rate, Q, in million gallons per day (MGD).

[2] The daily maximum shall apply to flow weighted 24-hour composite samples. The daily maximum mass emission shall be determined using the daily maximum effluent concentration limit as Ce and the observed flow rate, Q, in MGD.

[3] The instantaneous maximum shall apply to grab sample determinations.

[4] Not to exceed limits specified in Title 17, Division 1, Chapter 5, Subchapter 4, Group 3, Article 3, section 30253 of the California Code of Regulations.

Table F-16b. Final Effluent Limitations – Protection of Human Health – Non-Carcinogens

Parameter	Units	Effluent Limitation
		30-day Average
Acrolein	µg/L	29,500
	lbs/day	507
Antimony	µg/L	160,800
	lbs/day	2,763
Bis(2-chloroethoxy) methane	µg/L	590
	lbs/day	10
Bis(2-chloroisopropyl) ether	µg/L	160,800
	lbs/day	2,763
Chlorobenzene	µg/L	76,400
	lbs/day	1,313
Chromium (III)[1]	µg/L	25,500,000
	lbs/day	438,100
Di-n-butyl phthalate	µg/L	469,000
	lbs/day	8,058
Dichlorobenzenes[2]	µg/L	683,000
	lbs/day	11,734
Diethyl phthalate	µg/L	4,420,000
	lbs/day	75,937
Dimethyl phthalate	µg/L	109,900,000

Parameter	Units	Effluent Limitation
		30-day Average
	lbs/day	1,888,126
4,6-dinitro-2-methylphenol	µg/L	29,500
	lbs/day	507
2,4-dinitrophenol	µg/L	540
	lbs/day	9.3
Ethylbenzene	µg/L	549,000
	lbs/day	9,432
Fluoranthene	µg/L	2,000
	lbs/day	34
Hexachlorocyclopentadiene	µg/L	7,800
	lbs/day	134
Nitrobenzene	µg/L	660
	lbs/day	11
Thallium	µg/L	270
	lbs/day	4.64
Toluene	µg/L	11,400,000
	lbs/day	195,857
Tributyltin	µg/L	0.188
	lbs/day	0.0032
1,1,1-trichloroethane	µg/L	72,400,000
	lbs/day	1,243,860

[1] Discharger may at its option meet this objective as a total chromium objective.

[2] Sum of 1,2- and 1,3-dichlorobenzene.

Table F-16c. Final Effluent Limitations – Protection of Human Health – Carcinogens

Parameter	Units	Effluent Limitation
		30-day Average
Acrylonitrile	µg/L	13.4
	lbs/day	0.23
Aldrin	µg/L	0.00295
	lbs/day	5.07×10^{-5}
Benzene	µg/L	791
	lbs/day	14
Benzidine	µg/L	0.00925
	lbs/day	0.00016
Beryllium	µg/L	4.42
	lbs/day	0.076
Bis(2-chloroethyl) ether	µg/L	6.03
	lbs/day	0.10
Bis(2-ethylhexyl) phthalate	µg/L	469
	lbs/day	8.06
Carbon tetrachloride	µg/L	121
	lbs/day	2.08

Parameter	Units	Effluent Limitation
		30-day Average
Chlordane[1]	µg/L	0.00308
	lbs/day	5.3×10^{-5}
Chlorodibromomethane	µg/L	1,152
	lbs/day	20
Chloroform	µg/L	17,400
	lbs/day	299
DDT[2]	µg/L	0.0228
	lbs/day	0.00039
1,4-dichlorobenzene	µg/L	2,410
	lbs/day	41
3,3-dichlorobenzidine	µg/L	1.09
	lbs/day	0.019
1,2-dichloroethane	µg/L	3,750
	lbs/day	64
1,1-dichloroethylene	µg/L	120
	lbs/day	2.06
Dichlorobromomethane	µg/L	830
	lbs/day	14
Dichloromethane	µg/L	60,300
	lbs/day	1,036
1,3-dichloropropene	µg/L	1,190
	lbs/day	20
Dieldrin	µg/L	0.00536
	lbs/day	9.21×10^{-5}
2,4-dinitrotoluene	µg/L	348
	lbs/day	6.0
1,2-diphenylhydrazine	µg/L	21.4
	lbs/day	0.37
Halomethanes[3]	µg/L	17,400
	lbs/day	299
Heptachlor	µg/L	0.0067
	lbs/day	1.15×10^{-4}
Heptachlor epoxide	µg/L	0.00268
	lbs/day	4.6×10^{-5}
Hexachlorobenzene	µg/L	0.0281
	lbs/day	0.00048
Hexachlorobutadiene	µg/L	1,880
	lbs/day	32
Hexachloroethane	µg/L	335
	lbs/day	5.8
Isophorone	µg/L	98,000
	lbs/day	1,684
N-nitrosodimethylamine	µg/L	978

Parameter	Units	Effluent Limitation
		30-day Average
	lbs/day	17
N-nitrosodi-n-propylamine	µg/L	50.9
	lbs/day	0.87
N-nitrosodiphenylamine	µg/L	335
	lbs/day	5.8
PAHs[4]	µg/L	1.18
	lbs/day	0.020
PCBs[5]	µg/L	0.00255
	lbs/day	4.38×10^{-5}
1,1,2,2-tetrachloroethane	µg/L	310
	lbs/day	5.3
Tetrachlorothylene	µg/L	268
	lbs/day	4.6
Toxaphene	µg/L	0.0281
	lbs/day	0.00048
Trichloroethylene	µg/L	3,620
	lbs/day	62
1,1,2-trichloroethane	µg/L	1,260
	lbs/day	22
2,4,6-trichlorophenol	µg/L	39
	lbs/day	0.67
Vinyl chloride	µg/L	4,820
	lbs/day	83

[1] Sum of chlorodane-alpha, chlorodane-gamma, chlorodene-alpha, chlorodene-gamma, nonachlor-alpha, nonachlor gamma, and oxychlorodane.

[2] Sum of 4,4'-DDT, 2,4'-DDT, 4,4'-DDE, 2,4'-DDE, 4,4'-DDD, and 2,4'-DDD.

[3] Sum of bromoform, bromoethane (methylbromide), chloromethane (methyl chloride), chlorodibromomethane, and dichlorobromomethane.

[4] Sum of acenaphthylene, anthracene, 1,2-benzanthracene, 3,4-benzofluoranthene, benzo[k]fluoranthene, 1,1,2-benzoperylene, benzo[a]pyrene, chrysene, dibenzo[a,h]anthracene, fluorine, ideno[1,2,3-cd]pyrene, phenanthrene, and pyrene.

[5] Sum of chlorinated biphenyls whose analytical characteristics resemble those of Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Aroclor-1254, and Aroclor-1260.

E. Land Discharge Specifications – Not Applicable

F. Recycling Specifications – Not Applicable

V. RATIONALE FOR RECEIVING WATER LIMITATIONS

A. Surface Water

Receiving water quality is a result of many factors, some unrelated to the discharge. This Order considers these factors and is designed to minimize the influence of the discharge on the receiving water. Receiving water limitations for Discharge Point No. 001 to the Pacific Ocean are consistent with the water quality objectives contained in the Ocean Plan and Basin Plan, and are retained from the previous Order.

B. Groundwater – Not Applicable

VI. RATIONALE FOR PROVISIONS

A. Standard Provisions

Standard Provisions, which apply to all NPDES permits in accordance with 40 C.F.R. section 122.41, and additional conditions applicable to specified categories of permits in accordance with 40 C.F.R. section 122.42, are provided in Attachment D to the order.

Sections 122.41(a)(1) and (b) through (n) of 40 C.F.R. establish conditions that apply to all State-issued NPDES permits. These conditions must be incorporated into the permits either expressly or by reference. If incorporated by reference, a specific citation to the regulations must be included in the Order. Section 123.25(a)(12) allows the State to omit or modify conditions to impose more stringent requirements. In accordance with 40 C.F.R. section 123.25, this Order omits federal conditions that address enforcement authority specified in 40 C.F.R. sections 122.41(j)(5) and (k)(2) because the enforcement authority under the Water Code is more stringent. In lieu of these conditions, this Order incorporates by reference Water Code section 13387(e).

B. Special Provisions

1. Reopener Provisions

The Order may be modified in accordance with the requirements set forth at 40 C.F.R. 122 and 124, to include appropriate conditions or limits based on newly available information, or to implement any new State water quality objectives that are approved by the U.S. EPA. As effluent is further characterized through additional monitoring, and if a need for additional effluent limitations becomes apparent after additional effluent characterization, the Order will be reopened to incorporate such limitations.

2. Special Studies and Additional Monitoring Requirements

a. Toxicity Reduction Requirements

The Order contains the requirement to perform a TRE, if chronic toxicity limitation is exceeded. When toxicity monitoring measures toxicity in the effluent above a whole effluent toxicity effluent limitation established by the Order, the Discharger is required to resample and retest. When all monitoring results are available, the Executive Officer can determine whether to initiate enforcement action, whether to require the Discharger to implement TRE requirements, or whether other measures are warranted.

b. Effluent Bacteria Evaluation

To evaluate potential impacts on human health and assist in public health determinations, the Order contains requirements to conduct monitoring when effluent limitations for total coliform bacteria are exceeded in consecutive monitoring events. The Discharger shall conduct near shore and surf zone monitoring for bacteria in accordance with section VIII.A of the Monitoring and Reporting Program. Results of the increased monitoring for bacteria shall be summarized and submitted in a report to the Executive Officer.

3. Best Management Practices and Pollution Prevention

a. Pollution Prevention Program

A Pollution Prevention Program is a regulatory program administered by the Discharger to prevent the introduction of pollutants into the Facility which will interfere with the operation of the treatment works, pass through the treatment facility, reduce opportunities to recycle and reuse municipal wastewater and sludge, or expose the Facility employees to hazardous chemicals. Although a 301(h) waiver was not applied for or granted to the Discharger, the Facility is anticipated to continue to operate as it has under previous 301(h) waivers, and is unable to provide full secondary treatment to all effluent discharged from the Facility. Thus, this permit continues to implement pollution prevention requirements specified in 40 C.F.R. Part 125.66(d) in lieu of the general pretreatment regulations specified in 40 C.F.R. Part 403.

b. Pollutant Minimization Program

The 2015 Ocean Plan establishes requirements for a Pollutant Minimization Program (PMP) to reduce all potential sources of a pollutant through pollutant minimization control strategies. This Order implements the requirements of section III.C.9 of the Ocean Plan.

4. Construction, Operation, and Maintenance Specifications

The Facility shall be operated as specified under Standard Provisions, Attachment D.

5. Special Provisions for Municipal Facilities (POTWs Only)

a. Biosolids Management

The use and disposal of biosolids is regulated under federal and State laws and regulations, including permitting requirements and technical standards included in 40 C.F.R. 503. The Discharger is required to comply with the standards and time schedules contained in 40 C.F.R. 503.

Title 27, CCR, Division 2, Subdivision 1, section 20005 establishes approved methods for the disposal of collected screenings, residual sludge, biosolids, and other solids removed from liquid wastes. Requirements to ensure the Discharger disposes of solids in compliance with State and federal regulations have been included in this Order.

6. Other Special Provisions

a. Statewide General Waste Discharge Requirements for Sanitary Sewer Systems (State Water Board Order No. 2006-003-DWQ).

The Order requires coverage by and compliance with applicable provisions of General Waste Discharge Requirements for Sanitary Sewer Systems (State Water Board Order No. 2006-003-DWQ). This General Permit, adopted on May 2, 2006, is applicable to all "federal and state agencies, municipalities, counties, districts, and other public entities that own or operate sanitary sewer systems greater than one

mile in length that collect and/or convey untreated or partially treated wastewater to a publicly owned treatment facility in the State of California." The purpose of the General Permit is to promote the proper and efficient management, operation, and maintenance of sanitary sewer systems and to minimize the occurrences and impacts of sanitary sewer overflows.

VII. RATIONALE FOR MONITORING AND REPORTING REQUIREMENTS

40 C.F.R. section 122.48 requires that all NPDES permits specify requirements for recording and reporting monitoring results. Water Code sections 13267 and 13383 authorize the Central Coast Water Board to require technical and monitoring reports. The Monitoring and Reporting Program (MRP), Attachment E, establishes monitoring and reporting requirements that implement federal and state requirements. The following provides the rationale for the monitoring and reporting requirements contained in the MRP for this facility.

A. Influent Monitoring

In addition to influent flow monitoring, monitoring for BOD_5 and TSS is required to determine compliance with the Order's 85 percent removal requirement for these pollutants. Influent monitoring requirements have been retained from the previous Order.

B. Effluent Monitoring

Effluent monitoring is necessary to determine compliance with effluent limitations and evaluate compliance with applicable water quality objectives and criteria. Effluent monitoring requirements from the previous Order for Discharge Point No. 001 are retained in this Order, with some exceptions.

The previous Order established an effluent limitation for acute toxicity, but did not require monitoring. Due to the procedures in Appendix VI of the Ocean Plan, and State and federal anti-backsliding regulations, the effluent limitation for acute toxicity has been carried over to this Order. Acute toxicity monitoring requirements have not been added, based on the use of the more sensitive chronic toxicity monitoring required and initial dilution of 133:1.

Although the effluent limitations for chronic toxicity was retained due to the determination of reasonable potential for various Ocean Plan Table 1 parameters, the MEC for chronic toxicity was 31.2 TUc. This is significantly less than the applicable WQBEL of 134 TUc. Thus, due to the limited risk to exceed the applicable WQBEL, the monitoring frequency for chronic toxicity has been reduced from semiannual to annual.

Monitoring for Ocean Plan Table 1 metals and non-metals for protection of marine aquatic life without reasonable potential was established as once per year. This reduces the monitoring frequency from semiannual to annual.

Monitoring of the parameters for protection of human health without reasonable potential was established as once per permit term. This is consistent with other ocean discharge permits within the region.

Because ammonia did not demonstrate reasonable potential to exceed water quality objectives, the monitoring for ammonia was reduced from monthly to annually. Because the data is not necessary to evaluate compliance with applicable water quality objectives,

monitoring for nitrate, urea, orthophosphate, and dissolved silica was reduced from semiannual to annual.

C. Whole Effluent Toxicity Testing Requirements

See the previous section regarding monitoring frequencies for chronic toxicity. WET limitations protect receiving water quality from the aggregate toxic effect of a mixture of pollutants in the effluent. Chronic toxicity testing is conducted over a longer period of time and may measure mortality, reproduction, and/or growth. Accelerated monitoring requirements have been established in the attached MRP in order to confirm the presence of toxicity in the effluent prior to implementation of TIE and TRE procedures.

D. Receiving Water Monitoring

1. Surface Water

Surf zone monitoring is conducted to assess bacteriological conditions in areas used for body-contact sports (e.g., surfing) and where shellfish may be harvested for human consumption and to assess aesthetic conditions for general recreational uses (e.g., picnicking, boating, etc.).

Ocean monitoring is necessary to evaluate the impacts of the discharge on the receiving water and to determine compliance with surface water limitations.

Surface water receiving water monitoring requirements have been reduced to annually, consistent with the Discharger's demonstrated compliance and consistent with other ocean discharge permits within the region.

Water column surveys have been removed from this permit based on consistent compliance with surface water limitations, analysis of previous water column surveys, planned upgrades to full secondary treatment, and consistent with other municipal wastewater treatment facilities permitted to discharge to ocean waters in the Central Coast region.

2. Groundwater – Not Applicable

E. Other Monitoring Requirements

1. Benthic Monitoring

Benthic monitoring is necessary to assess the temporal and spatial occurrence of pollutants in local marine sediments and to evaluate the physical and chemical quality of the sediments in relation to the outfall. This Order decreases the frequency of benthic sampling from annual to once per permit based on the Facility upgrade to full secondary treatment, previous monitoring results, and consistent with other similar municipal wastewater treatment facilities permitted to discharge to ocean waters in the Central Coast region. Monitoring is required in the first year of the permit in order to maintain a continuous dataset with previous monitoring.

2. Biosolids Monitoring

Biosolids monitoring shall be reported in the annual report in accordance with 40 C.F.R. 503. Biosolids monitoring requirements are similar to the previous Order.

3. Ocean Outfall Inspection

This Order retains the requirement of the previous Order to conduct annual visual inspections of the outfall and diffuser structure and provide a report of this inspection to the Central Coast Water Board regarding the system's physical integrity.

VIII. PUBLIC PARTICIPATION

The Central Coast Water Board considered the issuance of WDRs that will serve as an NPDES permit for the City of Morro Bay/Cayucos Sanitary District Wastewater Treatment Plant. As a step in the WDRs adoption process, Central Coast Water Board staff developed tentative WDRs and encouraged public participation in the WDR adoption process.

A. Notification of Interested Parties

The Central Coast Water Board notified the Discharger and interested agencies and persons of its intent to prescribe WDRs for the discharge and provided an opportunity to submit written comments and recommendations. Notification was provided through publication in the local paper and posting in Discharger's City Hall.

The public had access to the agenda and any changes in dates and locations through the Central Coast Water Board's web site at:
http://www.waterboards.ca.gov/centralcoast/

B. Written Comments

Interested persons were invited to submit written comments concerning tentative WDRs as provided through the notification process. Comments were encouraged to be sent via email to centralcoast@waterboards.ca.gov. Comments may also have been submitted in person, or by mail, to the Executive Office at the Central Coast Water Board at:

Central Coast Water Board
895 Aerovista Place, Suite 101
San Luis Obispo, CA 93401-7906

To be fully responded to by staff and considered by the Central Coast Water Board, the written comments were due at the Central Coast Water Board office by 5:00 p.m. on **November 6, 2017**.

The Central Coast Water Board received written comments from the City of Morro Bay on November 6, 2017, as follows below. Water Board staff's response to comments is provided as well.

1. **Provide additional time to review an administrative draft of the pending time schedule order**. We understand a time schedule order with interim limits will be prepared to address compliance with the new permit. We are concerned that some of the monitoring requirements are not consistent with a secondary treatment permit and may carry over to a permit for the new facility. We respectfully request sufficient time for the City to review an administrative draft of the pending time schedule order.

Staff response: Water Board staff will be working closely with Discharger to develop realistic milestones and compliance dates for the pending time schedule order. Water Board staff intends to have the time schedule order implemented prior to the effective date of this permit.

2. **Update the Draft Permit to conform to the current Ocean Plan**. The Draft Permit cites objectives from the 2012 California Ocean Plan. However, that plan has been superseded by the 2015 Ocean Plan. The Tentative Order (Draft Permit) should revise its requirements to conform to the current Ocean Plan.

   Staff Response: Corrections have been made.

3. **Cite a Consistent Annual Report Due Date of April 1**. The Draft Permit contains conflicting dates for the submission of the Annual Monitoring Report, including January 30 (Page D-13), February 1 (Table E-12), and April 1 (Page E-26). We request the various references to an annual monitoring report submission deadline be revised to reflect an April 1 deadline. Only the April 1st deadline is tenable. That date is consistent with the Current Permit's submission deadline requirement. Earlier submission dates would be difficult to achieve. The data collection, laboratory processing of field samples, and analysis of instrumental data are sequential and require a finite amount of time. Many of these steps can only be initiated after the beginning of the year. An earlier deadline would leave little time for assimilating and reporting on the results, and the quality and scope of the final report would suffer greatly.

   Staff Response: Annual monitoring report expectation is April 1st; corrections have been made for consistency.

4. **Eliminate the Cat-Litter Public-Outreach Program.** The Draft Permit retains a nebulous cat-litter requirement that is an outdated relic of the previous permit-renewal process conducted a decade ago. This problematic permit requirement has been the subject of considerable criticism in every annual monitoring report since the current permit was approved (See Pages 2-17, 2-18, and 3-9 in http://www.morro-bay.ca.us/Archive.aspx?ADID=2757 and prior annual reports posted on the City of Morro Bay Website since 2009). As discussed in those reports, we request elimination of this requirement for the following reasons.
   a) The requirement arose out of a Section 7 consultation with the USFW service by the EPA as part of their biological evaluation of current 301(h)-modified permit. The new Draft Permit is not 301(h) modified, and therefore EPA and USFW evaluations and Section 7 consultations are no longer part of the regulatory process. Consequently, there is no mechanism for those regulatory agencies to address new scientific information and revisit the original Cat-Litter requirement.
   b) Shortly after final approval of the current MBCSD permit in 2009, results from a comprehensive field study (Johnson et al. 2009) were published that confirmed that disease vectors unrelated to WWTP discharge are responsible for the observed T. gondii exposure in otters, and that the epicenter for sea otter infection is not within Estero Bay. As such, there is no longer any scientific rationale for continuation of a dedicated outreach program specific to cat-litter disposal in the MBCSD collection system.
   c) None of the other regional ocean dischargers have a similar requirement, including the recently approved permits for Goleta, Avila, and Carpinteria. It is not as though the MBCSD is the only ocean discharger with cats located within its collection area, or that have southern sea otters within its receiving waters.
   d) Numerous nebulous requirements dealing with cat litter are included in multiple locations within the Draft Permit (Pages 20, E-27, F-7, F-40, and F-41). The

annual requirements for "implementation goals…work plans…quantifiable measures for goals…descriptions of actions taken…reevaluations with adequate justification" are vague and make quantitative evaluation of compliance with the requirement unattainable.

Staff Response: Water Board staff concurs with Discharger's comments and has reviewed the data from the annual reports submitted. Since the time of the original cat-litter public outreach program, the Central Coast Water Board has shifted similar programs to NPDES stormwater programs, when the programs are deemed necessary. Consistent with this practice for other areas in the Central Coast region, we will remove the cat-litter program from this permit and the stormwater program would be the appropriate regulatory program, if deemed necessary.

5. **Eliminate the Acute Toxicity Requirement**. A requirement for an annual acute toxicity test was added to the Draft Permit apparently because the Current Permit did not require that test and therefore, an RPA could not be performed (Page F-31). However, the acute toxicity test requirement was specifically excluded from the Current Permit for a variety of reasons. All of those same reasons apply to the Draft Permit. Specifically, ammonia interference introduces substantial inaccuracy in reported test results, and there is no technical or regulatory rationale for requiring acute toxicity testing of MBCSD effluent. For the following reasons, we request elimination of the acute toxicity testing requirement from the effluent monitoring requirements (Table E-3 on Page E-56). Alternatively, if inclusion of some form of acute testing requirement is deemed necessary, the requirement for conducting an acute test should be triggered by an elevated chronic test result that exceeds 90% (120 TUc) of the effluent limit. At a minimum, given the great uncertainty in the reported acute toxicity results, all Toxicity Reduction Requirements should only be based on a chronic toxicity triggering level, and not a trigger related to the acute bioassay results. Much of the rationale for eliminating the acute toxicity monitoring requirement was presented during the development of the current discharge permit, and has been presented in annual monitoring reports prior to 2009 (see Pages 2-38 thru 2-41 of the 2008 Annual Report available at: http://www.morro-bay.ca.us/Archive.aspx?ADID=124). Some of the major points are summarized below.
    a) The Draft Permit fact sheet [Page F-31] correctly states that the California Ocean Plan (COP) requires chronic toxicity testing for dischargers when dilution is between 100:1 to 350:1, but does not acknowledge that the COP also states that acute tests are discretionary within that dilution range. In fact, at 133:1, the MBCSD discharge is at the lower end of that range, and for dischargers with slightly lower dilutions, below 100:1, acute testing is not required under any circumstances.
    b) Acute testing is unnecessarily redundant when chronic testing is also required as part of the WDRs because chronic tests provide far more accurate and sensitive measures of effluent toxicity. In Functional Equivalent Documents supporting the COP, State Board "Staff agrees that critical life stage tests are more sensitive indicators of receiving water impacts than acute toxicity tests."
    c) Acute tests conducted on MBCSD effluent during prior permit cycles have resulted in highly erroneous measures of toxicity that provided no insight into the actual toxicity of the discharge. Over two decades of acute testing prior to the current permit have demonstrated that the presence of ammonia in the MBCSD effluent samples severely compromises the accurate determination of acute toxicity.
    d) Even within these past artificially elevated acute-toxicity measurements, the reported acute toxicity of the MBCSD discharge has been less than half of the more-stringent effluent limitation cited in the WDRs of that period. Consequently,

even the past artificially inflated acute-toxicity values cannot be considered a threat to beneficial uses.

e) The acute toxicity limit is intended to prevent lethality to organisms passing through the acute mixing zone. For the MBCSD discharge, the prescribed mixing zone is highly localized around the outfall, and extends only 1.5 m (4.9 ft) from the point of discharge. Field measurements collected at that distance within MBCSD discharge jets show that the effluent had already been diluted more than 100-fold, which is 25-times more dilute than the effluent tested in the bioassays. The only conceivable beneficial use that could be impacted within that narrow zone would be fishing. However, finfish are likely to avoid the turbulent discharge jet. Acute toxicity tests continuously expose organisms over a four-day period and do not reflect the brief duration of any potential finfish exposure.

Staff Response: Water Board staff has reviewed the existing Order's permitting history with regards to acute toxicity testing requirements. The existing permit's Fact Sheet (page F-36) provided Staff Response 6 regarding the removal of acute toxicity monitoring requirement. The same conditions still apply. Chronic toxicity testing is a more sensitive and accurate measure of whole effluent toxicity than acute toxicity. In this case, with an initial dilution of 133:1, chronic toxicity testing provides adequate protection of beneficial uses. Acute toxicity testing is unnecessary. Staff has removed the acute toxicity monitoring requirement.

6. **Reduce the Monitoring Frequency for Cyanide and TCDD Equivalents**. Based on an RPA conducted on a limited dataset collected 3 years ago, the Draft Permit established monitoring frequencies for cyanide of twice per year and a TCDD equivalents (dioxin) monitoring frequency of once per year. However, the RPA finding that these two constituents have a reasonable potential to exceed water-quality objectives is an artifact of uncertainty introduced by the limited time span of the datasets. Attachment A to the comment letter contains the RPA input and results for a more representative 14-year dataset spanning the period from 2004 thru 2017. Analysis of that data conclusively determines an RPA endpoint of 2, indicating that an effluent limitation is not required for those pollutants. We request the monitoring frequency for cyanide and TCDD equivalents be reduced to once in the life of the permit.

   Staff Response: Water Board staff reviewed the updated reasonable potential analysis for cyanide and TCDD provided by the Discharger. The data supports an endpoint of 2, and therefore similar to other endpoint 2 pollutants, an effluent limitation is not required for those pollutants, and the frequency of monitoring has been changed to similarly grouped parameters with endpoint 2 (once per permit term).

7. **Remove the effluent nutrient monitoring requirement**. A provision for nutrient monitoring was incorporated into the Current Permit to address concerns regarding the MBCSD's potential nutrient contribution to the generation of harmful algal blooms offshore central California. However, chemical analyses on nitrate, urea, orthophosphate, and silica that were conducted in every annual report produced in the current permit cycle, demonstrate unequivocally that nutrient concentrations within the MBCSD effluent, and their mass loading to the marine environment from its discharge, are miniscule compared to both other central-coast dischargers, and the contribution from regional streams and rivers. These nutrient comparisons are provided in Section 2.2.11 on Pages 2-32 thru 2-34 and on Pages 5-9 and 5-10 of 2015 Annual Report available at: http://www.morro-bay.ca.us/Archive.aspx?ADID=2757. Some of that discussion is summarized below. We request that the effluent nutrient monitoring requirement (nitrate, urea, orthophosphate, and dissolved silica in Table E-3 on Page E-5 of the draft permit) be removed.

a) In contrast to the other effluent parameters, there are no effluent limits associated with these four nutrients and therefore, they have no bearing on compliance assessments.
b) Nutrient loading from the MBCSD WWTP is several orders-of-magnitude lower than both runoff and discharge from other central-coast WWTP's, and far smaller than the nutrient loading from naturally occurring processes such as upwelling.
c) Additionally, it is clear that nutrient loads from the MBCSD discharge are unrelated to the frequency or intensity of the algal blooms occurring along this stretch of coastline. Consequently, continued nutrient monitoring provides no scientifically valid or usable information relevant to the prediction or management of algal blooms, and should be discontinued.
d) Other, much larger central coast dischargers are no longer required to monitor for nutrients and it is unreasonable to impose this additional requirement only on the MBCSD discharge.

Staff Response: Water Board staff does not recommend revisions to the draft permit based on Discharger's comments. Nutrient discharge and loading continues to be a concern in the region, and other municipal wastewater treatment plants are monitoring for nutrient discharges. The nutrient monitoring data continues to provide value to potential impacts to the discharge environment.

8. **Reduce the requirements for offshore benthic surveys and eliminate the requirement for water-column surveys**. The requirement for annual offshore benthic and water-column surveys is not warranted for a variety of reasons. We request that the requirement for water-column surveys be eliminated, and the frequency of benthic surveying be reduced to once-in-the-life of the permit. Justification and discussion is provided below.
    a) The offshore benthic and water-column surveys are labor intensive to conduct and time consuming to analyze, and as a result, are far more expensive than end-of-pipe chemical assays.
    b) The months of effort expended on these offshore surveys will not result in monitoring program that is more protective of the marine environment than achieved by the routine onshore effluent monitoring already implemented in the permit. End-of-pipe monitoring provides an immediate and easily-interpreted assessment of potential marine impacts that may result from a decline in effluent quality. In contrast, offshore monitoring requires complex analyses to determine the presence of long-term changes in a highly variable marine environment.
    c) The quarter-century of data already amassed by the MBCSD offshore monitoring program has never indicated any marine impacts from the discharge. It is highly unlikely that continued offshore monitoring of similar intensity will result in a different finding.
    d) The proposed offshore monitoring program is more intensive than that of other dischargers of similar or larger discharge volume. For example, as with most small ocean dischargers, the new Goleta permit does not require offshore water-column surveys, and limits the benthic sampling to once-in-the-life of the permit. This level of monitoring is also appropriate for the MBCSD discharge given that its flow is four-times smaller, its offshore dilution is 10% greater, and it services a less-industrialized collection area.
    e) The small volume of effluent discharged by the MBCSD is much higher quality than that achieved by primary treatment alone because the majority of effluent receives secondary treatment. TSS and BOD concentrations within the MBCSD discharge are the only effluent constituents that may occasionally slightly exceed

full-secondary standards, but because of the limited discharge volume, TSS and BOD loading to the environment is similarly limited. Moreover, the MBCSD discharge volume has declined in recent years and additional declines are expected when the Cayucos treatment plant is commission next year.

f) The Draft MBCSD Permit is no longer covered by Section 301(h) of the Clean Water Act, and as such, it not legally subject to the intensive offshore monitoring program specifically mandated in that section of the Federal Regulations. From a regulatory standpoint, it is inconsistent to impose these exhaustive monitoring requirements when the other 301(h) provisions were eliminated in the Draft Permit.

Staff Response: Water Board staff agrees with the Discharger's comments regarding the conclusions from the existing, intensive monitoring program. The comprehensive data set gathered during the previous Orders' offshore monitoring programs do not indicate an impact from the discharge on the marine environment. Additionally, since the Facility will no longer operate with a 301(h) waiver, reducing the monitoring to requirements consistent with other facilities within the region is supported. Monitoring requirements have been changed accordingly.

9. **Correct the effluent concentration and loading limits for heptachlor and Heptachlor epoxide in Table 7 on Page 9, Table F-6 on Page F-13, and Table F14c on Pages F-29 and F-30.** The respective concentration limits should be 0.0067 µg/L and 0.00268 µg/L, and the loadings should be 1.15 x 10-4 lbs/day and 4.6 x 10-5 lbs/day. This request was made in Comment 32 of Attachment F – Fact Sheet for the current permit, but was never implemented in the final permit.

   Staff Response: Water Board staff verified the units with the 2015 California Ocean Plan. The Discharger is correct regarding the values. Corrections have been made.

10. The City also requests the Regional Water Quality Control Board acknowledge the City is pursuing a recycled water program, and salt reduction in the collection system will be critical to reducing capital and operating cost for production of recycled water. Based on sampling conducted in June and July of 2015, the City estimated that brine from self-regenerating water softeners contributed 12% of total dissolved solids (TDS) and 19% of chlorides to wastewater treatment plant (WWTP) influent (January 5, 2016, Presentation to Water Reclamation Facility Citizens Advisory Committee).

    Staff Response: The Central Coast Water Board encourages, consistent with the State Recycled Water Policy, communities to plan for maximizing the extent of recycled water production and use. Water Board staff will continue to work with Dischargers to encourage and facilitate recycled water projects, including the City of Morro Bay.

C. Public Hearing

The Central Coast Water Board held a public hearing on the proposed WDRs during its regular Board meeting as follows:

Date:	December 7, 2017
Time:	8 am – 5 pm
Location:	Central Coast Water Board 895 Aerovisa Place, Suite 101

San Luis Obispo, CA 93401

Interested persons were invited to attend. At the public hearing, the Central Coast Water Board offered to hear testimony, pertinent to the discharge, WDR's, and permit. For accuracy of the record, important testimony is requested in writing. The item was considered on the consent calendar. Mr. Rob Livick from the City of Morro Bay Public Works Department provided a brief update on the City's activities presented in the Staff Report for this item. No members of the public requested comment, or was any provided.

D. Reconsideration of Waste Discharge Requirements

Any aggrieved person may petition the State Water Board to review the decision of the Regional Water Board regarding the final WDRs. The petition must be received by the State Water Board at the following address within 30 calendar days of the Regional Water Board's action.

State Water Resources Control Board
Office of Chief Counsel
P.O. Box 100, 1001 I Street
Sacramento, CA 95812-0100

For instructions on how to file a petition for review, see:
http://www.waterboards.ca.gov/public_notices/petitions/water_quality/wqpetition_instr.shtml

E. Information and Copying

The Report of Waste Discharge, other supporting documents, and comments received are on file and may be inspected at the address above at any time between 8:00 a.m. and 5:00 p.m., Monday through Friday. Copying of documents may be arranged through the Central Coast Water Board by calling (805) 549-3147.

F. Register of Interested Persons

Any person interested in being placed on the mailing list for information regarding the WDRs and NPDES permit should contact the Central Coast Water Board reference this Facility, and provide a name, address, and phone number.

G. Additional Information

Requests for additional information or questions regarding this order should be directed to Katie DiSimone at (805) 542-4638 (Katie.disimone@waterboards.ca.gov) or Sheila Soderberg at (805) 549-3592 (Sheila.soderberg@waterboards.ca.gov).

Appendix E:
Architectural Space Needs Outline

Morro Bay Water Reclamation Facility

ARCHITECTURAL SPACE NEEDS OUTLINE

OPERATIONS BUILDING

Provide an operations and administration building that will provide workspace for up to sixteen employees. Include three private office spaces, a control room/operations center with work spaces for thirteen employees (not necessarily all at the same time), a map storage and copy room, a break/training room, a conference room, sufficient gender-neutral showers and restrooms, uniform storage, an electrical room, a server room, and a janitorial/mechanical room.

Administration

Space Function
Three Private Offices (Manager plus two)

Operations

Space Function	Notes
Control Room-OPS Center	Work stations for up to 8 simultaneously
Map/Copy-Work Room	
Two Sample Storage Rooms	Access from exterior

Support Spaces

Space Function	Notes
Training-Break Room	
Storage Room	
Conference Room	
Gender-Neutral Restrooms	Adjacent to Uniform storage
Gender-Neutral Locker Room and Showers	
Uniform Storage (Lockers)	
Server Room	
Janitor-Mechanical Room	
Electrical Room	

SHOP/MAINTENANCE BUILDING

Provide a shop/maintenance building that will provide an open shop/storage area with drive through bay for service vehicles, plus a laboratory, restroom, instrumentation and controls (I&C) workshop, and a satellite operations room.

Space Function
Shop and Storage Space
I + C Workshop
Restroom
Laboratory – for process, not regulatory lab work
Satellite Operations Room

Appendix F:
Not Used

Appendix G:
Architectural Space Needs Identification Forms

SPACE IDENTIFICATION

ROOM NAME: **Offices**

SPACE USE

PRIMARY ACTIVITIES:	SECONDARY ACTIVITIES:
Work space	Meeting space
SPECIAL REQUIREMENTS:	

UTILIZATION	ACCESS	SECURITY
■ 10 HRS / DAY	☐ PUBLIC	☐ NO LOCK ☐ KEYPAD
☐ 24 HRS / DAY	■ STAFF	■ KEY LOCK ☐ CARD KEY
☐ OTHER	☐ SECURE	

SPACE RELATIONSHIPS

ADJACENCIES:

3 offices near reception; 2 closer to Staff Entry

SPECIAL REQUIREMENTS:

FLOOR LEVEL LOCATION
- ■ FIRST
- ☐ SECOND
- ☐ NO PREFERENCE

ISOLATION
- SOUND: ■ YES ☐ NO
- VISUAL: ☐ YES ■ NO

SPACE CHARACTERISTICS

FLOOR FINISH	WALL FINISH	CEILING FINISH	CEILING HEIGHT	GLAZING/WINDO COVER	SOUND/ACOUSTIC TREATMENT
☐ SEALED CONCRETE	■ PAINT	■ ACOUSTIC TILE	■ 9'-0'	■ TITLE 24	☐ NONE
■ POLISHED CONCRETE	❑ TACKABLE SURFACE	☐ DRY WALL	☐ 12'-14'	☐ TINTED	■ WALL INSULATION
☐ CARPET	❑ CERAMIC TILE	☐ EXPOSED	☐ OTHER	■ ROLLER SHADE	☐ CEILING INSULATION
☐ CARPET TILE	☐ WALLCOVERING	☐ SKYLIGHT		☐ NO WINDOW	☐ INSULATED DOOR
☐ RESILIENT	❑ WAINSCOT	☐ OTHER		☐ OTHER:	☐ OTHER
❑ CERAMIC TILE				☐ ONE-WAY GLASS	
❑ RUBBER					

DOOR	DOOR FINISH	CASEWORK FINISH	CASEWORK TYPE	COUNTERTOPS
☐ WOOD	■ PAINT	☐ PLASTIC LAMINATE	☐ BASE CABINET	■ PLASTIC LAMINATE
■ METAL	☐ STAINED	☐ PAINTED WOOD	☐ UPPER CABINET	☐ SOLID PHENOLIC
■ METAL FRAME	☐ LAMINATE	☐ STAINED WOOD	☐ FULL HEIGHT CABINET	☐ SOLID SURFACE POLYMER
☐ DOUBLE		☐ SOLID PHENOLIC	☐ PANTRY	☐ HEIGHT _____
☐ FULL LITE			☐ WARDROBE	☐ DEPTH _____
■ HALF LITE			☐ EXPOSED SHELVING	
☐ SIDE LIGHT			☐ LOCK	
☐ OTHER			☐ BUILT-IN	
			■ SYSTEM FURNISHING	

SPECIAL REQUIREMENTS:

MECHANICAL AND ELECTRICAL REQUIREMENTS

LIGHTING	HVAC	PLUMBING	ELECTRICAL POWER	COMMUNICATION
■ NATURAL LIGHT	☐ EXHAUST FAN	☐ COMPRESSED AIR	☐ 120V DEDICATED OUTLET	■ PHONE/DATA
■ TASK	☐ THERMOSTAT	☐ GAS	☐ EMERGENCY POWER	■ VIDEO/CABLE
■ DIMMER	☐ OTHER	☐ HOSE BIBB	☐ OTHER	☐ AUDIO SYSTEM
■ GENERAL ROOM		☐ SINK		☐ CCTV
		☐ DRINKING FOUNTAIN		■ OTHER:
		☐ OTHER		

SPECIAL REQUIREMENTS:

SCADA access

GENERAL COMMENTS/REMARKS:

SPACE IDENTIFICATION

ROOM NAME: **Control Room - Operations Center**

SPACE USE

PRIMARY ACTIVITIES:	SECONDARY ACTIVITIES:	UTILIZATION	ACCESS	SECURITY
Work space		☐ 10 HRS / DAY ■ 24 HRS / DAY ☐ OTHER	☐ PUBLIC ■ STAFF ☐ SECURE	☐ NO LOCK ☐ KEYPAD ■ KEY LOCK ☐ CARD KEY
SPECIAL REQUIREMENTS:				

SPACE RELATIONSHIPS

ADJACENCIES:	FLOOR LEVEL LOCATION	ISOLATION
Control workstations	■ FIRST ☐ SECOND ☐ NO PREFERENCE	SOUND: ■ YES ☐ NO VISUAL: ☐ YES ■ NO
SPECIAL REQUIREMENTS:		

SPACE CHARACTERISTICS

FLOOR FINISH	WALL FINISH	CEILING FINISH	CEILING HEIGHT	GLAZING/WINDOW COVER	SOUND/ACOUSTIC TREATMENT
☐ SEALED CONCRETE ■ POLISHED CONCRETE ☐ CARPET ☐ CARPET TILE ☐ RESILIENT ❑ CERAMIC TILE ❑ RUBBER	■ PAINT ■ TACKABLE SURFACE ❑ CERAMIC TILE ☐ WALLCOVERING ❑ WAINSCOT	■ ACOUSTIC TILE ☐ DRY WALL ☐ EXPOSED ☐ SKYLIGHT ☐ OTHER	■ 9'-0' ☐ 12'-14' ☐ OTHER	■ TITLE 24 ☐ TINTED ■ ROLLER SHADE ☐ NO WINDOW ☐ OTHER: ☐ ONE-WAY GLASS	☐ NONE ■ WALL INSULATION ☐ CEILING INSULATION ☐ INSULATED DOOR ☐ OTHER

DOOR	DOOR FINISH	CASEWORK FINISH	CASEWORK TYPE	COUNTERTOPS
☐ WOOD ■ METAL ■ METAL FRAME ■ DOUBLE ☐ FULL LITE ■ HALF LITE ☐ SIDE LIGHT ☐ OTHER	■ PAINT ☐ STAINED ☐ LAMINATE	■ PLASTIC LAMINATE ☐ PAINTED WOOD ☐ STAINED WOOD ☐ SOLID PHENOLIC	☐ BASE CABINET ☐ UPPER CABINET ☐ FULL HEIGHT CABINET ☐ PANTRY ☐ WARDROBE ☐ EXPOSED SHELVING ☐ LOCK ☐ BUILT-IN ■ SYSTEM FURNISHING	■ PLASTIC LAMINATE ☐ SOLID PHENOLIC ☐ SOLID SURFACE POLYMER ☐ HEIGHT _____ ☐ DEPTH _____

SPECIAL REQUIREMENTS:

Whiteboards, bank of three large monitors

MECHANICAL AND ELECTRICAL REQUIREMENTS

LIGHTING	HVAC	PLUMBING	ELECTRICAL POWER	COMMUNICATION
■ NATURAL LIGHT ■ TASK ■ DIMMER ■ GENERAL ROOM	☐ EXHAUST FAN ☐ THERMOSTAT ☐ OTHER	☐ COMPRESSED AIR ☐ GAS ☐ HOSE BIBB ☐ SINK ☐ DRINKING FOUNTAIN ☐ OTHER	☐ 120V DEDICATED OUTLET ■ EMERGENCY POWER ☐ OTHER	■ PHONE/DATA ☐ VIDEO/CABLE ☐ AUDIO SYSTEM ☐ CCTV ■ OTHER:

SPECIAL REQUIREMENTS:

SCADA display

GENERAL COMMENTS/REMARKS:

SPACE IDENTIFICATION

ROOM NAME: **Map Room**

SPACE USE

PRIMARY ACTIVITIES:	SECONDARY ACTIVITIES:
Maps and Reference Library	Meeting space
SPECIAL REQUIREMENTS:	

UTILIZATION
- ■ 10 HRS / DAY
- ■ 24 HRS / DAY
- ☐ OTHER

ACCESS
- ☐ PUBLIC
- ■ STAFF
- ☐ SECURE

SECURITY
- ☐ NO LOCK
- ■ KEY LOCK
- ☐ KEYPAD
- ☐ CARD KEY

SPACE RELATIONSHIPS

ADJACENCIES:

Operations

SPECIAL REQUIREMENTS:

FLOOR LEVEL LOCATION
- ■ FIRST
- ☐ SECOND
- ☐ NO PREFERENCE

ISOLATION

SOUND: ■ YES ☐ NO

VISUAL: ☐ YES ■ NO

SPACE CHARACTERISTICS

FLOOR FINISH
- ☐ SEALED CONCRETE
- ■ POLISHED CONCRETE
- ☐ CARPET
- ☐ CARPET TILE
- ☐ RESILIENT
- ❑ CERAMIC TILE
- ❑ RUBBER

WALL FINISH
- ■ PAINT
- ❑ TACKABLE SURFACE
- ❑ CERAMIC TILE
- ☐ WALLCOVERING
- ❑ WAINSCOT

CEILING FINISH
- ■ ACOUSTIC TILE
- ☐ DRY WALL
- ☐ EXPOSED
- ☐ SKYLIGHT
- ☐ OTHER

CEILING HEIGHT
- ☐ 9'-0'
- ■ 12'-14'
- ☐ OTHER

GLAZING/WINDOW COVER
- ■ TITLE 24
- ☐ TINTED
- ■ ROLLER SHADE
- ☐ NO WINDOW
- ☐ OTHER:
- ☐ ONE-WAY GLASS

SOUND/ACOUSTIC TREATMENT
- ☐ NONE
- ■ WALL INSULATION
- ☐ CEILING INSULATION
- ☐ INSULATED DOOR
- ☐ OTHER

DOOR
- ☐ WOOD
- ■ METAL
- ■ METAL FRAME
- ☐ DOUBLE
- ☐ FULL LITE
- ■ HALF LITE
- ☐ SIDE LIGHT
- ☐ OTHER

DOOR FINISH
- ■ PAINT
- ☐ STAINED
- ☐ LAMINATE

CASEWORK FINISH
- ■ PLASTIC LAMINATE
- ☐ PAINTED WOOD
- ☐ STAINED WOOD
- ☐ SOLID PHENOLIC

CASEWORK TYPE
- ■ BASE CABINET
- ☐ UPPER CABINET
- ☐ FULL HEIGHT CABINET
- ☐ PANTRY
- ☐ WARDROBE
- ☐ EXPOSED SHELVING
- ☐ LOCK
- ☐ BUILT-IN
- ☐ SYSTEM FURNISHING

COUNTERTOPS
- ■ PLASTIC LAMINATE
- ☐ SOLID PHENOLIC
- ☐ SOLID SURFACE POLYMER
- ☐ HEIGHT _____
- ☐ DEPTH _____

SPECIAL REQUIREMENTS:

Whiteboard, Tables to lay out maps, wall mounted maps, free-standing flat files for maps

MECHANICAL AND ELECTRICAL REQUIREMENTS

LIGHTING
- ■ NATURAL LIGHT
- ☐ TASK
- ■ DIMMER
- ■ GENERAL ROOM

HVAC
- ☐ EXHAUST FAN
- ☐ THERMOSTAT
- ☐ OTHER

PLUMBING
- ☐ COMPRESSED AIR
- ☐ GAS
- ☐ HOSE BIBB
- ☐ SINK
- ☐ DRINKING FOUNTAIN
- ☐ OTHER

ELECTRICAL POWER
- ☐ 120V DEDICATED OUTLET
- ☐ EMERGENCY POWER
- ☐ OTHER

COMMUNICATION
- ■ PHONE/DATA
- ☐ VIDEO/CABLE
- ☐ AUDIO SYSTEM
- ☐ CCTV
- ■ OTHER:

SPECIAL REQUIREMENTS:

GENERAL COMMENTS/REMARKS:

SPACE IDENTIFICATION

ROOM NAME: **Sample Storage**

SPACE USE

PRIMARY ACTIVITIES:	SECONDARY ACTIVITIES:
Storage	

SPECIAL REQUIREMENTS:
Access from exterior – direct outdoor access

UTILIZATION	ACCESS	SECURITY
■ 10 HRS / DAY	☐ PUBLIC	☐ NO LOCK ☐ KEYPAD
☐ 24 HRS / DAY	■ STAFF	■ KEY LOCK ☐ CARD KEY
☐ OTHER	☐ SECURE	

SPACE RELATIONSHIPS

ADJACENCIES:
Lab

SPECIAL REQUIREMENTS:

FLOOR LEVEL LOCATION
- ■ FIRST
- ☐ SECOND
- ☐ NO PREFERENCE

ISOLATION
- SOUND: ☐ YES ■ NO
- VISUAL: ☐ YES ■ NO

SPACE CHARACTERISTICS

FLOOR FINISH	WALL FINISH	CEILING FINISH	CEILING HEIGHT	GLAZING/WINDOW COVER	SOUND/ACOUSTIC TREATMENT
■ SEALED CONCRETE	■ PAINT	☐ ACOUSTIC TILE	■ 9'-0'	☐ STANDARD	■ NONE
☐ POLISHED CONCRETE	❑ TACKABLE SURFACE	☐ DRY WALL	☐ 12'-14'	☐ TINTED	☐ WALL INSULATION
☐ CARPET	❑ CERAMIC TILE	■ EXPOSED	☐ OTHER	☐ BLINDS	☐ CEILING INSULATION
☐ CARPET TILE	☐ WALLCOVERING	☐ SKYLIGHT		■ NO WINDOW	☐ INSULATED DOOR
☐ RESILIENT	❑ WAINSCOT	☐ OTHER		☐ OTHER:	☐ OTHER
❑ CERAMIC TILE				☐ ONE-WAY GLASS	
❑ RUBBER					

DOOR	DOOR FINISH	CASEWORK FINISH	CASEWORK TYPE	COUNTERTOPS
☐ WOOD	■ PAINT	☐ PLASTIC LAMINATE	☐ BASE CABINET	☐ PLASTIC LAMINATE
■ FIBERGLASS	☐ STAINED	☐ PAINTED WOOD	☐ UPPER CABINET	☐ SOLID PHENOLIC
■ FIBERGLASS FRAME	☐ LAMINATE	☐ STAINED WOOD	☐ FULL HEIGHT CABINET	☐ SOLID SURFACE POLYMER
☐ DOUBLE		☐ SOLID PHENOLIC	☐ PANTRY	☐ HEIGHT _____
☐ FULL LITE			☐ WARDROBE	☐ DEPTH _____
☐ HALF LITE			■ EXPOSED SHELVING	
☐ SIDE LIGHT			☐ LOCK	
■ LOUVER			☐ BUILT-IN	
			☐ SYSTEM FURNISHING	

SPECIAL REQUIREMENTS:

MECHANICAL AND ELECTRICAL REQUIREMENTS

LIGHTING	HVAC	PLUMBING	ELECTRICAL POWER	COMMUNICATION
☐ NATURAL LIGHT	■ EXHAUST FAN	☐ COMPRESSED AIR	☐ 120V DEDICATED OUTLET	☐ PHONE/DATA
☐ TASK	☐ THERMOSTAT	☐ GAS	☐ EMERGENCY POWER	☐ VIDEO/CABLE
☐ DIMMER	☐ OTHER	☐ HOSE BIBB	☐ OTHER	☐ AUDIO SYSTEM
■ GENERAL ROOM		☐ SINK		☐ CCTV
		☐ DRINKING FOUNTAIN		☐ OTHER:
		☐ OTHER		

SPECIAL REQUIREMENTS:

GENERAL COMMENTS/REMARKS:

SPACE IDENTIFICATION

ROOM NAME: **Training - Break Room**

SPACE USE

PRIMARY ACTIVITIES:	SECONDARY ACTIVITIES:
Training Classroom	Meeting space-break room
SPECIAL REQUIREMENTS:	

UTILIZATION
- ■ 10 HRS / DAY
- ☐ 24 HRS / DAY
- ☐ OTHER

ACCESS
- ☐ PUBLIC
- ■ STAFF
- ☐ SECURE

SECURITY
- ☐ NO LOCK
- ■ KEY LOCK
- ☐ KEYPAD
- ☐ CARD KEY

SPACE RELATIONSHIPS

ADJACENCIES:

SPECIAL REQUIREMENTS:
Would like to be accessible to outdoor patio

FLOOR LEVEL LOCATION
- ■ FIRST
- ☐ SECOND
- ☐ NO PREFERENCE

ISOLATION
- SOUND: ■ YES ☐ NO
- VISUAL: ☐ YES ■ NO

SPACE CHARACTERISTICS

FLOOR FINISH
- ☐ SEALED CONCRETE
- ■ POLISHED CONCRETE
- ☐ CARPET
- ☐ CARPET TILE
- ☐ RESILIENT
- ❑ CERAMIC TILE
- ❑ RUBBER

WALL FINISH
- ■ PAINT
- ■ TACKABLE SURFACE
- ❑ CERAMIC TILE
- ☐ WALLCOVERING
- ❑ WAINSCOT

CEILING FINISH
- ■ ACOUSTIC TILE
- ☐ DRY WALL
- ☐ EXPOSED
- ☐ SKYLIGHT
- ☐ OTHER

CEILING HEIGHT
- ■ 9'-0'
- ☐ 12'-14'
- ☐ OTHER

GLAZING/WINDOW COVER
- ■ TITLE 24
- ☐ TINTED
- ■ ROLLER SHADE
- ☐ NO WINDOW
- ☐ OTHER:
- ☐ ONE-WAY GLASS

SOUND/ACOUSTIC TREATMENT
- ☐ NONE
- ■ WALL INSULATION
- ☐ CEILING INSULATION
- ☐ INSULATED DOOR
- ☐ OTHER

DOOR
- ☐ WOOD
- ■ METAL
- ■ METAL FRAME
- ☐ DOUBLE
- ☐ FULL LITE
- ■ HALF LITE
- ☐ SIDE LIGHT
- ☐ OTHER

DOOR FINISH
- ■ PAINT
- ☐ STAINED
- ☐ LAMINATE

CASEWORK FINISH
- ■ PLASTIC LAMINATE
- ☐ PAINTED WOOD
- ☐ STAINED WOOD
- ☐ SOLID PHENOLIC

CASEWORK TYPE
- ■ BASE CABINET
- ■ UPPER CABINET
- ☐ FULL HEIGHT CABINET
- ☐ PANTRY
- ☐ WARDROBE
- ☐ EXPOSED SHELVING
- ■ LOCK
- ☐ BUILT-IN
- ☐ SYSTEM FURNISHING

COUNTERTOPS
- ☐ PLASTIC LAMINATE
- ☐ SOLID PHENOLIC
- ■ SOLID SURFACE POLYMER
- ☐ HEIGHT _____
- ☐ DEPTH _____

SPECIAL REQUIREMENTS:
Selected cabinets to have locks

MECHANICAL AND ELECTRICAL REQUIREMENTS

LIGHTING
- ■ NATURAL LIGHT
- ☐ TASK
- ■ DIMMER
- ■ GENERAL ROOM

HVAC
- ■ EXHAUST FAN
- ■ THERMOSTAT
- ☐ OTHER

PLUMBING
- ☐ COMPRESSED AIR
- ☐ GAS
- ☐ HOSE BIBB
- ■ SINK
- ☐ DRINKING FOUNTAIN
- ☐ OTHER

ELECTRICAL POWER
- ☐ 120V DEDICATED OUTLET
- ☐ EMERGENCY POWER
- ☐ OTHER

COMMUNICATION
- ■ PHONE/DATA
- ■ VIDEO/CABLE
- ☐ AUDIO SYSTEM
- ☐ CCTV
- ■ OTHER:

SPECIAL REQUIREMENTS:
SCADA data, Large wall monitor, whiteboards . Filter system for drinking water

GENERAL COMMENTS/REMARKS:

SPACE IDENTIFICATION

ROOM NAME: **Table and Chair Storage**

SPACE USE

PRIMARY ACTIVITIES:	SECONDARY ACTIVITIES:	UTILIZATION	ACCESS	SECURITY
Storage		■ 10 HRS / DAY ☐ 24 HRS / DAY ☐ OTHER	☐ PUBLIC ■ STAFF ☐ SECURE	■ NO LOCK ☐ KEYPAD ☐ KEY LOCK ☐ CARD KEY
SPECIAL REQUIREMENTS:				

SPACE RELATIONSHIPS

ADJACENCIES:	FLOOR LEVEL LOCATION	ISOLATION
Training-Break Room	■ FIRST ☐ SECOND ☐ NO PREFERENCE	SOUND: ☐ YES ■ NO VISUAL: ☐ YES ■ NO
SPECIAL REQUIREMENTS:		

SPACE CHARACTERISTICS

FLOOR FINISH	WALL FINISH	CEILING FINISH	CEILING HEIGHT	GLAZING/WINDOW COVER	SOUND/ACOUSTIC TREATMENT
☐ SEALED CONCRETE ■ POLISHED CONCRETE ☐ CARPET ☐ CARPET TILE ☐ RESILIENT ❑ CERAMIC TILE ❑ RUBBER	■ PAINT ❑ TACKABLE SURFACE ❑ CERAMIC TILE ☐ WALLCOVERING ❑ WAINSCOT	☐ ACOUSTIC TILE ■ DRY WALL ☐ EXPOSED ☐ SKYLIGHT ☐ OTHER	■ 9'-0' ☐ 12'-14' ☐ OTHER	☐ STANDARD ☐ TINTED ☐ BLINDS ■ NO WINDOW ☐ OTHER: ☐ ONE-WAY GLASS	■ NONE ☐ WALL INSULATION ☐ CEILING INSULATION ☐ INSULATED DOOR ☐ OTHER

DOOR	DOOR FINISH	CASEWORK FINISH	CASEWORK TYPE	COUNTERTOPS
☐ WOOD ■ METAL ■ METAL FRAME ☐ DOUBLE ☐ FULL LITE ☐ HALF LITE ☐ SIDE LIGHT ☐ OTHER	■ PAINT ☐ STAINED ☐ LAMINATE	☐ PLASTIC LAMINATE ☐ PAINTED WOOD ☐ STAINED WOOD ☐ SOLID PHENOLIC	☐ BASE CABINET ☐ UPPER CABINET ☐ FULL HEIGHT CABINET ☐ PANTRY ☐ WARDROBE ☐ EXPOSED SHELVING ☐ LOCK ☐ BUILT-IN ☐ SYSTEM FURNISHING	☐ PLASTIC LAMINATE ☐ SOLID PHENOLIC ☐ SOLID SURFACE POLYMER ☐ HEIGHT _____ ☐ DEPTH _____

SPECIAL REQUIREMENTS:

MECHANICAL AND ELECTRICAL REQUIREMENTS

LIGHTING	HVAC	PLUMBING	ELECTRICAL POWER	COMMUNICATION
☐ NATURAL LIGHT ☐ TASK ☐ DIMMER ■ GENERAL ROOM	☐ EXHAUST FAN ☐ THERMOSTAT ☐ OTHER	☐ COMPRESSED AIR ☐ GAS ☐ HOSE BIBB ☐ SINK ☐ DRINKING FOUNTAIN ☐ OTHER	☐ 120V DEDICATED OUTLET ☐ EMERGENCY POWER ☐ OTHER	☐ PHONE/DATA ☐ VIDEO/CABLE ☐ AUDIO SYSTEM ☐ CCTV ☐ OTHER:

SPECIAL REQUIREMENTS:

GENERAL COMMENTS/REMARKS:

SPACE IDENTIFICATION

ROOM NAME: **Conference Room**

SPACE USE

PRIMARY ACTIVITIES:	SECONDARY ACTIVITIES:	UTILIZATION	ACCESS	SECURITY
Meeting Space		■ 10 HRS / DAY ☐ 24 HRS / DAY ☐ OTHER	■ PUBLIC ■ STAFF ☐ SECURE	☐ NO LOCK ☐ KEYPAD ■ KEY LOCK ☐ CARD KEY
SPECIAL REQUIREMENTS:				

SPACE RELATIONSHIPS

ADJACENCIES:	FLOOR LEVEL LOCATION	ISOLATION
	■ FIRST ☐ SECOND ☐ NO PREFERENCE	SOUND: ■ YES ☐ NO VISUAL: ☐ YES ■ NO
SPECIAL REQUIREMENTS:		

SPACE CHARACTERISTICS

FLOOR FINISH	WALL FINISH	CEILING FINISH	CEILING HEIGHT	GLAZING/WINDOW COVER	SOUND/ACOUSTIC TREATMENT
☐ SEALED CONCRETE ■ POLISHED CONCRETE ☐ CARPET ☐ CARPET TILE ❑ RESILIENT ❑ CERAMIC TILE ❑ RUBBER	■ PAINT ■ TACKABLE SURFACE ❑ CERAMIC TILE ☐ WALLCOVERING ❑ WAINSCOT	■ ACOUSTIC TILE ☐ DRY WALL ☐ EXPOSED ☐ SKYLIGHT ☐ OTHER	■ 9'-0' ☐ 12'-14' ☐ OTHER	■ TITLE 24 ☐ TINTED ■ ROLLER SHADE ☐ NO WINDOW ☐ OTHER: ☐ ONE-WAY GLASS	☐ NONE ■ WALL INSULATION ☐ CEILING INSULATION ☐ INSULATED DOOR ☐ OTHER

DOOR	DOOR FINISH	CASEWORK FINISH	CASEWORK TYPE	COUNTERTOPS
☐ WOOD ■ METAL ■ METAL FRAME ☐ DOUBLE ☐ FULL LITE ☐ HALF LITE ☐ SIDE LIGHT ☐ OTHER	■ PAINT ☐ STAINED ☐ LAMINATE	■ PLASTIC LAMINATE ☐ PAINTED WOOD ☐ STAINED WOOD ☐ SOLID PHENOLIC	■ BASE CABINET ☐ UPPER CABINET ☐ FULL HEIGHT CABINET ☐ PANTRY ☐ WARDROBE ☐ EXPOSED SHELVING ☐ LOCK ☐ BUILT-IN ☐ SYSTEM FURNISHING	■ PLASTIC LAMINATE ☐ SOLID PHENOLIC ☐ SOLID SURFACE POLYMER ☐ HEIGHT _____ ☐ DEPTH _____

SPECIAL REQUIREMENTS:

MECHANICAL AND ELECTRICAL REQUIREMENTS

LIGHTING	HVAC	PLUMBING	ELECTRICAL POWER	COMMUNICATION
■ NATURAL LIGHT ☐ TASK ■ DIMMER ■ GENERAL ROOM	☐ EXHAUST FAN ☐ THERMOSTAT ☐ OTHER	☐ COMPRESSED AIR ☐ GAS ☐ HOSE BIBB ☐ SINK ☐ DRINKING FOUNTAIN ☐ OTHER	☐ 120V DEDICATED OUTLET ☐ EMERGENCY POWER ☐ OTHER	■ PHONE/DATA ■ VIDEO/CABLE ☐ AUDIO SYSTEM ☐ CCTV ■ OTHER:

SPECIAL REQUIREMENTS:

SCADA data, Large wall monitor, whiteboards

GENERAL COMMENTS/REMARKS:

SPACE IDENTIFICATION

ROOM NAME: **Copier–Work Alcove**

SPACE USE

PRIMARY ACTIVITIES:	SECONDARY ACTIVITIES:	UTILIZATION	ACCESS	SECURITY
Printer-Copier-Supplies Room	Office Work area	■ 10 HRS / DAY ☐ 24 HRS / DAY ☐ OTHER	☐ PUBLIC ■ STAFF ☐ SECURE	■ NO LOCK ☐ KEYPAD ☐ KEY LOCK ☐ CARD KEY
SPECIAL REQUIREMENTS:				

SPACE RELATIONSHIPS

ADJACENCIES:	FLOOR LEVEL LOCATION	ISOLATION
Manager offices and reception	■ FIRST ☐ SECOND ☐ NO PREFERENCE	SOUND: ☐ YES ■ NO VISUAL: ☐ YES ■ NO
SPECIAL REQUIREMENTS:		

SPACE CHARACTERISTICS

FLOOR FINISH	WALL FINISH	CEILING FINISH	CEILING HEIGHT	GLAZING/WINDOW COVER	SOUND/ACOUSTIC TREATMENT
☐ SEALED CONCRETE ■ POLISHED CONCRETE ☐ CARPET ☐ CARPET TILE ☐ RESILIENT ❑ CERAMIC TILE ❑ RUBBER	■ PAINT ❑ TACKABLE SURFACE ❑ CERAMIC TILE ☐ WALLCOVERING ❑ WAINSCOT	■ ACOUSTIC TILE ☐ DRY WALL ☐ EXPOSED ☐ SKYLIGHT ☐ OTHER	■ 9'-0' ☐ 12'-14' ☐ OTHER	☐ STANDARD ☐ TINTED ☐ BLINDS ■ NO WINDOW ☐ OTHER: ☐ ONE-WAY GLASS	■ NONE ☐ WALL INSULATION ☐ CEILING INSULATION ☐ INSULATED DOOR ☐ OTHER

DOOR	DOOR FINISH	CASEWORK FINISH	CASEWORK TYPE	COUNTERTOPS
☐ WOOD ☐ METAL ☐ METAL FRAME ☐ DOUBLE ☐ FULL LITE ☐ HALF LITE ☐ SIDE LIGHT ☐ OTHER	☐ PAINT ☐ STAINED ☐ LAMINATE	■ PLASTIC LAMINATE ☐ PAINTED WOOD ☐ STAINED WOOD ☐ SOLID PHENOLIC	■ BASE CABINET ■ UPPER CABINET ☐ FULL HEIGHT CABINET ☐ PANTRY ☐ WARDROBE ☐ EXPOSED SHELVING ☐ LOCK ☐ BUILT-IN ☐ SYSTEM FURNISHING	■ PLASTIC LAMINATE ☐ SOLID PHENOLIC ☐ SOLID SURFACE POLYMER ☐ HEIGHT _____ ☐ DEPTH _____

SPECIAL REQUIREMENTS:

MECHANICAL AND ELECTRICAL REQUIREMENTS

LIGHTING	HVAC	PLUMBING	ELECTRICAL POWER	COMMUNICATION
■ NATURAL LIGHT ☐ TASK ☐ DIMMER ■ GENERAL ROOM	■ EXHAUST FAN ☐ THERMOSTAT ☐ OTHER	☐ COMPRESSED AIR ☐ GAS ☐ HOSE BIBB ☐ SINK ☐ DRINKING FOUNTAIN ☐ OTHER	☐ 120V DEDICATED OUTLET ☐ EMERGENCY POWER ☐ OTHER	■ PHONE/DATA ☐ VIDEO/CABLE ☐ AUDIO SYSTEM ☐ CCTV ☐ OTHER:

SPECIAL REQUIREMENTS:

Space for recycling and trash bins

GENERAL COMMENTS/REMARKS:

SPACE IDENTIFICATION

ROOM NAME: **Reception - Lobby**

SPACE USE

PRIMARY ACTIVITIES:	SECONDARY ACTIVITIES:
Work space	Reception-Waiting Area
SPECIAL REQUIREMENTS:	

UTILIZATION
- ■ 10 HRS / DAY
- ☐ 24 HRS / DAY
- ☐ OTHER

ACCESS
- ■ PUBLIC
- ■ STAFF
- ☐ SECURE

SECURITY
- ☐ NO LOCK
- ■ KEY LOCK
- ☐ KEYPAD
- ☐ CARD KEY

SPACE RELATIONSHIPS

ADJACENCIES:

Offices

SPECIAL REQUIREMENTS:

FLOOR LEVEL LOCATION
- ■ FIRST
- ☐ SECOND
- ☐ NO PREFERENCE

ISOLATION

SOUND: ☐ YES ■ NO

VISUAL: ☐ YES ■ NO

SPACE CHARACTERISTICS

FLOOR FINISH
- ☐ SEALED CONCRETE
- ■ POLISHED CONCRETE
- ☐ CARPET
- ☐ CARPET TILE
- ☐ RESILIENT
- ❑ CERAMIC TILE
- ❑ RUBBER

WALL FINISH
- ■ PAINT
- ❑ TACKABLE SURFACE
- ❑ CERAMIC TILE
- ☐ WALLCOVERING
- ❑ WAINSCOT

CEILING FINISH
- ■ ACOUSTIC TILE
- ☐ DRY WALL
- ☐ EXPOSED
- ☐ SKYLIGHT
- ☐ OTHER

CEILING HEIGHT
- ■ 9'-0'
- ☐ 12'-14'
- ☐ OTHER

GLAZING/WINDOW COVER
- ■ TITLE 24
- ☐ TINTED
- ■ ROLLER SHADE
- ☐ NO WINDOW
- ☐ OTHER:
- ☐ ONE-WAY GLASS

SOUND/ACOUSTIC TREATMENT
- ☐ NONE
- ■ WALL INSULATION
- ☐ CEILING INSULATION
- ☐ INSULATED DOOR
- ☐ OTHER

DOOR
- ☐ WOOD
- ☐ METAL
- ☐ METAL FRAME
- ☐ DOUBLE
- ☐ FULL LITE
- ☐ HALF LITE
- ☐ SIDE LIGHT
- ■ ALUMINUM STOREFRONT

DOOR FINISH
- ☐ PAINT
- ☐ STAINED
- ☐ LAMINATE

CASEWORK FINISH
- ■ PLASTIC LAMINATE
- ☐ PAINTED WOOD
- ☐ STAINED WOOD
- ☐ SOLID PHENOLIC

CASEWORK TYPE
- ☐ BASE CABINET
- ☐ UPPER CABINET
- ☐ FULL HEIGHT CABINET
- ☐ PANTRY
- ☐ WARDROBE
- ☐ EXPOSED SHELVING
- ☐ LOCK
- ☐ BUILT-IN
- ■ SYSTEM FURNISHING

COUNTERTOPS
- ■ PLASTIC LAMINATE
- ☐ SOLID PHENOLIC
- ☐ SOLID SURFACE POLYMER
- ☐ HEIGHT _____
- ☐ DEPTH _____

SPECIAL REQUIREMENTS:

MECHANICAL AND ELECTRICAL REQUIREMENTS

LIGHTING
- ■ NATURAL LIGHT
- ■ TASK
- ■ DIMMER
- ■ GENERAL-ROOM

HVAC
- ☐ EXHAUST FAN
- ☐ THERMOSTAT
- ☐ OTHER

PLUMBING
- ☐ COMPRESSED AIR
- ☐ GAS
- ☐ HOSE BIBB
- ☐ SINK
- ■ DRINKING FOUNTAIN
- ☐ OTHER

ELECTRICAL POWER
- ☐ 120V DEDICATED OUTLET
- ☐ EMERGENCY POWER
- ☐ OTHER

COMMUNICATION
- ■ PHONE/DATA
- ■ VIDEO/CABLE
- ☐ AUDIO SYSTEM
- ☐ CCTV
- ☐ OTHER:

SPECIAL REQUIREMENTS:

Drinking fountain in general vicinity of reception/main public entry

GENERAL COMMENTS/REMARKS:

SPACE IDENTIFICATION

ROOM NAME **Restrooms and Locker Rooms**

SPACE USE

PRIMARY ACTIVITIES:	SECONDARY ACTIVITIES:	UTILIZATION	ACCESS	SECURITY
Toilet, Shower		☐ 10 HRS / DAY ■ 24 HRS / DAY ☐ OTHER	☐ PUBLIC ■ STAFF ☐ SECURE	☐ NO LOCK ☐ KEYPAD ■ KEY LOCK ☐ CARD KEY
SPECIAL REQUIREMENTS:				

SPACE RELATIONSHIPS

ADJACENCIES:	FLOOR LEVEL LOCATION	ISOLATION
Near staff entry	■ FIRST ☐ SECOND ☐ NO PREFERENCE	SOUND: ■ YES ☐ NO VISUAL: ■ YES ☐ NO
SPECIAL REQUIREMENTS: Custodial space nearby		

SPACE CHARACTERISTICS

FLOOR FINISH	WALL FINISH	CEILING FINISH	CEILING HEIGHT	GLAZING/WINDOW COVER	SOUND/ACOUSTIC TREATMENT
☐ SEALED CONCRETE ❑ COLOR CONCRETE ☐ CARPET ☐ CARPET TILE ❑ RESILIENT ■ CERAMIC TILE ❑ RUBBER	■ PAINT ❑ TACKABLE SURFACE ■ CERAMIC TILE ☐ WALLCOVERING ■ WAINSCOT	☐ ACOUSTIC TILE ■ DRY WALL ☐ EXPOSED ☐ SKYLIGHT ☐ OTHER	■ 9'-0' ☐ 12'-14' ☐ OTHER	☐ STANDARD ☐ TINTED ☐ BLINDS ■ NO WINDOW ☐ OTHER: ☐ ONE-WAY GLASS	☐ NONE ■ WALL INSULATION ■ CEILING INSULATION ☐ INSULATED DOOR ☐ OTHER

DOOR	DOOR FINISH	CASEWORK FINISH	CASEWORK TYPE	COUNTERTOPS
☐ WOOD ■ METAL ■ METAL FRAME ☐ DOUBLE ☐ FULL LITE ■ HALF LITE ☐ SIDE LIGHT ☐ OTHER	■ PAINT ☐ STAINED ☐ LAMINATE	■ PLASTIC LAMINATE ☐ PAINTED WOOD ☐ STAINED WOOD ☐ SOLID PHENOLIC	☐ BASE CABINET ☐ UPPER CABINET ☐ FULL HEIGHT CABINET ☐ PANTRY ☐ WARDROBE ■ EXPOSED SHELVING ☐ LOCK ☐ BUILT-IN ☐ SYSTEM FURNISHING	☐ PLASTIC LAMINATE ☐ SOLID PHENOLIC ■ SOLID SURFACE POLYMER ☐ HEIGHT _____ ☐ DEPTH _____

SPECIAL REQUIREMENTS:

Hanging space for uniforms, dirty uniform and towel bins, full length mirrors, lockers

MECHANICAL AND ELECTRICAL REQUIREMENTS

LIGHTING	HVAC	PLUMBING	ELECTRICAL POWER	COMMUNICATION
■ NATURAL LIGHT ☐ TASK ☐ DIMMER ■ GENERAL ROOM	■ EXHAUST FAN ■ THERMOSTAT ☐ OTHER	☐ COMPRESSED AIR ☐ GAS ■ HOSE BIBB ■ SINK ☐ DRINKING FOUNTAIN ☐ OTHER	☐ 120V DEDICATED OUTLET ☐ EMERGENCY POWER ☐ OTHER	☐ PHONE/DATA ☐ VIDEO/CABLE ☐ AUDIO SYSTEM ☐ CCTV ☐ OTHER:

SPECIAL REQUIREMENTS:

Showers, exhaust air inlets near towels and laundry bins, GFI outlets at lavatories for blow dryers.

GENERAL COMMENTS/REMARKS:

SPACE IDENTIFICATION

ROOM NAME: **On-Call Room**

SPACE USE

PRIMARY ACTIVITIES:	SECONDARY ACTIVITIES:	UTILIZATION	ACCESS	SECURITY
Bunk Room during flood events		■ 10 HRS / DAY ☐ 24 HRS / DAY ☐ OTHER	☐ PUBLIC ■ STAFF ☐ SECURE	☐ NO LOCK ☐ KEYPAD ■ KEY LOCK ☐ CARD KEY
SPECIAL REQUIREMENTS:				

SPACE RELATIONSHIPS

ADJACENCIES:	FLOOR LEVEL LOCATION	ISOLATION
Located directly off Operations Center	■ FIRST ☐ SECOND ☐ NO PREFERENCE	SOUND: ■ YES ☐ NO VISUAL: ■ YES ☐ NO
SPECIAL REQUIREMENTS:		

SPACE CHARACTERISTICS

FLOOR FINISH	WALL FINISH	CEILING FINISH	CEILING HEIGHT	GLAZING/WINDOW COVER	SOUND/ACOUSTIC TREATMENT
☐ SEALED CONCRETE ■ POLISHED CONCRETE ☐ CARPET ☐ CARPET TILE ☐ RESILIENT ❑ CERAMIC TILE ❑ RUBBER	■ PAINT ❑ TACKABLE SURFACE ❑ CERAMIC TILE ☐ WALLCOVERING ❑ WAINSCOT	■ ACOUSTIC TILE ☐ DRY WALL ☐ EXPOSED ☐ SKYLIGHT ☐ OTHER	■ 9'-0' ☐ 12'-14' ☐ OTHER	■ TITLE 24 ☐ TINTED ■ ROLLER SHADE ☐ NO WINDOW ☐ OTHER: ☐ ONE-WAY GLASS	■ NONE ☐ WALL INSULATION ☐ CEILING INSULATION ☐ INSULATED DOOR ☐ OTHER

DOOR	DOOR FINISH	CASEWORK FINISH	CASEWORK TYPE	COUNTERTOPS
☐ WOOD ■ METAL ■ METAL FRAME ☐ DOUBLE ☐ FULL LITE ☐ HALF LITE ☐ SIDE LIGHT ☐ OTHER	■ PAINT ☐ STAINED ☐ LAMINATE	■ PLASTIC LAMINATE ☐ METAL ☐ STAINED WOOD ☐ SOLID PHENOLIC	☐ BASE CABINET ☐ UPPER CABINET ■ FULL HEIGHT CABINET ☐ PANTRY ☐ WARDROBE ☐ EXPOSED SHELVING ☐ LOCK ☐ BUILT-IN ☐ SYSTEM FURNISHING	☐ PLASTIC LAMINATE ☐ SOLID PHENOLIC ☐ SOLID SURFACE POLYMER ☐ HEIGHT _____ ☐ DEPTH _____

SPECIAL REQUIREMENTS:

Window size to comply with emergency egress requirements

MECHANICAL AND ELECTRICAL REQUIREMENTS

LIGHTING	HVAC	PLUMBING	ELECTRICAL POWER	COMMUNICATION
■ NATURAL LIGHT ■ TASK ■ DIMMER ■ GENERAL ROOM	☐ EXHAUST FAN ■ THERMOSTAT ☐ OTHER	☐ COMPRESSED AIR ☐ GAS ☐ HOSE BIBB ☐ SINK ☐ DRINKING FOUNTAIN ☐ OTHER	☐ 120V DEDICATED OUTLET ☐ EMERGENCY POWER ☐ OTHER	■ PHONE/DATA ☐ VIDEO/CABLE ☐ AUDIO SYSTEM ☐ CCTV ☐ OTHER:

SPECIAL REQUIREMENTS:

GENERAL COMMENTS/REMARKS:

SPACE IDENTIFICATION

ROOM NAME: **Uniform Storage – Wash Room**

SPACE USE

PRIMARY ACTIVITIES:	SECONDARY ACTIVITIES:
Clean Up – Mud Room	Uniform Storage
SPECIAL REQUIREMENTS:	

UTILIZATION
- ☐ 10 HRS / DAY
- ■ 24 HRS / DAY
- ☐ OTHER

ACCESS
- ☐ PUBLIC
- ■ STAFF
- ☐ SECURE

SECURITY
- ☐ NO LOCK
- ■ KEY LOCK
- ☐ KEYPAD
- ☐ CARD KEY

SPACE RELATIONSHIPS

ADJACENCIES:

Staff Entry to Operations Facility; Outdoor Wash Off Area

SPECIAL REQUIREMENTS:

FLOOR LEVEL LOCATION
- ■ FIRST
- ☐ SECOND
- ☐ NO PREFERENCE

ISOLATION

SOUND: ☐ YES ■ NO

VISUAL: ☐ YES ■ NO

SPACE CHARACTERISTICS

FLOOR FINISH
- ☐ SEALED CONCRETE
- ❑ COLOR CONCRETE
- ☐ CARPET
- ☐ CARPET TILE
- ❑ RESILIENT
- ■ CERAMIC TILE
- ❑ RUBBER

WALL FINISH
- ☐ PAINT
- ❑ TACKABLE SURFACE
- ■ CERAMIC TILE
- ☐ WALLCOVERING
- ■ WAINSCOT

CEILING FINISH
- ☐ ACOUSTIC TILE
- ■ DRY WALL
- ☐ EXPOSED
- ☐ SKYLIGHT
- ☐ OTHER

CEILING HEIGHT
- ■ 9'-0'
- ☐ 12'-14'
- ☐ OTHER

GLAZING/WINDOW COVER
- ■ TITLE 24
- ☐ TINTED
- ■ ROLLER SHADE
- ☐ NO WINDOW
- ☐ OTHER:
- ☐ ONE-WAY GLASS

SOUND/ACOUSTIC TREATMENT
- ■ NONE
- ☐ WALL INSULATION
- ☐ CEILING INSULATION
- ☐ INSULATED DOOR
- ☐ OTHER

DOOR
- ☐ WOOD
- ■ FIBERGLASS
- ■ FIBERGLASS FRAME
- ☐ DOUBLE
- ☐ FULL LITE
- ☐ HALF LITE
- ☐ SIDE LIGHT
- ☐ OTHER

DOOR FINISH
- ■ PAINT
- ☐ STAINED
- ☐ LAMINATE

CASEWORK FINISH
- ☐ PLASTIC LAMINATE
- ☐ PAINTED WOOD
- ☐ STAINED WOOD
- ☐ SOLID PHENOLIC

CASEWORK TYPE
- ☐ BASE CABINET
- ☐ UPPER CABINET
- ☐ FULL HEIGHT CABINET
- ☐ PANTRY
- ☐ WARDROBE
- ■ OPEN HANGING RACKS
- ☐ LOCK
- ☐ BUILT-IN
- ☐ SYSTEM FURNISHING

COUNTERTOPS
- ☐ PLASTIC LAMINATE
- ☐ SOLID PHENOLIC
- ☐ SOLID SURFACE POLYMER
- ☐ HEIGHT _____
- ☐ DEPTH _____

SPECIAL REQUIREMENTS:

MECHANICAL AND ELECTRICAL REQUIREMENTS

LIGHTING
- ■ NATURAL LIGHT
- ☐ TASK
- ☐ DIMMER
- ■ GENERAL ROOM

HVAC
- ■ EXHAUST FAN
- ☐ THERMOSTAT
- ☐ OTHER

PLUMBING
- ☐ COMPRESSED AIR
- ☐ GAS
- ☐ HOSE BIBB
- ■ SINK
- ☐ DRINKING FOUNTAIN
- ☐ OTHER

ELECTRICAL POWER
- ☐ 120V DEDICATED OUTLET
- ☐ EMERGENCY POWER
- ☐ OTHER

COMMUNICATION
- ■ PHONE/DATA
- ☐ VIDEO/CABLE
- ☐ AUDIO SYSTEM
- ☐ CCTV
- ☐ OTHER:

SPECIAL REQUIREMENTS:

Passive air flow ideal to dry boots and gear, on adjacent, outside wall provide handheld sprayer for washing down boots and waders

GENERAL COMMENTS/REMARKS:

SPACE IDENTIFICATION

ROOM NAME: **Server Room**

SPACE USE

PRIMARY ACTIVITIES:	SECONDARY ACTIVITIES:	UTILIZATION	ACCESS	SECURITY
Network Servers		☐ 10 HRS / DAY ■ 24 HRS / DAY ☐ OTHER	☐ PUBLIC ■ STAFF ☐ SECURE	☐ NO LOCK ☐ KEYPAD ■ KEY LOCK ☐ CARD KEY
SPECIAL REQUIREMENTS:				

SPACE RELATIONSHIPS

ADJACENCIES:	FLOOR LEVEL LOCATION	ISOLATION
	■ FIRST ☐ SECOND ☐ NO PREFERENCE	SOUND: ■ YES ☐ NO VISUAL: ☐ YES ■ NO
SPECIAL REQUIREMENTS:		

SPACE CHARACTERISTICS

FLOOR FINISH	WALL FINISH	CEILING FINISH	CEILING HEIGHT	GLAZING/WINDOW COVER	SOUND/ACOUSTIC TREATMENT
☐ SEALED CONCRETE ■ POLISHED CONCRETE ☐ CARPET ☐ CARPET TILE ☐ RESILIENT ❑ CERAMIC TILE ❑ RUBBER	■ PAINT ❑ TACKABLE SURFACE ❑ CERAMIC TILE ☐ WALLCOVERING ❑ WAINSCOT	■ ACOUSTIC TILE ☐ DRY WALL ☐ EXPOSED ☐ SKYLIGHT ☐ OTHER	■ 9'-0' ☐ 12'-14' ☐ OTHER	☐ STANDARD ☐ TINTED ☐ BLINDS ■ NO WINDOW ☐ OTHER: ☐ ONE-WAY GLASS	■ NONE ☐ WALL INSULATION ☐ CEILING INSULATION ☐ INSULATED DOOR ☐ OTHER

DOOR	DOOR FINISH	CASEWORK FINISH	CASEWORK TYPE	COUNTERTOPS
☐ WOOD ■ METAL ■ METAL FRAME ☐ DOUBLE ☐ FULL LITE ☐ HALF LITE ☐ SIDE LIGHT ☐ OTHER	■ PAINT ☐ STAINED ☐ LAMINATE	☐ PLASTIC LAMINATE ☐ PAINTED WOOD ☐ STAINED WOOD ☐ SOLID PHENOLIC	☐ BASE CABINET ☐ UPPER CABINET ☐ FULL HEIGHT CABINET ☐ PANTRY ☐ WARDROBE ☐ EXPOSED SHELVING ☐ LOCK ☐ BUILT-IN ■ SERVER RACKS	☐ PLASTIC LAMINATE ☐ SOLID PHENOLIC ☐ SOLID SURFACE POLYMER ☐ HEIGHT _____ ☐ DEPTH _____

SPECIAL REQUIREMENTS:

MECHANICAL AND ELECTRICAL REQUIREMENTS

LIGHTING	HVAC	PLUMBING	ELECTRICAL POWER	COMMUNICATION
☐ NATURAL LIGHT ☐ TASK ☐ DIMMER ■ GENERAL ROOM	■ EXHAUST FAN ☐ THERMOSTAT ■ OTHER - AC	☐ COMPRESSED AIR ☐ GAS ☐ HOSE BIBB ☐ SINK ☐ DRINKING FOUNTAIN ☐ OTHER	☐ 120V DEDICATED OUTLET ■ EMERGENCY POWER ■ OTHER UPS	■ PHONE/DATA ■ VIDEO/CABLE ☐ AUDIO SYSTEM ☐ CCTV ☐ OTHER:

SPECIAL REQUIREMENTS:

GENERAL COMMENTS/REMARKS:

SPACE IDENTIFICATION

ROOM NAME: **Janitor and Mechanical Room**

SPACE USE

PRIMARY ACTIVITIES:	SECONDARY ACTIVITIES:
Janitor Closet	Maintenance
SPECIAL REQUIREMENTS:	

UTILIZATION
- ■ 10 HRS / DAY
- ☐ 24 HRS / DAY
- ☐ OTHER

ACCESS
- ☐ PUBLIC
- ■ STAFF
- ☐ SECURE

SECURITY
- ☐ NO LOCK
- ■ KEY LOCK
- ☐ KEYPAD
- ☐ CARD KEY

SPACE RELATIONSHIPS

ADJACENCIES:

Close to restrooms

SPECIAL REQUIREMENTS:

FLOOR LEVEL LOCATION
- ■ FIRST
- ☐ SECOND
- ☐ NO PREFERENCE

ISOLATION
- SOUND: ☐ YES ■ NO
- VISUAL: ☐ YES ■ NO

SPACE CHARACTERISTICS

FLOOR FINISH
- ■ SEALED CONCRETE
- ❑ POLISHED CONCRETE
- ☐ CARPET
- ☐ CARPET TILE
- ❑ RESILIENT
- ❑ CERAMIC TILE
- ❑ RUBBER

WALL FINISH
- ■ PAINT
- ❑ TACKABLE SURFACE
- ❑ CERAMIC TILE
- ☐ WALLCOVERING
- ❑ WAINSCOT

CEILING FINISH
- ☐ ACOUSTIC TILE
- ☐ DRY WALL
- ■ EXPOSED
- ☐ SKYLIGHT
- ☐ OTHER

CEILING HEIGHT
- ■ 9'-0'
- ☐ 12'-14'
- ☐ OTHER

GLAZING/WINDOW COVER
- ☐ STANDARD
- ☐ TINTED
- ☐ BLINDS
- ■ NO WINDOW
- ☐ OTHER:
- ☐ ONE-WAY GLASS

SOUND/ACOUSTIC TREATMENT
- ■ NONE
- ☐ WALL INSULATION
- ☐ CEILING INSULATION
- ☐ INSULATED DOOR
- ☐ OTHER

DOOR
- ☐ WOOD
- ■ METAL
- ■ METAL FRAME
- ☐ DOUBLE
- ☐ FULL LITE
- ☐ HALF LITE
- ☐ SIDE LIGHT
- ■ OTHER - LOUVER

DOOR FINISH
- ■ PAINT
- ☐ STAINED
- ☐ LAMINATE

CASEWORK FINISH
- ☐ PLASTIC LAMINATE
- ☐ PAINTED WOOD
- ☐ STAINED WOOD
- ☐ SOLID PHENOLIC

CASEWORK TYPE
- ☐ BASE CABINET
- ☐ UPPER CABINET
- ☐ FULL HEIGHT CABINET
- ☐ PANTRY
- ☐ WARDROBE
- ■ EXPOSED SHELVING
- ☐ LOCK
- ☐ BUILT-IN
- ☐ SYSTEM FURNISHING

COUNTERTOPS
- ☐ PLASTIC LAMINATE
- ☐ SOLID PHENOLIC
- ☐ SOLID SURFACE POLYMER
- ☐ HEIGHT _____
- ☐ DEPTH _____

SPECIAL REQUIREMENTS:

Work bench for minor repairs, storage system for bicycles

MECHANICAL AND ELECTRICAL REQUIREMENTS

LIGHTING
- ☐ NATURAL LIGHT
- ☐ TASK
- ☐ DIMMER
- ■ GENERAL ROOM

HVAC
- ■ EXHAUST FAN
- ☐ THERMOSTAT
- ☐ OTHER

PLUMBING
- ■ COMPRESSED AIR
- ☐ GAS
- ☐ HOSE BIBB
- ■ SINK
- ☐ DRINKING FOUNTAIN
- ■ OTHER – Floor Sink

ELECTRICAL POWER
- ☐ 120V DEDICATED OUTLET
- ☐ EMERGENCY POWER
- ☐ OTHER

COMMUNICATION
- ☐ PHONE/DATA
- ☐ VIDEO/CABLE
- ☐ AUDIO SYSTEM
- ☐ CCTV
- ☐ OTHER:

SPECIAL REQUIREMENTS:

GENERAL COMMENTS/REMARKS:

SPACE IDENTIFICATION

ROOM NAME: **Electrical Room**

SPACE USE

PRIMARY ACTIVITIES:	SECONDARY ACTIVITIES:
Electrical Equipment	Maintenance
SPECIAL REQUIREMENTS:	

UTILIZATION
- ☐ 10 HRS / DAY
- ■ 24 HRS / DAY
- ☐ OTHER

ACCESS
- ☐ PUBLIC
- ■ STAFF
- ☐ SECURE

SECURITY
- ☐ NO LOCK
- ■ KEY LOCK
- ☐ KEYPAD
- ☐ CARD KEY

SPACE RELATIONSHIPS

ADJACENCIES:

SPECIAL REQUIREMENTS:
Access from Exterior

FLOOR LEVEL LOCATION
- ■ FIRST
- ☐ SECOND
- ☐ NO PREFERENCE

ISOLATION
- SOUND: ☐ YES ■ NO
- VISUAL: ☐ YES ■ NO

SPACE CHARACTERISTICS

FLOOR FINISH
- ■ SEALED CONCRETE
- ❑ COLOR CONCRETE
- ☐ CARPET
- ☐ CARPET TILE
- ❑ RESILIENT
- ❑ CERAMIC TILE
- ❑ RUBBER

WALL FINISH
- ■ PAINT
- ❑ TACKABLE SURFACE
- ❑ CERAMIC TILE
- ☐ WALLCOVERING
- ❑ WAINSCOT

CEILING FINISH
- ☐ ACOUSTIC TILE
- ☐ DRY WALL
- ■ EXPOSED
- ☐ SKYLIGHT
- ☐ OTHER

CEILING HEIGHT
- ☐ 9’-0’
- ☐ 12’-14’
- ■ OTHER

GLAZING/WINDOW COVER
- ☐ STANDARD
- ☐ TINTED
- ☐ BLINDS
- ■ NO WINDOW
- ☐ OTHER:
- ☐ ONE-WAY GLASS

SOUND/ACOUSTIC TREATMENT
- ■ NONE
- ☐ WALL INSULATION
- ☐ CEILING INSULATION
- ☐ INSULATED DOOR
- ☐ OTHER

DOOR
- ☐ WOOD
- ■ FIBERGLASS
- ■ FIBERGLASS FRAME
- ☐ DOUBLE
- ☐ FULL LITE
- ☐ HALF LITE
- ☐ SIDE LIGHT
- ☐ OTHER

DOOR FINISH
- ■ PAINT
- ☐ STAINED
- ☐ LAMINATE

CASEWORK FINISH
- ☐ PLASTIC LAMINATE
- ☐ PAINTED WOOD
- ☐ STAINED WOOD
- ☐ SOLID PHENOLIC

CASEWORK TYPE
- ☐ BASE CABINET
- ☐ UPPER CABINET
- ☐ FULL HEIGHT CABINET
- ☐ PANTRY
- ☐ WARDROBE
- ☐ EXPOSED SHELVING
- ☐ LOCK
- ☐ BUILT-IN
- ☐ SYSTEM FURNISHING

COUNTERTOPS
- ☐ PLASTIC LAMINATE
- ☐ SOLID PHENOLIC
- ☐ SOLID SURFACE POLYMER
- ☐ HEIGHT _____
- ☐ DEPTH _____

SPECIAL REQUIREMENTS:

MECHANICAL AND ELECTRICAL REQUIREMENTS

LIGHTING
- ☐ NATURAL LIGHT
- ☐ TASK
- ☐ DIMMER
- ■ GENERAL ROOM

HVAC
- ■ EXHAUST FAN
- ☐ THERMOSTAT
- ☐ OTHER

PLUMBING
- ☐ COMPRESSED AIR
- ☐ GAS
- ☐ HOSE BIBB
- ☐ SINK
- ☐ DRINKING FOUNTAIN
- ☐ OTHER – Floor Sink

ELECTRICAL POWER
- ☐ 120V DEDICATED OUTLET
- ■ EMERGENCY POWER
- ☐ OTHER

COMMUNICATION
- ☐ PHONE/DATA
- ☐ VIDEO/CABLE
- ☐ AUDIO SYSTEM
- ☐ CCTV
- ☐ OTHER:

SPECIAL REQUIREMENTS:

GENERAL COMMENTS/REMARKS:

SPACE IDENTIFICATION

ROOM NAME: **Shop and Storage**

SPACE USE

PRIMARY ACTIVITIES:	SECONDARY ACTIVITIES:
Work space	Storage
SPECIAL REQUIREMENTS:	

UTILIZATION	ACCESS	SECURITY
■ 10 HRS / DAY	☐ PUBLIC	☐ NO LOCK ☐ KEYPAD
☐ 24 HRS / DAY	■ STAFF	■ KEY LOCK ☐ CARD KEY
☐ OTHER	☐ SECURE	

SPACE RELATIONSHIPS

ADJACENCIES:

Maintenance work areas

SPECIAL REQUIREMENTS:

FLOOR LEVEL LOCATION
- ■ FIRST
- ☐ SECOND
- ☐ NO PREFERENCE

ISOLATION
- SOUND: ☐ YES ■ NO
- VISUAL: ☐ YES ■ NO

SPACE CHARACTERISTICS

FLOOR FINISH	WALL FINISH	CEILING FINISH	CEILING HEIGHT	GLAZING/WINDOW COVER	SOUND/ACOUSTIC TREATMENT
■ SEALED CONCRETE	■ PAINT	☐ ACOUSTIC TILE	☐ 9'-0'	☐ STANDARD	☐ NONE
❑ COLOR CONCRETE	❑ TACKABLE SURFACE	☐ DRY WALL	☐ 12'-14'	☐ TINTED	☐ WALL INSULATION
☐ CARPET	❑ CERAMIC TILE	■ EXPOSED	■ OTHER	☐ BLINDS	☐ CEILING INSULATION
☐ CARPET TILE	☐ WALLCOVERING	☐ SKYLIGHT		☐ NO WINDOW	☐ INSULATED DOOR
❑ RESILIENT	❑ WAINSCOT	☐ OTHER		☐ OTHER:	☐ OTHER
❑ CERAMIC TILE				☐ ONE-WAY GLASS	
❑ RUBBER					

DOOR	DOOR FINISH	CASEWORK FINISH	CASEWORK TYPE	COUNTERTOPS
☐ WOOD	■ PAINT	☐ PLASTIC LAMINATE	☐ BASE CABINET	☐ PLASTIC LAMINATE
■ FIBERGLASS	☐ STAINED	■ METAL	☐ UPPER CABINET	■ METAL
■ FIBERGLASS FRAME	☐ LAMINATE	☐ STAINED WOOD	☐ FULL HEIGHT CABINET	☐ CHEMICAL RESISTANT
☐ DOUBLE		☐ SOLID PHENOLIC	☐ PANTRY	☐ HEIGHT _____
☐ FULL LITE			☐ WARDROBE	☐ DEPTH _____
■ HALF LITE			☐ EXPOSED SHELVING	
☐ SIDE LIGHT			☐ LOCK	
■ OTHER – ROLL UPS			☐ BUILT-IN	
			☐ SYSTEM FURNISHING	

SPECIAL REQUIREMENTS:

Equipment layout to be further developed by staff includes drill press, press, lathe, tool storage, parts washing, bead blast

MECHANICAL AND ELECTRICAL REQUIREMENTS

LIGHTING	HVAC	PLUMBING	ELECTRICAL POWER	COMMUNICATION
■ NATURAL LIGHT	■ EXHAUST FAN	■ COMPRESSED AIR	☐ 120V DEDICATED OUTLET	■ PHONE/DATA
☐ TASK	☐ THERMOSTAT	☐ GAS	☐ EMERGENCY POWER	☐ VIDEO/CABLE
☐ DIMMER	☐ OTHER	■ HOSE BIBB	☐ OTHER	☐ AUDIO SYSTEM
■ OTHER - SHOP		■ SINK		☐ CCTV
		☐ DRINKING FOUNTAIN		☐ OTHER:
		■ OTHER		

SPECIAL REQUIREMENTS:

Eyewash station at trough sink, gantry crane

GENERAL COMMENTS/REMARKS:

SPACE IDENTIFICATION

ROOM NAME: I and C Workshop

SPACE USE

PRIMARY ACTIVITIES:
Work space

SECONDARY ACTIVITIES:

SPECIAL REQUIREMENTS:

UTILIZATION
- ■ 10 HRS / DAY
- ☐ 24 HRS / DAY
- ☐ OTHER

ACCESS
- ☐ PUBLIC
- ■ STAFF
- ☐ SECURE

SECURITY
- ☐ NO LOCK
- ■ KEY LOCK
- ☐ KEYPAD
- ☐ CARD KEY

SPACE RELATIONSHIPS

ADJACENCIES:
Maintenance work areas

SPECIAL REQUIREMENTS:

FLOOR LEVEL LOCATION
- ■ FIRST
- ☐ SECOND
- ☐ NO PREFERENCE

ISOLATION
- SOUND: ☐ YES ■ NO
- VISUAL: ☐ YES ■ NO

SPACE CHARACTERISTICS

FLOOR FINISH
- ■ SEALED CONCRETE
- ☐ POLISHED CONCRETE
- ☐ CARPET
- ☐ CARPET TILE
- ☐ RESILIENT
- ❑ CERAMIC TILE
- ❑ RUBBER

WALL FINISH
- ■ PAINT
- ❑ TACKABLE SURFACE
- ❑ CERAMIC TILE
- ☐ WALLCOVERING
- ❑ WAINSCOT

CEILING FINISH
- ☐ ACOUSTIC TILE
- ■ DRY WALL
- ☐ EXPOSED
- ☐ SKYLIGHT
- ☐ OTHER

CEILING HEIGHT
- ■ 9'-0'
- ☐ 12'-14'
- ☐ OTHER

GLAZING/WINDOW COVER
- ☐ STANDARD
- ☐ TINTED
- ☐ BLINDS
- ☐ NO WINDOW
- ☐ OTHER:
- ☐ ONE-WAY GLASS

SOUND/ACOUSTIC TREATMENT
- ☐ NONE
- ☐ WALL INSULATION
- ☐ CEILING INSULATION
- ☐ INSULATED DOOR
- ☐ OTHER

DOOR
- ☐ WOOD
- ■ METAL
- ■ METAL FRAME
- ■ DOUBLE
- ☐ FULL LITE
- ■ HALF LITE
- ☐ SIDE LIGHT
- ☐ OTHER

DOOR FINISH
- ■ PAINT
- ☐ STAINED
- ☐ LAMINATE

CASEWORK FINISH
- ■ PLASTIC LAMINATE
- ☐ PAINTED WOOD
- ☐ STAINED WOOD
- ☐ SOLID PHENOLIC

CASEWORK TYPE
- ■ BASE CABINET
- ■ UPPER CABINET
- ☐ FULL HEIGHT CABINET
- ☐ PANTRY
- ☐ WARDROBE
- ☐ EXPOSED SHELVING
- ☐ LOCK
- ☐ BUILT-IN
- ■ SYSTEM FURNISHING

COUNTERTOPS
- ■ PLASTIC LAMINATE
- ☐ SOLID PHENOLIC
- ☐ SOLID SURFACE POLYMER
- ☐ HEIGHT _____
- ☐ DEPTH _____

SPECIAL REQUIREMENTS:

MECHANICAL AND ELECTRICAL REQUIREMENTS

LIGHTING
- ■ NATURAL LIGHT
- ■ TASK
- ■ DIMMER
- ■ GENERAL ROOM

HVAC
- ☐ EXHAUST FAN
- ☐ THERMOSTAT
- ☐ OTHER

PLUMBING
- ☐ COMPRESSED AIR
- ☐ GAS
- ☐ HOSE BIBB
- ☐ SINK
- ☐ DRINKING FOUNTAIN
- ☐ OTHER

ELECTRICAL POWER
- ■ 120V DEDICATED OUTLET
- ☐ EMERGENCY POWER
- ☐ OTHER

COMMUNICATION
- ■ PHONE/DATA
- ☐ VIDEO/CABLE
- ☐ AUDIO SYSTEM
- ☐ CCTV
- ☐ OTHER:

SPECIAL REQUIREMENTS:

GENERAL COMMENTS/REMARKS:

SPACE IDENTIFICATION

ROOM NAME: **Shop Bathroom**

SPACE USE

PRIMARY ACTIVITIES:	SECONDARY ACTIVITIES:
Work space	Safety
SPECIAL REQUIREMENTS:	

UTILIZATION
- ■ 10 HRS / DAY
- ☐ 24 HRS / DAY
- ☐ OTHER

ACCESS
- ☐ PUBLIC
- ■ STAFF
- ☐ SECURE

SECURITY
- ☐ NO LOCK
- ■ KEY LOCK
- ☐ KEYPAD
- ☐ CARD KEY

SPACE RELATIONSHIPS

ADJACENCIES:

Maintenance machine shop

SPECIAL REQUIREMENTS:

FLOOR LEVEL LOCATION
- ■ FIRST
- ☐ SECOND
- ☐ NO PREFERENCE

ISOLATION

SOUND: ■ YES ☐ NO

VISUAL: ■ YES ☐ NO

SPACE CHARACTERISTICS

FLOOR FINISH
- ■ SEALED CONCRETE
- ❑ COLOR CONCRETE
- ☐ CARPET
- ☐ CARPET TILE
- ❑ RESILIENT
- ❑ CERAMIC TILE
- ❑ RUBBER

WALL FINISH
- ■ PAINT
- ❑ TACKABLE SURFACE
- ■ CERAMIC TILE
- ☐ WALLCOVERING
- ■ WAINSCOT

CEILING FINISH
- ☐ ACOUSTIC TILE
- ■ DRY WALL
- ☐ EXPOSED
- ☐ SKYLIGHT
- ☐ OTHER

CEILING HEIGHT
- ■ 9'-0'
- ☐ 12'-14'
- ☐ OTHER

GLAZING/WINDOW COVER
- ☐ STANDARD
- ☐ TINTED
- ☐ BLINDS
- ☐ NO WINDOW
- ☐ OTHER:
- ☐ ONE-WAY GLASS

SOUND/ACOUSTIC TREATMENT
- ☐ NONE
- ■ WALL INSULATION
- ☐ CEILING INSULATION
- ☐ INSULATED DOOR
- ☐ OTHER

DOOR
- ☐ WOOD
- ■ METAL
- ■ METAL FRAME
- ☐ DOUBLE
- ☐ FULL LITE
- ☐ HALF LITE
- ☐ SIDE LIGHT
- ☐ OTHER

DOOR FINISH
- ■ PAINT
- ☐ STAINED
- ☐ LAMINATE

CASEWORK FINISH
- ☐ PLASTIC LAMINATE
- ☐ PAINTED WOOD
- ☐ STAINED WOOD
- ☐ SOLID PHENOLIC

CASEWORK TYPE
- ☐ BASE CABINET
- ☐ UPPER CABINET
- ☐ FULL HEIGHT CABINET
- ☐ PANTRY
- ☐ WARDROBE
- ☐ EXPOSED SHELVING
- ☐ LOCK
- ☐ BUILT-IN
- ☐ SYSTEM FURNISHING

COUNTERTOPS
- ☐ PLASTIC LAMINATE
- ☐ SOLID PHENOLIC
- ☐ SOLID SURFACE POLYMER
- ☐ HEIGHT _____
- ☐ DEPTH _____

SPECIAL REQUIREMENTS:

MECHANICAL AND ELECTRICAL REQUIREMENTS

LIGHTING
- ■ NATURAL LIGHT
- ☐ TASK
- ☐ DIMMER
- ■ GENERAL ROOM

HVAC
- ■ EXHAUST FAN
- ☐ THERMOSTAT
- ☐ OTHER

PLUMBING
- ☐ COMPRESSED AIR
- ☐ GAS
- ☐ HOSE BIBB
- ■ SINK
- ☐ DRINKING FOUNTAIN
- ☐ OTHER

ELECTRICAL POWER
- ☐ 120V DEDICATED OUTLET
- ☐ EMERGENCY POWER
- ☐ OTHER

COMMUNICATION
- ☐ PHONE/DATA
- ☐ VIDEO/CABLE
- ☐ AUDIO SYSTEM
- ☐ CCTV
- ☐ OTHER:

SPECIAL REQUIREMENTS:

GENERAL COMMENTS/REMARKS:

SPACE IDENTIFICATION

ROOM NAME: **Lab**

SPACE USE

PRIMARY ACTIVITIES:	SECONDARY ACTIVITIES:
Work space	Storage
SPECIAL REQUIREMENTS:	

UTILIZATION
- ■ 10 HRS / DAY
- ☐ 24 HRS / DAY
- ☐ OTHER

ACCESS
- ☐ PUBLIC
- ■ STAFF
- ☐ SECURE

SECURITY
- ☐ NO LOCK
- ■ KEY LOCK
- ☐ KEYPAD
- ☐ CARD KEY

SPACE RELATIONSHIPS

ADJACENCIES:

Shop and Maintenance work area

SPECIAL REQUIREMENTS:

FLOOR LEVEL LOCATION
- ■ FIRST
- ☐ SECOND
- ☐ NO PREFERENCE

ISOLATION
- SOUND: ☐ YES ■ NO
- VISUAL: ☐ YES ■ NO

SPACE CHARACTERISTICS

FLOOR FINISH
- ■ SEALED CONCRETE
- ❑ COLOR CONCRETE
- ☐ CARPET
- ☐ CARPET TILE
- ❑ RESILIENT
- ❑ CERAMIC TILE
- ❑ RUBBER

WALL FINISH
- ■ PAINT
- ❑ TACKABLE SURFACE
- ❑ CERAMIC TILE
- ☐ WALLCOVERING
- ❑ WAINSCOT

CEILING FINISH
- ☐ ACOUSTIC TILE
- ■ DRY WALL
- ☐ EXPOSED
- ☐ SKYLIGHT
- ☐ OTHER

CEILING HEIGHT
- ■ 9'-0'
- ☐ 12'-14'
- ☐ OTHER

GLAZING/WINDOW COVER
- ■ TITLE 24
- ☐ TINTED
- ■ BLINDS
- ☐ NO WINDOW
- ☐ OTHER:
- ☐ ONE-WAY GLASS

SOUND/ACOUSTIC TREATMENT
- ☐ NONE
- ☐ WALL INSULATION
- ☐ CEILING INSULATION
- ☐ INSULATED DOOR
- ☐ OTHER

DOOR
- ☐ WOOD
- ■ METAL
- ■ METAL FRAME
- ☐ DOUBLE
- ☐ FULL LITE
- ■ HALF LITE
- ☐ SIDE LIGHT
- FIBERGLASS
- ■ DOOR+FRAME @ EXTERIOR

DOOR FINISH
- ■ PAINT
- ☐ STAINED
- ☐ LAMINATE

CASEWORK FINISH
- ☐ PLASTIC LAMINATE
- ■ METAL
- ☐ STAINED WOOD
- ☐ SOLID PHENOLIC

CASEWORK TYPE
- ☐ BASE CABINET
- ☐ UPPER CABINET
- ☐ FULL HEIGHT CABINET
- ☐ PANTRY
- ☐ WARDROBE
- ☐ EXPOSED SHELVING
- ☐ LOCK
- ☐ BUILT-IN
- ☐ SYSTEM FURNISHING

COUNTERTOPS
- ☐ PLASTIC LAMINATE
- ☐ SOLID PHENOLIC
- ■ CHEMICAL RESISTANT
- ☐ HEIGHT _____
- ☐ DEPTH _____

SPECIAL REQUIREMENTS:

Equipment layout to be further developed by staff includes portable welding and cutting equipment, tables, tool storage

MECHANICAL AND ELECTRICAL REQUIREMENTS

LIGHTING
- ■ NATURAL LIGHT
- ■ TASK
- ■ DIMMER
- ■ GENERAL ROOM

HVAC
- ■ EXHAUST FAN
- ☐ THERMOSTAT
- ☐ OTHER

PLUMBING
- ■ COMPRESSED AIR
- ■ GAS
- ■ HOSE BIBB
- ■ SINK
- ☐ DRINKING FOUNTAIN
- ■ OTHER

ELECTRICAL POWER
- ☐ 120V DEDICATED OUTLET
- ■ EMERGENCY POWER
- ■ OTHER

COMMUNICATION
- ■ PHONE/DATA
- ☐ VIDEO/CABLE
- ☐ AUDIO SYSTEM
- ☐ CCTV
- ☐ OTHER:

SPECIAL REQUIREMENTS:

Accomodate owner-furnished lab equipment. Provide eyewash and meet specified ventilation requirements

GENERAL COMMENTS/REMARKS:

SPACE IDENTIFICATION

ROOM NAME: **Operations**

SPACE USE

PRIMARY ACTIVITIES:	SECONDARY ACTIVITIES:	UTILIZATION	ACCESS	SECURITY
Work space		■ 10 HRS / DAY ☐ 24 HRS / DAY ☐ OTHER	☐ PUBLIC ■ STAFF ☐ SECURE	☐ NO LOCK ☐ KEYPAD ■ KEY LOCK ☐ CARD KEY
SPECIAL REQUIREMENTS:				

SPACE RELATIONSHIPS

ADJACENCIES:	FLOOR LEVEL LOCATION	ISOLATION
Maintenance Shop, Library alcoves	☐ FIRST ☐ SECOND ■ NO PREFERENCE	SOUND: ☐ YES ■ NO VISUAL: ☐ YES ■ NO
SPECIAL REQUIREMENTS:		

SPACE CHARACTERISTICS

FLOOR FINISH	WALL FINISH	CEILING FINISH	CEILING HEIGHT	GLAZING/WINDOW COVER	SOUND/ACOUSTIC TREATMENT
☐ SEALED CONCRETE ■ POLISHED CONCRETE ☐ CARPET ☐ CARPET TILE ☐ RESILIENT ❑ CERAMIC TILE ❑ RUBBER	■ PAINT ❑ TACKABLE SURFACE ❑ CERAMIC TILE ☐ WALLCOVERING ❑ WAINSCOT	☐ ACOUSTIC TILE ■ DRY WALL ☐ EXPOSED ☐ SKYLIGHT ☐ OTHER	■ 9'-0' ☐ 12'-14' ☐ OTHER	■ TITLE 24 ☐ TINTED ■ ROLLER SHADE ☐ NO WINDOW ☐ OTHER: ☐ ONE-WAY GLASS	☐ NONE ■ WALL INSULATION ☐ CEILING INSULATION ☐ INSULATED DOOR ☐ OTHER

DOOR	DOOR FINISH	CASEWORK FINISH	CASEWORK TYPE	COUNTERTOPS
☐ WOOD ■ FIBERGLASS ■ FIBERGLASS FRAME ☐ DOUBLE ☐ FULL LITE ☐ HALF LITE ☐ SIDE LIGHT ☐ OTHER	■ PAINT ☐ STAINED ☐ LAMINATE	☐ PLASTIC LAMINATE ☐ PAINTED WOOD ☐ STAINED WOOD ☐ SOLID PHENOLIC	☐ BASE CABINET ☐ UPPER CABINET ☐ FULL HEIGHT CABINET ☐ PANTRY ☐ WARDROBE ☐ EXPOSED SHELVING ☐ LOCK ☐ BUILT-IN ■ SYSTEM FURNISHING	■ PLASTIC LAMINATE ☐ SOLID PHENOLIC ☐ SOLID SURFACE POLYMER ☐ HEIGHT _____ ☐ DEPTH _____

SPECIAL REQUIREMENTS:

MECHANICAL AND ELECTRICAL REQUIREMENTS

LIGHTING	HVAC	PLUMBING	ELECTRICAL POWER	COMMUNICATION
■ NATURAL LIGHT ☐ TASK ■ DIMMER ■ GENERAL ROOM	☐ EXHAUST FAN ☐ THERMOSTAT ☐ OTHER	☐ COMPRESSED AIR ☐ GAS ☐ HOSE BIBB ☐ SINK ☐ DRINKING FOUNTAIN ☐ OTHER	☐ 120V DEDICATED OUTLET ☐ EMERGENCY POWER ☐ OTHER	■ PHONE/DATA ☐ VIDEO/CABLE ☐ AUDIO SYSTEM ☐ CCTV ☐ OTHER:

SPECIAL REQUIREMENTS:

GENERAL COMMENTS/REMARKS:

Appendix H:
Architectural Equipment and Furniture List

Morro Bay Water Reclamation Facility

Equipment and Furniture List
December 8, 2017

OPERATIONS BUILDING

Offices - Total 5 offices

Equipment

Listing and Description	Quantity	Notes
Computer Workstations	5	
Telephones	5	

Furniture		
Office Workstation Furniture	5	
Desk Chairs with arms	5	
Guest Chair without arms	5	
Lateral File Cabinet	5	
Bookcase	5	

Control Room - Operations Center

Equipment

Listing and Description	Quantity	Notes
Control Workstations	3	
Computer Workstations	8	
Telephones	3	
50" Diagonal Wall-mounted Monitors	3	High quality/warranty for heavy use

Furniture		
Control Console	3	
Work Station Counters	8	
Desk Chairs with Arms	3	
Desk Chairs without Arms	8	

Map Room

Equipment

Listing and Description	Quantity	Notes
Whiteboards	2	

Furniture		
Layout Tables	4	
Flat Files-Map Cases	6	Stacks of two

Sample Storage

Equipment

Listing and Description	Quantity	Notes
Exposed Shelving	1	

Furniture		
No furniture		

Training-Break Room		
Equipment		
Listing and Description	Quantity	Notes
Computer workstation	1	
Large Monitor	2	Good Quality for occasional use
Whiteboards	2	
Refrigerator	1	
Microwave Oven	2	
Telephone	1	

Furniture		
Listing and Description	Quantity	Notes
Tables	16	Two-person seminar tables
Chairs without arms	60	Stackable on dolly

Table and Chair Storage		
Equipment		
Listing and Description	Quantity	Notes
Chair Storage Dolly	tbd	Qty. as needed for selected chairs
Table Storage Dolly	tbd	Qty. as needed for selected tables

Furniture		
No furniture		

Conference Room		
Equipment		
Listing and Description	Quantity	Notes
TV-Monitor	1	Good quality for occasional use
Whiteboards	2	

Furniture		
Conference Table	1	
Conference Chairs with arms	8	

Copier-Work Alcove		
Equipment		
Listing and Description	Quantity	Notes
Printer-Copier-Fax	1	Shared by all occupants
Shredder	1	
Trash-Recycling Bins	2	

Furniture		
No furniture		

Morro Bay Water Reclamation Facility

Equipment and Furniture List
December 8, 2017

Reception Area / Lobby		
Equipment		
Listing and Description	Quantity	Notes
Computer Workstation	1	
Phone	1	

Furniture		
Workstation Furniture	1	
Desk Chair with arms	1	
Lobby Seating - Visitor Chairs	3	

Men's Restroom		
Equipment		
Listing and Description	Quantity	Notes
No equipment		

Furniture		
No furniture		

Men's Shower + Locker Room		
Equipment		
Listing and Description	Quantity	Notes
No equipment		

Furniture		
No furniture		

Women's Restroom		
Equipment		
Listing and Description	Quantity	Notes
No equipment		

Furniture		
No furniture		

Women's Shower + Locker Room		
Equipment		
Listing and Description	Quantity	Notes
No equipment		

Furniture		
No furniture		

On-Call Room		
Equipment		
Listing and Description	Quantity	Notes
Phones	1	

Furniture		
Bed w/ box spring mattress + frame	1	Extra-long twin
Night table	1	

Uniform Storage + Wash Room		
Equipment		
Listing and Description	Quantity	Notes
Washer	1	
Dryer	1	

Furniture		
No furniture		

Server Room		
Equipment		
Listing and Description	Quantity	Notes
Equipment Racks	tbd	
Radio system, alarm, CCTV	tbd	

Furniture		
No furniture		

Janitor-Mechanical Room		
Equipment		
Listing and Description	Quantity	Notes
Exposed Shelving	1	

Furniture		
No furniture		

Electrical Room		
Equipment		
Listing and Description	Quantity	Notes
No equipment		

Furniture		
No furniture		

SHOP BUILDING

Shop and Storage

Equipment

Listing and Description	Quantity	Notes
Relocate Existing City Equipment		
Phone	1	

Furniture

No furniture		

I + C Workshop

Equipment

Listing and Description	Quantity	Notes
Relocate Existing City Equipment		
Phone	1	

Furniture

No furniture		

Bathroom

Equipment

Listing and Description	Quantity	Notes
No equipment		

Furniture

No furniture		

Lab

Equipment

Listing and Description	Quantity	Notes
Relocate Existing City Equipment		
Phone	1	

Furniture

Relocate Existing City Furniture		

Operations

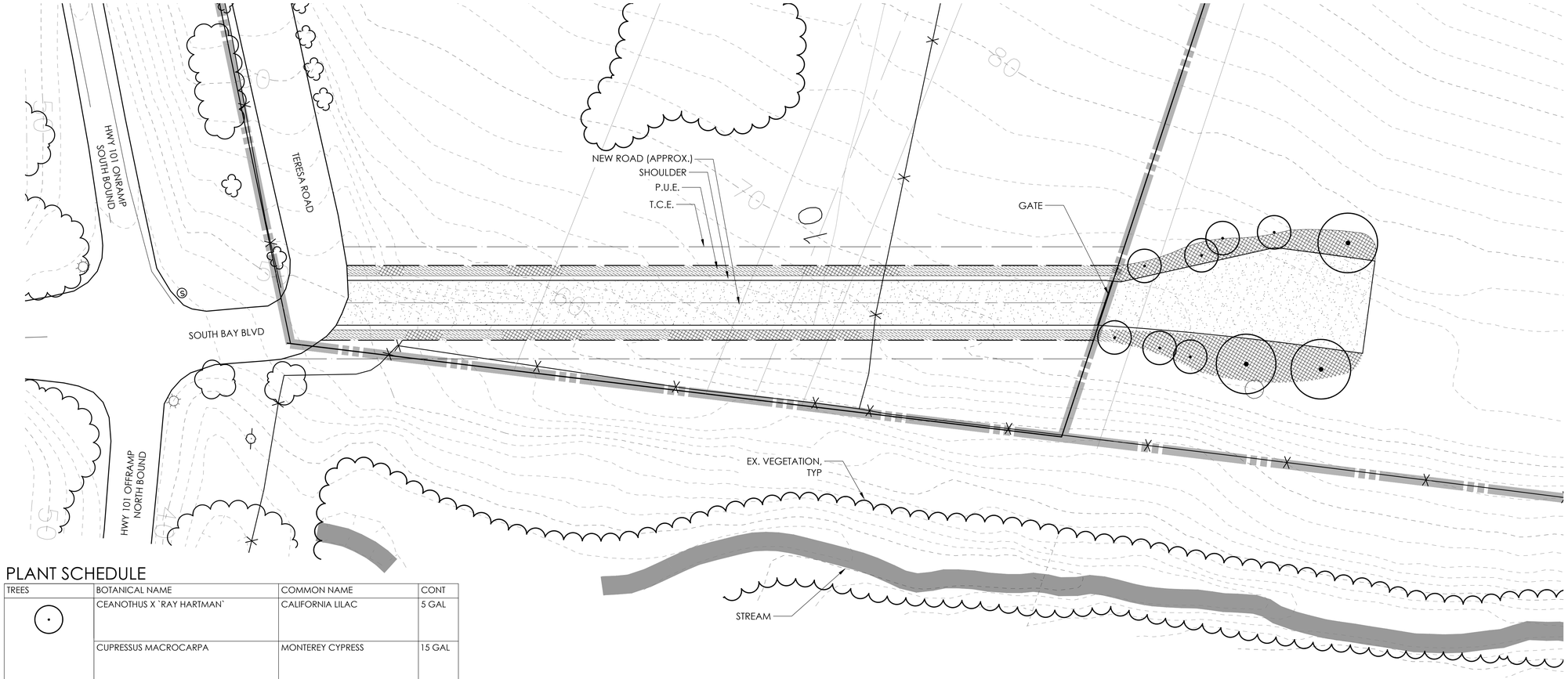
Equipment

Listing and Description	Quantity	Notes
Relocate Existing City Equipment		
Phone	1	
Printer/Copier / Fax	1	Desktop all-in-one

Furniture

Relocate Existing City Furniture		

Appendix I:
Access Road Conceptual Landscape Plans



PLANT SCHEDULE

TREES	BOTANICAL NAME	COMMON NAME	CONT
⊙	CEANOTHUS X `RAY HARTMAN`	CALIFORNIA LILAC	5 GAL
	CUPRESSUS MACROCARPA	MONTEREY CYPRESS	15 GAL
	METROSIDEROS EXCELSA	NEW ZEALAND CHRISTMAS TREE	15 GAL
	PINUS RADIATA	MONTEREY PINE	15 GAL
	QUERCUS AGRIFOLIA	COAST LIVE OAK	15 GAL
SHRUBS 36-48" O.C.	BOTANICAL NAME	COMMON NAME	CONT
	ARTEMISIA CALIFORNICA	CALIFORNIA SAGEBRUSH	1 GAL
	CEANOTHUS GLORIOSUS `HEART`S DESIRE`	HEART`S DESIRE LILAC	5 GAL
	DIPLACUS AURANTIACUS	STICKY MONKEYFLOWER	1 GAL
	ERIOGONUM GRANDE RUBESCENS	RED BUCKWHEAT	1 GAL
	HESPEROYUCCA WHIPPLEI	CHAPARRAL YUCCA	5 GAL
	SALVIA CLEVELANDII `ALLEN CHICKERING`	CLEVELAND SAGE	5 GAL
	SALVIA MELLIFERA	BLACK SAGE	1 GAL
	TRICHOSTEMA LANATUM	WOOLLY BLUE CURLS	5 GAL
SHRUBS 60-72" O.C.	BOTANICAL NAME	COMMON NAME	CONT
	BACCHARIS PILULARIS CONSANGUINEA	COYOTE BRUSH	5 GAL
	BACCHARIS PILULARIS `PIGEON POINT`	DWARF COYOTE BRUSH	5 GAL
	HETEROMELES ARBUTIFOLIA	TOYON	5 GAL
	RHAMNUS CALIFORNICA	CALIFORNIA COFFEE BERRY	5 GAL
	RHUS INTEGRIFOLIA	LEMONADE BERRY	5 GAL

GRAPHIC SCALE

30 0 15 30 60 120

(In Feet)

1 inch = 30 feet

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3765 S. Higuera, San Luis Obispo, CA 93401

NOT FOR CONSTRUCTION

MORRO BAY WRF

MORRO BAY, CA

LANDSCAPE CONCEPT PLAN

NO.	REVISION	DATE

PROJECT MANAGER
CHRIS DUFOUR

DRAWN BY CD/CM
CHECKED BY CD

DATE
JANUARY 9, 2018

PROJECT NUMBER
0218-01-IN15

SHEET
L-1

Appendix J:
Preliminary Geotechnical Baseline Report
- Provided separately-

Appendix K:
Existing WWTP Lead Testing Report

WEST COAST

SAFETY
CONSULTANTS

September 4, 2010

Bruce Keogh
Morro Bay Wastewater Treatment Facility
160 Atascadero Road
Morro Bay, CA 93442

RE: Lead Building Inspection - Morro Bay Wastewater Treatment Facility, 160 Atascadero Road, Morro Bay, California

INTRODUCTION

This report presents the findings of West Coast Safety Consultants inspection for lead containing building materials at the Morro Bay Wastewater Treatment Facility located at 160 Atascadero Road, Morro Bay, California on August 28, 2010. The inspection was conducted for CAL-OSHA and EPA compliance in conjunction with the renovation of the structure. All accessible areas were visibly inspected and representative samples of suspect materials were obtained and analyzed. Samples were not collected from every painted surface, however samples were obtained which represent the majority of the painted surfaces inside and outside the buildings.

LEAD SAMPLE ANALYSIS

Our survey involved a visual inspection of each structure and sample collection from painted surfaces and ceramic tile. There were 34 samples analyzed by Forensic Analytical Specialties using Flame Atomic Absorption in accordance with the Environmental Protection Agency (EPA) Method (3050B/7420) to identify lead content. Forensic Analytical Specialties, Incorporated is a laboratory which is certified to analyze for lead. They are accredited by the American Industrial Hygiene Association, the National Institute of Standards and Technology, and the California Department of Public Health (CDPH). Please note the attached laboratory report.

LEAD FINDINGS

West Coast Safety Consultants visual inspection indicated the ceramic tile and painted surfaces inside and outside the building were generally intact, and in good condition, however flaking and peeling paint was observed in the following areas:

1. Administration and Boiler Building's exterior parapet cap.
2. Upper Head Works Building exterior equipment.
3. Old Chlorine Building exterior fascia boards.

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Thirty (30) paint samples and four (4) ceramic tile samples were collected and analyzed for lead content. The results in parts per million (ppm) are as follows:

Sample #	Location	Description	Lead Content
MB-101	Administration Building Wall	Blue Paint	None Detected
MB-102	Administration Building Ceiling	White Paint	None Detected
MB-103	Administration Building Door	Brown Paint	1,400 ppm
MB-104	Administration Building Door Frame	Blue Paint	630 ppm
MB-105	Administration Building Door Frame	Beige Paint	3,300 ppm
MB-106	Administration Building Door	Blue Paint	7,300 ppm
MB-107	Admin. Building Roof Access Ladder	Beige Paint	870 ppm
MB-108	Administration Building Generator Stand	Beige Paint	4,400 ppm
MB-109	Administration Building Exterior Walls	Beige Paint	None Detected
MB-110	Administration Building Entryway Wall	Beige Tile	None Detected
MB-111	Administration Building Entryway Floor	Brown Tile	None Detected
MB-112	Administration Building Restroom Wall	Beige Tile	None Detected
MB-113	Administration Building Restroom Floor	Beige Tile	None Detected
MB-114	Administration Building Diesel Tank	Brown Paint	None Detected
MB-115	Administration Building Exterior Posts	Yellow Paint	150 ppm
MB-116	Interstage Building Interior Wall	Blue Paint	None Detected
MB-117	Interstage Building Interior Ceiling	White Paint	None Detected
MB-118	Interstage Building Door	Brown Paint	4,600 ppm
MB-119	Interstage Building Exterior Pipe	Grey Paint	None Detected
MB-120	Interstage Building Exterior Lamp Post	Grey Paint	None Detected
MB-121	Chlorine Disinfectant Stairway	Grey Paint	190 ppm
MB-122	Chlorine Disinfectant Pipe	Grey Paint	None Detected
MB-123	Boiler Building Door	Brown Paint	690 ppm

Sample #	Location	Description	Lead Content
MB-124	Boiler Building Exterior Wall	Beige Paint	None Detected
MB-125	Digester/Sludge Exterior Pipe	Grey Paint	230 ppm
MB-126	Digester/Sludge Exterior Pipe	Grey Paint	None Detected
MB-127	Upper Head Works Electrical Ceiling	White Paint	None Detected
MB-128	Upper Head Works Electrical Wall	Blue Paint	None Detected
MB-129	Lower Head Works Pipe	Grey Paint	None Detected
MB-130	Upper Head Works Exterior Hoist	Yellow Paint	72,000 ppm
MB-131	Upper Head Works Exterior Equipment	Grey Paint	90 ppm
MB-132	Collection Building Exterior Wall	White Paint	None Detected
MB-133	Old Chlorine Building Exterior Fascia	Beige Paint	150 ppm
MB-134	Old Chlorine Building Exterior I-Beam	Beige Paint	80 ppm

As a comparison, the EPA and CDPH consider a material to be lead based paint when it exceeds .5% or 5,000 ppm. In addition, the Consumer Product Safety Commission (CPSC) set a limit of .009% or 90 ppm of lead in paint for children's toys and CAL-OSHA regulates workers who disturb lead coated surfaces at any detectable lead level.

Lead based paint was detected on the blue painted metal door in the Administration Building and the yellow painted hoist located outside the Upper Headworks Building. The yellow painted hoist located in the Boiler Building and the Old Chlorine Building were not sampled and therefore should be assumed to contain lead in excess of 5,000 ppm. The paint on all of those surfaces was intact and in good condition. No lead hazards were detected on the inspection.

The remaining painted surfaces contained no lead or relatively low levels low levels of lead in the paint. The painted metal doors throughout the facility contained 630 - 4,600 ppm lead. The grey painted pipe, equipment, light posts and stairways contained up to 230 ppm lead.

No lead was detected in the ceramic tile located in the Administration Building or the interior and exterior painted walls and ceilings on all of the buildings except the Old Chlorine Building which contained 80-150 ppm lead on the exterior painted surfaces.

Although the majority of painted surfaces are below the EPA and CDPH threshold of 5,000 ppm lead, the paint still contains levels of lead, which when disturbed, trigger compliance with the CAL-OSHA regulations. Contractors disturbing painted surfaces or ceramic tile should receive notification of the lead content and the condition of the painted surfaces prior to demolition, renovation, or any activity which would disturb the material. **All work should be conducted in compliance with the CAL-OSHA and EPA regulations.**

CLOSURE

The findings and conclusions rendered in this report are based on the scope of work authorized by the client and laboratory analysis of building material samples collected during this inspection. This report does not reflect variations which may exist between sampling points. These variations can not be anticipated, nor could they be entirely accounted for even with exhaustive testing. All work has been performed in accordance with generally accepted practices in the field of lead consultation.

The conclusions and recommendations listed in this report are based on the requirements set forth in the Department of Housing and Urban Development Interim Guidelines for Lead-based Paint, 40 CFR Part 61, National Emission Standards for Hazardous Air Pollutants (NESHAP), and Section 1532.1 the Lead Standard of the California Occupational Safety and Health Administration.

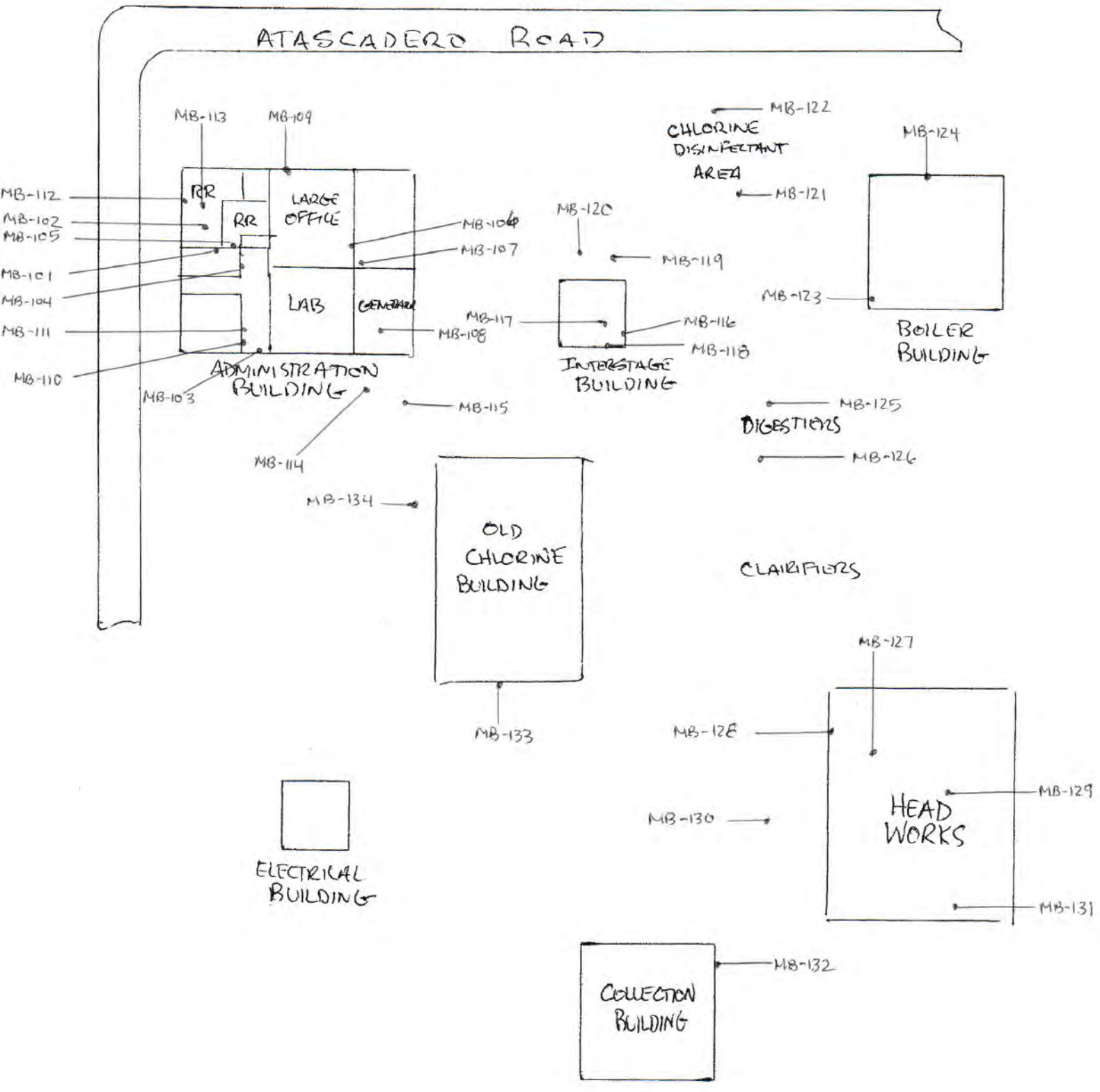
I have enclosed the required CDPH notification of a Lead Inspection, a sample location diagram, a laboratory report from Forensic Analytical and a copy of my lead credentials. If you have any questions, please contact me at 805-748-8832. Thank you for choosing West Coast Safety Consultants.

Sincerely,

Michael Mc Guire, CSP
Lead-Related Construction Certificate #379

SAMPLE LOCATION DIAGRAM

160 Atascadero Road
Morro Bay, California



Forensic Analytical — Analysis Request Form

Client Name & Address: # 5318 West Coast Safety Consultants, 4581 Wavertree, San Luis Obispo, CA 93405	P.O. #: Date: 8/28/10
	Turn Around Time: ____hr/ 12hr / 24hr / (48 hr) / ext: ____
	Due Date: / / Due Time: : am/pm
	☐ PLM: ☐ Standard / ☐ Point Count ☐ PCM: NIOSH 7400
Contact: Michael McGuire	☐ TEM Air: ☐ AHERA / ☐ Yamate2 / ☐ NIOSH 7402
	☐ TEM Bulk: ☐ Quantitative / ☐ Qualitative / ☐ Chatfield
Phone #: 805/544-5303 ext.	☐ TEM Water: ☐ Potable / ☐ Non-Potable / ☐ Wt %
	☐ TEM Microvac
Fax #: 805/544-4623	☐ Special Project:
Site: 160 ATASCADERO RD., MORRO BAY	☒ Metals Analysis: Method
Job: CITY OF MORRO BAY	Matrix: PAINT
	Analytes: LEAD
Comments:	

Sample ID	Date/ Time	Sample Location/Description	FOR AIR SAMPLES ONLY: Type	Time On/Off	Avg. LPM	Total Time	Sample Area or Air Volume
MB-101	8.28.10	ADMINISTRATION BLDG. WALL / BLUE PAINT	A P C				
MB-102		ADMINISTRATION BLDG. CEILING / WHITE PAINT	A P C				
MB-103		ADMINSTRATION DOOR / BROWN PAINT	A P C				
MB-104		ADMINSTRATION DOOR FRAME / BLUE PAINT	A P C				
MB-105		" / BEIGE PAINT	A P C				
MB-106		ADMINISTRATION BLDG. DOOR / BLUE PAINT	A P C				
MB-107		ADMINISTRATION BLDG LADDER / BEIGE PAINT	A P C				
MB-108		ADMINISTRATION GENERATOR / BEIGE PAINT	A P C				
MB-109		ADMINISTRATION EXTERIOR / BEIGE PAINT	A P C				
MB-114		ADMINISTRATION DIESEL TANK / BROWN PAINT	A P C				

Sampled by: M. MCGUIRE Date: 8/28/10 Time: 8:00 AM

Shipped via: ☒ Fed Ex ☐ Airborne ☐ UPS ☐ US Mail ☐ Courier ☐ Drop Off ☐ Other:

Relinquished by: MM Date / Time: 8-28-10 @ 7:30 PM	Relinquished by: Date / Time:	Relinquished by: Date / Time:
Received by: Betty Fedex Date / Time: 8/31/10 1030am Condition Acceptable? ☑ Yes ☐ No	Received by: Date / Time: Condition Acceptable? ☐ Yes ☐ No	Received by: Date / Time: Condition Acceptable? ☐ Yes ☐ No

San Francisco Office: 3777 Depot Road, Suite 409, Hayward, California 94545 / Telephone: (510)887-8828 (800)827-FASI / Fax: (510)887-4218
Los Angeles Office: 2959 Pacific Commerce Drive, Rancho Dominguez, California 90221 / Telephone: (310)763-2374 / Fax: (310)763-8684

Forensic Analytical

Analysis Request Form

Client Name & Address: # 5318 West Coast Safety Consultants, 4531 Wavertree, San Luis Obispo, CA 93405	P.O. #: Date: / /
	Turn Around Time: ____hr/ 12hr / 24hr / 48 hr / ext: ____
	Due Date: / / Due Time: : am/pm
	☐ PLM: ☐ Standard / ☐ Point Count ☐ PCM: NIOSH 7400
Contact: Michael McGuire	☐ TEM Air: ☐ AHERA / ☐ Yamate2 / ☐ NIOSH 7402
	☐ TEM Bulk: ☐ Quantitative / ☐ Qualitative / ☐ Chatfield
Phone #: 805/544-5303 ext.	☐ TEM Water: ☐ Potable / ☐ Non-Potable / ☐ Wt %
	☐ TEM Microvac
Fax #: 805/544-4623	☐ Special Project:
Site:	☐ Metals Analysis: Method ____
Job:	Matrix: ____
	Analytes: ____

Comments:

Sample ID	Date/ Time	Sample Location/Description	FOR AIR SAMPLES ONLY Type	Time On/Off	Avg. LPM	Total Time	Sample Area or Air Volume
MB-115	8-28-10	ADMINISTRATION EXT. POSTS / YELLOW PAINT	A P C				
MB-116		INTERSTAGE WALL / BLUE PAINT	A P C				
MB-117		INTERSTAGE CEILING / WHITE PAINT	A P C				
MB-118		INTERSTAGE DOOR / BROWN PAINT	A P C				
MB-119		INTERSTAGE EXT. PIPE / GREY PAINT	A P C				
MB-120		INTERSTAGE LIGHT POST / DARK GREY PAINT	A P C				
MB-121		CHLORINE DISINFECTANT STAIR / GREY PAINT	A P C				
MB-122		CHLORINE PIPE DISINFECTANT / GREY PAINT	A P C				
MB-123		BOILER BLDG DOOR / BROWN PAINT	A P C				
MB-124		BOILER BLDG EXTERIOR / BEIGE PAINT	A P C				

Sampled by: ____ Date: / / Time: :

Shipped via: ☐ Fed Ex ☐ Airborne ☐ UPS ☐ US Mail ☐ Courier ☐ Drop Off ☐ Other:

Relinquished by: MMM	Relinquished by:	Relinquished by:
Date / Time: 8-28-10 @ 7:30 PM	Date / Time:	Date / Time:
Received by: Betty Fitch	Received by:	Received by:
Date / Time: 8/31/10 1130am	Date / Time:	Date / Time:
Condition Acceptable? ☐ Yes ☐ No	Condition Acceptable? ☐ Yes ☐ No	Condition Acceptable? ☐ Yes ☐ No

San Francisco Office: 3777 Depot Road, Suite 409, Hayward, California 94545 / Telephone: (510)887-8828 (800)827-FASI / Fax: (510)887-4218
Los Angeles Office: 2959 Pacific Commerce Drive, Rancho Dominguez, California 90221 / Telephone: (310)763-2374 / Fax: (310)763-8684

Forensic Analytical — Analysis Request Form

Client Name & Address: # 5318 West Coast Safety Consultants, 4581 Wavertree, San Luis Obispo, CA 93405	P.O. #: Date: / /
	Turn Around Time: ____hr/ 12hr / 24hr / 48 hr / ext: ____
	Due Date: / / Due Time: : am/pm
	☐ PLM: ☐ Standard / ☐ Point Count ☐ PCM: NIOSH 7400
Contact: Michael McGuire	☐ TEM Air: ☐ AHERA / ☐ Yamate2 / ☐ NIOSH 7402
	☐ TEM Bulk: ☐ Quantitative / ☐ Qualitative / ☐ Chatfield
Phone #: 805/544-5303 ext.	☐ TEM Water: ☐ Potable / ☐ Non-Potable / ☐ Wt %
	☐ TEM Microvac
Fax #: 805/544-4623	☐ Special Project:
Site:	☐ Metals Analysis: Method
Job:	Matrix:
	Analytes:

Comments:

Sample ID	Date/ Time	Sample Location/Description	FOR AIR SAMPLES ONLY Type	Time On/Off	Avg. LPM	Total Time	Sample Area or Air Volume
MB-125	8-28-10	DIGESTER SLUDGE PIPE / GREY PAINT	A P C				
MB-126	"	" / "	A P C				
MB-127		UPPER HEADWORKS CEILING / WHITE PAINT	A P C				
MB-128		UPPER HEADWORKS WALL / BLUE PAINT	A P C				
MB-129		LOWER HEADWORKS PIPE / GREY PAINT	A P C				
MB-130		HEADWORKS HOIST / YELLOW PAINT	A P C				
MB-131		HEADWORKS EXT. EQUIPMENT / GREY PAINT	A P C				
MB-132		COLLECTION BLDG. EXT. WALL / WHITE PAINT	A P C				
MB-133		OLD CHLORINE EXT. ~~GREY~~ FASCIA / BEIGE PAINT	A P C				
MB-134		OLD CHLORINE I-BEAM / "	A P C				

Sampled by: Date: / / Time: :

Shipped via: ☐ Fed Ex ☐ Airborne ☐ UPS ☐ US Mail ☐ Courier ☐ Drop Off ☐ Other:

Relinquished by: MMM	Relinquished by:	Relinquished by:
Date / Time: 8-28-10 @ 7:30 Pm	Date / Time:	Date / Time:
Received by: Betty Fedex	Received by:	Received by:
Date / Time: 8/31/10 1030 am	Date / Time:	Date / Time:
Condition Acceptable? ☐ Yes ☐ No	Condition Acceptable? ☐ Yes ☐ No	Condition Acceptable? ☐ Yes ☐ No

San Francisco Office: 3777 Depot Road, Suite 409, Hayward, California 94545 / Telephone: (510)887-8828 (800)827-FASI / Fax: (510)887-4218
Los Angeles Office: 2959 Pacific Commerce Drive, Rancho Dominguez, California 90221 / Telephone: (310)763-2374 / Fax: (310)763-8684

Forensic Analytical — Analysis Request Form

Client Name & Address:	P.O. #: Date: 8/28/10
# 5318 West Coast Safety Consultants	Turn Around Time: ____hr/ 12hr / 24hr / (48)hr / ext: ____
4581 Wavertree,	Due Date: / / Due Time: ____ : ____ am/pm
San Luis Obispo, CA 93405	☐ PLM: ☐ Standard / ☐ Point Count ☐ PCM: NIOSH 7400
Contact: Michael McGuire	☐ TEM Air: ☐ AHERA / ☐ Yamate2 / ☐ NIOSH 7402 ☐ TEM Bulk: ☐ Quantitative / ☐ Qualitative / ☐ Chatfield ☐ TEM Water: ☐ Potable / ☐ Non-Potable / ☐ Wt % ☐ TEM Microvac
Phone #: 805/544-5303 ext.	
Fax #: 805/544-4623	☐ Special Project:
Site: 160 ATASCADERO RD., MORRO BAY Job: CITY OF MORRO BAY	☒ Metals Analysis: Method ____ Matrix: CERAMIC TILE Analytes: LEAD

Comments:

Sample ID	Date/ Time	Sample Location/Description		FOR AIR SAMPLES ONLY Type	Time On/Off	Avg. LPM	Total Time	Sample Area or Air Volume
MB-110	8.28.10	ADMINISTRATION ENTRYWAY WALL	CERAMIC TILE	A P C				
MB-111		ADMINISTRATION ENTRYWAY FLOOR	11	A P C				
MB-112		ADMINISTRATION RR WALL	11	A P C				
MB-113		ADMINISTRATION RR FLOOR	11	A P C				
				A P C				
				A P C				
				A P C				
				A P C				
				A P C				
				A P C				

Sampled by: M.McGUIRE Date: 8/28/10 Time: 8:00 AM

Shipped via: ☐ Fed Ex ☐ Airborne ☐ UPS ☐ US Mail ☐ Courier ☐ Drop Off ☐ Other:

Relinquished by: MM Date / Time: 8.28.10 @ 7:30PM	Relinquished by: Date / Time:	Relinquished by: Date / Time:
Received by: Betty Fedex Date / Time: 8/31/10 1030am Condition Acceptable? ☐ Yes ☐ No	Received by: Date / Time: Condition Acceptable? ☐ Yes ☐ No	Received by: Date / Time: Condition Acceptable? ☐ Yes ☐ No

Forensic Analytical Laboratories

Metals Analysis of Paints

West Coast Safety Consultants
Michael McGuire

4581 Wavertree
San Luis Obispo, CA 93405

Client ID: 5318
Report Number: M113417
Date Received: 08/31/10
Date Analyzed: 09/02/10
Date Printed: 09/02/10
First Reported: 09/02/10

Job ID / Site: City of Morro Bay, 160 Atascadero Rd., Morro Bay
Date(s) Collected: 08/28/10

FALI Job ID: 5318
Total Samples Submitted: 30
Total Samples Analyzed: 30

Sample Number	Lab Number	Analyte	Result	Result Units	Reporting Limit*	Method Reference
MB-101	30383111	Pb	< 0.006	wt%	0.006	EPA 3050B/7420
MB-102	30383112	Pb	< 0.006	wt%	0.006	EPA 3050B/7420
MB-103	30383113	Pb	0.14	wt%	0.006	EPA 3050B/7420
MB-104	30383114	Pb	0.063	wt%	0.006	EPA 3050B/7420
MB-105	30383115	Pb	0.33	wt%	0.02	EPA 3050B/7420
MB-106	30383116	Pb	0.73	wt%	0.03	EPA 3050B/7420
MB-107	30383117	Pb	0.087	wt%	0.006	EPA 3050B/7420
MB-108	30383118	Pb	0.44	wt%	0.02	EPA 3050B/7420
MB-109	30383119	Pb	< 0.006	wt%	0.006	EPA 3050B/7420
MB-114	30383120	Pb	< 0.006	wt%	0.006	EPA 3050B/7420
MB-115	30383121	Pb	0.015	wt%	0.006	EPA 3050B/7420
MB-116	30383122	Pb	< 0.006	wt%	0.006	EPA 3050B/7420
MB-117	30383123	Pb	< 0.006	wt%	0.006	EPA 3050B/7420
MB-118	30383124	Pb	0.46	wt%	0.02	EPA 3050B/7420
MB-119	30383125	Pb	< 0.006	wt%	0.006	EPA 3050B/7420
MB-120	30383126	Pb	< 0.006	wt%	0.006	EPA 3050B/7420
MB-121	30383127	Pb	0.019	wt%	0.006	EPA 3050B/7420
MB-122	30383128	Pb	< 0.006	wt%	0.006	EPA 3050B/7420
MB-123	30383129	Pb	0.069	wt%	0.006	EPA 3050B/7420
MB-124	30383130	Pb	< 0.006	wt%	0.006	EPA 3050B/7420
MB-125	30383131	Pb	0.023	wt%	0.006	EPA 3050B/7420
MB-126	30383132	Pb	< 0.006	wt%	0.006	EPA 3050B/7420
MB-127	30383133	Pb	< 0.007	wt%	0.007	EPA 3050B/7420
MB-128	30383134	Pb	< 0.006	wt%	0.006	EPA 3050B/7420
MB-129	30383135	Pb	< 0.006	wt%	0.006	EPA 3050B/7420
MB-130	30383136	Pb	7.2	wt%	0.3	EPA 3050B/7420
MB-131	30383137	Pb	0.009	wt%	0.006	EPA 3050B/7420

3777 Depot Road, Suite 409, Hayward, CA 94545 / Telephone: (510) 887-8828 (800) 827-FASI / Fax: (510) 887-4218

Forensic Analytical Laboratories

Metals Analysis of Paints

West Coast Safety Consultants
Michael McGuire

4581 Wavertree
San Luis Obispo, CA 93405

Client ID: 5318
Report Number: M113417
Date Received: 08/31/10
Date Analyzed: 09/02/10
Date Printed: 09/02/10
First Reported: 09/02/10

Job ID / Site: City of Morro Bay, 160 Atascadero Rd., Morro Bay
Date(s) Collected: 08/28/10

FALI Job ID: 5318
Total Samples Submitted: 30
Total Samples Analyzed: 30

Sample Number	Lab Number	Analyte	Result	Result Units	Reporting Limit*	Method Reference
MB-132	30383138	Pb	< 0.02	wt%	0.02	EPA 3050B/7420
MB-133	30383139	Pb	0.015	wt%	0.006	EPA 3050B/7420
MB-134	30383140	Pb	0.008	wt%	0.006	EPA 3050B/7420

* The Reporting Limit represents the lowest amount of analyte that the laboratory can confidently detect in the sample, and is not a regulatory level. The Units for the Reporting Limit are the same as the Units for the Final Results.

Dave Sandusky, CIH, Laboratory Supervisor, Hayward Laboratory

3777 Depot Road, Suite 409, Hayward, CA 94545 / Telephone: (510) 887-8828 (800) 827-FASI / Fax: (510) 887-4218

Forensic Analytical Laboratories

Metals Analysis of Bulks

West Coast Safety Consultants
Michael McGuire

4581 Wavertree
San Luis Obispo, CA 93405

Client ID: 5318
Report Number: M113418
Date Received: 08/31/10
Date Analyzed: 09/01/10
Date Printed: 09/01/10
First Reported: 09/01/10

Job ID / Site: City of Morro Bay, 160 Atascadero Rd., Morro Bay
Date(s) Collected: 08/28/10

FALI Job ID: 5318
Total Samples Submitted: 4
Total Samples Analyzed: 4

Sample Number	Lab Number	Analyte	Result	Result Units	Reporting Limit*	Method Reference
MB-110	30383141	Pb	< 7	mg/kg	7	EPA 3050B/7420
MB-111	30383142	Pb	< 7	mg/kg	7	EPA 3050B/7420
MB-112	30383143	Pb	< 6	mg/kg	6	EPA 3050B/7420
MB-113	30383144	Pb	< 8	mg/kg	8	EPA 3050B/7420

* The Reporting Limit represents the lowest amount of analyte that the laboratory can confidently detect in the sample, and is not a regulatory level. The Units for the Reporting Limit are the same as the Units for the Final Results.

Dave Sandusky, CIH, Laboratory Supervisor, Hayward Laboratory

3777 Depot Road, Suite 409, Hayward, CA 94545 / Telephone: (510) 887-8828 (800) 827-FASI / Fax: (510) 887-4218

State of California—Health and Human Services Agency

California Department of Public Health

LEAD HAZARD EVALUATION REPORT

Section 1 — Date of Lead Hazard Evaluation 8-28-10

Section 2 — Type of Lead Hazard Evaluation (Check one box only)

☒ Lead Inspection ☐ Risk assessment ☐ Clearance Inspection ☐ Other (specify) _____

Section 3 — Structure Where Lead Hazard Evaluation Was Conducted

Address [number, street, apartment (if applicable)]	City	County	Zip Code
160 ATASCADERO ROAD	MORRO BAY	SAN LUIS OBISPO	93442

Construction date (year) of structure	Type of structure		Children living in structure?
UNKNOWN	☐ Multi-unit building	☐ School or daycare	☐ Yes ☒ No
	☐ Single family dwelling	☒ Other WASTEWATER TREATMENT	☐ Don't Know

Section 4 — Owner of Structure (if business/agency, list contact person)

Name	Telephone number
CITY OF MORRO BAY - BRUCE KEOGH	805-704-3647

Address [number, street, apartment (if applicable)]	City	State	Zip Code
160 ATASCADERO ROAD	MORRO BAY	CA	93442

Section 5 — Results of Lead Hazard Evaluation (check all that apply)

☐ No lead-based paint detected ☒ Intact lead-based paint detected ☐ Deteriorated lead-based paint detected

☐ No lead hazards detected ☐ Lead-contaminated dust found ☐ Lead-contaminated soil found ☐ Other _____

Section 6 — Individual Conducting Lead Hazard Evaluation

Name	Telephone number
MIKE McGUIRE	805-544-5303

Address [number, street, apartment (if applicable)]	City	State	Zip Code
4581 WAVERTREE	SAN LUIS OBISPO	CA	93401

CDPH certification number	Signature	Date
379	M. McGuire	9-6-10

Name and CDPH certification number of any other individuals conducting sampling or testing (if applicable)

Section 7 — Attachments

A. A foundation diagram or sketch of the structure indicating the specifc locations of each lead hazard or presence of lead-based paint;
B. Each testing method, device, and sampling procedure used;
C. All data collected, including quality control data, laboratory results, including laboratory name, address, and phone number.

First copy and attachments retained by inspector

Second copy and attachments retained by owner

Third copy only (no attachments) mailed or faxed to:

California Department of Public Health
Childhood Lead Poisoning Prevention Branch Reports
850 Marina Bay Parkway, Building P, Third Floor
Richmond, CA 94804-6403
Fax: (510) 620-5656

State of California Department of Public Health

Lead-Related Construction Certificate

Certificate Type	Expiration Date
Inspector/Assessor	**10/07/2010**
Project Designer	**10/07/2010**
Project Monitor	**10/07/2010**

16611

Michael L. McGuire ID #: **379**

Appendix L:
Existing WWTP Asbestos Testing Report

WEST COAST

SAFETY
CONSULTANTS

September 2, 2010

Bruce Keogh
Morro Bay Wastewater Treatment Facility
160 Atascadero Road
Morro Bay, CA 93442

RE: Asbestos Building Inspection - Morro Bay Wastewater Treatment Facility, 160 Atascadero Road, Morro Bay, California

INTRODUCTION

This report presents the findings of West Coast Safety Consultants inspection for asbestos containing building materials at the Morro Bay Wastewater Treatment Facility, 160 Atascadero Road, Morro Bay, California on August 28, 2010. All accessible areas were visibly inspected and samples of suspect material were obtained and analyzed.

Our survey involved sampling and analyzing suspect materials to test for the presence of asbestos. A detailed description of the work is outlined below.

1. Inspected all accessible areas of the building for Category I Non-friable, Category II Non-friable, and other Regulated Asbestos Containing Materials. Samples were collected recording:

    a. Sample location
    b. Sample description
    c. Friability
    d. Condition of the material
    e. Potential for disturbance

2. Submitted samples to an EPA accredited laboratory which will provide a report containing the following:

    a. West Coast Safety Consultants sample identification number
    b. Laboratory sample identification number
    c. Analytical technique
    d. Quality control procedures
    e. Type and percentage of asbestos in each material

3. Analyzed the sample results and generated this report which includes:

   a. Definitions
   b. Executive Summary
   c. Findings
   d. Conclusions and Recommendations
   e. Sample Result Summary (Appendix A)
   f. Sample Location Diagram (Appendix B)
   g. Laboratory Report (Appendix C)
   h. Inspectors Credentials (Appendix D)

DEFINITIONS

Asbestos
Types of asbestos include chrysotile, amosite, crocidolite, tremolite, anthophyllite, actinolite and any of these minerals that have been chemically treated and/or altered.

Asbestos Containing Material (ACM)
Means any material containing more than one percent asbestos.

Category I Non-friable ACM
Asbestos containing packings, gaskets, resilient floor coverings, and asphalt roofing products containing more than 1 percent asbestos as determined using the method specified in Appendix A, Subpart F, 40 CFR Part 763, Section 1, Polarized Light Microscopy (PLM).

Category II Non-friable ACM
Any non-friable material, excluding Category I Non-friable ACM, containing more than 1% asbestos as determined using PLM.

Friable ACM
Any material containing more than 1% asbestos as determined using PLM that when dry can be crumbled, pulverized, or reduced to powder by hand pressure.

NESHAPS
The National Emission Standards for Hazardous Air Pollutants (40 CFR Part 61).

Regulated Asbestos Containing Material (RACM)
Any material containing more than 1% asbestos which is:

   a. Friable or;

   b. Category I Non-friable ACM that has become friable or;

   c. Category I Non-friable ACM that will be or has been subjected to sanding, grinding, cutting, abrading or;

   d. Category II ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to a powder by the forces expected to act on the material in the course of demolition.

EXECUTIVE SUMMARY

MATERIALS WHICH CONTAIN ASBESTOS:

Floor Tile located in the administration building contains a trace (less than 1%) chrysotile asbestos.

Tar located around the roof penetrations and patches on all of the buildings contain 5% chrysotile asbestos.

Transite Panels located in the fume hood in the administration building contain 20% chrysotile asbestos.

SUSPECT MATERIALS WHICH NO ASBESTOS WAS DETECTED:

Baseboard Mastic located in administration building was sampled and no asbestos was detected.

Plaster located on the interior walls in the administration building was sampled and no asbestos was detected in any of the samples.

Drywall/Joint Compound located in the attic area of the administration building and the boiler building restroom was sampled and no asbestos was detected in any of the samples.

Drop-in Ceiling Panel located in the administration building was sampled and no asbestos was detected.

Rolled Shingle/Tar and Felt Roofing Materials located on all of the buildings was sampled and no asbestos was detected in any of the samples.

Putty located on the roof parapet of the administration building was sampled and no asbestos was detected.

Pipe Gaskets located throughout the facility were sampled and no asbestos was detected in any of the samples.

Stucco located on the exterior walls of the administration building and the boiler building was sampled and no asbestos was detected in any of the samples.

FINDINGS

West Coast Safety Consultants collected samples of each suspect asbestos containing building material (ACBM) encountered at the specific site location. The Environmental Protection Agency (EPA) sampling protocol was utilized which requires multiple samples of suspect asbestos containing materials which are applied by spraying or troweling. A total of 34 samples were submitted to Forensic Analytical Services, Inc., an EPA accredited laboratory for analytical testing. Laboratory results are found in appendix C of this report. The asbestos samples were analyzed for the presence of asbestos by Polarized Light Microscopy (PLM) with dispersion staining in accordance with the EPA Method 600/R-93-116, Visual Area Estimation.

Of the 34 samples that were analyzed for asbestos, four (4) were found to contain asbestos. The location of these samples, their description, and our recommended solution to mitigate any potential hazards emanating from contact with these materials is as follows:

Sample Number:	MB-01
Sample Description:	Floor Tile/Mastic
Location of Material:	Throughout Administration Building
Quantity of Material:	Approximately 600 Square Feet
Type and % Asbestos:	Trace (<1%) Chrysotile (In Floor Tile Only)
NESHAP Classification:	Not regulated because the material contains less than 1% asbestos.
Overall Condition:	The material is intact and in good condition.
Disturbance Potential:	Slight, because the material is very resilient.
Recommended Response:	This material should be maintained in good condition and removed prior to demolition, renovation, or any activity which would disturb the material by an asbestos abatement contractor that is licensed by the State of California. Do not sand, cut, saw or abrade the material.
Inspectors Note:	The County Air Pollution Control District requires additional sample analysis to verify sample results which are less than 1% asbestos. If additional analysis is not conducted, the floor tile should be assumed to contain greater than 1% asbestos and classified as a Category I Non-friable Asbestos Containing Material.

Sample Number:	MB-10
Material Description:	Transite Panel
Location of Material:	Administration Building Fume Hood
Quantity of Material:	Approximately 15 Square Feet
Type and % Asbestos:	20% Chrysotile
NESHAP Classification:	Category II Non-Friable Asbestos Containing Material
Overall Condition:	The material was intact and in good condition.
Disturbance Potential:	Slight, because the material itself is very resilient.
Recommended Response:	This material should be maintained in good condition and removed prior to demolition, renovation, or any other activity which would disturb the material by an asbestos abatement contractor that is licensed by the State of California. Do not sand, saw, or abrade the material.

Sample Number:	MB-17, MB-28
Sample Description:	Tar
Location of Material:	All Buildings Roof Penetrations and Patches
Quantity of Material:	Approximately 30 Square Feet
Type and % Asbestos:	5% Chrysotile
NESHAP Classification:	Category I Non-Friable Asbestos Containing Material
Overall Condition:	The material was intact and in good condition.
Disturbance Potential:	Slight, because the material itself is very resilient.
Recommended Response:	The material should be maintained in good condition and removed prior to demolition, renovation, or any other activity which would disturb the material by an asbestos abatement contractor that is licensed by the State of California. Do not sand, saw, or abrade the material.
Inspectors Note:	In several areas the tar tested negative for asbestos, however the two positive sample results require us to treat all the tar located around the roof penetrations and patches as asbestos containing material until additional sampling proves otherwise.

CONCLUSIONS AND RECOMMENDATIONS

The asbestos containing materials identified in this report are intact and in good condition. Intact and undisturbed asbestos containing building materials do not pose a health risk to the building occupants. Disturbing the material improperly however, could expose the building occupants to airborne asbestos fibers. West Coast Safety Consultants recommends all the asbestos containing materials identified in this report be maintained in their current condition and be removed prior to demolition, renovation or any activity which could disturb those materials by an asbestos abatement contractor licensed by the State of California. If additional suspect materials are discovered during demolition or renovation activities, the material should be assumed to contain asbestos until sampling proves otherwise.

Estimated quantities of asbestos containing material identified in this report are intended as estimates only. Prior to removal of asbestos containing materials, West Coast Safety Consultants recommends the contractor make a thorough site investigation to independently ascertain the actual quantities prior to submitting a price quote.

These conclusions and recommendations are based on the requirements set forth in 40 CFR Part 61, National Emission Standards for Hazardous Air Pollutants (NESHAP), and Title 8, Chapter 4, Paragraph 1529, the Asbestos Standard of the California Occupational Safety and Health Administration.

CLOSURE

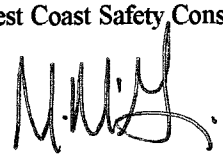
The findings and conclusions rendered in this report are opinions based on the scope of work authorized by the client and laboratory analysis of building material samples collected during this inspection. This report does not reflect variations which may exist between sampling points. These variations can not be anticipated, nor could they be entirely accounted for, in spite of exhaustive additional testing. Our work has been performed in accordance with generally accepted practices in the field of asbestos consultation. No other warranty, either expressed or implied is made.

Although every effort is made to identify all the asbestos containing materials in a building, it is possible for asbestos containing materials which are located under sub-floors, behind walls or otherwise hidden from view to go undetected until demolition or renovation activities uncover the material. If additional suspect materials are discovered, West Coast Safety Consultants will collect samples and provide a report for no additional cost other than the laboratory fee for sample analysis.

The County Air Pollution Control District requires additional sample analysis to verify sample results which are less than 1% asbestos. If additional analysis is not conducted, the material should be assumed to contain greater than 1% asbestos. Please notify West Coast Safety Consultants with-in three weeks of receiving this report if you require additional sample analysis. An additional laboratory fee of $120 will be charged for each sample analyzed by the Point Count Method.

Enclosed with this report are copies of my credentials and a laboratory report from Forensic Analytical Services. We appreciate this opportunity to be of service. Should you have any questions or comments regarding this report, please contact this office at your convenience.

West Coast Safety Consultants,



Michael Mc Guire, CSP
Certified Asbestos Consultant (#92-0534)

ASBESTOS SAMPLE RESULT SUMMARY

Sample #	Material	Location	Asbestos Content
MB-01	Floor Tile	Administration Building	Trace (<1%) Chrysotile
MB-02	Baseboard Mastic	Administration Building	None Detected
MB-03	Plaster	Administration Building Wall	None Detected
MB-04	Plaster	Administration Building Wall	None Detected
MB-05	Plaster	Administration Building Wall	None Detected
MB-06	Drywall/Joint Compound	Administration Building Attic	None Detected
MB-07	Drywall/Joint Compound	Administration Building Attic	None Detected
MB-08	Drywall/Joint Compound	Administration Building Attic	None Detected
MB-09	Drop-in Ceiling Panel	Administration Building	None Detected
MB-10	Transite Panel	Admin. Building Fume Hood	20% Chrysotile
MB-11	Tar and Felt	Administration Building Roof	None Detected
MB-12	Rolled Shingle	Administration Building Roof	None Detected
MB-13	Tar	Administration Building Roof	None Detected
MB-14	Tar	Administration Building Roof	None Detected
MB-15	Putty	Admin. Bldg. Roof Parapet	None Detected
MB-16	Tar and Felt	Interstage Building Roof	None Detected
MB-17	Tar	Interstage Bldg. Roof Penetration	5% Chrysotile
MB-18	Pipe Gasket	Interstage Building Exterior	None Detected
MB-19	Pipe Gasket	Chlorine Disinfectant Area	None Detected
MB-20	Tar and Felt	Boiler Building Roof	None Detected
MB-21	Rolled Shingle	Boiler Building Roof	None Detected
MB-22	Tar	Boiler Building Roof Penetration	None Detected
MB-23	Drywall/Joint Compound	Boiler Building Restroom	None Detected
MB-24	Pipe Gasket	Digester/Sludge Area	None Detected

Sample #	Material	Location	Asbestos Content
MB-25	Pipe Gasket	Digester/Sludge Area	None Detected
MB-26	Tar and Felt	Headworks Building Roof	None Detected
MB-27	Tar and Felt	Old Chlorine Building Roof	None Detected
MB-28	Tar	Old Chlorine Bldg. Roof Penet.	5% Chrysotile
MB-29	Stucco	Administration Building Exterior	None Detected
MB-30	Stucco	Administration Building Exterior	None Detected
MB-31	Stucco	Administration Building Exterior	None Detected
MB-32	Stucco	Boiler Building Exterior	None Detected
MB-33	Stucco	Boiler Building Exterior	None Detected
MB-34	Stucco	Boiler Building Exterior	None Detected

Forensic Analytical — Analysis Request Form

Client Name & Address: # 5318 West Coast Safety Consultants, 4581 Wavertree, San Luis Obispo, CA 93405	P.O. #: Date: 8/28/10
	Turn Around Time: ____hr/ 12hr / (24hr) / 48 hr / ext: ____
	Due Date: / / Due Time: ____:____ am/pm
	☒ PLM: ☐ Standard / ☐ Point Count ☐ PCM: NIOSH 7400
Contact: Michael McGuire	☐ TEM Air: ☐ AHERA / ☐ Yamate2 / ☐ NIOSH 7402
	☐ TEM Bulk: ☐ Quantitative / ☐ Qualitative / ☐ Chatfield
Phone #: 805/544-5303 ext.	☐ TEM Water: ☐ Potable / ☐ Non-Potable / ☐ Wt %
	☐ TEM Microvac
Fax #: 805/544-4623	☐ Special Project:
Site: 160 ATASCADERO RD., MORROBAY	☐ Metals Analysis: Method ____
Job: CITY OF MB	Matrix: ____
	Analytes: ____
Comments:	

Sample ID	Date/ Time	Sample Location/Description	FOR AIR SAMPLES ONLY: Type	Time On/Off	Avg. LPM	Total Time	Sample Area or Air Volume
MB-01	8.28.10	ADMINISTRATION / FLOOR TILE	A P C				
MB-02		ADMINISTRATION BASEBOARD / MASTIC	A P C				
MB-03		ADMINISTRATION WALL / PLASTER	A P C				
MB-04		11 / 11	A P C				
MB-05		11 / 11	A P C				
MB-06		11 / DRYWALL JOINT COMPOUND	A P C				
MB-07		11 / 11	A P C				
MB-08		11 / 11	A P C				
MB-09		ADMINISTRATION CEILING / DROP-IN PANEL	A P C				
MB-10		ADMINISTRATION FUME HOOD / TRANSITE PANEL	A P C				

Sampled by: M.MCGUIRE Date: 8/28/10 Time: 8:00AM

Shipped via: ☒ Fed Ex ☐ Airborne ☐ UPS ☐ US Mail ☐ Courier ☐ Drop Off ☐ Other:

Relinquished by: M.M.G	Relinquished by:	Relinquished by:
Date / Time: 8-28-10 @ 7:00PM	Date / Time:	Date / Time:
Received by: Betty Fecks	Received by:	Received by:
Date / Time: 8/31/10 10:30am	Date / Time:	Date / Time:
Condition Acceptable? ☒ Yes ☐ No	Condition Acceptable? ☐ Yes ☐ No	Condition Acceptable? ☐ Yes ☐ No

Forensic Analytical — Analysis Request Form

Client Name & Address:	P.O. #: Date: / /
# 5318 West Coast Safety Consultants	Turn Around Time: _____hr/ 12hr / 24hr / 48 hr / ext: _____
4581 Wavertree,	Due Date: / / Due Time: _____ : _____ am/pm
San Luis Obispo, CA 93405	☐ PLM: ☐ Standard / ☐ Point Count ☐ PCM: NIOSH 7400
Contact: Michael McGuire	☐ TEM Air: ☐ AHERA / ☐ Yamate2 / ☐ NIOSH 7402 ☐ TEM Bulk: ☐ Quantitative / ☐ Qualitative / ☐ Chatfield ☐ TEM Water: ☐ Potable / ☐ Non-Potable / ☐ Wt % ☐ TEM Microvac
Phone #: 805/544-5303 ext.	
Fax #: 805/544-4623	☐ Special Project:
Site:	☐ Metals Analysis: Method _____
Job:	Matrix: _____
	Analytes: _____

Comments:

Sample ID	Date/ Time	Sample Location/Description		FOR AIR SAMPLES ONLY Type	Time On/Off	Avg. LPM	Total Time	Sample Area or Air Volume
MB-11	8-28-10	ADMINISTRATION ROOF	TAR & FELT	A P C				
MB-12		"	ROLLED SHINGLE	A P C				
MB-13		"	TAR	A P C				
MB-14		"	"	A P C				
MB-15		"	PUTTY	A P C				
MB-16		INTERSTAGE ROOF	TAR & FELT	A P C				
MB-17		"	TAR	A P C				
MB-18		INTERSTAGE EXT. PIPE	GASKET	A P C				
MB-19		CHLORINE DISINFECTANT	"	A P C				
MB-20		BOILER BLDG ROOF	TAR & FELT	A P C				

Sampled by: _____ Date: / / Time: :

Shipped via: ☐ Fed Ex ☐ Airborne ☐ UPS ☐ US Mail ☐ Courier ☐ Drop Off ☐ Other:

Relinquished by: M.McG.	Relinquished by:	Relinquished by:
Date / Time: 8-28-10 @ 7:00PM	Date / Time:	Date / Time:
Received by: Betty Fed Ex	Received by:	Received by:
Date / Time: 8/31/10 1BO	Date / Time:	Date / Time:
Condition Acceptable? ☐ Yes ☐ No	Condition Acceptable? ☐ Yes ☐ No	Condition Acceptable? ☐ Yes ☐ No

Forensic Analytical

Analysis Request Form

Client Name & Address: # 5318 West Coast Safety Consultants 4581 Wavertree, San Luis Obispo, CA 93405	P.O. #: Date: / /
	Turn Around Time: ____hr/ 12hr / 24hr / 48 hr / ext: ____
	Due Date: / / Due Time: ____ : ____ am/pm
	☐ PLM: ☐ Standard / ☐ Point Count ☐ PCM: NIOSH 7400
Contact: Michael McGuire	☐ TEM Air: ☐ AHERA / ☐ Yamate2 / ☐ NIOSH 7402
	☐ TEM Bulk: ☐ Quantitative / ☐ Qualitative / ☐ Chatfield
Phone #: 805/544-5303 ext.	☐ TEM Water: ☐ Potable / ☐ Non-Potable / ☐ Wt %
	☐ TEM Microvac
Fax #: 805/544-4623	☐ Special Project:
Site:	☐ Metals Analysis: Method ____
Job:	Matrix: ____
	Analytes: ____
Comments:	

Sample ID	Date/ Time	Sample Location/Description	FOR AIR SAMPLES ONLY				Sample Area or Air Volume
			Type	Time On/Off	Avg. LPM	Total Time	
MB-21	8.28.10	BOILER BLDG. ROOF / ROLLED SHINGLE	A P C				
MB-22		11 / TAR	A P C				
MB-23		BOILER BLDG. REST ROOM / DRYWALL JOINT COMPOUND	A P C				
MB-24		DIGESTER SLUDGE / PIPE GASKET	A P C				
MB-25		11 / 11	A P C				
MB-26		HEADWORKS ROOF / TAR & FELT	A P C				
MB-27		OLD CHLORINE BLDG. ROOF / 11	A P C				
MB-28		11 / TAR	A P C				
MB-29		ADMINISTRATION BLDG. / STUCCO	A P C				
MB-30		11 / 11	A P C				

Sampled by: ____ Date: / / Time: :

Shipped via: ☐ Fed Ex ☐ Airborne ☐ UPS ☐ US Mail ☐ Courier ☐ Drop Off ☐ Other:

Relinquished by: M. McG Date / Time: 8.28.10 @ 7:00PM	Relinquished by: Date / Time:	Relinquished by: Date / Time:
Received by: Betty Fedex Date / Time: 8/31/10 1130 Condition Acceptable? ☐ Yes ☐ No	Received by: Date / Time: Condition Acceptable? ☐ Yes ☐ No	Received by: Date / Time: Condition Acceptable? ☐ Yes ☐ No

Forensic Analytical — Analysis Request Form

Client Name & Address: # 5318 West Coast Safety Consultants; 4581 Wavertree, San Luis Obispo, CA 93405	P.O. #: Date: / /
	Turn Around Time: _____hr/ 12hr / 24hr / 48 hr / ext: _____
	Due Date: / / Due Time: _____ : _____ am/pm
	☐ PLM: ☐ Standard / ☐ Point Count ☐ PCM: NIOSH 7400
Contact: Michael McGuire	☐ TEM Air: ☐ AHERA / ☐ Yamate2 / ☐ NIOSH 7402
	☐ TEM Bulk: ☐ Quantitative / ☐ Qualitative / ☐ Chatfield
Phone #: 805/544-5303 ext.	☐ TEM Water: ☐ Potable / ☐ Non-Potable / ☐ Wt %
	☐ TEM Microvac
Fax #: 805/544-4623	☐ Special Project:
Site:	☐ Metals Analysis: Method _____
Job:	Matrix: _____
	Analytes: _____
Comments:	

Sample ID	Date/ Time	Sample Location/Description	FOR AIR SAMPLES ONLY Type	Time On/Off	Avg. LPM	Total Time	Sample Area or Air Volume
MB-31	8.26.10	ADMINISTRATION BLDG. / STUCCO	A P C				
MB-32		BOILER BLDG. / STUCCO	A P C				
MB-33		11 11	A P C				
MB-34		11 11	A P C				
			A P C				
			A P C				
			A P C				
			A P C				
			A P C				
			A P C				

Sampled by: _____ Date: / / Time: :

Shipped via: ☐ Fed Ex ☐ Airborne ☐ UPS ☐ US Mail ☐ Courier ☐ Drop Off ☐ Other:

Relinquished by: MMZ Date / Time: 8-28-10 08:00 PM	Relinquished by: Date / Time:	Relinquished by: Date / Time:
Received by: Betty Fedex Date / Time: 8/31/10 1030 am Condition Acceptable? ☐ Yes ☐ No	Received by: Date / Time: Condition Acceptable? ☐ Yes ☐ No	Received by: Date / Time: Condition Acceptable? ☐ Yes ☐ No

Forensic Analytical Laboratories

Bulk Asbestos Analysis

(EPA Method 600/R-93-116, Visual Area Estimation)

West Coast Safety Consultants
Michael McGuire

4581 Wavertree
San Luis Obispo, CA 93405

Client ID: 5318
Report Number: B139347
Date Received: 08/31/10
Date Analyzed: 09/01/10
Date Printed: 09/01/10
First Reported: 09/01/10

Job ID/Site: 160 Atascadero Rd., Morro Bay, City of MB

Date(s) Collected: 08/28/2010

FALI Job ID: 5318
Total Samples Submitted: 34
Total Samples Analyzed: 34

Sample ID	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
MB1	11023345						
Layer: Grey Tile		Chrysotile	**Trace**				
Layer: Yellow Mastic			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (Trace)**					
Cellulose (Trace)							
MB2	11023346						
Layer: Brown Mastic			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (ND)**					
Cellulose (Trace)							
MB3	11023347						
Layer: Grey Plaster			**ND**				
Layer: White Plaster			**ND**				
Layer: Paint			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (ND)**					
Cellulose (Trace)							
MB4	11023348						
Layer: Grey Plaster			**ND**				
Layer: Paint			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (ND)**					
Cellulose (Trace)							
MB5	11023349						
Layer: Grey Plaster			**ND**				
Layer: Paint			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (ND)**					
Cellulose (Trace)							
MB6	11023350						
Layer: White Drywall			**ND**				
Layer: Off-White Joint Compound			**ND**				
Layer: White Fibrous Material			**ND**				
Layer: Off-White Joint Compound			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (ND)**					
Cellulose (20 %)							

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Report Number: B139347
Client Name: West Coast Safety Consultants **Date Printed:** 09/01/10

Sample ID	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
MB7	11023351						
Layer: White Drywall			**ND**				
Layer: Off-White Joint Compound			**ND**				
Layer: White Fibrous Material			**ND**				
Layer: Paint			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (ND)**					
Cellulose (20 %) Fibrous Glass (10 %)							
MB8	11023352						
Layer: White Drywall			**ND**				
Layer: Off-White Joint Compound			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (ND)**					
Cellulose (20 %) Fibrous Glass (10 %)							
MB9	11023353						
Layer: Grey Fibrous Material			**ND**				
Layer: Paint			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (ND)**					
Cellulose (35 %) Fibrous Glass (45 %)							
MB10	11023354						
Layer: Grey Semi-Fibrous Material		Chrysotile	**20 %**				
Total Composite Values of Fibrous Components:		**Asbestos (20%)**					
Cellulose (Trace)							
MB11	11023355						
Layer: Stones			**ND**				
Layer: Black Tar			**ND**				
Layer: Black Felt			**ND**				
Layer: Black Tar			**ND**				
Layer: Black Felt			**ND**				
Layer: Black Tar			**ND**				
Layer: Black Felt			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (ND)**					
Cellulose (Trace) Fibrous Glass (45 %)							
Comment: Bulk complex sample.							
MB12	11023356						
Layer: Stones			**ND**				
Layer: Black Tar			**ND**				
Layer: Black Felt			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (ND)**					
Fibrous Glass (45 %)							
MB13	11023357						
Layer: Black Semi-Fibrous Tar			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (ND)**					
Cellulose (15 %)							

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Report Number: B139347
Client Name: West Coast Safety Consultants **Date Printed:** 09/01/10

Sample ID	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
MB14	11023358						
Layer: Black Semi-Fibrous Tar			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (ND)**					
Cellulose (15 %)							
MB15	11023359						
Layer: Grey Non-Fibrous Material			**ND**				
Layer: Paint			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (ND)**					
Cellulose (Trace)							
MB16	11023360						
Layer: Black Tar			**ND**				
Layer: Black Felt			**ND**				
Layer: Black Tar			**ND**				
Layer: Black Felt			**ND**				
Layer: Black Tar			**ND**				
Layer: Black Felt			**ND**				
Layer: Black Tar			**ND**				
Layer: Black Felt			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (ND)**					
Cellulose (Trace) Fibrous Glass (45 %)							
Comment: Bulk complex sample.							
MB17	11023361						
Layer: Black Semi-Fibrous Tar		Chrysotile	**5 %**				
Total Composite Values of Fibrous Components:		**Asbestos (5%)**					
Cellulose (Trace)							
MB18	11023362						
Layer: Black Semi-Fibrous Material			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (ND)**					
Cellulose (Trace) Synthetic (7 %)							
MB19	11023363						
Layer: Black Semi-Fibrous Material			**ND**				
Layer: Paint			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (ND)**					
Cellulose (Trace) Synthetic (7 %)							
MB20	11023364						
Layer: Stones			**ND**				
Layer: Black Tar			**ND**				
Layer: Black Felt			**ND**				
Layer: Black Tar			**ND**				
Layer: Black Felt			**ND**				
Layer: Black Tar			**ND**				
Layer: Black Felt			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (ND)**					
Cellulose (Trace) Fibrous Glass (45 %)							
Comment: Bulk complex sample.							

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Client Name: West Coast Safety Consultants

Report Number: B139347
Date Printed: 09/01/10

Sample ID	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
MB21	11023365						
Layer: Stones			**ND**				
Layer: Black Tar			**ND**				
Layer: Black Felt			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (ND)**					
Fibrous Glass (45 %)							
MB22	11023366						
Layer: Black Semi-Fibrous Tar			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (ND)**					
Cellulose (15 %)							
MB23	11023367						
Layer: White Drywall			**ND**				
Layer: Off-White Joint Compound			**ND**				
Layer: White Fibrous Material			**ND**				
Layer: Off-White Joint Compound			**ND**				
Layer: Paint			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (ND)**					
Cellulose (20 %)							
MB24	11023368						
Layer: Black Semi-Fibrous Material			**ND**				
Layer: Paint			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (ND)**					
Cellulose (Trace) Synthetic (7 %)							
MB25	11023369						
Layer: Black Semi-Fibrous Material			**ND**				
Layer: Paint			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (ND)**					
Cellulose (Trace) Synthetic (7 %)							
MB26	11023370						
Layer: Black Tar			**ND**				
Layer: Black Felt			**ND**				
Layer: Black Tar			**ND**				
Layer: Black Felt			**ND**				
Layer: Black Tar			**ND**				
Layer: Black Felt			**ND**				
Layer: Black Tar			**ND**				
Layer: Black Felt			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (ND)**					
Cellulose (Trace) Fibrous Glass (45 %)							
Comment: Bulk complex sample.							

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Client Name: West Coast Safety Consultants

Report Number: B139347
Date Printed: 09/01/10

Sample ID	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
MB27	11023371						
Layer: Stones			**ND**				
Layer: Black Tar			**ND**				
Layer: Black Felt			**ND**				
Layer: Black Tar			**ND**				
Layer: Black Felt			**ND**				
Layer: Black Tar			**ND**				
Layer: Black Felt			**ND**				
Layer: Black Tar			**ND**				
Layer: Black Felt			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (ND)**					
Cellulose (Trace) Fibrous Glass (45 %)							
Comment: Bulk complex sample.							
MB28	11023372						
Layer: Black Semi-Fibrous Tar		Chrysotile	**5 %**				
Total Composite Values of Fibrous Components:		**Asbestos (5%)**					
Cellulose (Trace)							
MB29	11023373						
Layer: Grey Cementitious Material			**ND**				
Layer: Beige Cementitious Material			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (ND)**					
Cellulose (Trace)							
MB30	11023374						
Layer: Grey Cementitious Material			**ND**				
Layer: Beige Cementitious Material			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (ND)**					
Cellulose (Trace)							
MB31	11023375						
Layer: Grey Cementitious Material			**ND**				
Layer: Beige Cementitious Material			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (ND)**					
Cellulose (Trace)							
MB32	11023376						
Layer: Grey Cementitious Material			**ND**				
Layer: Beige Cementitious Material			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (ND)**					
Cellulose (Trace)							
MB33	11023377						
Layer: Grey Cementitious Material			**ND**				
Layer: Beige Cementitious Material			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (ND)**					
Cellulose (Trace)							

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Report Number: B139347
Client Name: West Coast Safety Consultants **Date Printed:** 09/01/10

Sample ID	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
MB34	11023378						
Layer: Grey Cementitious Material			**ND**				
Layer: Beige Cementitious Material			**ND**				
Total Composite Values of Fibrous Components:		**Asbestos (ND)**					
Cellulose (Trace)							

James Flores, Laboratory Supervisor, Hayward Laboratory

Note: Limit of Quantification ('LOQ') = 1%. 'Trace' denotes the presence of asbestos below the LOQ. 'ND' = 'None Detected'.

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Appendix M:
Anticipated Environmental Mitigation Measures

Anticipated Mitigation Measures
Morro Bay WRF Onsite Improvements

All anticipated mitigation measures and plans are the responsibility of the DB unless noted specifically otherwise. The City or consultants retained by the City will perform required monitoring and surveys, or as identified below.

Geologic Resources
Prior to the approval of building plans for each proposed facility, the design of each facility shall be based on a facility-specific geotechnical report prepared by a California registered geotechnical engineer and professional geologist. The geotechnical report shall provide seismic data for use with at least the minimum requirements of the California Building Code.
Prior to approval of the improvement plans for the proposed facilities, a geotechnical report that addresses liquefaction hazards shall be prepared by the DB and approved by the City of Morro Bay. The geotechnical report shall state the recommended actions for the collection system and treatment plant site so that potential impacts from seismically-induced liquefaction would be reduced to less than significant.
Prior to approval of improvement plans, an Emergency Response Plan (ERP) shall be prepared. The ERP shall recognize the potential for liquefaction, seismic hazards and ground lurching to impact proposed facilities, and specific high hazard areas shall be inspected for damage following an earthquake. “Soft Fixes” shall be incorporated in the ERP. Soft Fixes typically consist of having a plan in-place to address the hazards, such as can be achieved by storing supplies and equipment for repair.
Prior to the approval of grading plans, erosion control measures shall be incorporated into the grading plans to minimize the potential for erosion or loss of top soil during grading.
Prior to the approval of grading plans, vegetation/landscaping shall be provided on the graded cut and fill slopes to reduce the long-term potential for soil erosion or loss of topsoil.
Prior to the approval of grading plans for each facility, the plans shall provide for the control of surface water away from slopes.
Prior to approval of the improvement plans for the proposed facilities, a geotechnical report that addresses the potential for lateral spreading, ground subsidence, and ground lurching and provides measures to reduce potential impacts to less than significant shall be prepared and approved.
Prior to approval of improvement and building plans for the proposed facilities, a design-level geotechnical report shall be prepared that addresses and reduces potential expansive soil impacts to less than significant. The expansive soil data shall be used with the requirements of the California Building Code.
Biological Resources
Impacts to Trees. It is anticipated at this time that all trees could be avoided by the project, and those within 25 feet of the limits of disturbance will have protective measures put in place to ensure they remain uninjured during the course of construction. An attempt will be made to protect the minimum distance of 1.5 times the dripline (i.e., the distance from the trunk to the outermost limits of leaves and branches). During development, orange construction fencing or sufficient staking to identify the protection area will surround each tree or clusters of trees. Protection fencing and staking areas will also be shown on all construction plans. If grading or trenching must encroach within the dripline of protected trees, the activity will attempt to avoid soil compaction and damage to the critical root zone as much as possible. Tree protection and compensatory mitigation for impacted trees will follow current City policies that will be outlined in the arborist report.
Rare Plants. The facility site contains two occurrences of the San Luis Obispo owl’s clover, a CRPR List 1B species, that are outside the proposed development footprint. Native bunchgrass grasslands observed on portions of the facility site are also outside the development footprint, and would not be impacted by the proposed project. The

Cambria morning glory is present in annual grasslands. If these would be impacted by the project, a Rare Plant Habitat Mitigation Program should be developed and implemented. To fully mitigate impacts to special status plants that may occur from project construction, the following mitigation is required:

1. If a special status plant population(s) is located in the construction area and project redesign is not feasible to avoid the occurrence, a rare plant mitigation plan should be developed to ensure a no-net-loss of special status plant species and their habitat. The rare plant mitigation plan should be developed by a qualified botanist/restoration ecologist in consultation with the City, CDFW and USFWS, as appropriate. The special-status plant species mitigation program should at a minimum include the following:

    - The overall goal and measurable objectives of a no-net loss of special status species in the mitigation and monitoring plan;
    - Specific areas for re-vegetation and their size. Potential sites for mitigation would be any suitable site in close proximity to the impact area;
    - Specific habitat management concepts to be used during the establishment period (i.e., annual population census surveys and habitat assessments for the period immediately following construction; establishment of monitoring reference sites; a seasonally-timed weed abatement program; and seasonally-timed seed collection, propagation, and reintroduction of special-status plant species into specified receiver sites);
    - Success criteria based on the goals and measurable objectives to ensure that a viable population(s) is established on the project site; and
    - Reporting requirements to ensure consistent data collection and reporting methods used by monitoring personnel.

2. Prior to construction, all rare plant occurrences within or adjacent to impact areas will be flagged for avoidance. If development cannot avoid the rare plants, rare plants will be salvaged from the disturbance area where feasible, and relocated to appropriate habitat outside the development footprint. Salvage and relocation activities will include the collection of seed and/or propagules prior to grading activities. Seed will be hand broadcasted into areas of suitable habitat outside the development area, or incorporated into the native grassland erosion control seed mix.

3. Monitoring will occur annually for five years to ensure successful establishment of all re-introduced or salvaged plants and that no-net-loss of the species occurs. In the case of annual plants it can be difficult to determine if there has been a net loss or gain of a viable population in a five-year period. Therefore, reference sites will be used to the extent possible to extrapolate trends in a species' population dynamics. An adaptive management program will also be included to address both foreseen and unforeseen circumstances relating to the preservation and mitigation programs. The program will also include remedial measures to address negative impacts to the special- status plant species and their habitats (i.e., removal of weeds, additional seeding/planting efforts) if the species or its habitat is suffering a net loss at the time of the follow up surveys.

4. All grassland areas disturbed by construction that are outside the WRF facility will have an approved seed mix applied through either direct hand seeding or hydroseeding methods.

Wetland/Riparian Habitat Impacts. The following mitigation measures should be implemented prior to and during construction. The DB may be able to avoid some or all of these permits by siting facilities outside impact areas:

1. During the project planning phase, the City will initiate consultation with regulatory agencies to determine which regulatory permits will be necessary. The type of permits and compensatory mitigation required will depend on the proposed project impacts associated with the chosen pipeline alignment and proposed construction methods, and may likely include a Section 404 Permit from USACE, a Section 401 Water Quality Certification from RWQCB, and a Section 1602 Streambed Alteration Agreement from CDFW. The City, or consultants retained by the City, will complete applications for these specific permits if required.

2. Once the project development footprint and construction methods have been finalized, the drainage impact areas can be calculated and impacts to federal and state jurisdictional areas can be determined. To compensate for impacts to riparian and wetland habitat and non-wetland drainage features, a Habitat Mitigation and Monitoring Plan (HMMP) should be prepared. The HMMP should be consistent with federal and state regulatory requirements and local City policies. The HMMP should be submitted with permit applications for agency approval. The City would then be required to implement the HMMP during construction and immediately following project completion for an estimated period of five years.

3. Prior to start of construction activities, the contractor in coordination with the City should retain a qualified biological monitor to ensure compliance with all permit requirements and avoidance and minimization measures (i.e.: preconstruction surveys, worker environmental training, and construction monitoring) during work within and adjacent to drainage features.

4. Prior to start of construction, the project boundaries adjacent to drainages should be clearly flagged or fenced so that contractors are aware of the limits of allowable site access and disturbance. Areas to be preserved should be clearly flagged as off-limits to avoid unnecessary damage and potential erosion.

6 Prior to issuance of construction permits, an Erosion Control Plan incorporating up to date Best Management Practices should be prepared by the project engineer to minimize impacts to aquatic habitats. The plan should address installation and maintenance of both temporary and permanent measures to control erosion and dust, contain spills, protect stockpiles, and generally maintain good housekeeping practices within the worksite. All project plans should show that erosion, sediment, and dust control measures must be installed prior to start of any ground disturbing work. All bare or disturbed soil areas that are outside the developed facility and roadway areas will be seeded with an approved native erosion control seed mix.

7. All applicable plans should clearly show project stockpile and materials staging areas. These areas should be at least 50 feet from drainage features, active storm drain inlets, and must conform to BMPs applicable for storm drain protection.

8. Prior to start of work, the contractor should prepare and implement a Spill Prevention Plan to ensure prompt and effective response to any accidental spills. All workers shall be informed of the importance of preventing spills and of the appropriate measures to take should a spill occur. All project-related hazardous materials spills within the project site should be cleaned up immediately. Spill prevention and cleanup materials should be on-site at all times during the course of the project.

9. All refueling, maintenance, and washing of equipment and vehicles should occur on impervious areas in a location where a spill would not travel onto bare ground or to a storm drain inlet. This fueling/staging area will conform to BMPs applicable to attaining zero discharge of stormwater runoff. At a minimum, all equipment and vehicles must be checked and maintained on a daily basis to ensure proper operation and avoid potential leaks or spills. Washing of equipment should occur only in a location where polluted water and materials can be contained for subsequent removal from the site.

10. A designated concrete washout location should be established onsite, in an area at least 50 feet from any drainage or storm drain inlet. The washout should be maintained and inspected weekly, and will be covered prior to and during any rain event. Concrete debris should be removed whenever the washout container reaches the 1/2 full mark.

11. BMP's for dust abatement shall be a component of the project's construction documents. Dust control requirements should be carefully implemented to prevent

water used for dust abatement from transporting pollutants to storm drains leading to the creek channel.

12. During project activities, all trash that may attract predators shall be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash and construction debris shall be removed from work areas.

Nesting Birds. Project activities, including equipment use during demolition, initial vegetation removal and construction activities, and associated noise, vibration, and dust, could impact nesting migratory birds and/or special-status bird species in riparian willow habitat, street trees, and grassland habitats within the study area.

Recommended Mitigation. The following mitigation measures are recommended to avoid or minimize impacts to nesting bird species, including special status species and species protected by the Migratory Bird Treaty Act.

1. Any removal of trees and disturbance of annual grassland habitat should be limited to the time period between September 1 and February 14 if feasible. If tree removal and grassland impacts cannot be conducted during this time period, a qualified biologist should conduct pre-construction surveys for active bird nests within the limits of the project.

2. If active nest sites of bird species protected under the Migratory Bird Treaty Act and/or California Fish and Game Code Section 3503 are observed within or adjacent to the study area, then the project should be modified and/or delayed as necessary to avoid direct take of the identified nests, eggs, and/or young. Potential project modifications may include establishing appropriate "no activity" buffers around the nest site. Construction activities should not occur in the buffer until the project biologist has determined that the nesting activity has ceased.

3. If active nest sites of raptors and/or bird species of special concern are observed within the vicinity of noise or vibration producing project activities, an appropriate buffer around the nest site (250 to 500 feet for raptors depending on location) should be implemented. Construction activities in the buffer zone should be prohibited until the young have fledged the nest and achieved independence.

4. Active nests should be documented and monitored by the project biologist, and a letter report should be submitted to the USFWS and CDFW, documenting project compliance with the MBTA and applicable project mitigation measures.

American Badger. The American badger was determined to have potential to occur on the facility site, due to presence of grassland habitats, water, and a prey base of California ground squirrels and pocket gophers in the general region. A pre-construction survey for active badger dens should be conducted within the construction impact footprint and surrounding accessible areas of the study area at least two weeks prior to any ground disturbing activities. The survey should be conducted by a qualified biologist. In order to avoid potential direct impacts to adults and nursing young, no grading should occur within 50 feet of an active badger den as determined by the project biologist. Construction activities between July 1 and February 28 should comply with the following measures to avoid direct take of adult and weaned juvenile badgers through the forced abandonment of dens:

1. A qualified biologist should conduct a focused survey at least two (2) weeks prior to the start of construction;
2. The survey should cover the entire area proposed for development;
3. If a potential den is located that is too long to see the end, a fiber optic scope (or other acceptable method such as using tracking medium for a three night period) should be used to determine if the den is being actively used by a badger;

4. Inactive dens should be excavated by hand with a shovel or using a small excavator to prevent badgers from re-using them during construction. 5. Badgers should be discouraged from using currently active dens prior to the grading of the site by partially blocking the entrance of the den with sticks, debris and soil for three to five days. Access to the den should be incrementally blocked to a greater degree over this period. This should cause the badger to abandon the den and move elsewhere. After badgers have stopped using any den(s) within the project boundary, the den(s) should be hand-excavated with a shovel or carefully excavated with the use of an excavator to prevent re-use. 6. The qualified biologist should be present during the initial clearing and grading activity. If additional badger dens are found, all work should cease until the biologist can complete measures described above for inactive and active dens. Once the badger dens have been excavated, work on the site may resume.
Cultural and Paleontological Resources
Complete Area of Potential Effect (PAE) for potential cultural resources within the study area and conduct Phase 1 review within that area. Implement the recommendations of that Phase 1 review as appropriate. The prescriptive mitigation will be fully established through the EIR being prepared for the project.
If previously unidentified cultural materials are unearthed during construction, the disposition of such a find must follow state law. As part of this, work shall be halted in that area until a qualified archaeologist can assess the significance of the find. Additional archaeological survey will be needed if project limits are extended beyond the present survey limits, and for associated access roads and the pipeline.
Prepare a Phase 2 Work Plan for resource recovery, if needed to address the recommendations of any Phase I activities, and implement it as needed.
If human remains are encountered within the project area, the City shall be responsible for complying with provisions of Public Resources Code Sections 5097.98 and 5097.99, and 7050.5 of the California Health and Safety Code, as amended by Assembly Bill 2641, and coordinate such activities with the County, the entity responsible for permitting of the facility. Restrictions or procedures for excavation, treatment, or handling of human remains shall be established in consultation with the individuals designated by the Native American Heritage Commission as the Most Likely Descendents.
Although unlikely, should any vertebrate fossils or potentially significant finds (e.g., numerous well-preserved invertebrate or plant fossils) be encountered by anyone working on the site, all activities in the immediate vicinity of the find are to cease until a qualified paleontologist evaluates the find for its scientific value. If deemed significant, the paleontological resource(s) shall be salvaged and deposited in an accredited and permanent scientific institution where they will be properly curated and preserved for the benefit of current and future generations.
Hazards and Hazardous Materials
Prior to any onsite construction activities at the proposed treatment plant site, soils shall be sampled and analyzed by a licensed engineer or geologist approved by the County of San Luis Obispo Health Department to determine the level of residue for pesticides, herbicides, chemicals, and associated metals. If residues are found to be within acceptable amounts per the San Luis Obispo County Health Department (SLOCHD) and Environmental Protection Agency/Department of Toxic Substance Control (DTSC) standards then grading and construction may begin. If the residue is found to be greater than the SLOCHD and DTSC standards, all contaminated soils exceeding the acceptable limits shall be remediated and/or properly disposed of per SLOCHD and DTSC requirements. An appropriate verification closure letter from SLOCHD and DTSC shall be obtained and submitted to the County of San Luis Obispo Planning Department. Depending on the extent of contaminated soils, a verification closure letter from the California Regional Water Quality Control Board may also need to be submitted to the County of San Luis Obispo Planning Department. Site remediation can occur by the use of on-site transportable thermal treatment units or bio-remediation. The soil can also be excavated and shipped off-site to fixed incineration or bioremediation facilities.
Prior to operation of the wastewater project, a Hazardous Materials Management Plan shall be developed and submitted to the County of San Luis Obispo Environmental Health Services Division for approval. The plan shall identify hazardous materials utilized at the proposed wastewater facilities and their characteristics; storage, handling, training procedures, and spill contingency procedures. Additionally, the Hazardous Materials Management Plan shall identify procedures in the event of accidents such as

the release of raw wastewater or secondary treated water into watercourses such as the adjacent drainage. These procedures shall include immediate response personnel to limit public access to spill areas, potentially shutting down pump stations, creating berms, use of vacuum trucks, and use of water booms to contain spills within open water areas. Furthermore, the Plan shall address response and containment of fuel at pump stations sites, when used.
Traffic and Circulation
Prior to construction, a traffic management plan shall be prepared for review and approval by the City of Morro Bay. The Plan will address construction traffic as needed, including for the WRF and pipelines. With respect to the WRF, the plan must address site access. For the pipelines, the plan must address potential temporary road closures associated with pipelines that may be laid within road rights of way. The plan shall be based on the type of roadway, traffic conditions, duration of construction, physical constraints, nearness of the work zone to traffic and other facilities (bicycle, pedestrian, driveway access, etc.). The traffic management plan shall include: a) Advertisement. An advertisement campaign informing the public of the proposed construction activities should be developed. Advertisements should occur prior to beginning work and periodically during the course of project construction. Advertisements to be prepared by DB and reviewed/distributed by City. b) Property Access. Access to parcels along the construction area shall be maintained to the greatest extent feasible. Affected property owners shall receive advance notice of work adjacent to their property access and when driveways would be potentially closed. c) Schools. Any construction adjacent to schools shall ensure that access is maintained for vehicles, pedestrians, and bicyclists, particularly at the beginning and end of the school day. d) Buses, Bicycles and Pedestrians. The work zone shall provide for passage by buses, bicyclists and pedestrians. e) Intersections. Traffic control (i.e. use of flag men) shall be used at intersections that are determined to be unacceptably congested due to construction traffic.
Air Quality
Prior to issuance of grading permits, the contractor in coordination with the City shall submit a Construction Activities Management Plan for the review and approval of the SLOAPCD. This plan shall include but not be limited to the following Best Available Control Technologies for construction equipment: a. Minimize the number of large pieces of construction equipment operating during any given period. b. Schedule construction related truck/equipment trips during non-peak hours to reduce peak-hour emissions. c. Properly maintain and tune all construction equipment according to manufacturer's specifications. d. Fuel all off-road and portable diesel powered equipment including but not limited to: bulldozers, graders, cranes, loaders, scrapers, backhoes, generators, compressors, auxiliary power units, with CARB motor vehicle diesel fuel. e. Use 2007 or newer heavy duty off road vehicles to the extent feasible. f. Use Caterpillar pre-chamber diesel engines (or equivalent) together with proper maintenance and operation to reduce emissions of NOX. g. Electrify equipment where possible. h. Use Compressed Natural Gas (CNG), liquefied natural gas (LNG), biodiesel, or propane for on-site mobile equipment instead of diesel- powered equipment.
Prior to initiating grading activities, the contractor in coordination with the City shall: a. Include the following specifications on all project plans: One catalyzed diesel particulate filter (CDPF) shall be used on the piece of equipment estimated to generate the greatest emissions. If a CDPF is unsuitable for the potential equipment to be controlled, five diesel oxidation catalysts (DOC) shall be used. b. Identify equipment to be operated during construction as early as possible in order to place the order for the appropriate filter and avoid any project delays. This is necessary so that contractors bidding on the project can include the purchase, proper installation, and maintenance costs in their bids.

c. Contact the SLOAPCD Compliance Division to initiate implementation of this mitigation measure at least two months prior to start of construction.
Prior to initiating grading activities, if it is determined that portable engines and portable equipment would be utilized, the contractor in coordination with the City shall contact the SLOAPCD and obtain a permit to operate portable engines or portable equipment, and shall be registered in the statewide portable equipment registration program. The SLOAPCD Compliance Division shall be contacted in order to determine the requirements of this mitigation measure.
Project contract documents will include the following dust control measures: a. Reduce the amount of the disturbed area where possible, b. Use water trucks or sprinkler systems in sufficient quantities to prevent airborne dust from leaving the site. Increased watering frequency will be required whenever wind speeds exceed 15 mph. Reclaimed (non-potable) water should be used whenever possible. c. All dirt stockpile areas will be sprayed daily as needed. d. Permanent dust control measures identified in the revegetation and landscape plans will be implemented as soon as possible following completion of any soil disturbing activities. e. Exposed ground areas that are planned to be reworked at dates greater than one month after initial grading will be sown with a fast germinating native grass seed and watered until vegetation is established. f. All disturbed soil areas not subject to revegetation will be stabilized using approved chemical soil binders, jute netting, or other methods approved in advance by the APCD. g. All roadways, driveways, sidewalks, etc. to be paved will be completed as soon as possible. In addition, building pads will be laid as soon as possible after grading unless seeding or soil binders are used. h. Vehicle speed for all construction vehicles will not exceed 15 mph on any unpaved surface at the construction site. i. All trucks hauling dirt, sand, soil, or other loose materials are to be covered or will maintain at least two feet of freeboard (minimum vertical distance between top of load and top of trailer) in accordance with CVC Section 23114. j. Install wheel washers where vehicles enter and exit unpaved roads onto streets, or wash off trucks and equipment leaving the site. k. Sweep streets at the end of each day if visible soil material is carried onto adjacent paved roads. Water sweepers with reclaimed water should be used where feasible. l. If visible emissions of fugitive dust persist beyond a distance of 200 feet from the boundary of the construction site, all feasible measures shall be implemented to eliminate potential nuisance conditions at off-site receptors (e.g., increase frequency of watering or dust suppression, install temporary wind breaks where appropriate, suspend excavation and grading activity when winds exceed 25 mph). m. The contractor will designate a person or persons to monitor the dust control program and to order increased watering, as necessary, to prevent transport of dust offsite. Their duties will include holidays and weekend periods when work may not be in progress. The name and telephone number of such persons will be provided to the SLOAPCD prior to the start of construction.
Noise
The City shall require construction contractors to adhere to the following noise attenuation requirements: • Construction activities shall be consistent with the City's Noise Ordinance, which restricts activities from 7 AM to 10 PM, or as prescribed through the EIR, whichever approach is more restrictive. • All construction equipment shall use noise-reduction features (e.g., mufflers and engine shrouds) that are no less effective than those originally installed by the manufacturer. • Construction staging and heavy equipment maintenance activities shall be performed a minimum distance of 300 feet from the nearest residence, unless safety or technical factors take precedence.

• Stationary combustion equipment such as pumps or generators operating within 100 feet of any residence shall be shielded with a noise protection barrier.
Visual Resources
For all aspects of the project, construction staging areas shall be located away from sensitive viewing areas to the extent feasible. Before construction activities begin, an area of construction equipment storage away from direct views of sensitive viewing corridors (e.g. residences and major roads in the project area) shall be designated.
A final landscaping plan shall be prepared for the entire project site and approved prior to building permit issuance. Said landscaping plan shall emphasize native plant materials and shall include sufficient planting to screen views of the project from nearby roads and residential developments. The landscaping plan shall be to visually integrate the project into the rural landscape, while preserving and enhancing existing views.
Any buildings shall be designed in such a manner so they are architecturally compatible with other buildings in the vicinity.
A final lighting plan shall be prepared for the treatment and disposal facilities. The lighting plan shall meet City and County design standards. This shall include proper shielding, proper orientation, and applicable height standards. All lighting fixtures shall be shielded so that neither the lamp nor the related reflector interior surface is visible from adjacent properties. Light hoods shall be dark-colored.
Any building associated with treatment and disposal facilities shall be designed to conform to an agricultural landscape.

Appendix N:

Past Geotechnical Reports on Areas Near Access Road

Cleath & Associates
Engineering Geologists
Hydrogeologists
(805) 543-1413
1390 Oceanaire Drive
San Luis Obispo
California 93405

May 18, 2007

Tim Woodle
Steven D. Pults, AIA, and Associates
3450 Broad Street, Suite 106
San Luis Obispo, CA 93401

Subject: Geologic Report on Conceptual Proposed Employee Housing Project, Sea Shell Community Retirement Facility, Morro Bay, Assessor's Parcel Number 068-041-006

Dear Mr. Woodle:

Per your request and in accordance with our proposal of January 30, 2007, Cleath & Associates has reviewed your concept drawings for the proposed employee housing at the Sea Shell Community Retirement Facility and the site geology to identify geologic hazards that could be significant in the design and construction of these structures. The outline of this report follows the checklist prepared for engineering geology and seismology reports by the California Geologic Survey (publication Note 48).

PROJECT LOCATION

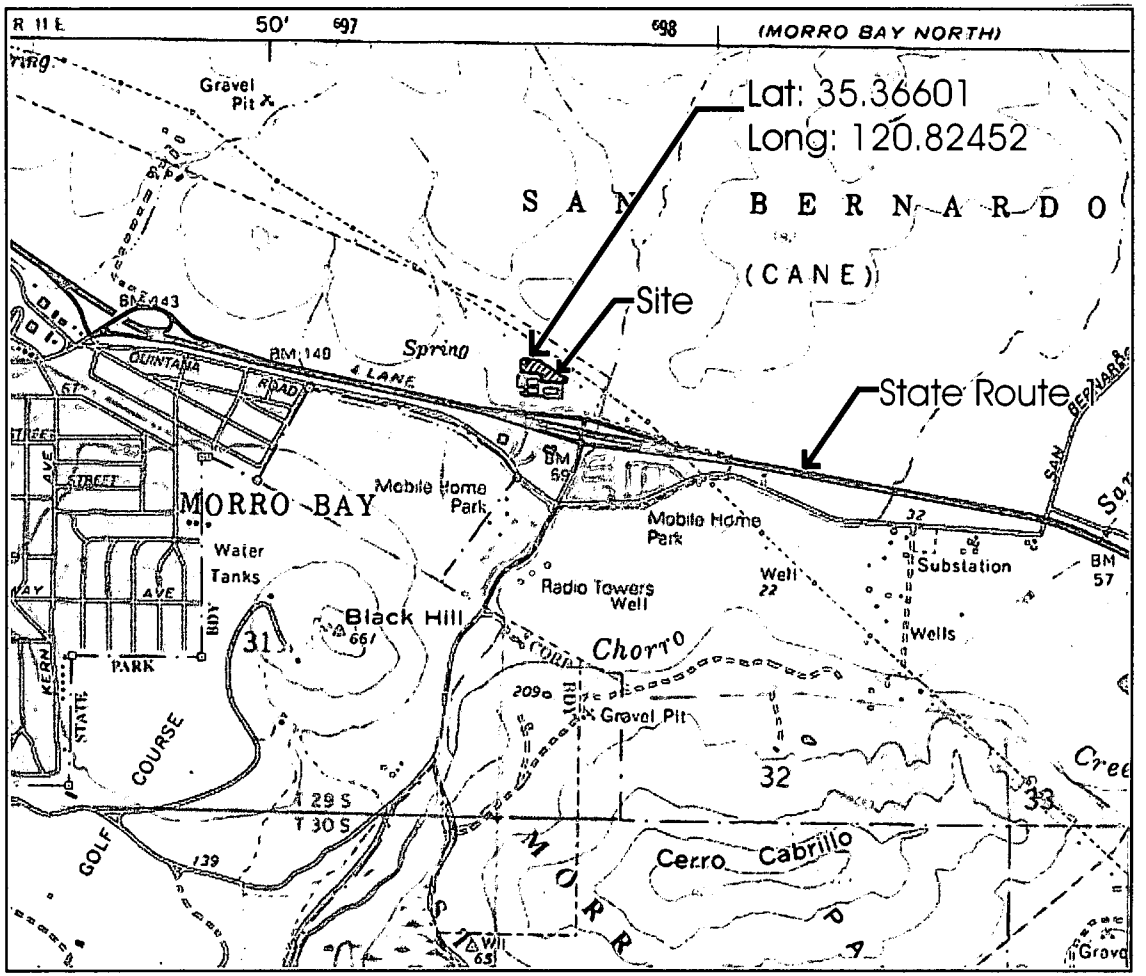
Location

The proposed project is located behind the existing retirement home. The Sea Shell Community Retirement Facility is located at 1405 Teresa Drive near the end of South Bay Boulevard immediately adjacent to the north bound on-ramp to State Route 1. The site has the following coordinates: latitude 35.36601, Longitude: -120.82452 (Figure 1). The site lies within the city limits of the City of Morro Bay.

Project Description

The proposed employee housing is comprised of 15 units situated on the slope behind the retirement facility and will be placed up-hill from the driveway and block retaining wall. Up-hill from the proposed housing there are high tension lines crossing the property. Existing grade rises from about 80 feet along the driveway to about 120 feet along the northern property boundary. The existing slope in the vicinity of units 1-8 is about 2:1 (H:V) and is 1:1 (H:V) in the vicinity of Units 9-15.

The project includes one and two story buildings that are single residences and duplexes that are planned to be constructed as slab-on-grade. Access would be by stairs and walkways to the existing driveway. Earthwork as determined for the existing plan will involve an estimated cut of 287 cubic yards and fill of



Base Map:
US Geological Survey 7.5"
Morro Bay South
Scale 1"=1000'

Figure 1
Location Map
Seashell Community Retirement Home
Morro Bay

98 cubic yards. The lower eastern building area will have the structures benched into the existing slope with retaining walls serving as stem walls for the structures. The layout of the housing is shown on Figure 2.

ENGINEERING GEOLOGY

Regional Geology

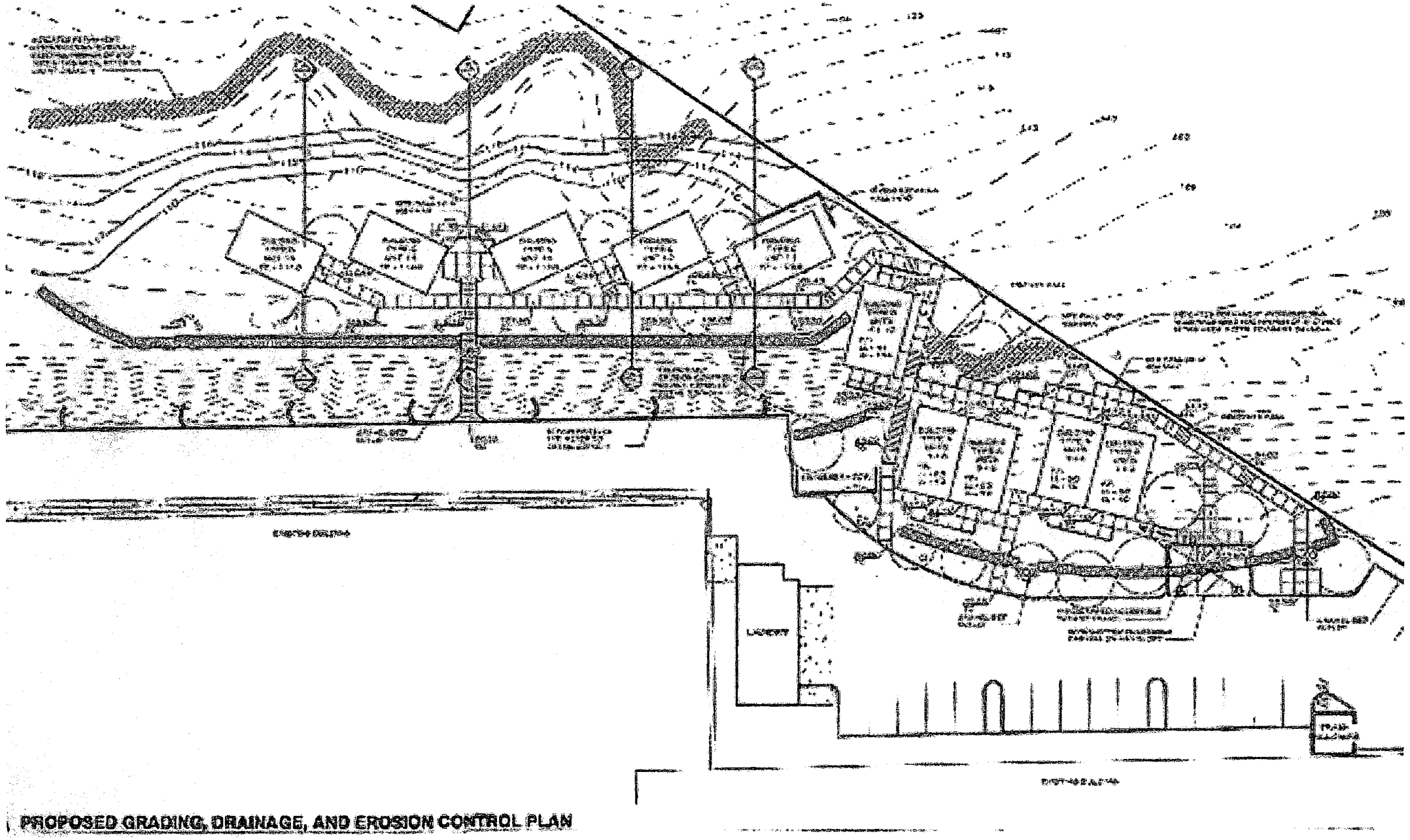
The published regional geologic map for this area is the USGS Miscellaneous Field Studies Map MF 511, "Geologic Map of Morro Bay South and Port San Luis Quadrangles, San Luis Obispo County, California, 1973, by Clarence A. Hall (Figure 3). This map shows that the property is underlain by Franciscan melange and serpentinite.

Site Geology

Cleath & Associates has mapped the geology of the property. A thin veneer of soil covers the bedrock geologic units underlying the project site, except where the slope has been cut back, where the bedrock units are exposed. The bedrock geology is clearly exposed in the cut behind the existing retaining wall. The geologic units exposed include primarily serpentinitic rock with a section of ultramafic and calc-silicate rocks located adjacent to Building Units 13 and 14. In the extreme eastern end of the proposed development area, there is an area of blueschist and chert beds but these rock types are east of the proposed building site and outside of the building envelopes. All of these rocks have been highly sheared and are weathered. The ultramafic/calc-silicate rock, however, are more heavily sheared. Figure 4, the Site Geologic Map, identifies the extent of the geologic units and the observed structural geologic features such as faults and major fractures and also the cross section lines..

Subsurface Geology

Cleath & Associates has reviewed the six boring logs in the GSI Geotechnical Investigation report (dated February 16, 2007) that are located as shown on Figure 4. The borings encountered up to five feet of sandy clay on top of severely weathered bedrock. The bedrock was described in soils terminology and referred to as "severely weathered bedrock". The color description may be an indication of rock type, however. The gray to greenish gray colors in Borings 1 & 2 are typical of serpentinite and the yellowish brown color in Borings 3-6 is typical of the ultramafic/calc-silicate rock, but may be decomposed serpentinite or cherts. These rocks are tectonically emplaced and therefore cannot be correlated from one location to another without continuous trenching. The best existing definition of the relationships between these major rock units are in the cut hillside face adjacent to proposed Units 10-15. Further definition of underlying rock at each unit can be accomplished during grading and excavations for footings.



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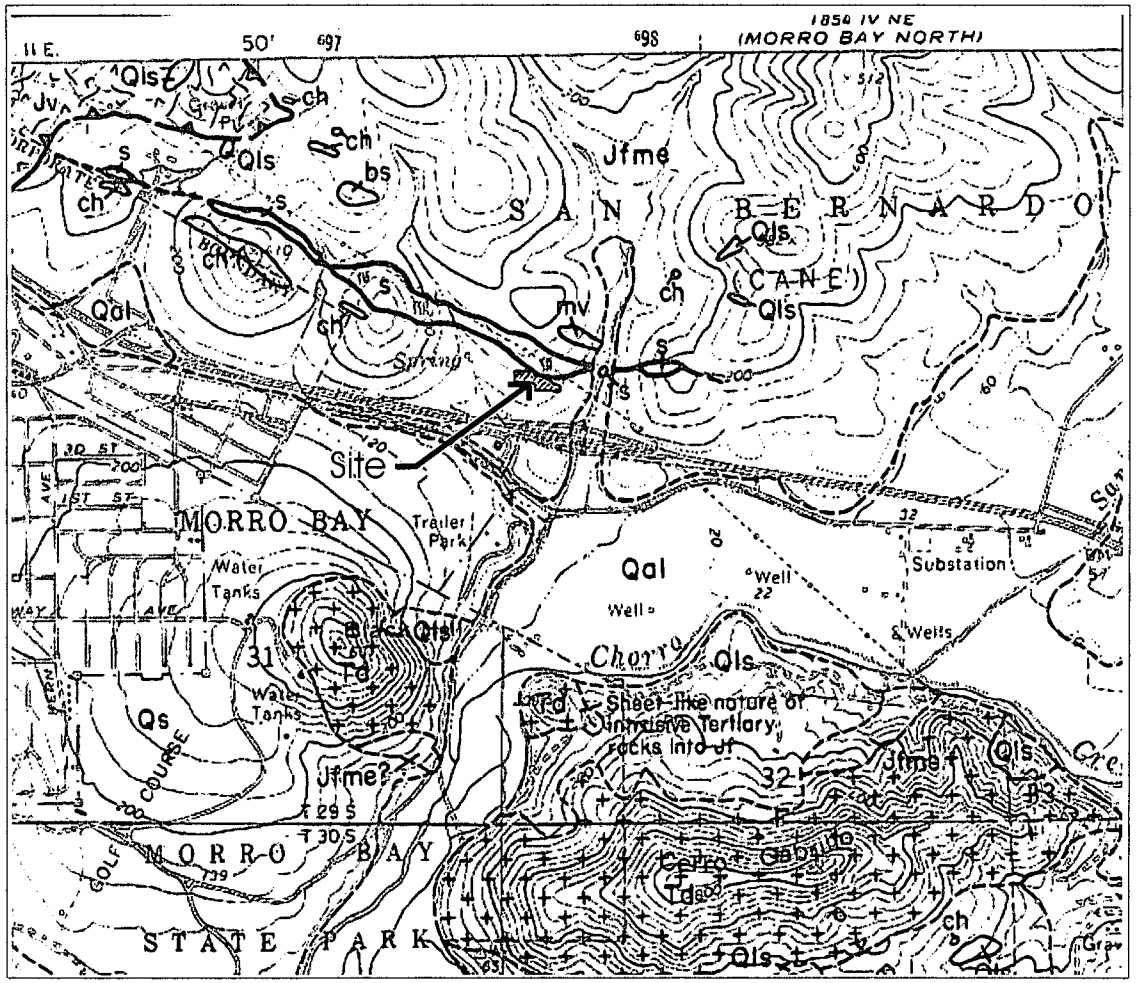
Scale 1"=40'

Figure 2
Site Map
Employee Housing
Seashell Community Retirement Home
Morro Bay



EXPLANATION

Quaternary

Qal	Alluvial Deposits
Qs	Sand Dune Deposits
Qls	Landshale Deposits

Tertiary

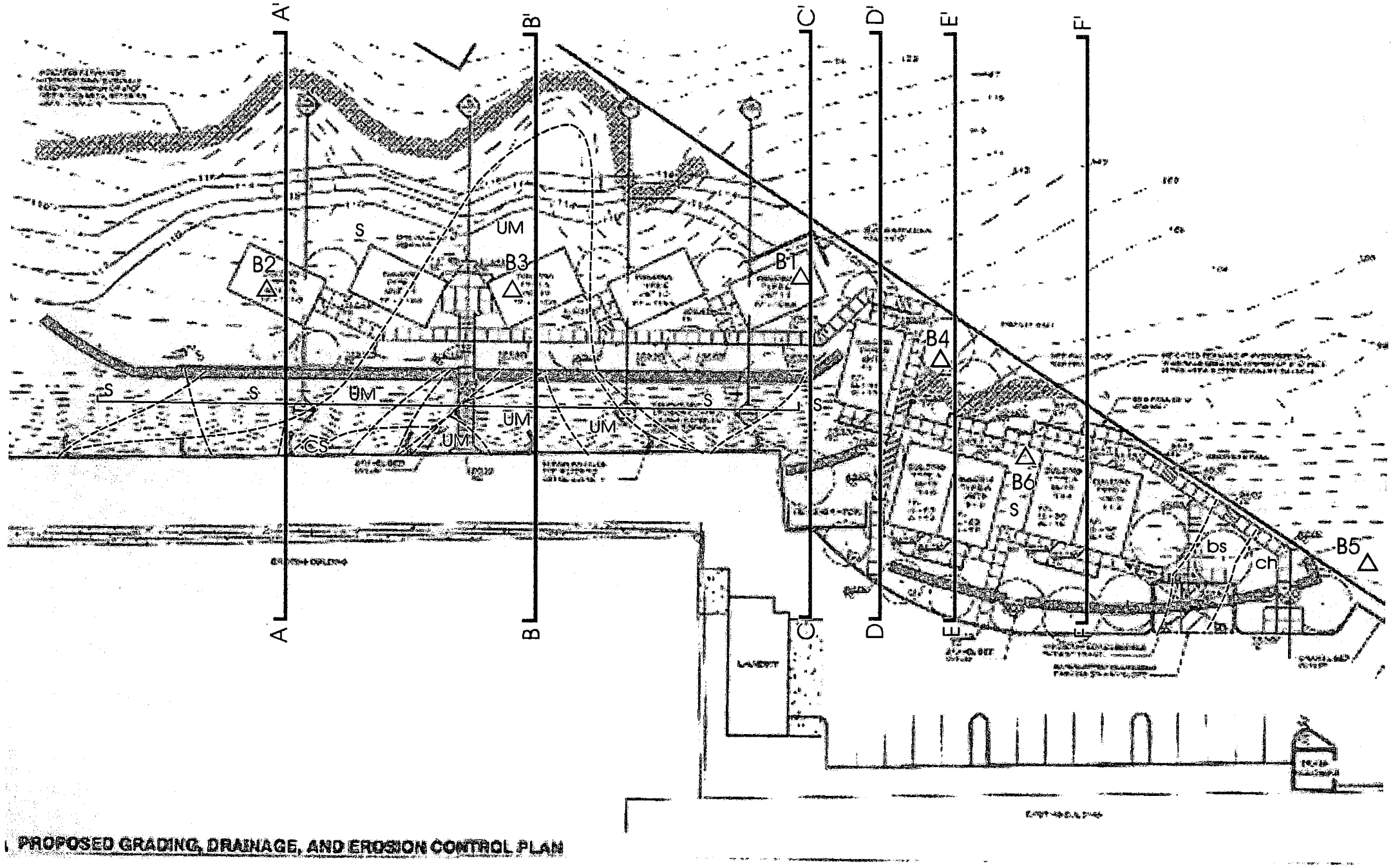
Td	Dacite

Mesozoic

Jv	Diabase and Basalt
Jfme	Rock melange: largely graywacke and claystone; with blue schist (bs), metavolcanic rock (mv), chert (ch), and serpentinite (s).

Map Geology:
Hall CA-1973
Geological Map of the Morro Bay South and Port San Luis Quadrants
Miscellaneous Field Statistics Map 511
Scale 1"=1000'

Figure 3
Regional Geologic Map
Employee Housing Project
Seashell Community Retirement Home
Morro Bay



PROPOSED GRADING, DRAINAGE, AND EROSION CONTROL PLAN

EXPLANATION

S	Serpentinite
UM	Ultramafic
CS	Calc-Silicate
bs	Blue-Schist
ch	Chert
----	Fault
B3 △	Borehole
⌊⌋	Cross Section Line

N

Figure 4
Site Geology
Employee Housing
Seashell Community Retirement Home
Morro Bay

Geologic Cross Sections

Seven cross sections have been drawn through the project area approximately perpendicular to the slope (Figure 5, Figure 6, Figure 7). Bedrock definition at each cross section is not possible at this time without trenching. The general character of the rock is noted, however. A photographic exhibit of the geologic section along the cut bank (Figure 8) provides a good visual illustration of the relationship of the two main rock types underlying the project site.

Active Faulting and Coseismic Deformation Across Site

No known active vault or coseismic deformation is identified in published maps. No active faulting or coseismic deformation was noted during our geologic mapping of the site. No Alquist-Priolo fault zones underlie the site.

Geologic Hazard Zones

The project site is not within an area of landslides or potential liquefaction based on County Safety Element maps. Figure 9 shows that the site is not in a County Designated "Geologic Study Area".

Landslides

No known landslides are in the project area, nor are any up-hill or down-hill from the project area. The potential for slope failure is low based on the type of rock (massive serpentinite and ultramafic rock) and shallow soils underlying the project area. Ground water was not encountered to a depth of several feet below the finished floor level and no seeps were observed in the cut bank. Therefore, no slumps, rotational slides, rock falls, or debris flows are likely. Some rock fragments will erode out of the cut slopes, where exposed, but these are primarily a maintenance nuisance.

Slope Stability

The relationship of the siting of the buildings to the slope is important to note, in light of the stability of the rock. The serpentinitic rock is firm and is stable at a 1:1 horizontal to vertical slope. The ultramafic/calc-silicate rock is not as firm and is more likely to be stable at a 1.5:1 (H:V). The structures located above the cut slope (Units 12-14) that are underlain by the ultramafics should be located so as to maintain a 1.5:1 (H:V). This would require that they be setback further from the existing slope than are shown on the existing conceptual plans.

Geotechnical Testing of Representative Samples

GSI Soils has performed geotechnical testing of the soils and rock that are summarized in their February 16, 2007 report. The ring sample collected at three feet depth in Boring 1 had an initial dry density of 108.3 pounds per cubic foot, an initial moisture content of 13.3 percent. The peak shear angle was 41 degrees and the cohesion value was 380 pounds per square foot. The shear strength plot is shown in Appendix B of their report.

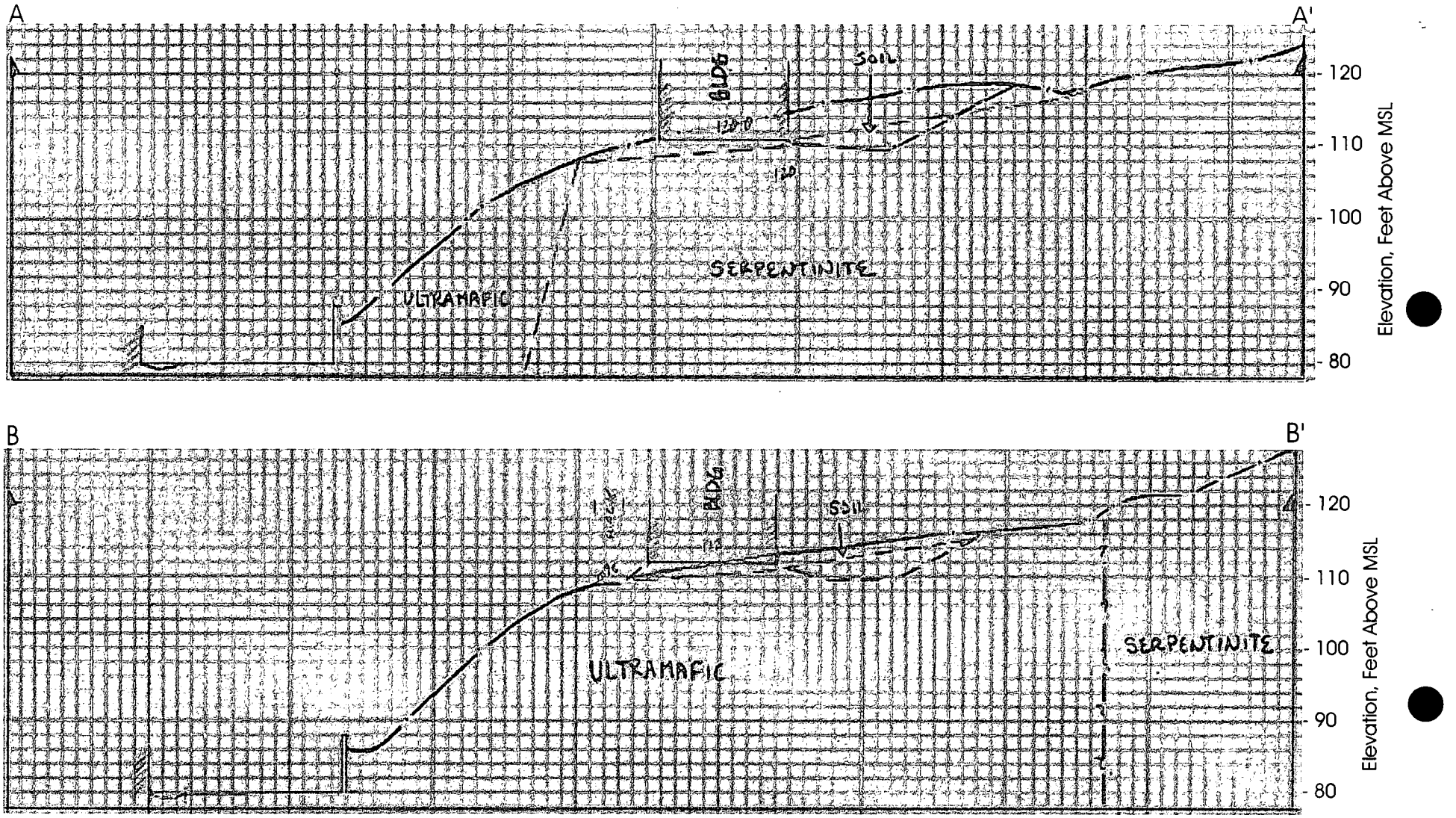


Figure 5
Geologic Cross Section
Employee Housing Project
Seashell Community Retirement Home
Morro Bay

See Figure 4 for Section Locations
Building Locations are Preliminary and Subject to Modification
Scale 1"=20'

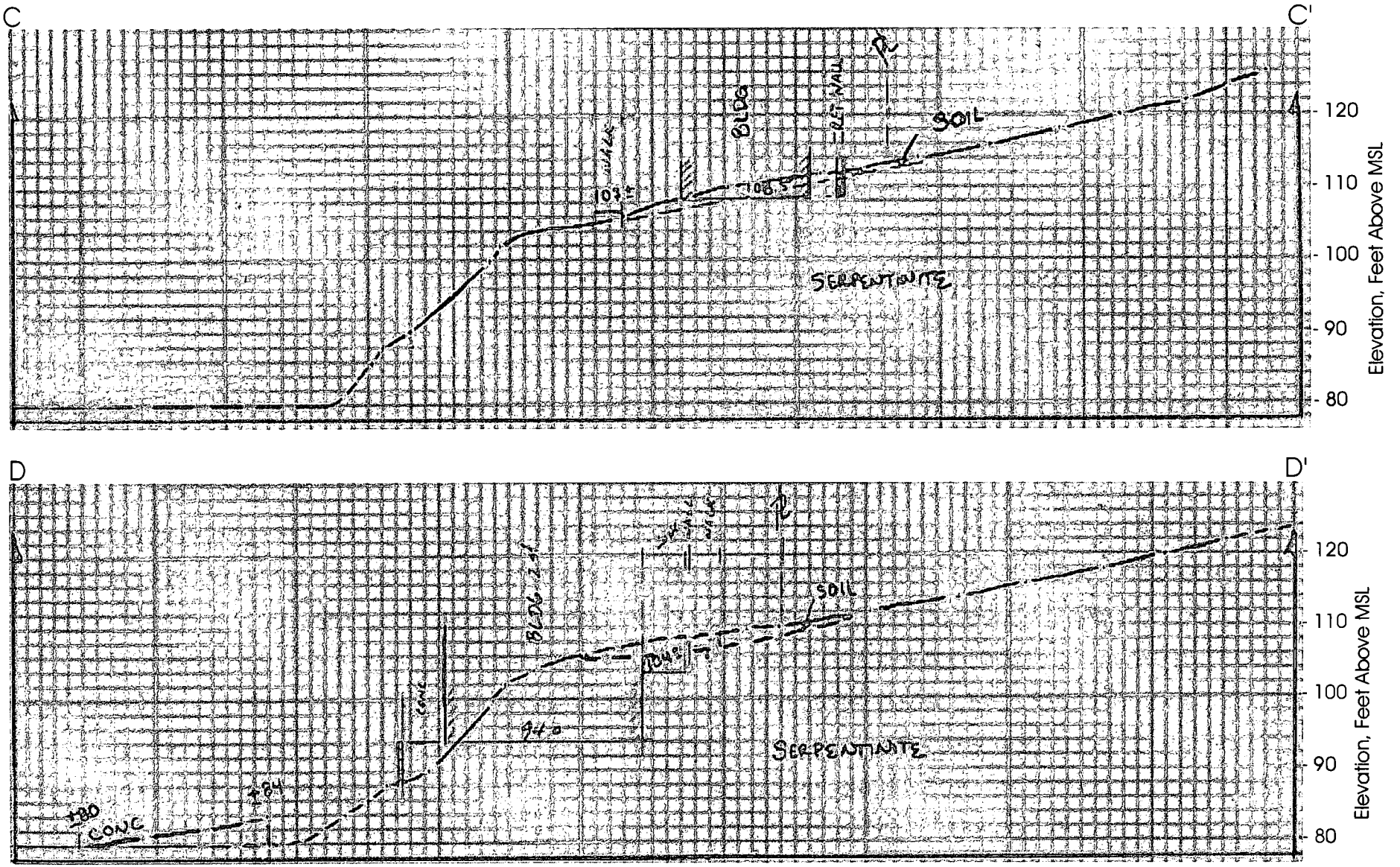
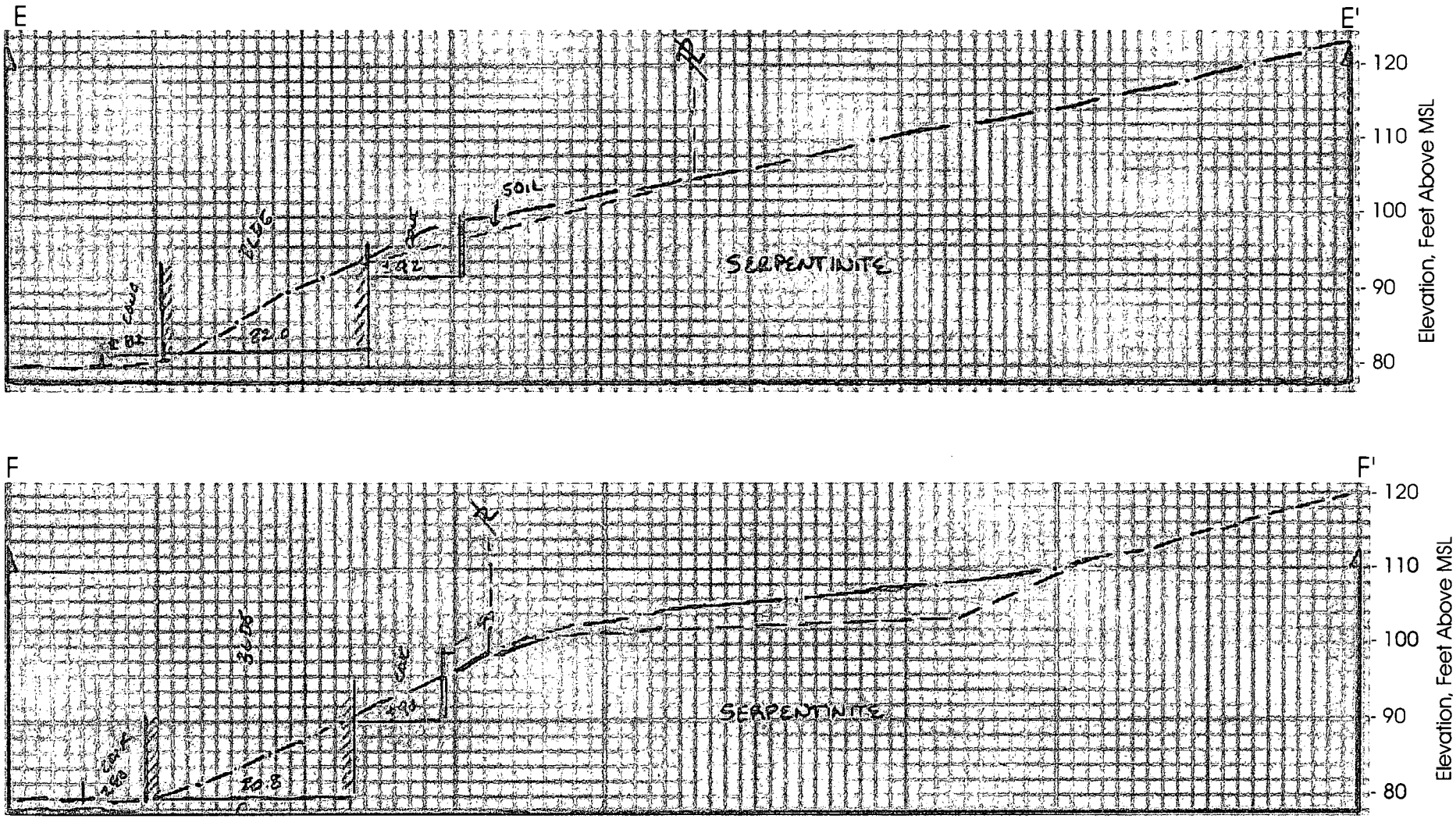


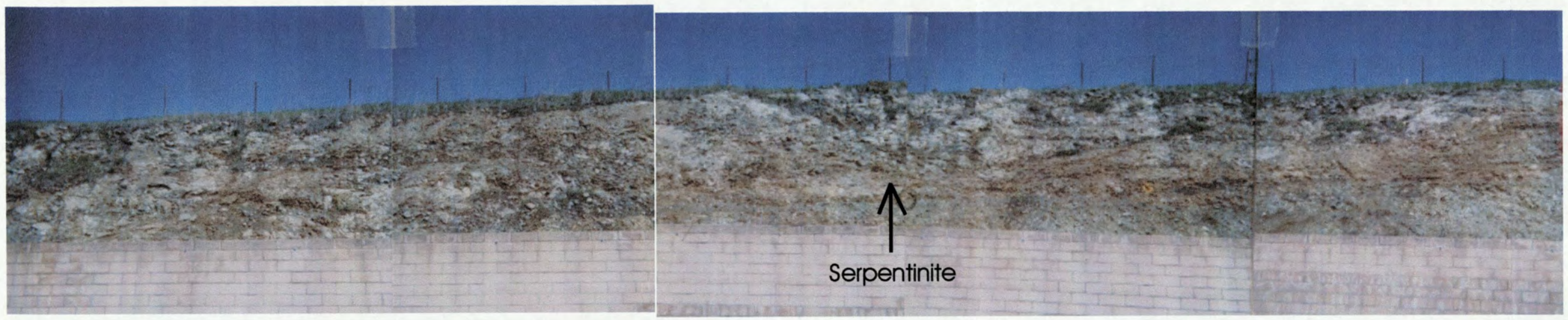
Figure 6
Geologic Cross Section
Employee Housing Project
Seashell Community Retirement Home
Morro Bay

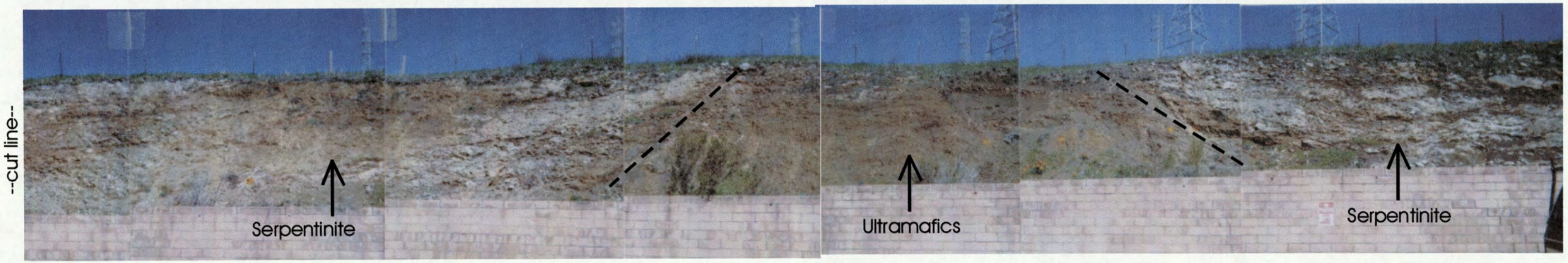
See Figure 4 for Section Locations
Building Locations are Preliminary and Subject to Modification
Scale 1"=20'



See Figure 4 for Section Locations
Building Locations are Preliminary and Subject to Modification
Scale 1"=20'

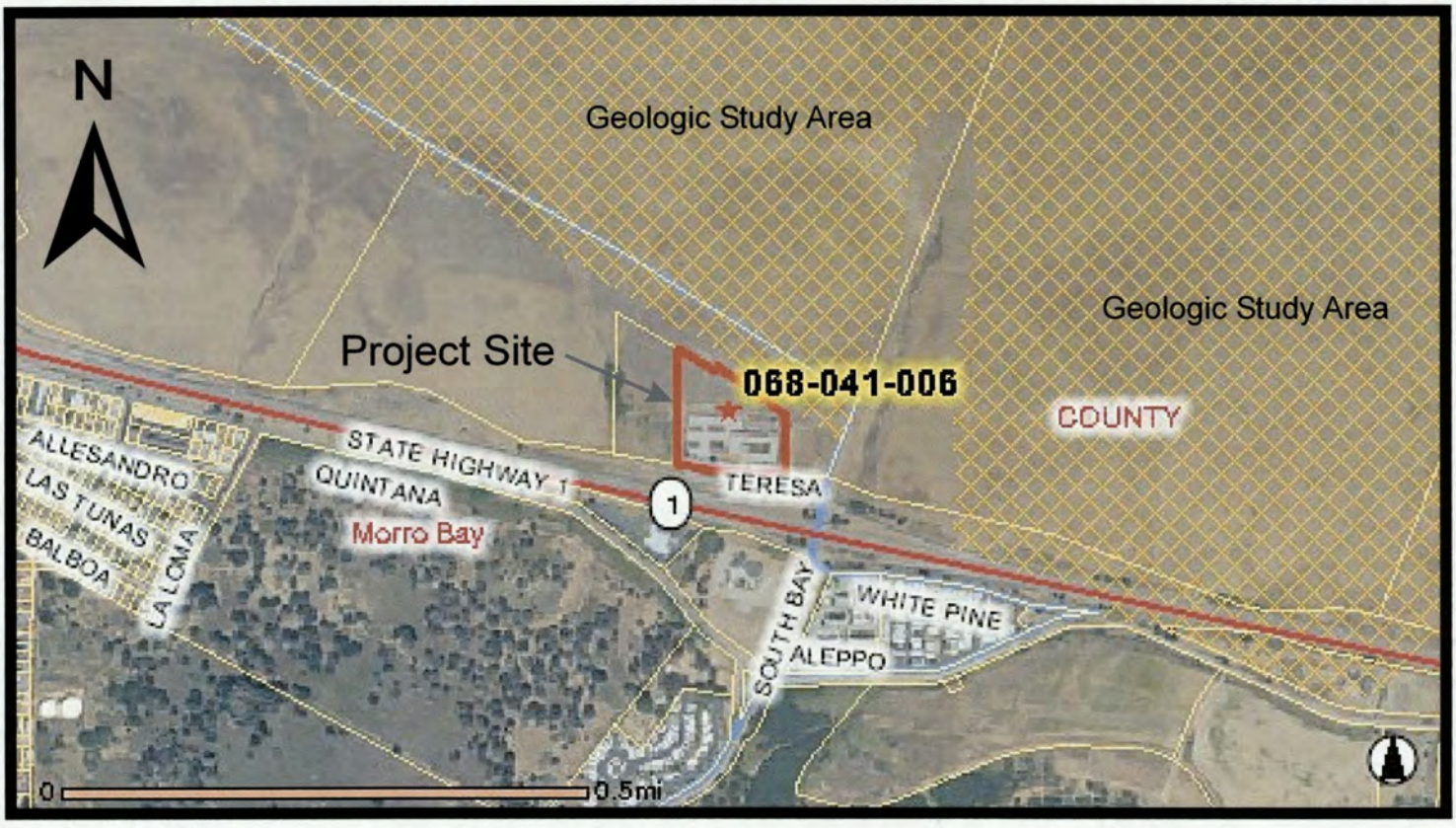
Figure 7
Geologic Cross Section
Employee Housing Project
Seashell Community Retirement Home
Morro Bay





See Figure 4 for Section Line

Figure 8
Photographic Section
Cut Slope Behind Retirement Home
Seashell Community
Morro Bay



Base map: San Luis Obispo County Department of Planning and Building
Interactive GIS Mapping

Note: The property is not in a Geologic Study Area
as determined by the San Luis Obispo County Geologist

Figure 9

Geologic Study Areas
Sea Shell Staff Housing

Cleath & Associates

Note: The property is not in a Geologic Study Area
as determined by the San Luis Obispo County Department

Expansive Soils
The expansion index of the top soil ranges from 98 to120 and of the bedrock is less than 20. As recommended in the geotechnical report, foundations should be placed into bedrock and the soils should be over-excavated below the slab and replaced with non-expansive soils or select material.

Geochemistry of Geologic Subgrade-Soluble Sulfates and Corrosive Soils
Based on the rock types underlying the project area, no soluble sulfates are present. Soils underlying the buildings will be over-excavated and therefore corrosive soils are not a factor in this project.

Flooding and Severe Erosion
The buildings are located up on a hill-side with limited watershed above the building areas and therefore major flooding should not be a problem. The shallow depth to bedrock that is resistant to erosion precludes severe erosion. This is exhibited in the existing cut slope. Drainage around the proposed residential units and down-slope should be controlled to avoid localized flooding at the driveway below the units.

Ground Water
No ground water was encountered in the hand auger and drilled borings to their total depths. These borings were drilled to several feet below the finished floor elevations of the adjacent proposed housing units. No ground water was observed on the surface at the project site. These borings were drilled during a particularly dry winter, however. Some seeps may issue out of the shallow fractured rock during and following a wetter rainy season.

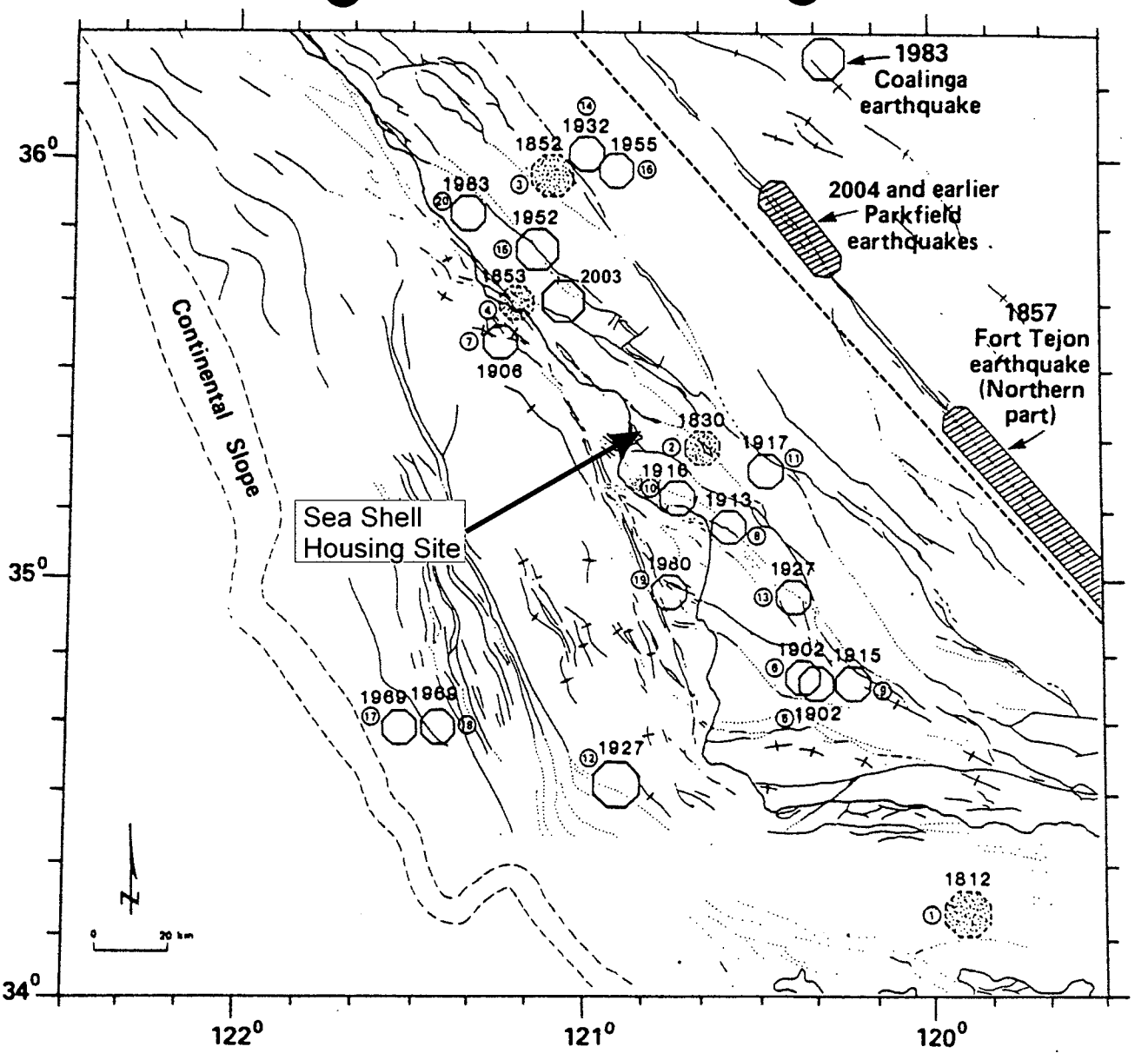
SEISMOLOGY AND CALCULATIONS OF EARTHQUAKE GROUND-MOTION

Evaluation of Historic Seismicity
Significant past earthquake epicenters are shown on Figure 10. Distances to known faults showing the maximum magnitude using the moment magnitude scale, are shown in Table 1.

Characterize and classify the geologic subgrade.
The geologic subgrade was evaluated through subsurface exploration and surface mapping, and classified based on Table 16-J of the ICBO, 1997. The soil profile type C (very dense soil and soft rock) was determined for the site.

Probabilistic evaluation of earthquake ground motion.
A probabilistic Seismic Hazard Analysis (PSHA) was conducted using the U.S. Geological Survey software "Seismic Design Parameters" to determine the design-basis earthquake (DBE) parameters.

Peak ground acceleration for DBE levels of ground motion.
Section 1629.1 of the 1997 Uniform Building Code (ICBO, 1997) requires that the "design-basis ground motion" be provided in a geologic report. This is defined by the ICBO, 1997, as the ground motion with a 10% probability of exceedance in 50 years. Peak ground accelerations for the DBE represented by a



EXPLANATION

Earthquake epicenter:

1812 – Year of event

① Event number

Event location that is poorly constrained

Event location that is within 20 kilometers and generally within 10 kilometers

Historic earthquakes with fault rupture along San Andreas fault zone

Magnitude

5.0 – 5.9

6.0 – 6.9

7.0 – 7.9

Base Map: Diablo Canyon Power Plant
Long Term Seismic Program - Final Report
Pacific Gas & Electric, July 1988

Scale: 1 inch = 20 kilometers

Figure 10

Earthquake Epicenter Map
Sea Shell Staff Housing

Cleath & Associates

response spectra were determined and are included in Appendix A (Seismic Parameters). The design basis ground motion for the site is 0.29 gravity (g). A spectral acceleration table is included in Appendix A

Near-source coefficients and distance to nearest active fault.
The near-source velocity factor (Nv) and the near-source acceleration factor (Na) were determined for the site using Tables 16-S and 16-T from the ICBO, 1997 (Appendix A). Using a distance of 7.2 kilometers from the site to the Los Osos fault (Type B fault), Nv is equal to 1.1, and Na is equal to 1.0. Table 16-Q of the ICBO, 1997 was used to determine the seismic coefficient Ca. Based on the Type C Soil Profile, the Na of 1.0, and the fact that the site is located within Seismic Zone 4, Ca is equal to 0.40. Table 16-R of the ICBO, 1997 was used to determine the seismic coefficient Cv. Based on the Type C Soil Profile, the Nv of 1.1, and the fact that the site is located within Seismic Zone 4, Cv is equal to 0.62.

Seismic Zone 3 or 4
The project site is located in Seismic Zone 4.

LIQUEFACTION ANALYSIS

This analysis is not applicable to this site due to the type of rock (massive serpentinite and ultramafic rock).

EXCEPTIONAL GEOLOGIC HAZARDS AND COMPLICATED SITE CONDITIONS

Not Present at Site
The following geologic hazards and complicated site conditions are not present at the site:

Phase 1 & II Environmental Site Assessment Work
Hazardous Materials (the project site has not been used to store or transmit hazardous materials)
Ground-Water Quality (the property is served by the City of Morro Bay)
On-Site Septic Systems (wastewater collected by the City of Morro Bay)
Non-Tectonic Faulting and Hydrocollapse of Alluvial Fan Soils (alluvial fan soils not present)
Regional Subsidence (the geologic units underlying the site are dense and not likely to subside)
Volcanic Eruption (no active volcanoes are in San Luis Obispo County)
Tsunami or Seiche (the site is above the tsunami flooding level)
Radon-222 Gas (geologic materials with documented radon not present at site)
Paleontologic Resources (none present at the site)

Naturally Occurring Asbestos
The serpentinite and ultramafic rock types contain asbestiform minerals. During construction, disturbed soils and rock can be expected to create dust that should be suppressed during construction activities. A dust control plan should be considered for this project. Permitting from the Air Pollution Control Board

or additional geologic investigations may be required to establish an exemption to this permitting requirement.

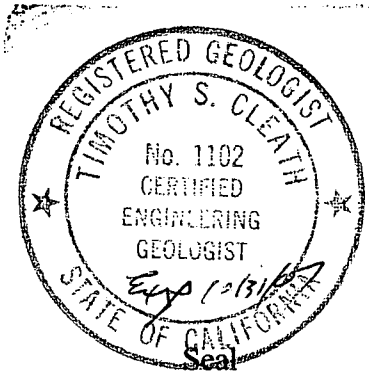
GRADING PLAN REVIEW AND FOUNDATION-PLAN REVIEW

A certified engineering geologist should review the grading plan and foundation plan, when developed to determine if the plans conform to the recommendations provided herein. A certified engineering geologist should be present to witness the excavations for cut slopes, footings and retaining walls to determine whether the rock exposed is consistent with the rock types mapped and drilled during this investigation and the geotechnical exploration or it is different and requires additional evaluation. Sub-drainage plans should be reviewed to determine conformance with the recommendations presented in this engineering geologic report.

REPORT DOCUMENTATION

Geology, Seismology, and Geotechnical References
The references used in this report are listed in the attached "List of References".

Certified Engineering Geologist's Signature



Seal

Timothy Stephen Cleath
Certified Engineering Geologist #1102
Certification Expires October 31, 2007

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GSI

GEOTECHNICAL INVESTIGATION
SEA SHELL STAFF HOUSING
1405 TERESA DRIVE
MORRO BAY, CALIFORNIA

February 16, 2007
PROJECT 7-4309

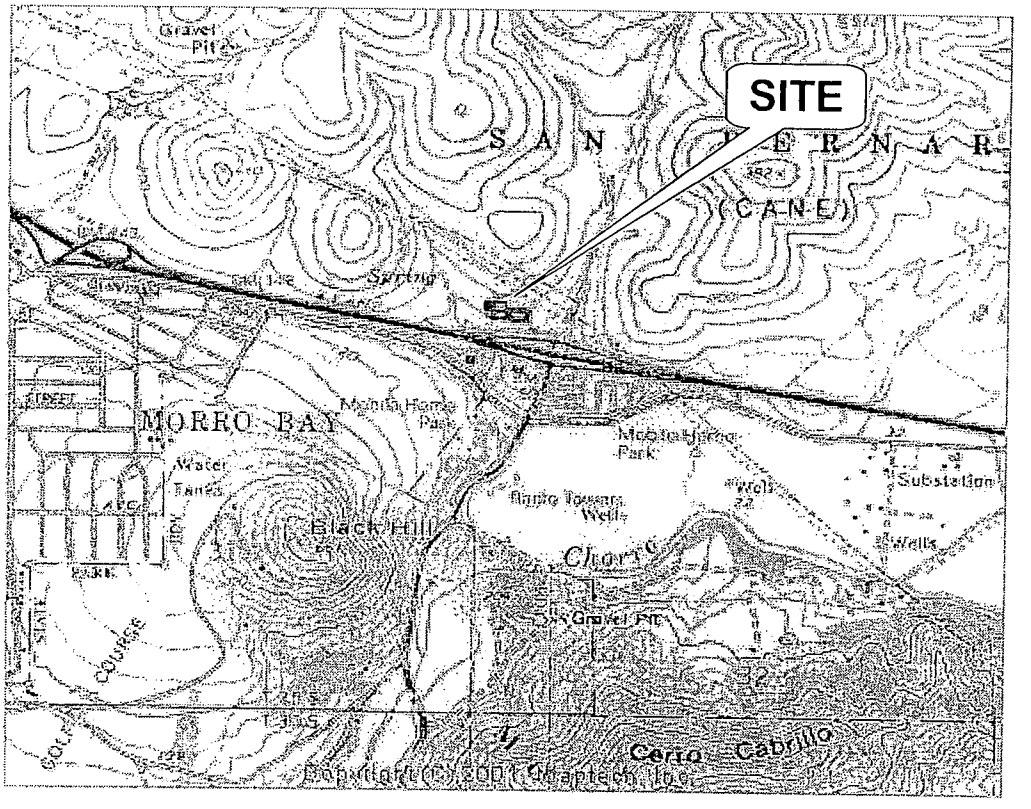

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TABLE OF CONTENTS

GEOTECHNICAL INVESTIGATION
SEA SHELL STAFF HOUSING
1405 TERESA DRIVE
MORRO BAY, CALIFORNIA

PROJECT 7-4309

1.0 INTRODUCTION

This report presents the results of our geotechnical investigation for the proposed residences to be located at 1405 Teresa Drive in Morro Bay, California. A site location map is presented in Figure 1.

The property is bounded by Teresa Drive to the south, residential lots to the west and open space to the north and east. The proposed residences will be located to the north of the existing structure. In general, the terrain in this area slopes to the south with an average elevation of approximately 100 feet above mean sea level. Units 11 through 14 on the west side of the site are located adjacent to an existing twenty-five (25) foot high, approximately 1:1 (horizontal:vertical) cut slope. Units 1 through 10 on the east side of the site and are located on sloping terrain with gradients of approximately 2:1 to 4:1 (horizontal:vertical). At the time of our field exploration the building areas were covered with grasses, weeds and some trees.

It is our understanding that eight (8) residential structures composing 16 units will be constructed at the site. These buildings will be one and two story wood-framed structures with concrete slab-on-grade floors. Due to the sloping terrain some structures will incorporate concrete retaining walls. Footing loads for the structures are presently unavailable. For the purpose of this report, maximum loads on the order of 15 kips (columns) and 1.5 kip per lineal foot (continuous) have been estimated.

The project description is based on a site reconnaissance performed by a GSI Soils Inc., engineer and information provided by Pults and Associates and Cathy Novak Consulting. The plan provided forms the basis for the "Site Plan", Figure 2.

In the event that there is change in the nature, design or location of improvements, or if the assumed loads are not consistent with actual design loads, the conclusions and recommendations contained in this report should be reviewed and modified, if required.

Evaluations of the soils for hydrocarbons or other chemical properties are beyond the scope of the investigation.

2.0 PURPOSE AND SCOPE

The purpose of this study was to explore and evaluate the surface and subsurface soil conditions at the site and to develop geotechnical information and design criteria for the proposed construction. The scope of this study included the following items.

1. A review of available soils information for this area of Morro Bay.

2. A field study consisting of a site reconnaissance and an exploratory boring program to formulate a description of the subsurface conditions.

3. A laboratory testing program performed on representative soil samples collected during our field study.

4. Engineering analysis of the data gathered during our field study, laboratory testing, and literature review. Development of recommendations for site preparation and grading, and geotechnical design criteria for foundations, retaining walls, and underground facilities.

5. Preparation of this report summarizing our findings, conclusions, and recommendations regarding the geotechnical aspects of the project site.

3.0 SUBSURFACE SOIL CONDITIONS

The near surface soils encountered in our exploratory borings generally consisted of sandy clays to a depth of 1 to 5 feet. These clays were encountered in a moist state and in a soft condition in the upper one to two feet and becoming stiff to very stiff below this depth. Severely weathered clayey sandstone materials were encountered below the surface clay soils to a depth of 12 feet. These materials were found in a moist state and in a dense to very dense condition. Laboratory testing indicates that the surface sandy clays are highly expansive while the underlying bedrock has very low expansivity.

No free ground water was during our field exploration. However, very moist to saturated conditions can occur during wet winter months in the near surface soils. A more detailed description of the soils encountered is presented graphically on the "Exploratory Boring Logs", B-1 through B-6, Appendix A. An explanation of the symbols and descriptions used on these logs are presented on the "Soil Classification Chart".

The soil profile described above is generalized; therefore, the reader is advised to consult the boring logs (Appendix A) for soil conditions at specific locations. Care should be exercised in interpolating or extrapolating subsurface conditions between or beyond borings. On the boring logs we have indicated the soil type, moisture content, grain size, dry density, and the applicable United Soil Classification System Symbol.

The locations of our exploratory borings, shown on Site Plan, Figure 2, were approximately determined from features at the site. Hence, accuracy can be implied only to the degree that this method warrants. Surface elevations at boring locations were not determined.

4.0 UBC SEISMIC COEFFICIENTS

A summary of the seismic factors applicable to this site is provided in Figure 5. The soil profile type would be considered an S_C, the seismic source is a Type B, and the near source factors N_a and N_v are 1.0 and 1.12 respectively. The seismic coefficients C_a and C_v would be 0.40 N_a and 0.56 N_v respectively.

5.0 CONCLUSIONS AND RECOMMENDATIONS

1. The site is suitable for the proposed development provided the recommendations presented in this report are incorporated into the project plans and specifications.

2. All grading and foundation plans should be reviewed by GSI Soils Inc., hereinafter described as the Geotechnical Engineer, prior to contract bidding. This review should be performed to determine whether the recommendations contained within this report are incorporated into the project plans and specifications.

3. The Geotechnical Engineer should be notified at least two (2) working days before site clearing or grading operations commence, and should be present to observe the stripping of deleterious material and provide consultation to the Grading Contractor in the field.

4. Field observation and testing during the grading operations should be provided by the Geotechnical Engineer so that a decision can be formed regarding the adequacy of the site preparation, the acceptability of fill materials, and the extent to which the earthwork construction and the degree of compaction comply with the project geotechnical specifications. Any work related to grading performed without the full knowledge of, and under direct observation of the Geotechnical Engineer, may render the recommendations of this report invalid.

5.1 Clearing and Stripping

1. All surface and subsurface deleterious materials should be removed from the proposed addition area and disposed of off-site. This includes, but is not limited to any buried utility lines, loose fills, septic systems, debris, building materials, and any other surface and subsurface structures within proposed building areas. Voids left from site clearing, should be cleaned and backfilled as recommended for structural fill.

2. Once the site has been cleared, the exposed ground surface should be stripped to remove surface vegetation and organic soil. The surface may be disced, rather than stripped, if the organic content of the soil is not more than three percent by weight. If stripping is required, depths should be determined by a member of our staff in the field at the time of stripping. Strippings may be either disposed of off-site or stockpiled for future use in landscape areas if approved by the landscape architect.

5.2 Preparation of Building Pads

1. It is recommended that all footings extend a minimum of 12 inches into the weathered bedrock materials with slab-on-grade areas supported on 36 inches of suitable native or imported non-expansive materials. However, where suitable

bedrock materials (non-expansive) are exposed at pad grade further removals would not be required.

2. For slab-on-grade areas and where fill is to be placed, the native soils should be overexcavated to a depth of 36 inches below existing grades or finished pad grade, whichever is greater. The exposed surface should then be scarified to a depth of 12 inches, wetted to above optimum moisture, and compacted to at least ninety (90) percent of maximum dry density. The removed material can then be replaced and compacted (90%). However, the slab-on-grade areas should be capped with 36 inches of native non-expansive soils or a select material such as decomposed granite or equivalent. These soils should be similarly compacted to ninety (90) percent. The lateral limits of overexcavation and scarification should be at least 5 feet beyond the perimeter building and footing lines.

3. Where building pads are located entirely into suitable non-expansive or very low expansive bedrock materials further excavation may not be required. The exposed surface should be evaluated and approved by the geotechnical engineer. At a minimum the surface should be scarified to a depth of 12 inches and compacted to 90 percent.

4. In order to help minimize potential settlement problems associated with structures supported on a non-uniform thickness of compacted fill, the soils engineer should be consulted for specific site recommendations during grading.

5. Cut and fill slopes in native materials should not exceed 3:1 (horizontal: vertical) and should be properly compacted to 90 percent. The slopes should also be properly protected against erosion. Fill slopes should be overfilled and trimmed back to competent material. If steeper slopes are planned they should be evaluated in the field during grading. Our observations indicate the existing cut slope at the site is stable. The project geologist should evaluate this slope and any further bedrock cuts for overall and surficial stability.

6. The above grading is based on the strength characteristics of the materials under conditions of normal moisture that would result from rain water and do not take into consideration the additional activating forces applied by seepage from springs or subsurface water. Areas of observed seepage should be provided with subsurface drains to release the hydrostatic pressures.

7. All final grades should be provided with a positive drainage gradient away from foundations. Final grades should provide for rapid removal of surface water runoff. Ponding of water should not be allowed on building pads or adjacent to foundations.

5.3 Preparation of Paved Areas

1. The upper 12 inches in driveway and paved areas should be replaced with crushed gravel or Class II Base. Pavement and driveway subgrades should be scarified to a depth of 12 inches below existing grade or finished subgrade prior to placing gravel or base. The soil should then be wetted to slightly above optimum moisture content and compacted to a minimum of 90 percent of maximum dry density.

2. The upper 6 inches of subgrade beneath all paved areas should be compacted to at least 95 percent relative compaction. Subgrade soils should not be allowed to dry out or have excessive construction traffic between the time of water conditioning and compaction, and the time of placement of the pavement structural section.

5.4 Structural Fill

1. On-site processed sandstone (clayey sand materials) free of organic and deleterious material are suitable for use in structural areas. Structural fill should not contain rocks larger than 4 inches in greatest dimension, and should have no more than 15 percent larger than 2.5 inches in greatest dimension.

2. Import (decomposed granite or equivalent) should be free of organic and other deleterious material and should have a very low expansion potential with a

plasticity index of 10 or less. Before delivery to the site, a sample of the proposed import should be tested in our laboratory to determine its suitability for use as structural fill.

3. Structural fill using on-site inorganic soil or approved import should be placed in layers, each not exceeding eight inches in thickness before compaction. On-site inorganic or imported soil should be conditioned with water, or allowed to dry, to produce a soil water content at approximately optimum value, and should be compacted to at least 90 percent relative compaction based on ASTM D1557-91.

5.5 Foundations

1. Conventional continuous footings and spread footings may be used for support of the proposed structures. Spread footings should be connected to the perimeter footings with grade beams.

2. Due to the existing cut slope and the relatively steep terrain a minimum setback distance of 10 feet should be maintained between the outer edge of footings and the competent face of adjacent slopes.

3. Perimeter footings should be at least 15 inches wide with a minimum embedment of 12 inches into bedrock with a minimum overall depth of 30 inches below lowest adjacent grade. The footing bottoms should be observed and approved by the geotechnical engineer prior to placing steel and concrete. Where footing depths exceed 30 inches slurry (3 sack cement/sand) could be used between the bottom of the excavations and the underside of the footings. Spread footings should be a minimum of 2 feet square, similarly embedded a minimum of 12 inches into bedrock and tied to the perimeter footings with grade beams spaced at a maximum of 20 feet on center. The reinforcement for the footings and grade beams should be designed by the structural engineer, however, a minimum of two (2) No. 5 rebar should be provided top and bottom for continuous footings with dowels (#3 @ 18" on-center) to tie the perimeter footings and grade beams to slab areas.

3. An allowable dead plus live load bearing pressure of 3000 psf may be used for design. Total settlements of less than 1-inch are anticipated with differential settlements being 50 percent of this value.

4. The above allowable pressures are for support of dead plus live loads and may be increased by one-third for short-term wind and seismic loads.

5. Lateral forces on structures may be resisted by passive pressure acting against the sides of shallow footings and/or friction between the soil and the bottom of the footing. For resistance to lateral loads, a friction factor of 0.35 may be utilized for sliding resistance at the base of the spread footings in undisturbed native materials or engineered fill. A passive resistance of 350 pcf equivalent fluid weight may be used against the side of shallow footings.

5.6 Slab-On-Grade Construction

1. Concrete slabs-on-grade and flatwork should not be placed directly on unprepared loose fill materials. Preparation of subgrade to receive concrete slabs-on-grade and flatwork should be processed as discussed in the preceding sections of this report.

2. Where concrete slabs-on-grade are to be constructed, the slabs should be underlain by a minimum of 6 inches of clean free-draining material such as clean gravel or permeable aggregate complying with Caltrans Standard Specifications 68, Class I, Type A or Type B; to service as a cushion and a capillary break. Clean gravel should have less than 3% passing the No. 200 sieve. A 15-mil Polyethylene-type membrane should be placed between the capillary break and the slab to provide an effective vapor barrier, and to minimize moisture condensation under the floor covering. All seams through the vapor barrier should be overlapped and sealed. Where pipes extend through the vapor barrier, the barrier should be sealed to the pipes. Tears or punctures in the moisture barrier should be completely repaired. It is suggested that a 2-inch thick sand layer be placed on top of the membrane to assist in the curing of the concrete. The sand should be lightly moistened prior to placing concrete.

3. Concrete slabs-on-grade should be a minimum of 4 inches thick and should be reinforced with No. 3 reinforcing bars placed at 18 inches on-center both ways at or slightly above the center of the structural section. Reinforcing bars should have a minimum clear cover of 1.5 inches, and hot bars should be cooled prior to placing concrete. The aforementioned reinforcement may be used for anticipated uniform floor loads not exceeding 100 psf. If floor loads greater than 100 psf are anticipated the slab should be evaluated by a structural engineer.

4. All slabs should be poured at a maximum slump of less than 5 inches. Excessive water content is the major cause of concrete cracking. For design of concrete floors, a modulus of subgrade reaction of k = 100 psi per inch would be applicable to on-site engineered fill soils.

5.7 Site Retaining Walls

1. Retaining walls should be designed to resist lateral pressures from adjacent soils and surcharge loads applied behind the walls.

Lateral Pressure and Condition (Compacted Fill)		Equivalent Fluid Pressure, pcf	
		Unrestrained Wall	Rigidly Supported Wall
Active Case, Drained	Level-native soils	60	--
	Level-granular backfill	30	--
At-Rest Case, Drained	Level-native soils	--	80
	Level-sand backfill		50
Passive Case, Drained	Level 2:1 Sloping Down	300 150	--
For sloping backfill add 1 pcf for every 2 deg. (Active case) and 1.5 pcf for every 2 deg. (At-rest case)			

2. Isolated retaining wall foundations should extend a minimum of 12 inches into bedrock with a minimum overall depth of 30 inches below lowest adjacent grade. An allowable toe pressure of 3,000 psf is recommended in competent bedrock approved by the geotechnical engineer. A coefficient of friction of 0.35 may be used between subgrade materials and concrete footings.

3. In addition to the lateral soil pressure given above, retaining walls should be designed to support any design live load, such as from vehicle and construction surcharges, etc., to be supported by the wall backfill. If construction vehicles are required to operate within 10 feet of a wall, supplemental pressures will be induced and should be taken into account through design.

4. The above-recommended pressures are based on the assumption that sufficient subsurface drainage will be provided behind the walls to prevent the build-up of hydrostatic pressure. To achieve this we recommend that a filter material be placed behind all proposed walls. The blanket of filter material should be a minimum of 12 inches thick and should extend from the bottom of the wall to within 12 inches of the ground surface. The top 12 inches should consist of water conditioned, compacted native soil. A 4-inch diameter drain pipe should be installed near the bottom of the filter blanket with perforations facing down. The drain pipe should be underlain by at least 4 inches of filter type material. Adequate gradients should be provided to discharge water that collects behind the retaining wall to an adequately controlled discharge system with suitably projected outlets. The filter material should conform to Class I, Type B permeable material as specified in Section 68 of the California Department of Transportation Standard Specifications, current edition. A typical 1" x #4 concrete coarse aggregate mix approximates this specification.

5. For hydrostatic loading conditions (i.e. no free drainage behind walls), an additional loading of 45 pcf equivalent fluid weight should be added to the above soil pressures. If it is necessary to design retaining structures for submerged conditions, allowed bearing and passive pressures should be reduced by 50 percent. In addition, soil friction beneath the base of the foundations should be neglected.

6. Precautions should be taken to ensure that heavy compaction equipment is not used immediately adjacent to walls, so as to prevent undue pressure against, and movement of, the walls.

7. The use of rubber water-stops between the footing and wall and an impermeable barrier such as Paraseal (or equivalent) should be considered for any basement construction, and for building walls which retain earth.

5.8 Pavement Design

1. The following table provides recommended pavement sections based on an estimated R-Value of 8 for the near surface sandy clay soils encountered at the site.

RECOMMENDED MINIMUM ASPHALT CONCRETE PAVEMENT SECTIONS DESIGN THICKNESS		
T.I.	A.C.-in.	A.B.-in.
4.5	2.5	9.0
5.0	2.5	10.5
5.5	3.0	11.0
6.0	3.0	14.0
6.5	3.5	14.5
7.0	3.5	16.0
8.0	4.5	17.5
8.5	5.0	18.5
9.0	5.5	19.0
T.I. = Traffic Index A.C. = Asphaltic Concrete - must meet specifications for Caltrans Type B Asphalt Concrete A.B. = Aggregate Base - must meet specifications for Caltrans Class II Aggregate Base (R-Value = minimum 78)		

2. All asphalt pavement construction and materials used should conform with Sections 26 and 39 of the latest edition of the Standard Specifications, State of California, Department of Transportation. Aggregate bases and sub-bases should also be compacted to a minimum relative compaction of 95 percent based on ASTM D1557-91.

3. R-value samples should be obtained and tested at the completion of rough grading and the pavement sections confirmed or revised. All asphaltic concrete pavement sections and all sections should be crowned for good drainage.

5.9 Underground Facilities Construction

1. The attention of contractors, particularly the underground contractors, should be drawn to the State of California Construction Safety Orders for "Excavations, Trenches, Earthwork". Trenches or excavations greater than 5 feet in depth should be shored or sloped back in accordance with OSHA Regulations prior to entry.

2. For purposes of this section of the report, bedding is defined as material placed in a trench up to 1 foot above a utility pipe and backfill is all material placed in the trench above the bedding. Unless concrete bedding is required around utility pipes, free-draining sand should be used as bedding. Sand proposed for use as bedding should be tested in our laboratory to verify its suitability and to measure its compaction characteristics. Sand bedding should be compacted by mechanical means to achieve at least 90 percent relative compaction based on ASTM Test D1557-91.

3. On-site inorganic soil, or approved import, may be used as utility trench backfill. Proper compaction of trench backfill will be necessary under and adjacent to structural fill, building foundations, concrete slabs and vehicle pavements. In these areas, backfill should be conditioned with water (or allowed to dry), to produce a soil water content of about 2 to 3 percent above the optimum value and placed in horizontal layers each not exceeding 8 inches in thickness before compaction. Each layer should be compacted to at least 90 percent relative compaction based on ASTM Test D1557-91. The top lift of trench backfill under vehicle pavements should be compacted to the requirements given in report section 5.3 for vehicle pavement subgrades. Trench walls must be kept moist prior to and during backfill placement.

5.10 Surface and Subsurface Drainage

1. Concentrated surface water runoff within or immediately adjacent to the site should be conveyed in pipes or in lined channels to discharge areas that are relatively level or that are adequately protected against erosion.

2. Water from roof downspouts should be conveyed in pipes that discharge in areas a safe distance away from structures. Surface drainage gradients should be planned to prevent ponding and promote drainage of surface water away from building foundations, edges of pavements and sidewalks. For soil areas we recommend that a minimum of two (2) percent gradient be maintained with an increase to four (4) percent for the first five (5) feet adjacent to the footings.

3. Careful attention should be paid to erosion protection of soil surfaces adjacent to the edges of roads, curbs and sidewalks, and in other areas where "hard" edges of structures may cause concentrated flow of surface water runoff. Erosion resistant matting such as Miramat, or other similar products, may be considered for lining drainage channels.

5.11 Temporary Excavations and Slopes

1. Conventional earth moving equipment should be adequate to excavate the soils at the site.

2. We recommend that temporary trench walls exceeding five (5) feet in depth be sloped at an inclination of 1:1 (horizontal:vertical). However, during the rainy season, or where soft or loose sediments, or perched water conditions are found, flatter slopes (1½:1 to 2:1) may be required.

3. It should be noted that it is the *Contractor's* responsibility to maintain safe cut slopes based on actual field conditions and according to OSHA requirements. Temporary Slopes at gradients of 1:1 should not be open for more than 2 to 3 days. In some geologic units, perched water may be present locally in the slope face. The stability of the slopes may be compromised somewhat where these conditions exist due to softening or piping of the saturated materials.

4. Where the excavation bottom is locally wet, soft and yielding, it is recommended that the bottom be stabilized prior to placement of fill. Methods such as the use of pit-run gravels and cobbles on the excavated bottom covered with a geotextile fabric such as Mirafi 600x or placement of a Class II base material over a similar fabric could be used. The *Contractor* should be responsible for design and implementation of stabilization techniques.

5. Where the temporary trench slopes are inclined as described above, no shoring is required. However, where adjacent features may influence establishment of appropriate slopes, the *Contractor* may elect to use shoring. In no case should personnel enter trenches with vertical sidewalls greater than 5 feet deep without proper shoring. Design and installation of the shoring should be the responsibility of the *Contractor* and should be performed according to OSHA requirements.

6. Shoring should be designed to resist the lateral earth pressures provided, assuming no hydrostatic loads. If ground water is encountered the shoring should be designed for the required hydrostatic pressures.

5.12 Site Slope Stability

1. As indicated previously the existing and proposed site slopes should be evaluated by the project geologist.

2. On the west side of the site, steeper slopes (approximately 1:1) were cut for the construction of the existing structure. An existing retaining wall approximately 5 feet high is located at the toe of this slope. Severely weathered bedrock materials are exposed across the entire slope. Visual observation did not reveal any obvious sign of instability.

3. The following minimum drainage and slope recommendations are also provided.

   a. Where possible compacted materials utilized in the construction of the fill slopes should comprise at least 20 percent fine grained (passing #200

sieve) soils in a zone equal to 2 the slope height.

b. Future cut slopes should be observed by the project geologist and a representative of the geotechnical engineer during grading and evaluated for stability.

c. Hydroseeding or planting a surface cover of protective vegetation on all slope surfaces. In addition, an erosion control blanket (Greenfix CF072RR or equivalent) should be placed over the slopes to protect the vegetation while it becomes established.

d. Water should not be allowed to run freely over the sides of the slopes. A lined V-ditch should be constructed above all cut and fill slopes.

6.0 LIMITATIONS AND UNIFORMITY OF CONDITIONS

1. It should be noted that it is the responsibility of the owner or his/her representative to notify **GSI Soils Inc.** a minimum of 48 hours before any stripping, grading, or foundation excavations can commence at this site.

2. The recommendations of this report are based upon the assumption that the soil conditions do not deviate from those disclosed during our study. Should any variations or undesirable conditions be encountered during grading of the site, **GSI Soils Inc.** will provide supplemental recommendations as dictated by the field conditions.

3. This report is issued with the understanding that it is the responsibility of the owner or his/her representative to ensure that the information and recommendations contained herein are brought to the attention of the architect and engineer for the project, and incorporated into the project plans and specifications. The owner or his/her representative is responsible for ensuring that the necessary steps are taken to see that the contractor and subcontractors carry out such recommendations in the field.

4. As of the present date, the findings of this report are valid for the property studied. With the passage of time, changes in the conditions of a property can occur whether they be due to natural processes or to the works of man on this or adjacent properties. Legislation or the broadening of knowledge may result in changes in applicable standards. Changes outside of our control may find this report to be invalid, wholly or partially. Therefore, this report should not be relied upon after a period of three (3) years without our review nor is it applicable for any properties other than those studied.

5. Validity of the recommendations contained in this report is also dependent upon the prescribed testing and observation program during the site preparation and construction phases. Our firm assumes no responsibility for construction compliance with these design concepts and recommendations unless we have been retained to perform continuous on-site testing and review during all phases of site preparation, grading, and foundation/slab construction.

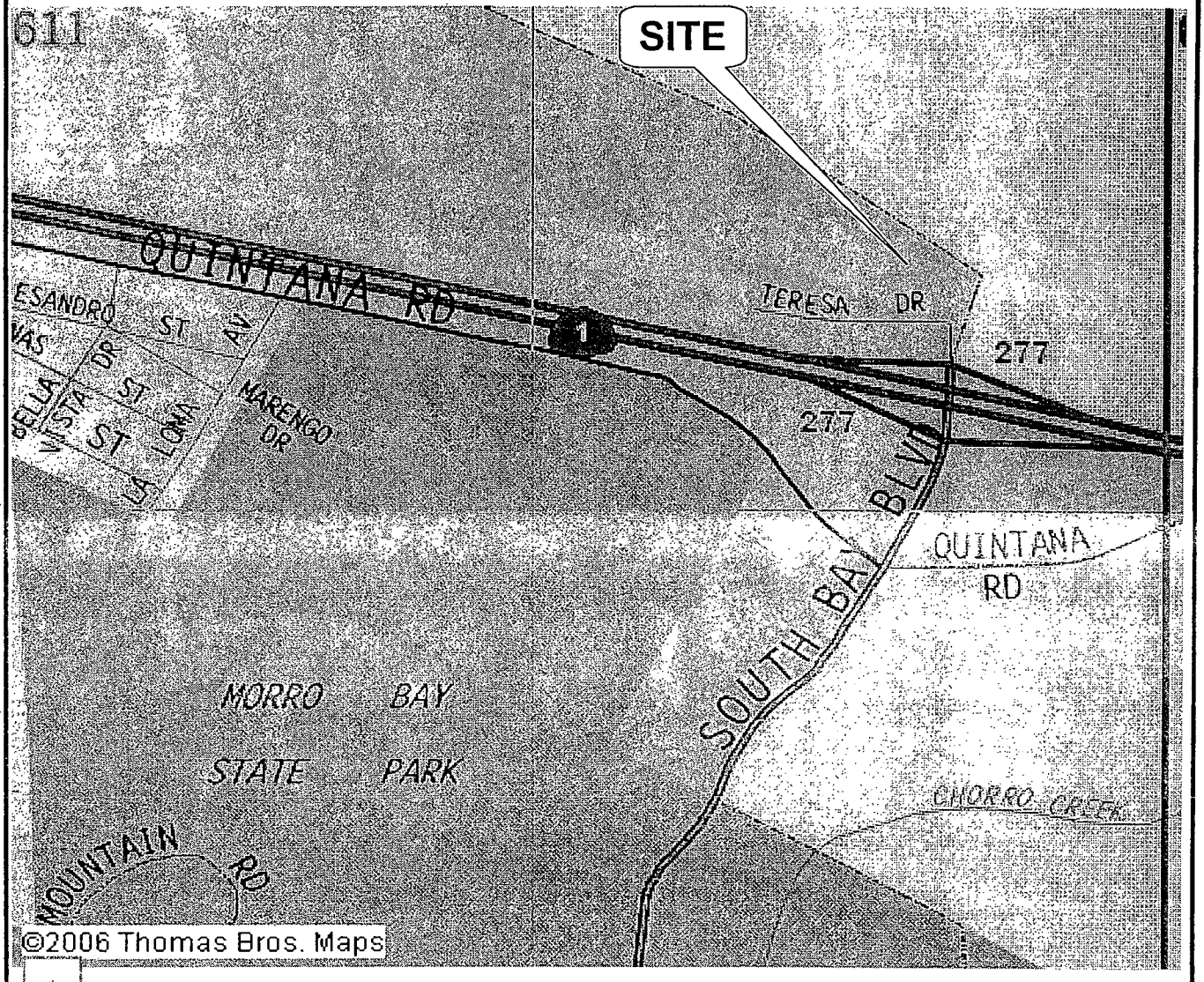
Thank you for the opportunity to have been of service in preparing this report. If you have any questions or require additional assistance, please feel free to contact the undersigned at (805) 543-5493.

Sincerely,

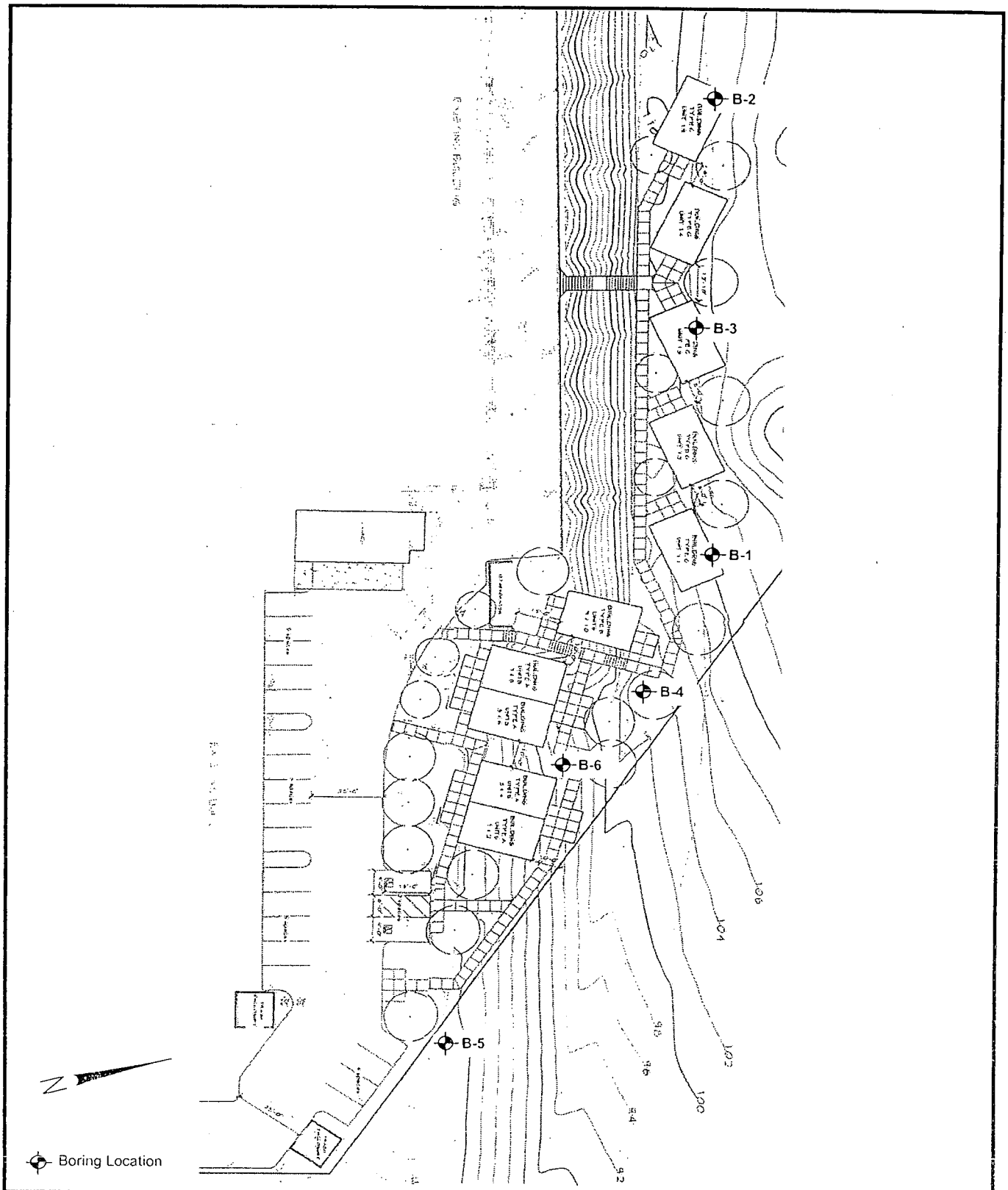
GSI SOILS INC.

Ronald J. Church
Senior Engineer
GE #2184

FIGURES



GSI	SITE MAP SEA SHELL STAFF HOUSING 1405 TERESA DRIVE MORRO BAY, CALIFORNIA	Project No.	Figure No.
		7-4309	1



GSI	SITE PLAN SEA SHELL STAFF HOUSING 1405 TERESA DRIVE MORRO BAY, CALIFORNIA	Project No.	Figure No.
		7-4309	2

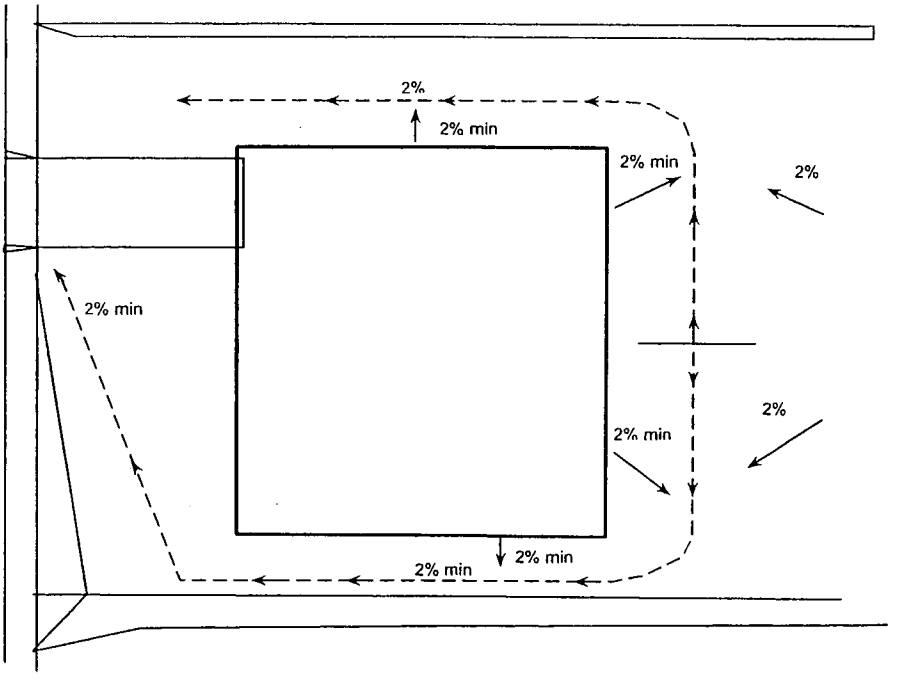
NOTES

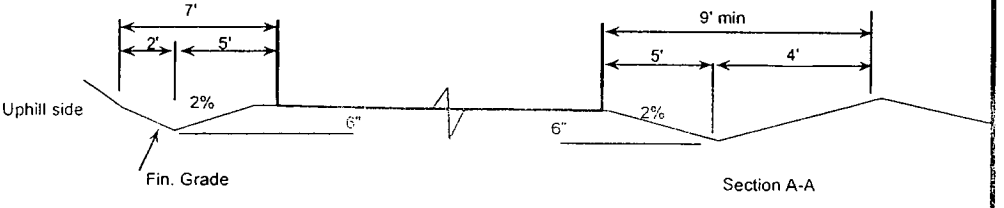
Positive surface drainage shall be established away from the foundation system of the proposed structure at a 2% slope (min) for a minimum distance of 5' away from the structure and should be maintained throughout the life of the structure.

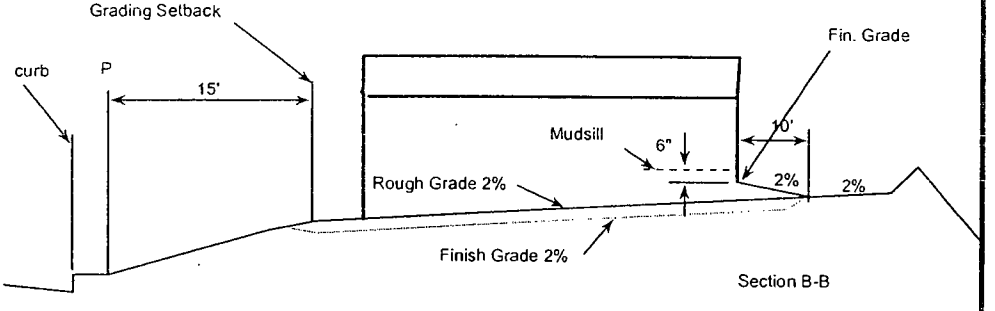
Drainage and surface water management should include the use of gutters and downspouts on the roof of the structure. Downspouts should be captured in a sealed pipe and diverted at least 10 horizontal feet away from the adjacent foundation system.

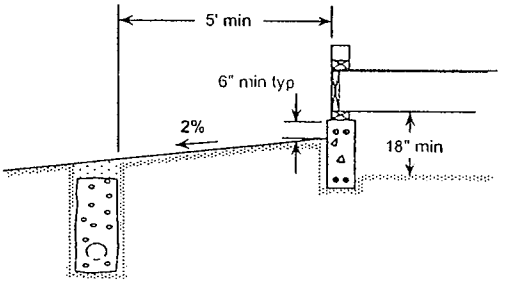
All drainage should be collected and directed away from the structures and away from slopes as shown in the figures. Drainage should be directed to proper non-erosive outfall facilities

(optional) Subterranean drains placed adjacent to the footings should be set at an elevation lower than the interior crawl space grade or the pad subgrade but not deeper than the bottom of the footing (see figure). Drain Pipes should be rigid perforated PVC with perforations down (5 to 7 o/clock). The pipes should be set 4" to 6" above the base of the trench and be completely surrounded by 1" gravel. The gravel should be wrapped with filter fabric (Mirafi 140n or equiv.). These drains should not be connected to surface sources such as yard drains or roof downspouts.





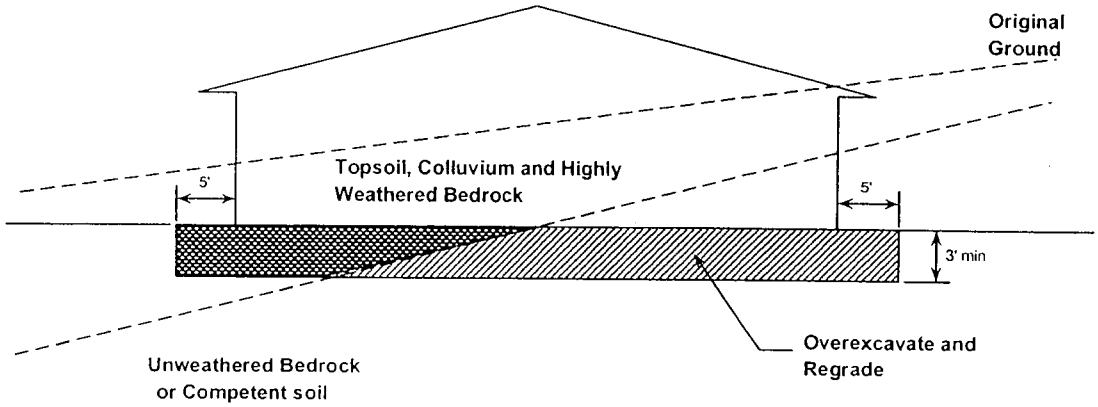




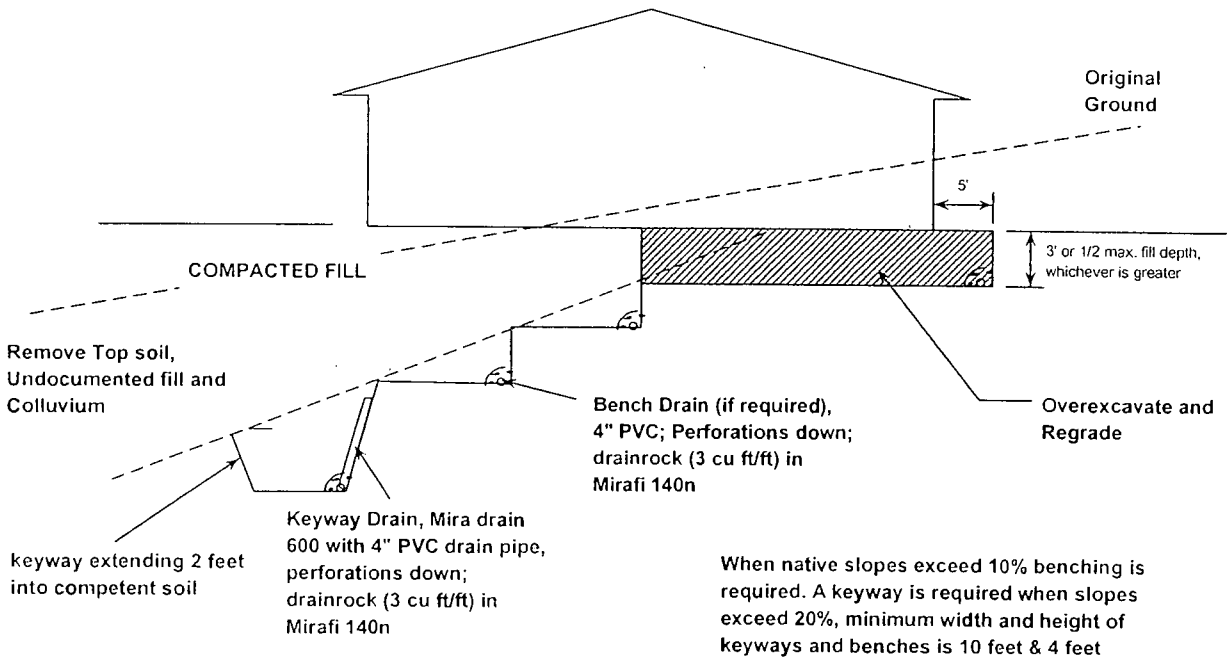
		Project No.	Figure No.
GSI	GENERAL SURFACE DRAINAGE RECOMMENDATIONS	7-4309	3

GENERAL GRADING RECOMMENDATIONS

CUT LOT

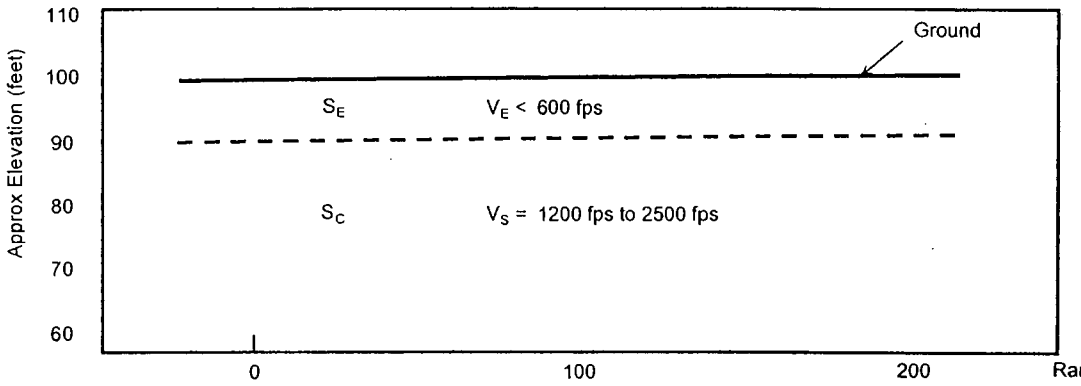


CUT/FILL LOT TRANSITION



When native slopes exceed 10% benching is required. A keyway is required when slopes exceed 20%, minimum width and height of keyways and benches is 10 feet & 4 feet respectively.

		Project No.	Figure No.
GSI	HILLSIDE LOTS	7-4309	4



Soil Profile Type	Seismic Source Type	Closest Distance to Active Fault	Seismic Coefficient
○ S_E	○ Seismic Type A	○ < 2 km	C_a (Seismic Coefficient) = 0.40 N_a
○ S_D	◉ Seismic Type B	○ 5 km	N_a (Near-Source Factor) = 1.0
◉ S_C	○ Seismic Type C	◉ 7 km	C_v (Seismic Coefficient) = 0.56 N_v
○ S_B		○ < 15 km	N_v (Near-Source Factor) = 1.12
○ S_A			

Soil Profile Type	Shear Wave Velocity, V_s (fps)
S_A = Hard Rock	> 5,000
S_B = Rock	2,500 to 5,000
S_C = Very Dense Soil and Soft Rock	1,200 to 2,500
S_D = Stiff Soil Profile	600 to 1,200
S_E = Soft Soil Profile	< 600

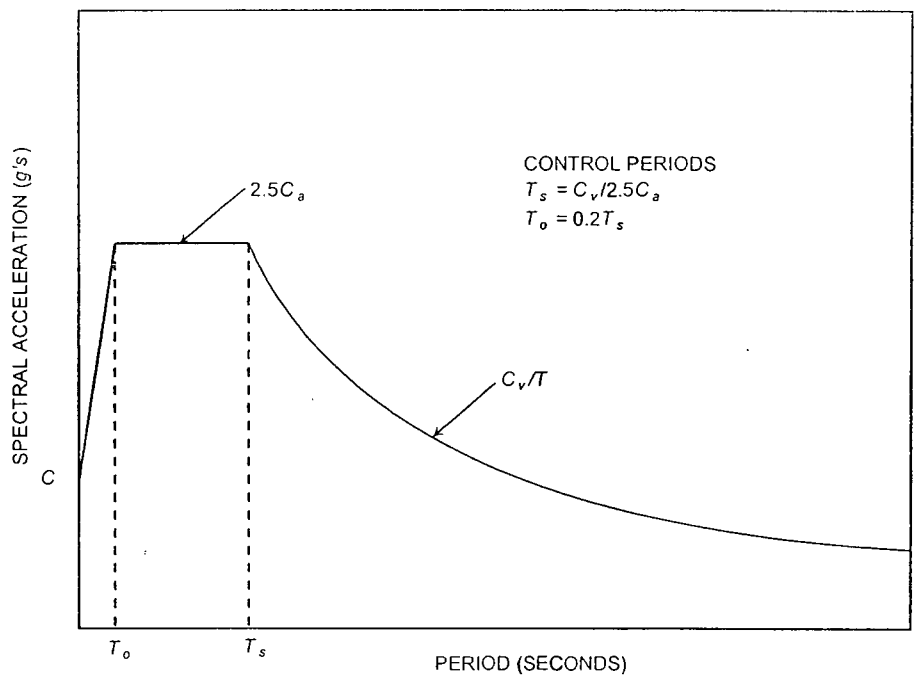


FIGURE 16.3 - DESIGN RESPONSE SPECTRA

		Project No.	Figure No.
GSI	UBC SEISMIC FACTORS AND COEFFICIENTS, CHAPTER 16	7-4309	5

APPENDIX A

Field Investigation
Key to Boring Logs
Boring Logs

February 16, 2007 Project 7-4309

FIELD INVESTIGATION

Test Hole Drilling

The field investigation was conducted on January 24, 2007. Six (6) exploratory borings were drilled at the approximate locations indicated on the Site Plan, Figure 2. The locations of these borings were approximated in the field.

Undisturbed and bulk samples were obtained at various depths during test hole drilling. The undisturbed samples were obtained by driving a 2.4-inch inside diameter sampler into soils. Bulk samples were also obtained during drilling.

Logs of Boring

A continuous log of soils, as encountered in the borings was recorded at the time of the field investigation, by a Staff Engineer. The Exploration Boring Logs are attached.

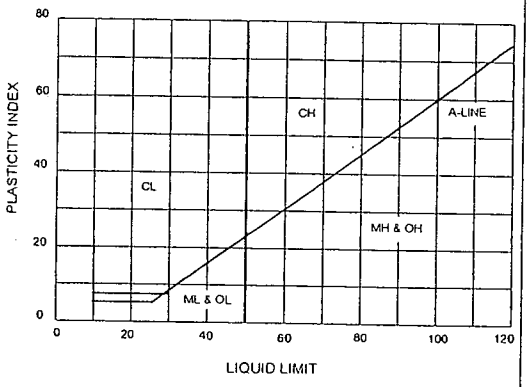
Locations and depth of sampling, in-situ soil dry densities and moisture contents are tabulated in the Boring Logs.

UNIFIED SOIL CLASSIFICATION SYSTEMS

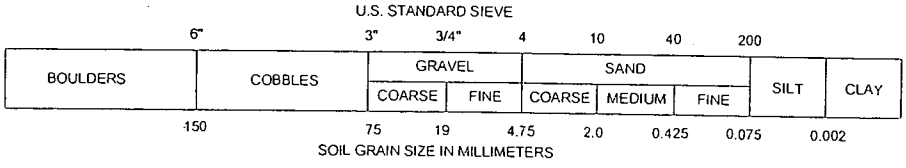
MAJOR DIVISION			SYMBOLS	TYPICAL NAMES
COARSE GRAINED SOILS Over 50% > #200 sieve	GRAVELS Over 50% > #4 sieve	CLEAN GRAVELS WITH LITTLE OR NO FINES	GW	WELL GRADED GRAVELS, GRAVEL-SAND MIXTURES
			GP	POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES
		GRAVELS WITH OVER 12% FINES	GM	SILTY GRAVELS, POORLY GRADED GRAVEL-SAND-SILT MIXTURES
			GC	CLAYEY GRAVELS, POORLY GRADED GRAVEL-SAND-CLAY MIXTURES
	SANDS Over 50% < #4 sieve	CLEAN SANDS WITH LITTLE OR NO FINES	SW	WELL GRADED SANDS, GRAVELLY SANDS
			SP	POORLY GRADED SANDS, GRAVELLY SANDS
		SANDS WITH OVER 12% FINES	SM	SILTY SANDS, POORLY GRADED SAND-SILT MIXTURES
			SC	CLAYEY SANDS, POORLY GRADED SAND-CLAY MIXTURES
FINE GRAINED SOILS Over 50% < #200 sieve	SILTS AND CLAYS Liquid limit < 50		ML	INORGANIC SILTS, SILTY OR CLAYEY FINE SANDS, OR CLAYEY SILTS WITH SLIGHT PLASTICITY
			CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY, SANDY, OR SILTY CLAYS, LEAN CLAYS
			OL	ORGANIC CLAYS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS Liquid limit > 50		MH	INORGANIC SILTS , MICACEOUS OR DIATOMACIOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS
			CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC CLAYS			Pt	PEAT AND OTHER HIGHLY ORGANIC SOILS

PLASTICITY CHART

USED FOR CLASSIFICATION OF FINE GRAINED SOILS



SOIL GRAIN SIZE



SAMPLE DRIVING RECORD

BLOWS PER FOOT	DESCRIPTION
25	25 BLOWS DROVE SAMPLER 12 INCHES, AFTER INITIAL 6 INCHES OF SEATING
50/7"	50 BLOWS DROVE SAMPLER 7 INCHES, AFTER INITIAL 6 INCHES OF SEATING
Ref/3"	50 BLOWS DROVE SAMPLER 3 INCHES DURING OR AFTER INITIAL 6 INCHES OF SEATING

NOTE: TO AVOID DAMAGE TO SAMPLING TOOLS, DRIVING IS LIMITED TO 50 BLOWS PER 6 INCHES DURING OR AFTER SEATING INTERVAL

KEY TO TEST DATA

B	Bag Sample	CONS	Consolidation (ASTM D2435)
	Drive, No Sample Collected	DS	Cons. Drained Direct Shear (ASTM D3080)
	2 1/2" O.D. Mod. California Sampler, Not Tested	PP	Pocket Penetrometer
	2 1/2" O.D. Mod. California Sampler, Tested	GSD	Grain Size Distribution (ASTM D422)
	Standard Penetration Test	CP	Compaction Test (ASTM D1557)
	Sample Attempted with No Recovery	EI	Expansion Index (ASTM D4829)
	Water Level at Time of Drilling	LL	Liquid Limit (in percent)
	Water Level after Drilling	PI	Plasticity Index

RELATIVE DENSITY

SANDS, GRAVELS, AND NON PLASTIC SILTS	BLOWS/FOOT
VERY LOOSE	0 - 4
LOOSE	4 - 10
MEDIUM DENSE	10 - 30
DENSE	30 - 50
VERY DENSE	OVER 50

RELATIVE DENSITY

CLAYS AND PLASTIC SILTS	STRENGTH	BLOWS/FOOT
VERY SOFT	0 - 1/4	0 - 2
SOFT	1/4 - 1/2	2 - 4
FIRM	1/2 - 1	4 - 8
STIFF	1 - 2	8 - 16
VERY STIFF	2 - 4	16 - 32
HARD	OVER 4	OVER 32

GSI

PROJECT NO.:	7-4309	SOIL CLASSIFICATION CHART AND BORING LOG LEGEND
DATE DRILLED:	1/24/2007	
SEA SHELL STAFF HOUSING MORRO BAY, CALIFORNIA		FIGURE NO. A-1

LOGGED BY: **BH** DRILL RIG: **Simco 2400** BORING NO.: **B-1**

ELEVATION: **100'** BORING DIAMETER (INCH): **4** DATE DRILLED: **24 January 2007**

GROUNDWATER DEPTH (FT):

ELEVATION (FT)	DEPTH (FT)	GRAPHIC LOG	GEOTECHNICAL DESCRIPTION	SOIL TYPE	SAMPLE	CONV. SPT BLOW COUNT	WATER CONTENT (%)	DRY DENSITY (PCF)	LIQUID LIMIT	PLASIT. INDEX	UNC. COMP. STRENGTH (PSF)	COMMENTS AND ADDITIONAL TESTS
99	1		Sandy Clay: dark brown, moist, fine to coarse grained, trace gravel and silt, soft	CL								
98	2		Clayey Sand: gray, moist, fine to coarse grained, trace gravel, very dense (severely weathered bedrock)	SC	B							
97	3					50/4"	13.3	108.3				EI = 6
96	4											
95	5					50/2"	13.9					
94	6											
93	7											
92	8				B		11.6					
91	9											
90	10					50/2"	8.4					
89	11											
88	12		Boring terminated at 12 feet									
87	13											
86	14											
85	15											
84	16											
83	17											
82	18											
81	19											
80	20											

EXPLORATORY BORING LOGS

GSI

SEA SHELL STAFF HOUSING
1405 TERESA DRIVE

PROJECT NO.	DATE	FIGURE NO.
7-4309	February-07	A-2

LOGGED BY: **BH** DRILL RIG: **Simco 2400** BORING NO.: **B-2**

ELEVATION: **100'** BORING DIAMETER (INCH): **4** DATE DRILLED: **24 January 2007**

GROUNDWATER DEPTH (FT):

ELEVATION (FT)	DEPTH (FT)	GRAPHIC LOG	GEOTECHNICAL DESCRIPTION	SOIL TYPE	SAMPLE	CONV. SPT BLOW COUNT	WATER CONTENT (%)	DRY DENSITY (PCF)	LIQUID LIMIT	PLASIT. INDEX	UNC. COMP. STRENGTH (PSF)	COMMENTS AND ADDITIONAL TESTS
99	1		Sandy Clay: dark brown, moist, fine to coarse grained, trace gravel and silt, soft	CH								
98	2				B		39.2					EI = 120
97	3		stiff to very stiff									
96	4											
95	5		Sandy Clay: greenish gray, moist, fine to coarse grained, trace gravel, mottled, hard (severely weathered bedrock)	CL-SC		50/5"	27.8					
94	6											
93	7											
92	8				B		22.3					
91	9											
90	10					48						
89	11		Boring terminated at 11 feet									
88	12											
87	13											
86	14											
85	15											
84	16											
83	17											
82	18											
81	19											
80	20											

EXPLORATORY BORING LOGS

GSI

SEA SHELL STAFF HOUSING
1405 TERESA DRIVE

PROJECT NO.	DATE	FIGURE NO.
7-4309	February-07	A-3

LOGGED BY: **BH** DRILL RIG: **Simco 2400** BORING NO.: **B-3**

ELEVATION: **100'** BORING DIAMETER (INCH): **4** DATE DRILLED: **24 January 2007**

GROUNDWATER DEPTH (FT):

ELEVATION (FT)	DEPTH (FT)	GRAPHIC LOG	GEOTECHNICAL DESCRIPTION	SOIL TYPE	SAMPLE	CONV. SPT BLOW COUNT	WATER CONTENT (%)	DRY DENSITY (PCF)	LIQUID LIMIT	PLASIT. INDEX	UNC. COMP. STRENGTH (PSF)	COMMENTS AND ADDITIONAL TESTS
99	1		Sandy Clay: dark brown, moist, fine to coarse grained, trace gravel and silt, soft	CL								
98	2		Clayey Sand: yellow brown, moist, fine to coarse grained, trace gravel, very dense (severely weathered bedrock)	SC	B							
97	3											
96	4											
95	5					50/3"	17.4					
94	6											
93	7											
92	8				B							
91	9											
90	10					50/2"	20.7					
89	11		Boring terminated at 11 feet									
88	12											
87	13											
86	14											
85	15											
84	16											
83	17											
82	18											
81	19											
80	20											

EXPLORATORY BORING LOGS

GSI

SEA SHELL STAFF HOUSING
1405 TERESA DRIVE

PROJECT NO.	DATE	FIGURE NO.
7-4309	**February-07**	**A-4**

LOGGED BY: **BH** DRILL RIG: **Simco 2400** BORING NO.: **B-4**

ELEVATION: **100'** BORING DIAMETER (INCH): **4** DATE DRILLED: **24 January 2007**

GROUNDWATER DEPTH (FT):

ELEVATION (FT)	DEPTH (FT)	GRAPHIC LOG	GEOTECHNICAL DESCRIPTION	SOIL TYPE	SAMPLE	CONV. SPT BLOW COUNT	WATER CONTENT (%)	DRY DENSITY (PCF)	LIQUID LIMIT	PLASIT. INDEX	UNC. COMP. STRENGTH (PSF)	COMMENTS AND ADDITIONAL TESTS
99	1		Sandy Clay: dark brown, moist, fine to coarse grained, trace gravel and silt, soft	CH								
98	2				B		20.1					EI = 98
97	3		gray/olive green									
96	4		Sandy Clay: yellow brown, moist, fine to coarse grained, trace gravel, hard dense (severely weathered bedrock)	CL-SC								
95	5					52	21.7					
94	6											
93	7											
92	8				B							
91	9											
90	10					50/3"	24.8					
89	11		Boring terminated at 11 feet									
88	12											
87	13											
86	14											
85	15											
84	16											
83	17											
82	18											
81	19											
80	20											

EXPLORATORY BORING LOGS

GSI

SEA SHELL STAFF HOUSING
1405 TERESA DRIVE

PROJECT NO.	DATE	FIGURE NO.
7-4309	February-07	A-5

LOGGED BY: **BH**	DRILL RIG: **Hand Auger**	BORING NO.: **B-5**
ELEVATION: **100'**	BORING DIAMETER (INCH): **3**	DATE DRILLED: **24 January 2007**
GROUNDWATER DEPTH (FT):		

ELEVATION (FT)	DEPTH (FT)	GRAPHIC LOG	GEOTECHNICAL DESCRIPTION	SOIL TYPE	SAMPLE	CONV. SPT BLOW COUNT	WATER CONTENT (%)	DRY DENSITY (PCF)	LIQUID LIMIT	PLASIT. INDEX	UNC. COMP. STRENGTH (PSF)	COMMENTS AND ADDITIONAL TESTS
99	1		Sandy Clay: brown, moist, fine to coarse grained, trace gravel and silt, soft	CL								
98	2				B		8.0					
97	3		Clayey Sand: yellow brown, moist, fine to coarse grained, trace gravel, very dense (severely weathered bedrock)	SC								
96	4					64	17.7					
95	5		Boring terminated at 5 feet									
94	6											
93	7											
92	8											
91	9											
90	10											
89	11											
88	12											
87	13											
86	14											
85	15											
84	16											
83	17											
82	18											
81	19											
80	20											

EXPLORATORY BORING LOGS

GSI

SEA SHELL STAFF HOUSING
1405 TERESA DRIVE

PROJECT NO.	DATE	FIGURE NO.
7-4309	**February-07**	**A-6**

LOGGED BY: **BH** DRILL RIG: **Hand Auger** BORING NO.: **B-6**

ELEVATION: **100'** BORING DIAMETER (INCH): **3** DATE DRILLED: **24 January 2007**

GROUNDWATER DEPTH (FT):

ELEVATION (FT)	DEPTH (FT)	GRAPHIC LOG	GEOTECHNICAL DESCRIPTION	SOIL TYPE	SAMPLE	CONV. SPT BLOW COUNT	WATER CONTENT (%)	DRY DENSITY (PCF)	LIQUID LIMIT	PLASIT. INDEX	UNC. COMP. STRENGTH (PSF)	COMMENTS AND ADDITIONAL TESTS
99	1		Sandy Clay: brown, moist, fine to coarse grained, trace gravel and silt, soft	CL								
98	2				B		9.5					
97	3		Clayey Sand: yellow brown, moist, fine to coarse grained, trace gravel, very dense (severely weathered bedrock)	SC								
96	4				B							
95	5					57	19.4					EI = 14
94	6											
93	7											
92	8											
91	9					50/3"	21.6					
90	10		Boring terminated at 10 feet									
89	11											
88	12											
87	13											
86	14											
85	15											
84	16											
83	17											
82	18											
81	19											
80	20											

EXPLORATORY BORING LOGS

GSI

SEA SHELL STAFF HOUSING
1405 TERESA DRIVE

PROJECT NO.	DATE	FIGURE NO.
7-4309	February-07	A-7

APPENDIX B

Laboratory Testing
Moisture-Density Tests
Direct Shear Test
R Value Test
Expansion Index
Atterberg Limits

February 16, 2007 Project 7-4309

LABORATORY TESTING

Moisture-Density Tests

The field moisture content, as a percentage of the dry weight of the soil, was determined by weighing samples before and after oven drying. Dry densities, in pounds per cubic foot, were also determined for the undisturbed samples. Results of these determinations are shown in the Exploration Boring Logs.

Direct Shear Test

Direct shear tests were performed on undisturbed samples, to determine strength characteristics of the soil. The test specimens were soaked prior to testing. Results of the shear strength tests are attached.

Resistance (R) Value Test

An R-Value test was estimated based on sieve analysis and plasticity on a bulk sample obtained from boring B-1. The results of the tests indicates that the clay soils have an R-Value of 8.

Expansion Index Tests

Expansion indices (EI) of 98 to 120 were obtained for the near surface sandy clay soils. The clayey sandstones had EI's of 6 to 14. The test procedures were performed in accordance with Uniform Building Code Standard 29-2.

Atterberg Limits

The liquid limit, plastic limit and plasticity index was determined for selected samples in accordance with ASTM D4318. The results are presented on the boring logs.

UPDATED GEOTECHNICAL INVESTIGATION
SEA SHELL STAFF HOUSING
1405 TERESA DRIVE
MORRO BAY, CALIFORNIA

September 25, 2008
PROJECT 7-4309

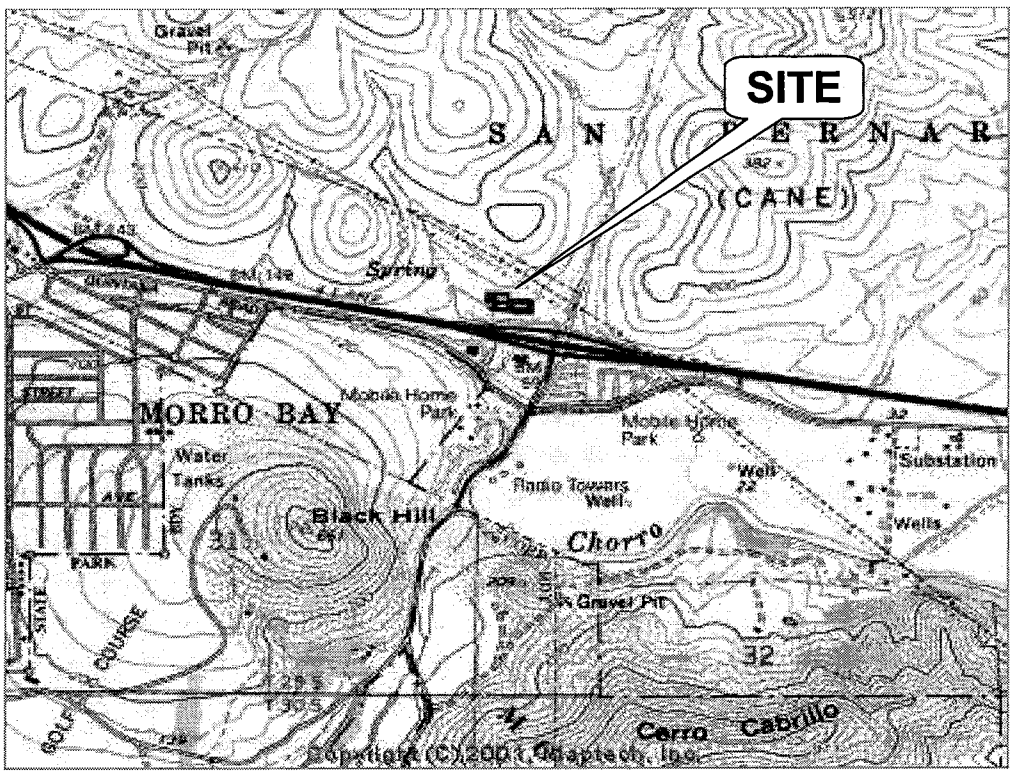


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TABLE OF CONTENTS

UPDATED GEOTECHNICAL INVESTIGATION
SEA SHELL STAFF HOUSING
1405 TERESA DRIVE
MORRO BAY, CALIFORNIA

PROJECT 7-4309

1.0 INTRODUCTION

This report presents the results of our updated geotechnical investigation for the proposed residences to be located at 1405 Teresa Drive in Morro Bay, California. Previously eight (8) structures were planned with five (5) of these being located above the cut slope on the north side of the property. The new site plan provided indicates that the five (5) structures adjacent to the cut slope will be eliminated with six (6) new housing structures being constructed north and east of the existing building. A site location map is presented in Figure 1 with a revised site plan in Figure 2. Previously a geotechnical investigation was performed for this site on February 16, 2007. This report includes recently adopted seismic considerations of the 2007 California Building Code (CBC).

The property is bounded by Teresa Drive to the south, residential lots to the west and open space to the north and east. In general, the terrain in this area slopes to the south with an average elevation of approximately 100 feet above mean sea level. The proposed structures will be located on a steeply sloping area of the site with gradients of approximately 2:1 to 4:1 (horizontal:vertical). At the time of our field exploration the building areas were covered with grasses, weeds and some trees.

As indicated above six (6) residential structures will be constructed at the site. These buildings will be one and two story wood-framed structures with concrete slab-on-grade floors. Due to the sloping terrain some structures will incorporate concrete retaining walls. Footing loads for the structures are presently unavailable. For the purpose of this report, maximum loads on the order of 15 kips (columns) and 1.5 kip per lineal foot (continuous) have been estimated.

The project description is based on a site reconnaissance performed by a GSI Soils Inc., engineer and information provided by Pults and Associates and Cathy Novak Consulting. The plan provided forms the basis for the "Site Plan", Figure 2.

In the event that there is change in the nature, design or location of improvements, or if the assumed loads are not consistent with actual design loads, the conclusions and recommendations contained in this report should be reviewed and modified, if required. Evaluations of the soils for hydrocarbons or other chemical properties are beyond the scope of the investigation.

2.0 PURPOSE AND SCOPE

The purpose of this study was to review the surface and subsurface soil conditions at the site and to provide updated geotechnical information and design criteria for the proposed project. The scope of this work and our original study included the following items.

1. A review of available soils information for this area of Morro Bay.

2. A field study consisting of a site reconnaissance and an exploratory boring program to formulate a description of the subsurface conditions.

3. A laboratory testing program performed on representative soil samples collected during our field study.

4. Engineering analysis of the data gathered during our field study, laboratory testing, and literature review. Development of recommendations for site preparation and grading, and geotechnical design criteria for foundations, retaining walls, and underground facilities.

5. Preparation of this report summarizing our findings, conclusions, and recommendations regarding the geotechnical aspects of the project site.

3.0 SUBSURFACE SOIL CONDITIONS

The near surface soils encountered in our exploratory borings generally consisted of sandy clays to a depth of 1 to 5 feet. These clays were encountered in a moist state and in a soft condition in the upper one to two feet and becoming stiff to very stiff below this depth. Severely weathered clayey sandstone materials were encountered below the surface clay soils to a depth of 12 feet. These materials were found in a moist state and in a dense to very dense condition.

Laboratory testing indicates that the surface sandy clays are highly expansive while the underlying bedrock has very low expansivity.

No free ground water was during our field exploration. However, very moist to saturated conditions can occur during wet winter months in the near surface soils. A more detailed description of the soils encountered is presented graphically on the "Exploratory Boring Logs", B-1 through B-4, Appendix A. An explanation of the symbols and descriptions used on these logs are presented on the "Soil Classification Chart".

The soil profile described above is generalized; therefore, the reader is advised to consult the boring logs (Appendix A) for soil conditions at specific locations. Care should be exercised in interpolating or extrapolating subsurface conditions between or beyond borings. On the boring logs we have indicated the soil type, moisture content, grain size, dry density, and the applicable United Soil Classification System Symbol.

The locations of our exploratory borings, shown on Site Plan, Figure 2, were approximately determined from features at the site. Hence, accuracy can be implied only to the degree that this method warrants. Surface elevations at boring locations were not determined.

4.0 SEISMIC CONSIDERATIONS

4.1 CBC Seismic Coefficients

In accordance with the 2007 CBC the project site was positioned on the 2002 USGS Seismic Hazard Maps for a 2% probability of exceedance in 50 years to determine the maximum considered earthquake spectral response accelerations in accordance with the 2007 CBC. The design acceleration coefficients for short periods (S_{DS}) and at 1-second (S_{D1}) were found to be 0.823g and 0.419g respectively. A site class C should be used of design of the structures.

4.2 Liquefaction Analysis

Liquefaction is described as the sudden loss of soil shear strength due to a rapid increase of pore water pressures caused by cyclic loading from a seismic event. In simple terms it means that the soil acts more like a fluid than a solid in a liquefiable event. In order for liquefaction to occur, the following are generally

needed; granular soils (sand, silty sand and sandy silt), groundwater and low density (very loose to medium dense) conditions. A detailed liquefaction study was not part of our scope for this project, however an opinion can be provided based on the borings performed at the site. The results of our borings indicate that severely weathered bedrock materials exist below a depth of 3 to 5 feet. Based on this information the potential for liquefaction at the site would be negligible. However, this is a preliminary assessment and a detailed liquefaction study would be required to fully investigate the potential for liquefaction.

5.0 CONCLUSIONS AND RECOMMENDATIONS

1. The site is suitable for the proposed staff housing provided the recommendations presented in this report are incorporated into the project plans and specifications.

2. All grading and foundation plans should be reviewed by GSI Soils Inc., hereinafter described as the Geotechnical Engineer, prior to contract bidding. This review should be performed to determine whether the recommendations contained within this report are incorporated into the project plans and specifications.

3. The Geotechnical Engineer should be notified at least two (2) working days before site clearing or grading operations commence, and should be present to observe the stripping of deleterious material and provide consultation to the Grading Contractor in the field.

4. Field observation and testing during the grading operations should be provided by the Geotechnical Engineer so that a decision can be formed regarding the adequacy of the site preparation, the acceptability of fill materials, and the extent to which the earthwork construction and the degree of compaction comply with the project geotechnical specifications. Any work related to grading performed without the full knowledge of, and under direct observation of the Geotechnical Engineer, may render the recommendations of this report invalid.

5.1 Clearing and Stripping

1. All surface and subsurface deleterious materials should be removed from the proposed addition area and disposed of off-site. This includes, but is not limited to any buried utility lines, loose fills, septic systems, debris, building materials, and any other surface and subsurface structures within proposed building areas. Voids left from site clearing, should be cleaned and backfilled as recommended for structural fill.

2. Once the site has been cleared, the exposed ground surface should be stripped to remove surface vegetation and organic soil. The surface may be disced, rather than stripped, if the organic content of the soil is not more than three percent by weight. If stripping is required, depths should be determined by a member of our staff in the field at the time of stripping. Strippings may be either disposed of off-site or stockpiled for future use in landscape areas if approved by the landscape architect.

5.2 Preparation of Building Pads

1. It is recommended that all footings extend a minimum of 12 inches into the weathered bedrock materials with slab-on-grade areas supported on 36 inches of suitable native or imported non-expansive materials. However, where suitable bedrock materials (non-expansive) are exposed at pad grade further removals would not be required.

2. For slab-on-grade areas and where fill is to be placed, the native soils should be overexcavated to a depth of 36 inches below existing grades or finished pad grade, whichever is greater. The exposed surface should then be scarified to a depth of 12 inches, wetted to above optimum moisture, and compacted to at least ninety (90) percent of maximum dry density. The removed material can then be replaced and compacted (90%). However, the slab-on-grade areas should be capped with 36 inches of native non-expansive soils or a select material such as decomposed granite or equivalent. These soils should be similarly compacted to ninety (90) percent. The lateral limits of overexcavation

and scarification should be at least 5 feet beyond the perimeter building and footing lines.

3. Where building pads are located entirely into suitable non-expansive or very low expansive bedrock materials further excavation may not be required. The exposed surface should be evaluated and approved by the geotechnical engineer. At a minimum the surface should be scarified to a depth of 12 inches and compacted to 90 percent.

4. In order to help minimize potential settlement problems associated with structures supported on a non-uniform thickness of compacted fill, the soils engineer should be consulted for specific site recommendations during grading.

5. Cut and fill slopes in native materials should not exceed 3:1 (horizontal: vertical) and should be properly compacted to 90 percent. The slopes should also be properly protected against erosion. Fill slopes should be overfilled and trimmed back to competent material. If steeper slopes are planned they should be evaluated in the field during grading. Our observations indicate the existing cut slope at the site is stable. The project geologist should evaluate this slope and any further bedrock cuts for overall and surficial stability.

6. The above grading is based on the strength characteristics of the materials under conditions of normal moisture that would result from rain water and do not take into consideration the additional activating forces applied by seepage from springs or subsurface water. Areas of observed seepage should be provided with subsurface drains to release the hydrostatic pressures.

7. All final grades should be provided with a positive drainage gradient away from foundations. Final grades should provide for rapid removal of surface water runoff. Ponding of water should not be allowed on building pads or adjacent to foundations.

5.3 Preparation of Paved Areas

1. The upper 12 inches in driveway and paved areas should be replaced with crushed gravel or Class II Base. Pavement and driveway subgrades should be scarified to a depth of 12 inches below existing grade or finished subgrade prior to placing gravel or base. The soil should then be wetted to slightly above optimum moisture content and compacted to a minimum of 90 percent of maximum dry density.

2. The upper 6 inches of subgrade beneath all paved areas should be compacted to at least 95 percent relative compaction. Subgrade soils should not be allowed to dry out or have excessive construction traffic between the time of water conditioning and compaction, and the time of placement of the pavement structural section.

5.4 Structural Fill

1. On-site processed sandstone (clayey sand materials) free of organic and deleterious material are suitable for use in structural areas. Structural fill should not contain rocks larger than 4 inches in greatest dimension, and should have no more than 15 percent larger than 2.5 inches in greatest dimension.

2. Import (decomposed granite or equivalent) should be free of organic and other deleterious material and should have a very low expansion potential with a plasticity index of 10 or less. Before delivery to the site, a sample of the proposed import should be tested in our laboratory to determine its suitability for use as structural fill.

3. Structural fill using on-site inorganic soil or approved import should be placed in layers, each not exceeding eight inches in thickness before compaction. On-site inorganic or imported soil should be conditioned with water, or allowed to dry, to produce a soil water content at approximately optimum value, and should be compacted to at least 90 percent relative compaction based on ASTM D1557-91.

5.5 Foundations

1. Conventional continuous footings and spread footings may be used for support of the proposed structures. Spread footings should be connected to the perimeter footings with grade beams.

2. Perimeter footings should be at least 15 inches wide with a minimum embedment of 12 inches into bedrock with a minimum overall depth of 30 inches below lowest adjacent grade. In addition, a minimum setback distance of 10 feet should be maintained between the outer edge of footings and the competent face of adjacent slopes. The footing bottoms should be observed and approved by the geotechnical engineer prior to placing steel and concrete. Where footing depths exceed 30 inches slurry (3 sack cement/sand) could be used between the bottom of the excavations and the underside of the footings. Spread footings should be a minimum of 2 feet square, similarly embedded a minimum of 12 inches into bedrock and tied to the perimeter footings with grade beams spaced at a maximum of 20 feet on center. The reinforcement for the footings and grade beams should be designed by the structural engineer, however, a minimum of two (2) No. 5 rebar should be provided top and bottom for continuous footings with dowels (#3 @ 18" on-center) to tie the perimeter footings and grade beams to slab areas.

3. An allowable dead plus live load bearing pressure of 3000 psf may be used for design. Total settlements of less than 1-inch are anticipated with differential settlements being 50 percent of this value.

4. The above allowable pressures are for support of dead plus live loads and may be increased by one-third for short-term wind and seismic loads.

5. Lateral forces on structures may be resisted by passive pressure acting against the sides of shallow footings and/or friction between the soil and the bottom of the footing. For resistance to lateral loads, a friction factor of 0.35 may be utilized for sliding resistance at the base of the spread footings in undisturbed

native materials or engineered fill. A passive resistance of 350 pcf equivalent fluid weight may be used against the side of shallow footings.

5.6 Slab-On-Grade Construction

1. Concrete slabs-on-grade and flatwork should not be placed directly on unprepared loose fill materials. Preparation of subgrade to receive concrete slabs-on-grade and flatwork should be processed as discussed in the preceding sections of this report.

2. Where concrete slabs-on-grade are to be constructed, the slabs should be underlain by a minimum of 6 inches of clean free-draining material such as clean gravel or permeable aggregate complying with Caltrans Standard Specifications 68, Class I, Type A or Type B, to service as a cushion and a capillary break. Clean gravel should have less than 3% passing the No. 200 sieve. A 15-mil Polyethylene-type membrane should be placed between the capillary break and the slab to provide an effective vapor barrier, and to minimize moisture condensation under the floor covering. All seams through the vapor barrier should be overlapped and sealed. Where pipes extend through the vapor barrier, the barrier should be sealed to the pipes. Tears or punctures in the moisture barrier should be completely repaired. It is suggested that a 2-inch thick sand layer be placed on top of the membrane to assist in the curing of the concrete. The sand should be lightly moistened prior to placing concrete.

3. Concrete slabs-on-grade should be a minimum of 4 inches thick and should be reinforced with No. 3 reinforcing bars placed at 18 inches on-center both ways at or slightly above the center of the structural section. Reinforcing bars should have a minimum clear cover of 1.5 inches, and hot bars should be cooled prior to placing concrete. The aforementioned reinforcement may be used for anticipated uniform floor loads not exceeding 100 psf. If floor loads greater than 100 psf are anticipated the slab should be evaluated by a structural engineer.

4. All slabs should be poured at a maximum slump of less than 5 inches. Excessive water content is the major cause of concrete cracking. For design of concrete

floors, a modulus of subgrade reaction of k = 100 psi per inch would be applicable to on-site engineered fill soils.

5.7 Site Retaining Walls

1. Retaining walls should be designed to resist lateral pressures from adjacent soils and surcharge loads applied behind the walls.

Lateral Pressure and Condition (Compacted Fill)		Equivalent Fluid Pressure, pcf	
		Unrestrained Wall	Rigidly Supported Wall
Active Case, Drained	Level-native soils	60	--
	Level-granular backfill	30	--
At-Rest Case, Drained	Level-native soils	--	80
	Level-sand backfill		50
Passive Case, Drained	Level 2:1 Sloping Down	300 150	--
For sloping backfill add 1 pcf for every 2 deg. (Active case) and 1.5 pcf for every 2 deg. (At-rest case)			

2. Isolated retaining wall foundations should extend a minimum of 12 inches into bedrock with a minimum overall depth of 30 inches below lowest adjacent grade. An allowable toe pressure of 3,000 psf is recommended in competent bedrock approved by the geotechnical engineer. A coefficient of friction of 0.35 may be used between subgrade materials and concrete footings.

3. A seismic horizontal surcharge of $10H^2$ (pounds per linear foot of wall) may be assumed to act on retaining walls. The surcharge will act at a height of 0.6H above the wall base (where H is the height of the wall in feet). This surcharge force shall be added to an active design equivalent fluid pressure of 55 pounds per square foot of depth for the seismic condition.

4. In addition to the lateral soil pressure given above, retaining walls should be designed to support any design live load, such as from vehicle and construction surcharges, etc., to be supported by the wall backfill. If construction vehicles are

required to operate within 10 feet of a wall, supplemental pressures will be induced and should be taken into account through design.

5. The above-recommended pressures are based on the assumption that sufficient subsurface drainage will be provided behind the walls to prevent the build-up of hydrostatic pressure. To achieve this we recommend that a filter material be placed behind all proposed walls. The blanket of filter material should be a minimum of 12 inches thick and should extend from the bottom of the wall to within 12 inches of the ground surface. The top 12 inches should consist of water conditioned, compacted native soil. A 4-inch diameter drain pipe should be installed near the bottom of the filter blanket with perforations facing down. The drain pipe should be underlain by at least 4 inches of filter type material. Adequate gradients should be provided to discharge water that collects behind the retaining wall to an adequately controlled discharge system with suitably projected outlets. The filter material should conform to Class I, Type B permeable material as specified in Section 68 of the California Department of Transportation Standard Specifications, current edition. A typical 1" x #4 concrete coarse aggregate mix approximates this specification.

6. For hydrostatic loading conditions (i.e. no free drainage behind walls), an additional loading of 45 pcf equivalent fluid weight should be added to the above soil pressures. If it is necessary to design retaining structures for submerged conditions, allowed bearing and passive pressures should be reduced by 50 percent. In addition, soil friction beneath the base of the foundations should be neglected.

7. Precautions should be taken to ensure that heavy compaction equipment is not used immediately adjacent to walls, so as to prevent undue pressure against, and movement of, the walls.

8. The use of rubber water-stops between the footing and wall and an impermeable barrier such as Paraseal (or equivalent) should be considered for any basement construction, and for building walls which retain earth.

5.8 Pavement Design

1. The following table provides recommended pavement sections based on an estimated R-Value of 8 for the near surface sandy clay soils encountered at the site.

RECOMMENDED MINIMUM ASPHALT CONCRETE PAVEMENT SECTIONS DESIGN THICKNESS		
T.I.	A.C.-in.	A.B.-in.
4.5	2.5	9.0
5.0	2.5	10.5
5.5	3.0	11.0
6.0	3.0	14.0
6.5	3.5	14.5
7.0	3.5	16.0
8.0	4.5	17.5
8.5	5.0	18.5
9.0	5.5	19.0
T.I. =	Traffic Index	
A.C. =	Asphaltic Concrete - must meet specifications for Caltrans Type B Asphalt Concrete	
A.B. =	Aggregate Base - must meet specifications for Caltrans Class II Aggregate Base (R-Value = minimum 78)	

2. All asphalt pavement construction and materials used should conform with Sections 26 and 39 of the latest edition of the Standard Specifications, State of California, Department of Transportation. Aggregate bases and sub-bases should also be compacted to a minimum relative compaction of 95 percent based on ASTM D1557-91.

3. R-value samples should be obtained and tested at the completion of rough grading and the pavement sections confirmed or revised. All asphaltic concrete pavement sections and all sections should be crowned for good drainage.

5.9 Underground Facilities Construction

1. The attention of contractors, particularly the underground contractors, should be drawn to the State of California Construction Safety Orders for "Excavations, Trenches, Earthwork". Trenches or excavations greater than 5 feet in depth should be shored or sloped back in accordance with OSHA Regulations prior to entry.

2. For purposes of this section of the report, bedding is defined as material placed in a trench up to 1 foot above a utility pipe and backfill is all material placed in the trench above the bedding. Unless concrete bedding is required around utility pipes, free-draining sand should be used as bedding. Sand proposed for use as bedding should be tested in our laboratory to verify its suitability and to measure its compaction characteristics. Sand bedding should be compacted by mechanical means to achieve at least 90 percent relative compaction based on ASTM Test D1557-91.

3. On-site inorganic soil, or approved import, may be used as utility trench backfill. Proper compaction of trench backfill will be necessary under and adjacent to structural fill, building foundations, concrete slabs and vehicle pavements. In these areas, backfill should be conditioned with water (or allowed to dry), to produce a soil water content of about 2 to 3 percent above the optimum value and placed in horizontal layers each not exceeding 8 inches in thickness before compaction. Each layer should be compacted to at least 90 percent relative compaction based on ASTM Test D1557-91. The top lift of trench backfill under vehicle pavements should be compacted to the requirements given in report section 5.3 for vehicle pavement subgrades. Trench walls must be kept moist prior to and during backfill placement.

5.10 Surface and Subsurface Drainage

1. Concentrated surface water runoff within or immediately adjacent to the site should be conveyed in pipes or in lined channels to discharge areas that are relatively level or that are adequately protected against erosion.

2. Water from roof downspouts should be conveyed in pipes that discharge in areas a safe distance away from structures. Surface drainage gradients should be planned to prevent ponding and promote drainage of surface water away from building foundations, edges of pavements and sidewalks. For soil areas we recommend that a minimum of five (5) percent gradient be maintained adjacent to the footings.

3. Careful attention should be paid to erosion protection of soil surfaces adjacent to the edges of roads, curbs and sidewalks, and in other areas where "hard" edges of structures may cause concentrated flow of surface water runoff. Erosion resistant matting such as Miramat, or other similar products, may be considered for lining drainage channels.

5.11 Temporary Excavations and Slopes

1. Conventional earth moving equipment should be adequate to excavate the soils at the site.

2. We recommend that temporary trench walls exceeding five (5) feet in depth be sloped at an inclination of 1:1 (horizontal:vertical). However, during the rainy season, or where soft or loose sediments, or perched water conditions are found, flatter slopes (1½:1 to 2:1) may be required.

3. It should be noted that it is the *Contractor's* responsibility to maintain safe cut slopes based on actual field conditions and according to OSHA requirements. Temporary Slopes at gradients of 1:1 should not be open for more than 2 to 3 days. In some geologic units, perched water may be present locally in the slope face. The stability of the slopes may be compromised somewhat where these conditions exist due to softening or piping of the saturated materials.

4. Where the excavation bottom is locally wet, soft and yielding, it is recommended that the bottom be stabilized prior to placement of fill. Methods such as the use of pit-run gravels and cobbles on the excavated bottom covered with a geotextile fabric such as Mirafi 600x or placement of a Class II base material over a similar

fabric could be used. The *Contractor* should be responsible for design and implementation of stabilization techniques.

5. Where the temporary trench slopes are inclined as described above, no shoring is required. However, where adjacent features may influence establishment of appropriate slopes, the *Contractor* may elect to use shoring. In no case should personnel enter trenches with vertical sidewalls greater than 5 feet deep without proper shoring. Design and installation of the shoring should be the responsibility of the *Contractor* and should be performed according to OSHA requirements.

6. Shoring should be designed to resist the lateral earth pressures provided, assuming no hydrostatic loads. If ground water is encountered the shoring should be designed for the required hydrostatic pressures.

5.12 Slope Stability

1. As indicated previously the existing and proposed site slopes should be evaluated by the project geologist.

2. On the west side of the site, steeper slopes (approximately 1:1) were cut for the construction of the existing structure. An existing retaining wall approximately 5 feet high is located at the toe of this slope. Severely weathered bedrock materials are exposed across the entire slope. Visual observation did not reveal any obvious sign of instability.

3. The following minimum drainage and slope recommendations are also provided.

   a. Where possible compacted materials utilized in the construction of the fill slopes should comprise at least 20 percent fine grained (passing #200 sieve) soils in a zone equal to 2 the slope height.

   b. Future cut slopes should be observed by the project geologist and a representative of the geotechnical engineer during grading and evaluated

for stability.

c. Hydroseeding or planting a surface cover of protective vegetation on all slope surfaces. In addition, an erosion control blanket (Greenfix CF072RR or equivalent) should be placed over the slopes to protect the vegetation while it becomes established.

d. Water should not be allowed to run freely over the sides of the slopes. A lined V-ditch should be constructed above all cut and fill slopes.

6.0 LIMITATIONS AND UNIFORMITY OF CONDITIONS

1. It should be noted that it is the responsibility of the owner or his/her representative to notify **GSI Soils Inc.** a minimum of 48 hours before any stripping, grading, or foundation excavations can commence at this site.

2. The recommendations of this report are based upon the assumption that the soil conditions do not deviate from those disclosed during our study. Should any variations or undesirable conditions be encountered during grading of the site, **GSI Soils Inc.** will provide supplemental recommendations as dictated by the field conditions.

3. This report is issued with the understanding that it is the responsibility of the owner or his/her representative to ensure that the information and recommendations contained herein are brought to the attention of the architect and engineer for the project, and incorporated into the project plans and specifications. The owner or his/her representative is responsible for ensuring that the necessary steps are taken to see that the contractor and subcontractors carry out such recommendations in the field.

4. As of the present date, the findings of this report are valid for the property studied. With the passage of time, changes in the conditions of a property can occur whether they be due to natural processes or to the works of man on this or adjacent properties. Legislation or the broadening of knowledge may result in

changes in applicable standards. Changes outside of our control may find this report to be invalid, wholly or partially. Therefore, this report should not be relied upon after a period of three (3) years without our review nor is it applicable for any properties other than those studied.

5. Validity of the recommendations contained in this report is also dependent upon the prescribed testing and observation program during the site preparation and construction phases. Our firm assumes no responsibility for construction compliance with these design concepts and recommendations unless we have been retained to perform continuous on-site testing and review during all phases of site preparation, grading, and foundation/slab construction.

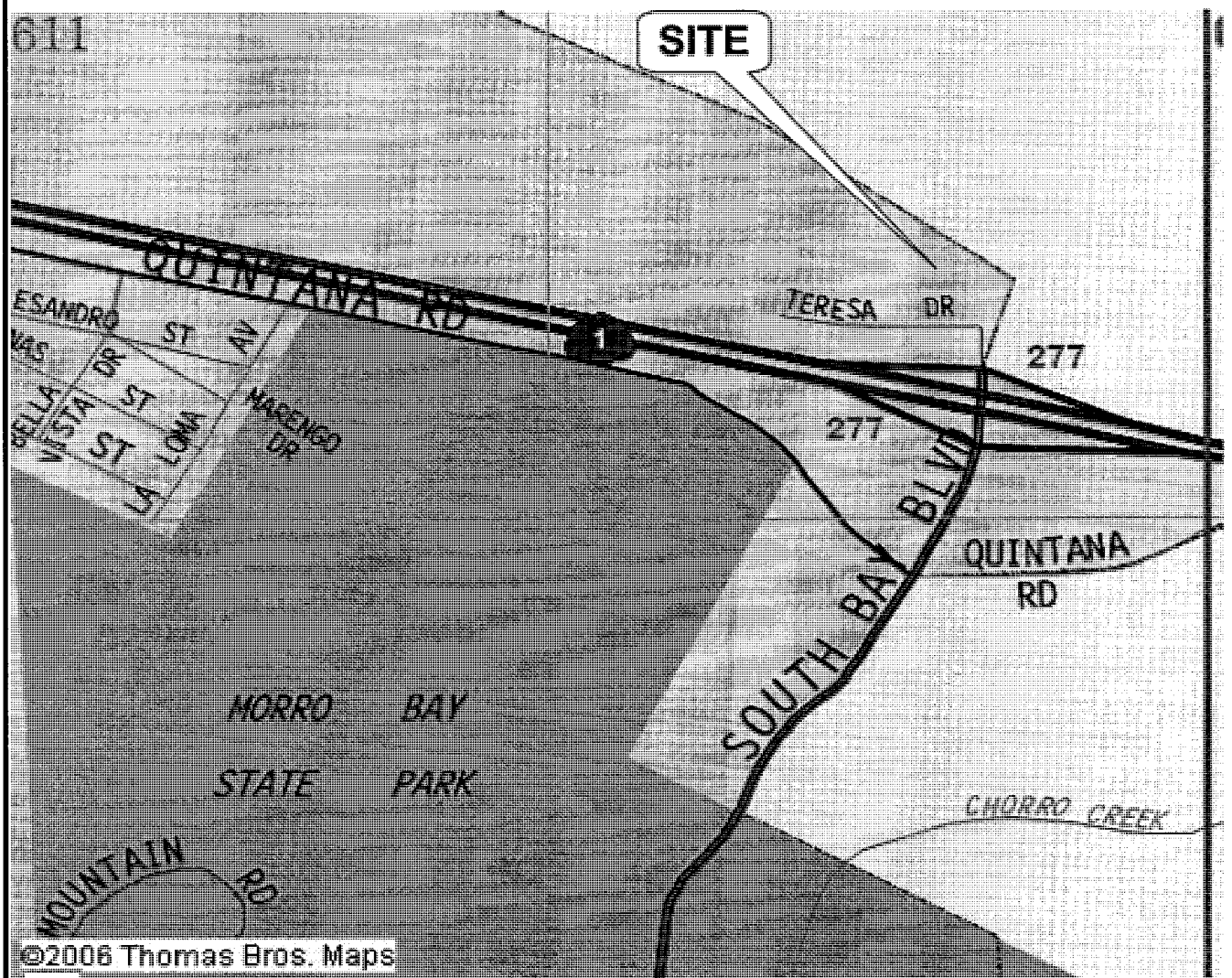
Thank you for the opportunity to have been of service in preparing this report. If you have any questions or require additional assistance, please feel free to contact the undersigned at (805) 543-5493.

Sincerely,

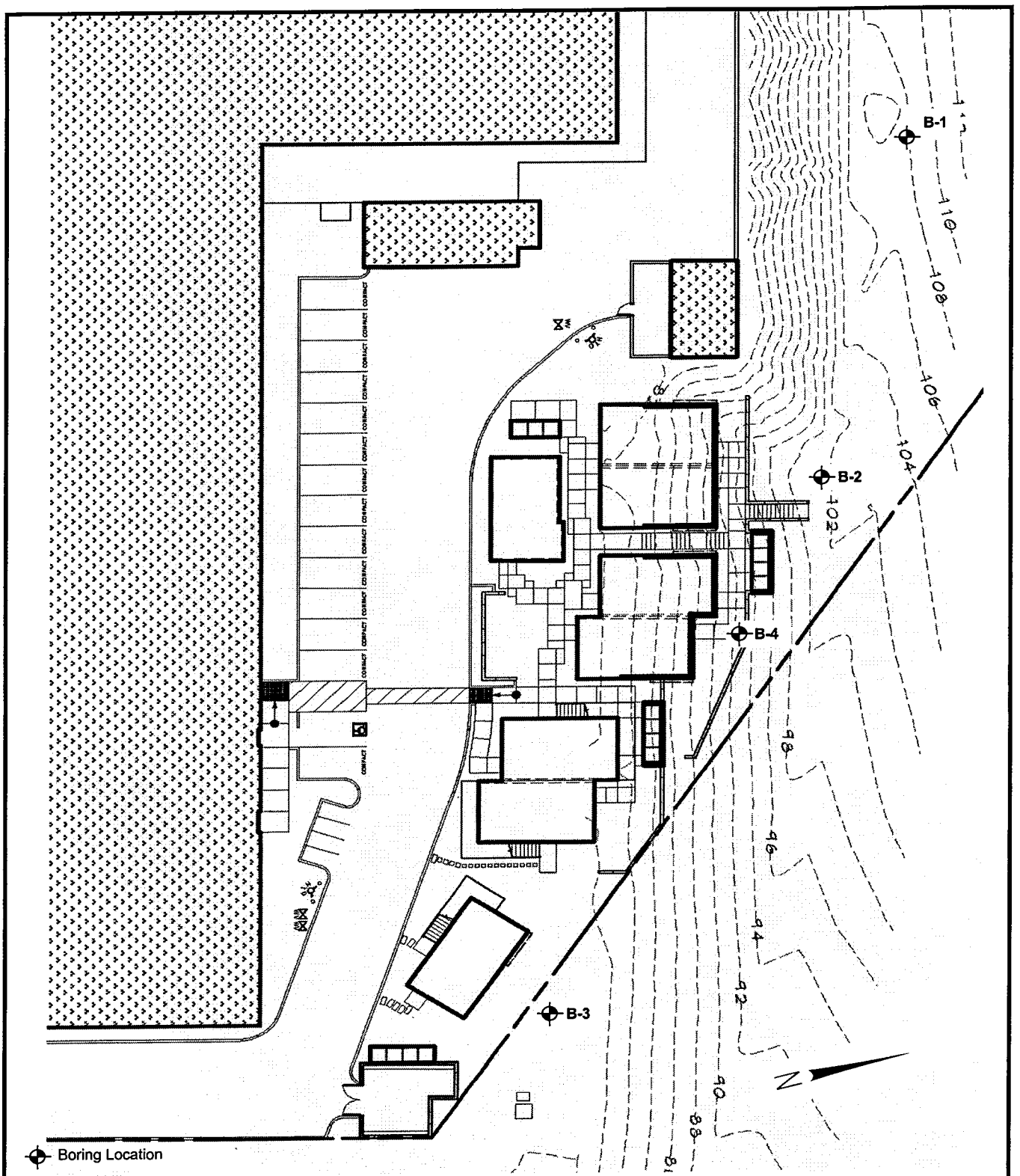
GSI SOILS INC.

Ronald J. Church
Senior Engineer
GE #2184

FIGURES



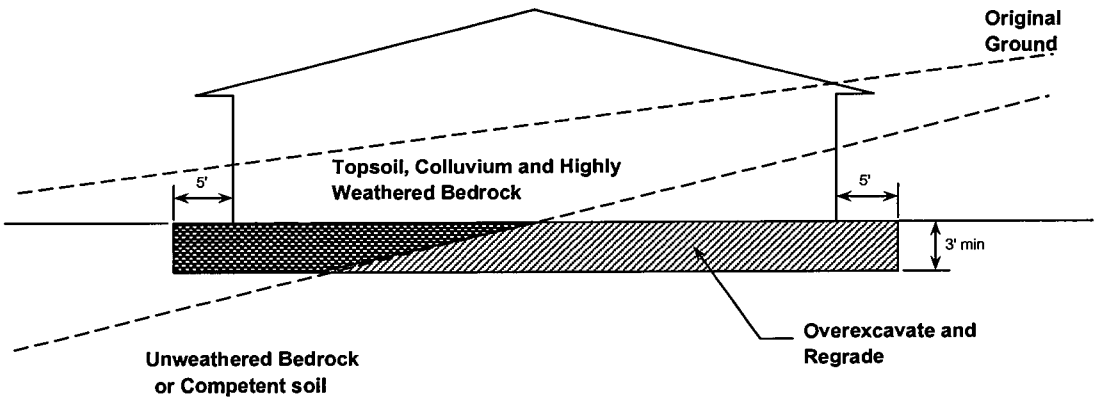
GSI	SITE MAP SEA SHELL STAFF HOUSING 1405 TERESA DRIVE MORRO BAY, CALIFORNIA	Project No.	Figure No.
		7-4309	1



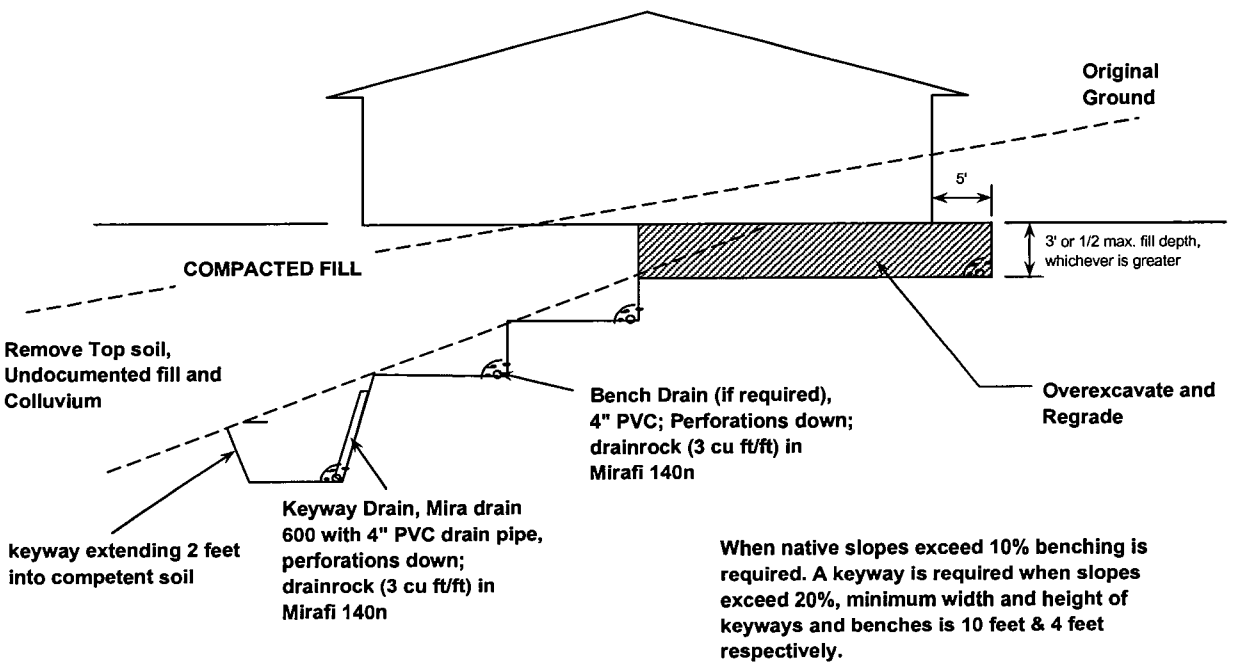
GSI	SITE PLAN SEA SHELL STAFF HOUSING 1405 TERESA DRIVE MORRO BAY, CALIFORNIA	Project No.	Figure No.
		7-4309	2

GENERAL GRADING RECOMMENDATIONS

CUT LOT



CUT/FILL LOT TRANSITION



When native slopes exceed 10% benching is required. A keyway is required when slopes exceed 20%, minimum width and height of keyways and benches is 10 feet & 4 feet respectively.

GSI	HILLSIDE LOTS	Project No.	Figure No.
		7-4309	3

APPENDIX A

Field Investigation
Key to Boring Logs
Boring Logs

FIELD INVESTIGATION

Test Hole Drilling

The field investigation was conducted on January 24, 2007. Four (4) exploratory borings were drilled at the approximate locations indicated on the Site Plan, Figure 2. The locations of these borings were approximated in the field.

Undisturbed and bulk samples were obtained at various depths during test hole drilling. The undisturbed samples were obtained by driving a 2.4-inch inside diameter sampler into soils. Bulk samples were also obtained during drilling.

Logs of Boring

A continuous log of soils, as encountered in the borings was recorded at the time of the field investigation, by a Staff Engineer. The Exploration Boring Logs are attached.

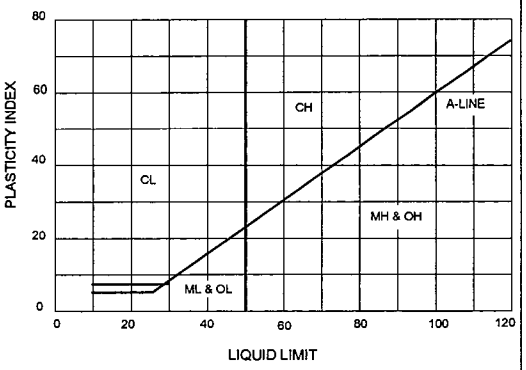
Locations and depth of sampling, in-situ soil dry densities and moisture contents are tabulated in the Boring Logs.

UNIFIED SOIL CLASSIFICATION SYSTEMS

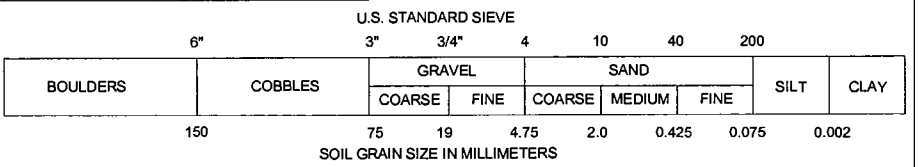
MAJOR DIVISION			SYMBOLS	TYPICAL NAMES
COARSE GRAINED SOILS Over 50% > #200 sieve	GRAVELS Over 50% > #4 sieve	CLEAN GRAVELS WITH LITTLE OR NO FINES	GW	WELL GRADED GRAVELS, GRAVEL-SAND MIXTURES
			GP	POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES
		GRAVELS WITH OVER 12% FINES	GM	SILTY GRAVELS, POORLY GRADED GRAVEL-SAND-SILT MIXTURES
			GC	CLAYEY GRAVELS, POORLY GRADED GRAVEL-SAND-CLAY MIXTURES
	SANDS Over 50% < #4 sieve	CLEAN SANDS WITH LITTLE OR NO FINES	SW	WELL GRADED SANDS, GRAVELLY SANDS
			SP	POORLY GRADED SANDS, GRAVELLY SANDS
		SANDS WITH OVER 12% FINES	SM	SILTY SANDS, POORLY GRADED SAND-SILT MIXTURES
			SC	CLAYEY SANDS, POORLY GRADED SAND-CLAY MIXTURES
FINE GRAINED SOILS Over 50% < #200 sieve	SILTS AND CLAYS Liquid limit < 50		ML	INORGANIC SILTS, SILTY OR CLAYEY FINE SANDS, OR CLAYEY SILTS WITH SLIGHT PLASTICITY
			CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY, SANDY, OR SILTY CLAYS, LEAN CLAYS
			OL	ORGANIC CLAYS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS Liquid limit > 50		MH	INORGANIC SILTS , MICACEOUS OR DIATOMACIOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS
			CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC CLAYS			Pt	PEAT AND OTHER HIGHLY ORGANIC SOILS

PLASTICITY CHART

USED FOR CLASSIFICATION OF FINE GRAINED SOILS



SOIL GRAIN SIZE



SAMPLE DRIVING RECORD

BLOWS PER FOOT	DESCRIPTION
25	25 BLOWS DROVE SAMPLER 12 INCHES, AFTER INITIAL 6 INCHES OF SEATING
50/7"	50 BLOWS DROVE SAMPLER 7 INCHES, AFTER INITIAL 6 INCHES OF SEATING
Ref/3"	50 BLOWS DROVE SAMPLER 3 INCHES DURING OR AFTER INITIAL 6 INCHES OF SEATING

NOTE: TO AVOID DAMAGE TO SAMPLING TOOLS, DRIVING IS LIMITED TO 50 BLOWS PER 6 INCHES DURING OR AFTER SEATING INTERVAL

KEY TO TEST DATA

B	Bag Sample	CONS	Consolidation (ASTM D2435)
	Drive, No Sample Collected	DS	Cons. Drained Direct Shear (ASTM D3080)
	2 1/2" O.D. Mod. California Sampler, Not Tested	PP	Pocket Penetrometer
	2 1/2" O.D. Mod. California Sampler, Tested	GSD	Grain Size Distribution (ASTM D422)
	Standard Penetration Test	CP	Compaction Test (ASTM D1557)
	Sample Attempted with No Recovery	EI	Expansion Index (ASTM D4829)
	Water Level at Time of Drilling	LL	Liquid Limit (in percent)
	Water Level after Drilling	PI	Plasticity Index

RELATIVE DENSITY

SANDS, GRAVELS, AND NON PLASTIC SILTS	BLOWS/FOOT
VERY LOOSE	0 - 4
LOOSE	4 - 10
MEDIUM DENSE	10 - 30
DENSE	30 - 50
VERY DENSE	OVER 50

RELATIVE DENSITY

CLAYS AND PLASTIC SILTS	STRENGTH	BLOWS/FOOT
VERY SOFT	0 - 1/4	0 - 2
SOFT	1/4 - 1/2	2 - 4
FIRM	1/2 - 1	4 - 8
STIFF	1 - 2	8 - 16
VERY STIFF	2 - 4	16 - 32
HARD	OVER 4	OVER 32

GSI

PROJECT NO.:	7-4309	SOIL CLASSIFICATION CHART AND BORING LOG LEGEND
DATE DRILLED:	1/24/2007	
SEA SHELL STAFF HOUSING MORRO BAY, CALIFORNIA		FIGURE NO. A-1

LOGGED BY: **BH** DRILL RIG: **Simco 2400** BORING NO.: **B-1**

ELEVATION: **100'** BORING DIAMETER (INCH): **4** DATE DRILLED: **24 January 2007**

GROUNDWATER DEPTH (FT):

ELEVATION (FT)	DEPTH (FT)	GRAPHIC LOG	GEOTECHNICAL DESCRIPTION	SOIL TYPE	SAMPLE	CONV. SPT BLOW COUNT	WATER CONTENT (%)	DRY DENSITY (PCF)	LIQUID LIMIT	PLASIT. INDEX	UNC. COMP. STRENGTH (PSF)	COMMENTS AND ADDITIONAL TESTS
99	1		Sandy Clay: dark brown, moist, fine to coarse grained, trace gravel and silt, soft	CL								
98	2		Clayey Sand: gray, moist, fine to coarse grained, trace gravel, very dense (severely weathered bedrock)	SC	B							
97	3					50/4"	13.3	108.3				EI = 6
96	4											
95	5					50/2"	13.9					
94	6											
93	7											
92	8				B		11.6					
91	9											
90	10					50/2"	8.4					
89	11											
88	12		Boring terminated at 12 feet									
87	13											
86	14											
85	15											
84	16											
83	17											
82	18											
81	19											
80	20											

EXPLORATORY BORING LOGS

GSI

SEA SHELL STAFF HOUSING
1405 TERESA DRIVE

PROJECT NO.	DATE	FIGURE NO.
7-4309	**September-08**	**A-2**

LOGGED BY: **BH** DRILL RIG: **Simco 2400** BORING NO.: **B-2**

ELEVATION: **100'** BORING DIAMETER (INCH): **4** DATE DRILLED: **24 January 2007**

GROUNDWATER DEPTH (FT):

ELEVATION (FT)	DEPTH (FT)	GRAPHIC LOG	GEOTECHNICAL DESCRIPTION	SOIL TYPE	SAMPLE	CONV. SPT BLOW COUNT	WATER CONTENT (%)	DRY DENSITY (PCF)	LIQUID LIMIT	PLASIT. INDEX	UNC. COMP. STRENGTH (PSF)	COMMENTS AND ADDITIONAL TESTS
99	1		Sandy Clay: dark brown, moist, fine to coarse grained, trace gravel and silt, soft	CH								
98	2				B		20.1					EI = 98
97	3		gray/olive green									
96	4		Sandy Clay: yellow brown, moist, fine to coarse grained, trace gravel, hard dense (severely weathered bedrock)	CL-SC								
95	5					52	21.7					
94	6											
93	7											
92	8				B							
91	9											
90	10					50/3"	24.8					
89	11		Boring terminated at 11 feet									
88	12											
87	13											
86	14											
85	15											
84	16											
83	17											
82	18											
81	19											
80	20											

EXPLORATORY BORING LOGS

GSI

SEA SHELL STAFF HOUSING
1405 TERESA DRIVE

PROJECT NO.	DATE	FIGURE NO.
7-4309	**September-08**	**A-3**

LOGGED BY: **BH** DRILL RIG: **Hand Auger** BORING NO.: **B-3**

ELEVATION: **100'** BORING DIAMETER (INCH): **3** DATE DRILLED: **24 January 2007**

GROUNDWATER DEPTH (FT):

ELEVATION (FT)	DEPTH (FT)	GRAPHIC LOG	GEOTECHNICAL DESCRIPTION	SOIL TYPE	SAMPLE	CONV. SPT BLOW COUNT	WATER CONTENT (%)	DRY DENSITY (PCF)	LIQUID LIMIT	PLASIT. INDEX	UNC. COMP. STRENGTH (PSF)	COMMENTS AND ADDITIONAL TESTS
99	1		Sandy Clay: brown, moist, fine to coarse grained, trace gravel and silt, soft	CL								
98	2				B		8.0					
97	3		Clayey Sand: yellow brown, moist, fine to coarse grained, trace gravel, very dense (severely weathered bedrock)	SC								
96	4					64	17.7					
95	5		Boring terminated at 5 feet									
94	6											
93	7											
92	8											
91	9											
90	10											
89	11											
88	12											
87	13											
86	14											
85	15											
84	16											
83	17											
82	18											
81	19											
80	20											

EXPLORATORY BORING LOGS

GSI

SEA SHELL STAFF HOUSING
1405 TERESA DRIVE

PROJECT NO.	DATE	FIGURE NO.
7-4309	**September-08**	**A-4**

LOGGED BY: **BH** DRILL RIG: **Hand Auger** BORING NO.: **B-4**

ELEVATION: **100'** BORING DIAMETER (INCH): **3** DATE DRILLED: **24 January 2007**

GROUNDWATER DEPTH (FT):

ELEVATION (FT)	DEPTH (FT)	GRAPHIC LOG	GEOTECHNICAL DESCRIPTION	SOIL TYPE	SAMPLE	CONV. SPT BLOW COUNT	WATER CONTENT (%)	DRY DENSITY (PCF)	LIQUID LIMIT	PLASIT. INDEX	UNC. COMP. STRENGTH (PSF)	COMMENTS AND ADDITIONAL TESTS
99	1		Sandy Clay: brown, moist, fine to coarse grained, trace gravel and silt, soft	CL								
98	2				B		9.5					
97	3		Clayey Sand: yellow brown, moist, fine to coarse grained, trace gravel, very dense (severely weathered bedrock)	SC								
96	4				B							
95	5					57	19.4					EI = 14
94	6											
93	7											
92	8											
91	9					50/3"	21.6					
90	10		Boring terminated at 10 feet									
89	11											
88	12											
87	13											
86	14											
85	15											
84	16											
83	17											
82	18											
81	19											
80	20											

EXPLORATORY BORING LOGS

GSI

SEA SHELL STAFF HOUSING
1405 TERESA DRIVE

PROJECT NO.	DATE	FIGURE NO.
7-4309	**September-08**	**A-5**

APPENDIX B

Laboratory Testing
Moisture-Density Tests
Direct Shear Test
R Value Test
Expansion Index
Atterberg Limits

LABORATORY TESTING

Moisture-Density Tests

The field moisture content, as a percentage of the dry weight of the soil, was determined by weighing samples before and after oven drying. Dry densities, in pounds per cubic foot, were also determined for the undisturbed samples. Results of these determinations are shown in the Exploration Boring Logs.

Direct Shear Test

Direct shear tests were performed on undisturbed samples, to determine strength characteristics of the soil. The test specimens were soaked prior to testing. Results of the shear strength tests are attached.

Resistance (R) Value Test

An R-Value test was estimated based on sieve analysis and plasticity on a bulk sample obtained from boring B-1. The results of the tests indicates that the clay soils have an R-Value of 8.

Expansion Index Tests

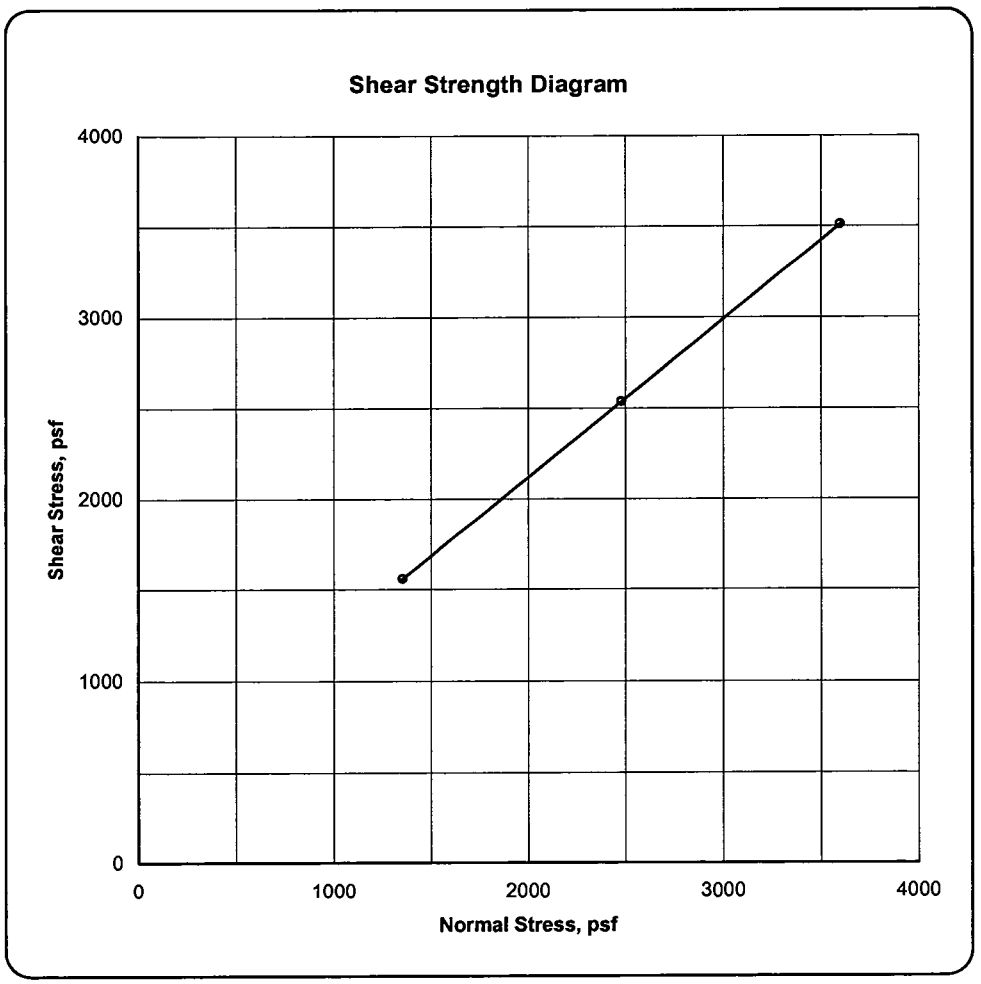
Expansion indices (EI) of 98 to 120 were obtained for the near surface sandy clay soils. The clayey sandstones had EI's of 6 to 14. The test procedures were performed in accordance with Uniform Building Code Standard 29-2.

Atterberg Limits

The liquid limit, plastic limit and plasticity index was determined for selected samples in accordance with ASTM D4318. The results are presented on the boring logs.

DIRECT SHEAR TEST

ASTM D3080-90 (Modified for unconsolidated-undrained conditions)



Project:	SEA SHELL STAFF HOUSING	Project No.	7-4309
Sample Location:	B-1 @ 3 feet	Initial Dry Density (pcf)	108.3
Soil Description:	**Clayey Sand**	Initial Moisture (%)	13.3
Sample Type:	○ Remolded ◉ Ring	**Peak Shear Angle** **Cohesion (psf)**	**41** **380**

City of Morro Bay
Request for Proposals
for

DESIGN-BUILD SERVICES of the

WATER RECLAMATION FACILITY (WRF) ONSITE IMPROVEMENTS

Attachment B:

Proposed Design-Build Agreement

January 2018

Rob Livick, PE/PLS
Public Works Director/City Engineer
955 Shasta Avenue
Morro Bay, California 93442

Design-Build Agreement

City of Morro Bay,

California

Water Reclamation Facility Design-Build Project
_____, 2018

Table of Contents

CITY OF MORRO BAY
WATER RECLAMATION FACILITY DESIGN-BUILD PROJECT
DESIGN / BUILD AGREEMENT

THIS DESIGN/BUILD AGREEMENT is entered into on _____ , 2018, between the CITY OF MORRO BAY, a general law city and municipal law corporation (City), and **[INSERT DESIGN-BUILDER NAME]**, located at **[address] [a _____ _____]** (Design/Build Entity).

RECITALS

A. The City intends to contract with the Design/Build Entity to design and construct a new Water Reclamation Facility (WRF).

B. Pursuant to Public Contract Code section 22160 *et seq*. the City is expressly authorized to design and construct the facility on a Design/Build delivery basis.

C. The City issued a Request for Qualification on October 27, 2017. Statements of Qualifications were due to the City on December 7, 2017.

D. The City pre-qualified four Design/Build teams, which were notified on _____, 2018 of their prequalification.

E. The City issued a Request for Proposal to the pre-qualified teams on _____, 2018, (RFP) with instructions to submit their proposals to the City by _____, 2018.

F. The City issued Addenda to the RFP as listed below:.

[TBD]

Those Addenda are made part of this agreement as listed in Exhibit B of this Design/Build Contract Agreement.

G. Final selection interviews were held on **[TBD]**.

H. Notification of final selection was made on **[TBD]**.

I. The Design/Build Entity is **[INSERT DESIGN-BUILDER NAME]** The Design/Build Entity has entered into a design contract with **[INSERT ENGINEER NAME]** pursuant to which the Engineer of Record agreed to perform certain design services required by this Agreement.

J. The documents included in the RFP, and the Design/Build Entity's Proposal dated TBD incorporated in this Agreement, and designated as the Contract Documents, are provided by the City to establish the scope, level of quality and design intent, and the reporting procedures for the development and construction of the entire project.

The Design/Build Entity shall not provide any exceptions to the Cost Plus with Guaranteed Not To Exceed Amount, the Project Milestone Schedule,

the program statement, the Performance Requirements, or any other requirement described in the Request for Proposal or contract requirements. Despite incorporating the Design/Build Entity's Statement of Qualifications and Proposal as part of this Design/Build Agreement, the City does not accept any provision of the Proposal that is not in conformance with the criteria of the Request for Proposal.

K. It is the intent of this Design/Build Agreement that the Design/Build Entity assumes full responsibility for administering, managing, quality control, designing, constructing and commissioning the Project..

L. The City and Design/Build Entity wish to memorialize the intent of the parties and the terms upon which Design/Build Entity will undertake the Project.

NOW THEREFORE, THE PARTIES AGREE AS FOLLOWS:

ARTICLE 1 – DEFINITIONS

1.0 Definitions. The definitions below shall have the same meaning throughout all of the Contract Documents.

1.1 Act of God: An Act of God shall include only the occurrences or conditions defined in Public Contract Code Section 7105.

1.2 Agreement (Design/Build Agreement): this Design/Build Agreement and all subsequent amendments and modifications to it. Where the term “Agreement,” or “Contract,” is used in the documents, those terms shall refer to this Design/Build Agreement.”

1.3 Applicable Laws: all laws, codes, ordinances, rules and regulations of governmental authorities affecting the Site and the Work.

1.4 Engineer or Designer of Record: **[INSERT ENGINEER NAME]** licensed in the State of California and employed or contracted by the Design/Build Entity to design and prepare construction documents for the project and to provide construction phase services during the Project.

1.5 Authorized Representatives: see Article 4, Paragraph 4.1, the City’s Representative.

1.6 Beneficial Occupancy: City’s occupancy or use of any completed or partially completed portion of the Work. See Article 6, Subparagraph 6.11.3, Beneficial Occupancy.

1.7 CEQA: the California Environmental Quality Act, (Public Resources Code section 21000 *et seq*.) and the State CEQA Guidelines 14 CCR 15000 *et seq*.)

1.8 Certificate of Compliance: a certificate issued by the City stating the installation of all life safety materials and equipment is in compliance with

building and life safety codes. Such equipment includes, but is not limited to: Fire Alarm and Fire Sprinklers, rated construction assemblies, fire exits, paths of egress, etc.

1.9 Certificate of Final Completion: a certificate prepared by the Design/Build Entity and forwarded to the City stating that the Design/Build Entity believes in good faith that the Project is complete, including all punch list items, close-out activities and commissioning, and that the Design/Build Entity is entitled to Subparagraph 6.11.7, Final Payment, in accordance with the provisions of Subparagraph 6.11.5, Final Completion.

1.10 Change Order: a change to the Design/Build Agreement and/or Contract Documents signed by the Design/Build Entity and the City authorizing a change in the Work, which may also adjust the Guaranteed Not To Exceed Amount and/or the Contract Time, Paragraph 7.1. The Cost Plus with Guaranteed Not To Exceed Amount and Contract Time may be changed only by Change Order.

1.11 Change Proposal: a proposal for a Change Order, submitted to the Design/Build Entity by the City, or submitted to the City by the Design/Build Entity on the Design/Build Entity's own initiative.

1.12 City of Morro Bay: the City.

1.13 Commissioning: a quality process for achieving, validating and documenting that the new facilities and its systems are planned, designed, installed, tested and capable of being operable and maintained to perform in conformity with the Design Requirements.

1.14 Construction Documents: the drawings and specifications prepared and sealed by the Architect of Record on behalf of the Design/Build Entity for construction of the Project.

1.15 Construction Manager: the individual appointed by the City to serve as a point of contact in coordinating the City's interests.

1.16 Contract Documents: those documents set forth in Exhibit B, Contract Documents, all of which, together with this Design/Build Agreement, form the entire agreement between the City and the Design/Build Entity. Any amendments and modifications to the Contract Documents and/or the Design/Build Request for Proposal package must be approved by the City prior to incorporation into this Design/Build Agreement.

1.17 Contract Time: see Paragraph 7.1, Contract Time.

1.18 Cost Plus: no more than ___ percent (__%) over the Design/Build Entity's actual costs paid by the Design./Build Entity (i) for its direct labor costs and (ii) to procure each type of labor, materials, tools, equipment, and services provided through its subcontractors of any level and material providers, when (i) or (ii) are required to be performed by or on behalf of the Design/Build Entity pursuant to the provisions of the Contract Documents, as more fully described in Article 3, Design/Build Entity's Duties and Responsibilities.

1.19 Cost Plus with Guaranteed Not To Exceed Amount: is the maximum contract amount established by Section 3.2.1 of this Agreement as total compensation to the Design/Build Entity for the design and construction of the Project.

1.20 Day(s): calendar day or days, unless otherwise specifically designated as a business day. If a day requiring notice or action falls on a weekend or national or state holiday, then the next non-weekend or non-holiday shall be applicable. (Business day(s) are days other than weekend days or national or California holidays.)

1.21 Design/Build Entity: **[INSERT DESIGN-BUILDER NAME]**, a California corporation (License No. _____ – Classification A) able to provide appropriately licensed construction contracting, and professional architectural and engineering services required hereunder.

1.22 Final Completion: the point at which the Work has been completed in accordance with the terms and conditions of the Contract Documents.

1.23 Final Certificate of Occupancy: a formal document issued by the City's Building Official granting unconditional approval to occupy all the habitable structures of the Project.

1.24 Float: the amount of time difference between the Design/Build Entity's scheduled critical path method (CPM) early completion date and the Final Completion date as shown in the Project Milestone Schedule, **Exhibit A**.

1.25 Indemnified Parties: the City and its officers, officials, employees, attorneys, consultants, agents, subcontractors, successors and assigns.

1.26 Liquidated Damages: the damages limited to failure to complete the Project on time and payable by the Design/Build Entity to the City in the event the Design/Build Entity does not achieve the Certificates of Final Completion for the Project as required in the Project Milestone Schedule (Exhibit A), or as adjusted by contract change order, as more fully described in Paragraph 7.7, Liquidated Damages.

1.27 Notice to Proceed: the notice given by the City to the Design/Build Entity stating that the Design/Build Entity is authorized to begin the design and/or the construction of the Project.

1.28 Performance Requirements: the Performance Criteria, Performance Criteria Report, Project Requirements within the RFP, Specifications, and Drawings included in the Request for Proposals and incorporated by reference into this Agreement.

1.29 Substantial Completion: a point in time when the work is sufficiently complete in accordance with the Construction Documents so that it can be used for its intended purpose, as evidenced by (i) the issuance of one of more Temporary Certificates or a Final Certificate of Occupancy, for all habitable

structures of the Project and (ii) successful submission of all necessary documentation required for the NPDES permit (including UV validation testing results).

1.30 Temporary Certificate of Occupancy: a formal document (i) issued by the City's Building Official granting conditional approval to occupy one or more of the habitable structures of the Project and (ii) but subject to corrections, which must all be satisfactorily completed by the Design/Build Entity, as reasonably acceptable to the City's Building Official, prior to the issuance of the Final Certificate of Occupancy.

1.31 Work: all labor, materials, tools, equipment, and services required to be performed or provided by the Design/Build Entity pursuant to the provisions of the Contract Documents, as more fully described in Article 3, Design/Build Entity's Duties and Responsibilities.

ARTICLE 2 – GENERAL PROVISIONS

2.1 Scope of Work.

2.1.1 The Design/Build Entity shall be responsible for the performance of all design and construction services, and provide all materials, labor, tools, and equipment necessary to complete the work described in and reasonably inferable from the Contract Documents.

2.2 Execution, Correlation and Intent:

2.2.1 This Agreement will not be binding on the City until executed by the City's legal representative.

2.2.2 Execution of this Agreement by Design/Build Entity is a representation the Design/Build Entity understands and accepts the methodology under which the work is to be performed and has correlated personal observations with requirements of the Contract Documents.

2.2.3 The intent of the Contract Documents is to include all necessary criteria to establish the scope and quality for completion of the work by Design/Build Entity. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all. Performance by the Design/Build Entity shall be required to the extent consistent with and reasonably inferable from the Contract Documents.

2.2.4 Organization of the Contract Documents and arrangement of the drawings is not intended to control or guide the division or extent of work.

2.2.5 Unless otherwise stated in the Contract Documents, words and phrases shall be interpreted consistent with construction and design industry standards.

2.2.6 Work shall be accomplished in a workmanship-like manner by workers, laborers, or mechanics especially skilled in the class of work required. Any persons the City may deem incompetent or disorderly shall be promptly removed from the Project by the Design/Build Entity upon written notice from the City, and shall not be reemployed for the duration of the project.

2.2.7 As a minimum, work shall be in compliance with applicable laws, codes and ordinances. Higher levels of performance, material, and or function, may be required or reasonably inferred from the Contract Documents.

2.3 Use of the City's Contract Documents.

2.3.1 The Contract Documents issued by the City are for use solely with respect to this Project. They are not to be used on other projects, or for additions to this Project without the specific written consent of the City. The Design/Build Entity is granted limited license to use and reproduce applicable portions of the Contract Documents for use in the execution of the Work. Design/Build Entity shall not release any information to the public in connection with services performed under this Agreement without advance written permission of the City.

2.4 Conflicts in the Contract Documents.

2.4.1 The Contract Documents are intended to be complementary and interpreted in harmony so as to avoid conflict. In the event of conflict in the Contract Documents, the precedence shall be as follows:

.1 Addenda shall govern over other sections of the Contract Documents to the extent specifically noted; subsequent Addenda shall govern over prior Addenda only to the extent specified.

.2 This Agreement shall govern over other Contract Documents except for specific modifications stated in amendments to this Agreement and Addenda.

.3 In case of conflict between the drawings and the written design guidelines and the specifications, the Design/Build Entity shall obtain written clarification from the City as to the governing document. Such request for Clarification shall be submitted via a formal Request For Clarification (RFC) letter.

.4 In the case of conflict within the Performance Requirements, the following shall govern:

.1 Schedules, when identified as such, shall govern over all other portions of the drawings.

.2 Specific notes shall govern over all other notes and all other portions of the drawings, except schedules described in the

preceding sub clause.

.3 Larger scale drawings shall govern over smaller scale drawings.

.4 Figured or numerical dimensions shall govern over dimensions obtained by scaling.

.5 In the case of other conflict within the Performance Requirements, the Design/Build Entity shall obtain written clarification from the City as to the governing document.

2.4.2 The City and Design/Build Entity acknowledge that the Contract Documents may differ in some respects from other documents included in the Design/Build Entity's Technical Proposal upon which Design/Build Entity based its proposal. The City and Design/Build Entity agree that the documents that provide the higher quality supersede any inconsistent versions of these documents.

2.5 Clarifications and Additional Instructions.

2.5.1 Conflicts, omissions, errors, interpretation or clarification, insufficiency of detail or explanation in the Contract Documents relative to the timely or material execution of the work shall be immediately brought to the attention of the City in writing and request interpretation, clarification, or furnishing of additional detailed instructions. Such questions shall be resolved and instructions to the Design/Build Entity issued within a reasonable time by the City, whose decision shall be final and conclusive. Should the Design/Build Entity proceed with the work before receipt of instructions from the City, the Design/Build Entity shall make adjustments to conform to the City's instructions. Design/Build Entity shall be solely responsible for any resultant damage, defect or added cost.

2.5.2 The City may furnish additional detailed written instructions to explain the work more fully, and such instructions shall be a part of the Contract Documents requirements. Should additional detailed instructions, in the opinion of the Design/Build Entity, constitute work in excess of the scope of the Work, the Design/Build Entity shall submit written notice to the City within 10 calendar days following receipt of such instructions, and in any event prior to commencement of the work on it. The City will then consider the notice; and, if in the City's judgment it is justified, the City's instructions will be revised for the extra work authorized.

ARTICLE 3 – DESIGN/BUILD ENTITY'S DUTIES AND RESPONSIBILITIES

3.1 Performance of Work.

3.1.1 Design/Build Entity shall be responsible for achieving the Occupancy and Final Completion Milestones dates in the Project Milestone Schedule as shown in **Exhibit A**. The schedule may be

modified from time to time pursuant to the provisions of the Contract Documents.

3.2 Design/Build Entity's Responsibilities:

3.2.1 Design/Build Entity further agrees to design and construct the Project in sole consideration for the City's payment of the Cost Plus with Guaranteed Not To Exceed Amount of **_____ Million Dollars ($ ___,000,000)**. In the event any or all costs incurred by the Design/Build Entity in the performance of all work required to satisfactorily complete the Project, as required by the Contract Documents, exceed the Guaranteed Not To Exceed Amount, such costs shall be the sole responsibility of the Design/Build Entity and not subject to compensation or reimbursement by the City. The duties and responsibilities include, but are not limited to, the following tasks:

3.2.2 General Responsibilities

Utilize the City's Management Information System (MIS), Procore, to manage the project, and provide information to the City's Project Management Team.

The Management Information System (MIS), shall facilitate documentation and exchange of project information including, but not limited to, Request for Clarifications (RFC's), Substitutions, Deviations from Design Requirements, Change Orders, Progress Payments, Submittals, Schedule(s), Drawings, etc. Design/Build Entity shall meet with the City's Project Management Team to determine specific requirements for the implementation of the MIS.

Pursuant to CEQA, an final environmental impact report has been certified, as **has/will be** a final environmental impact statement or other document analyzing environmental impacts per the National Environmental Policy Act. The Design/Build Entity shall comply with all the mitigation measures required by those documents.

The Design/Build Entity is required to deliver to the City any and all design materials. Those materials include, but are not limited to: calculations, preliminary drawings, construction drawings, shop drawings, samples, electronic media data, tenant improvement documents, sketches, illustrations, specifications, descriptions, models, and other information developed, prepared, furnished, or delivered in the prosecution of the design work.

3.2.3 Design Phase Responsibilities -The Design Phase includes the preparation of the design and construction Documents for the project including, but not limited, to all necessary architectural design, specialty consultant services, civil engineering, structural engineering, mechanical engineering, plumbing , and electrical engineering and whatever else may be necessary to ensure a full

and complete process that meets, at a minimum, the Performance Requirements. These responsibilities shall also include all relevant plan submittals and permitting activities, for permits and approvals required for construction activities related to the Project.

.1 Systems Confirmation Phase

.a Following receipt of a Notice to Proceed, the Design/Build Entity shall meet weekly with City and provide such information as necessary to inform the City of the project design status, and obtain City input and approval regarding design issues. The Design/Build Entity shall be responsible for scheduling and coordinating the participation in these meetings. The Design/Build Entity shall proceed to develop System Confirmation documents. These documents shall depict the type and quality of materials, equipment, design, layout and general coordination of each major building system (i.e.: structural, exterior closure, mechanical, plumbing, electrical, etc.) in sufficient detail to confirm compliance with the Performance Requirements. The System Confirmation documents are considered to be part of and submitted with the schematic design, design development 60%, and construction document submittals. For further details on submittal requirements refer to Exhibit E- Project Schedule and Project Management Submittals.

.b Conduct value engineering analysis on selected building components to determine best value based on initial cost, life expectancy, cost of operation and maintenance. The value engineering analysis shall be performed concurrent with the System Confirmation effort.

.c Prepare and update detailed estimates of the cost of construction at the 30%, 60% and 90% design phases to substantiate that the project will not exceed the contracted Guaranteed Not To Exceed Amount.

.d Monthly prepare and update the detailed construction schedule to confirm project delivery within the stipulated milestones, as defined in the Contract Documents.

.e Provide services to develop a final space program and prepare plan layouts to reflect the requirements of all department users.

.f Participate in the Systems Confirmation Conference with the City and its consultants within 30 calendar days after the Notice of Award, prior to the development of the Construction Documents. The Design/Build Entity shall be responsible for scheduling and coordinating the participation in these meetings. The Systems Confirmation Conference is intended to obtain City approval for design approach, equipment

selection, and system/building layout prior to detailed design. The deliverables are defined in the appropriate sections of the Contract Documents.

.2 Construction Documents Phase

.a Prepare Construction Documents for the entire Project in full compliance with all applicable building codes, ordinances, and other regulatory authorities. The Construction Documents shall at a minimum comply with all applicable California State Building Codes, to include but not be limited to, Title 8 (Industrial Relations), Title17 (Public Health), and Title 24 (Building Standards). Construction Documents will also need to show Best Management Practices for storm water pollution prevention during and after construction of project. The completed contract documents are to be delivered to City and shall consist of the following:

Drawings – Provide one reproducible original, and 10 printed full-size copies and 10 half-size copies of all approved construction document drawings. Provide one copy of all approved construction document drawings on compact disks (CD) using:

Computer-Aided Design (CAD) software, using the latest version of AutoCAD.

Specifications – Where articles, materials, and equipment are identified by brand names, at least two names shall be used, and such names shall be followed by the words “or equal”. Specifications shall not contain restrictions that will limit competitive bids. Exceptions shall only be as permitted by Public Contract Code Section 3400.

Provide original and 10 printed copies of approved specifications, bound and organized. Provide approved specifications on compact disks for all sections for all work applicable to the Project; in a format complying with the current edition of the Construction Specifications Institute’s “Master Format”; as directed by the City and in accordance with the following:

1) Electronic computer software in Microsoft Word, latest version for Windows.

2) All disks provided shall be clearly labeled to indicate files contained and date produced.

.b Upon receipt of the Notice to Proceed, the Design/Build Entity shall instruct the Engineer of Record to commence with design and preparation of the construction documents. The construction documents shall provide information customarily

necessary in documents for projects of similar size, complexity, and quality.

The construction documents shall include all information required by the building trades to complete the construction of the Project, other than such details customarily developed by others during construction. The Design/Build Entity shall be responsible to design, prepare construction documents and coordinate all disciplines for the entire project including, but not limited to: all structural elements, building enclosure, roofing, waterproofing, site work, structures, parking areas, utilities, and all building systems.

Responsibilities also include the design, preparation of construction documents and all coordination necessary for accommodation of interior space construction, fixtures and equipment coordination, finishes, infrastructure, and equipment, all to be provided and installed by the Design/Build Entity. Refer to paragraph 3.2.4, Construction Phase Responsibilities, for further fixtures and equipment requirements. The project's design shall meet or exceed the design and performance criteria stipulated in the Design Requirements.

.c The City's review of the construction documents shall be conducted in accordance with the approved Design/Build Entity's Baseline Schedule with procedures set forth in Article 7, Schedule. Such review shall not relieve the Design/Build Entity from its responsibilities under this Agreement. Such review shall not be deemed an approval or waiver by the City of any deviation from, or of the Design/Build Entity's failure to comply with, any provision or requirement of the Contract Documents, unless such deviation or failure has been identified as such in writing in the document submitted by the Design/Build Entity and approved by the City.

.d However, it is acknowledged by the parties hereto that inherent in a Design/Build concept, the production and review of construction documents may be a continuing process with portions thereof completed at different times. However, during Project start-up the Design/Build Entity will determine the number of design packages with the City and stipulate the number in the Design/Build Entity's Project Management Plan. The Design/Build Entity's Baseline Schedule shall indicate the times for the City to review the completion of each such portion of the construction documents and a reasonable time for review of same. The minimum review time for major milestone submittals shall not be less than 10 working days.

.e The Design/Build Entity shall submit completed packages of the construction documents, in the quantities required by the City Community Development Department and other

applicable authorities having jurisdiction, at the times indicated on the Design/Build Entity's Baseline Schedule. Review meetings between the Design/Build Entity and the City to review the construction document packages, shall be scheduled and held so as not to delay the Work. After reviewing the construction documents package for conformance to the Contract Documents and applicable codes, in his/her governmental capacity, the City's Building Official will issue a Building Permit to the Design/Build Entity. The issuance of the Building Permit or Notice to Proceed does not relieve the Design/Build Entity of satisfactorily and timely complying with all provisions of the Contract Document.

.f The construction documents for hazardous and/or toxic abatement efforts and demolition activities shall be of sufficient clarity and detail and shall be submitted to the City and other applicable authorities having jurisdiction for review.

.3 Ownership of Design Materials

.a All materials and documents developed in the performance of this Agreement are the property of the City. The City shall have unlimited rights, for the benefit of the City, in all drawings, designs, specifications, notes, and other work developed in the performance of this Agreement, including the right to use same on any other City work at no additional cost to the City.

Design/Build Entity agrees to and does hereby grant to the City a royalty-free license to all such data that Design/Build Entity may cover by copyright and to all designs as to which Design/Build Entity may assert any rights or establish any claim under the patent or copyright laws. The Design/Build Entity for a period of three years after completion of the Project agrees to furnish and to provide access to the originals or copies of all such materials upon the request of the City.

The City agrees to make no demand on Design/Build Entity and indemnifies the Design/Build Entity of any damages for responsibility for the City's use of such materials for any other City work that is not the subject of an agreement between the City and Design/Build Entity for such use.

.b The Design/Build Entity shall perform the work required under this Agreement with Computer-Aided Design (CAD) software, using the latest version of AutoCAD, and shall deliver to the City the compact disks containing the electronic files of all approved construction document drawings and as constructed Record Drawings.

.c The City does not assume any obligation to employ the

Design/Build Entity's services or pay Design/Build Entity royalties of any type as to future programs that may result from the work performed under this Agreement.

.4 Design Material Errors

The Design/Build Entity shall be solely responsible for all design errors, including, but not limited to: errors, inconsistencies or omissions in the construction documents, and errors, omissions and inconsistencies that do not conform to the minimum standards of the Contract Requirements and the Performance Requirements. The Design/Build Entity shall take field measurements and verify field conditions and shall carefully compare such field conditions and other information known to the Design/Build Entity from the Contract Requirements and the Performance Requirements before commencing activities.

3.2.4 Construction Phase Responsibilities

The Design/Build Entity shall provide all supervision, labor, materials, equipment, temporary utility services and facilities necessary to design and construct the entire fully-functional Project, as required by the Contract Documents, including, but not limited to:

.1 Prepare an existing conditions survey of the all surrounding and adjacent properties, including streets and observable and recorded utilities, prior to the start of construction. The survey shall professionally document existing conditions of surrounding and adjacent properties using a professional video/filming service hired by the Design/Build Entity and approved by the City prior to the start of work. Videotape shall be on DVD and contain detailed audio documentary describing property, location and existing conditions in areas of view. Design/Build Entity will endeavor to gain access to non-City owned properties. Submit three copies of the videotapes to the City 10 days prior to the start of construction.

.2 Competitively bid all work not performed by the Design/Build Entity or the Designated Subcontractors.

.a Provide public notice of the availability of work to be subcontracted in accordance with Section 22160 *et seq.* of the Public Contract Code.

.b The contents of the notice shall state the time and place for receiving and opening of sealed bids and general description of the work in accordance with Section 22160 *et seq.* of the Public Contract Code.

.c As authorized by the City, establish reasonable pre-qualification criteria and standards. See Public Contract Code Section 22160 *et seq.*

.d Provided that the subcontracted work be awarded to the lowest responsible bidder, subject to Design/Build Entity's right in its sole discretion, to reject all bids and re-bid any subcontract bid package in the event that all bids exceed Design/Build Entity's budget for subcontract bid package.

.3 If a discovery is made of items of archaeological interest on site during excavation activities, the Design/Build Entity shall immediately cease excavation in the area of discovery and shall not continue until ordered by the Construction Manager. Design/Build Entity shall cooperate with and provide access to the City's Archaeologist and other monitoring services

.4 Except as otherwise specifically approved by the City, prepare and submit construction progress photographs monthly from groundbreaking through project completion, within three calendar days of the date of the Design/Build Entity's application for progress payment. To the extent practicable, make photographs at approximately the same time of day through progress of the work. When inclement weather is anticipated, consult with the City and determine acceptable alternative arrangements.

Identify each location by word description, by marked drawing, or by such other means as acceptable to the City, to enable future photographs to be taken from the same position. When so directed by the City, because of the stage of construction, change one or more of the locations to new locations inside or outside the buildings. Make each photograph clear, in focus, with high resolution and sharpness, and with minimum distortion.

The Design/Build Entity shall retain the digital copies for at least four years following Date of Substantial Completion, and to provide prints to the City during that period at the prevailing commercial rates for such prints. Do not permit prints to be issued for any other purpose without specific written approval from the City.

3.3 Standards of Performance.

The Work on the project shall be performed in accordance with the professional standards and quality of care applicable to projects, buildings or work of similar size, complexity, quality and scope constructed within a California urban environment.

3.3.1 The Design/Build Entity shall assign **[INSERT NAME]**, Project Manager, as previously approved by the City. The Project Manager shall remain on the project through Final Completion. The Design/Build Entity shall make assignments of consultants and subcontractors as detailed in the Proposal.

The Design/Build Entity may make additions or substitutions to personnel and responsibilities provided they are suitably qualified and are approved by the City in writing. In the event that personnel

assigned by the Design/Build Entity fail to meet the professional standards required or are persistently uncooperative, in the sole discretion of the City, the City may request substitution of such personnel. Once notice of such request has been received, the Design/Build Entity shall have 20 business days to substitute such other personnel as approved by the City.

3.3.2 The Design/Build Entity shall employ a competent, on-site project team including, but not limited to, Project Manager, superintendent, and necessary assistants who shall be in attendance at the Project Site at all times during the construction of the project. The Project Manager shall represent the Design/Build Entity and communications given to and by the Project Manager shall be as binding as if given directly to and by the Design/Build Entity. The Design/Build Entity shall confirm all communications in writing and provide a matrix of signature authority limitations for its team.

3.3.3 At any other time when the Project Manager is absent from the Project Site because no work is being performed, the Project Manager shall nevertheless keep the City advised of the Project Manager's whereabouts so that the Project Manager may readily be reached and available for consultation at the Project Site at any time.

3.4 Applicable Laws and Codes.

The Design/Build Entity shall comply with all applicable laws, codes, regulations, City Resolutions and City ordinances and shall give notices as applicable. Design/Build Entity shall prepare and file all documents required to obtain the necessary approvals of governmental authorities having jurisdiction over the work and shall secure and pay as part of the Guaranteed Not To Exceed Amount, for plan check and permits fees, licenses and inspections required.

3.4.1 The Design/Build Entity shall comply with the current adopted edition of the California Building Code ("CBC"), including any updates following the date the Design/Build Entity submits the project for plan check. Whenever the Contract Documents require higher standards than the minimum required by applicable laws, the Contract Documents shall take priority.

3.4.2 Design/Build Entity shall submit for review to the City and to other authorities having jurisdiction required calculations and other materials demonstrating the energy use of proposed systems and sustainability.

3.5 Permits, Fees and Notices.

3.5.1 Unless otherwise provided in the Contract Documents, the Design/Build Entity shall be responsible for obtaining the required permits, governmental fees, licenses, inspections, approvals, notices and actions necessary to complete the Work and to prepare all documents customarily required for regulatory agency approvals. City

shall be responsible for the cost of the building permit and such cost shall not be included in the Guaranteed Not To Exceed Amount. Design/Build Entity shall provide a minimum of 10 working days' notice to City to cut checks for the building permit.

3.5.2 Design/Build Entity shall promptly, notify the City, in writing, of variances observed between the Contract Documents and applicable laws. The Design/Build Entity shall bear responsibility for any attributable costs for work performed, without prior notice to the City, known to be contrary to applicable laws.

3.5.3 The Design/Build Entity may be subject to City, or state laws, rules, or regulations pertaining to building permits or regulating the design or construction of buildings upon City property, and shall be solely responsible for meeting these requirements.

3.5.4 The Design/Build Entity shall pay any site de-watering fees and will cooperate with the City in any reasonable measure to limit the quantity of de-watering.

3.5.5 The City shall pay all utility assessments and connection fees levied by the City, or other utility service provider.

3.6 Use of Project Site.

3.6.1 The Design/Build Entity shall confine operations at the Project Site to areas permitted by law, ordinances, permits, and the Contract Documents.

3.6.2 The Design/Build Entity shall perform no operations of any nature on or beyond the limits of Work or premises, except as such operations are authorized in the Contract Documents, or authorized by the City.

3.6.3 The Design/Build Entity shall provide and maintain a temporary construction fence and suitable temporary barriers as required preventing public entry; protecting the work and existing facilities, persons, and trees and plants from damage or injury from construction operations. Temporary barriers shall be maintained in a structurally sound condition and neat appearance.

3.6.4 If regulatory requirements necessitate construction of temporary barriers, barricades, or pedestrian walkways not indicated or specified in the Construction Documents, then the Design/Build Entity shall construct or provide same, as required. at no increase in the Guaranteed Not To Exceed Amount. The Design/Build Entity shall also paint, at no increase in the Guaranteed Not to Exceed Amount, such items in a color selected by the City's Representative.

3.7 Cutting and Patching

3.7.1 The Design/Build Entity shall be responsible for cutting, fitting or patching required to complete the Work.

3.7.2 The Design/Build Entity shall not damage nor endanger the Work by cutting, patching or otherwise altering the construction, and shall not cut nor otherwise alter the construction without prior written consent of the City.

3.8 Cleaning

3.8.1 The Design/Build Entity shall keep the Project Site and surrounding areas free from waste materials and/or rubbish caused by operations under the Agreement and at other times when directed by the City. At all times while finish work is being accomplished, floors shall be kept clean, free of dust, construction debris and trash. Prior to issuance of the Certificate of Final Completion, the Design/Build Entity shall remove from the Project Site the Design/Build Entity's tools, construction equipment, machinery, and any waste materials not previously disposed of, leaving the Project site thoroughly clean, and ready for the City's final inspection.

3.8.2 If the Design/Build Entity fails to clean up as provided in the Contract Documents, the City may do so and the cost thereof charged to the Design/Build Entity.

3.9 Site Availability.

3.9.1 The City shall turn over the Site to the Design/Build Entity as described in the Notice to Proceed and as further described in EXHIBIT A – PROJECT MILESTONE SCHEDULE, at which time the Design/Build Entity shall be obligated to take control and responsibility. The Design/Build Entity shall provide the City, Construction Manager and other City consultants with continuous access to the Site.

3.9.2 The Design/Build Entity shall occupy the least amount of parking spaces at all times for use by the public during regular operating hours of the facilities at the site. Temporary parking facilities shall meet all applicable regulatory requirements applicable to design and construction. Design/Build Entity shall be responsible for all permits, design, and construction required including, but not limited to lighting, access, signage, handicap accessibility, and maintenance.

3.10 Site Conditions.

3.10.1 The Design/Build Entity represents it has taken the necessary steps to ascertain the nature, location and extent of the Work, and it has investigated and satisfied itself as to the general and local conditions which are applicable to the Work, such as:

(a) conditions bearing on transportation, disposal, handling and storage of materials;

(b) the availability of labor, water, power and roads;
(c) normal weather conditions;
(d) physical conditions at the Site;
(e) the conditions of the ground;
(f) the character of equipment and facilities needed prior to and during the performance of the Work.

3.10.2 To the extent the Design/Build Entity encounters subsurface conditions or hazardous materials, which differ materially from that actually known by the Design/Build Entity, or from those ordinarily known to exist or could have been reasonably discovered within the time permitted during the Request for Proposals, or generally recognized as inherent in the area, then notice by the Design/Build Entity shall be immediately given to the City, before conditions are disturbed, and in no event later than two business days after the first observance of the conditions. If such conditions could not have been reasonably identified by Design/Build Entity's site investigations and available existing data, and the Design/Build Entity incurs significant additional costs or delays as a result of such concealed conditions, then such conditions may be the subject of a Change Proposal.

If any existing utilities or services are disturbed, disconnected or damaged during construction, then the Design/Build Entity shall be responsible, at no additional cost or time to the City, for all expenses and consequential damages of whatever nature arising from such disturbance or the replacement or repair thereof and shall repair such items as required to maintain continuing service, including emergency repairs.

3.10.3 The Design/Build Entity is responsible for foreseeable site conditions and toxic materials to the extent described in the Contract Documents or could be reasonably inferred by the Design/Build Entity based on its and its representative's experience and expertise on similar projects in urban areas.

3.11 Hazardous Materials.

Any hazardous materials that are encountered beyond those described in the Contract Documents or Proposal Requirements, or which reasonably could not have been discovered within the time permitted or the Design/Build Entity to prepare its Proposal, may properly be the subject of a Change Proposal. The City agrees the Design/Build Entity cannot be considered a hazardous materials generator of any such materials in existence on the Site at the time it is given possession of the Site.

3.11.1 "Hazardous materials" means any substance, the presence of which requires investigation or remediation under any federal, state or local law, statute, regulation, ordinance, order, action, policy or common law; which is or becomes defined as a "hazardous waste," "hazardous substance," pollutant or contaminant under any federal, state or local law, statute, regulation, rule or ordinance or

amendments thereto, including, without limitations, the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. Section 9601 *et seq.* ("CERCLA"), as amended, or the Resource, Conservation and Recovery Act, as amended, 42 U.S.C. Section 6901 *et seq.* ("RCRA"); which is petroleum, including crude oil or any fraction thereof not otherwise designated as a "hazardous substance" under CERCLA, including without limitation gasoline, diesel fuel or order petroleum hydrocarbons; which is toxic, explosive, corrosive, flammable, infectious, radioactive, carcinogenic, mutagenic, or otherwise hazardous and is or becomes regulated by any regulatory agency or instrumentality or the City; the presence of which on the Site causes or threatens to cause a nuisance upon the Site or to the adjacent properties or poses or threatens to pose a hazard to the health or safety of persons on or about the Site; the presence of which on adjacent properties could constitute a trespass by the Design/Build Entity or the City; or as defined in the California Health and Safety Code.

3.11.2 "Environmental Requirements" means all applicable laws, statutes, regulations, rules, ordinances, codes, licenses, permits, orders and similar items of all governmental agencies or other instrumentality's of the State of California and United States and all applicable judicial, administrative and regulatory decrees, judgments and orders relating to the protection of human health or the environment, including, without limitation: all requirements, including but not limited to, those pertaining to reporting, licensing, permitting, investigation and remediation of emissions, discharges, releases or threatened releases of hazardous materials into the air, surface water, ground water or land, or relating to the manufacture, processing, distribution, use, treatment, storage, disposal, transport or handling of hazardous materials; and all requirements pertaining to the protection of the health and safety of employees or the public.

3.11.3 The indemnification provision of the Agreement, Paragraph 12.2, Indemnification, is applicable to this paragraph in its entirety.

3.12 Shop Drawings, Product Data, Samples, Materials, and Equipment.

3.12.1 Shop drawings means drawings, submitted to Design/Build Entity by, subcontractors, manufacturers, supplier or distributors showing in detail the proposed fabrication and assembly of building elements and the installation (i.e., form, fit, and attachment details) of materials or equipment.

3.12.2 Design/Build Entity shall coordinate all submittals and review them for accuracy, completeness, and compliance with the requirements of the Contract Documents and the Design/Build Entity's construction documents, and shall indicate its approval thereon as evidence of such coordination and review.

3.12.3 Materials and equipment incorporated in the Work shall match the

approved samples within tolerances appropriate to the items, and as may be described in the Design Requirements.

3.12.4 Prior to placement of material orders or start of component fabrication, the Design/Build Entity shall submit to the City all shop drawings approved by the Architect of Record and samples of submittals that relate to finish materials and products.

3.12.5 Wherever the name or brand of manufacturer or an article is listed in the Contract Documents, it is to be used in the Work as the standard. Any variation in quality must be approved by the City.

3.13 **[Intentionally left blank]**

3.14 Site Conditions.

3.14.1 The Design/Build Entity is responsible for assessing the site conditions prior to start of design work. Preliminary findings that will impact the design work must be notified to the City immediately. Design/Build Entity shall be responsible to verify the accuracy of the information provided and, at its cost, obtain any additional measurements, and verifications.

3.14.2 The Design/Build Entity shall verify the location and depth (elevation) of all existing utilities and services before performing any excavation Work.

3.14.3 The Design/Build Entity shall obtain, and pay for, the services of geotechnical engineers licensed in the State of California and other consultants to provide services deemed necessary by the Design/Build Entity. Such services may include reports, test borings, test pits, soil bearing values, percolation tests, air and water pollution tests, ground corrosion and resistivity tests, and other necessary operations for determining subsoil, air and water conditions, with reports and appropriate professional interpretations and recommendations thereof.

3.15 Meetings and Reports.

3.15.1 Prior to commencement of the work, the Design/Build Entity shall attend a Project Kick-off meeting, at a time and a place selected by the City's Representative, to discuss procedures to be followed during the course of the work. Design/Build Entity shall follow the procedures as set forth by the City's Representative and as provided in the Design/Build Entity's procedure manual to be supplied at the Kick-off conference. The purpose of the meeting will be to introduce the City's key personnel and to review the contract provisions and any other items pertaining to the project.

3.15.2 Once a week, or at such interval as mutually agreed by the parties, the City's Representative will meet with the Design/Build Entity to review the overall project progress, the status of the design and/or

construction, and to discuss any problems that may arise. The Design/Build Entity and the Architect of Record shall attend all progress meetings. Subconsultants, Subcontractors and Vendor Representatives shall attend the progress meetings as appropriate to the particular stage of the work. The Design Build Entity shall prepare and submit written reports to be presented at these weekly meetings of the progress and quality of Work.

3.15.3 Each month the Design/Build Entity shall attend a payment meeting with the City's Representative to agree on the percentage of the work completed during the current month and establishes an amount to be requested in the Application for Payment.

3.15.4 The Design/Build Entity shall prepare and submit to the City, during design completion, the construction document phase, and the construction phase, monthly reports on the Work accomplished during the prior monthly period. Such reports shall be prepared in a manner and in a format approved by the City. One electronic and four bound copies of the Reports shall be furnished at the time of submission of each monthly application for payment. The monthly report shall also set forth the Design/Build Entity's projected progress for the forthcoming month.

3.15.5 Thirty days prior to the estimated final completion, the Design/Build Entity shall hold a meeting to review maintenance manuals, guarantees, close-out
submittals, bonds, and service contracts for materials and equipment. Implement repair and replacement of defective items, and extend service and maintenance contracts as desired by the City.

3.16 Other Reports.

3.16.1 The Design/Build Entity will cooperate with the City, and as may be requested, assist in preparing periodic project reports required by the City Council, the City's Project Management team, or other City agencies as required.

3.17 Notices of Labor Disputes.

3.17.1 If Design/Build Entity has knowledge that any actual or potential labor dispute is delaying or threatens to delay the timely performance of the Work, then Design/Build Entity shall immediately give notice including all relevant information to the City. Design/Build Entity shall refer to the Project Labor Agreement for additional requirements.

3.17.2 Design/Build Entity agrees to insert the substance of this Article including this Clause in any subcontract to which a labor dispute may delay the timely performance of the Work, except that each subcontract shall provide that in the event its timely performance is delayed or threatened by delay, by any actual, or potential labor dispute, the subcontractor shall immediately notify the next higher tier subcontractor or Design/Build Entity, as the case may be, of all

relevant information concerning the dispute.

3.18 Guarantee.

3.18.1 The Design/Build Entity unconditionally guarantees the Work will be completed in accordance with the requirements of the Contract Documents, and will remain free of defects in workmanship and materials for a period of one year from the date of Final Completion, unless a longer guarantee period is specifically called for in the Contract Documents. For equipment or building components started in operation prior to Final Completion, the Design/Build Entity shall, at no additional cost to the City, provide extended guarantees such that the guarantee period will be in force for the full year after Final Completion.

The Design/Build Entity shall repair or replace any and all work, together with any adjacent work that may have been damaged or displaced, which was not in accordance with the requirements of the Contract Documents, or that may be defective in its workmanship or material within the guarantee period specified in the Contract Documents, without any expense whatsoever to the City; ordinary wear and tear and abuse excepted.

3.18.2 The Design/Build Entity further agrees, within seven days after being notified in writing by the City, of any work not in accordance with the requirements of the Contract Documents or any defects in the Work, that the Design/Build Entity shall commence and execute, with due diligence, all work necessary to fulfill the terms of the guarantee. If the City finds that the Design/Build Entity fails to perform any of the work under the guarantee, then the City will proceed to have the work completed at the Design/Build Entity's expense and the Design/Build Entity will pay costs of the work upon demand. The City will be entitled to all costs, including reasonable attorney's fees necessarily incurred upon the Design/Build Entity's refusal to pay the above costs.

3.18.3 Notwithstanding the foregoing subparagraph, in the event of an emergency constituting an immediate hazard to health or safety of City employees, property, or licensees, the City may undertake, at the Design/Build Entity's expense and without prior notice, all work necessary to correct such hazardous condition(s) when it is caused by work of the Design/Build Entity not being in accordance with the requirements of the Contract Documents.

3.19 Warranty.

3.19.1 The Design/Build Entity warrants to the City that any and all materials, equipment and furnishings incorporated in the Work will be of good quality and new unless otherwise required or permitted by the Contract Documents. Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective. The foregoing warranty excludes improper operation, or normal wear and tear under normal

usage under the control of the City. Such warranty shall exclude warranties relating to design, warranty of fitness, and any other express or implied warranties other than as set forth herein or in the Contract Documents; provided, however, that the foregoing shall not impair the rights of the City to maintain an action for breach of contract against the Design/Build Entity.

3.20 Patents, Trademarks, and Copyrights.

3.20.1 The Design/Build Entity shall pay, as part of the Guaranteed Not To Exceed Amount, all applicable royalties and license fees on any and all matters arising in connection with the Work. The Design/Build Entity shall defend all suits or claims for infringement of patent, trademark, and copyrights against the indemnified parties, and shall indemnify, defend, and hold harmless the indemnified parties from any claims, causes of action, losses, or costs related to any and all matters arising in connection with Work on the Project (such costs to be paid as part of the Guaranteed Not To Exceed Amount), except with respect to any particular design process or the product of a particular manufacturer or manufacturers specified and required by the City, other than pursuant to the recommendation or suggestion of the Design/Build Entity; provided, however, if the Design/Build Entity has reason to believe that the design, process, or product so specified is an infringement of a patent, the Design/Build Entity shall be responsible for any loss resulting unless the Design/Build Entity has provided the City with prompt written notice of the Design/Build Entity's belief, and the City has nevertheless elected to go forward with such design, process, or product so specified.

3.21 Taxes and Business License.

3.21.1 The Design/Build Entity shall pay all applicable taxes for the Work, or portions thereof provided by the Design/Build Entity, which were legally enacted as of 30 days prior to the submission of the Design/Build Entity's Request for Proposal, whether or not yet effective or merely scheduled to go into effect. Any federal, state, or local taxes payable on any materials, labor or any other thing to be furnished by Design/Build Entity under the Contract Documents and in effect 30 days prior to the submission of the Design/Build Entity's Request for Proposal shall be included in the Guaranteed Not To Exceed Amount and paid by Design/Build Entity. Design/Build Entity must procure a City Business Tax Certificate before or during the construction of work.

3.22 Tests and Inspections.

3.22.1 The Design/Build Entity shall be responsible for designating a Quality Assurance Manager assigned to the Project. The Quality Assurance Manager shall be subject to approval by the City. The Design/Build Entity shall provide the City with the detailed qualifications of the Quality Assurance Manager, including but not limited to, a description of previous relevant project experience, and all training, licensing and

certifications.

The Design/Build Entity shall be responsible for requesting and scheduling all tests and inspections necessary to ensure the quality of the Work are in accordance with the terms of the Contract Documents. The Design/Build Entity shall at all-time permit the City and its agents, inspectors, officers, and employees to visit the Project Site and inspect the Work and such other locations where work is in preparation. This obligation shall include maintaining proper facilities and safe access for such inspection. When the Contract Documents require a portion of the work to be tested, such portion of work shall not be covered up until inspected and approved. The Design/Build Entity shall be solely responsible for notifying the City where and when the work is ready for inspection and testing. The City shall provide inspectors to review and verify compliance of the Design/Build Entity's quality control and assurance teams with the contract documents.

If any work is covered without the required testing or witnessed by the City, then such work shall be uncovered at the Design/Build Entity's expense. Whenever the Design/Build Entity intends to perform work on Saturday, Sunday, or a legal holiday, the Design/Build Entity shall give written notice to the City of such intention at least 48 hours prior to performing the work, so that the City may make necessary arrangements.

3.22.2 If the City determines portions of the Work require additional testing or inspection that is not included in the Contract Documents, then the City will instruct the Design/Build Entity, in writing, to make arrangements for additional testing or inspection by an entity acceptable to the City, and the Design/Build Entity shall give 48 hours written notice to the City of where and when tests and inspections will be conducted so that the City may observe the procedures. The City will bear the costs except as provided in Subparagraph 3.22.1.

3.22.3 If procedures for testing, inspection or approval under Subparagraphs 3.22.1, 3.22.2 and 3.22.3 reveal failure of a portion(s) of the work to comply with the Contract Documents, the Design/Build Entity shall bear all costs and time made necessary by such failure(s) including those of repeated procedures and compensation for the City's services and expenses. The Design/Build Entity shall notify the City in writing within 24 hours of any test conducted by the independent testing agency reveals work failing to comply with the contract documents.

3.22.4 Required certificates of testing and inspection shall, unless otherwise required by the Contract Documents, be secured by the Design/Build Entity and delivered to the City within seven days after each test.

3.22.5 Provide qualified on-site personnel to review and record daily construction activities, including subcontract activities, to determine adequacy of work and compliance with the approved plans and

specifications. Provide written daily reports in a daily report format approved by the City, including, but not limited to: project title, date of work, contract day, weather and conditions (temperature, wind, humidity, etc.), a description of the work in progress by corresponding schedule activity number(s), name of each subcontractor on site and work being performed, location of each trade on the project site, total daily man count per trade (including the Design/Build Entity's work force), material deliveries and quantities, equipment deliveries, potential delays and delays encountered, orders of instruction, unsatisfactory work, tests performed, safety concerns, visitors, and any other issues to document work performed and areas of concern. Daily reports shall be signed by the Design/Build Entity's' Quality Assurance Manager and Project Manager and submitted to the City's Construction Manager through the City's Procore system no later than the 12:00 p.m. following the day work was performed. The Design/Build Entity shall separately provide written reports to the City's Construction Project of any noted deficiencies in the installed work and corrective measures taken, and test reports of work being installed.

3.23 Air Pollution.

3.23.1 The Design/Build Entity and each subcontractor shall comply with all State, City and or local air pollution control rules, regulations, ordinances, and statutes that apply to any work performed under the Agreement. If there is a conflict between the State, City and local air pollution control rules, regulations, ordinances and statutes, the most stringent shall govern.

3.24 Certification by Design/Build Entity of Recycled Content.

3.24.1 The Design/Build Entity shall certify in writing, under penalty of perjury, to the City awarding an agreement under this part, the minimum, if not exact, percentage of recycled content, both post-consumer material and secondary material, as defined in Public Contract Code Sections 12161 and 12200-12226, in materials, goods, or supplies offered or products used in the performance of the Agreement, regardless of whether the product meets the required recycled percentage as defined in Sections 12161 and 12200-12226. The Design/Build Entity may certify that the product contains zero recycled content. This information shall be provided for all materials with recycled content noted in the Contract Documents. See also Management Plan Information and Requirements, and Waste Management Plan.

3.25 Unfair Business Practices.

The Design/Build Entity agrees, and will require all of the Design/Build Entity's contractors and subcontractors and suppliers to agree, to assign to the awarding body all rights, title, and interest in and to all causes of action they may have under Section 4 of the Clayton Act (15 U.S.C. Section 15), or under the Cartwright Act (commencing with Section 16700 of the Business

and Professions Code), arising from the purchase of goods, services or materials, pursuant to the Contract Documents or any subcontract there under. An assignment made by the Design/Build Entity, and all additional assignments made by subcontractors and suppliers, shall be deemed to have been made and will become effective at the time the City tenders Final Payment to the Design/Build Entity, without further acknowledgment of the parties.

ARTICLE 4 – CITY'S DUTIES AND RESPONSIBILITIES

4.1 City's Representative.

4.1.1 The City shall designate, from time to time, one or more representatives authorized to act on the City's behalf with respect to the Project, together with the scope of his/her respective authority. Functions for which this Design/Build Agreement provides to be performed by the City may be delegated by the City only by written notice to the Design/Build Entity from the City.

The Design/Build Entity shall not be entitled to rely on directions (nor shall it be required to follow the directions) from anyone outside the scope of that person's authority as set forth in written authorization pursuant to this Design/Build Agreement. Directions and decisions made by Authorized Representatives of the City shall be binding on the City.

4.2 Communication with the Design/Build Entity.

4.2.1 During the term of this Design/Build Agreement, the City shall communicate with the Design/Build Entity, subcontractors, suppliers, and others performing any part of the Work only through the Design/Build Entity's Authorized Representatives, as may be amended, subject to any approvals required by the City as described in the Contract Documents.

4.3 City's Consent.

4.3.1 Whenever the City's consent, review, satisfaction, or determination shall be required or permitted under the Contract Documents with respect to the Design/Build Entity's performance of the Work, and this Design/Build Agreement does not expressly state that the City may act in its sole discretion, such consent, review, satisfaction or determination shall not be unreasonably withheld.

The City shall cooperate fully with the Design/Build Entity and shall furnish decisions, information, and/or reviews required by this Design/Build Agreement in a timely manner so as not to delay the Work, provided that the City shall have no less time for review than set forth in the Project Baseline Schedule as developed by the Design/Build Entity and accepted by the City.

4.4 City Review of Design Materials.

4.4.1 The Design/Build Entity shall be entitled to proceed with all or a part of the construction phase of the Project upon the City's review and approval of the design and construction documents, and any subsequent submittals or shop drawings for conformance with the Design Requirements, and other Contract Documents. If the City modifies or otherwise changes in a material way the Scope of Work called for in the construction documents, subsequent submittals or shop drawings, after such review for conformity, the Design/Build Entity shall be entitled to a Change Order in accordance with Article 8, Changes in the Work, of the Agreement. In no event shall a Change Order be issued to the extent such modification is due to the fault or neglect of the Design/Build Entity, or in the event the original submittals were not accompanied by annotations showing nonconformance with the Contract Documents, if any.

ARTICLE 5 – SUBCONTRACTING AND LABOR

5.1 Subletting and Subcontracting.

5.1.1 The Design/Build Entity shall adhere to the rules governing subcontracting as set forth in the Subletting and Subcontracting Fair Practices Act, commencing with Public Contract Code, Section 4100. Subcontractor substitutions shall be in accordance with the Act and any violations may subject the Design/Build Entity to penalties and disciplinary action as provided by the Subletting and Subcontracting Fair Practices Act.

5.1.2 The Design/Build Entity shall be responsible for all work performed under this Agreement. All persons engaged in the Project will be considered employees of the Design/Build Entity. The Design/Build Entity shall give personal attention to fulfillment of the Agreement and shall keep the Work under the Design/Build Entity's control. When any subcontractor fails to execute a portion of the work in a manner satisfactory to the City, the Design/Build Entity shall remove such subcontractor immediately upon written request notice from the City, and the subcontractor shall not again be employed on the Project. Although Specification Sections, Part 4 of the Contract Documents, may be arranged according to various trades or general grouping of work, the Design/Build Entity is not obligated to sublet work in such manner. The City will not entertain requests to arbitrate disputes among subcontractors or between the Design/Build Entity and subcontractor(s) concerning responsibility for performing any part of the Work.

5.1.3 The City may not permit a subcontractor who is ineligible to bid or work on, or be awarded, a public works project pursuant to Sections 1777.1 or 1777.7 of the Labor Code.

Any contract on a public works project entered into between a Design/Build Entity and a debarred subcontractor is void as a matter of law. A debarred subcontractor may not receive any public money for performing work as a subcontractor on a public works contract, and any public money that may have been paid to a debarred

subcontractor by the Design/Build Entity on the project shall be returned to the awarding body by the Design/Build Entity. The Design/Build Entity shall be responsible for the payment of wages to workers of a debarred subcontractor who has been allowed to work on the project.

5.2 Subcontracting Relations.

The Design/Build Entity shall, by subcontractor agreement, require each subcontractor, to the extent of the work to be performed by the subcontractor, to be bound to the Design/Build Entity by terms of the Contract Documents, and to assume toward the Design/Build Entity all the obligations and responsibilities which the Design/Build Entity, by the Contract Documents, assumes toward the City. Each subcontractor agreement shall preserve and protect the rights of the City under the Contract Documents with respect to the work to be performed by the subcontractor.

The subcontractor shall be allowed, unless specifically provided otherwise in the subcontractor agreement, the benefits of all rights, remedies and redress against the Design/Build Entity that the Design/Build Entity, by the Contract Documents, has against the City. The Design/Build Entity shall require each subcontractor to enter into similar agreements with sub-subcontractors. The Design/Build Entity shall make available to each proposed subcontractor, prior to the execution of the subcontractor agreement, copies of those portions of the Contract Documents to which the subcontractor will be bound. Subcontractors shall similarly make copies of applicable portions of such documents available to their respective proposed sub-subcontractors.

5.3 Subcontractor Progress Payments.

Within 10 days of receipt of each progress payment, the Design/Build Entity shall make payment to subcontractors in accordance with Public Contract Code Section 10262.

5.4 Contract Assignments.

Performance of the Contract Documents may not be assigned except upon written consent of the City. Consent will not be given to an assignment that would relieve the Design/Build Entity or the Design/Build Entity's surety of their responsibilities under the Contract Documents.

5.5 **[Intentionally left blank]**

5.6 **[Intentionally left blank]**

5.7 Statement Of Compliance.

The Design/Build Entity's execution of this Agreement shall constitute a certification under penalty of perjury under the laws of the State of California that the Design/Build Entity will, unless exempted, comply with the nondiscrimination program requirements of Government Code section 12990

and 2 CCR, section 8103.

5.8 Drug-Free Workplace Certification.

By signing this Agreement, the Design/Build Entity certifies under penalty of perjury under the laws of the State of California that the Design/Build Entity will comply with the requirements of the Drug-Free Workplace Act of 1990 (Government Code section 8350 et seq.).

5.9 Nondiscrimination.

5.9.1 Equal Employment Opportunity. Design/Build Entity agrees for the duration of this Contract it will not discriminate against any employee or applicant for employment because of age, ancestry, color, gender, marital status, medical condition, national origin, physical or mental disability, race, religion, sexual orientation or other protected status. The Design/Build Entity will take affirmative action to insure employees are treated during employment or training without regard to their race, color, religion, sex, national origin, age, political affiliation, marital status, or disability. The Design/Build Entity agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of the Nondiscrimination Clause.

a. The Design/Build Entity will in all solicitations or advertisements for employees placed by or on behalf of the Design/Build Entity, state that all qualified applicants will receive consideration for employment without regard to age, ancestry, color, gender, marital status, medical condition, national origin, physical or mental disability, race, religion or sexual orientation.

b. The Design/Build Entity will send to each labor union or other representative of workers with which it has a collective bargaining agreement or other contract or understanding, a notice advising the workers' representative of the Design/Build Entity commitments under this Agreement. The Design/Build Entity agrees that it will comply with the provisions of Titles VI and VII of the Civil Rights Act, Revenue Sharing Act Title 31, U.S. Code Section 2716 and California Government Code Section 12990.

c. The Design/Build Entity agrees it will assist and cooperate with the City, the State of California and the United States Government in obtaining compliance with the Equal Opportunity Clause, rules, regulations and relevant orders of the State of California and United States Government issued pursuant to the above-referenced Acts.

d. In the event of the Design/Build Entity's non-compliance with the Nondiscrimination Clause or with any of the said rules, regulations or orders, this Contract may be canceled, terminated, or suspended in whole or in part by the City.

5.9.2 Disabled Non-Discrimination. This project is subject to Section 504 of the Rehabilitation Act of 1973 as amended, (29 U.S.C. 794), the Americans with Disabilities Act of 1990 and all requirements imposed by the guidelines and interpretations issued in furtherance of the ADA. In this regard, the City, its Design/Build Entity's and subcontractors will take all reasonable steps to ensure that disabled individuals have the maximum opportunity for the same level of aid, benefit or service as any other individual.

5.9.3 Fair Employment and Housing Act Addendum. In the performance of this Agreement, the Design/Build Entity will not discriminate against any employee or applicant for employment because of age, ancestry, color, gender, marital status, medical condition, national origin, physical or mental disability, race, religion or sexual orientation. The Design/Build Entity will take affirmative action to ensure that applicants are employed and that employees are treated during employment, without regard to their age, ancestry, color, gender, marital status, medical condition, national origin, physical or mental disability, race, religion or sexual orientation. Such action shall include, but not be limited to, the following: employment, upgrading, promotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation and selection for training, including apprenticeship. The Design/Build Entity shall post in conspicuous places, available to employees and applicants for employment, notices to be provided by the State or local agency setting forth the provisions of this Fair Employment and Housing Section.

a. The Design/Build Entity will permit access to his records of employment, employment advertisements, application forms and other pertinent data and records by the California Fair Employment and Housing Commission, or any other agency of the State of California designated by the awarding authority, for the purposes of investigation to ascertain compliance with the Fair Employment and Housing section of this Contract.

b. The State, County, or City may determine a willful violation of the Fair Employment and Housing provision to have occurred upon receipt of a final judgment having that effect from a court in an action to which Design/Build Entity was a party, or upon receipt of a written notice from the Fair Employment and Housing Commission that it has investigated and determined that the Design/Build Entity has violated the Fair Employment and Housing Act and has issued an order or obtained an injunction under Government Code Sections 12900, *et seq.*

c. For willful violation of this Fair Employment and Housing provision, the City may terminate this Contract either in whole or in part and any loss or damage sustained by the City in securing replacement goods or services shall be borne and paid for by the Design/Build Entity and by his surety under the Performance Bond, and/or the City may deduct from any moneys due or that may become due to the

Design/Build Entity to compensate the City, the difference between the price named in the Agreement and the actual cost to the City.

5.10 Wages and Records.

5.10.1 Wage Rates

a. Pursuant to Section 1770 and 1773 *et seq.* of the Labor Code of the State of California, the Director of Industrial Relations (DIR) has ascertained the general prevailing rate of per diem wages and the rates for overtime and holiday work in the locality in which the work is to be performed for each craft, classification, or type of workman needed to execute the Agreement, copies of which are on file and available upon request from the California Department of Industrial Relations.

b. The Design/Build Entity and any subcontractor under him, must not pay less than prevailing wage rates to all laborers, workmen and mechanics employed in the execution of the Contract. Such wages shall be in accordance with the higher of those required by the DIR or Davis Bacon rules and regulations. It is further expressly stipulated that the Design/Build Entity shall, as a penalty to City, forfeit twenty-five dollars ($25.00) for each calendar day, or portion thereof, for each laborer, workman, or mechanic paid less than the stipulated prevailing rates for any work done under this Agreement by him or by any subcontractor under him and Design/Build Entity agrees to comply with all provisions of Section 1770 *et seq.* of the Labor Code.

c. In case it becomes necessary for the Design/Build Entity or any subcontractor to employ on the Project under this Agreement any person in a trade or occupation (except executives, supervisory, administrative, clerical, or other non-manual workers as such) for which no minimum wage rate is specified, the Design/Build Entity shall immediately notify the City who will promptly determine the prevailing rate for such additional trade or occupation and shall furnish the Design/Build Entity with the minimum rate. The minimum rate furnished shall be applicable as a minimum for such trade or occupation from the time of the initial employment of the person affected and during the continuance of such employment.

d. Pursuant to Sections 1770 and 1773 of the Labor Code, the general prevailing rate of per diem wages applicable to the work to be done for straight time, overtime, Saturday, Sunday and holiday work are set forth by the Director of the California Department of Industrial Relations and are a part of the Agreement. The Design/Build Entity is required to post a copy of these prevailing wages rates on the job site.

e. The City will not recognize any claim for additional compensation because of the payment by the Design/Build Entity of any wage rate in excess of the prevailing wage rate set forth as provided herein. The possibility of wage increases is one of the elements to be

considered by the Design/Build Entity in submitting its Design/Build Proposal and will not under any circumstances be considered as the basis of a claim against the City on the Contract.

5.10.2 Wage Records

a. The Design/Build Entity and each subcontractor shall keep or cause to be kept an accurate record (certified payroll) showing the names and occupations of all laborers, workers and mechanics employed by him in connection with the execution of this Contract or any subcontract thereunder and showing also the actual per diem wages paid to each of said workers, which records shall be provided to the City and to the California Department of Industrial Relations upon its request. Copies provided will include one, which has the name and social security numbers marked out.

b. The Design/Build Entity shall meet the requirements of Section 7-1.01A(3). "Payroll Records," of the State of California Standard Specifications. The Design/Build Entity shall be responsible for compliance by his subcontractors.

c. Certified Payroll records shall be submitted with each Monthly Progress Payment request showing records within 10 days after the billing period. The Design/Build Entity shall provide all information reasonably required by Labor Trade organizations.

ARTICLE 6 – PAYMENTS AND COMPLETION

6.1 Cost Plus with Guaranteed Not To Exceed Amount.

In consideration of Design/Build Entity's obligations under the Contract Documents, Design/Build Entity will be paid the Cost Plus with Guaranteed Not To Exceed Amount, in accordance with the payment procedures set forth herein. Except as otherwise provided in the Contract Documents, the Cost Plus with Guaranteed Not To Exceed Amount will fully compensate Design/Build Entity for all of the services required under the Contract Documents, including the scope of services described in this Agreement.

6.2 Schedule of Values.

6.2.1 Within 30 days after the Effective Date and prior to the first Application for Payment, the Design/Build Entity shall submit to the City a Schedule of Values to complete the Project, supported by such data to substantiate the accuracy as the City may require. The Schedule of Values, unless objected to by the City within 15 days after receipt, shall be used as a basis for progress payments.

6.2.2 This Schedule of Values may be adjusted from time-to-time as the subcontracting plan is finalized.

6.3 Application for Payment.

The Design/Build Entity shall deliver to the City on the last business day of each month, or as otherwise agreed by both parties, an Application for Payment, in the format approved by the City, covering that portion of the Cost Plus with Guaranteed Not To Exceed Amount allocated to the Work completed during each month and in accordance with the Schedule of Values. Invoices shall include the contract number, the project number, the amendment number, Design/Build Entity's Federal Employer Identification Number (FEIN); and shall be submitted to the City, attention of the Project Director in care of the City's Construction Manager.

Application for payment shall not be submitted more frequently than once monthly. The application for payment shall be signed by an officer or designee of the Design/Build Entity's firm. Provided the Application for Payment is received and approved by the City, the City shall make payment to the Design/Build Entity not later than 30 days after receipt by the City of the approved payment application. With each Application for Payment, the Design/Build Entity shall submit such evidence as may be necessary to demonstrate costs incurred or estimated to be incurred in accordance with the Schedule of Values during such month and the percentage of completion of each category of Work and the applicable Cost Plus amounts.

WAIVER AND RELEASE FORMS

Consistent with the provisions of California Civil Code sections 8122 and 8124, the Design/Build Entity and its subcontractors shall promptly furnish the City with a release of all claims against the City arising by virtue of the Contract Documents related to amounts to be paid or which have been paid. This section shall survive expiration or termination of the Contract. The Design/Build Entity shall include these requirements in all subcontracts for this project. The Design/Build Entity and subcontractors from the operation of the release may specifically exclude disputed contract claims in stated amounts.

Neither the City nor the Design/Build Entity by any term of this Contract, or otherwise, shall waive, affect, or impair the claims and liens of other persons whether with or without notice except by their written consent, and any term of the Contract to that effect shall be null and void. Any written consent given by any claimant pursuant to this section shall be null, void, and unenforceable unless and until the claimant executes and delivers a waiver and release. Such a waiver and release shall be binding and effective to release the City, construction lender, and surety on a payment bond from claims and liens only if the waiver and release follows substantially one of the forms set forth in California Civil Code section 8132 and this section and is signed by the claimant or his/her authorized agent, and, in the case of a conditional release, there is evidence of payment to the claimant. Evidence of payment may be by the claimant's endorsement on a single or joint payee check that has been paid by the bank upon which it was drawn or by written acknowledgment of payment given by the claimant.

No oral or written statement purporting to waive, release, impair or otherwise adversely affect a claim is enforceable or creates any estoppel or impairment of a claim unless:

(1) It is pursuant to a waiver and release prescribed herein, or
(2) The claimant had actually received payment in full for the claim.

This section does not affect the enforceability of either an accord and satisfaction regarding a bona fide dispute or any agreement made in settlement of an action pending in any court provided the accord and satisfaction or agreement and settlement make specific reference to the stop notice or bond claims.

The waiver and release given by any claimant hereunder shall be null, void, and unenforceable unless it follows substantially the forms as presented in California Civil Code section 8122.

6.4 Progress Payments.

The City shall pay the Design/Build Entity the progress payments through the period covered by the Application for Payment, less five percent retention. Upon receipt of an Application for Payment from the Design/Build Entity, the City will promptly review the same to determine if it is a proper Application for Payment based on the approved Schedule of Values. Any Application for Payment determined by the City not to be suitable for payment shall be modified and processed per the City's assessment. The reason(s) the Application for Payment was deemed unsuitable shall be stated in writing.

6.5 Withholding of Payment.

6.5.1 Notwithstanding the provisions of Subparagraph 6.11.6, Final Payment, the City may withhold payment on account of an Application for Payment to the extent necessary to protect the City from loss because of:

.1 Defective Work not remedied;

.2 Third-party claims filed or reasonable evidence indicating probable filing of such claims;

.3 Failure of the Design/Build Entity to make payments of undisputed amounts to Design/Build team consultants or subcontractors for labor, materials, or equipment;

.4 Damage to the City caused by the fault or neglect of the Design/Build Entity to the extent not covered by insurance; or

.5 Reasonable evidence that the Work will not be substantially completed within the Contract Time due to delay not considered a Compensable Event, and that the unpaid balance of the Cost Plus with Guaranteed Not To Exceed Amount would not be adequate to cover liquidated damages for the anticipated inexcusable delay.

6.5.2 When the above reasons for withholding payment are removed,

payment less retention shall be made for amounts previously withheld. Prior to any withholding pursuant to this paragraph, the City shall meet with the Design/Build Entity to discuss potential withholding, and shall attempt in good faith to resolve such issue without the need for withholding. Amounts withheld shall bear interest at whatever rate is paid to the City from time to time for funds it may have on deposit, from the date the funds would otherwise have been due until paid, if at all. In lieu of withholding the Design/Build Entity may deposit securities equivalent to the amount withheld in accordance with the procedures outlined in Article 6.10.1.1

6.6 Payment for Stored Materials.

Unless otherwise provided in the Contract Documents, payment will be made on account for materials or equipment not incorporated in the Work but delivered and suitably stored at the Site and/or if approved in advance by the City, payments may be made for materials or equipment stored at some other location agreed upon in writing. Payments made for materials or equipment stored on or off-site shall be conditioned upon submission by the Design/Build Entity of bills of sale or such other procedures satisfactory to the City to establish City's title to such materials or equipment or otherwise protect the City's interest, including applicable insurance and transportation to the Site for those materials and equipment stored off-site.

6.7 Payments as Trust Funds.

Any and all funds payable to the Design/Build Entity are hereby declared to constitute trust funds in the hands of the Design/Build Entity to be applied first to payment of claims of subcontractors, sub-subcontractors, architects, engineers, surveyors, laborers, material men or employees arising out of the described Work, to obligations for utilities furnished, tax imposed or such to the payment of premiums on security or other bonds, and to payment of insurance premiums relating to the Project and to payments and contributions to union pension plans and trust funds before application to any other purpose.

6.8 Payment Not a Waiver.

6.8.1 No payment hereunder, including Final Payment to Design/Build Entity, nor City's use or Beneficial Occupancy of the Work, shall release Design/Build Entity with respect to design, construction, workmanship, materials, equipment or machinery incorporated in the Work which are found to be defective, unsound or improper.

6.8.2 No payment made under the Design/Build Agreement, shall be evidence of performance thereof, either wholly or in part, nor shall it be construed to be acceptance of defective work or improper material, or an approval of any items in any application for payment.

6.9 Waiver of Lien and Payment Bond Rights.

The Design/Build Entity shall attach to each application for payment, a waiver of all lien and payment bond rights, with respect to all amounts requisitioned up to and including the then current requisition from the Design/Build Entity, which waiver of lien and payment bond rights covers all amounts requisitioned from the Design/Build Entity's subcontractors and all tiers and suppliers. Upon request, Design/Build Entity shall make available copies of similar waivers from its subcontractors of all tiers and suppliers.

6.10 Retentions.

The City will retain five percent of such estimated value of all Work completed (including design and other professional services) and a like percentage within limits established by law, of the value of materials so estimated to have been furnished, delivered and unused, as aforesaid, as part of security for fulfillment of the Contract Documents by the Design/Build Entity. At any time after 95% of the Work has been completed, the City may reduce funds withheld to an amount not less than one hundred 125% of the estimated value of the Work yet to be completed, as determined solely by the City. The completion of the design work will be evaluated separate from the construction effort, and redirection of retainage will be evaluated accordingly. The City will pay monthly to the Design/Build Entity while executing the Work the balance not retained after deducting all previous payments and all sums to be retained under provisions of the Contract Documents.

Investment Options:

6.10.1 At the request and expense of the Design/Build Entity, and in accordance with
Public Contract Code Section 10263, securities equivalent to the amount withheld shall be deposited with the City Treasurer or, a state or federally chartered bank in California, as the escrow agent, who shall then pay the moneys to the Design/Build Entity. Upon satisfactory completion of the Agreement, the securities shall be returned to the Design/Build Entity.

6.10.2 Alternatively, the Design/Build Entity may request and the City will make payment of the retention earned directly to the escrow agent. The Design/Build Entity may direct the investment of the payments into securities and the Design/Build Entity shall receive the interest earned on the investments upon the same terms provided for securities deposited by the Design/Build Entity. Upon satisfactory completion of the Work, the Design/Build Entity shall receive from the escrow agent all securities, interest, and payments received by the escrow agent from the City, pursuant to the terms of Final Payment.

6.10.3 Securities eligible for investment shall include those listed in Government Code Section 16430; bank or savings and loan certificates of deposit; interest-bearing demand deposit accounts; standby letters of credit; or any other securities mutually agreed to by the Design/Build Entity and the City.

6.10.4 The Design/Build Entity shall be beneficial owner of any securities substituted for moneys withheld and shall receive any interest thereon.

6.10.5 The escrow agreement shall be substantially similar to the form "Escrow Agreement for Security Deposits in Lieu of Retention" found in Public Contract Code Section 10263.

6.11 Payment and Completion.

6.11.1 The City reserves the right to occupy all or any part of the Project prior to completion of the Work, upon written notice. In this event, the Design/Build Entity shall be relieved of responsibility to the City for injury or damage that results from occupancy and use by the City. If, by reason of the City's occupancy, the premium for the Design/Build Entity's bodily injury and property damage insurance is increased, the City will reimburse the Design/Build Entity for the additional amount necessarily incurred allocable to the area and the period of City's occupancy up to the date of Final Completion.

6.11.2 The City's occupancy does not constitute acceptance by the City of the Work, or any portion of the Work, nor will it relieve the Design/Build Entity of responsibility for correcting defective Work or materials found at any time before Final Completion, as set forth in Paragraph 3.18, Guarantee, or during the guarantee period after the City's acceptance, as set forth in Subparagraph 6.11.6, Final Payment. However, when the Project includes separate buildings, and one or more of the buildings is entirely occupied by the City, then upon written request by the Design/Build Entity and by written consent from the City, the guarantee period will commence to run for a building or buildings from the date of the City's Beneficial Occupancy of a building or buildings.

6.11.3 Beneficial Occupancy. The City may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Design/Build Entity, provided such occupancy or use is consented to by the insurer of the Project and the City, Notice of Substantial Completion, and a Temporary Certificate of Occupancy is obtained.

Such partial occupancy or use may commence whether or not the portion is complete, provided the City and the Design/Build Entity have accepted in writing the responsibilities assigned to each of them for payment, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. Immediately prior to such occupancy, the City and the Design/Build Entity shall jointly inspect the area to be occupied in order to determine and record the condition of the Work. Unless otherwise agreed, partial occupancy or use of a portion of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

6.11.4 Substantial Completion: When the Work, or designated portion thereof, is sufficiently complete in accordance with the construction documents so that it can be used for its intended purpose, the Design/Build Entity and the City shall collaboratively prepare a single comprehensive punch list. The Design/Build Entity shall then proceed promptly to complete and correct the punch list items. Failure to include an item on the punch list does not alter the responsibility of the Design/Build Entity to complete all work in accordance with the Contract Documents.

6.11.5 Final Completion: Upon completion of the punch list the City will make an inspection to determine whether the work has been completed. The Certificate of Final Completion shall be issued when all work is complete, and the Council has formally accepted the project.

6.11.6 Waiver of Claims. Acceptance of Final Payment by the Design/Build Entity shall constitute a waiver of affirmative claims by the Design/Build Entity, except those previously made in writing and identified as unsettled at the time of Final Payment.

6.11.7 Final Payment. Upon execution of the Certificate of Final Completion, providing no stop notices have been filed which have not been discharged or bonded, all amounts unpaid under the Design/Build Agreement will be paid to Design/Build Entity. The City may withhold any reasonable sums payable to Design/Build Entity for the value of any Work, which the City may have found defective and ordered to be replaced. Final Payment for withholdings will be made when the Work is completed and/or defective Work replaced.

. City shall pay the remaining amount of the Cost Plus with Guaranteed Not To Exceed Amount due to the Design/Build Entity, after:

.1 Acceptance and Close-out of the Work.

.2 Resolution of all stop notices.

.3 Execution by the Design/Build Entity of a release of all claims against the City arising by virtue of the Design/Build Agreement.

.4 Any other requirements spelled out in the Design/Build Agreement.

6.11.8 The Design/Build Entity is required to pay subcontractors from whom a retention has been withheld within seven days of receipt from the City of retention proceeds.

6.11.9 The making of Final Payment by the City shall constitute a waiver of claims by the City, except those arising from (a) liens, claims, security interests and encumbrances arising out of the Work after Final Payment, or identified in writing as unsettled at the time of Final

Payment; (b) latent defects arising after Final Payment; (c) the terms of warranties required by the Contract Documents; or (d) indemnities which shall survive completion of the Design/Build Agreement.

6.12 Interest.

Payments due and unpaid under this Agreement shall bear interest pursuant to Public Contract Code Section 10261.5 (relating to progress payments) and Section 7107 (relating to retentions).

6.13 Shared Cost Savings

Any potential modifications to the project work identified by the Design-Build Entity after the execution of this document shall be submitted for approval by the City's authorized representative. If approved and validated, then any actual cost savings realized by the City may be will be shared with the Design/Build Entity. The amount to be shared with the Design-Build Entity shall be 50% of the final realized cost savings based on those modifications and on any deletions to the Project made by the City..

6.14 Allowance for Environmental Requirements

6.14.1 The Cost Plus with Guaranteed Not To Exceed Amount described in section 3.2.1 includes _____ Dollars ($_____) for the execution of requirements neither specified nor anticipated in the Anticipated Environmental Impact Report Mitigation Measures (EIRMM). That amount will be utilized by the Design/Build Entity on a time and materials basis for EIRMM work resulting directly from requirements not specified in the EIRMM that could arise during the EIR process and that will add cost to the project. This allowance item is only to be utilized for unanticipated work associated with the EIRMM.

6.14.2 The Design-Build Entity and the City have worked together to review the Allowance Item and Values based on available EIRMM information to determine the Allowance Values constitute reasonable estimates for the unanticipated EIRMM work. The Design-Build Entity and City will continue working closely together during the preparation of the design to develop Construction Documents consistent with these EIRMM Allowance Values. Nothing herein is intended in any way to constitute a guarantee by Design-Build Entity the EIRMM Allowance Item in question can be performed for the Allowance Value.

6.14.3 No work shall be performed on any EIRMM Allowance Item without Design/Build Entity first obtaining in writing advanced authorization to proceed from the City. The City agrees if the Design/Build Entity is not provided written authorization to proceed on an EIRMM Allowance Item by the date set forth in the Project schedule, due to no fault of Design/Build Entity, Design-Builder Entity may be entitled to an adjustment of the Contract Time(s) and the Cost Plus with Guaranteed Not To Exceed Amount.

6.14.4 The Allowance Value for an EIRMM Allowance Item includes the direct cost of labor, materials, equipment, transportation, taxes and insurance associated with the applicable Allowance Item. All other costs, including

design fees, the Design/Build Entity's overall project management and general conditions costs, overhead and fee, are deemed to be included in the original Contract Price, and are not subject to adjustment, regardless of the actual amount of the EIRMM Allowance Item.

6.15 **[Intentionally left blank]**

6.16 Compensable Cost Escalation

6.15.1 After the award of this Design-Build Agreement, the Notice to Proceed (NTP) for construction is anticipated to be delayed for up to eight months. The Design-Build Entity will not be compensated for increases in pricing within that delay unless the Engineering News-Record (ENR) Construction Cost Index (CCI) exceeds 3.0% annual average for eight months. If the NTP for construction is not issued within eight months, then the Cost Plus with Guaranteed Not To Exceed Amount will be increased by the amount as documented by the Engineering News-Record Construction Cost Index. Any increase, if any at all,, in the amount of the Cost Plus with Guaranteed Not To Exceed Amount that would be adjusted because of the delayed issuance of the NTP is to be equal to the increase in the ENR CCI in excess of 3.0% annual average over the first eight months and equal to the increase in the ENR for any additional delay in the issuance of the NTP.

ARTICLE 7 – SCHEDULE

7.1 Contract Time.

The "Contract Time" – is the period from receipt by Design/Build Entity of written authorization to begin the Project in the form of a Notice to Proceed from the City, until the scheduled date of Final Completion of the Work. The Design/Build Entity agrees to design, construct and manage the Work in accordance with the Project Milestone Schedule and approved Baseline Schedule.

7.2 Completion.

By executing this Design/Build Agreement, the Design/Build Entity confirms that the Contract Time and Milestones, as stated in the Project Milestone Schedule (Exhibit A) of the Contract Documents, are of the essence of this Design/Build Agreement. The Design/Build Entity confirms that the Contract Time and Milestones allow a reasonable period of time for achieving the Temporary and Final Certificates of Occupancy and Certificate(s) of Final Completion of the Work for the Project.

7.3 Schedules.

7.3.1 The Design/Build Entity shall be responsible for the development and

maintenance of the Preliminary Baseline Schedule, the Baseline Schedule, the Progress Schedule and the Short-Term Schedule as described below. The Design/Build Entity shall submit, as indicated below, each schedule for the execution of the Work for the City's review and response. The City's review of and response to the schedule submissions shall not be construed as relieving the Design/Build Entity of its complete and exclusive control over the means, methods, sequences and techniques for executing the Work. Each schedule shall provide an interrelated means for defining activities involved in the planning, design, construction, and completion of the Project, their sequences and elapsed completion time from the date of the Notice to Proceed.

Each schedule shall utilize CPM (Critical Path Method) and shall be submitted in diagram and listed form. The computerized schedules shall permit the Design/Build Entity to obtain several print sorts that aid in identifying various activities and requirements. Of particular importance would be critical activities that require information or reviews by City, City agencies, or the Construction Manager. The Design/Build Entity shall utilize Primavera (P3) or Microsoft Project software (latest version).

The Design/Build Entity shall make its Authorized Schedule Representative available throughout the contract time and authorize that person to make scheduling commitments binding on the Design/Build Entity, as required to fulfill the scheduling requirements. The Design/Build Entity has submitted a preliminary schedule of the work (the "Proposal Schedule") in bar chart form with it's proposal, incorporating all critical path milestones identified by the City or known milestones and critical activities by the Design/Build Entity, as well as the date for contract completion.

Design/Build Entity's representation that it could comply with the contract milestones, as demonstrated by its Proposal Schedule was an element of consideration in the City's award of the contract. Design/Build Entity's Proposal Schedule, as submitted with its proposal and as modified during negotiations and accepted by the City, will be utilized as an interim contract schedule for all purposes until the Design/Build Entity's submittal of an acceptable Preliminary Baseline Schedule.

7.3.2 Design/Build Entity's Preliminary Baseline Schedule. Within 14 calendar days after the Notice to Proceed, the Design/Build Entity shall submit a Preliminary Baseline Schedule to the Construction Manager. This schedule shall show, but is not limited to, the general plan for the work to be completed in the first 90 calendar days after the Effective Date, as defined below. The Preliminary Baseline Schedule shall contain, but not be limited to:

.1 dates established in the City's Project Milestone Schedule;

.2 dates to acquire, set up and occupy a field office if required;

.3 dates of all mobilization activities on site, including notices and permits;

.4 dates detailing the planned design schedule, including submittals and reviews;

.5 anticipated dates for the start and completion of each stage of the design and construction process; and

.6 established milestone dates representing important events in the first 90 days and 'major milestones' representing the completion of a group of activities in the first year.

The Preliminary Baseline Schedule shall be in the form of a CPM schedule. Design/Build Entity will provide all data files electronically on compact disc. The City and Construction Manager will review the Design/Build Entity's Preliminary Baseline Schedule for conformance with the Milestone Schedule and interrelationships with other activities requiring coordination that may be outside the scope of this agreement. Upon completion of the review, the City may make recommendations to the Design/Build Entity as to adjustments to the Preliminary Baseline Schedule. These recommendations, if accepted by both the City and Design/Build Entity, will be incorporated into the development of the Design/Build Entity's Baseline Schedule.

7.3.3 Design/Build Baseline Schedule. Within 60 calendar days after the Notice to Proceed, the Design/Build Entity, after an initial meeting with the City, shall prepare a proposed Baseline Schedule for the Project. Recognizing that planning activities and design activities need time control to no less degree than construction activities, this schedule shall include, but not be limited to:

.1 A CPM format that incorporates all activities with descriptions, sequence, logic relationships, duration estimates, resource-loading, cost loading and other information required for all design, pre-construction and construction activities. Each activity shall have a minimum of one predecessor and one successor, with the exception of the first and last activities. The first activity will be denoted as "Notice To Proceed" and the last activity will be denoted as "Final Completion". Both activities shall be contract milestones.

.2 The CPM format shall include all Contract Milestones defined in this Agreement and/or by the Design/Build Entity's proposed preliminary schedule, as well as all engineering, fabrication and delivery dates required to support the milestones.

.3 Activities indicating the start and finish dates for project design, engineering, preparation of design development and construction documents, government agency plan check and City document review.

.4 Activities to be integrated and shown in the CPM network shall include all milestones representing the Design/Build Entity's submittal dates and activities representing the City's review period of each submittal (which review period shall in no case be scheduled for less than 10 working days); Design/Build Entity's procurement of materials and equipment; submittals; manufacture and/or fabrication, testing and delivery to the job-site of special material and major equipment; equipment installation and preliminary, final and performance testing of equipment or systems.

.5 Activities showing the start and finish dates for all temporary protection.

.6 Activities showing start and finish dates of owner-furnished items and interface requirement dates with other contractors; regulatory agency approvals; and permits required for the performance of the work.

.7 Activities showing start and finish of space planning (as appropriate), furniture, fixtures and equipment, moving activities, and occupancy.

.8 Close-out activities.

.9 The schedule shall consider all foreseeable factors or risks affecting, or which may affect the performance of the work, including historical and predicted weather conditions, applicable laws, regulations or collective bargaining agreements pertaining to labor, transportation, traffic, air quality, noise and any other applicable regulatory requirements.

.10 The Design/Build Entity shall not use any "float suppression" techniques such as preferential sequencing or logic, special lead/lag constraints or unjustifiably overestimating activity durations in preparing it schedule.

.11 The Design/Build Entity's Authorized Schedule Representative shall formally present the detailed time-scaled CPM network for the duration of the contract time, demonstrating compliance with contract milestones and other requirements to the City clearly showing the critical path(s) of the project (activities with 10 days of float or less) through completion.

.12 Time units for all schedules shall be in calendar days, and no construction activity scheduled to commence within sixty days of the Data Date shall have a duration greater than fifteen calendar days. Activities scheduled to start more than 60 days of the data date shall have durations no greater than thirty days.

7.3.4 The proposed Baseline Schedule shall be submitted and reviewed by the City's Construction Manager. Changes to the Baseline Schedule shall be reviewed with the City's Construction Manager prior to implementation. The City, at its sole discretion, may allow or require the Design/Build Entity to more fully detail portions of the Baseline Schedule at a later date.

The City's Construction Manager shall notify the Design/Build Entity of acceptance or of any necessary changes to the CPM network within 10 working days from the formal presentation, after which the Design/Build Entity shall make the required changes and resubmit it for acceptance within five working days certifying in writing that all information contained in it complies with the contract requirements. Upon notification by the City of acceptance of the CPM network, the Design/Build Entity shall prepare computer plots and printouts (8 1/2" x 11"), and complete its submission of the Baseline Schedule, which shall include:

.1 Bar Charts for Contract Milestones; Summary Level (sorted by craft/trade or project area); and Detail (sorted by Early Dates).

.2 Reports for: Float (sorted low to high).

.3 Provide all data files electronically on compact disc.

Once accepted by the City, this schedule shall become the Baseline Schedule for the Project from which all future Progress Schedules will be generated.

7.3.5 Design/Build Entity Progress Schedule. Each month, in conjunction with the application for payment process, the Design/Build Entity and City's Construction Manager will conduct monthly reviews to determine: "planned" versus "actual" progress to date; compliance with contract submittal requirements, contract milestones and accepted contract schedule; and determination of any changes to the work plan or implementation which must be made by the Design/Build Entity to comply with the contract schedule. The monthly schedule review shall include, at a minimum:

.1 Monthly update/status of electronic database shall include recording of all Actual Start Dates and Actual Finish Dates and status of activities in progress.

.2 Reviews of revisions added or deleted work and how those activities are being integrated into the Design/Build Entity's work plan.

.3 Review of all impacts to the work during the preceding month and to date, Design/Build Entity evaluation of those impacts and any recovery plans or remedial actions required to comply with the contract schedule.

Following the review of the above and all other information relevant to the progress of the work, the Design/Build Entity shall adjust its work plan as required to insure compliance with the contract schedule. The requirement for additional work force allocations, additional shifts, overtime, etc., will not entitle Design/Build Entity to additional compensation except to the extent expressly provided for by this Agreement or change order. The contract schedule shall be updated and submitted monthly for the City's Construction Manager's review concurrent with each payment application submitted by the Design/Build Entity. The schedule update shall incorporate actual status to date and shall include the following:

.1 Computer plotted time-scaled CPM network, in color;

.2 Bar Charts, generated separately using the format template provide by the City for:

(1) Contract Milestones only (Baseline vs. forecast);
(2) Summary Level (sorted by craft/trade or project area);
(3) Detail (sorted by Early Dates);

.3 Reports, generated separately using the format template provided by the City for Float (sorted low to high); and

.4 Provide all data files electronically by Compact Disc.

7.3.5 Design/Build Entity Short-Term Schedule. The Short-Term Schedule shall address activities over an eight-week period. This schedule shall be maintained on a weekly basis and used as a means of compensating for negative effects of as many variables as possible. It shall be directly derived and electronically tied to the Master Schedule to enable rapid impacts of short-term schedule changes on the overall project time line.

The Short-Term Schedule is a dynamic schedule whose activities can vary in both duration and precedence, but only between two sequential milestones as described in the accepted Baseline Schedule. Upon the City's acceptance of the Baseline Schedule, the Design/Build Entity shall begin providing an updated Short-Term Schedule for all participants at each regular progress meeting. The interval format shall be a seven-week projection that shall include one week prior, the week submitted, and six weeks thereafter.

7.3.7 Schedule Revisions. The implementation of revised schedule logic or activity duration estimates for updating the contract schedule or other interim schedule whether furnished by the Design/Build Entity or the City do not constitute an extension of contract time, relaxation of contract milestones or basis for a change to the contract sum. Such revisions are for the purpose of maintaining the accuracy of the contract schedule's representation of the work to be accomplished and to present best duration estimates for work yet to be performed. In updating the contract schedule, the Design/Build Entity shall make

no modifications to Activity ID numbers in the accepted contract schedule calculation rules/criteria, or the Activity Coding Structure provided by the City's Construction Manager without the explicit written permission of the City, which permission the City may withhold at its sole discretion.

7.3.8 City's Project Master Schedule. The purpose of the Master Schedule is to combine, coordinate, and track schedules produced by the Design/Build Entity and other Project team members throughout the course of the Project. The Master Schedule will also include milestone dates and the Design/Build Entity's Baseline Schedule, and shall be utilized by the City and the Design/Build Entity to identify any coordination issues and/or conflicts with other Project team members under separate contract. The Construction Manager shall be responsible for maintaining, updating and distributing the Master Schedule. The Master Milestone Schedule is shown in Exhibit A.

7.4 Float time.

All float time contained in the Work shall be shared between the City and Design/Build Entity. Under no circumstances shall Design/Build Entity be entitled to maintain a claim against the City for Design/Build Entity's failure to achieve Final Completion on a date earlier than that set forth on said Project Milestone Schedule as the same may be adjusted by approved Change Orders.

7.5 Compensable Event.

7.5.1 Notwithstanding anything in this Design/Build Agreement to the contrary, in the event of a "Compensable Event," as hereinafter defined, Design/Build Entity shall notify the City in writing within 14 days, setting forth all of the facts and circumstances relating to the Compensable Event, the expected financial impact on the Cost Plus with Guaranteed Not To Exceed Amount, and any delays to the Contract Time. In the event the City agrees it is a Compensable Event, the City shall have the option of either:

(a) adjusting the Contract Time by the delay occasioned by the Compensable Event, if any, and increasing the Cost Plus with Guaranteed Not To Exceed Amount by the financial impact of the Compensable Event, if any, or

(b) reducing the scope of the Project so the Cost Plus with Guaranteed Not To Exceed Amount and/or Contract Time will not be exceeded. Design/Build Entity shall cooperate with the City, and provide information at no additional cost to the City, at the City's request to identify appropriate program modifications to achieve the desired effect.

"Compensable Event" shall mean any one of the following:

.1 material acts or omissions of the City's agents or contractors

(other than Design/Build Entity, the Architect of Record and/or any of either or both of their members, subcontractors, employees, consultants or representatives), which are inconsistent with the terms of the Contract Documents and result in any delay or cost increase to the Project that results in an extension of the Contract Time;

.2 a change in any applicable laws, ordinances, rules, codes, regulation, and lawful orders of governmental authorities relating to the Project after the date of execution of this Agreement by the Design/Build Entity, which results in a delay or cost increase;

.3 Acts of God events, as defined in Article 1;

.4 labor disputes, strikes, lockouts, work slow-downs or work stoppages not resulting from Design/Build Entity's failure to comply with any applicable labor agreement or failure to timely order necessary materials or equipment.

7.6 Costs of Compensable Event.

The increased costs occasioned by a Compensable Event shall be limited solely to the direct costs of Design/Build Entity and shall not include any consequential damages or lost profits. To the extent a Compensable Event increases the time of performance of either the design or construction, an extension to the Contract Time shall be granted. Notwithstanding the forgoing, if the Compensable Event is of the type described by clauses .3 or .4, immediately above, Design/Build Entity shall not be entitled to recovery of any costs for the first 30 days of delay (in the aggregate), and shall be entitled to file a claim for recovery of costs thereafter, which claim shall be limited to general conditions overhead costs only.

7.7 Liquidated Damages.

The City and Design/Build Entity agree the City will suffer economic damage should the Design/Build Entity fail to complete the Project in the time required as shown in Exhibit A. The City has determined the estimated cost of such damages is _____ **Thousand Dollars ($_____)** per day, or portion thereof, of a delay in achieving Beneficial Occupancy and a total of _____ **Thousand Dollars ($_____)** per day, or portion thereof, of delay in achieving Final Completion for the Project, by the date indicated in the Milestone Schedule shown in Exhibit A. Design/Build Entity agrees that is a reasonable estimate of such costs.

The City and Design/Build Entity agree such amount shall be treated as Liquidated Damages pursuant to Government Code Section 53069.85, Civil Code Section 1671 and Public Contracts Code Section 10226, and Design/Build Entity shall accordingly pay the City the sum of ____ **Thousand Dollars ($_____)** per day, or portion thereof, of a delay in achieving Beneficial Occupancy and a total of ____ **Thousand Dollars ($_____)** for each day, or portion thereof, by which the Certificate of Final

Completion is delayed beyond the Contract Time set forth in the Project Milestone Schedule, whether the City's actual damages for such occupancy delays are more or less than the liquidated sum.

However, if the City has taken Beneficial Occupancy of any portion of the Project, the liquidated damages sum for the Certificate of Final Completion shall be reduced proportionately. For example, if the City takes 10% Beneficial Occupancy of the Project, then the amount of the Liquidated Damages shall be reduced by 10%. This paragraph shall not limit the City's right to seek and obtain additional legal remedies or damages that result from breaches of the Contract Documents by the Design/Build Entity which do not stem from delay in occupancy. Those additional damages include, but are not limited to, such things as breach of contract or breach of warranties either express or implied.

7.7.1 Design-Build Entity acknowledges and agrees the foregoing damages have been set based on an evaluation by City of damages that it will incur in the event of late completion. Design-Build Entity and City agree the amount of such damages is impossible to ascertain as of the date of execution hereof, and the parties have agreed to such Liquidated Damages to fix Design-Build Entity's costs and to avoid later disputes over which items are properly chargeable to Design-Build Entity. It is understood and agreed by Design-Build Entity that any Liquidated Damages payable pursuant to his Agreement are not a penalty and that such amounts are not manifestly unreasonable under the circumstances existing as of the date of execution of this Agreement.

7.7.2 It is further mutually agreed City shall have the right to deduct Liquidated Damages against progress payments or retainage and that the City will issue a unilateral deductive change order and will reduce the Contract Price accordingly. In the event the remaining unpaid Contract Price is insufficient to cover the full amount of Liquidated Damages, Design-Build Entity shall pay the difference to City.

ARTICLE 8 – CHANGES IN THE WORK

8.1 General.

8.1.1 The City may order changes, including but not limited to, revisions to the Construction Documents, performance of extra work, and the elimination of work. Orders for such changes will be in writing. Changes shall not affect the obligations of the sureties on the contract bonds nor require their consent. The Design/Build Entity shall notify the City for their evaluation whenever it appears a change is necessary. Contract Time and Cost Plus with Guaranteed Not To Exceed Amount will be adjusted by written Change Order for changes materially increasing or decreasing the time for performance or cost.

8.1.2 The Design/Build Entity, when ordered by the City, shall proceed with changes before agreement is reached on adjustment in compensation or time for performance, and shall furnish to the City

records as specified in this Agreement.

8.1.3 If the Design/Build Entity fails to provide such records, then the City's records will be used for the purpose of adjustment in Contract Time and Cost Plus with Guaranteed Not To Exceed Amount.

8.2 Change Order.

8.2.1 Methods used in determining the value of a Change Order shall be based on one of the following methods:

1. By mutual acceptance of a lump sum increase or decrease in costs. Upon the City's written request, the Design/Build Entity shall furnish a detailed estimate of increase or decrease in costs, together with cost breakdowns of labor, materials and equipment and other support data within the time specified in such request. Cost breakdowns shall include, but are not limited to: hourly labor rates and hours; materials quantities and unit costs; and equipment hourly rates and hours, as an example. The Design/Build Entity shall be responsible for any additional costs caused by the Design/Build Entity's failure to provide the estimate within the time specified.

2. By the City, on the basis of the City's estimate of increase or decrease in the costs.

3. By the City, whether or not negotiations are initiated as provided in this Agreement.

4. By actual and necessary costs, as determined by the City, on the basis of records. Beginning with the first day and at the end of each day, the Design/Build Entity shall furnish to the City detailed hourly records for labor, construction equipment, and services; and itemized records of materials and equipment used that day in performance of the changes. Such records shall be in a format approved by the City. Such records shall be signed by the Design/Build Entity and verified by the City.

5. By Unit Prices stated in the Contract Documents, or subsequently agreed upon.

6. By a manner agreed upon by the City and the Design/Build Entity.

8.2.2 Allowable Costs. If an increase or decrease cannot be agreed to as set forth in Clauses 8.2.1.1 through 8.2.1.6, above, then the method for determining the value of the Change Order shall be computed in the following manner:

1. Mark-Ups for Added Work.

.a For work performed by the Design/Build Entity in the amount equal to the direct cost (as defined herein) for the work plus the fee percentage of the direct costs for overhead and profit,

to be no higher than __ percent..

.b For work performed by Subcontractor in the amount equal to the direct cost (as defined herein) for the work plus the fee percentage of the direct costs for overhead and profit, to be no higher than __ percent.

.c For work performed by a Sub-subcontractor (any tier), in the amount equal to the direct cost (as defined herein) for the work plus the fee percentage of the direct costs for overhead and profit, to be no higher than __ percent .

.d For deleted work the cost savings to the Project shall be shared pursuant to section 6.13

8.2.3 Direct Costs:

.1 Labor

Cost for labor shall include any employer payments to or on behalf of the workmen for health, welfare, pension, vacation and similar purposes. Labor rates will not be recognized when in excess of those prevailing in the locality and time the work is being performed. The costs for all supervision including Project Manager, General Superintendents and Foremen will be included in the markups established by the Contract. The only exception to this will be working foremen who perform actual manual labor. No labor charges will be accepted for engineering or proposal preparation.

These costs will be included in the markups established by the Contract. A breakdown of the payroll rates for each trade will be provided for all Change Orders 15 days after Notice to Proceed including the base rate, benefits, payroll taxes and insurance. Overtime and premium time pricing will only be allowed for labor which, based on mutual agreement, shall be performed after normal working hours. Unless otherwise agreed to by both parties, mechanical and electrical changes will be negotiated using productivity factors no greater than those listed in the following manuals:

a. Electrical: NECA Column 1 (Normal), Current Edition.
b. Plumbing and Piping: MCAA Discounted 30%.
c. HVAC: National Mechanical Estimator by Ottaviano, Current Edition.

.2 Material

The City shall pay only the actual cost to the Design/Build Entity for the materials directly required for the performance of the changed work. Such cost of materials may include the cost of transportation and no delivery charges will be allowed unless the delivery is specifically for the changed work. If a trade discount by an actual supplier is available to the Design/Build Entity, it shall be credited to

the City. If the materials are obtained from a supplier or source owned wholly by or in part by the Design/Build Entity, payment thereof will not exceed the current wholesale price for the materials. The term "trade discount" includes the concept of cash discounting.

If in the opinion of the City, the cost of the materials is excessive or if the Design/Build Entity fails to furnish satisfactory evidence of a cost to him other from the actual supplier, then, in either case, the cost of the materials shall be deemed to be the lowest current wholesale price at which similar materials are available in the quantities required. The City reserves the right to furnish such materials, as it deems advisable and the Design/Build Entity shall have no claims for cost or profits on materials furnished by the City.

3. Construction Equipment

The City shall pay only the actual cost to the Design/Build Entity for the use of equipment directly required in the performance of the changed work. In computing the hourly rental of equipment, any time less than 30 minutes shall be considered one-half hour. No payment will be made for time while equipment is inoperative due to breakdown or for non-workdays. In addition, the rental time shall not include the time required to move the equipment to the work for rental of such equipment and to return it to the source.

No mobilization or demobilization will be allowed for equipment already on site. If such equipment is not moved by its own power, then loading and transportation costs will be paid in lieu of rental time thereof. However, neither moving time nor loading and transportation costs will be paid if the equipment is used on the Project in any other way than upon the changed work. Individual pieces of equipment having a replacement value of $1,000 or less shall be considered to be small tools or small equipment and no payment will be made therefore.

The rental rate for equipment will not exceed that as recommended by the lower of the rental rates established by distributors or equipment rental agencies or as contained in the Association of Equipment Distributors (AED) book in the locality for performance of the changes. For equipment owned, furnished, or rented by the Design/Build Entity no cost thereof shall be recognized in excess of the rental rates established by distributors or equipment rental agencies and/or the AED or any tier book in the locality for performance of the changes. The amount to be paid to the Design/Build Entity for the use of equipment as set forth above shall constitute full compensation to the Design/Build Entity for the cost of fuel, power, oil, lubricants, supplies, small tools, small equipment, necessary attachments, repairs and maintenance of any kind, depreciation, storage, insurance, labor (except for equipment operators) and any and all costs to the Design/Build Entity incidental to the use of the equipment.

8.3 Acceptance of Change Orders.

The Design/Build Entity's written acceptance of a Change Order shall constitute final and binding agreement to the provisions of it and a waiver of all claims in connection with it, whether direct, indirect, or consequential in nature.

8.4 Effect on Sureties.

All alterations, extensions of time, extra and additional work, and other changes authorized by the Contract Documents may be made without securing consent of surety(s).

8.5 Covering and Uncovering of Work.

8.5.1 When inspections are required by the Contract Documents the Design/Build Entity shall notify the City two working days prior to covering any work.

8.5.2 If a portion of the Work is covered prior to the City's review, it shall, if requested in writing by the City, be uncovered for the City's observation and replaced at the Design/Build Entity's expense without change in the Contract Time.

8.6 Correction of Work.

8.6.1 The Design/Build Entity shall promptly correct work rejected by the City or failing to conform to the requirements of the Contract Documents, whether or not fabricated, installed, or completed. The Design/Build Entity shall bear the costs of correcting such rejected work, including additional testing and inspections required and compensation for the City's services and expenses made necessary thereby.

8.6.2 Notwithstanding Paragraph 3.18, Guarantee, in the event of an emergency constituting an immediate hazard to the health or safety of City employees, property, or licensees, the City may undertake, at the Design/Build Entity's expense and without prior notice, all work necessary to correct such hazardous condition(s) when it was caused by work of the Design/Build Entity not being in accordance with requirements of the Contract Documents.

8.6.3 The Design/Build Entity shall remove from the Project site portions of the Work that are not in accordance with the requirements of the Contract Documents, and are neither corrected by the Design/Build Entity nor accepted by the City.

8.6.4 If the Design/Build Entity fails to correct nonconforming work, as per Paragraph 3.18, Guarantee, the City may correct the nonconforming work in accordance with Paragraph 9.3, The City Remedies. If the Design/Build Entity does not proceed with correction of such nonconforming work, within such time fixed by written notice from the City, the City may remove and store the salvable materials articles

and/or equipment at the Design/Build Entity's expense.

If the Design/Build Entity does not pay all costs of such removal and storage within 14 days after written notice, the City may, upon 14-additional–days' written notice, sell such materials articles and/or equipment at an auction or private sale, and shall account for the proceeds, after deducting costs and damages that would have been borne by the Design/Build Entity, including compensation for the City's services and expenses made necessary by it. If the proceeds of a sale do not cover all costs that the Design/Build Entity would have borne, the Cost Plus with Guaranteed Not To Exceed Amount shall be reduced by the deficiency. If payments then or thereafter due the Design/Build Entity are not sufficient to cover such amount, the Design/Build Entity shall pay the difference to the City.

8.6.5 The Design/Build Entity shall bear the cost of correcting destroyed or damaged work executed by the City or separate contractors, whether fully completed or partially completed, which is caused by the Design/Build Entity's correction or removal of Work that is not in accordance with requirements of the Contract Documents.

8.6.6 Nothing contained in this Paragraph 8.6, Correction of Work, shall be construed to establish a period of limitation with respect to other obligations that the Design/Build Entity might have in the Contract Documents. Establishment of the time period of one year, as described in Paragraph 3.18, Guarantee, relates only to the specific obligation of the Design/Build Entity to correct the Work, and has no relationship to the time within which the obligation to comply with requirements of the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Design/Build Entity's liability with respect to the Design/Build Entity's obligations other than specifically to correct the Work.

8.7 Acceptance of Nonconforming Work.
If the City prefers to accept any or all of the Work that is not in accordance with requirements of the Contract Documents, the City may do so instead of requiring its correction and/or removal, in which case the Cost Plus with Guaranteed Not To Exceed Amount will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not Final Payment to the Design/Build Entity has been made.

ARTICLE 9 – EVENTS OF DEFAULT AND TERMINATION

9.1 City Events of Default.

9.1.1 The following shall be considered the City Events of Default:

.1 If the Work is stopped for a period of 180 consecutive days through no fault of the Design/Build Entity for any of the following reasons:

a. The issuance of an order of a court or other public authority having jurisdiction;
b. An act of government, such as a declaration of national emergency, making material unavailable;
c. Non-payment by the City for approved design and approved work–inplace after 60 days of a properly submitted and approved invoice.

9.2 Design/Build Entity Events of Default.

9.2.1 The following shall be considered Design/Build Entity Events of Default:

.1 If Design/Build Entity fails or neglects to carry out the Work in accordance with the provisions of the Contract Documents and fails, after seven-days' written notice from the City, to commence a cure to correct such failure or neglect and/or thereafter diligently pursue such cure to completion; or

.2 If Design/Build Entity materially breaches this Agreement after written notice from the City and fails, after seven-days' notice from the City, to commence a cure to correct such breach and/or diligently pursue such cure to completion; or

.3 If a custodian, trustee or receiver is appointed for Design/Build Entity, or if Design/Build Entity becomes insolvent or bankrupt, is generally not paying its debts as they become due, or makes an assignment for the benefit of creditors, or if Design/Build Entity causes or suffers an order for relief to be entered with respect to it under applicable Federal bankruptcy law or applies for or consents to the appointment of a custodian, trustee or receiver for Design/Build Entity, or bankruptcy, reorganization, arrangement or insolvency proceedings, or other proceedings for relief under any bankruptcy or similar law or laws for the relief of debtors, are instituted by or against the Design/Build Entity, and in any of the foregoing cases such action is not discharged or terminated within 60 days of its institution; or

.4 If the Design/Build Entity changes its corporate identity in a manner different from that described in this Agreement due to merger, takeover, offer, sale or exchange of interest therein, dissolution, whether by operation of law or otherwise, and the change in interest is not approved in advance in writing by the City. In the event such a change does not have the effect or diminishing or impairing the Design/Build Entity's ability to perform the Work or its financial capabilities, such approval shall not be unreasonably withheld. The City shall have at least 30-days' notice of such a change.

9.3 City Remedies.

9.3.1 Without prejudice to any other rights or remedies of the City, the following remedies shall be available to the City in the case of a Design/Build Entity event of default:

.1 The City shall have the right to terminate this Agreement upon an additional seven-days' written notice to Design/Build Entity; provided that Design/Build Entity has not commenced a cure within such seven- day period.

.2 The City may take possession of the Project site and of all materials, equipment, tools and construction equipment on site owned by Design/Build Entity.

.3 The City may accept assignment of the construction subcontract and/or design subcontract.

.4 The City may finish the Work by whatever reasonable method the City may deem expedient.

.5 The City may seek such remedies as may be available under existing law.

9.4 Termination.

When the City terminates this Design/Build Agreement as provided above, Design/Build Entity shall not be entitled to receive further payment until the Work is finished. If the unpaid balance of the Cost Plus with Guaranteed Not To Exceed Amount exceeds costs incurred by the City in finishing the Work, then such excess shall be paid to Design/Build Entity. However, if such costs exceed the unpaid balance of the Cost Plus with Guaranteed Not To Exceed Amount, then Design/Build Entity shall pay the difference to the City.

9.5 Design/Build Entity Remedies.

The following remedy shall be available to Design/Build Entity in the case of the City event of default: Design/Build Entity may, upon seven-days' additional written notice to the City, terminate this Agreement and recover from the City payment for Work performed and for proven loss with respect to materials, equipment tools, construction equipment and services rendered, including reasonable overhead and profit.

9.6 Multiple Remedies.

Except as otherwise provided in this Design/Build Agreement, no remedy under the terms of this Design/Build Agreement is intended to be exclusive of any other remedy, but each and every such remedy shall be cumulative and shall be in addition to any other remedies, existing now or hereafter, at law, in equity or by statute. No delay or omission to exercise any right or power accruing shall impair any such right or power nor
shall it be construed to be a waiver of any event of default or acquiescence to it, and every such right and power may be exercised from time to time as often may be deemed expedient.

9.7 Termination for Convenience.

The City may terminate this Design/Build Agreement at any time for

convenience if the City determines such termination is in the best interests of the City upon 60-days' advance written notice. In the event the City terminates this Agreement for convenience and subsequently rebids or otherwise completes the Project, then Design/Build Entity shall be entitled to recover lost profits in addition to other costs recoverable under this Agreement, so long as it shall provide a title insurance policy in an amount acceptable to the City together with such endorsements as may be requested by the City.

Such Title Insurance policies and endorsements shall be at the sole cost and expense of the Design/Build Entity and shall insure the Project is free of all liens and encumbrances. Any liens or charges encumbering the Project, or which are claimed to encumber the Project, other than those placed by or agreed upon by the City, shall be offset against whatever amount is determined to be owed to the Design/Build Entity.

9.8 Termination Payment.

In the event the City terminates this Design/Build Agreement for convenience as set forth above, the City shall pay to the Design/Build Entity all funds due the Design/Build Entity for work satisfactorily performed up to the date of termination, plus all demobilization and close-out costs, including, but not limited to, any penalties payable to subcontractors for early termination, plus reasonable overhead and profit. All funds due pursuant to this Section, including unpaid retainage, shall be released within 30 days after termination of the Design/Build Agreement for convenience, subject to the provisions of Paragraph 9.7, Termination for Convenience.

9.9 Property Rights.

In the event of termination, all studies, reports, special forms, schedules, designs and any other written information pertaining to the Project shall become the City's property as provided in this Agreement.

9.10 Suspension of Work.

9.10.1 City may order Design/Build Entity, in writing, to suspend, delay, or interrupt all or any part of the Work for the period of time that the City determines appropriate for the convenience of the City.

9.10.2 If the performance of all or any part of the Work is for any period of time, suspended, delayed, or interrupted (a) by an act of the City in the administration of the Design/Build Agreement, or (b) by the City's failure to act within the time specified in the Design/Build Agreement (or within a reasonable time if not specified), or (c) for other reasons which Design/Build Entity is entitled to claim delay under the Agreement, Design/Build Entity shall provide notice according to the Agreement.

9.10.3 Design/Build Entity shall be entitled to an increase in the Cost Plus with Guaranteed Not To Exceed Amount and the Contract Time to the extent the cost of performance of the Design/Build Agreement or

the time therefore is increased as a result of suspension, delay, or interruption by the City or as otherwise provided in the Contract Documents. However, no adjustments shall be made under this Article for any suspension, delay, or interruption to the extent that Design/Build Entity's performance would have been so suspended, delayed, or interrupted by any other cause for which Design/Build Entity would not be entitled to an increase in the Cost Plus with Guaranteed Not To Exceed Amount or in the Contract Time.

9.11 Non-Compliance with Design/Build Agreement Requirements

In the event the Design/Build Entity, after receiving written notice from the City of non-compliance with any requirement of the Design/Build Agreement, fails to initiate promptly such action as may be appropriate to comply with the specified requirement within a reasonable period of time, the City shall have the right to order Design/Build Entity to stop all Work in the area affected until Design/Build Entity has complied with or has initiated such action as may be appropriate to comply within a reasonable period of time. Design/Build Entity will not be entitled to any extension of Contract Time or Stipulated Sum for any costs incurred as a result of being ordered to stop Work for such cause.

ARTICLE 10 – DISPUTES AND CLAIMS

10.1 Dispute and Claim Procedures.

10.1.1 When the Design/Build Entity and the City fail to agree whether or not any work is within the scope of Contract Documents, the Design/Build Entity shall immediately perform such work upon receipt of a written notice to do so by the City. Within 14 days after receipt of such notice, the Design/Build Entity may submit a written protest to the City, specifying in detail in what particular Contract Documents were exceeded, and approximate change in cost resulting so that the City will have notice of a potential claim.

Failure to submit a protest within the specified period shall constitute a waiver of any and all rights to an adjustment in Cost Plus with Guaranteed Not To Exceed Amount and Contract Time due to such work, and the Design/Build Entity thereafter shall not be entitled to adjustment of the Cost Plus with Guaranteed Not To Exceed Amount or Contract Time. For any such work that is found to exceed Contract Documents, there shall be an adjustment in Cost Plus with Guaranteed Not To Exceed Amount and Contract Time on same basis as any other change in the Work.

.1 The Design/Build Entity shall provide supporting data and shall provide and maintain records of costs attributable to disputes in similar manner as for Change Orders in Article 8, Changes in the Work.

.2 The City and the Design/Build Entity will make every reasonable effort to resolve the dispute prior to proceeding to the next step.

.3 Either the City or the Design/Build Entity may call a special meeting for the purpose of resolving the dispute. Such a meeting will be held within seven days after written request of it.

.4 If the dispute as to the Contract Documents has not been resolved, the

Design/Build Entity shall, within 14 days after the special meeting, take one or more of the following actions:

.a submit additional supporting data requested by the City;

.b modify the initial dispute;

.c notify the City that the initial dispute stands as is; or

.d withdraw the dispute. Once withdrawn, the dispute cannot be reopened by the Design/Build Entity.

.5 If the dispute has not been resolved within seven days after the Design/Build Entity's action in response to Clause 10.1.1.4, another meeting may be scheduled, at the City's option, with senior management personnel of the City and the Design/Build Entity. The purpose of this meeting is to resolve the dispute prior to proceeding to the action under Subparagraph 10.1.2, Dispute and Claim Procedures.

.6 Any dispute not resolved by the above meetings shall be settled by mediation conducted by a third-party neutral from Judicial Arbitration and Mediation Services ("JAMS") jointly appointed by the parties. Said mediation shall occur in San Luis Obispo County, with the costs split between all parties participating in the mediation.

10.1.2 If a dispute has not been resolved at the time of the City's proposed Final Payment, then the Design/Build Entity shall submit within 30 days a claim along with detailed documentation required by Subparagraph 10.1.1, Dispute and Claim Procedures, for the City's consideration. The City will render a written decision to the Design/Build Entity relative to the claim. The City's written decision shall be final and binding on the party(ies). The City may withhold from the Final Payment an amount not to exceed 150% of the disputed amount. If there appears to be a possibility of a Design/Build Entity's default, then the City may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

Any claim not resolved by the foregoing section will be subject to resolution pursuant to procedures set forth in Public Contract Code Section 20104, regardless of whether such claims exceed $375,000. Said procedures are incorporated as though fully set forth in this Agreement.

10.1.3 Maintenance of Existence. Design/Build Entity covenants that it

will remain in existence during the term of the Design/Build Agreement and for a period of time five years after Final Completion of the Project (the "Corporate Maintenance Period"). The purpose for which Design/Build Entity shall remain in existence during the Corporate Maintenance Period is to assure the City that Design/Build Entity will be able, during the Corporate Maintenance Period, to address and/or pay claims by the City against the Design/Build Entity if the City deems the Design/Build Entity to be insufficiently capitalized to be able, on its own to carry out its obligations hereunder (financial or otherwise). In the event a guarantee of the Design/Build Entity is required by the City, from the date of this Design/Build Agreement and during the remainder of the Corporate Maintenance Period, then the guarantee shall be in the form of Exhibit C, Design/Build Entity's Guarantee, attached hereto.

10.2 Public Contracts Code section 9204

10.2.1 Notwithstanding the foregoing, attention is directed to the summary of Section 9204 of the Public Contract Code (PCC) regarding the claims resolution process for all public works projects. Any dispute or claim against the City under a public works project shall be processed in accordance with PCC section 9204 and any other applicable law. Any of the foregoing that is inconsistent with PCC section 9204 or applicable law shall not apply..

SUMMARY OF PCC SECTION 9204

Any dispute or claim regarding the project shall be resolved in accordance with PCC section 9204, which is summarized herein, and other applicable law. "Claim" means a separate demand by a contractor sent by registered mail or certified mail with return receipt requested, for one or more of the following: (i) a time extension, including, without limitation, for relief from damages or penalties for delay assessed by the City under a contract for a public works project; (ii) payment by the City of money or damages arising from work done by, or on behalf of, the Design/Build Entity pursuant to the contract for a public works project and payment for which is not otherwise expressly provided or to which the claimant is not otherwise entitled; or (iii) payment of an amount that is disputed by the City.

Upon receipt of a claim, the City shall conduct a reasonable review of the claim and, within a period not to exceed 45 days, shall provide the claimant a written statement identifying what portion of the claim is disputed and what portion is undisputed. Upon receipt of a claim, the City and the Design/Build Entity may,

by mutual agreement, extend the time period provided in Section 9204. The claimant shall furnish reasonable documentation to support the claim. If the City needs approval from the City Council to provide the claimant a written statement identifying the disputed portion and the undisputed portion of the claim, and the City Council does not meet within the 45 days or within the mutually agreed to extension of time following receipt of a claim sent by registered mail or certified mail, return receipt requested, then the City shall have up to three days following the next duly publicly noticed meeting of the City Council after the 45-day period, or extension, expires to provide the claimant a written statement identifying the disputed portion and the undisputed portion. Any payment due on an undisputed portion of the claim shall be processed and made within 60 days after the City issues its written statement.

If the claimant disputes the City's written response, or if the City fails to respond to a claim issued pursuant to PCC section 9204 within the time prescribed, then the claimant may demand in writing an informal conference to meet and confer for settlement of the issues in dispute. Upon receipt of a demand in writing sent by registered mail or certified mail, return receipt requested, the City shall schedule a meet and confer conference within 30 days for settlement of the dispute.

Within 10 business days following the conclusion of the meet and confer conference, if the claim or any portion of the claim remains in dispute, then the City shall provide the claimant a written statement identifying the portion of the claim that remains in dispute and the portion that is undisputed. Any payment due on an undisputed portion of the claim shall be processed and made within 60 days after the City issues its written statement.

Any disputed portion of the claim, as identified by the Design/Build Entity in writing, shall be submitted to nonbinding mediation, with the City and the claimant sharing the associated costs equally. The City and claimant shall mutually agree to a mediator within 10 business days after the disputed portion

of the claim has been identified in writing. If the parties cannot agree upon a mediator, then each party shall select a mediator and those mediators shall select a qualified neutral third party to mediate with regard to the disputed portion of the claim. Each party shall bear the fees and costs charged by its respective mediator in connection with the selection of the neutral mediator. If mediation is unsuccessful, then the parts of the claim remaining in dispute shall be subject to applicable law. Mediation includes any nonbinding process, including, but not limited to, neutral evaluation or a dispute review board, in which an independent third party or board assists the parties in dispute resolution through negotiation or by issuance of an evaluation. Any mediation utilized shall conform to the timeframes in Section 9204 of the Public Contract Code. Unless otherwise agreed to by the City and the Design/Build Entity in writing, the mediation conducted pursuant to PCC section 9204 shall excuse any further obligation under PCC section 20104.4 to mediate after litigation has been commenced.

PCC section 9204 does not preclude the City from requiring arbitration of disputes under private arbitration or the Public Works Contract Arbitration Program, if mediation under PCC section 9204 does not resolve the parties' dispute.

Failure by the City to respond to a claim from the Design/Build Entity within the time periods described herein or to otherwise meet the time requirements of PCC section 9204 shall result in the claim being deemed rejected in its entirety. A claim that is denied by reason of the City's failure to have responded to a claim, or its failure to otherwise meet the time requirements of PCC section 9204, shall not constitute an adverse finding with regard to the merits of the claim or the responsibility or qualifications of the claimant.

Amounts not paid in a timely manner as required by PCC section 9204 shall bear interest at seven percent per annum.

If a subcontractor or a lower tier subcontractor lacks legal standing to assert a claim against the City because privity of contract does not exist, then the

Design/Build Entity may present to the City a claim on behalf of a subcontractor or lower tier subcontractor. A subcontractor may request in writing, either on his or her own behalf or on behalf of a lower tier subcontractor, the Design/Build Entity present a claim for work which was performed by the subcontractor or by a lower tier subcontractor on behalf of the subcontractor. The subcontractor requesting the claim be presented to the City shall furnish reasonable documentation to support the claim. Within 45 days of receipt of that written request, the Design/Build Entity shall notify the subcontractor in writing as to whether the Design/Build Entity presented the claim to the City and, if the original contractor did not present the claim, provide the subcontractor with a statement of the reasons for not having done so.

A waiver of the rights granted by PCC section 9204 is void and contrary to public policy; provided, however, that (1) upon receipt of a claim, the parties may mutually agree to waive, in writing, mediation and proceed directly to the commencement of a civil action or binding arbitration, as applicable; and (2) the City may prescribe reasonable change order, claim, and dispute resolution procedures and requirements in addition to the provisions of PCC section 9204, so long as the contractual provisions do not conflict with or otherwise impair the timeframes and procedures set forth in PCC section 9204.

ARTICLE 11 – PROTECTION OF PERSONS AND PROPERTY

11.1 Safety of Persons and Property.

11.1.1 The Design/Build Entity shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Work. The City shall have no responsibility for initiating, maintaining and supervising safety of persons and property.

11.1.2 The Design/Build Entity shall take precautions for safety and provide protection to prevent damage, injury or loss to:

.1 Employees working under the Agreement and other persons who may be affected by it;

.2 The Work and materials and equipment to be incorporated in it, whether in storage on or off the Project site, under care, custody or control of the Design/Build Entity or the

Design/Build Entity's subcontractors or sub-subcontractors; and

.3 Other property at the Project site, or adjacent to it, such as trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement during the course of construction.

11.1.3 The Design/Build Entity shall comply with all applicable laws, ordinances, rules, regulations and lawful orders of public authorities bearing on the safety of persons or property, or their protection from damage, injury or loss.

11.1.4 The Design/Build Entity shall erect and maintain, as required by existing conditions and performance of the Contract Documents, safeguards for safety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations and notifying the City, other owners (other than the City) and users of adjacent sites and utilities.

11.1.5 The Design/Build Entity shall comply with all applicable laws, ordinances, rules, regulations and lawful orders of public authorities regarding the storage and/or use of explosives or other hazardous materials or equipment necessary for execution of Work. The Design/Build Entity shall employ properly qualified personnel for supervision of same.

11.1.6 The Design/Build Entity shall remedy damage and loss to property referred to in Clauses 11.1.2.2 and 11.1.2.3 caused in whole or in part by the Design/Build Entity, a subcontractor, a sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Design/Build Entity is responsible under Clauses 11.1.2.2 and 11.1.2.3. The foregoing obligations of the Design/Build Entity are in addition to the Design/Build Entity's obligations under Paragraph 12.3, Indemnification.

11.1.7 The Design/Build Entity shall not permit any part of the Work or Project site to be loaded so as to endanger its safety.

11.1.8 When conditions of the Work, in the judgment of the City, present unreasonable risk of injury or death to persons or property damage, the City, may direct the Design/Build Entity, at the Design/Build Entity's sole expense, to close down the Work and not commence work again until all dangerous conditions are eliminated.

11.1.9 The Design/Build Entity, at the Design/Build Entity's own cost, shall rebuild, repair, restore and make good any and all damages to any portion of the Work affected by such causes before its acceptance.

11.2 Emergencies.

In an emergency affecting safety of persons or property, the Design/Build

Entity shall act, at the Design/Build Entity's sole discretion, to prevent any threatened damage, injury or loss. Additional compensation or extension of Contract Time claimed by the Design/Build Entity because of an emergency will be reviewed as provided in Article 8, Changes in the Work.

ARTICLE 12 – INSURANCE, BONDS, AND INDEMNIFICATION

12.1 Insurance.

12.1.1 Design/Build Entity shall not commence work under this Contract until all insurance has been obtained that is required under this section and such insurance has been verified by the City, nor shall Design/Build Entity allow any Subcontractor to commence work on its Contract until all similar insurance required of the Subcontractor has been so obtained and approved. Design/Build Entity shall furnish the City with three copies of each required certificate of insurance, as provided below. Design/Build Entity shall have the following insurance coverage:

a. Workers' Compensation Insurance and Employer's Liability Insurance.

Design/Build Entity shall maintain during the life of the Contract Workers' Compensation Insurance and Employer's Liability Insurance for all of its employees employed on the project as described herein. Said insurance shall comply with the following:

i. Workers' Compensation Insurance in compliance with the laws of the State of California and any applicable federal statutes.

ii. Employers liability insurance of not less than One Million Dollars ($1,000,000) each accident and One Million Dollars ($1,000,000) each employee.

In signing the Contract, Design/Build Entity shall make the following certification, required by Section 1861 of the Labor Law: "I am aware of the provisions of Section 3700 of the Labor Code which require every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that code, and I will comply with such provisions before commencing the performance of the work of this contract."

b. Automobile and General Liability. Design/Build Entity shall have throughout the term of this contract policies of liability insurance covering automobile and general liability as follows:

i. Owned/non-owned and hired automobile liability insurance with primary limits for bodily injury and property damage liability of not less that One Million Dollars ($1,000,000) per accident. Umbrella and/or excess liability limits of not less than Two Million Dollars ($2,000,000) per accident.

ii. Commercial general liability and/or umbrella excess liability insurance providing coverage on an occurrence basis and with limits of not less than Five Million Dollars ($5,000,000) each occurrence and annual aggregate for bodily injury and property damage liability combined including:

1) Premises and operations liability coverage;

2) Owner's and contractor's protective liability coverage;

3) Broad form property damage liability coverage including completed operations;

4) Blanket contractual liability coverage;

5) Deletion of any limitations relating to liability arising out of explosion, collapse or underground hazards;

6) Personal and advertising injury liability coverage;

7) For excavation and foundations, deletion of any limitation on coverage for bodily injury or property damage arising out of subsidence of soil or earth movement; and

8) For demolition and/or hazardous materials removal, deletion of any limitation regarding asbestos and/or lead risk exposure.

9) An endorsement specifying that policy aggregate limits apply separately to the project covered by this contract;

10) Errors & Omissions

11) Products and Completed Operations including five year extension endorsement

12) Occurrence Definition to include "Assault and battery committed by, at the direction of or on behalf of any insured for the purpose of protecting the person or property of any insured or of others shall be deemed to be an occurrence."

13) Extended Personal Injury definition to include alienation of affections, discrimination, or humiliation.

14) Bodily Injury Definition to include mental anguish, shock, mental injury, humiliation, sickness, or disease sustained by a person, including death

resulting from any of these at any time.

15) Exclusion Property Damage to the Insured's Work to read: "Property damage" to that particular part of "your work" that is defective or actively malfunctions. This exclusion applies only to the "products-completed operation" hazard. It does not apply if the damaged work or the work out of which the damage arises was performed on Design/Build Entity's behalf by a subcontractor.

16) Contractual Liability – Municipal Work: The phrase "any other contract or agreement pertaining to your business," as included in the definition of an insured contract, includes an indemnification of a municipality required by ordinance and in connection with work performed for the municipality.

17) Professional Liability Insurance. Upon execution of this contract, Design/Build Entity shall obtain professional liability insurance with limits of at least Five Million Dollars ($5,000,000) per claim and aggregate which shall cover claims resulting from professional errors and omissions of Design/Build Entity and any of its consultants in connection with the work provided such claims arise during the period commencing upon the preparation of the construction documents and ending five years following Final completion. Such insurance shall be in form reasonably acceptable to the City's Risk Manager.

18) Builders' Risk Insurance/Installation Floater. Design/Build Entity shall have until contract completion "all risk" builders' risk property insurance, jointly in the names of the City and the Design/Build Entity, payable as their respective interest may appear, such insurance all times to be of sufficient amount to cover fully all loss or damage to the work under this Contract, at 100% replacement cost. Design/Build Entity's responsibility for earthquake coverage shall be in accordance with Public Contract Code Section 7105. Such insurance shall be in a form acceptable to the City's Risk Manager and shall include coverage for machinery during testing.

19) Subcontractor Insurance. Design/Build Entity shall cause all subcontractors engaged to perform work required of Design/Build Entity pursuant to this Contract to have Workers' Compensation, Commercial General Liability/Umbrella and/or Excess Liability, and Automobile Insurance in a form and amount deemed appropriate by the Design/Build Entity for work performed under this Contract.

20) **DESIGN/BUILD ENTITY POLLUTION LEGAL LIABILITY** (CPL) (and/or other applicable policies as determined by the City's Risk Manager or his/her designee, e.g. Asbestos Legal Liability) *unless waived in writing by the CITY'S Risk Manager or his/her designee* shall be written on either an occurrence form, or a claims-made form, and is required for all environmental and water remediation work and for all work transporting fuel. CPL is also required for demolition, renovation, HVAC, plumbing and electrical work (including, without limitation, lighting) on any structure built prior to the year 1990 with limits of liability of not less than the following:

(i) $1,000,000 per occurrence or claim; and,
(ii) $2,000,000 general aggregate per annual policy period.

In the event this Agreement involves any lead based, mold or asbestos environmental hazard, either the CAL policy or other appropriate insurance policy shall be endorsed to include *Transportation Pollution Liability insurance* covering materials to be transported by the Design/Build Entity pursuant to the Agreement.

12.2 Indemnification.

12.2.1 The Design/Build Entity will indemnify, defend and hold harmless the City and its respective officers, elective and appointive Board, employees and consultants (including the Project Manager and Architect of Record) against all loss, expense (including, but not limited to, attorneys' fees and court costs), damage, injury, liability, causes of action or claims of any kind or character (collectively "claims" and individually a "claim"), provided that such claim or claims is/are attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself for claims not covered by insurance which is required under this Agreement) including loss of use resulting there from (except loss of use attributable to a claim otherwise insured as provided under this Agreement), in any way arising out of this Agreement or the Work, including but not limited to the acts or omissions of the Design/Build Entity, its partners, officers, directors, employees, agents, licensees, invitees, consultants, vendors, or subcontractors of any tier (collectively the "Design/Build Entity"). Such indemnification shall include, but not be limited to any claim arising from or caused by:

(i) any defect in the construction documents, or the design or construction of or materials used in the Work or in any machine, equipment, appliance, or other item of personal property installed or located therein;

(ii) any defect in the preparation of soils or in the design and accomplishment of grading;

(iii) any violation or alleged violation by any member of the Design/Build Entity of any law existing as of the date of this Agreement or hereafter enacted (provided that with respect to laws enacted after the date of the Design/Build Agreement, the Design/Build Entity may be entitled to an adjustment in the Contract Sum and/or Contract Time as provided in the Design/Build Agreement);

(iv) any negligent acts or omissions or other tortious conduct of the Design/Build Entity or any member of the Design/Build Entity;

(v) any accident on the job site or other casualty thereon;

(vi) any other cause whatsoever in connection with the Design/Build Entity's use of or activities on the job site or the Design/Build Entity's performance under this Agreement; and/or

(vii) the inaccuracy or incorrectness of any representation or warranty of the Design/Build Entity to the City under this Agreement. Notwithstanding the foregoing, the obligations of the Design/Build Entity in this paragraph are intended to apply only to third party claims arising out of the Agreement or the Work, and not to property damage to the City, which damage is treated elsewhere in this Agreement.

.1 Subject to Paragraph 3.20, the Design/Build Entity will indemnify, defend and hold harmless the City and its respective officers, elective and appointive Board, employees and consultants (including the Project Manager and Architect of Record) from all claims by reason of, or in the course of the performance of, said Work, by reason of any infringement or alleged infringement of the patent rights, copyrights, and/or trademarks of any person or persons, firm, or corporation in consequence of the use in, on or about said Work, of any article or material supplied or installed under this Agreement (except to the extent such article or material was directed to be supplied or installed by the City).

Neither the City and its respective officers, elective and appointive Board, employees and consultants (including the Project Manager and Architect of Record) shall be liable for any loss or damage that may happen to the Work, or any part of it; nor to any of the materials or other items used or employed in performing the Work; nor for injury to any person or persons, either workers or the public, for damage to property from any cause which might have been prevented by the Design/Build Entity, or the Design/Build Entity's employees or agents, against all of which injuries or damages the

Design/Build Entity must properly guard.

The Design/Build Entity shall indemnify, defend and hold harmless the City and its respective officers, elective and appointive Board, employees and consultants (including the Project Manager and Architect of Record), from all suits, actions or claims brought for, or on account of injuries or damages received or sustained by any person or persons, by or from the Design/Build Entity, the Design/Build Entity's employees or agents, in construction of the Work, or by or in consequence of the Design/Build Entity's failure to properly guard the same, or by or as a result of any act or omission of the Design/Build Entity, the Design/Build Entity's employees or agents.

In addition to any remedy authorized by law, moneys due the Design/Build Entity under the Design/Build Agreement, as considered necessary by the City, may be retained until disposition has been made of such suits, actions, or claims for damages; however, this provision shall not be construed as precluding the City from enforcing any right of offset the City may have to any such moneys. These obligations shall apply to any claim or action asserted by a private party or by a governmental agency, including, but not limited to, any claim or action for multiple or punitive damages; and these obligations are intended to apply with respect to claims arising during the term of this Agreement or following any expiration or other termination of this Agreement, and shall survive the expiration or other termination of this Agreement.

.2 The Design/Build Entity’s obligations as described above shall apply regardless of fault or negligence (whether active or passive) on its part or on the part of the indemnified parties to the extent allowed by law; it being the intent of this Agreement that these obligations be interpreted in the broadest possible manner provided that, as to any indemnified party, said obligations shall not apply to injury, death, or damage to property to the extent arising from the negligence or the willful misconduct of said indemnified party or its officers, agents, servants, or independent contractors who are directly responsible to the indemnified party, or for defects of design furnished by such persons but provided further that the foregoing limitations shall not apply to the extent reimbursable through any insurance required by this Agreement.

.3 These obligations of the Design/Build Entity shall not be construed to negate, abridge, or otherwise reduce any right of indemnity or any other rights to which the City would otherwise be entitled

12.2.2 The Design/Build Entity shall cause all subcontracts to include the indemnification and hold harmless requirements set forth in this Article, in a form satisfactory to the City.

12.3 No Personal Liability.

No officer, elective and appointive Board member, employee, or consultant of the City will be personally responsible for liabilities arising under this Design/Build Agreement.

12.4 Performance Bond and Payment Bonds.

12.4.1 The Design/Build Entity shall furnish to the City, prior to the awarding of any contract, a surety bond in favor of the City in the amount of not less than 100% of the amount of Contract, to guarantee faithful performance of Contract and a payment bond, each in the form attached to the Design/Build Agreement. Bond shall guarantee repair or replacement of deficient, defective or faulty materials and workmanship for a period of one year following completion of the project unless otherwise required in the Contract Documents. The Bond shall be issued by an California admitted surety with a rating classification of “A XIII” or better according to Best’s Rating Service.

12.4.2 The City acknowledges that any faithful performance and payments bonds provided by the Design/Build Entity shall not apply to errors or omissions in the furnishing of professional services in connection with architecture or engineering services provided by the Design/Build Entity or its consultants. The City waives and releases all claims against such sureties arising out of or relating to such professional errors and omissions; such release, however, does not apply to a failure to provide professional services where required under the Contract, and the performance bonds shall include the costs of such services. Professional Liability insurance shall be primary insurance in settling claims related to Errors and Omissions

ARTICLE 13 – SEPARATE CONTRACTS

13.1 City’s Right to Perform Construction and to Award Separate Contracts.

13.1.1 The City reserves the right to perform work or operations related to the Project with the City's own work force, and to award separate contracts in connection with other portions of the Work or other construction or operations on the Work.

13.1.2 When separate contracts are awarded for different portions of the Work or for other construction or operations on the Project site, the term "Contractor" in the Contract Documents in each case shall mean the contractor who executes each separate agreement.

13.1.3 The City will provide for coordination of the activities of the City's own work force and of each separate Contractor with the work of the Design/Build Entity, who shall cooperate with them. The Design/Build Entity shall participate with other separate Contractors and the City in reviewing and revising their Baseline Schedules when directed by the City. The resulting Baseline Schedules shall then constitute the schedules to be used by the Design/Build Entity, separate Contractors and the City.

13.1.4 The City reserves the right to perform other work in connection with the Project or adjacent to the Project site by separate contract or otherwise. The Design/Build Entity shall at all times conduct the Work so as to impose no hardship on the City or others engaged in the

Work, nor to cause any unreasonable delay or hindrance to the Work.

13.2 Mutual Responsibility.

13.2.1 The Design/Build Entity shall afford the City and other Contractors the opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the contractors construction and operations with theirs as required by the Contract Documents.

13.2.2 If part of the Design/Build Entity's work relies on proper execution or results upon construction or operations by the City or a separate Contractors, then the Design/Build Entity shall, prior to proceeding with that portion of the work, report to the City apparent discrepancies or defects in other construction that would render it unsuitable for proper execution and results. Failure of the Design/Build Entity to report any discrepancies or defects shall constitute an acknowledgment that the City's or separate Contractors' complete or partially completed construction is fit and proper to receive the Design/Build Entity's work.

13.2.3 The Design/Build Entity shall promptly remedy damage wrongfully caused by the Design/Build Entity to any completed or partially completed construction or to any property of the City or separate Contractors.

13.2.4 The City and each separate Contractor shall have the same responsibilities for cutting and patching as are described in Paragraph 3.7, Cutting and Patching.

ARTICLE 14 – MISCELLANEOUS

14.1 Governing Law

The parties have executed and delivered this contract in the City, County of San Luis Obispo, State of California. This Design/Build Agreement shall be governed by the laws of the State of California. The exclusive venue for any action or proceeding, in law or equity that may be brought in connection with this contract, is the Superior Court of the State of California in and for the County of San Luis Obispo, or the United States District Court, Central District, California.

14.2 Successors.

The City and the Design/Build Entity respectively bind themselves, their partners, shareholders, successors, assigns and legal representatives to the other party and to shareholders, successors, assigns and legal representatives of such other party in respect to covenants, agreements and obligations contained in the Contract Documents. Neither party shall assign the Design/Build Agreement as a whole without the written consent of the other party. If either party attempts to make such an assignment without such

consent, that party shall nevertheless remain legally responsible for all of its obligations under the Design/Build Agreement and the Contract Documents.

14.3 Notice.

Written notices or other communications required or permitted hereunder shall be sufficiently given if delivered personally, by facsimile, by registered or certified first class U.S. mail, return receipt requested with postage pre-paid, or by commercial courier. Written notice shall be deemed to have been duly served in the date of delivery if delivered in person or by facsimile, on the first working day after deposit if delivery by overnight courier, or two working days after deposit of delivery by placing in the U.S. mail as provided herein. All notices shall be addressed to the appropriate Authorized Representative, as follows:

Design/Build Entity:

_____

_____

City

_____

_____

_____

14.4 Statutory Limitations.

Commencement of statutory limitation periods and statute of repose periods shall be as follows:

14.4.1 As to acts or failures to act occurring prior to Final Completion, any applicable statute of limitations shall commence to run and any alleged cause of action shall be deemed to have accrued in any and all events not later than such date of Final Completion.

14.4.2 As to acts or failures to act occurring after the date of Final Completion, any applicable statute of limitations shall commence to run and any alleged cause of action shall be deemed to have accrued in any and all events not later than the date of any act or failure to act by the Design/Build Entity pursuant to any applicable warranty, the date of any correction of Work or failure to correct Work by the Design/Build Entity, or the date of actual commission of any other act or failure to perform any duty or obligation by the Design/Build Entity or the City, whichever occurs last.

14.4.3 The time period for the applicable Statute of Repose shall commence to run at Final Completion of the Work.

14.5 Modifications.

No modifications or Change Orders shall be valid unless in writing and

signed by the City and the Design/Build Entity or their respective permitted successors and assigns. The Design/Build Entity and the City agree to make modifications to this Design/Build Agreement if requested by the City's lender(s), provided that such modifications do not adversely affect the costs and/or risks and/or time of performance of the Work.

14.6 Meaning of Words.

Any and all headings used in this Design/Build Agreement are for convenience only and do not modify, define or limit the provisions of it. Words of any gender shall be deemed and construed to include correlative words of the other gender. Words importing the singular number shall include all supplements and/or amendments to any such exhibits or documents entered into in accordance with the terms of this Agreement. All references to any person or entity shall be deemed to include any person or entity succeeding to the rights, duties and obligations of such person or entity in accordance with the terms of this Design/Build Agreement. Where reference is made in this Design/Build Agreement to another Contract Document, the reference refers to that provision as amended or supplemented by the other provisions of the Contract Documents.

14.7 Severability.

If any provision of this Design/Build Agreement is held to be inoperative or unenforceable as applied in any particular case because it conflicts with any other provision hereof or any constitution, statute, ordinance, rule of law or public policy, or for any other reason, then such holding shall not have the effect of rendering any other provision contained herein to be inoperative or unenforceable to any extent whatsoever. The invalidity of any one or more phrases, sentences, clauses or sections contained in this Design/Build Agreement shall not affect the remaining portions of this Design/Build Agreement or any part of it, and they shall otherwise remain in full force and effect.

14.8 Whole Agreement.

This Design/Build Agreement and any and all exhibits, the Design/Build Entity's Proposal, which is incorporated by reference, and the Contract Documents shall constitute the entire agreement between the Parties, related to the subject matter hereof. No inducements, considerations, promises or other references shall be implied in this Design/Build Agreement that are not expressly addressed in this Agreement. By incorporating the Design/Build Entity's Proposal as part of this Design/Build Agreement, the City does not accept any provision of the Proposal that are not in conformance with the criteria of the Request for Proposal.

14.9 Record Retention and Audits.

The Design/Build Entity agrees that the awarding department or their designated representative shall have the right to review and to copy any records and supporting documentation pertaining to the performance of this

Agreement. The Design/Build Entity shall keep full and detailed accounts and exercise such controls as may be necessary for proper financial management under this Design/Build Agreement; the accounting and control systems shall be reasonably satisfactory to the City and shall be in accordance with generally accepted accounting standards.

Design/Build Entity shall retain all records, books, correspondence, instructions, drawings, receipts, subcontracts, vouchers, memoranda and other data relating to this Design/Build Agreement for a period of five years after Final Payment under this Agreement, or for such longer period as may be required by law. Design/Build Entity agrees to allow the City auditor(s) access to such records during normal business hours and to allow interviews of any employees who might reasonably have information related to such records, and not withhold relevant information. Further, Design/Build Entity agrees to include a similar right of the City to audit records and interview staff in any subcontract related to performance of this Agreement.

14.10 Deliverables.

The Design/Build Entity is responsible for delivery to the City certain drawings, schedules, reports, samples and other documents as described in the Contract Documents.

14.11 Waiver.

No waiver of any condition, requirement or right expressed in this Agreement shall result from any forbearance of the City to declare a default.

14.12 Brokerage or Contingent Fees.

Design/Build Entity warrants by execution of this Agreement, that no person or selling agency has been employed or retained to solicit or secure this Agreement upon understanding or agreement for a commission, percentage, brokerage or contingent fee, excepting bona fide employees or established commercial or selling agencies maintained by Design/Build Entity for the purpose of securing business. For breach or violation of this warranty, the City shall, in addition to other remedies
provided by law, have the right to terminate this Agreement without liability, paying only for the work actually performed, or otherwise recover the full amount of such commission, brokerage or contingent fee.

14.13 Computer Software.

Design/Build Entity certifies it has appropriate systems and controls in place to ensure City funds will not be used in the performance of this Agreement for the acquisition, operation or maintenance of computer software in violation of copyright laws.

14.14 Independent Capacity.

Design/Build Entity, and agents and employees of Design/Build Entity, in the performance of the agreement, shall act in an independent capacity and

not as officers or employees or agents of the City.

14.15 Air or Water Pollution Violations.

By signing this agreement, the Design/Build Entity swears, under penalty of perjury, that the Design/Build Entity is not: (1) in violation of any order or resolution not subject to review promulgated by the State Air Resources Board or an air pollution control district; (2) subject to a cease and desist order not subject to review issued pursuant to Section 13301 of the Water Code for violation of waste discharge requirements or discharge prohibitions; or (3) finally determined to be in violation of provisions of federal law relating to air or water pollution.

14.16 No Uncertainty Protection.

This Agreement is the product of negotiation and compromise on the part of both Parties and that the Parties agree that, notwithstanding Civil Code section 1654, any uncertainty in this Agreement shall not be construed against the drafter.

14.17 PWCR Number.

Deign/Build Entity, in the space provided on the signature page shall provide Deign/Build Entity's public works registration (PWCR) number for City to complete the PWC 100 Form.

14.18 Effective Date.

The effective date of this Agreement is the date it is signed on behalf of City provided it has also been signed on behalf of Design/Build Entity.

ARTICLE 15 – EXECUTION OF THE AGREEMENT

_____, a _____

By: _____
_____
Its _____

By: _____
_____
Its _____

PWCR # _____

CITY OF MORRO BAY, a municipal corporation

By: _____
Jamie Irons, Mayor

Date: _____, 2018

APPROVED AS TO FORM:

_____
Joseph W. Pannone,
City Attorney

ATTEST:

_____
Dana Swason,
City Clerk

EXHIBIT A – PROJECT MILESTONE SCHEDULE

The Project Milestone Schedule below identifies the major events for the Project. The Design/Build Entity confirms that the Contract Time and Milestones allow a reasonable period of time for completing the work under the Project.

List milestones (in list format; not a chart)

EXHIBIT B – CONTRACT DOCUMENTS

The Contract Documents consist of the following, all of which, together with this Design/Build Agreement, form the entire agreement between the City and the Design/Build Entity.

Design/Build Entity Proposal **[dated INSERT]**
Scope of Work

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EXHIBIT C – DESIGN/BUILD ENTITY'S GUARANTY OF OBLIGATIONS

GUARANTY OF OBLIGATIONS OF DESIGN/BUILD ENTITY UNDER THE _____ _____ DESIGN-BUILD PROJECT DESIGN/BUILD AGREEMENT

THIS GUARANTY ("Guaranty") is made and entered into as of _____ , 20____, by _____("Guarantor") to and for the benefit of the CITY OF _____ ("City") with reference to the following facts:

A. _____ ("Design/Build Entity"), is about to enter into a certain Design/Build Agreement (the "Agreement") with the City, and a number of related Contract Documents (as that term is defined in the Agreement) where under the Design/Build Entity is to design and build a Water Reclamation Facility Design-Build Project in _____, CA.

B. For a variety of reasons the Design/Build Entity is a newly formed entity whose sole shareholders are _____(the "Contractor") and _____ (the Architect). Because the City must be assured that the Design/Build Entity has the financial strength and expertise to carry out its obligations under this Agreement, it has required, as a condition of entering into the Agreement, that the Contractor execute this Guaranty where under the Contractor, as Guarantor hereunder, guarantees to the City that it will guaranty the performance of all obligations of the Design/Build Entity under the Agreement, whether physical or financial, all as more particularly herein stated.

C. All terms used in this Guaranty which are not defined shall have the meanings assigned in the Agreement, the Contract Documents, the Construction meanings assigned in the Agreement, the Contract Documents, the construction documents, and any other documents referred to in the Agreement. For purposes of this Guaranty, the term "Collective Agreements" shall refer to the Agreement, the Contract Documents, the construction documents and any other documents referred to in the Agreement, in the aggregate.

NOW THEREFORE, for a valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the Guarantor, for itself, its successors and assigns:

1. Unconditionally and absolutely guarantees the due and punctual performance of any and all obligations of the Design/Build Entity under the Collective Agreements, and each of them, in accordance with the terms thereof, whether such be obligations to act, or make payments of any nature whatsoever, whether now or hereafter due, as well as the due and punctual performance and observance by Design/Build Entity of all the other terms, covenants, and conditions of the Collective Agreements, and each of them (including, without limitation, the completion of the construction of the Project contemplated by it in accordance with the terms of it and including the payment of all funds required in excess of the City's commitment to pay for the construction), together with all attorney fees, court costs, and other costs and expenses as shall be paid or incurred by the City in connection with the attempted enforcement of the Collective Agreements, or any of them, or portions thereof, or paid or incurred by the City in connection with the

defense by the City of any action, suite, or claim by any third party with respect to any of same, or paid or incurred by the City in connection with the attempted enforcement of this Guaranty. All debts, duties, liabilities, and obligations above described and covered by this Guaranty or intended so to be, are collectively called the "Obligations."

2. Waives diligence, presentment, protest, notice of dishonor, demand for payment, extension of time of payment, notice of acceptance of this Guaranty, nonpayment at maturity, and indulgences and notices of every kind, and consents to any and all forbearances and extensions of the time of payment or performance by the Design/Build Entity under the Collective Agreements, or any of them, and to any and all changes in the terms, covenants and conditions made or granted and to any and all substitutions, exchanges, or releases of any collateral therefore; also waives any right to cause a marshaling of Design/Build Entity's assets or to cause the City to proceed against the Design/Build Entity before proceeding against the Guarantor; also waives any right to require the Department to apply upon any obligation of the Design/Build Entity under the Collective Agreements, or any of them, guaranteed any funds or other property at any time received by or paid to or in the possession of the City; it being the intention that the Guarantor shall remain liable until the terms, covenants, and conditions of the collective Agreements, and all of them, have been fully performed and observed by the Design/Build Entity, notwithstanding any act, omission, or thing that might otherwise operate as a legal or equitable discharge of Guarantor. In connection therewith, the Guarantor expressly waives any and all benefits, which might otherwise be available to the Guarantor under California Civil Code Sections 2810, 2819, 2825, 2845, 2849, 2850, 2899 and 3443.

3. Agrees that the liability of the Guarantor shall not in anywise be released, diminished, impaired, reduced, or affected by:

   a. The taking or accepting by the City of any security or guaranty for the Design/Build Entity's performance of any or all of the Obligations;

   b. Any release, withdrawal, surrender, exchange, substitution, subordination, or loss of any security or other guaranty at any time existing in connection with any or all of the Obligations; any partial release of the liability of any other guarantor or guarantors of any nature whatsoever, or under any other instrument had, or to be had, in connection with, or as security for, the Obligations, or the death, corporate dissolution, insolvency, bankruptcy, disability, or lack or City of the Design/Build Entity, the Guarantor, or any other guarantor or any party at any time liable for the payment of all or any part of the Obligations, whether now existing or hereafter occurring;

   c. Any renewal, extension, modification, and/or rearrangement of the performance or payment of any or all of the Obligations, or the performance of any covenant contained in any instrument had, or to be had, in connection with, or as security for, the Obligations, either with or without notice to, or consent of, the Guarantor or any adjustment, indulgence, forbearance, or compromise that may be granted or given by the City to any party; or

   d. Any neglect, delay, omission, failure, or refusal of the City to take or prosecute any action for the collection or performance of any of the Obligations or to

foreclosure or take or prosecute any action in connection with any lien, right, or security existing or to exist in connection with, or as security of, any of the Obligations; or to take any action hereunder; it being the intention hereof that the Guarantor shall remain liable as principal until the full amount of the Obligations, together with interest, and any other sums due or to become due upon or in connection with any of the same, shall have been fully paid, performed, and observed by the Design/Build Entity.

4. Agrees that it shall have no right of subrogation whatsoever with respect to the aforesaid Obligations, or to any moneys due and unpaid thereon or any collateral security for the same (unless and until any third party, or the City, as the case may be, shall have received payment in full of all sums at any time due under the Collective Agreements, or any of them.) All sums, amounts, performances owing, or to be performed by Design/Build Entity to the Guarantor, as well as all rights, liens, claims, and securities existing and to exist in connection with it, or as security for it, are declared, recognized, and made subordinate to the Obligations and to all rights, titles, interest, and claims of any nature which the Department may have, or under the Collective Agreements, or any of them, of any nature whatsoever.

5. Agrees that this Guaranty may be enforced by the City without first resorting to or exhausting any particular security, Bond, or collateral for the Obligations, or without first having recourse to the assets or estate of the Design/Build Entity or of any other party liable for the performance of the Obligations, or any of them.

6. Further covenants, represents, and warrants that:

   a. The Collective Agreements, and each of them, were duly authorized and, to the degree required were, executed by the Design/Build Entity and are legal, valid, and binding instruments, enforceable against Design/Build Entity in accordance with their respective terms.

   b. Guarantor agrees that in the event this Guaranty is placed in the hands of attorneys for enforcement, the Guarantor will reimburse the City for all expenses incurred, including, but not limited to, attorney fees and court costs, as well as all fees incurred for expert witnesses, consultants, witnesses and the like, whether prior to trial, at trial, or on appeal.

7. Agrees that this Guaranty shall inure to the benefit of the City and its successors and assigns and shall be binding upon and enforceable against the Guarantor and its successors and assigns. The laws of the State of California shall be applicable to this Guaranty.

8. Agrees that if any term, covenant, or condition of this Guaranty, the Collective Agreements, or any of them, or the application to any person or circumstances shall, to any extent, be invalid or unenforceable, the remainder of this Guaranty, the Collective Agreements, and each of them, or the application of such term, covenant, or condition to persons or circumstance other than those as to which it is held invalid or unenforceable, shall not be affected thereby and each term, covenant, or condition of this Guaranty, the Collective Agreements, and each of them, shall be valid and be enforced to the fullest extent permitted by law.

9. Agrees that in the event of any bankruptcy, reorganization, winding up, or similar proceeding with respect to the Design/Build Entity, no limitation of the Design/Build Entity's liability under the Collective Agreements, or any of them, that may now or hereafter be imposed by any federal, state, or other statute, law, regulation, or judicial or administrative determination applicable to such proceedings shall in any way limit the obligation of the Guarantor, which obligation is coextensive with the Design/Build Entity's liability as set forth in the Collective Agreements, and each of them, without regard to any such limitation. In the event any payment by the Design/Build Entity to the City is held to constitute a preference under the bankruptcy laws, or if for any other reason the Department is required to refund such payment or pay the amount thereof to any other party, such payment by the City to Design/Build Entity shall not constitute a release of the Guarantor from any liability hereunder, by the Guarantor agrees to pay such amount to the City upon demands.

10. Agrees that this Guaranty shall be continuing and of full force and effect until the Obligations under the Collective Agreements, and each of them, are fully paid or performed, as the case may be.

11. Agrees that any notice or demand to the Guarantor may be given and shall conclusively be deemed and considered to have been given and received upon the deposit thereof, in writing, in the U.S. mail, duly stamped and addressed to the Guarantor at the last known address of the Design/Build Entity; but actual notice, however given or received, shall always be effective. The last preceding sentence shall not be construed in any way to affect or impair any waiver of notice or demand provided or to require giving of notice or demand to or upon the Guarantor in any situation or for any reason.

12. In any action initiated by the City to enforce this Guaranty against the Guarantor, except as otherwise expressly agreed, the Guarantor shall be entitle to assert, and rely upon, as against the City any contractual defense(s)under the Collective Agreements and common law to which the Design/Build Entity would be entitled thereunder.

The Guarantor has executed this instrument, the day and year first above written, _____ , California.

[Signatures]

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EXHIBIT D – PAYMENT & PERFORMANCE BONDS

SEE FOLLOWING PAGES FOR PAYMENT & PERFORMANCE BONDS

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS, _____ (hereinafter called the "Principal") as Principal and , _____ a corporation organized and existing under the laws of the State of California (hereinafter called the Surety"), as Surety, are held and firmly bound to CITY OF MORRO BAY (hereinafter called the "City"), as Obligee, in the sum of _____ Million Dollars, for the payment of which sum well and truly be made, the said Principal and Surety bind themselves, and their respective heirs, subcontractors, contractors, successors and assigns, jointly and severally, thereby by these presents.

WHEREAS, (I) the Design/Build Entity has entered into a Design/Build Agreement (hereinafter called the "D-B Agreement") with the City for the design and construction of the Morro Bay Water Reclamation Facility Design-Build Project (hereinafter called the "Project"); and

WHEREAS, the Principal has submitted a bid for the work on the Project.

NOW THEREFORE, THE CONDITION OF THE OBLIGATION IS SUCH, that if the Principal shall well and truly perform all of the undertakings, covenants, terms, conditions and agreements of the Contract Documents within the time provided therein and any extensions thereof that may be granted by the Authority, as applicable, and during the life of any guaranty or warranty required under the Contract Documents and shall also well and truly perform all of the undertakings, covenants, terms conditions and agreements of any and all duly authorized modifications of the Contract Documents that may be made, and shall indemnify and save harmless the obligee of and from any and all loss, damage, and expense, including costs and attorney's fees, from which the said obligee may sustain by reason of failure to do so, then this obligation shall be null and void; otherwise it shall remain if full force and effect.

The said Surety agrees that no change, extension of time, alterations, additions, omissions or other modifications of the terms of the Contract Documents or in the work to be performed with respect to the Project, or in the specifications of plans, or by any change or modification of any terms or payment or extension of any time for any payment pertaining or relating to the Contract Documents, or by rescission or attempted rescission of the Contract Documents, or this Bond, or by any condition precedent or subsequent in this Bond attempting to limit the right of recovery of obligee otherwise entitled to recover under this Bond, or by any fraud practiced by any person other than the obligee seeking to recover on this Bond, shall in anywise affect its obligation on this Bond, and it does hereby waive notice of any such changes, extensions of time, alterations, additions, omissions or other modifications. The Surety agrees that to the extent that payment of sums pursuant to the Contract Documents undertaken by the Surety, and the payment obligation could be construed as an obligation under this Bond or the payment bond issued by the Surety contemporaneously with the issuance of the Bond, such payment shall be treated solely as the discharge of an obligation under the payment bond and shall not reduce or impact on the Surety's obligations under this Bond.

When this Bond has been furnished to comply with a statutory of other legal requirement in the location where the construction is to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. The intent is that

this Bond shall be construed as a statutory bond and not as a common law bond.

IN WITNESS WHEREOF, the above bounded parties have executed this instrument under their several seals this _____ day of_____, 20___, the names and corporate seals of the corporate parties being hereto affixed and those presents duly signed by their undersigned representatives, pursuant to authority of their governing bodies.

WITNESS:

PRINCIPAL (DESIGN/BUILD ENTITY)

_____

By:_____
Name: Title: Address:

SURETY:

_____

By:_____
Name: Title: Address:

DRAFT DOCUMENT - NOT A PUBLIC RECORD

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS:

THAT WHEREAS, the City (herein after called the "City") has awarded a Design/Build Agreement (hereinafter called the "D-B Agreement") to _____ , the Design/Build Entity (hereinafter called the "Design/Build Entity") for the design and construction of the City Design-Build Project (hereinafter called the "Project"); and

WHEREAS, the Design/Build Entity is required to furnish a payment bond in connection the Contract Documents, to secure the payment of claims of Design/Build Entity laborers, mechanics, material men and other persons as provided by law.

NOW THEREFORE, we the undersigned Principal (Design/Build Entity) and Surety are held and firmly bound unto the Authority obligee in the sum of _____ Million Dollars ($ _____) for which payment well and truly to be made we bind ourselves our heirs, executors and administrators, successors and assigns, jointly and severally firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH that if the Principal, or its heirs, executors, administrators, successors or assigns or subcontractors, shall fail to pay any of the persons named in California Civil Code Section 3181, or amounts due under the Unemployment Insurance Code with respect to work or labor performed by any such claimant, or any amounts required to be deducted, withheld and paid over the California Franchise Tax Board from the wages of employees of the Principal and/or its subcontractors pursuant to Section 18306 of the California Revenue and Taxation Code, with respect to such work and labor, then the surety or sureties will pay such amounts in an amount not to exceed the sum specified in this bond, otherwise the above obligation shall be void. In case suit is brought upon this bond, the surety will pay a reasonable attorney's fees to be fixed by the court.

This bond shall inure to the benefit of any of the persons named in California Civil Code Section 3181 as to give a right of action to such persons or their assigns in any suit brought upon this bond.

Notwithstanding the number of claimants on this bond or any underlying law to the contrary, the Sureties shall not be liable under this bond for an amount greater than the aggregate penal sum designated above.

The said Surety agrees that no change, extension of time, alterations, additions, omissions or other modifications of the terms of the Contract Documents, or in the work to be performed with respect to the Project, or in the specifications or plans, or by any change or modification of any terms of payment or extension of the time for any payment pertaining or relating to the Contract Documents, or by any recession or attempted recession of the Contract Documents, or this Bond, or by any conditions precedent or subsequent in this Bond attempting to limit the right of recover of claimants otherwise entitled to recover under this Bond, or any fraud practiced by any person other than the claimant seeking to recover on this Bond, shall in any way affect its obligations on this Bond, and it does waive notice of any such changes, extensions of time, alterations, additions, omissions or other modifications.

When this Bond had been furnished to comply with a statutory or other legal requirement in the location where the construction is to be performed, any provision in this Bond conflicting with

said statutory or legal requirement shall be deemed deleted here from and provisions conforming to such statutory or other legal requirement shall deemed incorporated in it. The intent is that this Bond shall be construed as a statutory bond and not a common law bond.

IN WITNESS WHEREOF, the above bounded parties have executed this instrument under their several seals this _____ day of_____ , 20_____ , the names and corporate seals of the corporate parties being affixed and those presents duly signed by their undersigned representatives, pursuant to authority of their governing bodies.

WITNESS:

PRINCIPAL (DESIGN/BUILD ENTITY)

_____

By:_____
Name: Title: Address:

SURETY:

_____

By:_____
Name: Title: Address

EXHIBIT E – PROJECT SCHEDULE AND PROJECT MANAGEMENT SUBMITTALS

Submittals Required	Due Date
Functional Relationships	30 Days Prior to NTP
Health and Safety Plan (Including IIPP)	30 Days Prior to NTP
Data and Document Management Plan	30 Days Prior to NTP
Design QA/QC Plan	30 Days Prior to NTP
Design Management Plan	30 Days Prior to NTP
Environmental Management Plan	30 Days Prior to NTP
Construction QA/QC Plan	30 Days Prior to NTP
Design Builders Construction Management Plan	30 Days Prior to NTP
Preliminary Baseline Schedule	14 days after NTP
Baseline Schedule Costs and Resource loaded	60 days after NTP
Weekly Report and Short term schedule	Weekly throughout the Contract duration
Monthly Report, Baseline schedule update, Certified Payroll, Pay Application and California Civil Code 8122 waivers and release forms	Monthly
Schedule of Values	30 days after NTP
3-week Look-ahead Schedule	Weekly during active construction
UV Validation Testing Plan	6 months prior to testing
UV Validation Test Results	1 month after test
All Testing Plans and Submittals per Title 22 and DDW	As required by permitting agencies
Certified Payroll	Per DIR, state and federal funding standards
Subcontractor Advertisement/Bid Results	As required in Funding Agency Documents

Schematic Design	**30 Days prior to NTP for Design Development**
Code Analysis: Submittal shall consist of an outline of applicable provisions of building codes, Regional and State Water Quality Control Board, Fire Department, and other codes. The outline shall include a written report and diagrammatic drawings which delineate the design criteria.	
Facility Layout: Layout showing all processes, structures, building locations, outlines, and hydraulic profile of treatment processes	
Architectural Design Themes – Submit for City review and approval the architectural design themes for the WRF.	
Schematic Design Report: Report detailing the review and analysis of each building and process component or treatment processes. Based on the Design Criteria Report, RFP requirements, and submitted proposal, with description of proposed changes, improvements, and/or additional requirements. Provide equipment cut sheets for critical equipment, and include preliminary design details for each discipline. This report shall include design flow rates and loadings, energy consumptions, chemical uses, operational and maintenance costs. Design report shall also include updated cost estimates for entire project.	
Reverse Osmosis Energy Recovery – Submit a desktop analysis for the optimum use of energy recovery devices for the reverse osmosis system. Include a cost benefit analysis evaluation for independent 3rd stage, energy recover devices, and pretreatment chemical addition alternatives	

Reverse Osmosis Acid Addition – Submit a cost-benefit analysis of increasing recovery with acid addition versus reduced recovery using scale inhibitor. City will determine preferred approach.
Design Intent: Updated design intent narrative based on the design intent narrative in the submitted Proposal.
Civil Drawings: Site Demolition Plan Site Plan showing locations of treatment facilities, buildings, structures, and access roadways and pedestrian pathways Site Access Road Plan showing road location Grading plans showing existing contours at 1-foot intervals and proposed grading concepts to a level sufficient to illustrate general site drainage and cut and fill areas. Utility Plans showing existing utilities, points-of-connections, and new site utilities
Landscape Drawings: Plans showing conceptual hardscape and planting areas and plant palettes
Architectural Drawings: Overall Facility Dimensions Structure dimensions Major interior and exterior elements Floorplan layout with room names and size Site Sections Basic Elevations
Material Board: - Show exterior finishing materials for architectural items
Structural Drawings: Conceptual structural framing and reinforcement plan
Plumbing Drawings: Plans showing primary risers, pump locations, and etc.
HVAC Drawings: Plans showing conceptual single line duct, single line pipe, equipment locations, equipment sizes
Electrical Drawings: Conceptual single-line diagrams and plans showing site conduit routing, MCC and equipment locations and sizes.
Specification Outline: Outline shall include a detailed description of all building and treatment components with an index showing all divisions and sections to be used including technical sections.

Design Development 60%	**30 Days prior to NTP for Construction**
Code Analysis: Updated analysis from schematic design	
Facility Layout: Updated layout from schematic design	
Design Intent: Updated and more detailed narrative building on the schematic design narrative	
Civil Drawings: Site Demolition Plan Site Plan showing dimensions of site features Site Access Road Plan showing road location and geometrics Grading plans showing general drainage, benchmarks, elevations for structures and exterior elements, and existing and proposed contours. Utility Plans updated with utilities showing plan and profiles along alignments and utility corridors, ductbanks, all equipment and structures Trench design and protection Miscellaneous Civil Details	
Landscape Drawings: Plans showing locations of plant types and trees	
Material board: Show all exterior, interior, coatings, color pallets, and glazing materials for architectural items	

Architectural Drawings: Updated Floorplans with corridors, door swings, fire ratings, exits, fire doors, plumbing fixtures, built-in features, movable furniture, sections and elevations. Architectural schedules for doors, glazing, finishes Large scale drawings of all buildings, structures and process areas
Structural Drawings: Structural plans showing structural elements (e.g. framing member sizes, reinforcement details, etc.) and details scaled per architectural drawings
Plumbing Drawings: Show all piping (including alignments and sizes), fixtures and equipment requiring plumbing, waste lines, vents, air, gas, water, fire water system
HVAC Drawings: Floor plans with equipment, main duct systems, air balances, large scale equipment room drawings and equipment schedules
Electrical Drawings: Updated plans from schematic design documents to include MCC layouts with loads, lighting layouts, preliminary arc flash and trip study, conduit schedule, conduit routing, equipment locations and sizes. Typical light fixture cut sheets Large scale electrical room drawings Individual MCC detailed single lines
Controls: PLC and SCADA layouts and block diagrams Equipment and instrument locations Input/output points P&ID's
Specification: Complete Technical Specifications per the updated outline. Specification must include construction guidelines, sequencing, construction materials, equipment specifications, submittal requirements, and test requirements.

Construction Documents 90%	**30 Days prior**
Code Analysis: Updated analysis from Design Development	
Facility Layout: Updated layout from Design Development	
Design Intent: Finalized details for entire facility and buildings	
Civil Drawings: Finalized plans from the Design Development Phase Site Survey and Control Plan Final Utilities Plan that: • Are coordinated with Architectural, Mechanical, Plumbing, Electrical, etc.; • Show manholes, valves, valve boxes, cleanouts, lift stations, process structures, etc.; • Include fully designed process piping horizontal and vertical locations and sizes; and • Show location, size, and elevations of all utilities.	
Landscape Drawings: Hardscape (paving, walls, walks, planters) plan, irrigation plan, planting plan, irrigation details, planting details	
Material Board: Show all finalized exterior, interior, coatings, color pallets, and glazing materials for architectural items	
Architectural Drawings: Reflected Ceiling plans, details	

Structural Drawings:

Plans that indicate the location, type of member, size, and material of each structural element for foundations, floors, roofs, and any intermediate levels. List assumed safe bearing pressures on soils and ultimate strengths of concrete.

Schedules (beam, column, and slab)

Details of all connections, assemblies, expansion joints, and similar items

Structural framing systems for piping, nonstructural elements and fixed equipment

Plumbing Drawings:

Floor plans showing complete process and domestic plumbing systems with the following information:

- Location sizes, elevations of water, firewater, sewers, drains, waste, waste vents, and process piping with risers and connections to equipment, drains, and fixtures.
- Locations of meters, valves, cleanouts, etc.
- Fire-extinguishing equipment such as sprinklers and standpipes.
- Location and sizes of natural gas, compressed air, process air piping.
- Single line process diagram for all process piping
- Equipment Schedules

HVAC Drawings:

Mechanical floorplans showing complete HVAC systems including

- Air Conditioning systems including refrigerators, water and refrigerant piping, and duct work
- Odor Control and Exhaust ventilation systems showing duct sizes, duct locations, condensate, equipment connections and discharge locations
- Detailed floor plans and sections for all mechanical rooms and equipment
- Air balance schedule indicating the CFM of outside air, supply air, return air, odor control air, and exhaust for all air systems
- Elevations of mechanical equipment to ensure airflows and access to component parts
- Equipment mounting details
- Isometric diagrams of HVAC water systems
- Sequence of operations diagram
- Equipment Schedules

Electrical Drawings:

- Transformers and connections
- Feeder and conduit sizes
- Light fixtures, receptacles, switches, and power outlets
- Telephone outlets, conduits, terminal cabinets, and backboards
- Complete fire alarm system including inter connections to SCADA
- Equipment local control panels
- Emergency electrical power system including generator, transfer switches, fuel tanks, and all auxiliaries
- Electrical Details including all mounting details
- Equipment Schedules

Instrumentation and Controls Drawings:

- Instrumentation Remote I/O cabinet details
- Controls Details
- Equipment Schedules

Technical Specifications:
Updated Specifications based on the specifications submitted as part of the Design Development work submittal.

Final Design Calculations
Developer shall clearly list all design criteria, assumptions, and references used for process, structural, mechanical, and electrical calculations. Calculations shall be arranged in a clear manner and shall include schematic diagrams and spreadsheets where necessary together with information sufficient to show compliance with applicable Law and the Contract Documents. Calculations shall be checked and stamped by Licensed Professional in applicable disciplines. Calculations shall be submitted for:

- Structural shall include basis for structural design, unusual conditions, and diagrams
- Mechanical shall include HVAC loads, equipment sizing and selection data, duct/pipe/pump sizing selection data and all seismic/structural calculations
- Plumbing shall include piping/pump/equipment sizing and selection data, and seismic/structural calculations
- Electrical shall include transformer loads and calculations, fault interrupt calculations, lighting calculations, equipment seismic/structural calculations
- Process calculations shall be performed with the use of an acceptable wastewater treatment computer modeling software program (i.e., BioWin). All system inputs and outputs must be submitted.

Post Design Submittals	
Building Permit Drawing Set	As required to meet the construction starting schedule date as defined by Design-Builder. Design-Builder is directed to anticipate and allow for sufficient review, revision and resubmission for building permit approvals.
Misc. Permit Submittal Requirements	All necessary documents necessary to complete design or construction of the project (i.e. Traffic Control, SWPPP)
Pre-Construction site condition record video	10 days prior to start of construction on the WRF
Equipment and Materials	Prior to release for production
Building Furnishings	Prior to release for production
Shop Drawings and Finish Materials	With sufficient time for City review and approval prior to order release
Daily Record of Construction activities	Following Business day 12:00 p.m.
Construction Photos	Monthly within 3 days of pay application
Existing WWTP Shutdown and Decommissioning Plan	Must be submitted 60 days prior to Decommissioning
As-Built Drawings	Prior to Final Completion and Payment
Structural Engineer Observation Certification	Prior to Certificate of Occupancy
Air Balance Report (Air Side Report)	Prior to Final Acceptance
Hazardous and/or Toxic Abatement and Demolition Plan	Prior to Demolition of existing WWTP
Operation and Maintenance Manuals	60 Days prior to Facility Testing
Traffic Control Plans	As required by Agencies

Training Plan	3 months prior to equipment testing
Facility Testing Plan	Minimum 3 months prior to Facility Testing
Facility Verification Plan	Minimum 3 months prior to Facility Testing
UV Validation Test results	30 Days after validation testing
Miscellaneous Certificates of testing and inspection	7 days after testing unless otherwise specified
Facility Test Reports	30 days after Testing
Certificate of Final Completion	After all work and punch list items are completed

City of Morro Bay
Request for Proposals
for

DESIGN-BUILD SERVICES of the

WATER RECLAMATION FACILITY (WRF) ONSITE IMPROVEMENTS

Attachment C:

Price Proposal and Life-Cycle Cost Instructions

January 2018

Rob Livick, PE/PLS
Public Works Director/City Engineer
955 Shasta Avenue
Morro Bay, California 93442

Proposer's Name:_____

Price Proposal Form for
Design-Build Services of the
City of Morro Bay
WATER RECLAMATION FACILITY (WRF) ONSITE IMPROVEMENTS

TO THE PUBLIC WORKS DIRECTOR

COST PROPOSAL

Having carefully examined the Request for Proposal, attachments and related documents the undersigned proposes and agrees to provide to the City of Morro Bay, in accordance with the Performance Criteria Report annexed hereto and made a part thereof, the following materials and labor not to exceed the following guaranteed maximum price at the rates attached hereto (attach all parts and labor rate list):

BASE BID AMOUNT

Item	Qty	Description	GMP Total Cost
1	Lump Sum	Design-Build of onsite improvements at the Water Reclamation Facility	$
2	Lump Sum	Allowance for Unanticipated EIR Mitigation Measures*	$1,000,000

*This is an allowance for all unanticipated work associated with EIR Mitigation Measure implementation. It has been determined to be $1,000,000.

TOTAL COST PLUS WITH GUARANTEED NOT TO EXCEED OF BASE AMOUNT:
$_____

ADD ALTERNATE:

Item	Qty	Description	GMP Total Cost
3	Lump Sum	Demolition of existing WWTP per Section 11 of "Attachment A" to the Request for Proposals	$

TOTAL COST PLUS WITH GUARANTEED NOT TO EXCEED OF BASE PLUS ADD ALTERNATE AMOUNT:
$_____

The price proposals set forth herein shall include any and all applicable taxes. The City reserves the right to reject any and all proposals. The City may make a single award for either the base cost proposal with or without the add alternate. To be considered complete the cost proposal must include the tables on pages 1 through 4 of this of this document. Provide additional pages as required to submit a complete cost proposal.

Proposer's Name:_____

Cost Plus Proposal Table

DESCRIPTION OF ITEM	TOTAL COST
Design and Preconstruction Activities	
Project Management and City Coordination	
TREATMENT PROCESS AREAS	
Influent (Coarse) Screening	
Grit Removal	
Flow Equalization	
Fine Screens	
Membrane Bioreactor	
Aerobic Sludge Digester	
Sludge Dewatering	
Reverse Osmosis	
Ultraviolet Advanced Oxidation Process	
Chemical Storage and Feed Facilities	
Odor Control	
Effluent Pump Station	
Recycled Water Pump Station	
Recycled Water Storage Tank	
On-site Reclaimed Water system	
General Structural and Foundations	
General Mechanical	
Other (list)	
Subtotal	
ARCHITECTURAL AND LANDSCAPING	
Buildings, including Operations Building, Administration Building, all equipment, furnishings, finishes, and other non-process buildings	
General Mechanical/HVAC	
General Structural and Foundations	
Landscaping and Irrigation	
Decorative fences and gates	
Other	
Subtotal	
GENERAL SITE AND CIVIL	
Site Work including earthwork and grading	
Site access road	
Offsite water line connection and extension	
Fire protection	
Construction dust control, SWPPP development, and compliance	
Dewatering of excavations during construction	

Post-construction stormwater controls including detention facilities	
Miscellaneous yard piping	
Other (list)	
Subtotal	
ELECTRICAL, INSTRUMENTATION, AND CONTROLS	
Utility Electrical Service	
Data Service	
Planning and provisions for alternative solar power (by others)	
General Electrical including lighting and alarms	
Electrical System Studies	
Electrical Testing	
General instrumentation and controls including SCADA and Security	
Emergency Generator	
Other (list)	
Subtotal	
STARTUP, TESTING, COMMISSIONING, AND DEMOBILIZATION	
Startup	
Testing and commissioning	
Training	
Support during performance testing	
Demobilization	
Subtotal	
GENERAL	
Miscellaneous work items and other prices not included in the previous items as required to complete the Work (list)	
Unanticipated EIR Mitigation Measures	$1,000,000
FEE (___% of Cost)	
Base Guaranteed Maximum Price	

ADD ALTERNATIVE	
Demolition of WWTP per Section 11 of “Attachment A” to the Request for Proposals	
Base with add alternative Guaranteed Maximum Price	

Proposer's Name:_____

Life-Cycle Cost Analysis

The Offeror shall provide a present worth life cycle cost for the proposed project. The purpose of the Life-Cycle Cost Analysis (LCCA) is to provide a standardized basis to compare overall costs of proposed project alternatives. The LCCA shall be based on a 30-year life assuming an average flow rate 0.97 MGD, electrical power costs of $0.12/kwh, natural gas costs of $0.10/therm, and an annual inflation rate of 2%. The LCCA shall include initial cost, energy costs, operation (not including operator time), maintenance (not including operator time), repair costs, replacement costs, and chemical costs. The LCCA shall include the replacement frequencies, replacement cost, and escalation cost for consumables (i.e. Membranes, odor control media…). The table below is intended to provide a template for the Offeror to develop the LCCA.

Equipment/ System	Initial Cost	Replacement	Energy Cost			Chemical Cost			Operation & Maintenance & Repair Cost	Total
			Type	Qty	Cost/ Qty	Type	Qty	Cost/ Qty		
Project 30-year Life-Cycle Total Present Value =										

The Offeror shall also prepare a detailed table of operator manhours required to perform all typical staff operations activities at the WRF, including a breakdown of maintenance, operation, and repair hours per activity for a typical week, month, year, and over the 30-year LCCA period. This should include routine activities as well as those that are less frequent (such as membrane clean-in-place cycles, reverse osmosis clean-in-place cycles, diffuser replacement, pump seal replacement, for example). Include frequency and costs for replacement items such as but not limited to MBR membranes, RO membranes, and fine bubble diffusers. Include any cost escalation factors used in calculations.

In addition to the life-cycle costs above the Offeror shall prepare a 5-year total energy cost, 5-year maintenance cost, and 5-year replacement cost for the entire project based on startup flows and loads for the WRF, assuming 1% annual flow and load increases.

Description	Manhours	Consumables/Energy	Totals
5-Year Energy Cost			
5-Year Maintenance Cost			
5-Year Replacement Cost			

City of Morro Bay

Request for Proposals
for

DESIGN-BUILD SERVICES of the

WATER RECLAMATION FACILITY (WRF)
ONSITE IMPROVEMENTS

Attachment D:

Question Form

January 2018

Rob Livick, PE/PLS
Public Works Director/City Engineer
955 Shasta Avenue
Morro Bay, California 93442

CITY OF MORRO BAY
WATER RECLAMATION FACILITY PROJECT

DEPARTMENT OF PUBLIC WORKS

Bid Questions For: **City of Morro Bay Design-Build Services of Onsite Improvements at the Water Reclamation Facility** Attention: **Rob Livick, PE/PLS** EMAIL: **rlivick@morrobayca.gov**	(FOR CITY OF MORRO BAY USE ONLY) QUESTION NO:_____ DATE:_____ REVIEWED BY:_____ RESPONSIBLE FOR RESPONSE: ◯ CITY STAFF ◯ CONSULTANT
From: _____ Company: _____ Contact Person:_____	Date:_____ Phone No:_____ EMAIL:_____
Question (One question per sheet):_____	
Answer:_____	
Response by:_____ Date:_____ Included in Addendum No._____ Date:_____	

City of Morro Bay
Request for Proposals
for

DESIGN-BUILD SERVICES of the

WATER RECLAMATION FACILITY (WRF) ONSITE IMPROVEMENTS

Attachment E:

Sample Proposal Forms

January 2018

Rob Livick, PE/PLS
Public Works Director/City Engineer
955 Shasta Avenue
Morro Bay, California 93442

PROPOSAL FORM 1

INFLUENT (COARSE) SCREENING
(DESIGN CRITERIA PER SECTION 2 OF THE PCR)

Provide a description of the Influent (Coarse) Screening System. Include system descriptions, operations descriptions, and specific information for the equipment proposed, including but not limited to manufacturers and models, screen size, dewatering/conveyance type system and layout, construction materials, number of units and capacities per unit, and control features.

The Performance Criteria Report provides all pertinent design information including, but not limited to: design criteria; mechanical, electrical and I&C requirements; manufacturers; and capacities. The design criteria for Influent (Coarse) Screening are provided in Section 2.2 of the PCR. The DBE shall review the PCR and provide a statement confirming the requirement of the PCR as being consistent with the design approach utilized for the development of its proposed Influent (Coarse) Screening design. Should the DBE's proposed design utilize criteria which varies from that identified in the PCR, the Proposer shall describe the variation and provide justification herein.

<u>System Description</u>

<u>Operations Description</u>

PROPOSAL FORM 2

GRIT REMOVAL
(DESIGN CRITERIA PER SECTION 2 OF THE PCR)

Provide a description of the Grit Removal systems. Include system descriptions, operations descriptions, and specific information for the equipment proposed, including but not limited to manufacturers and models, construction materials, number of units and capacities per unit, and control features. The DBE should provide information specific to its proposed design to provide the required minimum performance.

The Performance Criteria Report provides all pertinent design information including, but not limited to: design criteria; mechanical, electrical and I&C requirements; manufacturers; and capacities. The design criteria for Grit Removal are provided in Section 2.3 of the PCR. The DBE shall review the PCR and provide a statement confirming the requirement of the PCR as being consistent with the design approach utilized for the development of its proposed Grit Removal design. Should the DBE's proposed design utilize criteria which varies from that identified in the PCR, the Proposer shall describe the variation and provide justification herein.

System Description

Operations Description

PROPOSAL FORM 3

FLOW EQUALIZATION BASIN
(DESIGN CRITERIA PER SECTION 2 OF THE PCR)

Provide a description of the Flow Equalization Basin. Include system descriptions, operations descriptions, and specific information for the equipment proposed. The DBE should provide information specific to its proposed design to accommodate peak flow conditions, including a flow analysis with proposed design flows and configuration for the Flow Equalization Basin. The DBE should provide information regarding the materials of construction, pumps (including number, type, and capacities), mixing system type, equipment manufacturers, odor control provisions, and operational flexibility.

The Performance Criteria Report provides all pertinent design information including, but not limited to: design criteria; mechanical, electrical and I&C requirements; and capacities. The design criteria for Flow Equalization Basin are provided in Section 2.4 of the PCR. The DBE shall review the PCR and provide a statement confirming the requirement of the PCR as being consistent with the design approach utilized for the development of its proposed Flow Equalization Basin designs. Should the DBE's proposed design utilize criteria which varies from that identified in the PCR, the Proposer shall describe the variation and provide justification herein.

System Description

Operations Description

PROPOSAL FORM 4

FINE SCREENING
(DESIGN CRITERIA PER SECTION 2 OF THE PCR)

Provide a description of the Fine Screening systems. Include system descriptions, operations descriptions, and specific information for the equipment proposed, including but not limited to manufacturers and models, construction materials, screen size, number of units and capacities per unit, and control features.

The Performance Criteria Report provides all pertinent design information including, but not limited to: design criteria; mechanical, electrical and I&C requirements; manufacturers; and capacities. The design criteria for Fine Screening are provided in Section 2.5 of the PCR. The DBE shall review the PCR and provide a statement confirming the requirement of the PCR as being consistent with the design approach utilized for the development of its proposed Fine Screening design. Should the DBE's proposed design utilize criteria which varies from that identified in the PCR, the Proposer shall describe the variation and provide justification herein.

System Description

Operations Description

PROPOSAL FORM 5

MEMBRANE BIOREACTOR
(DESIGN CRITERIA PER SECTION 2 OF THE PCR)

Provide a description of the Membrane Bioreactor (MBR) system. Include system descriptions, operations descriptions, and specific information for the equipment proposed, including but not limited to system configuration, manufacturers and models for main pieces of equipment, construction materials, DDW approval for pathogen reduction, design flows, number of units and capacities per unit, design return and waste rates, water quality performance, ancillary equipment, and control features.

The Performance Criteria Report provides all pertinent design information including, but not limited to: design criteria; mechanical, electrical and I&C requirements; manufacturers; and capacities. The design criteria for the MBR are provided in Section 2.6 of the PCR. The DBE shall review the PCR and provide a statement confirming the requirement of the PCR as being consistent with the design approach utilized for the development of its proposed MBR design. Should the DBE's proposed design utilize criteria which varies from that identified in the PCR, the Proposer shall describe the variation and provide justification herein.

Proposed Alternative Treatment Concepts to the MBR system shall provide references for a minimum of three successful full-scale facilities operating in California.

System Description

Operations Description

PROPOSAL FORM 6

AEROBIC SLUDGE DIGESTER
(DESIGN CRITERIA PER SECTION 2 OF THE PCR)

Provide a description of the Aerobic Sludge Digester system. Include system descriptions, operations descriptions, and specific information for the equipment proposed, including but not limited to materials of construction, volume, aeration system manufacturers and models, and design flow. The DBE should provide information specific to its proposed design to accommodate potential future odor control.

The Performance Criteria Report provides all pertinent design information including, but not limited to: design criteria; mechanical, electrical and I&C requirements; manufacturers; and capacities. The design criteria for the Aerobic Sludge Digester are provided in Section 2.7 of the PCR. The DBE shall review the PCR and provide a statement confirming the requirement of the PCR as being consistent with the design approach utilized for the development of its proposed Aerobic Sludge Digester design. Should the DBE's proposed design utilize criteria which varies from that identified in the PCR, the Proposer shall describe the variation and provide justification herein.

System Description

Operations Description

PROPOSAL FORM 7

SLUDGE DEWATERING
(DESIGN CRITERIA PER SECTION 2 OF THE PCR)

Provide a description of the Sludge Dewatering system. Include system descriptions, operations descriptions, and specific information for the equipment proposed, including but not limited to equipment manufacturers and models, chemicals required including quantity per day/year; number of units and capacity per unit, operating schedule, solids loading rate, and equipment performance.

The Performance Criteria Report provides all pertinent design information including, but not limited to: design criteria; mechanical, electrical and I&C requirements; manufacturers; and capacities. The design criteria for the Sludge Dewatering are provided in Section 2.8 of the PCR. The DBE shall review the PCR and provide a statement confirming the requirement of the PCR as being consistent with the design approach utilized for the development of its proposed Sludge Dewatering design. Should the DBE's proposed design utilize criteria which varies from that identified in the PCR, the Proposer shall describe the variation and provide justification herein.

System Description

Operations Description

PROPOSAL FORM 8

REVERSE OSMOSIS
(DESIGN CRITERIA PER SECTION 2 OF THE PCR)

Provide a description of the Reverse Osmosis system. Include system descriptions, operations descriptions, and specific information for the equipment proposed, including but not limited to system configuration, manufacturers and models for main pieces of equipment, construction materials, design flows, number of skids and capacities per skid (including number of membrane elements per skid), design flux and recovery, frequency and type of cleaning operations including time required for cleaning, chemicals required for cleaning and operation, water quality performance, ancillary equipment, and control features.

The Performance Criteria Report provides all pertinent design information including, but not limited to: design criteria; mechanical, electrical and I&C requirements; manufacturers; and capacities. The design criteria for the Reverse Osmosis System are provided in Section 2.9 of the PCR. The DBE shall review the PCR and provide a statement confirming the requirement of the PCR as being consistent with the design approach utilized for the development of its proposed Reverse Osmosis System design. Should the DBE's proposed design utilize criteria which varies from that identified in the PCR, the Proposer shall describe the variation and provide justification herein.

<u>System Description</u>

<u>Operations Description</u>

PROPOSAL FORM 9

ULTAVIOLET ADVANCED OXIDATION PROCESS
(DESIGN CRITERIA PER SECTION 2 OF THE PCR)

Provide a description of the Ultraviolet Advanced Oxidation Process (UVAOP) system. Include system descriptions, operations descriptions, and specific information for the equipment proposed, including but not limited to system configuration, manufacturers and models for main pieces of equipment, construction materials, design flows, number of units and capacities per unit, oxidant type and dosages, water quality performance, ancillary equipment, and control features.

The Performance Criteria Report provides all pertinent design information including, but not limited to: design criteria; mechanical, electrical and I&C requirements; manufacturers; and capacities. The design criteria for the UVAOP are provided in Section 2.10 of the PCR. The DBE shall review the PCR and provide a statement confirming the requirement of the PCR as being consistent with the design approach utilized for the development of its proposed UVAOP design. Should the DBE's proposed design utilize criteria which varies from that identified in the PCR, the Proposer shall describe the variation and provide justification herein.

System Description

Operations Description

PROPOSAL FORM 10

CHEMICAL STORAGE AND FEED FACILITIES
(DESIGN CRITERIA PER SECTION 2 OF THE PCR)

Provide a description of the Chemical Storage and Feed Facilities. Include system descriptions, operations descriptions, and specific information for the equipment proposed, including but not limited to number, type, and materials for storage tank(s); storage area size; feed pump types, models, manufacturers, capacities, and appurtenances; piping materials; and alarms and controls.

The Performance Criteria Report provides all pertinent design information including, but not limited to: design criteria; mechanical, electrical and I&C requirements; and capacities. The design criteria for Chemical Storage and Feed Facilities are provided in Section 2.11 of the PCR. The DBE shall review the PCR and provide a statement confirming the requirement of the PCR as being consistent with the design approach utilized for the development of its proposed Chemical Storage and Feed Facilities design. Should the DBE's proposed design utilize criteria which varies from that identified in the PCR, the Proposer shall describe the variation and provide justification herein.

System Description

Operations Description

PROPOSAL FORM 11

ODOR CONTROL SYSTEM
(DESIGN CRITERIA PER SECTION 2 OF THE PCR)

Provide a description of the Odor Control System. Include system descriptions, operations descriptions, and specific information for the equipment proposed. The DBE should provide information specific to its proposed design, including but not limited to odorous air treatment type, treatment performance, required chemicals, energy usage, odorous air collection systems and performance.

The Performance Criteria Report provides all pertinent design information including, but not limited to: design criteria; mechanical, electrical and I&C requirements; manufacturers; and capacities. The design criteria for the Odor Control System are provided in Section 2.12 of the PCR. The DBE shall review the PCR and provide a statement confirming the requirement of the PCR as being consistent with the design approach utilized for the development of its proposed Odor Control System design. Should the DBE's proposed design utilize criteria which varies from that identified in the PCR, the Proposer shall describe the variation and provide justification herein.

<u>System Description</u>

<u>Operations Description</u>

PROPOSAL FORM 12

EFFLUENT PUMP STATION
(DESIGN CRITERIA PER SECTION 2 OF THE PCR)

Provide a description of the Effluent Pump Station. Include system descriptions, operations descriptions, and specific information for the equipment proposed, including but not limited to pump station capacity, configuration, number of pumps and redundancy, pump manufacturers and materials; and controls.

The Performance Criteria Report provides all pertinent design information including, but not limited to: design criteria; mechanical, electrical and I&C requirements; and capacities. The design criteria for Effluent Pump Station are provided in Section 2.13 of the PCR. The DBE shall review the PCR and provide a statement confirming the requirement of the PCR as being consistent with the design approach utilized for the development of its proposed Effluent Pump Station designs. Should the DBE's proposed design utilize criteria which varies from that identified in the PCR, the Proposer shall describe the variation and provide justification herein.

System Description

Operations Description

PROPOSAL FORM 13

RECYCLED WATER STORAGE TANK AND PUMP STATION
(DESIGN CRITERIA PER SECTION 2 OF THE PCR)

Provide a description of the Recycled Water Storage Tank and Pump Station. Include system descriptions, operations descriptions, and specific information for the equipment proposed. The DBE should provide information specific to its proposed design, including but not limited to tank volume, materials of construction, and design standards; pump station capacity, configuration, number of pumps and redundancy, pump manufacturers, and materials; and controls.

The Performance Criteria Report provides all pertinent design information including, but not limited to: design criteria; mechanical, electrical and I&C requirements; and capacities. The design criteria for Recycled Water Storage Tank and Pump Station are provided in Sections 2.14 and 2.15 of the PCR. The DBE shall review the PCR and provide a statement confirming the requirement of the PCR as being consistent with the design approach utilized for the development of its proposed Recycled Water Storage Tank and Pump Station designs. Should the DBE's proposed design utilize criteria which varies from that identified in the PCR, the Proposer shall describe the variation and provide justification herein.

<u>System Description</u>

<u>Operations Description</u>

PROPOSAL FORM 14

ON-SITE RECLAIMED WATER SYSTEM
(DESIGN CRITERIA PER SECTION 2 OF THE PCR)

Provide a description of the On-Site Reclaimed Water System. Include system descriptions, operations descriptions, and specific information for the equipment proposed, including but not limited to pump station capacity, configuration, number of pumps and redundancy, pump manufacturers and materials; on-site reclaimed water distribution system design; location of hose bibs; storage design; and controls.

The Performance Criteria Report provides all pertinent design information including, but not limited to: design criteria; mechanical, electrical and I&C requirements; and capacities. The design criteria for On-Site Reclaimed Water System are provided in Section 2.16 of the PCR. The DBE shall review the PCR and provide a statement confirming the requirement of the PCR as being consistent with the design approach utilized for the development of its proposed On-Site Reclaimed Water System design. Should the DBE's proposed design utilize criteria which varies from that identified in the PCR, the Proposer shall describe the variation and provide justification herein.

<u>System Description</u>

<u>Operations Description</u>

PROPOSAL FOR THE CITY OF MORRO BAY DESIGN-BUILD SERVICES OF THE

WATER RECLAMATION FACILITY ONSITE IMPROVEMENTS

FILANC BLACK & VEATCH, A JOINT VENTURE

FILANC ▪ BLACK & VEATCH
A Joint Venture
740 North Andreasen Drive
Escondido, California 92029

May 8, 2018

City of Morro Bay Public Works Department
Attn: Rob Livick, Public Works Director
595 Shasta Avenue
Morro Bay, CA 93442

RE: City of Morro Bay Water Reclamation Facility - Onsite Improvements
Proposal for Design-Build Services

Dear Mr. Livick,

The enclosed proposal is the culmination weeks of collaboration between dozens of talented design and construction professionals to find the best value solution to the City of Morro Bay's wastewater treatment needs. The technical solution we developed is as innovative as it is effective, affordably addressing the challenging peak flow conditions the City experiences while delivering a state-of-the-art advanced water treatment facility for everyday operations.

In developing our best-value solution for the City, we leveraged every aspect of our industry-leading experience. Our team brings both cutting edge global and local wastewater recycle experience by combining the strengths of J.R. Filanc Construction Company's (Filanc) 65 years of California construction experience with Black & Veatch's global and local wastewater and recycle experience. Our team is also strongly connected the local area, assisting Morro Bay, Paso Robles and Cayucos meet their wastewater and water reuse goals and objectives.

Since the submittal of our qualifying Statement of Qualifications, we have made minor changes to our project delivery team to add differentiating resources. These changes are reflected on our organizational chart shown as Figure 1.1 in Section 1 of this proposal. These changes/additions include:

- **Jorj Long** is replacing Commissioning Manager Mike Heaton, who is retiring. Jorj holds a Grade V Operator's license and worked on the start-up, testing, training, and turnover for the Silicon Valley AWPF. She also worked on several major projects for Orange County Sanitation District. Ron Wade, the recently-retired OSCD Chief Plant Operator declared that "Commissioning and training activities led by Jorj were the best I have ever experienced."
- **Jennifer Enson, PE**, will serve as our Design Quality Manager. She has managed design and procurement on projects totaling more than $1 billion in construction over the last 10 years. She has more than 20 years of experience in the planning, study, design, and construction of water, recycled water, and wastewater facilities. She recently managed the design of the Northeast Bakersfield Design-Build WTP, a 20-mgd membrane filtration plant for the California Water Services Company.
- **Debbie Burris, P.E., BCEE** has been added to our team so that we can leverage her 23 years of California permitting experience. She was responsible for many sections of the City of San Diego North City Pure Water Project Title 22 Engineering Report. She also provided Design Review, Permitting, Regulatory Compliance including Title 22 Engineering Reports and Supplements for the Groundwater Replenishment System for OCSD and OCWD in Fountain Valley.
- **Dr. Michael Welch**, replacing John Hollenbeck, has been added to our team to support our permitting efforts with the California Regional Water Quality Control. He has 40 years of experience implementing California water projects and has assisted public agencies in evaluating regulatory compliance with state and federal water quality regulations, state and federal drinking water regulations, and state public health regulations. Dr. Welch previously served as an associate engineer with the CRWQB in San Diego.

NAME & FIRM	ADDRESS	PHONE	EMAIL
Jorj Long Black & Veatch	8400 Ward Parkway, W4 Kansas City, MO 64114	(913) 458-3347	longja@bv.com
Jennifer Enson Black & Veatch	2999 Oak Road, Suite 490 Walnut Creek, CA 94597	(925) 949-5915	ensonjt@bv.com
Debbie Burris DDB Engineering, Inc.	15635 Alton Parkway, Suite 117 Irvine, CA 92618	(949) 727-4008	dburris@ddbe.com
Michael Welch MW Consulting	2735 San Clemente Terrace San Diego, CA 92122-4030	(858) 625-0167	mwelch1@san.rr.com

The Filanc Black & Veatch team, partially illustrated below, looks forward to the opportunity to further dig into the details of this project and work as the City's trusted partner to develop a solution that meets your goals and serves your community for many years to come.

CITY OF
MORRO BAY

FILANC BLACK & VEATCH CEO/PRESIDENT
Harry Cosmos

QUALITY ASSURANCE/QUALITY CONTROL
Richard Kaullen - Safety
Jennifer Enson, P.E. - Design Quality
Tory B Wagoner, P.E. - Construction Quality

DESIGN-BUILD PROJECT MANAGER
Gary Silverman, P.E., BCEE, DBIA

DESIGN MANAGER
Erick Bevington, P.E.

PRECONSTRUCTION MANAGER
Omar Rodea, P.E., DBIA

CONSTRUCTION MANAGER
Chad Brown, P.E., DBIA

COMMISSIONING MANAGER
Jorj Long, EIT

KEY MEMBERS OF DELIVERY TEAM

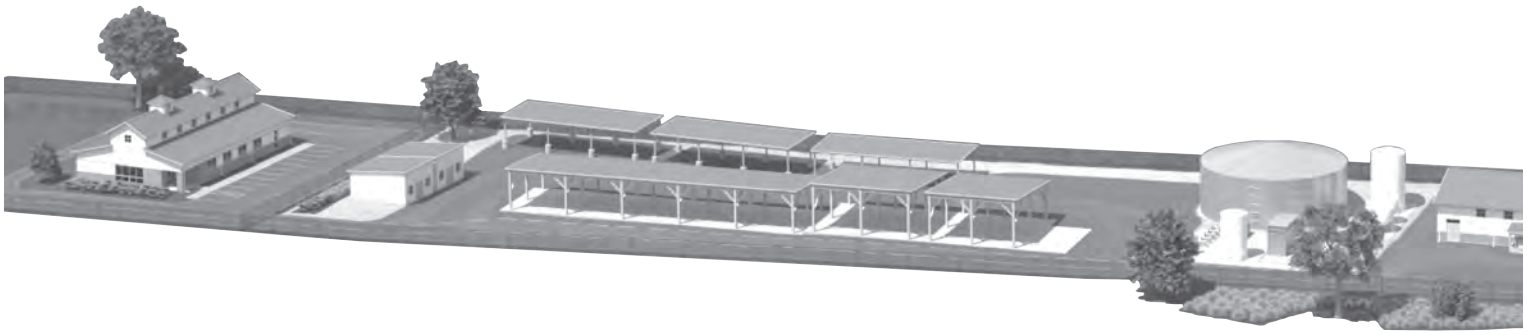
PROCESS
Sandeep Sathyamoorthy, Ph.D.

PROCESS MECHANICAL
Kaitie Zusy, P.E.

PERMITTING
Debbie Burris, P.E., BCEE, D.WRE
Michael Welch, Ph.D., P.E.

Very truly yours,

Harry Cosmos, Project Executive
Filanc Black & Veatch Joint Venture



SIGNED ADDENDUMS

If any equipment warranty failure causes a temporary inability to meet performance guarantees, but the effluent water quality specifications have been maintained, then the Performance and Operational Testing period will not be extended. If any performance guarantee is not met and one or more modifications to any equipment or its operations are necessary to meet the performance standard, then the City has option to extend or restart the Performance and Operational Testing period until after satisfactory completion of the modifications.

Clarifications:

1. **WRF Access Road:** Improvements to the roadway at the intersection of Highway 1 and South Bay Boulevard are included in the design and construction for the project access road (Performance Criteria Report Figure 5-1). The City will apply for and obtain an encroachment permit from the District 5 Caltrans Encroachment Permit Office for the 19-foot widening and intersection improvement. DB will provide the design support, including drawings, for the permit application. The improvements shall meet Department of Transportation intersection design standards and highway design requirements. DB is responsible for providing information associated with an encroachment exception for this work. Work in the State Highway right of way is expected to be constructed using Department of Transportation/Caltrans Standard Plans and Specifications (most current) and Encroachment Permit Provisions. The encroachment permit application may be downloaded from the following website: http://dot.ca.gov/dist05/permit/index.htm

2. **Under what terms will an addendum be issued in response to an Alternative Technology or Management Concepts (ATCs) submitted for review?:** Refer to the Section 2.3.4 of the Request for Proposals, which states: "*If the Owner accepts an Alternative Concept that is contrary to the Performance Criteria Report, the Owner shall issue an Addendum to this RFP altering that portion of the RFP that is inconsistent with the accepted alternative concept.*"

3. **Site Visits to the Existing WWTP:** Each Proposer may make up to two visits to the existing WWTP. Contact the City's Utilities Director, Joe Mueller, directly to arrange the visit at jmueller@morrobayca.gov.

Digitally signed by Rob Livick
Date: 2018.02.28 10:13:38 -08'00'

Rob Livick, PE, Public Works Director/City Engineer — Date

3 May 2018

Acknowledgement of Addendum No. 1 — Date

Attachments:

1. City of Morro Bay Request for Proposals for Design-Build Services of the Water Reclamation Facility (WRF) Onsite Improvements Attachment C: Price Proposal and Life Cycle Cost Instructions

Rob Livick, PE, Public Works Director/City Engineer	27 March 2018 Date
Acknowledgement of Addendum No. 2	3 May 2018 Date

The permit for the WRF will include recycled water requirements. The minimum requirements are as defined by CCR Title 22, Division 4, Chapter 3 Water Recycling Criteria, as applicable for Indirect Potable Reuse: Groundwater Replenishment – Subsurface Application (injection wells). DB shall be responsible for providing a WRF that meets the requirements for IPR using injection wells, assuming a 2-month subsurface response time. The WRF product water shall be non-corrosive and have a minimum Langelier Saturation Index of 0.

4. **PCR, Part 2.9 Reverse Osmosis,** design criteria table, RO System Ancillary Equipment – for Optional 3rd stage, Item 2: RO High Pressure Pump: Revise criteria to: Horizontal multistage centrifugal or vertical turbine pump.

Rob Livick, PE, Public Works Director/City Engineer	29 March 2018 Date
Acknowledgement of Addendum No. 3	3 May 2018 Date

Estimated Morro Bay WRF Influent Wastewater Flows (MGD)				
Flow Condition	**Existing**	**Existing with Collection System Improvements**	**Future (2040)**	**Future (2040) with Collection System Improvements**
Average Annual Flow (AAF)	0.87	0.87	0.97	0.97
Maximum Month Flow (MMF)	1.04	1.04	1.15	1.15
Average Dry Weather Flow (ADWF)	0.90	0.90	1.00	1.00
Peak Dry Weather Flow (PDWF)	2.08	2.08	2.74	2.74
Peak Wet Weather Flow (PWWF)	5.85	7.90	8.14	8.14

2. **Modeled Hydrographs**: Hydrographs were developed from the City's calibrated sewer collection system hydraulic model, and consist of the flow entering the WWTP from the City of Morro Bay only (i.e., excluding Cayucos flows). Three different scenarios are included. For each scenario, a seven day hydrograph is provided for the Average Dry Weather Flow (ADWF), Peak Dry Weather Flow (PDWF), and Peak Wet Weather Flow (PWWF) condition. Each scenario is described below. The hydrographs will be made available to potential proposers in Excel spreadsheet format through the City's Procore system.

   - Existing Condition: These hydrographs represent the flow from Morro Bay that is conveyed to the WWTP without any improvements to the collection system. In the case of the PWWF condition, peak flows in certain areas of the collection system are "held back" in the collection system due to undersized sewer mains.
   - Existing Condition with Improvements: These hydrographs represent the flow from Morro Bay that would be conveyed to the WWTP if improvement projects were constructed to mitigate capacity deficiencies in the collection. In the case of the ADWF and PDWF condition, the hydrographs are identical to the "Existing Condition" scenario. However, for the PWWF condition, peak flows that are currently "held back" in the collected system can now be conveyed to the WWTP, resulting in a higher PWWF that will reach the WWTP.
   - 2040 Condition: These hydrographs represent the flows under future (year 2040) flow conditions. This scenario assumes that the improvement projects included as part of the "Existing Condition with Improvements" have been implemented, and that there are no capacity restrictions in the collection system under year 2040 conditions.

Rob Livick, PE, Public Works Director/City Engineer — 6 Apr 2018 — Date

Acknowledgement of Addendum No. 4 — 3 May 2018 — Date

Attachments:

1. City of Morro Bay Request for Proposals for Design-Build Services of the Water Reclamation Facility (WRF) Onsite Improvements Attachment B: Proposed Design Build Agreement (showing changes from draft agreement issued on January 24, 2018)

Rob Livick, PE, Public Works Director/City Engineer — 19 April 2018 — Date

Acknowledgement of Addendum No. 5 — 3 May 2018 — Date

Attachments:

1. City of Morro Bay Request for Proposals for Design-Build Services of the Water Reclamation Facility (WRF) Onsite Improvements Attachment B: Proposed Design Build Agreement, Exhibit G Current Davis Bacon Wage Determinations

Rob Livick, PE, Public Works Director/City Engineer — 27 April 2018 — Date

Acknowledgement of Addendum No. 6 — Date

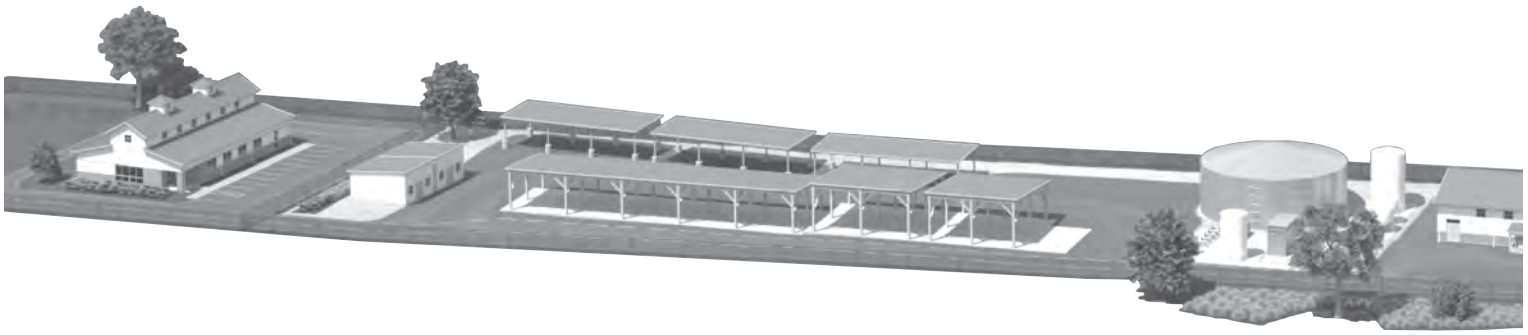


TABLE OF CONTENTS

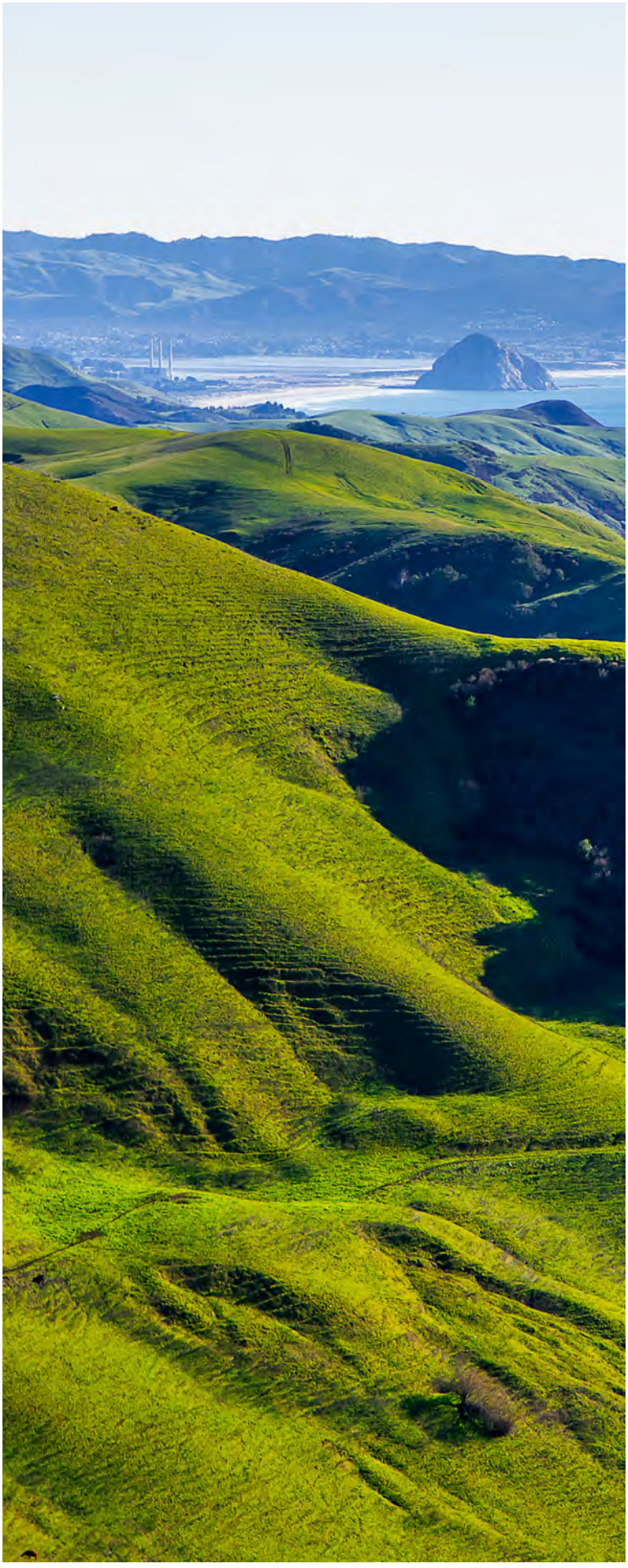
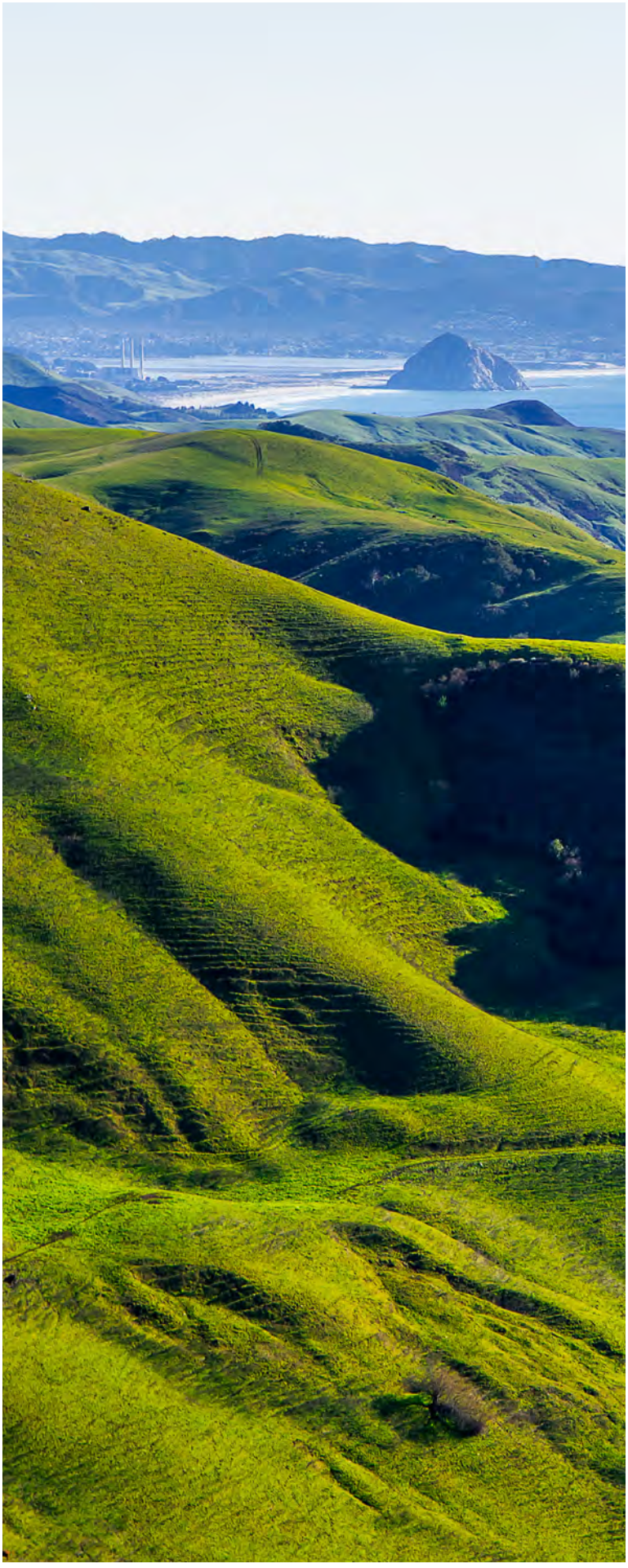


Table of Contents



Appendices

Appendix 1 - Proposed DB Contract Changes

Appendix 2 - O&M Commissioning Report Sample

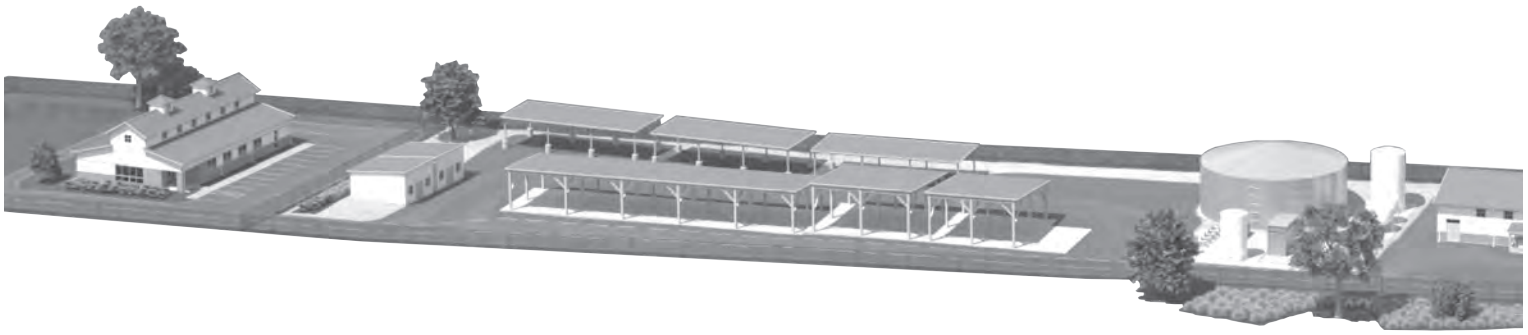
Appendix 3 - Project Schedule

Appendix 4 - Performance Guarantees - Backup

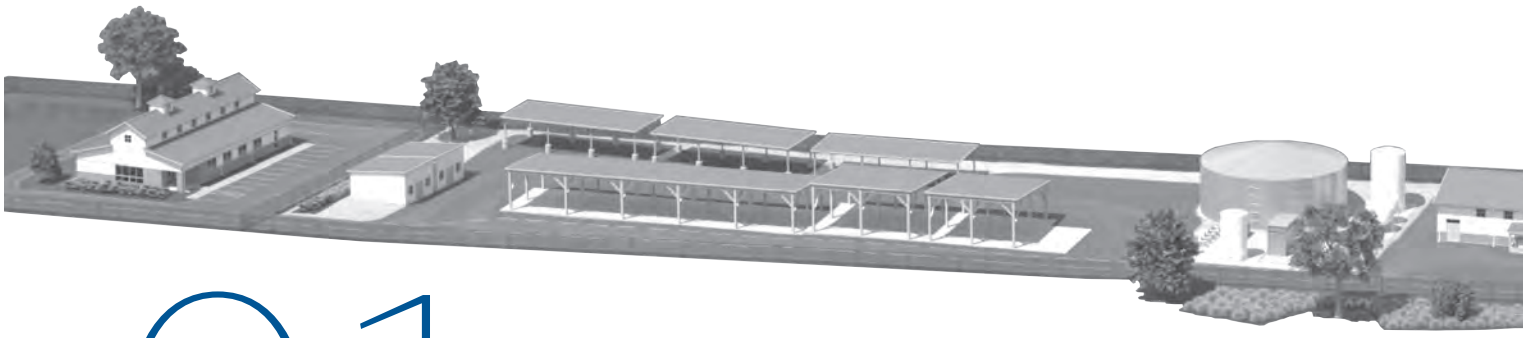
Appendix 5 - Life Cycle Costs - Backup

Appendix 6 - Drawings

Price Proposal Form (Separate Envelope)

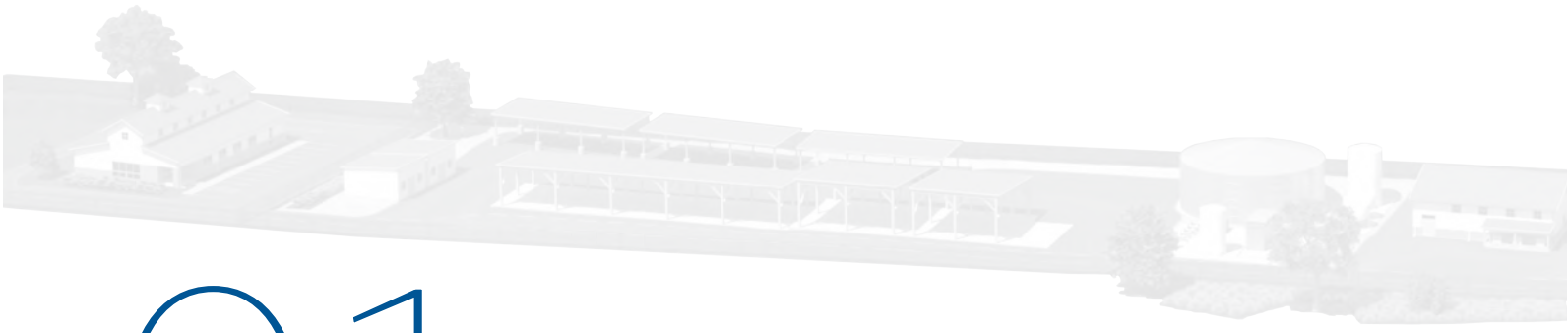


TECHNICAL PROPOSAL



01

OVERALL MANAGEMENT APPROACH



01

OVERALL MANAGEMENT APPROACH

Working side-by-side with the City and its consultants, we will collaboratively deliver a new WRF that provides robust and reliable performance at the lowest achievable cost.

The replacement of Morro Bay's aging wastewater treatment facility near the City's waterfront with a state-of-the art water reclamation facility (WRF) located 1.5 miles inland, is an enormous challenge in terms of project siting, scoping, funding, design, permitting and delivery. With most of the up-front challenges addressed, the City is proceeding to the design, permitting and construction phase using a design-build (DB) delivery model. The collaboration that is the foundation of DB offers unmatched opportunities to create value through innovation.

The Filanc Black & Veatch (FBV) DB team's approach is based on taking full advantage of our combined talents and working side-by-side with the City and its consultants to collaboratively deliver a new WRF that provides robust and reliable performance at the lowest achievable cost.

PROJECT SUCCESS THROUGH:

Design-Build collaboration
Budget-Conscious Innovative Design
Expert Construction

We have carefully reviewed the RFP requirements and documentation; gathered information through our proprietary meetings with City staff; and conducted additional geotechnical investigations, research, and brainstorming. Together. we have developed a management approach that leverages our previous experience on major lump sum design-build water and wastewater projects in California and throughout the country. We are confident that the management approach described in these pages will successfully address each of the items listed in your RFP.

PROJECT UNDERSTANDING

Replacing the existing Morro Bay-Cayucos Wastewater Treatment Plant (WWTP) is a major capital improvement project that has required significant planning, public outreach and technical analysis to ensure that the residents of the City obtain the best value for their investment. A major milestone in the planning process was completion of the Morro Bay Water Reclamation Facility Master Plan (FMP) by Black & Veatch Corporation. The FMP advanced the planning of the proposed new WRF and outlined many of the City's goals for it. Through this effort, our team has developed an intrinsic, first-hand understanding of the technical, administrative, environmental and ratepayer concerns associated with the project.

One of the drivers for replacing the existing WWTP is to meet the regulatory requirements of the federal Clean Water Act (CWA) and additional requirements defined by the State of California Regional Water Quality Control Board (RWQCB). The CWA defines the quality of treated wastewater that can be released to the environment. Treated wastewater from existing WWTP is currently discharged to the Pacific Ocean, offshore and north of Morro Rock. The existing plant cannot meet state and federal requirements for discharge to the ocean without significant upgrades. The RWQCB has required the City of Morro Bay to develop a new treatment facility by 2021. Another key factor that has driven the project from an upgrade to a replacement, is the California Coastal Commission's January 2013 direction to relocate the facility to a more inland area that is consistent with Coastal Act policies.

The requirement to build a new WWTP provides the City an opportunity to discontinue the daily discharge of treated water to the ocean and create a new, sustainable and local water resource. The uses under consideration for the water ranged from indirect potable reuse (IPR) through groundwater injection, to agricultural irrigation such as avocado orchards, and general irrigation for parks or golf courses.

The City's goal for the new WRF is to meet all discharge permit and recycled water reuse requirements for IPR through groundwater injection while ensuring economic value with a special emphasis on minimizing rate payer and City expense. To address these goals, our team brings both cutting edge global and local wastewater reclamation experience from the combined strengths of J.R. Filanc Construction Company's (Filanc) 65 years of California construction experience with Black & Veatch's global and local wastewater and treatment design experience. Together, our combined experience brings innovation and affordability to the benefit of the City of Morro Bay.

OVERCOMING CHALLENGES TO CREATE VALUE

While every major capital improvement project has challenges, the new Morro Bay WRF faces several that are unique, requiring innovative solutions to meet the City's goals and objectives. Relocating a wastewater treatment facility from a low-lying area adjacent to the ocean with direct connection to its outfall presents a myriad of technical and right-of-way challenges in terms of influent and effluent conveyance. Our focus is on those challenges related to the new treatment facility itself. Three key challenges and strategies to mitigate them are presented below and on the following page.

GOALS FOR MORRO BAY

Given our long relationship with the City in the development of project, we understand your goals for the WRF to be:

- A high quality plant that reliably produces IPR quality water for aquifer recharge
- Efficiently handles occasional high volume peaks
- Designed for efficient operations
- Minimizes capital cost
- Minimizes lifecycle cost

NO COMPROMISE PLANT DESIGN

The primary challenge to the efficient design and operation of the new WRF is managing the variability between typical diurnal flows and peak flows created by storm events. The average daily flow to the plant is about 1 mgd, whereas the peak flows can exceed 8 mgd, albeit infrequently. A typical design approach to handle this peak would be to incorporate additional basin capacity to equalize the flow. However, due to the size of the peak and the infrequency of its occurrence, we've determined that the expense of that approach would be unnecessarily high. Our approach, as described in detail in Section 7, utilizes a standby filtration system to remove suspended solids during high flow events and blend it with treated baseline flows to reliably attain ocean discharge quality standards. We call this concept the Stormwater Adaptive Filtration Equipment (SAFE System). Using SAFE we can minimize both capital and life cycle costs, while allowing us to fully optimize the design and performance of the membrane bioreactor (MBR) based plant for operation under typical flows without any compromises.

OPTIMIZING USE OF AVAILABLE SPACE

A second challenge for the WRF project is containing the cost of earthwork for construction. The South Bay Boulevard (SBB) WRF plant site, while currently undeveloped, features fairly steep topography with the only comparatively level area for construction along its eastern side. The underlying bedrock is overlain by a thin layer of clay rich colluvium. Through multiple iterations of 3D modeling of cut-and-fill scenarios and construction value engineering, we achieved a site development plan that eliminates the need for costly offsite disposal of the clay rich overburden, import of fill soils and construction of major retaining walls. Our balanced site approach not only minimizes earthwork costs, it creates an adjacent level area suitable for the future installation of a photovoltaic panel field.

COST CONTAINMENT

As noted, the WRF is an ambitious project facing many challenges, each with the potential to increase costs. Our design approach is founded on the concept of cost containment without compromise in quality or performance. Our approach to collaboration and construction, maximizes the benefits of design-build to facilitate delivery and contain costs. In recent months, we have observed significant upward pressure on pricing in the water/wastewater infrastructure marketplace that may exceed the escalation factors of the RFP over the next year. The old adage that "time is money" certainly applies. Certain mitigation measures are available to potentially limit the impact of rapid price escalation. These include the use of early start packages to lock in early pricing. For example, early packages for major equipment, or site preparation could be authorized. While our experience using multiple GMPs is typically associated with schedule acceleration needs, it can also be used to hedge on price escalation.

RISK MANAGEMENT

Risk management in the DB process is another area that we approach collaboratively because each party views risk differently. Depending up on Owner preferences and project criteria, the approach can be highly formalized using BV's @Risk Model, or through a more generally using a Risk Register. Whichever is your preference, we are prepared to work with you to identify, assess, and plan to mitigate potential risks to the achievement of all project goals using the steps below.

- **Step 1 Risk Identification**
- **Step 2 Risk Evaluation, Mitigation & Quantification**
- **Step 3 Model Development**
- **Step 4 Model Output, Analysis & Recommendations**
- **Step 5 Implementation**

As a greenfield project with clearly defined performance criteria, we do not see the WRF project as having risks that are overly challenging to mitigate. The overarching risk to the project is associated with local approval of the project and its funding, which is beyond our ability to mitigate. **Table 1.1** on the following page identifies our view of the Top 5 Risks to your goals and objective and our mitigation strategy for each.

TABLE 1.1: TOP 5 RISKS TO YOUR GOALS

RISK	DESCRIPTION	IMPACT	MITIGATION
Scope Creep	Changes to project criteria, materials, processes during design phase	Cost increase and/or schedule delay	Our detailed design and exhaustive estimating process for this proposal has significantly reduced the design-builder risk for scope creep. Collaboration and thorough Owner review during design will increase project definition. Monitoring and notification of potential change impacts will be performed by DB team to head off potential cost or schedule concerns.
Permitting	Delays in obtaining key permits to construct or for operations	Potential schedule delays and/or cost increases to address unanticipated agency requirements	Detailed review of permitting requirements during proposal design phase has minimized potential of significant permitting issues. Engagement of permitting specialists will aid in getting the project permitted.
Coordination with 3rd Parties	Coordination challenges between DB, conveyance pipeline designer and contractor, Owner or Owner's Representative	Construction delays, cost increase, inability to perform startup.	Include all parties as Stakeholders in project partnering. FBV experience in collaborative DB delivery will ensure complete coordination.
Local Workforce	Potential difficulty in staffing large project in Central Coast region	Delays and/or excessive rework due to limited available workforce.	Filanc is signatory to local labor unions that consistently provide trained and qualified staff. As builder of the Cayucos Sanitary District WWTP project that will proceed the WRF, Filanc will have screened available labor to identify the most qualified individuals.
Unforeseen Subsurface Conditions	Unsuitable soil or bedrock conditions not identifiable based on geotechnical investigations performed by Morro Bay	Delays and/or cost increase to address unacceptable soil conditions.	FBV performed targeted subsurface investigations during the proposal period in areas of greatest potential impact to our design to mitigate the collective risk.

DIFFERENTIATORS OF THE FILANC BLACK & VEATCH TEAM

The FBV team brings tremendous technical depth and differentiating resources that ensure this project will meet each of its goals. FBV has already collaborated to successfully deliver an advanced water treatment plant over four times as large as the Morro Bay WRF. We are a team of DB experts that know how to work together to remove roadblocks to success. Our team Organization Chart previously presented in the SOQ has been updated to include additional differentiating resources and minor staffing changes since the submittal of our SOQ.

Filanc is currently serving as the Construction Manager at Risk (CMAR) for the Cayucos Sanitary District Sustainable Water Project. The benefit of this experience to Morro Bay is that we will have an established local workforce and a cadre of proven subcontractors ready to engage on the WRF project. The sequence of both projects is perfectly aligned to seamlessly move resources to ensure efficient delivery.

Key members of our management team—Gary Silverman, Chad Brown, and Omar Rodea—are California P.E.s and certified by the Design Build Institute of America (DBIA) as Designated DB Professionals. Proposed DB Project Manager (DBPM) **Gary Silverman,** brings a unique skill set that is specifically evolved for DB delivery. With more than 20 years of experience as a design professional followed by about seven years as a DBPM in construction, he has a complete understanding of the challenges that face each part of our team. With prior experience working as an Owner, he also has a first-hand appreciation of the challenges the City will face. Bringing these perspectives together is the fundamental art of DB. Gary has that experience including the recent completion of a nanofiltration plant for the City of Signal Hill and an UV/AOP treatment facility for the City of Monterey Park.

Construction Project Manager **Chad Brown** has worked almost exclusively on complex DB water and wastewater treatment facilities over the past 20 years. His experience collaborating with designers and owners before, during, and after construction is a true differentiator. Similarly, Preconstruction Manager **Omar Rodea** is uniquely qualified. His role, often overlooked by inexperienced design-builders, is the crucial link between design, estimating and construction. **Erick Bevington,** our Design Manager, has shown true skill in collaboration while leading our design team through the challenging process leading to the development of this proposal.

Designing and building a reliable, high-quality advanced water treatment plant that is affordable in terms of capital and operations expense is also a bit of an art. In developing this proposal, we brought nearly two dozen design and construction professionals together to evaluate potential solutions to the City's water treatment and reuse challenge, looking for the optimal approach. Chief Estimators **Bob Zaiser** of Filanc and **Mike Mackenzie** of Black & Veatch, who collaborated on a $190M wastewater DB project for the U.S. Marines at Camp Pendleton, were deeply engaged to ensure that value decisions were made at each opportunity. Following award, our team will review our proposed design in detail with the City to begin the close collaboration needed to finalize the design to your satisfaction.

Startup and commissioning of complex water treatment facilities is also a challenge. Here again our team possesses unique capabilities. Design Manager **Erick Bevington** worked closely with **Marco Palomera** of Filanc to commission the Silicon Valley Advanced Water Purification Center in San Jose, one of the state's most complex plants of its kind. Coupled with beginning-to-end involvement of Filanc's affiliated electrical contractor, Big Sky Electric, we are confident that the startup and commissioning of the Morro Bay WRF will be well planned, efficient, and successful.

The FBV team is excited by the opportunity to further dig into the details of this project and work as the City's trusted partner to develop a solution that meets your goals and serves your community for many years to come.

KEY SUBCONTRACTORS ADD VALUE THROUGH EARLY ENGAGEMENT

SUBCONTRACTORS ON TEAM

A DB best practice that we fully embrace is the early engagement of key subcontractors to help create value through collaboration. Being part of the process also ensures that our subcontractor partners fully understand the project, its challenges and their roles in its successful completion. This commitment and buy-in dramatically reduces miscommunication and disagreements during construction, creating a more efficient and successful project delivery process.

The FBV team possesses tremendous resources and capabilities to self-perform most of the design and construction work needed to deliver the WRF. These capabilities allow us to tightly control the critical path of construction to ensure efficient delivery. In our qualifying SOQ, we identified three Designated Subcontractors that will be key contributors to the project; **Ashley + Vance Engineering**, **Big Sky Electric** and **Fraser Seiple Architects**. Each has contributed in their area of expertise to the development of this proposal and is ready help us deliver the project.

ASHLEY + VANCE ENGINEERING (A+V)

Ashley + Vance Engineering (A+V) is a central coast civil and structural engineering firm headquartered in San Luis Obispo. A+V provides our team an understanding and appreciation of the local development environment to facilitate design, permitting, and construction of the WRF. We selected A+V based on their work quality and their collaboration with Filanc on design of Cayucos Sanitary District's Sustainable Water Facility. A+V's role will be to support civil and structural design needs and to provide permitting support.

BIG SKY ELECTRIC

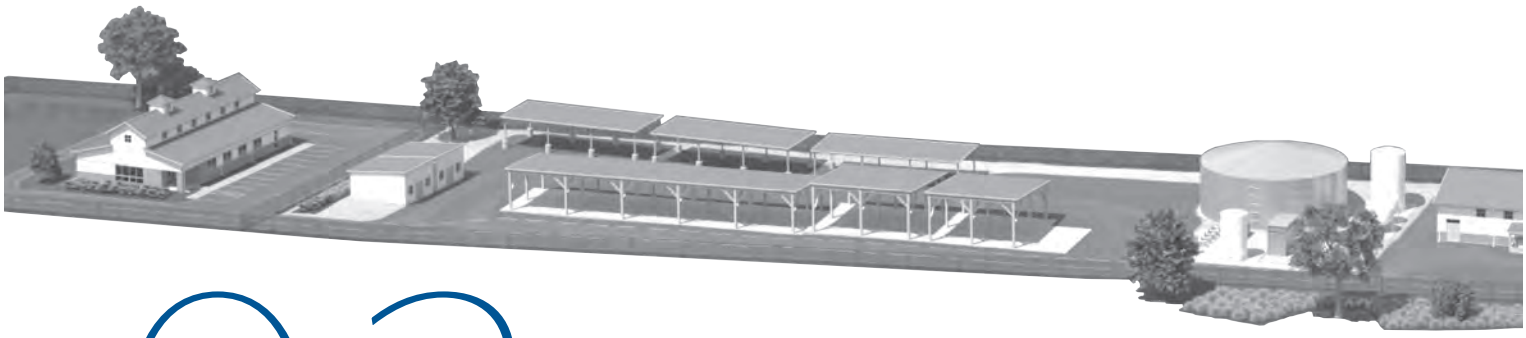
A critical aspect of treatment facility DB construction is the role of the electrical contractor—DB allows the contractor and electrical designer to collaborate to develop high performing, constructible and cost-effective solutions to power and control complex treatment equipment. **Big Sky Electric** specializes in electrical construction for water and wastewater treatment infrastructure and is a consistent partner with Filanc and Black & Veatch in its DB projects. Together, we have successfully completed projects totaling over $200M in value, many using DB delivery. The principals of Big Sky have worked with Filanc for more than 20 years on projects including the West Basin Phase IV Water Reclamation Plant and with Black & Veatch on the City of Santa Monica Charnock Well Field AWTP. Both projects featured MF, RO and UV light disinfection among other advanced treatment technologies that will be part of the Morro Bay WRF. Big Sky will serve as electrical contractor for the project.

FRASER SEIPLE ARCHITECTS

Fraser Seiple Architects is a full service architectural firm practicing throughout California and internationally. The firm's experience extends across a wide variety of project types and client types,and all work is approached with an orientation to careful management, technical competence, and design excellence.

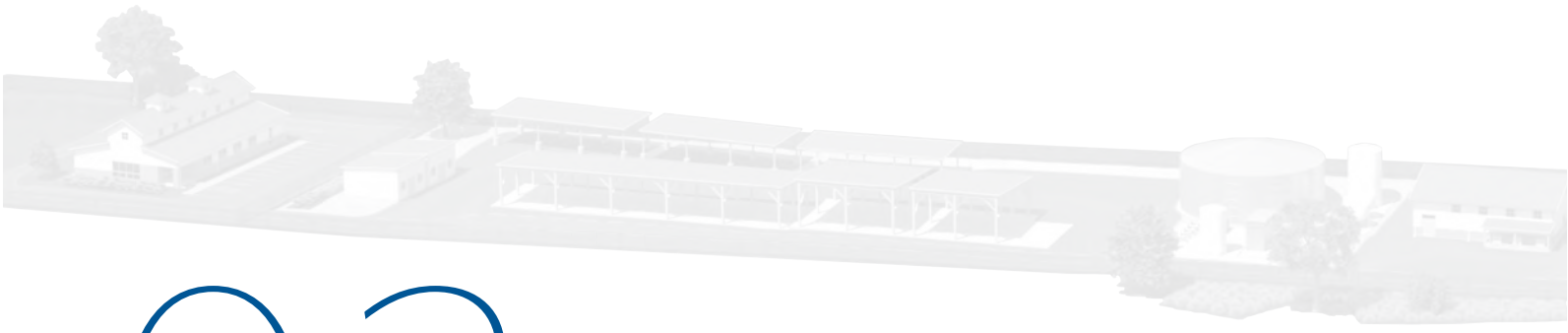
SUBCONTRACTOR PROCUREMENT PLAN

Given our team's deep roots in regional construction surrounding the City of Morro Bay, we carry longstanding relationships with local contractors. It is through these relationships that we are able to leverage a web of knowledge and provide cost competitive solutions from quality subcontractors. We have developed relationships with the local subcontractor market and understand how to ensure there is a capable workforce to construct this project. Beyond the civil and structural support from A+V and architectural design from Fraser Seiple, we do not anticipate the need to subcontract additional design services. We expect to self-perform structural excavation, concrete, piping, and process mechanical construction. We will seek subcontracting support for site grading, shoring, rebar, and coatings. We will also subcontract most architectural trades for the site buildings as well as paving and landscaping.



02

QUALITY ASSURANCE/ QUALITY CONTROL



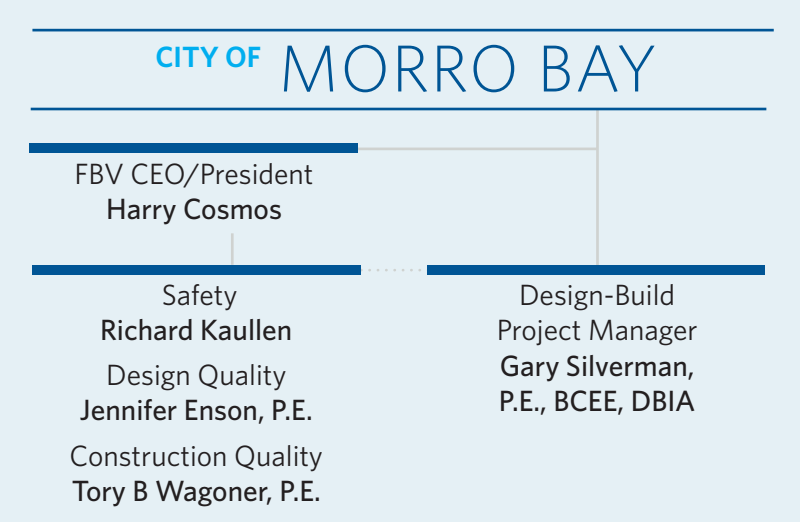
02 QUALITY ASSURANCE/ QUALITY CONTROL

Our systems, processes, and procedures will aid us in delivering the WRF on time, safely, within budget, and with lasting quality.

The FBV team understands the need to build quality into all that we do to deliver a project on time, safely, within budget, with impeccable quality. These factors are implicitly linked, with quality being a driving force behind all aspects of a successful project. We have systems, processes, and procedures to help us maintain the standards that you expect. Quality is a process that merits diligent performance, management, feedback, and improvement.

QUALITY CONTROL TEAM & APPROACH

Our established design-build Quality Control Program addresses all aspects of quality from design through construction and startup. Under the direction of our Project Executive, Design and Construction Quality Control Managers not involved in the day-to-day management of the project, prepare and implement Quality Control Plans in their specific areas of responsibility. Documentation of quality reviews, inspections and corrective actions are recorded and maintained in our cloud-based Procore Project Management system, available to City representatives for review.



As shown on this excerpt from our Organization Chart previously presented in the SOQ, quality management is separate and independent from the Project Manager and reports directly to Project Executive, **Harry Cosmos**. Quality Management is a distinct unit consisting of a Design Quality Manager (DQM) and a Construction Quality Manager (CQM). **Jennifer Enson, PE** will serve as the DQM for the project and **Tory Wagoner, PE** will serve as the CQM. This Quality group has the authority to stop work until the work is brought into conformance with the Contract Documents.

We recognize that designing and building a high-quality project requires both Quality Assurance (QA) and Quality Control (QC). As illustrated in the organization chart, primary responsibility for QA rests with those responsible for delivery of the work product. For this project, Engineer of Record, **Erick Bevington, PE,** will be responsible for the QA of our design work and **Chad Brown,PE** will be responsible for QA of construction.

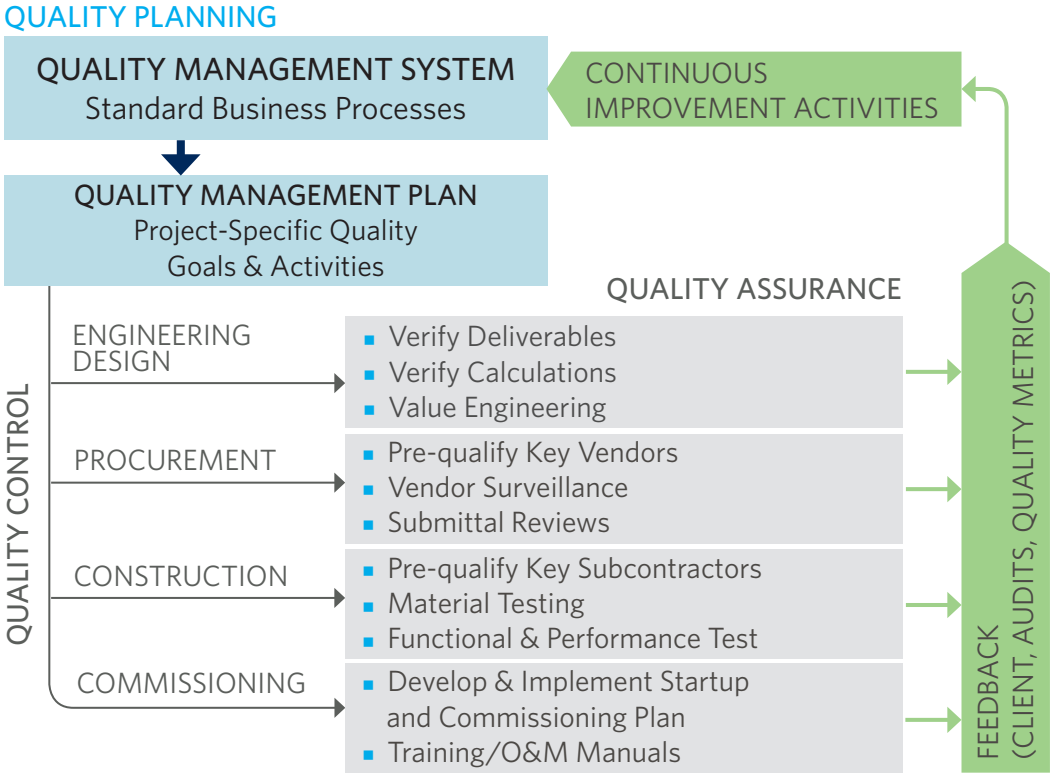
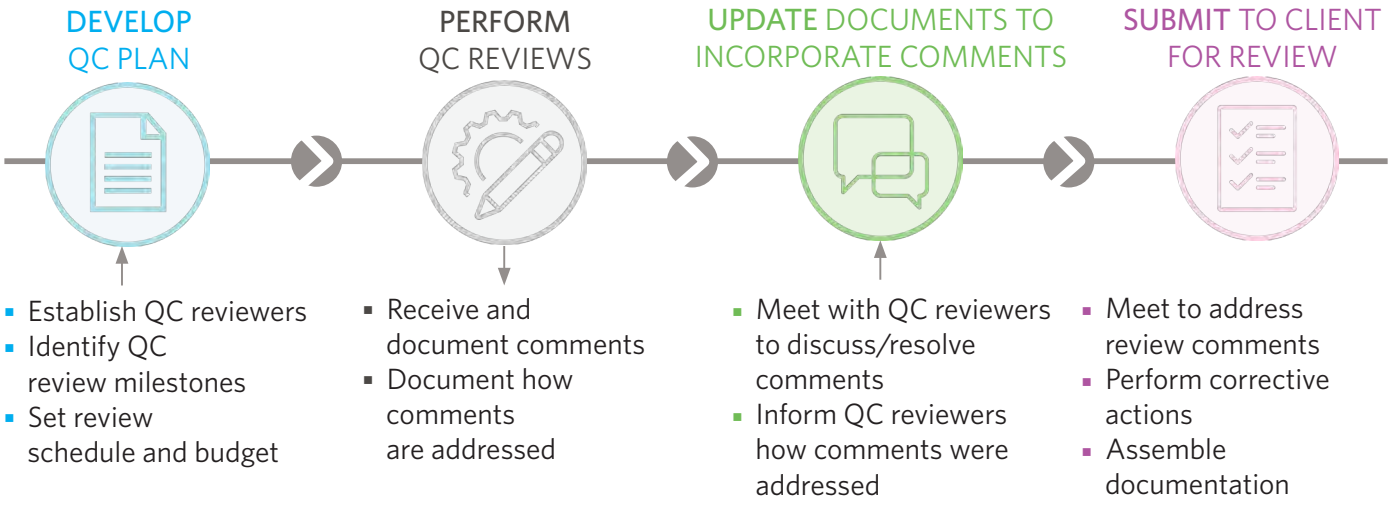


FIGURE 2.1:
OUR INDUSTRY LEADING QUALITY ASSURANCE AND QUALITY CONTROL PROCESS IS BUILT ON DETAILED PLANNING, COMMITTED FOLLOW THROUGH AND CONTINUOUS IMPROVEMENT THROUGH FEEDBACK

FIGURE 2.2: DESIGN QUALITY CONTROL PROCESS



DESIGN QUALITY

As a full-service globally recognized design engineering firm, Black & Veatch employs a comprehensive design QA/QC methodology on each of its design projects in accordance with its Quality Management System (QMS). The Black & Veatch QMS is a system of planned processes and activities and formal documentation based on ISO 9001:2008 Quality Management Systems. It addresses all elements of the standard, to achieve client requirements, codes, standards, contracts, drawings, and objectives that are applicable to the project.

The QMS is a systematic process of monitoring and evaluation of the project to provide and maintain quality of the delivered products. QA activities and roles are identified as the project is scoped and are implemented throughout the project as deliverables are prepared. QC activities consist of independent reviews for technical, coordination, and readability needed to provide the detailed design for the project. For further discussion of our approach to Design Quality, please refer to Section 5.

Jennifer**Enson**, PE | DESIGN QUALITY MANAGER

Jennifer Enson, PE has more than 20 years of experience in the planning, study, design, and construction of water, recycled water, and wastewater facilities. Over the last ten years, she has managed procurement and design on projects totaling more than $1 billion in construction including the Orange County Water District Groundwater Replenishment System.

CONSTRUCTION QUALITY

QA during construction will be the responsibility of Construction Manager, **Chad Brown.** Prior to construction, he will lead the development of detailed construction work packages for each discipline of work and include applicable construction specification sections, activity-specific quality considerations, a material list, material delivery dates, labor crew size, required construction equipment, drawings, and lay and lift drawings.

Tory**Wagoner**, PE | CONSTRUCTION QUALITY MANAGER

Tory Wagoner, PE, has 20 years of experience in the construction industry serving as a project manager and construction quality manager. He is certified in Construction Quality Management for Contractors by USACE/NAFVAC.

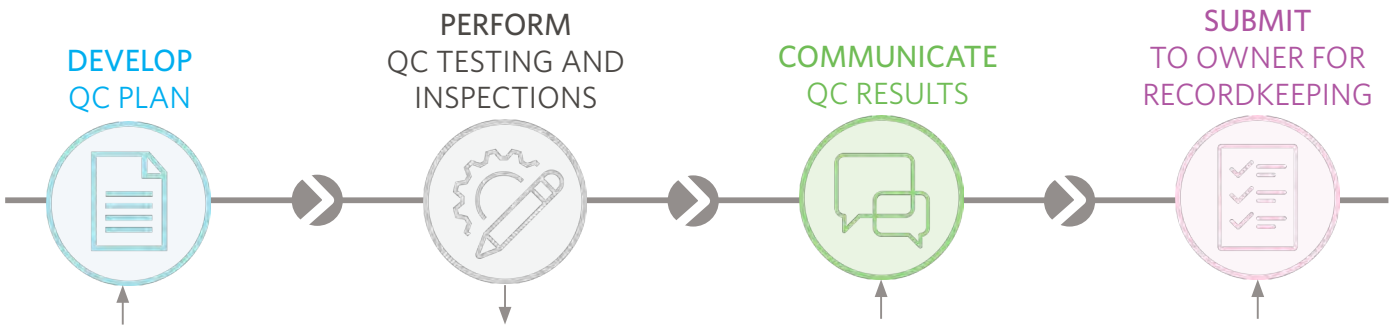
The packages will serve as the manual of construction that explains "How to Execute" each definable feature of work (DFOW). Means and methods, number of craft, estimated man-hours, and type of construction equipment will be evaluated to develop the best project plan. Communication is key to any construction effort. Creation of these work packages increases clarity and focus on each DFOW, improves safety, communication, and maximizes quality and productivity. Working with Superintendent, **Marco Palomera**, Chad will coordinate all third-party special inspections and testing with the City.

Tory Wagoner will serve as the CQM responsible for maintaining all construction QC reports and data. He will provide weekly updates to Project Executive Harry Cosmos and DBPM Gary Silverman who will monthly, review all construction quality issues with the City. Tory will conduct field inspections when construction is under way. The CQM is the key person involved with the day-to-day QC of construction activities in the field. He is responsible for, and has the obligation to stop work in areas that have not met requirements.

The CQM's responsibilities also include:

- Organizing, conducting, and reporting on the QA/QC status to the Project Executive and Manager
- Collecting and reviewing subcontractor's quality control plans
- Auditing logs and submittal packages sent to the City
- Reviewing as-built drawing packages
- Ensuring proper documents and project revisions are used during all phases of construction by all affected trades and subs
- Collecting jobsite photos of the ongoing construction progress

FIGURE 2.3: CONSTRUCTION QUALITY CONTROL PROCESS



- Identify CQM
- Define quality metrics
- Identify 3rd Party testers and special inspectors

- Testing and inspections
- Daily reports
- Inspection logs
- Maintain data

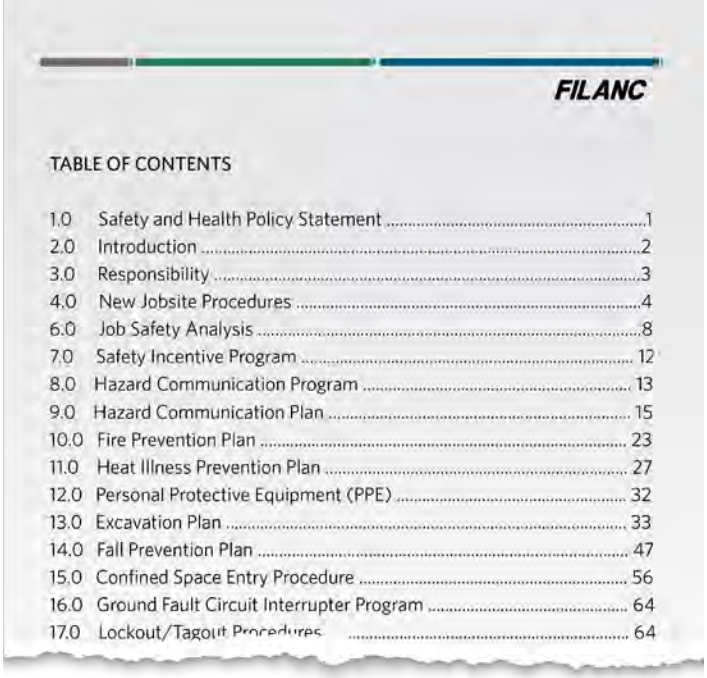
- Meet with CQM to resolve issues
- Perform corrective actions
- Document completion

- Record drawings
- QC data summaries
- Corrective action documentation

COMMITMENT TO SAFETY

FBV maintains a solid safety program that helps us consistently deliver work safely. We place the highest importance on the safety and health of our people, clients, and the public during the performance of our work. For our employees, it means everyone goes home at the end of the day without incident. For our clients it results in fewer delays and lower costs. As a standard of practice, we work with clients to meet project-specific safety considerations in addition to industry best practices and regulatory standards.

Our safety and health programs, policies, and procedures incorporate best practices and lessons learned based on our understanding of regulatory and legal considerations as well as our experiences from all over the globe. Black & Veatch is a member company of the Construction Industry Institute (CII) and has incorporated much of its research into formal policies and procedures. Filanc has an extensive record of safe construction spanning many decades and resulting in numerous local and national awards. Our well-established approach is based on proven safe work practices and innovative methods that improve communication and eliminate complacency about safety.



FILANC

TABLE OF CONTENTS

THE TABLE OF CONTENTS ABOVE IS FROM A PREVIOUS HEALTH AND SAFETY PLAN PREPARED BY FILANC TO IDENTIFY AND ADDRESS SAFETY, HEALTH, AND ENVIRONMENTAL CONCERNS.

Our safety goals for all projects include:

- Zero injuries at the workplace including subcontractors, Owner personnel, delivery personnel and visitors
- Zero injuries to the public
- Zero environmental issues

During project planning, our Corporate and Site safety personnel, Construction Manager, Superintendent and CQM develop a site-specific health and safety plan to identify and address safety, health, and environmental concerns that may arise in the performance of work. Our project safety plan includes provisions for all potential people onsite, and all people onsite will be given a briefing on the safety protocol and provided the necessary PEP. This site-specific safety plan will include the following methods to ensure safe work practices are continuously observed by our team and all subcontractors.

- Training and inspections, record-keeping, and oversite of all aspects of safety
- Orientations for all tradespeople to cover each site's unique concerns, including thorough discussion of rules for working on-site
- Regular monitoring by our corporate safety officers for continuous recommendations and improvement
- Required submission and approval of all subcontractor safety programs and ongoing confirmation of compliance
- Accurate record-keeping of all work hours and reportable incidents

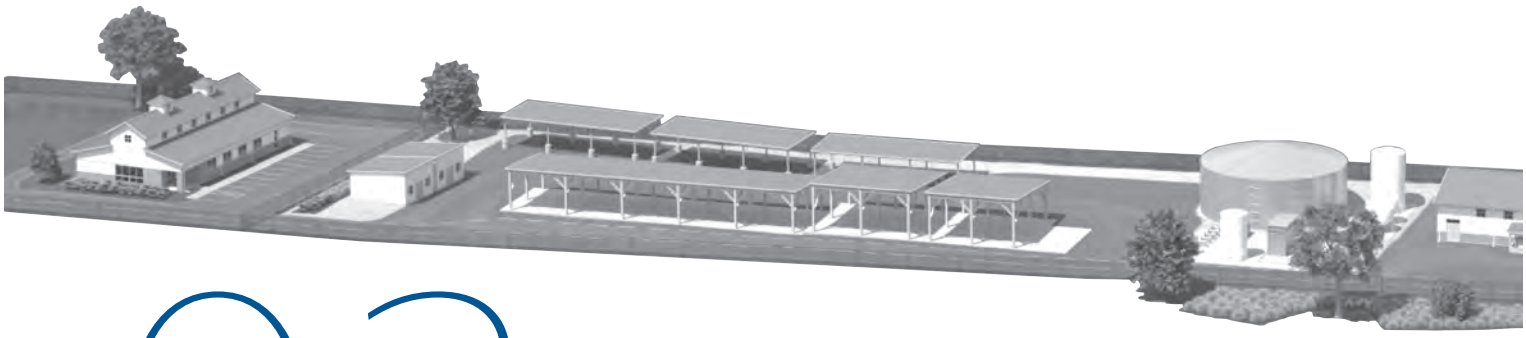
- Regularly scheduled audits conducted with project management and field supervisory staff
- Establishment of a first-response team who is prepared and ready to act in the event of any emergency
- Assurance that all Activity Hazard Analysis (AHA) documentation is kept up-to-date

ESTABLISHING A CULTURE OF SAFETY

Part of our tireless dedication to our culture of safety is the direct involvement of our entire team, from executive management to the craft workers in the field. Project executives will provide oversight of safety performance for the Project, giving personal attention to the cause and subsequent rectification of any safety issue.

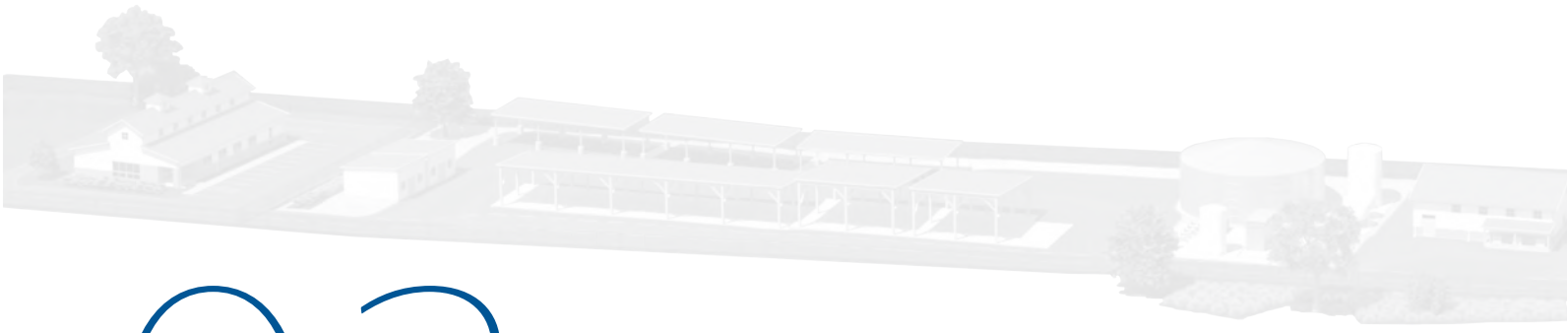
Safety will not be sacrificed for production but rather considered an integral part of quality control, cost reduction, and job efficiency. As such, all superintendents will be keenly aware of the safety performance demonstrated by the employees under their supervision. Each employee has the responsibility to work in a safe manor. If they see something that is not safe, they have a responsibility to report it to their supervisor, and if it poses a risk to them, not to expose themselves to the hazards. This is also reinforced through the site-specific safety orientation and twice-weekly toolbox talks.

FIGURE 2.4: SAFETY STATISTICS



03

PROJECT CONTROLS AND COST TRACKING



03

PROJECT CONTROLS & COST TRACKING

FBV employs robust, best-in-class project control and document management measures to fully inform the City of our progress.

As industry leaders in major facility design and construction, the FBV team employs robust, best-in-class project control and document management measures. From notice to proceed to final close out, the City will be fully informed of our progress in terms of cost, percent complete and schedule performance. By delivering the project as a team, with full participation and buy-in from all participants, we will virtually eliminate miscommunication, quickly resolve potential concerns and deliver a high-value, high-performance facility that the residents of Morro Bay can count on for decades to come.

SCOPE, COST & BASELINE SCHEDULE DEVELOPMENT

To prepare this proposal, we reviewed the RFP performance criteria and vetted various design concepts with the City in our proprietary meetings to define the project scope and our approach. That understanding is reflected in our initial design, schedule, and proposed GMP to construct the Morro Bay WRF project.

Following our selection and Notice to Proceed (NTP), we will transition to the Preconstruction Phase. The primary activities to be completed during preconstruction will be completion of the design, development of subcontractor bid packages, developing the baseline schedule and establishing our accounting framework.

DBPM Gary Silverman will lead the team, supported primarily by **Design Manager Erick Bevington**, **Preconstruction Manager Omar Rodea** and **Construction Manager Chad Brown** throughout the life of the project. As DBPM, Gary Silverman will have overall responsibility for budget and schedule management. However, day-to-day responsibility for management of the design budget and schedule will be held by Erick Bevington. Similarly, Construction Manager Chad Brown will be responsible for management of the construction budget and schedule.

Preconstruction Service Manager Omar Rodea will lead the creation of the accounting framework for the project working with our management, estimating, accounting and procurement teams. This process will include further developing the Work Breakdown Structure (WBS), establishing cost codes and assigning budgets informed by the GMP breakdown from our estimating team. A Schedule of Values (SOV) will also be prepared and submitted to the City to serve as a basis for progress payments. The SOV may be adjusted from time-to-time as the subcontracting plan is finalized.

VIEWPOINT

The construction budget will be managed within ViewPoint, our accounting management system, to facilitate logging of self-performed direct labor, payment of local subcontractors and suppliers, compliance with state prevailing wage and subcontractor Public Works Contractor Registration and certified payrolls in accordance with CA SB 854. We will collaborate with the City's construction management staff to ensure that our invoicing procedures are consistent with any grant or loan payment application the City may need to prepare. In addition, our project management and accounting personnel will monitor the utilization of small, minority or disadvantaged businesses in accordance with requirements that may apply based on the requirements of the funding agency.

Weekly review of project schedule and budget status will be conducted by **Construction Manager Chad Brown**. Budget performance evaluations relative to schedule will be performed monthly by Chad and DBPM Gary Silverman for internal reporting of Estimated Cost at Completion (ECAC) and to accompany monthly invoices to the City. Quarterly "Deep Dive" accounting reviews will be performed by Filanc Black & Veatch JV executive staff to uncover potential concerns and enact corrective actions, as needed. In addition, at key design milestones, we will update the project cost estimate to confirm that scope changes can be accommodated within the GMP.

ORACLE PRIMAVERA

Chad Brown was a key contributor to the development of the initial schedule presented in Section 6 of this proposal. As Construction Manager, it will be his responsibility to lead the development of the contractual Baseline Schedule. The schedule will be developed in Oracle Primavera P6 and cost-loaded to facilitate

cash flow projections and reporting. Development of the Baseline Schedule will be a collaborative effort between our design, estimating, and construction management staff as well as the City and its representatives. Chad will lead the development of the project schedule sequencing and logic and will be supported by P6 scheduling software expert Marsha Peterson.

When the baseline schedule is near completion, we will host a workshop with the City and key project stakeholders to verify that we have appropriately accounted for project constraints, permits, agency review durations, etc. Incorporating updates resulting from this workshop, the baseline schedule will be submitted for review and approval prior to the start of major construction work activities.

The approved project schedule will be updated each month until the project is complete. Each schedule update will be built upon a copy of the previous month's schedule so that progress can be tracked and verified over time. The actual start and completion dates of construction activities will be documented within our daily reports and look-ahead schedules — these dates will then be documented within the monthly project schedule update(s).

The projected completion (remaining duration) for in-progress activities — i.e. those activities started but not yet complete — will be confirmed by the project's superintendent, subcontractors, and/or our material and equipment suppliers. With this information input within the database, Primavera P6 will calculate the forecasted start and completion date for all remaining work activities, including the substantial completion date and the project completion date based upon critical path methodology.

A printed copy of each month's schedule update will be submitted to the City. Additionally, a PDF copy of the schedule update and the P6 (.XER) schedule data file will be provided along with a schedule narrative to assist the City in its review of the update. The narrative will include a summary of the month's progress, a description of the Critical Path, and highlight any notable items important to the completion of the project, such as the progress of permits, delivery of equipment, and the identification of any potential or anticipated issues so that they may be resolved prior to impact. Special reports and/or filters can also be provided at the City's request.

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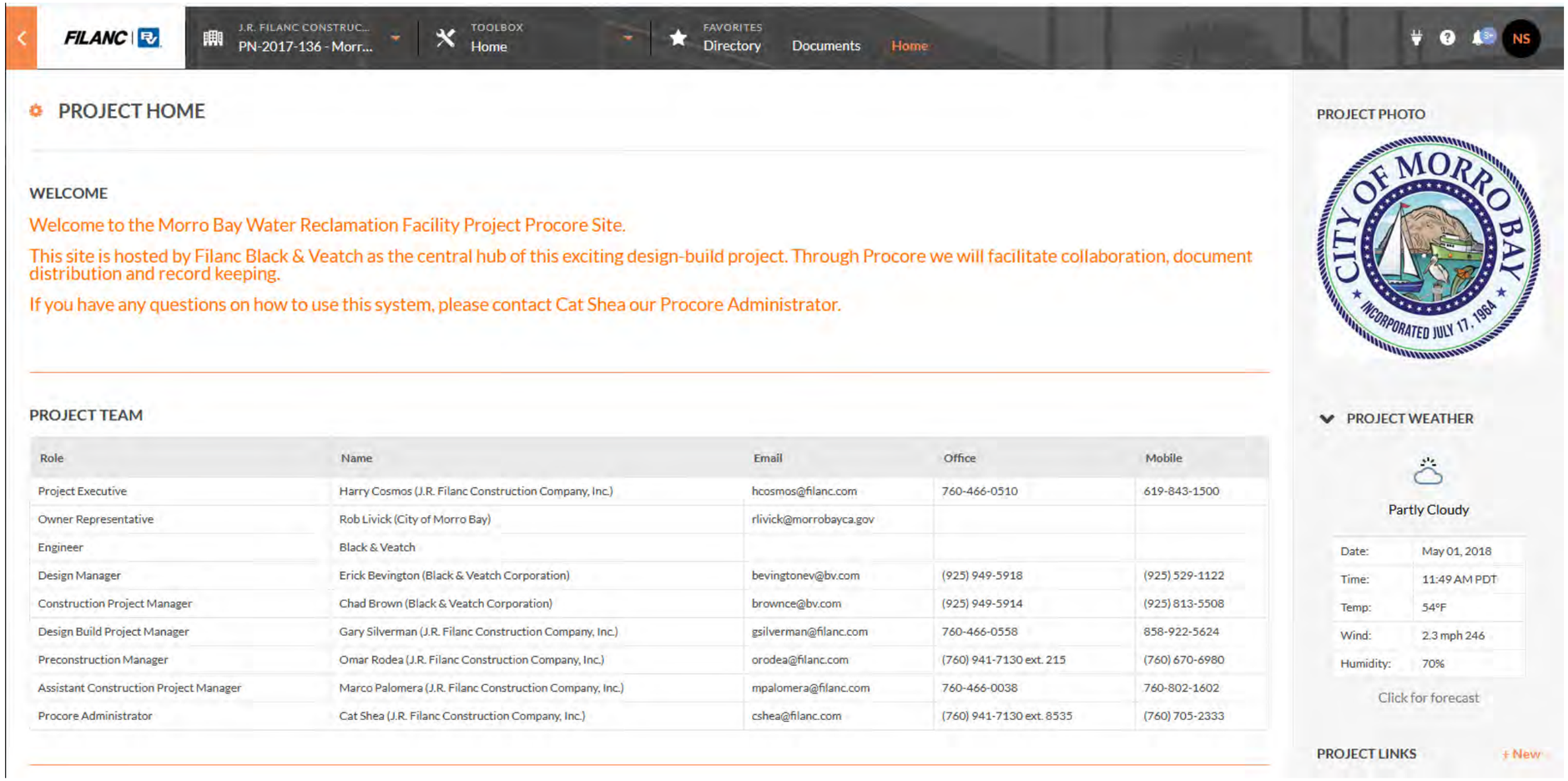
DOCUMENT MANAGEMENT

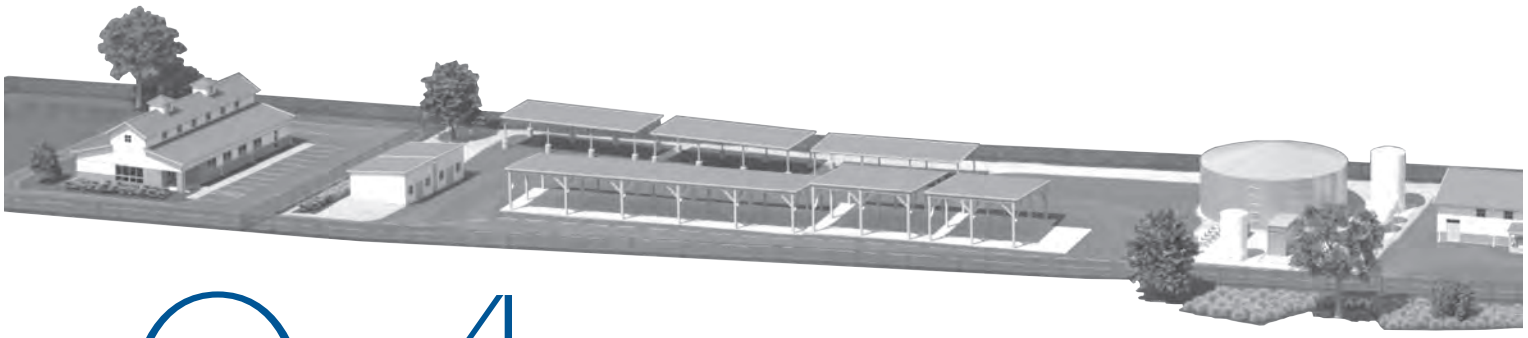
To facilitate communication, collaboration, and accurate record keeping, all project information will be maintained in Procore, our cloud-based project management platform. City staff, construction management, and other designated personnel will be provided rights-based internet access to Procore. The system will contain information such as plans, specifications, requests for information (RFIs), purchasing control register (PCR), submittals, potential change order log, change orders, schedule, daily reports, permits, photographs, meeting minutes, and agendas. Because Procore is our standard project management platform, there will be no charge for the City to access information. In addition, should the City or its consultants require training or support in the use of the system, our **Procore Administrator Cat Shea** will be readily available.

PROCORE™
CLOUD-BASED CONSTRUCTION SOFTWARE

CatShea | PROCORE ADMINISTRATOR

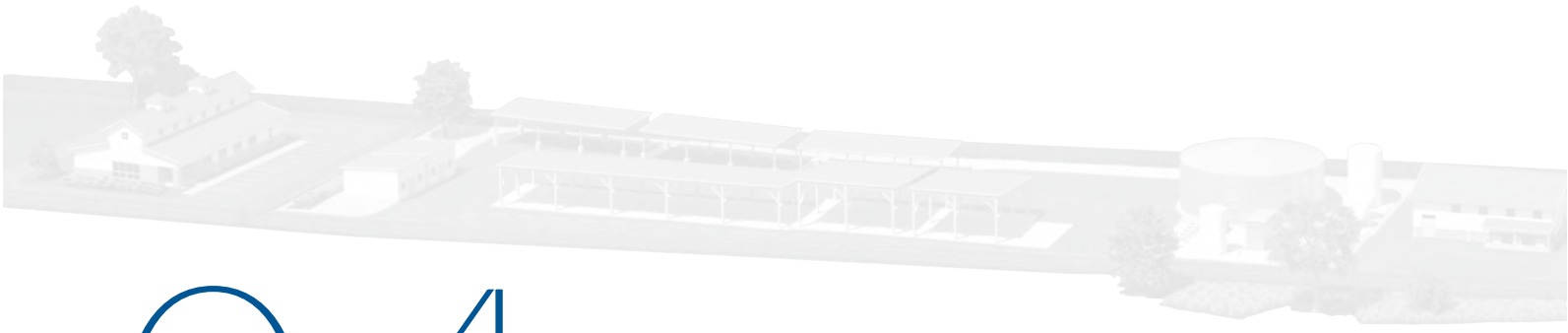
My day job is to serve as an internal resource to help our design, construction management and client staff make the best use of our Procore Construction Management platform. I develop new tools, audit projects, serve as a "help desk" and train staff. As the Procore Administrator for the Morro Bay WRF project, my goal is to help the entire project team communicate at the highest level.





04

COLLABORATION AND INTEGRATION



04

COLLABORATION & INTEGRATION

PERSPECTIVE: Design-build delivery succeeds when needed skills and perspectives are truly integrated to form a high-performing team.

RESPECT: Teams succeed when each member respects the perspectives and contributions of the other.

COMMITMENT: Filanc Black & Veatch is fully committed to lead the integration and collaboration of the Morro Bay WRF project team with a "project-first" focus while respecting the contributions and perspectives of all stakeholders

CREATING A COLLABORATIVE ENVIRONMENT

Through experience gained from working with clients like the City of Morro Bay, our integrated DB team has developed a philosophy founded on the following tenets:

- By partnering with the City, we will adopt your goals and vision for the project, and then work tirelessly to ACHIEVE IT.
- Provide objective, documented proof that all contract requirements have been met or exceeded.
- As an integrated member of the project delivery team, be fully open, honest, and transparent in all dealings with you and your representatives, and with our own subconsultants, subcontractors and vendors.
- Demonstrate our commitment and investment to the local economy through our employment and buying practices.
- Foster an integrated environment where cooperation among operations, maintenance, design, construction, and start-up staff results in facilities with higher value than can be attained through other project delivery models.
- Establish and maintain a collaborative environment in which City staff, your representatives, and our employees can grow professionally, expand their skills, and have an enjoyable project experience.

COLLABORATIVE PARTNERING & INTEGRATION

We have gotten off to a great start in meeting your goals by assembling a terrific team to address the needs of the WRF project. Our design and estimating personnel have spent countless hours assessing and reassessing best value approaches to solve your treatment needs. Our focused proposal effort is clear indication that this team is poised to deliver an exceptional project that provides the residents of Morro Bay an affordable, yet state-of-the-art, facility in an enjoyable and frictionless manner.

Establishing internal teamwork is only the first step in a successful DB project. Fully engaging the City, its staff and consultants is the next critical step in the process. During the proposal phase, we approached the Proprietary Meetings with you like we would a design workshop after award. Our objective was to present our ideas and seek your feedback, including preferences and concerns. Based on our limited interaction to date, we are confident that the combined WRF delivery team will function at the highest level.

Once we are selected as your design-builder, collaboration and integration efforts will really take off. We have suggestions on how to proceed, but we are flexible and prefer to develop our approach collaboratively with the City and its consultants. We typically advocate a series of team-building workshops, meetings, and activities aimed at co-developing our technical approach to the project while encouraging and developing teamwork. These workshops and "over-the-shoulder" reviews will be identified in our baseline design schedule.

To get the project off on the right foot and to provide an early roadmap for executing the work, we advocate formal partnering for the project. We have decades of experience participating in formal and informal partnering to facilitate collaboration with all project stakeholders. We typically develop a Partnering Charter to memorialize our commitments to each other and set mutual goals for the team to meet to consider the project a success.

Gary**Silverman**, PE, BCEE, DBIA | PROJECT MANAGER

The past seven years as a design-builder with a construction firm has been an eye-opening experience. With more than 20 years of prior experience as a designer, Owner, and regulator, I now have a full 360° perspective of DB project delivery. Drawing on the benefits from my experience to enhance collaboration is what makes my role of DB Project Manager most rewarding.

Erick**Bevington** | DESIGN MANAGER

Early in my career, I was a field engineer on the 45-mile, $180M Lake Nacimiento aqueduct project providing construction phase support. I observed the importance of collaboration between and design and construction first-hand. As Design Manager for the Morro Bay WRF, I am committed to fostering collaboration at all levels and look forward to working in the Morro Bay area again!

COMMUNICATION PLAN

As part of our overall Project Management Plan, we will prepare a Project Communication Plan. **Gary Silverman**, our proposed DB Project Manager, will be the primary FBV team member responsible for managing the communication and coordination processes with the City and its consultants. Together, we will utilize various forms of verbal and written communication during execution of the project. We will utilize Procore to record, store and disseminate documents and images generated by project participants including:

- Telephone conversation reports
- Meeting minutes
- Action item and decision logs
- Conference call notes
- Emails
- Progress reports
- Technical memoranda and written reports
- QA/QC documentation
- Drawings and specifications
- Construction management documents
- Project management documents
- Submittals and shop drawings
- Requests for Information (RFIs)
- Progress photos

CONFLICT RESOLUTION

One of the many reasons we prefer to deliver work by DB is that through early integration and collaboration, the chances for significant conflict is greatly reduced. In our experience, DB projects proceed more smoothly, with significantly fewer change orders and disputes and have better outcomes. For the rare instances that require conflict resolution, our policy is to resolve all disputes expeditiously at the lowest possible level. We resolve issues in a fair, reasonable and informal manner using "win-win" negotiations to ensure all parties are satisfied.

We typically include the development of a dispute resolution matrix as part of our partnering efforts at the outset of the project that carries over into our Project Communication Plan. As part of our partnering approach, we will align our team members with their appropriate counterparts for resolving problems and conflicts. This alignment means individuals from the City and FBV will be assigned a counterpart from the other organization for resolving issues on the project. As issues and challenges are identified, assigned parties will work together to resolve them as they arise.

CO-LOCATION

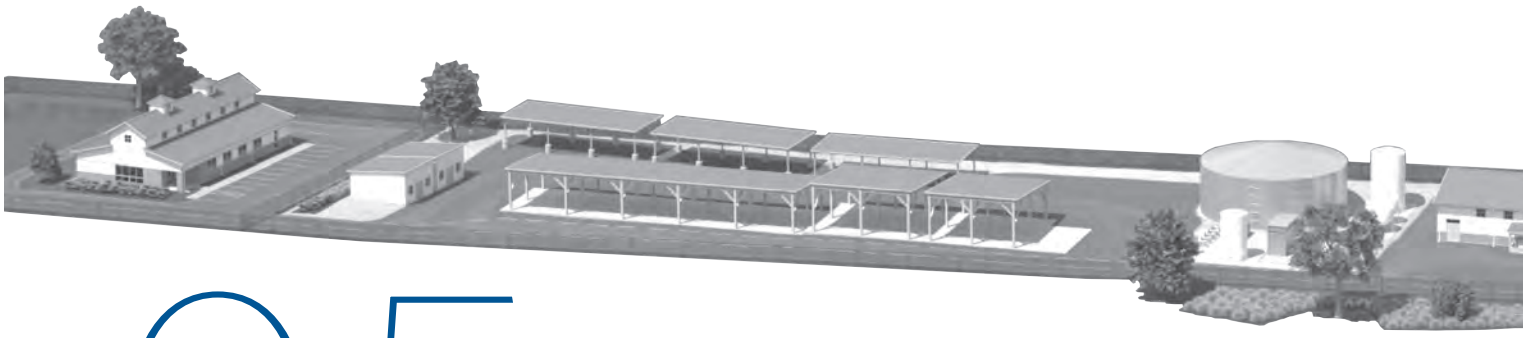
The successful delivery of the project will be driven by teamwork, collaboration, and the effective integration and management of many components. Close collaboration will be essential to keep the project progressing on schedule and within budget. FBV is committed to co-locating key staff with City staff on or near the project site. Co-location promotes partnering, collaboration, accountability, innovative solutions and ideas, timely decisions, and ownership of project objectives by all stakeholders.

In addition, co-location of design and construction personnel with shared tools and databases will streamline communication and enhance problem-solving and decision-making as the team works through day-to-day challenges. In the end, Morro Bay receives a design that has benefited from the integrated perspectives of all team members. Working together day-to-day enables key team members to be responsive to the project needs, including schedule, budget, design and construction issues, and operational concerns.

We are happy to consider using the potential office space available for co-location. Other options we will consider include:

- Mobilizing construction trailers to the site that have offices and meeting space, as well as connectivity for collaboration tools and resources sharing. This can accommodate design and construction team members, as well as city staff, and places the team directly on site during design and construction, which provides additional benefits.
- Renting available space in downtown Morro Bay to house key team members. This option can augment the City offices or the mobilized trailers if additional capacity for team members is needed. It can also be a long-term solution if this level of facility is desired for the duration of the project.

It is important for every team member in a DB project to recognize that every decision they make impacts budget and schedule. Therefore, seamless execution comes through careful planning and intentional collaboration. Our team will capitalize on the integrated nature of DB practices to manage the team and the process in a manner that is efficient and well-defined.



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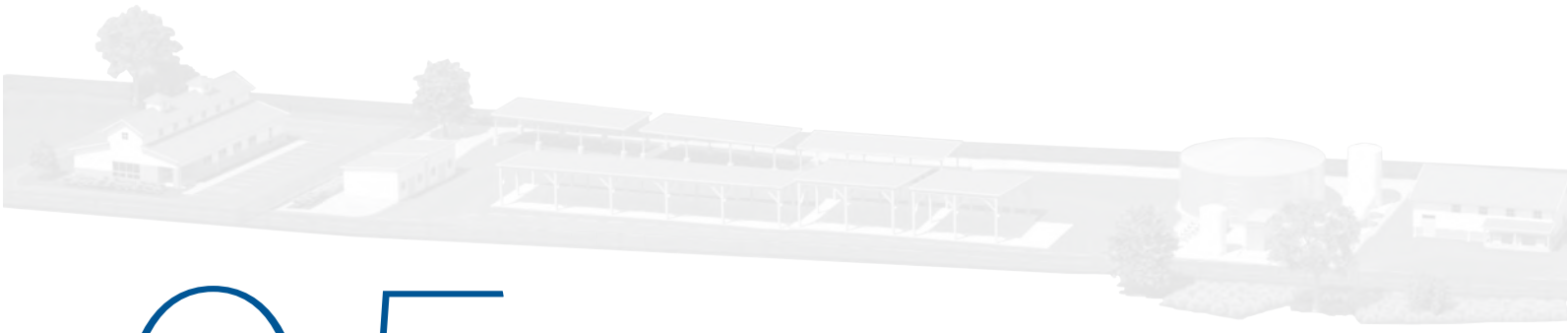
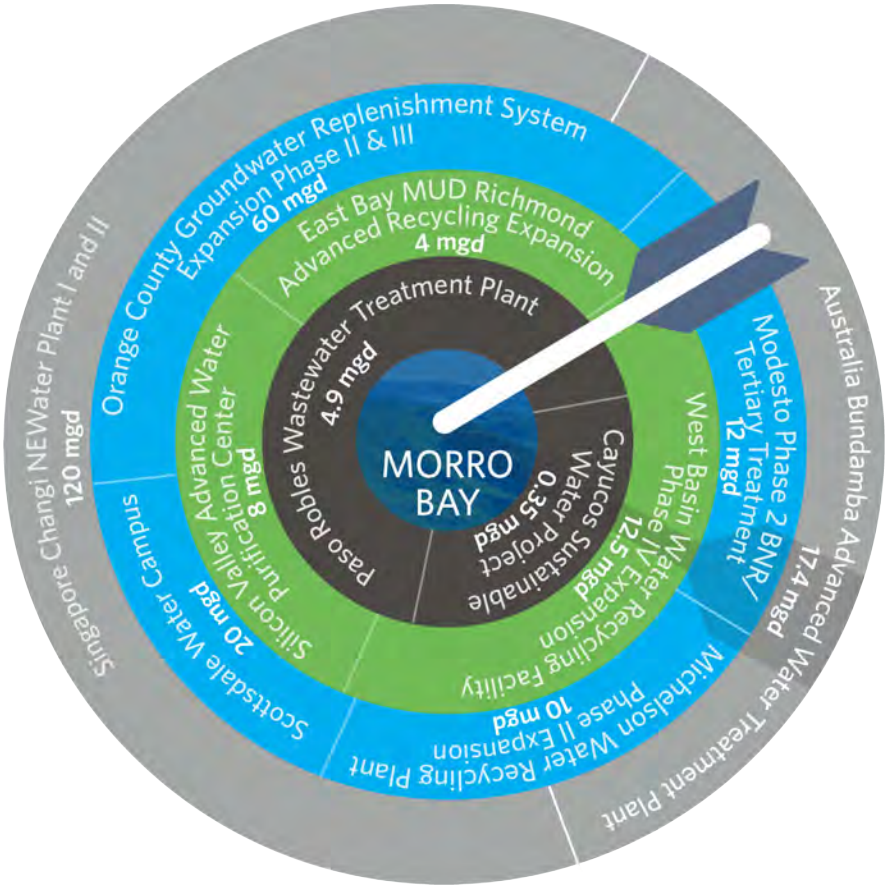
DESIGN DEVELOPMENT AND MANAGEMENT



05

DESIGN DEVELOPMENT & MANAGEMENT

Together, the FBV team has designed and constructed more than 268 mgd of recycled treatment facilities globally and locally. We have leveraged this experience to offer Morro Bay a state-of-the-art facility that also meets the City's affordability goals.



APPROACH TO DESIGN, USING DESIGN TOOLS & MANAGING THE PROCESS

The FBV DB team will successfully deliver this project through teamwork, collaboration, communication with stakeholders, and the effective integration of design, construction, and operations.

The successful delivery of this project will be driven by teamwork, collaboration, and the effective integration and management of many components. From design to construction to operations to communication with stakeholders - working together is the key benefit of DB. Communication within the team is encouraged to maximize the integration and collaboration of all team members, including Morro Bay staff and consultants. While frequent and open communication often occur as a result of co-location and collaboration, regularly scheduled meetings will maintain the flow of critical information and provide updates on schedule and budget throughout the life of the project.

DB Project Manager Gary Silverman and Design Manager Erick Bevington are responsible for design development of the project. They will work with Morro Bay and the team to progress the design forward for construction-ready documents and will be responsible for communicating design decisions and information to the entire team.

The project design is currently at 30% and our internal design development process has integrated operations, commissioning, estimating, construction, permitting, and quality control professionals. It is critical to the project's success that we continue to involve Morro Bay and these key team members as the design is finalized. In addition to regularly scheduled project meetings, we will hold focused workshops to ensure our team has thoroughly considered alternatives and options before the design is finalized.

Gary**Silverman**, PE, BCEE, DBIA
PROJECT MANAGER

Gary has devoted his 35-year career to the water/wastewater industry in leadership roles as a design consultant, an owner and a contractor. He gained valuable perspective from this experience, enabling him to hone a management approach based on proactive communication and consensus building. Quality work, innovative problem solving, and customer satisfaction are common features of Gary's projects. He has led many alternative delivery projects as either DB Project Manager or Design Manager. In these roles, Gary has been uniquely positioned to drive team integration, enabling Owner's like the City of Morro Bay to realize the true value of DB project delivery, including having a little fun along the way.

Erick**Bevington**, PE
DESIGN MANAGER, ENGINEER-OF-RECORD

Erick has led the design team and disciplines in developing our proposed design. He has led multi-discipline teams on WWTP projects up to 330 mgd, and also has field experience that enhances his leadership in this role. Erick was the engineering manager for construction and startup of the Silicon Valley Advanced Water Purification Center (working with Filanc), and was on-site in the central coast community for three years during construction of the Nacimiento Water Project. This combination of experience provides him the ability to evaluate design decisions based on treatment goals, as well as the context unique to wastewater treatment along the coast.

FIGURE 5.1

PHASE 1 & 2 DESIGN MANAGEMENT PROCESS

Partnering with Morro Bay will be integral to meeting critical path milestones (blue) and maintaining delivery of this project in accordance with the schedule and budget.

PHASE 1: NOTICE TO PROCEED/PROPOSAL DESIGN UPDATE

- Partnering workshop
- Set-up collaboration center
- Design intent meeting
- Update design schematic
- Update Revit 3D model
- RO energy recovery and acid addition study
- Update design schematic
- Finalize and begin implementing permitting strategy
- Update schedule and budget

FINALIZE DESIGN APPROACHES & CONCEPTS

60% DESIGN DEVELOPMENT

- Update design
- Review specifications
- Continue permitting meetings with agencies
- Value engineering
- Review 3D Revit model for operations functionality / design input
- Update schedule and budget
- Value engineering
- Constructability workshop
- Plant operations and commissioning strategy meeting
- Draft start-up plan

FINALIZE CONSTRUCTION BUDGET

90% CONSTRUCTION DRAWINGS

- Update and finalize design
- Review 3D Revit model for operations functionality / design input
- Finalize specifications
- Continue permitting meetings
- Update schedule & budget
- Workshop
- Final start-up plan

FINALIZE DESIGN IN ACCORDANCE WITH FINALIZED CONSTRUCTION BUDGET

PHASE 2: MOBILIZATION

- Begin construction
- Permit drawing set
- Review shop drawings
- As-builts
- O&M/start-up meetings
- Training plan

We use a variety of software during design to develop and manage aspects of the project:

- BIM+ Lifecycle Design - Our team developed this design using Building Information System Plus software called Revit. The model can be used from day 1 of the project and provides many efficiencies for design, allowing disciplines to work concurrently on designs that contribute to the overall 3D model. Changes are populated throughout the platform so the team is always working with current, and up-to-date information.
- Timberline - Cost model development, estimating, and GMP development provides the ability to track cost models and trends, and identify the impact of design options prior to a final decision.
- Primavera P6 - Integrated schedule development
- Drones - Our procedures include photo documentation of pre-construction conditions and construction progress. We have also had great success in capturing difficult to obtain photos and inspection data.

APPROACH TO VALUE ENGINEERING

To build on the value engineering (VE) that our team has already instituted during design development during the proposal stage, we will continue to hold VE and constructability sessions to ensure the final design is of the highest quality and provides the best value for Morro Bay. We will engage a mix of team members to ask questions that probe alternative thinking and challenge engineering designs. The goal is to drive the group toward design decisions that are cost effective, safe to build and operate, provide long-term life cycle benefits, and meet the capacity and regulatory compliance objectives of the project. Constructibility and VE sessions are conducted in a workshop setting with key team members from design disciplines, preconstruction, construction, commissioning, Morro Bay, external stakeholders, and your program manager and consultant(s).

MANAGING QUALITY CONTROL & QUALITY ASSURANCE

In Section 2, we described our approach to quality management for the project through the design and construction phases. For design, we identified the roles of Design Manager Erick Bevington, responsible for Quality Assurance (QA) and Jennifer Enson serving as Design Quality Manager (DQM) responsible for Quality Control (QC). Following our selection, they will develop a project-specific Design Quality Plan (DQP) as a key component of the overall Design Management Plan. Thirty days prior to Notice to Proceed (NTP), the DQP will be submitted to the City for review and approval.

The DQP will identify a Technical Advisory Committee (TAC) with appropriate technical expertise to provide independent input to assure that design will proceed based on proper assumptions and sound decisions. The TAC will support Jennifer and provide additional input at all stages from the schematic design step through the 60% milestone through 90% construction documents, through as-built drawings at completion of construction. The DQP will define a schedule and scope for design quality control (QC) reviews, corrective action procedures, and communication protocols with the City. It will also document the City's critical success factors for how design quality is defined or monitored.

DESIGN CHALLENGES

TABLE 5.1

CHALLENGES IN DEVELOPING THE DESIGN	SOLUTION
High peaking factor	FBV proposes an innovative and cost-effective treatment process to address high flows due to storm events, while reliably meeting ocean discharge limitations. Our solution is based on the use of disk filters to treat storm flows. The combination of disk filtration, with an MBR system results in a state-of-the-art facility that improves treatment over the current WWTP from both an operational and effluent water quality perspective.
Unknown mineral water quality can impact RO system design and operation resulting in reduced flux rates and lower production rate and increased energy costs	FBV leveraged our past experience designing six other recycled treatment facilities in California to: ▪ Review three years of Morro Bay's drinking water source quality and estimating the average concentrations of key inorganic parameters present in Morro Bay's drinking water over a range of source water blending conditions ▪ Determine wastewater concentration factors from other recycle facilities with similar source water and estimated the ratio of RO feed water concentrations for both pre and post drought conditions ▪ Apply wastewater concentration factors to estimate feed water quality for RO system
Efficient site layout to minimize costs Challenging site layout due to hilly terrain	FBV developed a site layout that: ▪ Balanced the cost of reducing excavation against placing compacted fill ▪ Eliminated the need to import fill material ▪ Reused excavated material on-site for fill material ▪ Spreads unused excavated material on site and eliminates need for hauling materials ▪ Minimized retaining walls

The findings and documentation of the QC review process will be presented internally to Project Executive Harry Cosmos and DBPM Gary Silverman as independent confirmation that they are taking place and that corrective actions, if any, are implemented. On a monthly basis, Gary will review the results of our design quality management process with the City. All QA/QC documentation and reporting information will be stored and made available to the City via our Procore project management system.

MANAGING THE PERMITTING PROCESS

Permitting for DB projects requires a proactive plan to ensure all the benefits and value of DB can be leveraged, and mitigate the unforeseen regulatory conditions creating delays. Our permitting approach includes:

- Early engagement with agencies (meeting with them ahead of time to discuss the project and getting feedback on the submittal requirements and process)

Katie**Zusy**, PE
PROCESS MECHANICAL

Katie led design of the UV disinfection and cloth media filtration systems and plant hydraulics for a Title 22 reuse project for Irrigation for the Paso Robles Tertiary Treatment Facilities. She attended design workshops, client meetings, and the HAZOP meeting. Kaitie attended weekly construction meetings and coordinated engineering services. She will lead the process mechanical design for the Morro Bay WRF. She has worked with Erick Bevington on WWTP projects up to 330 mgd.

Sandeep**Sathyamoorthy**, PH.D.
PROCESS ENGINEER

Sandeep is an expert on treatment and removal of emerging contaminants. He has worked on DB projects for recycled treatment facilities, including MF/UF and RO design, in CA and throughout the U.S. As a Process Innovation Leader within Black & Veatch, he has led process design for this project. He has developed solutions, such as the SAFE System, that keep the project affordable without compromising any state-of-the-art technology.

- Developing a permitting matrix so things do not fall through the cracks
- Using existing well established relationships and developing new relationships with agencies and reviewers
- Continually checking in on the status of the reviews and addressing any comments/concerns immediately
- Tracking the status of each permit with the matrix

By meeting with regulatory agencies early and informing them of the project schedule, they will have an opportunity to provide us with their requirements for issuing the permit. It is imperative to keep communication open until the permit is awarded to ensure the project schedule is not negatively impacted. All requirements, contacts, and actions will be tracked on the matrix to ensure timely response and management of each critical item.

SAFE SYSTEM PERMITTING

FBV proposes an innovative and cost-effective treatment process to address high flows due to storm events, while reliably meeting ocean discharge limitations. Our solution is based on using disk filters to treat storm flows. The combination of disk filtration with an MBR system results in a state-of-the-art facility that improves treatment over the current WWTP from both an operational and effluent water quality perspective. The proposed FBV treatment process will address both dry- and wet-weather sanitary wastewater and stormwater flows in an economical fashion that is also protective of the environment, mitigates odors, and reduces overall energy costs, thus achieving many of the City's goals. We call this the Stormwater Adaptive Filtration Equipment (SAFE System).

The SAFE System is a well-established treatment solution for storm flows. Treatment facilities across the U.S. have been incorporating this technology to cost-effectively treat high flows while also protecting the environment and meeting regulatory requirements. The SAFE System is considered an enhanced high rate treatment (EHRT) system due to the pile cloth media filter. This cloth results in a filtered effluent that meets the secondary permit standards without using chemicals. **Figure 5.2** shows where EHRT treatment solutions are being used across the U.S.

One SAFE System has been successfully implemented and operational in California for Linda County Water District, California. The SAFE System has been successfully permitted in California for discharge to a sensitive body of water as the Linda County WWTP discharges into the Feather River which is a critical water supply for California and is aggressively monitored for water quality protections.

We recognize that a focused effort for permitting the SAFE System will be necessary to ensure a successful permitting process. Communication with the Regional Water Quality Control Board early in the process is a key component of our approach. The proposed FBV approach contemplates the NPDES permitting process by considering all elements of State and Federal regulation. We will provide a biological treatment process for nominal dry weather flows (governed by 40 CFR Part 133) and the SAFE System for high flows (governed by 40 CFR Part 122 which specifies auxiliary treatment). The combination of our biological treatment and the SAFE System will comply with numerical effluent limitations and criteria that are fully protective of the receiving water body. The SAFE System is intended to stabilize and ensure effectiveness of the biological treatment process while providing treatment for all sanitary wastewater and stormwater flows in a regulatory-compliant manner.

FBV will assist the City in obtaining a NPDES permit and associated approvals for the proposed treatment process in sequential fashion composed of two essential steps:

1) The preparation of a technical memorandum by our wastewater treatment and permitting expert **Dr. Michael Welch**. We will work closely with the City to achieve consensus on the specifics of this memorandum.

2) A stepwise consensus-building program based on the technical memorandum for all relevant project and permitting stakeholders.

The technical memorandum will demonstrate how the treatment process meets regulatory requirements, and will rely on FBV knowledge of treatment processes, water quality, and our National and Regional knowledge of facility permitting precedents and case-studies. This technical memorandum will form the basis of the Fact Sheet development and associated findings that support the NPDES permit.

Based on the technical memorandum, we will also prepare and conduct a step-wise series of presentations and briefings intended to build support and consensus for the proposed technical approach. The process will start with City and Regional Board staff, move on to local environmental groups, and conclude with Regional and State Board members and EPA staff. The goal of this process is to ensure that environmental, social, and affordability concerns are simultaneously met with an effective and reliable treatment plant that complies with all state and federal technology-based and water quality-based standards.

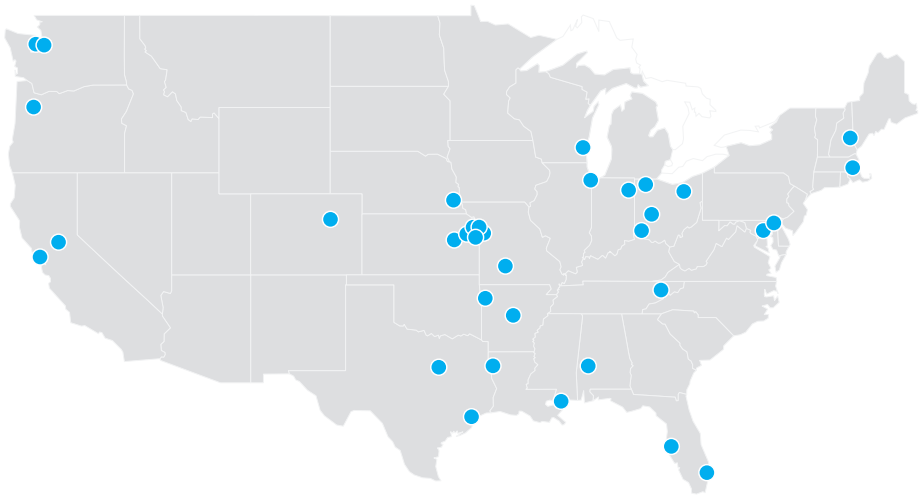


FIGURE 5.2
Locations where EHRT has currently been permitted for treating high flows.

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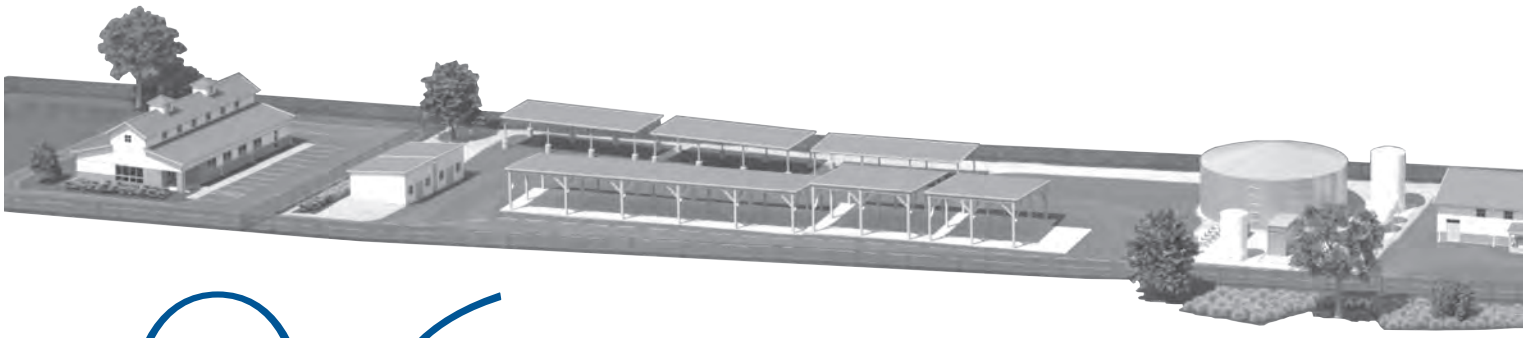
TABLE 5.2: A PERMITTING MATRIX ENSURES NOTHING FALLS THROUGH THE CRACKS. THE BELOW PERMITTING MATRIX IS AN EXAMPLE FROM FBV'S RECENT PROJECT FOR PARKER WATER & SANITATION DISTRICT AND IS SIMILAR TO THE PROCESS WE WILL USE FOR MORRO BAY.

AGENCY	TYPE OF PERMIT	AGENCY CONTACT	PURPOSE/NEED	SUBMITTAL REQUIREMENTS	TIMEFRAME	ANTICIPATED FEE	RESPONSIBLE PARTY	STATUS	REMARKS
CDPHE	401 Permit	Scott Garncarz 303.692.2374 scott.garncarz@state.co.us	Only required if an Individual 404 Permit is required by the Corps. Can be submitted concurrently	Copy of the 404 Permit, site plans, narrative of BMPs during and post project	N/A	$1,100	N/A	N/A	Not required because a Nationwide 404 Permit was obtained.
CDPHE	Construction Approval	Jeffrey Hlad 303.692.6276 jeffrey.hlad@state.co.us	Approcal is needed for conversion of the wells (Parker North, Parker Ridge, Rueter-Hess, and Regional) to chloramine disinfection and construction of Bradbury Raw Water Reservoir	One BDR template application is sufficient for the total project - Rueter-Hess, Regional, Parker Ridge, Parker North, Bradbury Reservoir, and pumping changes at Hess 1 (and Regency?). Design calcs showing disinfection contact time and chem feed sizing.	Submission by mid-March is tight for a May 1 approval. Based on current construction schedule, a May 1 start is optimistic. Assume 60 days for approval.	$0 - No fee for drinking water reviews	FBV	Approved	Submittal was made to CDPHE for larger project previously. Review was stopped. BDR application will need to be updated and submitted with applicable figures and drawings. One site specific deviation has been identified: 1) the use of 3-1,000 gal double walled tanks at Rueter-Hess Well House.The CDPHE application, BODR, and applicable drawings were submitted to CDPHE on 4/13/17. Intended for construction drawings and specifications will be submitted mid-May.
CDPHE	Stormwater Discharge During Construction	Kendra Kelly 303.692.3387 kendra.kelly@state.co.us	Canyons pipeline, Canyons pump station, Regional West Conveyance, Hess Conveyance, Bradbury Raw Water Reservoir, bulk fill station	Map with extent of disturbance (site map not sufficient), legal description of sites in subdivisions, and stormwater management plan (do not need to submit, just certify). To submit electronically, all docs have to be attached using the button on the form using Adobe (not bluebeam) and print & send/ deliver the signature page	10 calendar days from receipt of complete package.	$270 application fee + $540 for July 1 to June 30 thereafter (>30 acres)	FBV	Approved	It is assumed that material developed for the GESC for the Canyons pipeline, the DESC for the Canyons pump station, and similar material developed by Stantec for the Regional West conveyance, Hess conveyance, and Bradbury Reservoir will be used for this submittal. Application and vicinity map was submitted via email (due to system glitches) on 5/19/17. Signature page was signed by Austin Liddicoat and a hard copy was mailed on 5/22/17. The District should receive an invoice directly. The permit was approved on 5/24/17. The District received the invoice for $270 and will pay directly.
CDPHE	Drinking Water Construction Completion Form	Submit form online at wqcdcompliance.com/login	Parker Ridge, Parker North, Rueter-Hess, Regional, and Bradbury Raw Water Reservoir		Prior to operation	N/a	FBV	In progress	4 submittals anticipated. Submitted for Rueter-Hess, Hess 1, Hess 2, Parker Ridge, Parker North and Regional wells on 3/29/18.
CDPHE	Hydrostatic Test Discharge Permit	Margo Griffin 303.692.3607 margo.griffin@state.co.us	Required for Canyons pipeline, Canyons pump station, Regional West conveyance, Hess conveyance, and Bradbury Raw Water Reservoir.	Discharge details (location where discharge occurs, map, dates, outfalls). May want to check if we should submit separately for various components	Submittal date based on proposed construction completion date.	$410 app fee + $820 for July 1 to June 30	Reynolds - pipelines	Approved	Reynolds will obtain permits for pipelines. Filanc will obtain a permit for the Bradbury Raw Water Reservoir. Permit for Canyons and Hess pipelines was obtained 7/31/17. Update 12/6/17: Reynolds has submitted for an amendment. Filanc obtained a permit for the Bradbury Raw Water Reservoir on 1/22/18.
City of	Use by Special	Sam Bishop 303.705.0225	Only required for above				N/A	N/A	N/A



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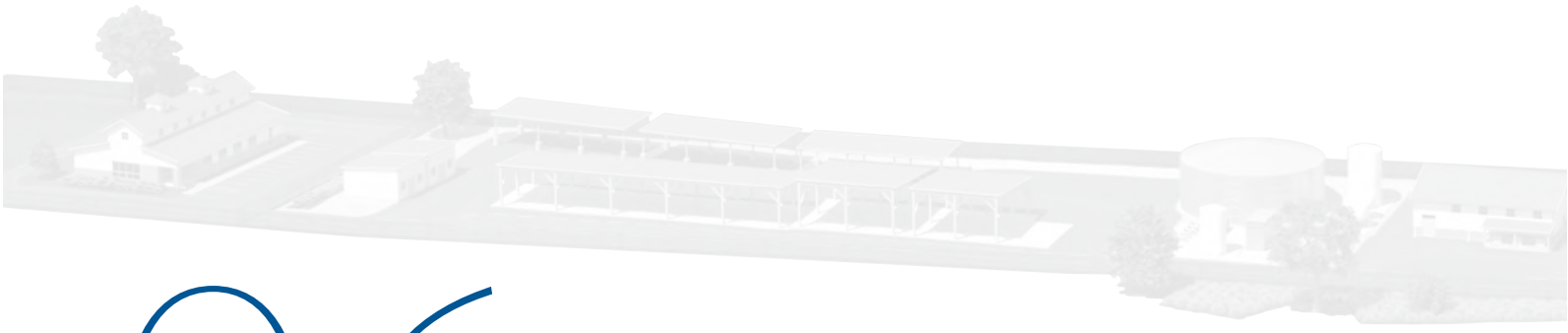
PROJECT SEQUENCING AND SCHEDULING



06

PROJECT SEQUENCING & SCHEDULING

The Filanc Black & Veatch design-build team will deliver the WRF efficiently by executing the work while considering permitting requirements and stakeholder interests. Our combined experience enables us to proactively identify and tackle schedule challenges.

The FBV team is comprised of veteran design-builders. We know how to deliver complex projects efficiently and effectively to avoid pitfalls that commonly lead to schedule delays. We will employ and integrate a variety of tactics to ensure a smooth DB experience for all stakeholders, including the following:

- Early design packages to support equipment procurement and permitting
- Continuous collaboration to define and maintain alignment for the life of the project
- Early negotiation of purchase orders and submittal processing to minimize the risk of equipment fabrication delays
- Parallel work activity and early start dates for activities focused on the critical path
- Use of breakout schedules, including 3-month and 3-week lookahead schedules, for planning work
- Proactive development of workplans for definable features of work to ensure the proper labor and materials are ready to go
- Proactive development and implementation of startup plans
- Early and regular interaction with regulatory agencies to facilitate timely permitting

Our proposed Primavera P6 schedule is provided in Appendix 3. **Figure 6.1** on the following page is a summary schedule highlighting major milestones. As shown, we have a plan to reach final contractual completion, plus the required 6-month post-commissioning phase, before the end of 2021. The City will benefit from this 3- to 6-month acceleration through cost savings from a shorter construction duration, sooner beneficial occupancy, and timely permit compliance. This plan is possible due to our efficient approach to executing work and is based on assumptions identified in **Table 6.1.**

Our approach comfortably achieves a 3- to 6-month early completion.

APPROACH TO DESIGN SEQUENCING

Following NTP, we will begin with a Schematic Design as called for in the Proposal DB Agreement. This will be a Basis of Design Report detailing design criteria for each building and process component and includes drawings at a nominal 30% completion level for all disciplines. This period, anticipated to last two months, will be highly collaborative, taking full advantage of the DB process. It will be the first opportunity for our team to interact with yours to refine and reach consensus on the technical approach defined in this proposal. We anticipate multiple face-to-face meetings and workshops to gel our collective ideas. At the conclusion of this phase, it is important for project efficiency that we move forward as one team in pursuit of a common vision.

The Schematic Design process will focus particularly on decision making and design details associated with the MBR, the core of the treatment process and a critical path item, enabling us to quickly go to market to select the MBR equipment vendor. This is important because MBR equipment from alternative manufacturers differs significantly in size and orientation. Making an early selection enables submittal information to be used as a basis of the design of the BNR/MBR structure, saving time and costly rework.

Another early task keyed off the Schematic Design milestone is development of an earthwork design that can be used as part of a grading permit application. Timely receipt of the grading permit is critical to initiate work immediately after construction NTP. Included in the grading permit package will be plans for erosion control, vegetation and landscaping, and dust control. The latter may also require a permit from the Air Pollution Control Board for control of asbestos fibers that naturally occur in serpentinite rock on the southern end of the site. We will also prepare a Storm Water Pollution Prevention Plan (SWPPP) prior to construction.

The next set of priorities in design development is to engage with the market for other major equipment, including the RO, UV, headworks, dewatering equipment and auxiliary filters. This will be useful for locking in pricing to manage escalation risk and to prevent delays in fabrication and delivery of critical components. Once we have competitively selected each vendor, we will begin to negotiate terms and conditions, often a protracted, time-consuming process, enabling early execution of purchase orders (POs). We will employ a strategy to structure the POs conditionally, with initial authorization to produce submittals only (and associated payment upon receipt, if required). Receiving and approving critical submittals early allows us to provide adequate time for fabrication and manage timing of deliveries to suit the schedule and avoid delays.

FIGURE 6.1: SUMMARY SCHEDULE WITH MAJOR MILESTONES

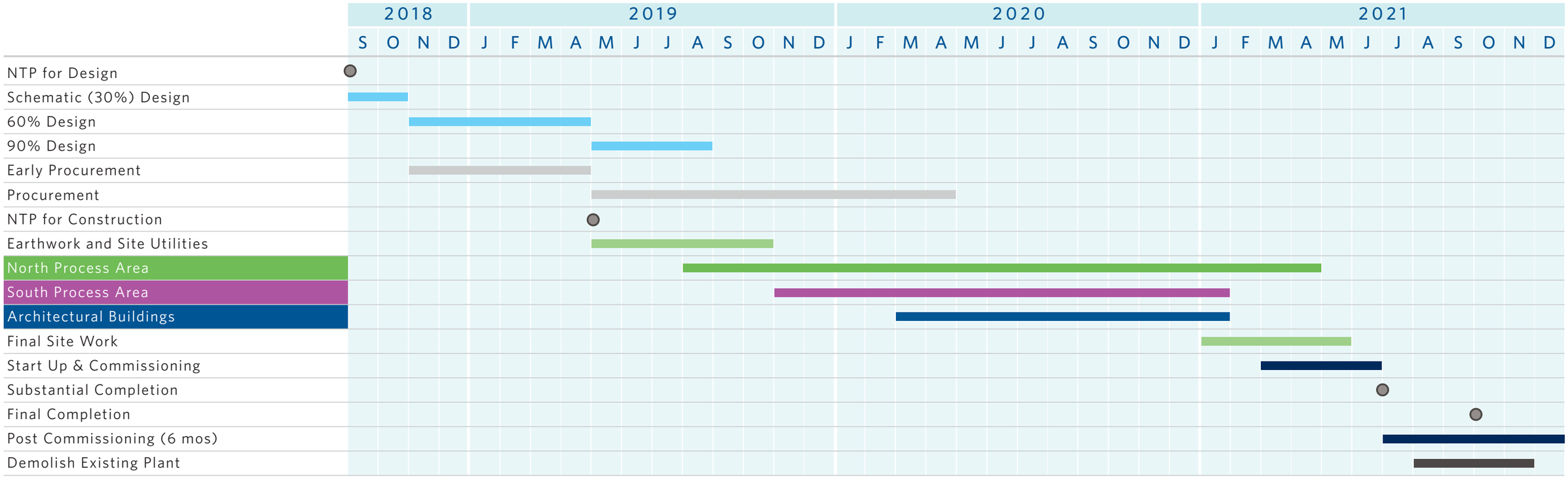


TABLE 6.1: SCHEDULE ASSUMPTIONS

1. There will be no more than two Notices to Proceed (NTP).
2. The first NTP will be on or about September 4, 2018, and will allow design, preconstruction services and some early procurement.
3. The second NTP, based on the City's receipt of funding, will be for construction on or about April 29, 2019. We will not mobilize to the site before this NTP.
4. Design submittals will include a Schematic Design (30 percent), 60 percent design, 90 percent design and as-built drawings.
5. Construction can commence after receipt of the second NTP, a grading permit, and approval of design for early construction activities.
6. The 6-month post-commissioning phase starts after Substantial Completion.
7. Final Completion and demolition of the existing treatment plant occurs during the 6-month post-commissioning phase.
8. The City of Morro Bay, rather than SLO County, will be the permitting authority for local permits, such as the grading and building permits.
9. The anticipated environmental mitigation measures do not restrict year-round construction activity; however, some biological monitoring will be required during certain seasons.
10. Design progress meetings will be held biweekly in City offices.
11. Construction meetings will be held weekly in on-site project field offices.
12. The Engineer of Record on the DB Team will review and approve all material submittals.
13. The City will provide review comments to the Schematic Design 2 weeks after submittal and to the 60% and 90% designs 3 weeks after submittal.
14. The City will review and approve a preidentified subset of submittals, and those reviews will occur concurrently with the DB Team's review.
15. During startup, the City will provide activated sludge to seed the new biological treatment facility. Water produced during this phase can be discharged to the ocean outfall.

Completion of the 60% design package is targeted to coincide with construction NTP, or eight months after initial NTP. The 60% package will be sufficiently complete to enable immediate mobilization for early construction activities. This will primarily be mass grading work, lasting about three months, followed by major backbone yard piping and electrical duct banks, structural excavation and foundations for the BNR/MBR and Aerobic Digester facilities.

Getting design off the critical path as soon as possible is one of our DB best practices. It aids construction sequencing and avoids trade stacking.

Our goal is for enough construction to be released from the 60% package that design is no longer on the critical path. The subsequent 90% design, essentially a complete package short of final City comments, will be finished about four months after 60% design milestone, or about one year from initial NTP. We assume a final design submittal is not necessary. Rather, a comprehensive set of as-built drawings will be issued following substantial completion to serve as the ultimate design record.

During the initial eight-month design period, we will establish a biweekly progress meeting that will be held regularly, or as mutually agreed. Additional in-depth design workshops or major submittal reviews will be scheduled, as needed. As discussed in Section 4, it is our belief and experience that frequent in-person collaborative team interaction early in the process is vital to overall project success. It prevents misunderstanding and rework.

APPROACH TO CONSTRUCTION SEQUENCING

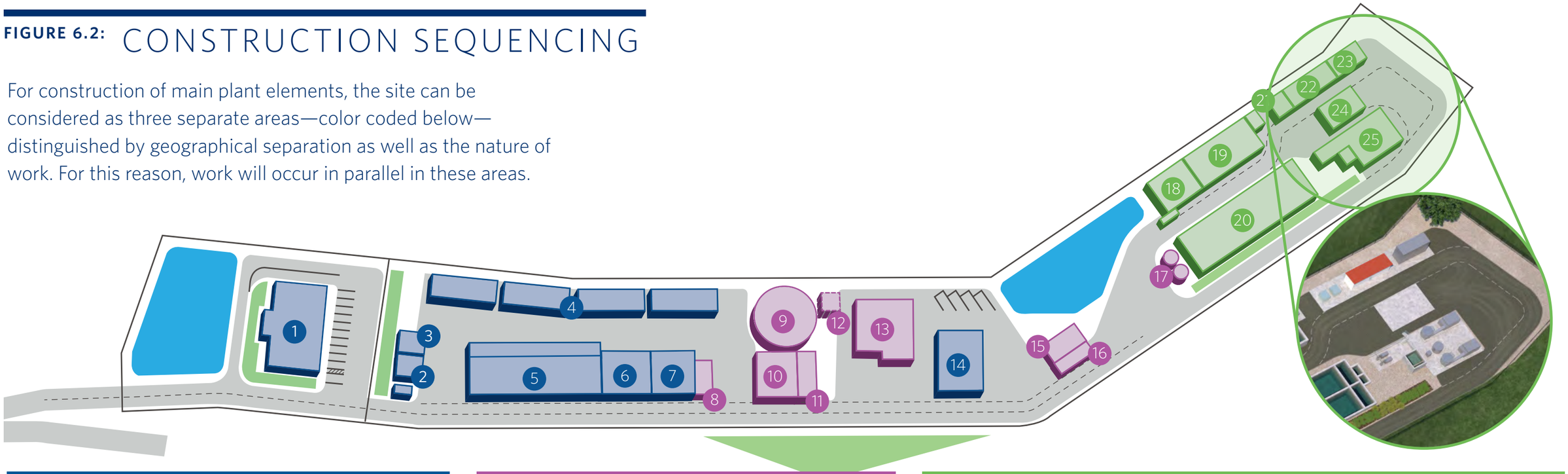
Our approach to sequencing construction is to focus on critical path activities while sub-critical work is executed in parallel. As graphically represented in **Figure 6.2** on the following page, the site is oriented to enable simultaneous work in separate areas without interference. Sitewide clearing and grubbing will occur first followed by mass grading, taking about three months to transform the site topography for the design hydraulic grade. While it will require substantial cuts and fills, our approach is engineered to be a balanced site, saving cost and time.

Next, the backbone yard piping on the eastern edge of the site, the duct backs on the western edge of the site, and major deep cross drains will be constructed. These will be initially installed only in the south ¾ of the site, as the northern section will involve deep excavations that will not permit early utility work.

We will conduct a weekly on-site construction meeting with the City and its representatives. This meeting will have a standard agenda, including review of the three-week lookahead schedule, present pay applications, resolve field issues and concerns, and discuss other matters of routine business to promote effective communication and coordination in the field. In addition, we anticipate the need for periodic (as-needed, but perhaps monthly) higher-level management meetings to discuss big picture scope, schedule, or contractual matters.

FIGURE 6.2: CONSTRUCTION SEQUENCING

For construction of main plant elements, the site can be considered as three separate areas—color coded below—distinguished by geographical separation as well as the nature of work. For this reason, work will occur in parallel in these areas.



ARCHITECTURAL STRUCTURES

1 Operations Building
2 Water Supply Storage
3 Collection Supply Storage
4 Outdoor Storage Aisles
5 WRF Parking Canopy
6 Water Vehicles Equipment Storage
7 Collection Vehicles Equipment Storage
14 Maintenance Building

Erection and interior architectural improvements of pre-engineered O&M Buildings. A specialty subcontractor will focus on these structures independent of other plant activities. Erection of additional canopies and architectural roof structures located sitewide will be scheduled opportunistically during the overall construction period.

SOUTH PROCESS AREA

8 Wash Rack
9 Recycled Water Tank
10 Effluent Pump Area
11 SAFE System
12 Calcite Reminerialization S
13 RO/UV Building
15 Chemical Area
16 Chemical Unloading
17 RO Feed Tanks

Slab on-grade mechanical installations, including the RO/UV building, SAFE System/Effluent Pumping facility, Effluent Storage tank and Chemical Unloading facility. The RO/UV building will be built first to be available when equipment is ready for delivery. Mechanical work in the RO/UV building will require intensive effort to assemble, set, plumb, wire and program equipment.

NORTH PROCESS AREA

18 Dewatering Area
19 Aerobic Digester
20 Membrane Bioreactor (MBR)
21 Incoming Utility Transformers
22 Electrical Room
23 Emergency Generator
24 Vactor Receiving Station/Washdown
25 Headworks Area

BNR/MBR and Aerobic Digester are deep, cast-in-place concrete structures requiring extensive excavation, subgrade preparation and concrete work. Construction of this area is at the core of the critical path. We will begin work as soon as mass grading in this area is complete. Crews will be dedicated to this area until complete, anticipated to be approximately 21 months. We will begin construction of the BNR/MBR structure first, which will require an excavation over 20 feet deep.

Once the floor slab is placed, excavation will continue for adjacent, and nearly as deep, Aerobic Digester. After placing walls and backfilling area, work will shift to subgrade preparation and on-grade slabs for headworks, electrical and dewatering facilities. As equipment is delivered, it will be installed in their respective locations and piping and conduit will be run to each.

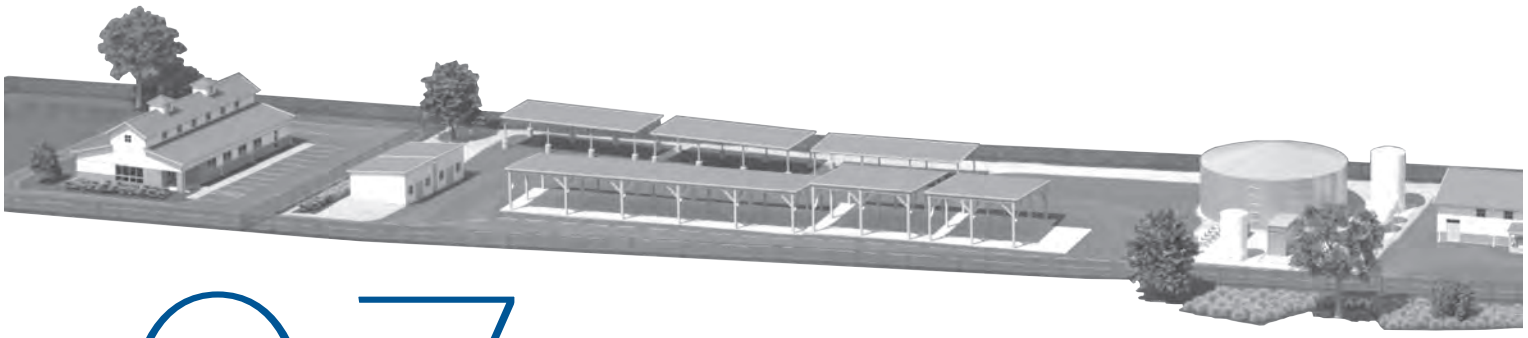
THE FILANC BLACK & VEATCH DIFFERENCE

The WRF project will benefit from our team's employment of a dedicated scheduler. **Marsha Peterson**, who provides fully-dimensioned scheduling services for Filanc, will support our team by producing and updating the schedule so it can be relied on as an effective management tool. Marsha is a recognized expert in multiple CPM scheduling platforms, including Primavera P6, and she teaches classes in CPM scheduling at UCLA. As part of the schedule update process, Marsha provides a "reality check" to verify the updated model reflects the reality of the project. When reality deviates from the plan, she is adept at facilitating re-planning the project or analyzing time impacts to demonstrate those deviations.

As further benefit to the City, our team will inherently be able to reduce schedule risk to the project because we are a self-performing general contractor. Including exclusive electrical contractor **Big Sky**, we can self-perform nearly 80% of the construction scope. By self-performing, it is much easier to manage and control the critical path. We are more able to be flexible with directing crews to tackle work as daily field situations dictate. Also, if a subcontractor fails to perform for any reason, we will likely be able to step in and continue that work without undue schedule impact.

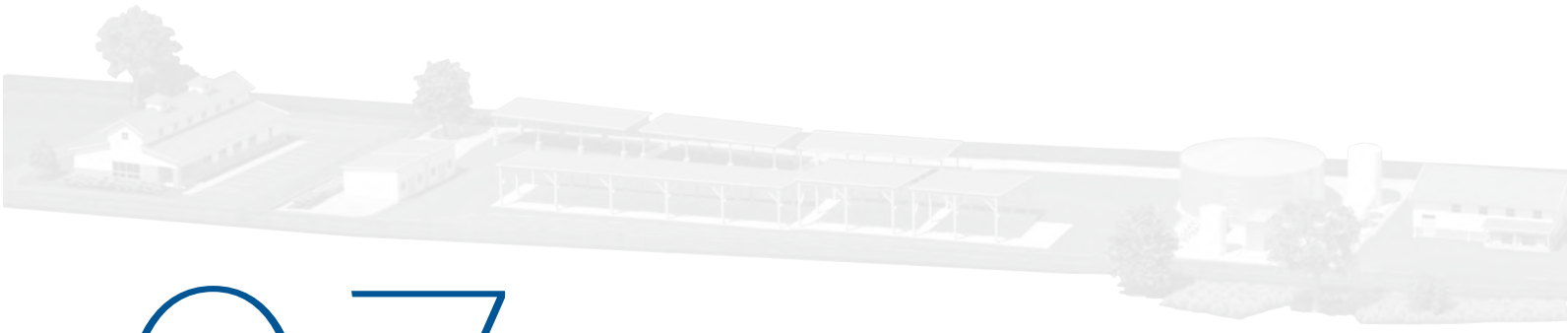
The FBV team will be able to reduce schedule risk to the WRF project because we are a self-performing general contractor.

Lastly, the City of Morro Bay will significantly benefit from the work Filanc is currently doing as the Construction Manager at Risk (CMAR) for the Cayucos Sanitary District. The Cayucos project schedule is ahead of the Morro Bay schedule. Therefore, we are gaining valuable knowledge about local resources and skilled labor availability. As work proceeds, we will know even more about who can really perform and whether we would want to bring them to your project. Timing-wise, crews could move seamlessly from one project to the other. As both projects are wastewater treatment facilities, we will have a strong data base of equipment vendor offerings and pricing.



07

PROPOSED DESIGN



07

PROPOSED DESIGN

FBV's unmatched experience results in a new WRF for Morro Bay with NO COMPROMISES that:

- ✓ Minimizes Capital Cost
- ✓ Achieves Regulatory Compliance
- ✓ Facilitates Potable Reuse
- ✓ Maximizes Energy Efficiency
- ✓ Minimizes O&M Cost and Complexity
- ✓ Provides Reliability
- ✓ Expedites Schedule
- ✓ Delivers Quality

The City of Morro Bay's RFP did an excellent job of defining the critical process and performance requirements for your new WRF. In this section of our proposal, we present our proposed design to cost-effectively incorporate those requirements into a treatment facility your staff will be proud to own and operate. We look forward to the opportunity to work collaboratively with you to perfect that design and build the plant that you envision.

To prepare our proposal, we brought together our team of water reclamation facility design, construction, procurement, and operations and maintenance experts to develop a proposed design that delivers your objectives.

Our proposed design results from a collaborative approach within our team and with your staff. Our team's efforts included numerous in-person design charrettes, focus meetings, and coordination efforts to brainstorm concepts, vet ideas, and gel approaches—the same approach we will use to develop the final design with you. Our proposed design also benefited greatly from our proprietary meetings with you—by giving us additional input to help us refine our efforts and by allowing us to make sure it is in keeping with your goals and desires.

We also conducted field work at the South Bay Boulevard site to help confirm assumptions needed to optimize our grading plan and reduce construction risks.

The rigorous approach we followed to develop our proposed design resulted in the preparation of nearly 100 engineering drawings that provide a basis for the guaranteed maximum price (GMP) and life cycle costs we present in our Cost Proposal. These drawings are presented in Appendix 6 and the detailed life cycle cost analysis is shown in Appendix 5..

As a supplement to the drawings, we also completed the 14 proposal forms from Attachment E of the RFP. We augmented these with six additional forms to document our designs for Electrical, Instrumentation & Control, Civil/Site, Structural, Architectural, and Post-Treatment. All of these forms are provided at the end of this Section 7.

7.1 KEY BENEFITS OF FBV'S PROPOSED DESIGN

During development of our proposed design, our focus was on creating a design that most cost-effectively meets your project objectives, moving the City toward water independence in concert with replacing your aging infrastructure. We took full advantage of the collective water reclamation facility design, construction, procurement, and operation and maintenance expertise of our team to develop a design that delivers on your vision with No Compromises to cost performance, quality, reliability, durability, or operations friendliness. **Figure 7.1** below provides a summary of some of the innovative approaches of our proposed design.

FIGURE 7.1: SUMMARY OF INNOVATIVE IDEAS & KEY BENEFITS OF THE FBV PROPOSED DESIGN

INNOVATIVE DESIGN IDEAS

FEATURE	DESCRIPTION
"SAFE" System	Innovative yet proven approach treats high flows using auxiliary disc filter system
MBR	Exhaustive evaluation of potential biological treatment technologies landed on MBR as best option for this application
Site Arrangement & Grading	Compact footprint balances cut and fill, minimizes cutting into underlying bedrock, takes advantage of topography to benefit hydraulics
Select Package Systems	Design selectively takes advantage of benefits of package systems, including headworks, fine screens, calcite, and chemical pumps
Additional Features	Other key design features include: ▪ Inter-stage RO pumps dedicated to each RO unit ▪ Controls to optimize aeration for NdN ▪ Use of chlorine rather than hydrogen peroxide for AOP ▪ Selective surface wasting system ▪ In-basin equalization for regular diurnal flows

DESIGN APPROACH ACHIEVES YOUR GOALS

- ✓ MINIMIZES CAPITAL COST
- ✓ ACHIEVES REGULATORY COMPLIANCE
- ✓ FACILITATES POTABLE REUSE
- ✓ MAXIMIZES ENERGY EFFICIENCY
- ✓ MINIMIZES O&M COST & REDUCES OPERATIONAL COMPLEXITY
- ✓ PROVIDES RELIABILITY
- ✓ EXPEDITES SCHEDULE
- ✓ DELIVERS QUALITY

The discussions that follow in this section of our proposal complement the design described and illustrated in the forms and drawings by highlighting the key features and benefits of our proposed design solutions.

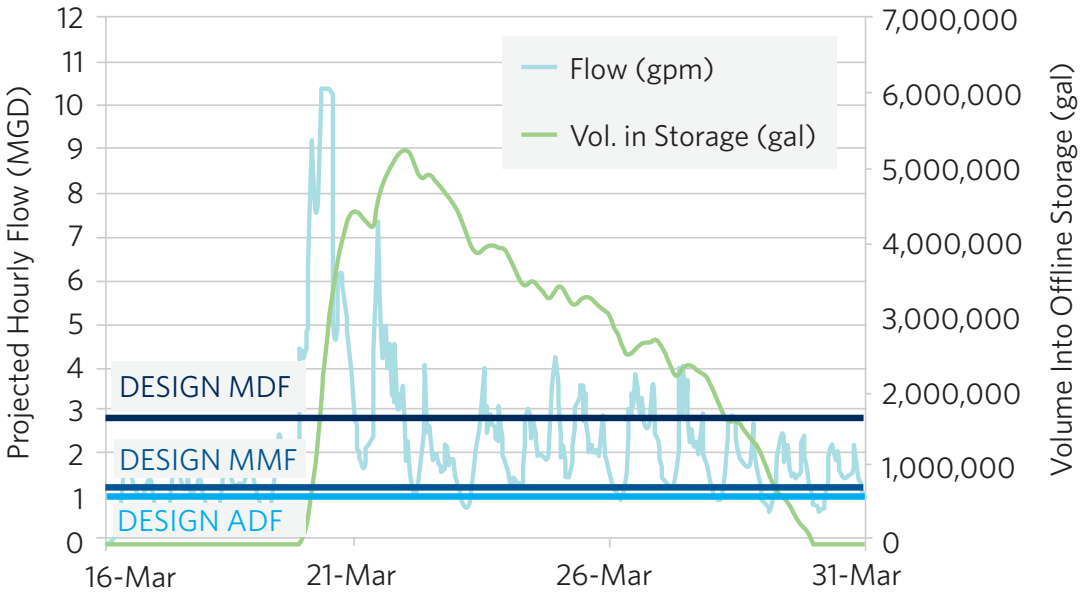
7.2. FLOWS & LOADS

As we learned from our analysis of 20 years of flow data in the Facility Master Plan (FMP), the City periodically experiences extremely high peak flows. The cost and complexity of the WRF will be driven by the design solution to manage these peak flows that your new plant will have to handle. **Figure 7.2** below presents an example of flow data from a representative time period.

In the FMP, and as reflected in your RFP, the proposed solution to this was to provide a large influent flow equalization basin to manage the flows. This was a good planning level approach that provided a conservative process design, plant footprint for space planning, and overall project cost for budgeting.

The FMP also provided an analysis of water quality constituent loads to provide planning level values for TSS, BOD, TKN, and others. This yielded a conservative treatment process conceptual design for space planning and cost estimating. The FMP went on to recommend that the City perform additional sampling. The results of that sampling were provided to us with the RFP.

FIGURE 7.2: EXAMPLE OF MORRO BAY PEAK FLOW DATA & ANALYSIS OF FLOW EQUALIZATION STORAGE NEED

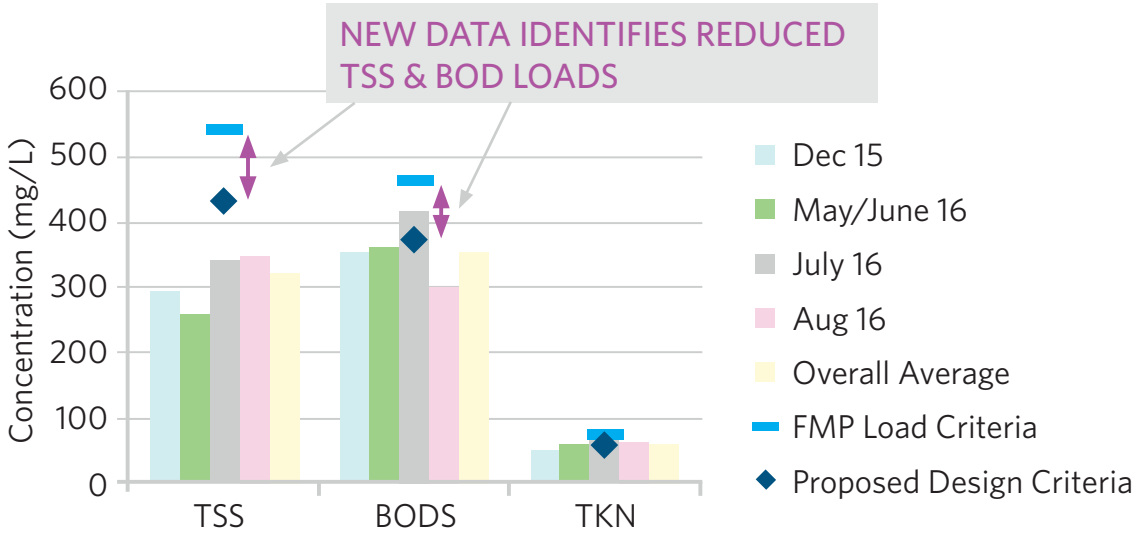


MMF - mean maximum flow

MDF - maximum daily flow

ADF - average daily flow

FIGURE 7.3: REFINEMENT OF LOAD DATA



With new data available, FBV analyzed the new load information and revisited the high flows and water quality requirements, all to identify opportunities to refine our design approach.

Figure 7.3 above shows an analysis of the new load data alongside the preliminary criteria from the RFP. As shown, the new data supports significantly lower load criteria for TSS and BOD. This affords a significant opportunity to refine the design to reduce sizing of treatment unit processes and optimize both your capital and O&M costs

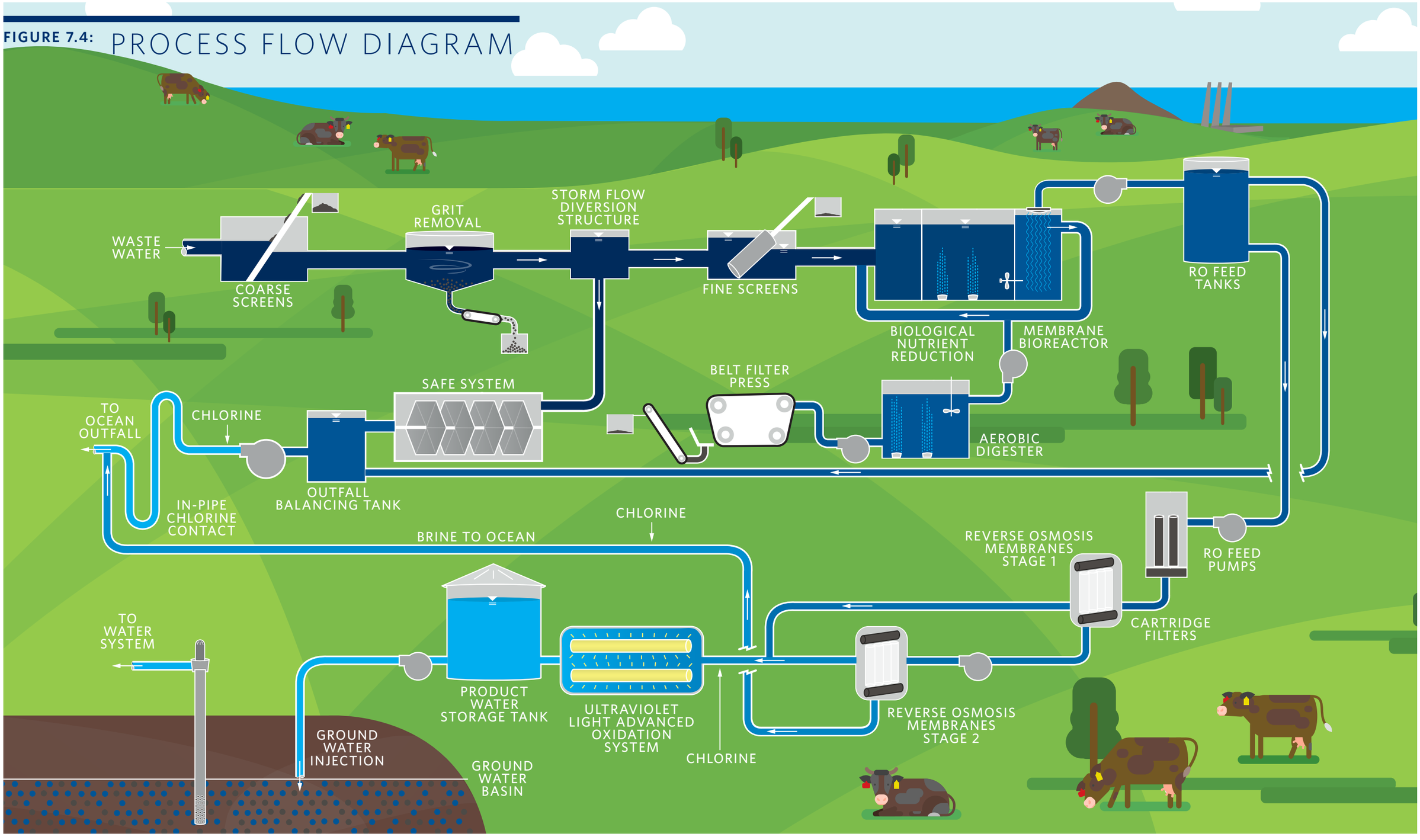
Refined water quality data results in reduced process sizing, reduced capital and O&M cost

PROPOSED TREATMENT PROCESS SOLUTION - OVERVIEW

Morro Bay's new WRF must meet dual water quality objectives. First, it must provide a consistent and high quality advanced water treatment (AWT) for groundwater injection and indirect potable reuse. Second, when discharging to the ocean, the WRF must meet strict effluent discharge limits established by its NPDES permit.

To develop our proposal, the FBV team of experts took the opportunity to evaluate every aspect of the project to achieve an overarching goal: to meet these objectives in a cost-effective manner, while providing a durable, easy to operate and maintain facility. Our refinement of the influent water quality analysis, described in the prior section, will contribute to achieving that goal. Resulting from our efforts and our collaborative proprietary discussions with you, our proposed design is founded on the treatment process solution shown in **Figure 7.4** on the following page, and Drawing 00-G-003 in Appendix 6. The associated hydraulic profile is also included as Drawing 00-G-004.

FIGURE 7.4: PROCESS FLOW DIAGRAM



The biological treatment process, the central component of the WRF, is highlighted by the following beneficial features:

BNR-MBR

Our team analyzed a comprehensive set of alternatives and vendors from a performance and cost perspective. We selected Biological Nutrient Removal (BNR) with Membrane Bioreactors (MBRs) as the appropriate core treatment technology for Morro Bay. We arrived at this approach because MBRs provide a range of benefits:

- Provides flexibility to meet diverse effluent water quality requirements
- Provides filtration ahead of reverse osmosis (RO) reducing complexity and O&M needs by eliminating an additional unit process
- Has more compact footprint overall
- Provides least life-cycle cost (capital & O&M)

AUXILIARY FILTRATION – "SAFE" SYSTEM

Innovative SAFE System approach reduces BNR-MBR by 30%, saving capital and O&M cost

To optimize the WRF while meeting your water quality objectives, we are proposing an innovative approach that addresses the issue of high flows described earlier. We will provide an auxiliary filtration system we are calling the Stormwater Adaptive Filtration Equipment, or "SAFE" System. The SAFE System provide a number benefits:

- Reduces cost, space, and operations and maintenance complexity associated with a large flow equalization basin.
- Allows size of BNR-MBR to be reduced by 30%, greatly reducing construction and operational costs
- Protects compliance with permit requirements
- Meets regulatory requirements for secondary treatment standards without using chemicals

Details about our design approach to these and the other WRF unit processes are presented through the remainder of this section of our proposal.

FIGURE 7.4: SITE PLAN

ARCHITECTURAL STRUCTURES

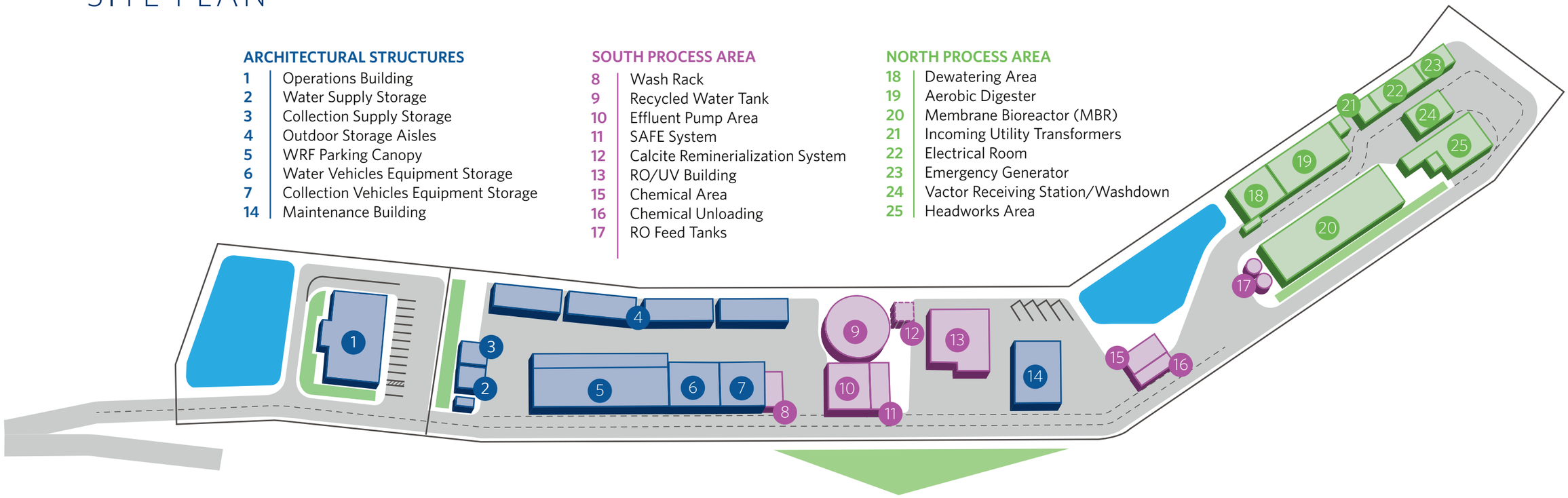
1	Operations Building
2	Water Supply Storage
3	Collection Supply Storage
4	Outdoor Storage Aisles
5	WRF Parking Canopy
6	Water Vehicles Equipment Storage
7	Collection Vehicles Equipment Storage
14	Maintenance Building

SOUTH PROCESS AREA

8	Wash Rack
9	Recycled Water Tank
10	Effluent Pump Area
11	SAFE System
12	Calcite Reminerialization System
13	RO/UV Building
15	Chemical Area
16	Chemical Unloading
17	RO Feed Tanks

NORTH PROCESS AREA

18	Dewatering Area
19	Aerobic Digester
20	Membrane Bioreactor (MBR)
21	Incoming Utility Transformers
22	Electrical Room
23	Emergency Generator
24	Vactor Receiving Station/Washdown
25	Headworks Area



7.4 SITE PLAN

The South Bay Boulevard (SBB) site provides a blank slate for the new WRF. To develop a grading and site plan for the project, our team focused on several goals:

- Minimize construction cost
- Provide expeditious construction schedule
- Provide hydraulically advantageous profile by minimizing elevation of the headworks and minimizing pumping between processes
- Incorporate 60-foot wide utility easement
- Provide unconstrained access to all areas of the site to enhance O&M activities
- Position key process elements in close proximity to one another to facilitate O&M
- Incorporate drainage BMPs to address stormwater regulations

Figure 7.4 provides an overview of our Proposed Design, depicting overall site grading and the arrangement of the facilities on the site. Additional detail is provided in the drawings in Appendix 6. Grading plans and sections are provided on Drawings 10-C-102 and 10-C-301. Drawings 10-C-101, and 13-C-101 though 103 provide details about the facilities arrangement, as well as process piping, site utilities, and electrical power supply.

GRADING

One of the key challenges of the SBB site is the topography. Developing the site plan required careful balancing to cost-effectively provide a site that has good access to all areas of the plant, places key process elements in close proximity to one another, is conducive to plant hydraulics, minimizes expensive import or export of materials, and minimizes the extent of retaining walls.

Our Proposed Design does all of this and provides a best-value to the City by:

- Minimizing Site Footprint. To do this, we spent considerable effort to optimize the arrangement of the various facilities and individual building footprints. We provided access roads and space for operations and maintenance activities but made efficient use of space. Within evaluation of the treatment process, we evaluated how each unit process and how the process train as a whole would impact site development costs, and vice versa.
- Geotechnical Evaluation. Our experts carefully reviewed the RFP and Yeh & Associates geotechnical report provided along with the RFP. The site is comprised of surficial materials, including unsuitable expansive clays, underlain by bedrock materials. The Yeh & Associates report recommended 2H:1V slopes for both excavation and compacted backfill slopes. We performed our own field reconnaissance by digging test pits under supervision from another local geotechnical engineer to confirm the findings. For our Proposed Design, we have elected to employ the Yeh & Associates recommendations in lieu of the 3H:1V mentioned in the RFP performance criteria, as it saves significant cost to the project.

Compact site provides best value with:

- Balanced cut/fill
- Minimal retaining walls
- Beneficial hydraulics

- Balancing Cut and Fill. Our proposed design balances the excavated bedrock volume (excluding the unsuitable surficial expansive clays) with compacted backfill volume to reduce the need for import of structural backfill. To achieve an economical grading plan and facilitate an effective hydraulic profile, the site is long and narrow, generally following the adjacent creek alignment, and inclusive of the environmental buffer to the creek and the 60-foot wide utility access easement. Minimizing the width of the site perpendicular to the existing hillside slopes minimized required cut and fill volumes. Excavation is predominantly on the southern half of the site, compacted fill for most of the northern half of the site, with a small area of excavation again at the far northern end. The grade runs downhill from north to south, as it generally does in its existing condition, minimizing grading and providing fall between treatment processes to minimize pumping. Excavated bedrock will be processed on site to the extent possible and only the shortfall of material, if any, will be made up with imported material. Excess spoils will be spread on site west of the WRF facility, such as in the draw uphill of the northern end of the plant site, or on the southern face of the hill south of there.

- Minimizing Retaining Walls. The proposed design largely eliminated the need for retaining walls on the project. A couple of short walls are included to accommodate transition slopes, but these are limited in extent.

SITE PLAN FEATURE SUMMARY

By implementing the aforementioned approach, we were able to minimize the cost of the grading and site work for the WRF as well as minimize operational and maintenance costs for the WRF. The resulting site plan in **Figure 7.4** offers other valuable features worth noting.

- The southern end of the site includes a 24-foot wide access road that will accommodate two-way traffic. To the north, the road becomes a one-way counterclockwise loop to provide good vehicular access and O&M work space while minimizing additional grading cost. Access roads provide WB-50 sized truck maneuverability.
- Roads (asphalt) and parking (concrete) areas will be paved.
- Areas are provided for landscaping for visual screening and aesthetic appeal.
- The access road along the eastern side of the site will serve as corridor for wet utilities (recycled water and plant effluent lines, chemical duct bank, RO concentrate disposal). The access road on the western side of the site will accommodate major electrical duct banks. This arrangement enhances constructability and ability to route piping and ducts efficiently to where they are needed. Potable water and fire water loops run the full perimeter of the site.
- The operations building is placed near to plant entrance to provide ease of access without entering the process areas of the site. This also blocks the process areas from view from South Bay Boulevard and Highway 1, enhancing aesthetics. The operations building will be a pre-engineered building made of materials suitable for a coastal environment and made to resemble a barn to blend with the local surroundings. The maintenance building and RO/UV building will also be made architecturally compatible with the surrounding area.

7.5. HEADWORKS

Our proposed design connects to the influent force main at the designated location near Highway 1 and extends it to the headworks facility at the far north end of the site. We will coordinate with the influent pipeline designer regarding the appropriate pump selections for the new pump station so that the pumped flow is efficiently delivered at the proper hydraulic grade.

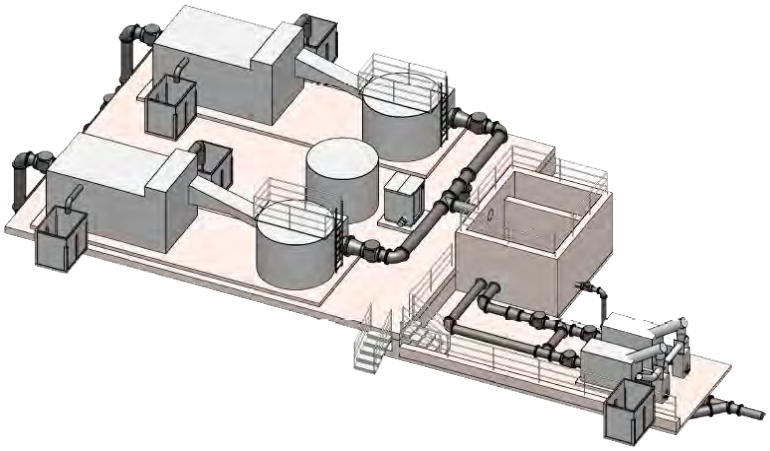


FIGURE 7.5: PACKAGED HEADWORKS & SPLITTER BOX FACILITIES

Based on an analysis of alternatives, we are proposing a packaged headworks system. To provide redundancy, we propose two parallel packaged headworks systems sized for the peak wet weather flow of 8.14 mgd (1 duty, 1 standby) as shown in **Figure 7.5**. Each system will include coarse screening with a washer/compactor, a screw-auger conveyor with a bagging attachment, and a vortex grit separator with washer/classifier and conveyor. This redundancy exceeds the requirement of the RFP while being more cost effective since it allows use of the standard package system configuration.

After an extensive comparison with a custom system comprised of concrete channels and basins with corrosion protective coatings, we determined that a stainless steel system would have equal longevity to concrete and provide the benefit of added redundancy. Based on cost estimating and bidding of alternatives, we found that the cost to design and construct a custom system with a single set of components is similar to that of a package system with dual units. We can provide a custom system if desired by the City at no additional cost, but without the redundancy benefit.

The channels and tanks of the headworks will be fully covered, and odor control will be provided by a packaged bio-filter tower with a centrifugal blower.

Dual packaged headworks provides full redundancy and similar life expectancy as single custom system

The headworks also includes fine screening as separate 316 stainless steel package systems. Two fine screen packages are provided for redundancy (1 duty, 1 standby) and are each sized for the maximum daily flow of 1.88 mgd. A splitter box is included in the headworks area to divert flows greater than 1.88 mgd to the SAFE System, allowing us to reduce the size of the BNR-MBR and other downstream facilities.

Each fine screen package is comprised of 316 stainless steel tanks with 2 mm stainless steel drum screens and a washer/compacter and conveyor. Solids from the course screening, fine screening, and grit removal will be conveyed to roll-off dumpsters sized to require pickup no more than once per week.

7.6. BNR-MBR FACILITY

As noted earlier, we have selected BNR-MBR as the preferred technology for the biological treatment process of the WRF. BNR-MBR offers several overall benefits for potable reuse applications including small foot print, high quality effluent, and ability to automate operation. From a water quality perspective, MBRs provide excellent pretreatment for RO, affording the ability to reduce cost and complexity. MBRs also provide a barrier to pathogens with industry demonstrated reductions of 5-7 log removal of total and fecal coliform and 2-4.6 log removal of indigenous coliphage. Recently DDW has unequivocally confirmed MBR will be granted pathogen reduction credits when used as part of an AWT process for potable reuse.

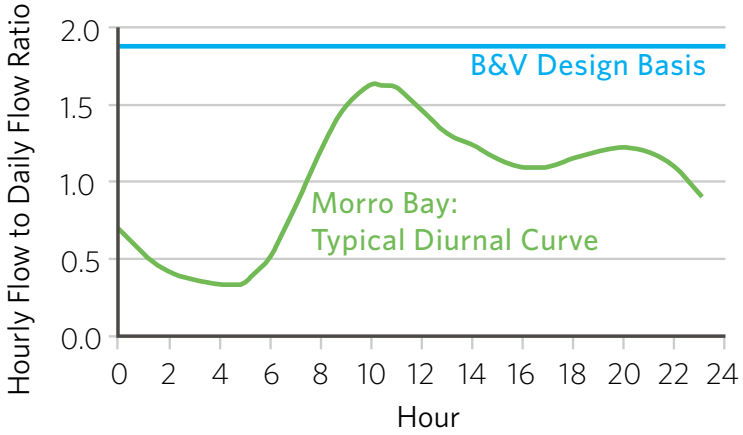


FIGURE 7.6: TYPICAL DIURNAL FLOWS WILL BE TREATED IN THE BNR-MBR PROCESS WHILE HIGHER FLOWS WILL BE MANAGED USING THE SAFE SYSTEM

Our team's innovative WRF design also includes the use of our proposed SAFE System auxiliary filters to manage high flows. This approach eliminates the cost, space consumption, and operational complexity of a large flow equalization basin. The SAFE System also allows for a significant reduction of the size of the BNR-MBR facility, reducing both capital and O&M costs. The SAFE System is described in detail in Section 7.7. Here we focus on the resulting implications for and benefits to the BNR-MBR process design.

Figure 7.6 shows the typical Morro Bay diurnal pattern based on our analysis of 5-years (2010 – 2014) of hourly flow data. It shows that on a typical day, the highest hourly flow is less than the 1.88 mgd max day flow capacity of our BNR-MBR facility. Therefore, under normal conditions all flow will be treated in the BNR-MBR process. By not treating the full peak flow in the BNR-MBR system, we achieve:

- A 30% reduction in the required membrane filtration area. This not only reduces the capital cost of our solution but also directly results in significant operating cost savings.
- Better sludge retention time (SRT) management in the BNR process with limited high-flow, low-BOD/TKN loading entering the biological process.

BNR-MBR with SAFE System optimizes footprint, capital and energy cost, and simplifies operation

To prepare our proposal, we evaluated critical needs for the BNR-MBR process as part of the whole WRF process train. Supported by our integrated process modeling and professional experience, we have developed a BNR-MBR facility built on four pillars: process robustness, operational flexibility, system sustainability and low life cycle costs. **Figure 7.7** illustrates a process focused layout of the BNR-MBR facility. Key benefits of our design are indicated by the lettered items in the figure and described on the following page.

a. **Effective Aeration Design Saves Money.** To minimize the aeration requirement and reduce the energy cost of treatment, Black & Veatch has designed numerous plants that achieve very high total nitrogen (TN) removal by effectively combining Simultaneous Nitrification-Denitrification (SND) with anoxic zones. Our proposed design integrates both ammonia based and dissolved oxygen (DO) based aeration control in the MLE configuration through a tapered fine bubble aeration grid. In this approach, the measured ammonia concentration in the aerobic zone is used to manage aeration and maximize SND during the course of the day. As shown in **Figure 7.7**, this results in an aeration energy savings of 15%-20%.

b. **Improved Membrane Operation through Selective Surface Wasting.** Our design concept incorporates scum and surface wasting in the aerobic zones of the BNR basins. Surface wasting is a commonly-used operational tool in activated sludge plants to improve sludge volume index (SVI) through removal of poorly settling organisms. When using MBRs, selective surface wasting improves the removal of lighter floc and enmeshed

Proven BNR-MBR design details greatly reduce O&M costs through 15% energy reduction and extended membrane life

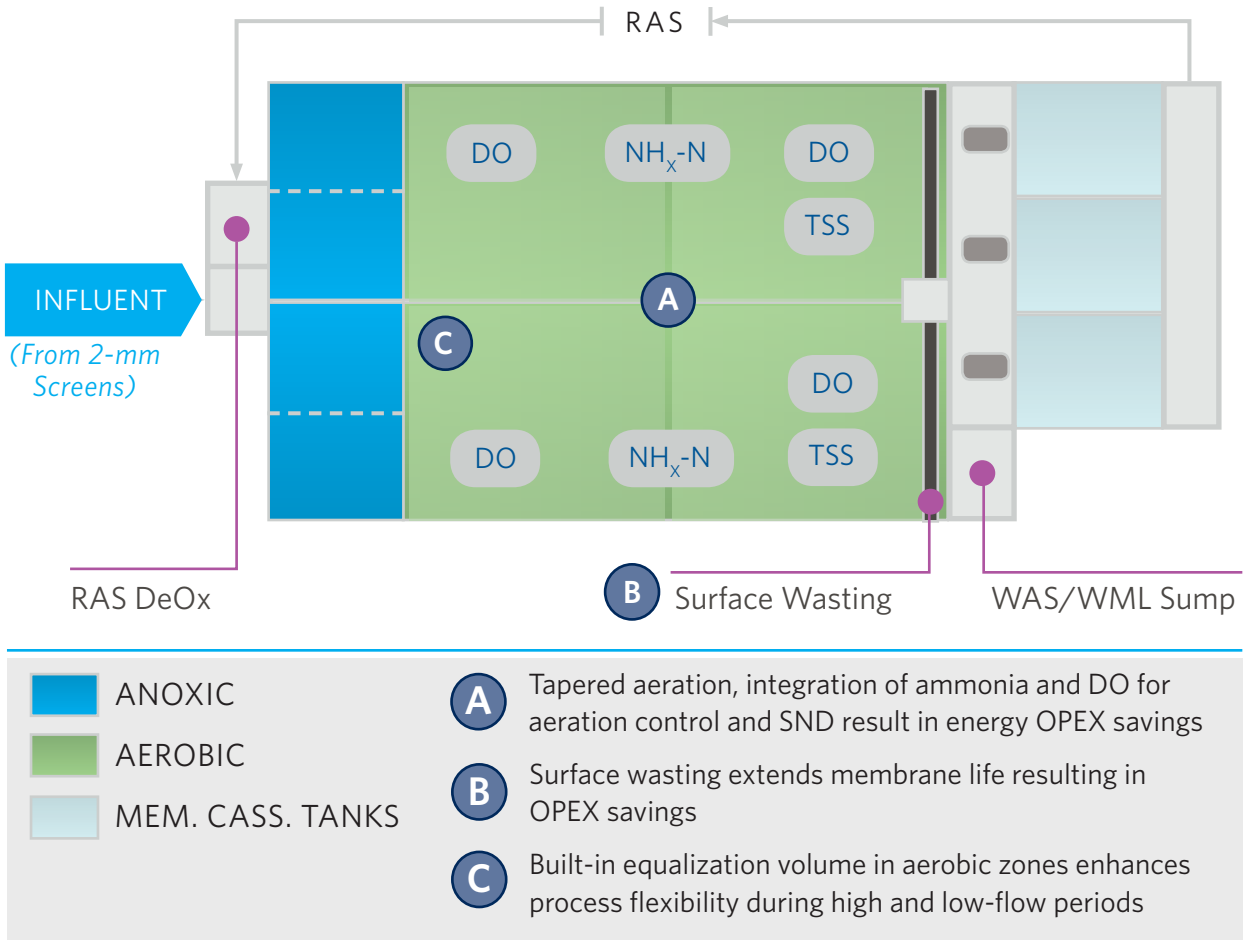


FIGURE 7.7: OUR TEAM'S SUSTAINABLE APPROACH TO BNR-MBR DESIGNS RESULTS IN A 15% ENERGY SAVINGS OVER CONVENTIONAL PROCESS DESIGNS

colloidal material recycled from the solids handling process. Recent research suggests links between the recycling of light colloidal material and exacerbated membrane fouling. Integrating surface wasting upstream of the MBR basins will reduce the City's O&M cost by extending membrane life and reliability, easily paying for itself on a life cycle basis.

c. **Operational Flexibility with In-Basin Equalization.** We have incorporated in-basin equalization in the BNR tanks to provide staff operational flexibility during high and low flow periods. In addition, for a marginal cost increase, this design feature will enable more effective use of the membranes and limit operations at very low flow or fluxes for extended periods of time.

PROPOSED BNR-MBR DESIGN

As detailed in Proposal Form 5 found at the end of this section, and illustrated in the Appendix 6 drawings, we propose two parallel BNR process trains. These are sized to treat the maximum monthly flow with full redundancy (one train out of service) or a maximum daily flow of 1.88 mgd with both trains operating. Flows greater than 1.88 mgd will be diverted to the SAFE system via a splitter box located at the headworks.

The BNR basins will be a cast-in-place concrete structures with an 18-foot side water depth. In-basin equalization is provided from 1.5 feet of that depth, amounting to approximately 27,000 gallons, to help manage high and low flows. Process air is provided from single-stage, high speed turbo blowers (1 duty, 1 standby). Three MBR trains are provided with two membrane cassettes per train, sized to meet the RFP-specified design flux rates. The MBR area will be covered by a canopy for protection from the environment and a monorail system will be incorporated for cassette removal.

FBV RECENTLY COMPLETED PRE-PURCHASE OF EQUIPMENT FOR THE 26 MGD MBR PROJECT FOR RIVERSIDE

MBR SYSTEM PROCUREMENT CONSIDERATIONS

As part of developing our proposed design, evaluating O&M costs, and pricing the work, we evaluated several potential hollow-fiber systems. A key objective is to select an MBR system supplier that provides the City with a reliable system, proven expertise and implementation experience. Early selection of the MBR system supplier will enable Morro Bay and the FBV team to optimize the detailed design around the selected system supplier.

There are over a half-dozen well-reputed MBR system suppliers in the marketplace (see **Table 7-1** on the following page for some of the hollow fiber system manufacturers). Our team has first-hand operational knowledge with many of the suppliers' equipment and consistently stays abreast of ongoing technology improvements and market trends so that we can bring the most recent knowledge and effective solutions to the City. Each MBR membrane system has unique characteristics. For the plant to be built and operate as planned, it is imperative to have effective and well managed collaboration between the MBR system supplier, our team's process and facilities design and your engineering and operations team.

TABLE 7.1: COMPARISON OF SELECTED HOLLOW FIBER MBR SYSTEMS & WARRANTIES BID ON MORRO BAY'S PROJECT

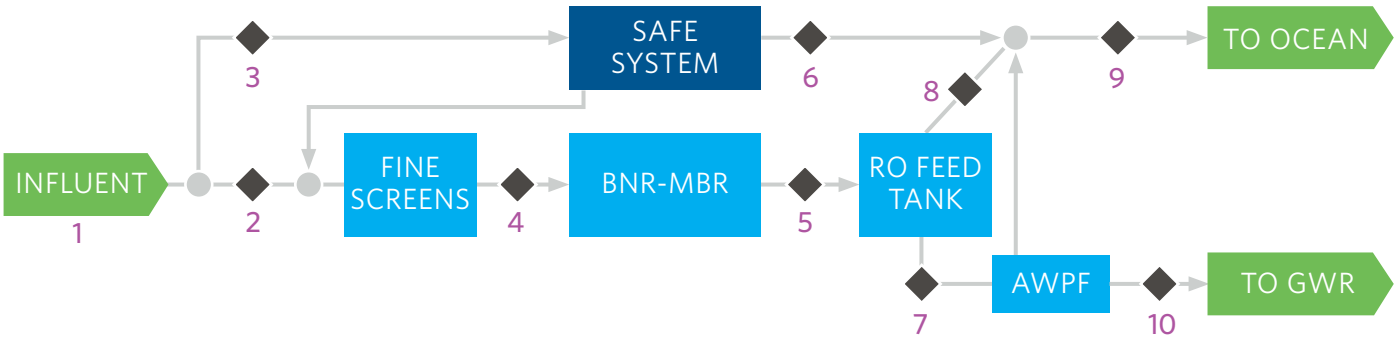
MANUFACTURER	NO. OF NORTH AMERICAN INSTALLATIONS	MEMBRANE WARRANTY & EXTENDED WARRANTY	KEY MANUFACTURER DIFFERENTIATORS	MEMBRANE CARTRIDGE REPLACEMENT COSTS
Suez	>200	5-year full replacement 5 additional years prorated	Leap MBR provides ~30% energy reduction	$1,560 (inflation index of CPI + 1%)
Fibracast	<5	5-year full replacement 5 additional years prorated	High packing density reduces footprint and uses less construction materials	$1,350 (inflation tied to CPI)
Evoqua	>40	5-year full replacement 5 additional years prorated	Mempulse provides air lift which reduces energy requirements	$1,400 (inflation tied to CPI)

7.7. SAFE SYSTEM

As presented previously in Section 7.1, historical and anticipated future peak flows in Morro Bay are many times greater than average daily flows, owing primarily to wet weather events. Rather than building expensive basin capacity and treatment capability throughout the process train for high flows, we offer a significant innovation that reduces costs and simplifies operations while maintaining compliance with your waste discharge permit requirements. Our proposed design includes our SAFE System, providing auxiliary filtration system to treat high flows, thereby dramatically reducing the size of downstream processes.

Figure 7.8 is a flow balance diagram that shows how the SAFE system is engaged at flows greater than 1.88 MGD. The BNR-MBR and downstream processes will have capacity to treat at least the maximum monthly flow (MMF).

FIGURE 7.8: SAFE SYSTEM FLOW BALANCE DIAGRAM



	FLOW (MGD)									
	1	2	3	4	5	6	7	8	9	10
ADF	0.97	0.97	0	0.97	0.97	0	0.97	0	0.19	0.78
MMF	1.16	1.16	0	1.16	1.16	0	1.16	0	0.23	0.93
MDF	2.74	1.88	0.86	1.94	1.94	0.80	1.16	0.78	1.81	0.93
PHF	8.14	1.88	6.26	2.32	2.32	5.82	1.16	1.16	7.21	0.93

A portion of the maximum daily flow (MDF) and the majority of the peak hourly flow (PHF) is managed using the SAFE system.

SAFE SYSTEM OPERATION

The RFP Performance Criteria Report set the required maximum RO feed flow as the maximum monthly flow, or 1.16 mgd. When the AWT facilities are operating at full capacity and influent flow to the WRF is between 1.16 and 1.88 mgd, the excess MBR permeate flow will be diverted to the ocean outfall. We calculated that this is the minimum flow that must be maintained through the BNR-MBR facility to meet ocean discharge limits in conjunction with the SAFE system. It could be a greater diversion if the AWT facilities are operated at a lower flow, or offline altogether, for any reason. These outfall flow conditions are normal occurrences and achieved through an overflow of the RO feed tanks whenever the plant inflow exceeds the RO feed pumping rate.

During a wet weather event, when flow is greater than 1.88 mgd, the storm-induced excess goes to the SAFE system through a passive overflow weir in a splitter box upstream of the fine screens. The flow filtered by the SAFE system is blended with the BNR-MBR excess permeate in the Outfall Balancing Tank described in Section 7.10.

Our team evaluated the expected quality of the ocean discharge comprising three streams: wet weather flow filtered by the SAFE system, excess MBR filtrate not directed to the Advanced Water Purification Facility (AWPF) and RO concentrate. As shown in **Figure 7.7**, the TSS of a daily composite sample of the blended effluent from these flow streams will be below the monthly average requirement under all conditions and well below the weekly average requirement. For example, if the influent flow is 2.5 mgd and the AWPF runs at its capacity of 1.16 mgd, the blended outfall TSS is approximately 21 mg/l, less than the 30 mg/l limit. The outfall water quality improves when the AWPF is not running since the MBR permeate that would have gone to the AWPF will instead go to the outfall, thereby providing a more diluted blend. It is important to recognize that regardless of flow, whenever the SAFE system is in use there will always be an MBR permeate flow stream available for blending.

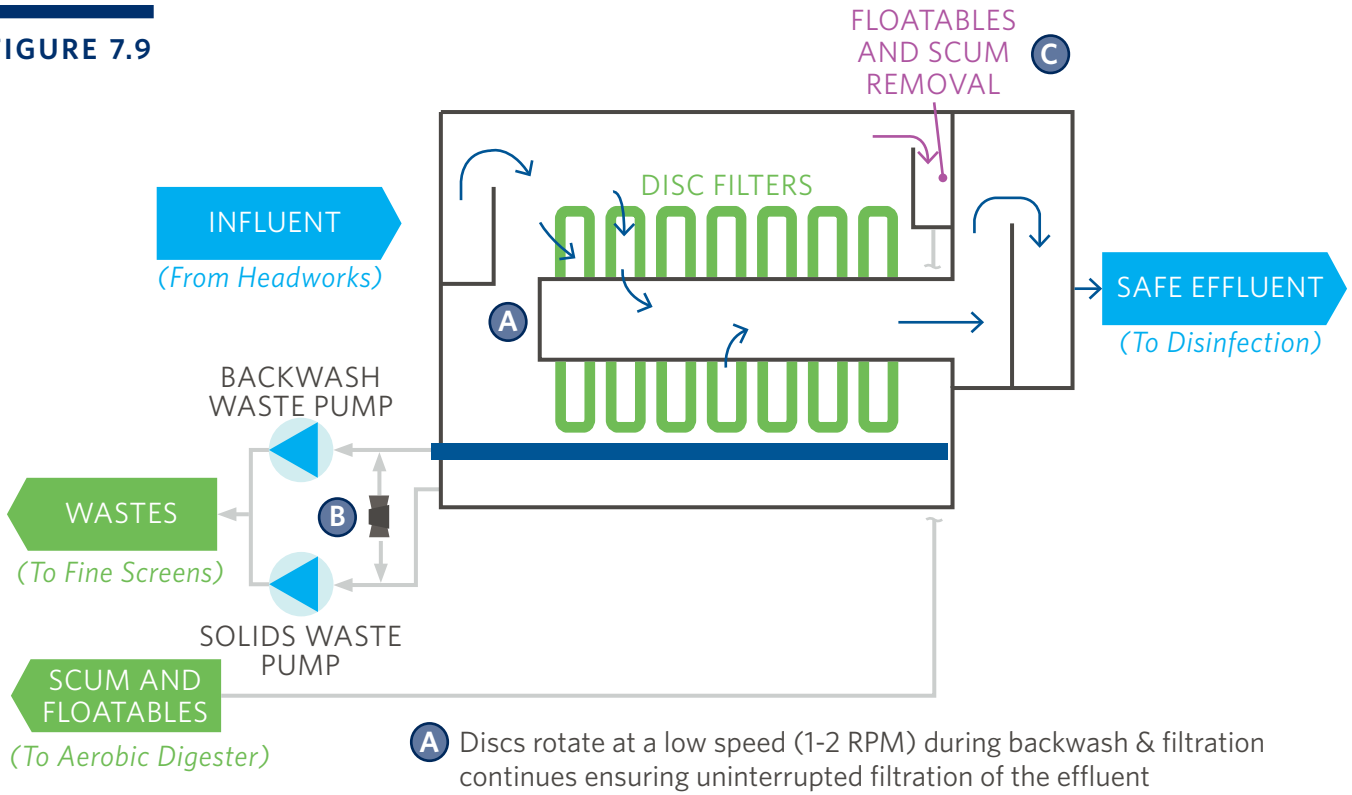
SAFE SYSTEM DESIGN

Following an evaluation of potential treatment technologies for the SAFE system, our team has determined that disc filtration is an effective technology for the City to consistently achieve the ocean discharge effluent TSS and BOD5 requirements. Disc filters provide a physical filtration barrier with a nominal pore size of 5 mm for filtration of the screened influent. **Figure 7.9** on the following page is a schematic diagram of the key features of our proposed disc filtration system. With this approach, 100% of the flow sent to the ocean outfall is filtered.

The unit we propose is sized at 6.26 mgd and consists of cloth media discs for BOD removal and filtration of suspended solids.

There are several types of EHRT solutions such as the Actiflo®. The SAFE System is the optimal EHRT system as it does not use chemicals, is lower in energy consumption, requires less maintenance, and is simpler to operate.

FIGURE 7.9



A Discs rotate at a low speed (1-2 RPM) during backwash & filtration continues ensuring uninterrupted filtration of the effluent

B Backwash and Solids Waste Pumps are interconnected to enhance SAFE System robustness

C Floatables and scum are removed from the system ensuring that no FOG is in the effluent

It will be pre-engineered in a 304 stainless steel tank and installed on a concrete slab on grade. The tank will be covered to protect the filters from sunlight and other exposure during the long periods between use.

After each use, the tank will be drained, and the system will be ready for the next high flow event. Backwash pumps provided with the system will route waste flow back to the headworks, thereby requiring an increased capacity of the fine screens and BNR-MBR facilities, as accounted for previously in **Figure 7.8**.

REGULATORY CONSIDERATIONS FOR THE SAFE SYSTEM

An important aspect of the project will be to ensure that the effluent discharged to the ocean from the WRF meets the Final Effluent Limitations in the City's NPDES permit. As described previously, with the proposed design comprised of the BNR-MBR process and SAFE system, the WRF will consistently achieve the target effluent quality goals. Our evaluation of the City's NPDES Permit indicates that the effluent from our proposed process design meets the definition of secondary treatment in 40 C.F.R.133.102. We are confident that the Regional Board will acknowledge the innovative approach we have taken to cost effectively address wet weather flows while achieving a high-quality ocean discharge.

We have provided a detailed permitting strategy for the SAFE System in Section 5 and discuss where it has currently been permitted.

7.8. REVERSE OSMOSIS

Based on our experience with advanced water treatment facilities throughout California, we know that the composition of feed water with respect to general parameters (temperature, pH, turbidity, etc.), inorganic constituents (e.g. dissolved ions, metals, silica etc.) and organic constituents can have a significant impact on the design, performance, and O&M requirements of RO systems. We also know that sparingly soluble salts can lead to RO scaling/fouling, greatly impacting O&M costs due to the need for frequent cleaning, increased chemical costs and offline time, and reduction in operating recovery and increased energy use.

To develop our proposed design, our water quality and process experts took a systematic approach to estimating the RO feed water quality for the WRF. This included evaluating source water quality data and estimating wastewater concentration factors using a BioWin model. BioWin modeling was also used to support our BNR-MBR design. The source water quality evaluation included a range of blends among Morro Bay's water supply sources, including State Water Project and well water. Wastewater concentration factors looked at pre-drought and post-drought scenarios.

We utilized this data to optimize feed pressure pumping, sustainable recovery, and pre-treatment requirements. We also optimized RO system O&M costs with respect to energy and chemicals. These findings contributed to optimization of the downstream UV/AOP process as well.

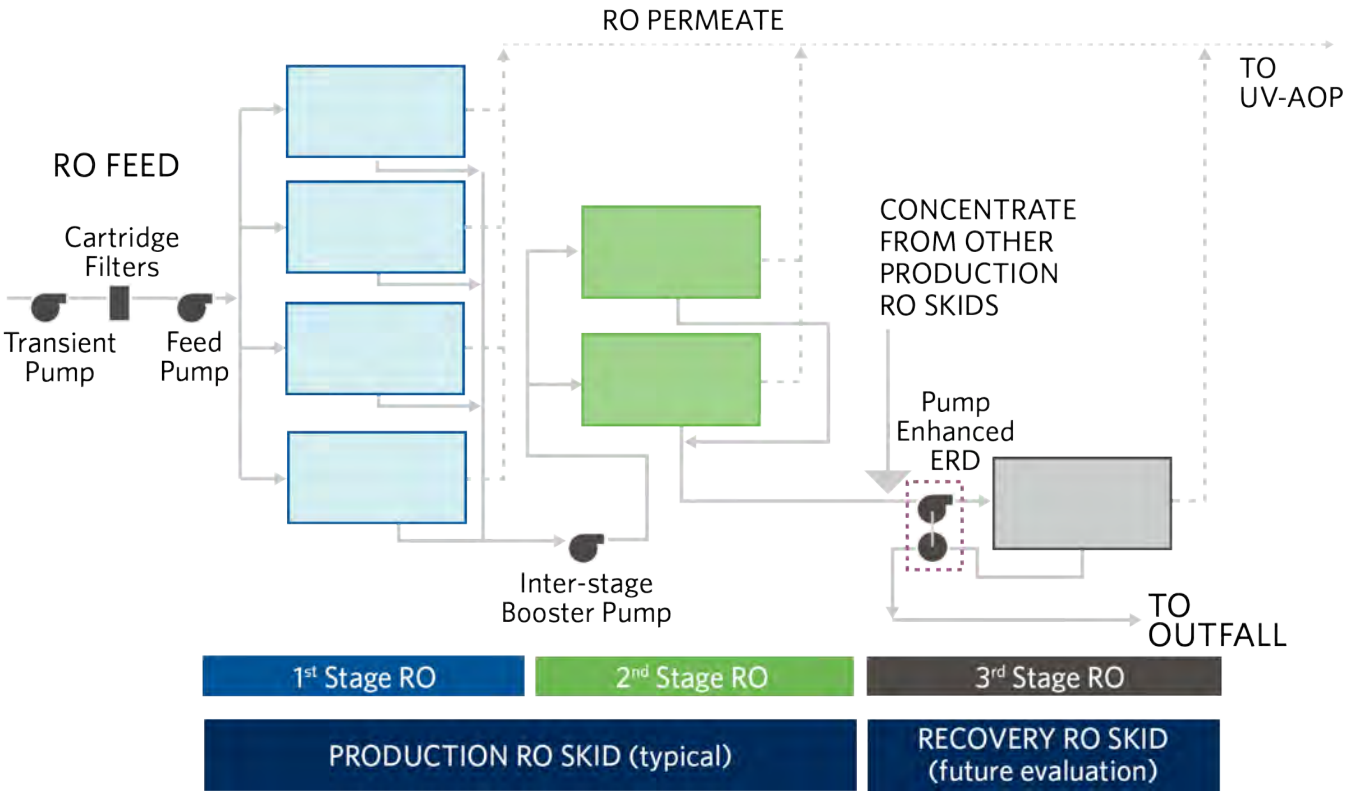
RO SYSTEM DESIGN

The MBR permeate pumps will fill two parallel RO feed tanks having a total capacity of 30,000 gallons. From there, three parallel high pressure vertical turbine pumps will feed three cartridge filters and then three 2-stage RO units, with one feed pump dedicated to each train. This three train (3 duty, 0 standby) design allows operation over a wide range of permeate capacities (0.31 to 0.93 mgd) to meet diurnal variations in available RO feed flow and to meet annual permeate flow requirements of 825 AFY. The flexibility afforded by this design will allow the City to maintain production during all feed flow conditions.

Our RO design is based on a conservative 80 percent design recovery based on our preliminary feed water quality analysis. By targeting a conservative recovery, the City benefits from the eliminated need for acid pretreatment, lower feed pressure requirements, and reduced cleaning frequency and need for specialty cleaning chemicals.

Note that our system does has the flexibility to range between 75 and 85 percent recovery should there be changes in feed water quality. The City could consider increasing recovery in the future at modest cost compared with the capital and operating cost of a third stage. Figure 7.10 on the following page illustrates the RO design.

FIGURE 7.10: RO SYSTEM



A further benefit of our RO design is the incorporation of dedicated inter-stage boost pumps for each RO unit. This allows precise control of the flux between stages over a range of operating conditions to reduce pressure and scaling. We also performed a cost-benefit evaluation of energy recovery devices, but they did not add value. Thus, our proposed design includes a 2-stage RO design that provides lower life cycle cost than a system with an independent 3rd stage equipped with feed water pH suppression and an energy recovery device. During final design, we will work with you to perform a detailed evaluation to optimize the solution, looking at UV/AOP.

RO FEED WATER QUALITY DETERMINATION

The composition of feed water with respect to general parameters (temperature, pH, turbidity, etc.), inorganic constituents (e.g. dissolved ions, metals, silica etc.), and organic constituents can have a significant impact on the design, performance, and O&M requirements of reverse osmosis (RO) systems. Our team's experience with the design, operation, and evaluation of RO systems used for water reuse in California has shown sparingly soluble salts such as such calcium carbonate, calcium phosphate, silica or silica metal salts can lead to RO scaling/fouling. This occurrence often leads to the need for frequent cleaning, resulting in increased chemical costs and offline time and reduction in operating recovery.

Leveraging our experience with the design and operation of numerous California AWT facilities, our water quality and process experts took a systematic and comprehensive approach to estimating the RO feed water quality for the Morro Bay WRF.

Our experience results in the following benefits:

- Establishes a basis of design for the RO system, with respect to feed pressure pump sizing, sustainable recovery and pre-treatment requirements to ensure the system meets the required permeate quality and production requirements.
- Allows a realistic estimate of RO system O&M costs with respect to energy, chemical pre-treatment and cleaning chemicals.
- Provides a basis for estimating RO permeate quality via standard RO manufacturer modeling tools that was then used as the basis of design for the downstream treatment processes including the UV AOP and remineralization systems.

Step 1: We reviewed three years (2014-2016) of Morro Bay's drinking water source quality as published in the Annual Consumer Confidence Reports including surface water from the State Water Project and the City's well water. This information was used to estimate the average concentrations of key inorganic parameters present in Morro Bay's drinking water over a range of source water blending conditions. The analysis included estimating Morro Bay's drinking water quality based on source water blends of 87% State Water: 13% well water and 96% State water: 4% well water. The treated well water quality was estimated based on a nominal 95% rejection of inorganic constituents by RO and a 35% bypass.

Step 2: Wastewater concentration factors for key inorganic constituents were determined using historical RO feed water quality from the nearby Silicon Valley Advanced Water Purification Center and potable drinking quality from the Santa Clara Valley Water District's annual water treatment plant operation and compliance data. A range of wastewater concentration factors we estimated by taking the ratio of RO feed water concentrations (pre-drought and post-drought) and potable water concentrations.

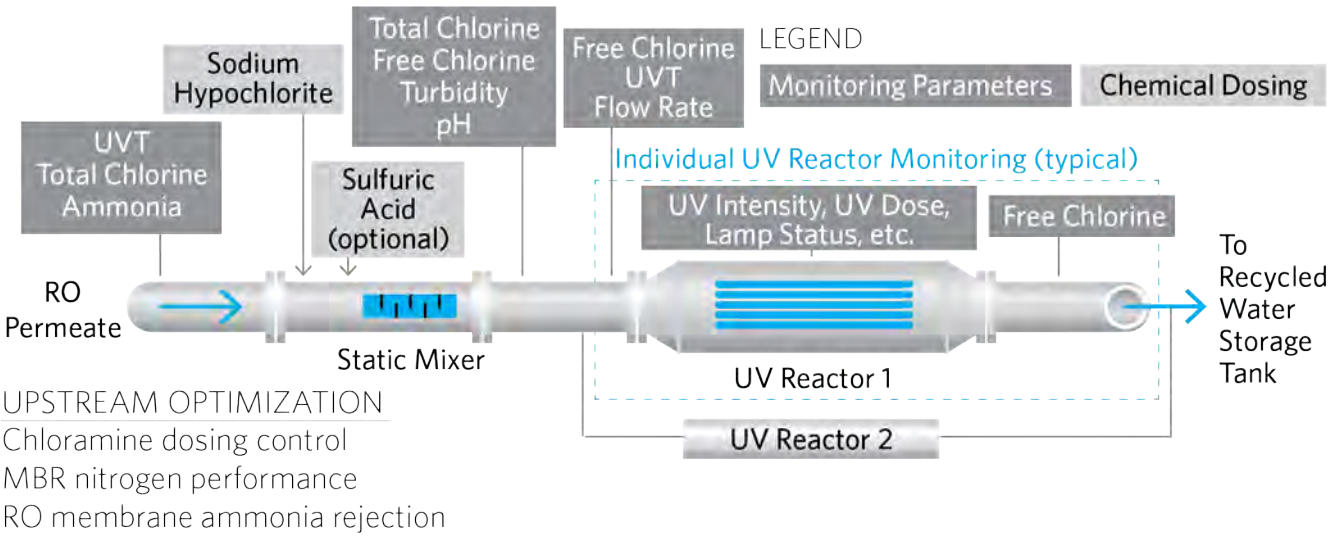
Step 3: The wastewater concentration factors determined in Step 3 were applied to the Morro Bay drinking water source quality for inorganic constituents estimated Step 1. The results of this analysis represent the estimated Morro Bay RO feed water quality as summarized in Proposal Form 8. The typical values are based on concentration factors associated with pre-drought and high blend of State Water, while the maximum values are based on post drought and lower blend of State Water. Values shown for general parameters and nutrients are based on review of Morro Bay's historical and specialized wastewater sampling data and BioWin modeling conducted as part of the MBR design.

7.9. UV/AOP & POST TREATMENT

A schematic of our proposed design for the UV/AOP system is depicted in **Figure 7.11** on the following. The UV/AOP system is expected to meet or exceed the RFP performance criteria. We evaluated our proposed system and found that it can be expected to achieve greater than 0.7 log reduction of 1,4-Dioxane (greater than the RFP minimum 0.5 log) and greater than 0.84 log reduction of NDMA. We have direct experience with DDW permitting of systems treating 1,4-Dioxane, so will follow the same process we have in the past to help obtain that permit.

Our proposed UV system will consist of two low pressure, high output (LPHO) UV reactors, each capable of treating a flow range of 0.31 to 0.93 mgd (1 duty, 1 standby). After evaluating both alternatives, we chose chlorine as the oxidant, rather than hydrogen peroxide. A UV/chlorine system has a potential to be more efficient for both energy use and oxidant dose.

FIGURE 7.11: UV/AOP SYSTEM



Chlorine also has other process applications onsite, eliminating the cost and complexity of building and maintaining dual chlorine and hydrogen peroxide systems. Finally, chlorine avoids significant residual quenching costs associated with UV/H2O2 for applications such as WRF that require downstream free chlorine disinfection to meet DDW's pathogen reduction requirements.

Due to the corrosive nature of the AOP effluent, post-treatment stabilization is required to protect the downstream product storage and conveyance systems. For your WRF, we evaluated using either liquid lime with carbon dioxide or calcite contact filters with sodium hydroxide. After preliminary evaluation of both cost and operational considerations, our proposed design utilizes the calcite system. Calcite contactors provide a cost effective, low-maintenance, approach to achieve stabilization goals, and calcite can be provided with required NSF rating for potable reuse. Parallel contactor design will allow one contactor to be taken offline for maintenance and still maintain target plant production. This system requires the addition of sodium hydroxide for pH adjustment.

7.10. RECYCLED WATER SYSTEM & PATHOGEN REDUCTION

Water treated by the UV/AOP system will be sent to a 0.5 MG glass lined bolted steel recycled water storage tank. A pump station will deliver recycled water from that tank to the offsite groundwater recharge field. A second pump station will divert recycled water to a hydropneumatic tank for onsite landscape irrigation and other non-potable use.The water entering the storage tank will be disinfected with sodium hypochlorite. The disinfection is designed to achieve 12-log enteric virus reduction, 10-log Giardia cyst reduction, and 10-log Cryptosporidium oocyst reduction, meeting CA Title 22 Code requirements.

Table 7.2 on the following page illustrates our proposed pathogen reduction approach for the WRF. In addition to the significant removal provided by the advanced water treatment processes, multiple additional barriers of pathogen reduction are provided,

including 1 to 2- log reduction by the MBR, 4-log reduction by pipeline chlorine disinfection, and 2-log reduction for underground retention. These removals/reductions allow for excursions in process performance and online monitoring while ensuring continuous public health protection. The values assigned to MBR are based on recent discussions FBV has had with DDW. During said discussions, DDW has confirmed the LRV values shown will be granted based on filtrate turbidity monitoring alone and operation within an established window of operating conditions. Additional credit (not shown) may be granted if demonstration testing is conducted.

TABLE 7.2: PROPOSED PATHOGEN REDUCTION APPROACH

TECHNOLOGY	MBR	RO	UV/AOP	PIPELINE FREE CHLORINE	UNDERGROUND RETENTION	TOTAL ACHIEVED	DDW REQUIREMENT
Virus	1	1.5	6	4	2	14.5	12
Giardia	2	2	6	0	2	12	10
Cryptosporidium	2	2	6	0	2	12	10

7.11. OCEAN OUTFALL SYSTEM

The existing ocean outfall will continue to be used by the new WRF. A new outfall pipeline will connect the WRF to the existing outfall adjacent to the City's existing wastewater treatment plant.

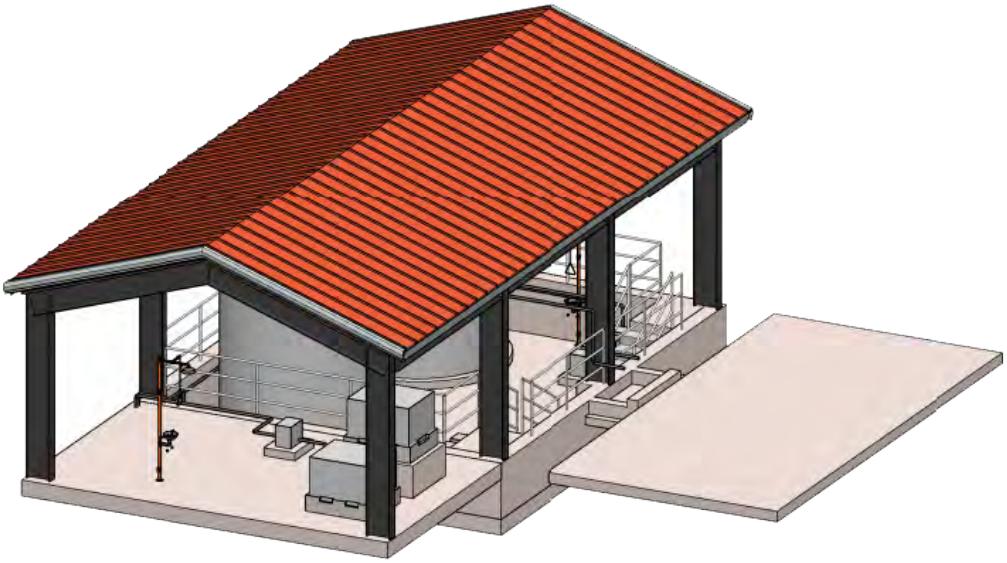
During normal operation, the outfall will be used primarily to dispose of RO concentrate flows and excess MBR permeate flows above the RO system capacity. When plant inflow is greater than the capacity of the BNR-MBR facility, the SAFE system will engaged. Flows treated by the SAFE system will be blended with MBR permeate in an Outfall Balancing Tank to achieve the permit required water quality for ocean discharge. The Outfall Balancing Tank will also serve as a forebay for the outfall pump station. The MBR permeate will reach the tank by overflowing a weir in the RO Feed Tanks; controls will be established to create the proper blend.

The outfall pump station will be located adjacent to the outfall balancing tank and near the recycled water pump station. A key component of the design was to ensure the appropriate level of disinfection is provided to meet the ocean outfall limit for total coliform under all flow conditions. Our innovative, cost saving solution is a pipeline contactor sized to provide sufficient contact time under peak hour flow conditions to meet a CT of 350 mg/L-min and provide a 3.7 log reduction of total coliform, the level of disinfection anticipated to be needed to meet the ocean outfall limits. Since this treatment must be achieved before the flow leaves the WRF site, the pipeline contactor includes an approximately 1,500-foot long, 48-inch diameter pipeline that wraps around the perimeter of the site. This approach is more cost effective than utilizing a chlorine contact basin, as the space needed for siting leads to a significant increase in overall project cost. Before leaving the site, the flow will be dechlorinated with sodium bisulfite.

7.12. CHEMICAL STORAGE & FEED

Our proposed design includes a chemical bulk storage and feed facility. It is centrally located on site and convenient to the various process areas that require chemical dosing, thereby minimizing piping runs. This facility will store sodium hypochlorite, sodium hydroxide and sodium bisulfite, all under a pre-engineered metal canopy to protect from the elements.

FIGURE 7.12: CHEMICAL STORAGE AND FEED AREA



The sodium hypochlorite and sodium hydroxide will be stored in bulk in a common containment area due to their compatibility. The tanks will be sized to accommodate delivery of at least a full truck load and will supply at least 15 days of maximum consumption.

The chemical unloading area can be accessed conveniently and safely by delivery trucks by simply pulling to the shoulder of the main plant access road. Sodium bisulfite, used in lesser quantity, will be fed to IBC totes positioned in containment tubs for secondary containment.

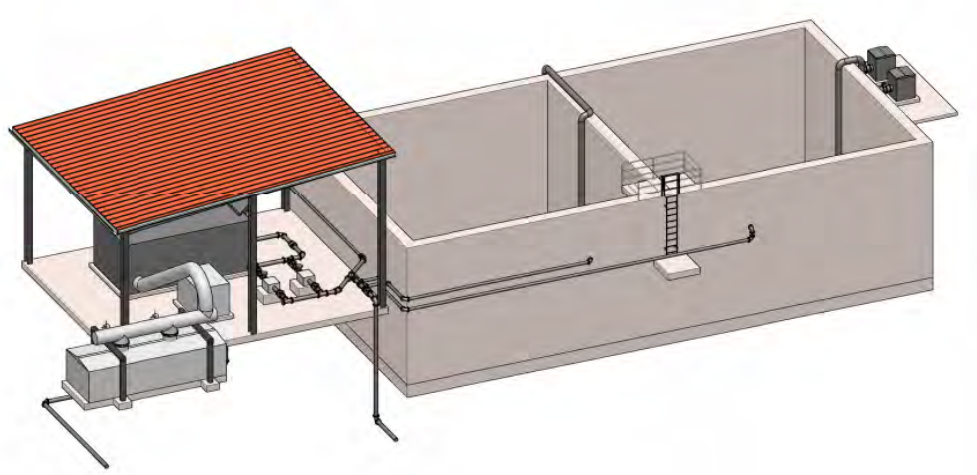
All chemicals will be metered to their destinations from peristaltic pumps with on-board controllers. The feed pumps will be pre-skidded by the manufacturer to minimize the time and expense associated with field assembly and troubleshooting of intricate small diameter piping and wiring. To ensure environmental protection once outside of the chemical storage area, the pumps will deliver each chemical to their respective feed point through a system of double contained pipe that will be bundled and encased in a chemical duct bank. The chemical duct bank will be aligned in the eastern utility corridor, to route chemicals throughout the site to their intended destinations, while also facilitating monitoring of these systems with leak detection.

In addition to the central chemical facility, several remote facilities are provided to store and feed specialty, process-specific chemicals. For example, a lean-to protected chemical area will be provided outside of the RO/UV building to feed citric acid and antiscalant from IBC totes, with space for sulfuric acid feed in the future, if needed. The MBR facility will also have a dedicated citric acid feed system for membrane cleaning. Finally, the dewatering system will include a dedicate polymer feed at that location.

7.13. SOLIDS

Our proposed design includes a solids handling area comprised of an aerobic digester and a belt filter press for dewatering, depicted in **Figure 7-13**. The aerobic digester will function essentially as a sludge holding tank to provide operational flexibility for scheduling dewatering. The digester is sized to handle 14 days of sludge. A dividing wall in the cast in place concrete basin will split the storage into two 7-day chambers, providing additional operational flexibility to use one or the other or both halves at once. This will be a benefit for maintenance, as well.

FIGURE 7.13: SOLIDS HANDLING SYSTEM



Sludge will be aerated by blowers feeding a grid of coarse bubble diffusers. They are sized and plumbed to enable aeration of either or both basins at once. The blowers will operate on a controlled cycle to promote denitrification and alkalinity management. When the blowers are off cycle, mixers installed in each basin will operate to promote minimal aeration and circulation. Two rotary lobe pumps are provided to lift the sludge from the digester to a belt filter press for dewatering. The press is sized to be operated two days per week for 8 hours each day. It will be designed and selected to produce dewatered sludge having a minimum solids content of 16 percent with aid of a polymer feed. We selected belt filter presses over screw presses because belt press manufacturers were willing to guarantee 16 percent solids. The screw press manufacturers we approached attempted to sell that they can provide that performance as well, but were not willing to make a guarantee.

The dewatering system will include a conveyor to lift solids from the belt filter press to a covered roll-off dumpster, with a motorized knife gate system designed to distribute solids evenly in that container. This innovative approach minimizes the space that must be odor controlled and simplifies the operation and maintenance requirements of the system.

To select the optimal dewatering system for Morro Bay WRF, our team evaluated a suite of currently operating belt press and screw press installations in the U.S. (eight installations in CA, GA, OH) used for dewatering MBR WAS with no primary sludge. The results of our evaluation indicate that the cake solids are typically comparable between these two technologies. Key benefits of Belt Filter Press for MBR WAS dewatering include:

- Belt Presses capture WAS fines more effectively than screw presses resulting in less return of fines to the BNR-MBR process and reduced membrane fouling. This directly reduces the operating costs for the Morro Bay WRF.
- Polymer use for MBR-WAS dewatering using belt presses is typically 50% compared to screw presses resulting in annual savings between $35,000 - $40,000.

The results of our evaluation indicate that the cake solids are typically comparable between these two technologies.

Our controls design focused on ensuring performance, reliability and security, including:

1. *Network segregation between the the plant process control network and the plant SCADA network to ensure the most optimized network.*
2. *Redundant communication links between the plant process control network and the plant SCADA network for increased reliability.*
3. *Separation of the plant process network and the plant non-process network with multiple firewalls for cyber security measures.*
4. *No direct external internet connection for the plant control network for maximum cyber security protection.*
5. *Cyber security measures like encrypted wireless network with non-broadcast SSID and static IP addresses for approved plant devices only to protect the plant from any external threats through the on-site wireless network.*
6. *Strategically located plant operation stations and local vendor equipment interface screens for the ease of operation.*

7.14. ELECTRICAL, INSTRUMENTATION & CONTROL (I&C)

Significant thought was put into the electrical and I&C designs to make them functional, reliable, and efficient. These systems often make or break the ultimate success of WRF facilities. We look forward to collaboratively melding our ideas with the City's operations staff on these topics once in the design phase of work.

Electrical Design. Our electrical design includes equipment centered in two locations, a dedicated electrical building and a separate electrical room in the RO/UV building. This approach of using multiple distributed load centers strategically located close to the process equipment, with radial distribution to each destination, is efficient because it reduces energy loss in the cabling. Distribution will be in duct banks aligned primarily on the western edge of the site, away from most wet utilities and out of the access road where maintenance could disturb plant access. The dedicated electrical building is located at the head of the plant to house the 2000A main service switchboard, transfer switch, two motor control centers (MCC) for the headworks, MBR, dewatering and chemical facilities, and the main PLC panel. We co-located the utility transformer and the emergency generator in this area to reduce the energy loss of the interconnecting cables and for the ease of future maintenance. The main switchboard will have sufficient space for future photovoltaic equipment. The separate electrical room located inside the RO/UV building includes an MCC to serve the RO, UV, product water area, and Operations and Maintenance buildings.

I&C Design. The I&C design features a self-healing fiber optic ring for the plant control network. Ethernet-based communications will be used between Plant PLCs and the SCADA I/O servers and between the Plant PLCs and vendor PLCs. Distributed remote I/O panels will be employed in the RO area, chemical area, MBR area, solids area, and the headworks are to minimize hardwired cabling.

7.15. STARTUP, TESTING & COMMISSIONING

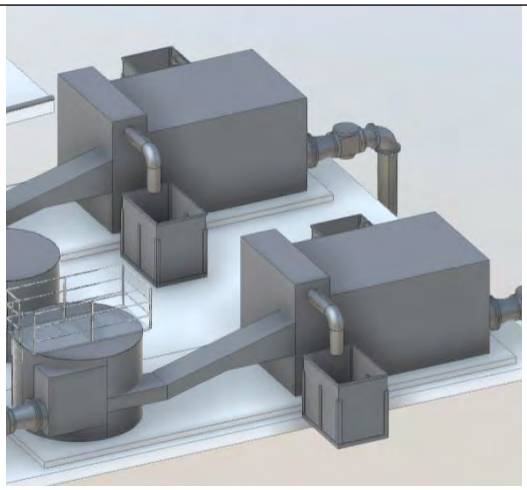
Another key to project success is a well-orchestrated startup, testing, and commissioning process. The key is to develop a plan early in the construction process, preferably at least six months before startup is to begin. This allows input from all stakeholders, including the City and permitting entities. Our team includes full-time startup professionals, led by Jorj Long, that will develop and implement our startup plan. We have provided a draft of the startup plan that we will utilize for your facility in Appendix 2. It provides guidance on our plan for functional testing of each process element, followed by acceptance testing that will enable beneficial occupancy. We are also committed to supporting the City during the 6-month Performance and Operation Testing period to ensure you are satisfied with your new WRF. Our detailed analysis of the life cycle costs for our proposed design can be found in Appendix 5.

PROPOSAL FORMS

Proposal forms describing our proposed design are included on the following pages. These forms describe our detailed design approach for each of the facilities, any variations from the performance criteria report, and the operations description. We look forward to reviewing these with you to assure alignment with your requirements.

REQUIRED PROPOSAL FORMS

Attachment E, Proposal Form 1
System Description – Coarse Screening



Two packaged headworks units are proposed to meet the City's RFP requirements. Each unit contains a bar screen and vortex grit unit. This form covers the coarse screen components of the packages. The vortex grit components are covered on Form 2.

Key Overall Facility Features

- Two Packaged Headworks Systems are furnished, each rated at full plant peak hour capacity of 8.14 mgd. 1 duty / 1 standby.
- Each package headworks includes coarse screening and grit removal.
- Coarse screening includes screens, washer/compactors, conveyor to dumpster, and odor control.
- Skid mounted metal channels and tank construction. 316 stainless steel construction.
- Manual isolation valves for each Packaged Headworks System.
- Ability to bypass both Packaged Headworks Systems via bypass pipe and manually operated valves.
- Built-in bypass/overflow around the coarse screens directly to the grit removal system.
- Fully covered channels and tanks for odor control.
- Manufacturer: Kusters Zima, Huber, Lakeside Equipment, or equal.

Equipment (Package Headworks)- Coarse Screens

- 2 screens @ 8.14 mgd each, one in each package. 1 duty / 1 standby at peak hour flow.
- ¼" (6 mm) bar spacing, 316 stainless steel.
- Furnished by packaged headworks manufacturer as part of the package.

Equipment (Package Headworks)- Washer/Compactor/Conveyor

- 2 washer/compactors, one in each package integrated into each coarse screen.
- 316 stainless steel wetted components.
- Integrated Screw-auger conveyor included for each package.
- Discharge to dumpster. Bagging attachment included on chute. Dumpster area can accommodate up to a 20-yard dumpster. A 4-yard is anticipated for weekly disposal based on published debris loading rates. Dumpster to be provided by hauling company.
- Furnished by packaged headworks manufacturer as part of the package.

Attachment E, Proposal Form 1

System Description – Coarse Screening

Control Features

- Local control panel by Packaged Headworks System manufacturer with Plant PLC start/stop and monitoring.
- Operators manually select which unit(s) operate and leave them running continuously.
- Local control panel for each Packaged Headworks System initiates operation of rake, washer/compactor, and conveyor.
- No operator intervention required for bypass or overflow of coarse screens. Operator intervention required for bypass or overflow of the Packaged Headworks System.

Variations from PCR

- Two screening washer/compactors are being furnished instead of one because each Packaged Headworks System includes a coarse screen with integrated washer/compactor.

Attachment E, Proposal Form 1

Operations Description – Coarse Screening

Purpose

The coarse screens collect and remove suspended debris and solid material from the plant influent flow stream to protect the plant equipment. Screenings are delivered to a washer compactor. Plant water is used to wash the screenings which removed soluble organics from the screenings which are utilized in the MBR. The unit compacts the screenings and deposits the material into a screenings container.

Description

The plant influent includes flow from the influent main and the plant drain system. Plant drain flow is metered separately.

Coarse Screens

Wastewater enters the headworks and can be directed to Coarse Screen No. 1 or No. 2 or bypassed to the grit basin effluent and to the Splitter Box. If flow is bypassed it will be diverted to the SAFE system for treatment. Wastewater passes through the bar rack while solids are captured in the rack. The retained solids blind the screen basket surface, causing an additional filtering. Automatic screen operation is based on differential level and time. The cleaning rakes are driven by the chains and travel upwards transporting the screenings upwards along the apron which comes after the bar rack. A hinged wiper pushes the screenings from the rake shelf over the discharge chute and directs them to the washer compactor.

Screen control is set through the local control panel (LCP). With the control selector switch in the Auto position the screen will be operate based on level control and/or time control. In Hand screen operation is controlled locally using the Forward and Reverse switches. Rake speed can be adjusted locally and speed viewed on the LCP. The screen will shut down on high toque, motor overload and if the E-Stop is pressed. Screen status, operating mode and alarms are transmitted to SCADA thru the PLC.

Level Control

Water level is measured upstream and downstream of the screens. When a preset differential level is reached a raking event starts at a preset low speed setpoint. In the event a high-high level is reached the screen speed will increase to the high speed setpoint. The rake high speed control has an adjustable delay timer.

Timer Control

A programmable timer is used to initiate raking events. During periods of low flow the rake may not reach levels high enough to trigger an event. A 24 hour programmable timer can be set to periodically operate the rake to make sure that screenings stay fresh.

Washer Compactor

Washer compactor operation is interlocked with the screen rake. Compactor control is set locally. With the control selector switch in the Auto position the compactor starts when a screening event is initiated. The spray water solenoid valves opens and the compactor starts and runs forward for a preset time period. Compacted material is discharged into a screenings discharge chute that holds a screenings bag. When full the bag is dropped into the screenings container. In Hand the washer compactor operation is controlled locally using the Forward and Reverse switches. The unit will shut down on low spray water pressure and when the E-Stop is pressed. Compactor status, operating

mode and alarms are transmitted to SCADA thru the PLC.

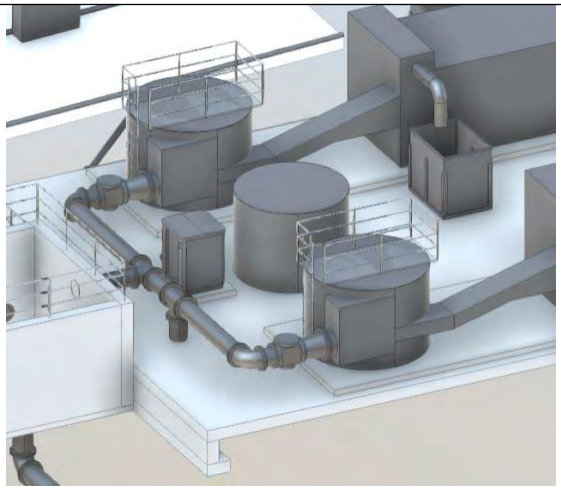
Normal Operation

Normally one screen is selected for use in Remote Auto control.

Alternate Operations

1. If Coarse Screen No. 1 fails in Remote Auto Manual the unit may be operated from SCADA by selecting Remote Manual and cycling the screen. This option requires manual operation of the compactor.
2. If Coarse Screen No. 1 fails in Remote Auto the unit may be operated locally using the local control selector switch.
3. If Coarse Screen No. 1 should fail the Operator can open the valve to the Coarse Screen No. 2 and close the valves to Coarse Screen No. 1. Coarse Screen No. 2 controls will be placed in Remote Automatic.
4. Should both screens fail to operate the screens may be bypassed to the grit gates by opening the bypass valves.

Attachment E, Proposal Form 2
System Description – Grit Removal



Two packaged headworks units are proposed to meet the City's RFP requirements. Each unit contains a bar screen and vortex grit unit. This form covers the vortex grit removal components of the packages. The coarse screen components are covered on Form 1.

Key Overall Facility Features

- Two Packaged Headworks Systems, 1 duty / 1 standby. Includes coarse screening and grit removal.
- Grit removal includes screens, washer/classifiers, conveyor to dumpster, and odor control.
- Skid mounted metal channels and tank construction. 316 stainless steel construction.
- Manual isolation valves for each Packaged Headworks System.
- Bypass/Overflow around both Packaged Headworks Systems by isolating both hieadwork systems to cause flow to flow directly to the flow splitter box.
- Fully covered channels and tanks for odor control.
- Manufacturer: Kusters Zima, Huber, Lakeside Equipment, or equal.

Equipment (Package Headworks)- Vortex Grit Removal

- 2 vortex grit units @ 8.14 mgd each. One integrated into each Packaged Headworks System. 1 duty / 1 standby at peak hour flow.
- 316 stainless steel tank and components.
- Removal Rate @ 0.97 MGD: ≥ 50 Mesh = 95%; 50-70 Mesh = 95%; 80-100 Mesh = 65%.
- Furnished by packaged headworks manufacturer as part of the package.

Equipment (Package Headworks)- Grit Pump

- 2 pumps total, one integrated into each Packaged Headworks System. 1 duty/1 standby.
- 250gpm rated flow.
- Discharges into grit removal washer/classifier.
- Furnished by packaged headworks manufacturer as part of the package.

Equipment (Package Headworks)- Washer/Classifier/Conyeyor

- 2 units total, one integrated into each Packaged Headworks System. 1 duty/1 standby.
- 316 stainless steel wetted components.
- Screw-auger conveyor.
- Discharge to dumpster. Dumpster area can accommodate a 20-yard dumpster. A 4-yard is

anticipated for weekly disposal based on published debris loading rates. Dumpster to be provided by hauling company.

- Furnished by packaged headworks manufacturer.

Control Features

- Local control panel by Packaged Headworks System Packaged Headworks System manufacturer with Plant PLC start/stop and monitoring.
- Operators manually select which unit(s) operate and leave them running continuously.
- Local control panel for each Packaged Headworks System initiates operation of paddle, grit pump, washer/classifier, and conveyor.
- Operator intervention required for bypass or overflow of the Packaged Headworks System.

Variations from PCR

- Two vortex grit removal systems and washer/classifiers are being furnished instead of one because each Packaged Headworks System includes a vortex grit removal system and washer/classifier. Providing two Packaged Headworks Systems decreases the cost to the City.

Attachment E, Proposal Form 2

Operations Description – Grit Removal

Purpose

Grit consists of inorganic material, such as sand, silt, and gravel. The grit removal system consists of a vortex grit basin, two grit pumps and a grit separator and classifier. Grit is removed from the wastewater to prevent damage to equipment and piping and the reduction of tank volume.

Description

Grit Basin

The grit basin inlet flume produces a straight laminar flow that minimizes turbulence at the inlet of the basin. Grit already at the bottom of the flume follows a ramp at the end of the inlet flume to the floor of the basin. The inlet baffle at the end of the flume helps the incoming flow to properly merge with the circular flow already inside the grit basin. The configuration of inlet flume, inlet baffle, and rotating paddle generates the toroidal flow pattern required for proper operation of the flat floored vortex grit basin.

The toroidal flow pattern moves water upward through the vortex at the center of the basin, across the surface of the water toward the outer wall, down the outside wall toward the floor, and across the floor back to the center again. Wastewater is also flowing simultaneously with the toroidal flow around the basin in a circular flow pattern. The combined effect of the two flow patterns retains grit in the basin for more than one circular rotation around the basin, effectively increasing the amount of time grit is retained in the basin, thus increasing the opportunity for grit to be captured on the floor.

The settled grit migrates toward the center of the hopper and falls into the grit storage hopper. The shaft on which the rotating paddles are attached extends only to the bottom of the separation basin.

Grit Pumps

Two centrifugal pumps operate periodically to remove grit slurry from the

Grit Separator and Classifier

The grit separator separates the pumped grit from the carrier water. The separator works on the principal of centrifugal force. The grit pump discharges settled grit slurry and some organics into the separator at a controlled rate. The slurry enters the separator tangentially near its upper perimeter. The round shape of the separator imparts a circular motion inside the unit. The heavier grit is forced to the outside of the cone and moves down the sides, falling into the grit classifier below the separator. The carrier water and lighter organics exits the separator at the top of the cone to return to the grit basins.

The grit classifier separates the grit from the organics and consists of an inclined tank with an inclined screw. The grit and organics falls from the grit concentrator into the tank, where it is washed using plant effluent water. The water flow rate through the tank is sufficient to carry the lighter organics out the settling basin overflow weirs to return to the in-plant drain while permitting the heavier grit to settle to the bottom of the tank. The grit is carried up the inclined screw allowing the grit to dewater before falling into a grit hopper for offsite disposal.

Normal Operation

Grit Basin: On-line

Grit Basin Paddle: Run continuously.

Grit Pump: Runs periodically based on preset timer.

Attachment E, Proposal Form 2

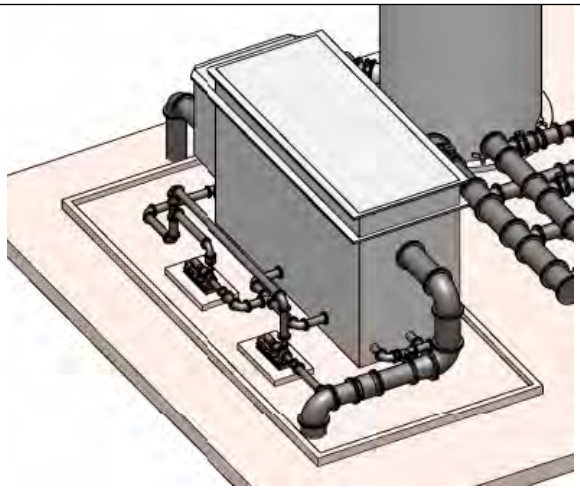
Operations Description – Grit Removal

Grit Separator and Classifier: Starts 5 minutes before grit pump runs and continues running for a preset time period after the grit pump stops.

Grit Container: Manual

Attachment E, Proposal Form 3

System Description – Flow Equalization Basin (SAFE System)



Rather than a large, expensive, and high O&M cost Equalization Basin, the Filanc Black & Veatch team is proposing a different approach. Instead, peak flows above the capacity of the MBR system will automatically be processed with a primary filtration system. We are calling this the Stormwater Adaptive Filtration Equipment (SAFE) System.

Key Overall Facility Features

- SAFE System Diversion Box included at headworks to divert any flows in excess of the MBR capacity to the SAFE system for treatment.
- 1 SAFE System Unit
    - 1 disk backwash pump
    - 1 sludge pump
    - Cloth media disks for BOD removal and filtration
    - Scum box for scum removal
- In lieu of a large equalization basin, the SAFE System takes excess flows from the main treatment train and treats them for ocean discharge.
- Effluent is blended with MBR effluent to meet discharge permit requirements
- Manufacturer: Aqua-Aerobic Systems Inc., Veolia, or equal.

Equipment – SAFE System .

- 1 @ 6.26 mgd each (plant peak hour flow of 8.14 mgd less MBR capacity of 1.88 mgd).
- Stainless Steel tank to house disks and appurtenances.
- 1 backwash pump, approx. 51 ft TDH
- 1 solids pump, approx. 51 ft TDH
- Backwash and solids pumps will be interconnected to allow either to be used for either operation in event one pump is out of service.
- Electrically actuated plug valves to control sludge, scum and backwash operations and control appurtenances
    - Pressure transducer
    - Float Switch
    - Vacuum transmitters

Attachment E, Proposal Form 3

System Description – Flow Equalization Basin (SAFE System)

Control Features

- Local control panel by SAFE System manufacturer with Plant PLC start/stop and monitoring.
- Flow from headworks through influent flow meter automatically triggers the startup of the SAFE system.

Variations from PCR

- SAFE System is provided in lieu of influent equalization tank swith mixers, aeration, gates, odor control, etc.
- With the SAFE system included, the design the fine screens and BNR/MBR systems do not need to be sized for the equalized peak day flow. These components are sized instead for 1.88 mgd based on the finished water production requirements and blending requirements of the SAFE system effluent. In the event the flow exceeds the MBR capacity, it will pass through the SAFE system. The SAFE system effluent will blend with MBR effluent to meet ocean outfall permits.
- With the SAFE system, the Ocean Outfall pumps need to be sized to handle 6.26 mgd and up to 8.14 mgd in situations where the RO System is offline.

Attachment E, Proposal Form 3

Operations Description – Flow Equalization Basin (SAFE System)

Purpose

Flows is excess of the treatment plant design capacity are diverted to the SAFE system for treatment.

Description

The SAFE facility is a cloth media filtration system that provides primary treatment for wet weather applications. The disks are constructive of a pile cloth filtration media to effectively filter high solids waste streams without the use of chemicals under varying influent conditions.

Normal Operation

Operation

As needed. Flow from headworks through influent flow meter initiates the SAFE system startup.

Filtration Mode

Screened wastewater flow enters the filter by gravity and fill basin that contains stationary cloth media disks that are completely submerged. Solids deposit on the outside of the cloth media forming a mat as filtrate flows through the media. The tank liquid level rises as headloss builds due to the collection of solids. Filtrate is collected in the hollow center tube and discharged over an effluent weir. The heavier solids settle into a hopper located in the bottom of the tank.

Backwash Mode

Solids are backwashed at a preset liquid level or time. Backwash shoes directly contact the cloth media and solids are removed by vacuum pressure using a backwash pump. The disks rotate slowly and two disks are backwashed at a time. Filtration is not interrupted. Backwash water is directed the plant drain.

Solids Wasting Mode

Heavier solids are removed from the collection on an intermittent basis. Filter Solids Waste Pump.

Solids are pumped back to the Headworks Splitter Box.

Floatable Wasting Mode

Floatable scum is allowed to collect on the water surface. After a preset number of backwashes, the water level is allowed to rise above the preset high level and the scum flows over the scum removal Weir. Scum wasting water is directed to the plant drain.

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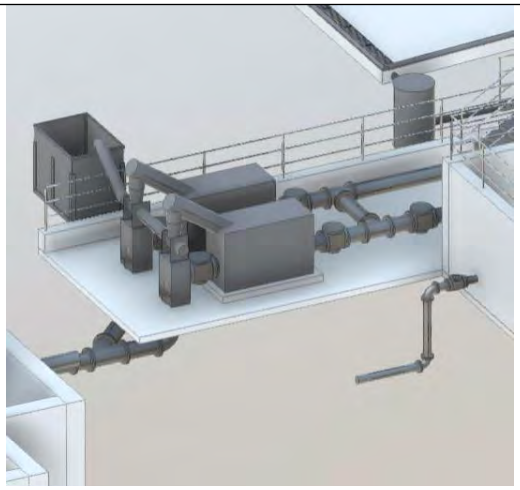
Attachment E, Proposal Form 4
System Description – Fine Screening



Two packaged fine drum screen units are furnished in the Headworks Area to screen wastewater influent ahead of the MBR process.

Key Overall Facility Features

- Fine screens are supplied from the SAFE System Diversion Box. An automated flow control valve and meter is included to regulate flow to the fine screens to the MBR treatment rate. A manual bypass valve is furnished in event the flow meter or control valve are out of service.
- Two Packaged Fine screens with integrated washer/compactors.
- Conveyor to convey screenings to dumpster.
- Manufacturer: Kusters Zima, Huber, Smith & Loveless, or equal.

Equipment - Fine Screens

- Perforated plate drum screens in stainless steel tank with packaged washer/compactors.
- 2 unit @ 1.88 mgd each. 1 duty / 1 standby.
- 2 mm openings, 316 stainless steel.
- Furnished by fine screen manufacturer as part of package unit.

Equipment - Washer/Compactor

- 2 units total, one integrated into each fine screen package.
- 316 stainless steel wetted components.
- 50% weight and volume reduction of screenings.
- Furnished by fine screen manufacturer as part of package unit.

Equipment - Conveyor

- 1 unit, shared between both screening and washer/compactor units.
- Screw-auger conveyor
- 316 stainless steel wetted components.
- Discharge to dumpster. Dumpster area can accommodate a 20-yard dumpster. A 4-yard is anticipated for weekly disposal based on published debris loading rates. Dumpster to be provided by hauling company.
- Furnished by fine screen manufacturer as separately installed equipment.

Attachment E, Proposal Form 4
System Description – Fine Screening

Control Features

- Local control panel by screen manufacturer with Plant PLC start/stop and monitoring.
- Operators manually select which unit(s) operate and leave them running continuously.
- Local control panel initiates operation of screen drum, washer/compactor, and conveyor.
- Control valve utilizes flow meter to maintain the MBR treatment flow capacity, maximum flow of 1.88 mgd through the fine screens. The valve is controlled directly by the Plant PLC and can be remotely or manually set to a position. A manual bypass valve is also furnished.

Variations from PCR

- Two fine screen units each rated at 100% of required capacity are furnished instead of three units each rated at 50% of required capacity as listed in the PDR. This simplifies the system while providing equivalent or greater redundancy.
- The fine screens are being furnished with a maximum flow of 1.88 mgd instead of 2.75 mgd equalized maximum day flow. This is due to the inclusion of the SAFE system for treating peak flow events.

Attachment E, Proposal Form 4
Operations Description – Fine Screening

Purpose

Splitter Box flow is discharged to the fine screens through two lines. Trash and fibrous materials such as hair and paper found in domestic wastewater can hinder membrane performance and shorten membrane life. Fine screening captures these materials to prevent them from accumulating on the membranes and transfers the material to the conveyor and discharge chute and into the screenings container.

Description

The fine screen is comprised of perforated plate with an integrated screenings press and screenings washing. Floating and suspended materials are retained by the screen basket. Blinding of the screen surface generates an additional filtering effect so that solids can be retained that are smaller than the bar spacing or perforation.

The screenings and compactor local control panel (LCP) is energized from the MCC. With the control selector switch in the Hand position the screen runs continuously; in the Off position the screen does not rotate; in Auto control is passed to PLC and operation set through SCADA. Screen operation is set on the SCADA configuration screen including control mode (Remote Manual | Remote Auto), screen out of service and screen high level setpoint. Selecting a screen has out of service removes the equipment from the control loop and suppresses any alarms.

Water level is measured upstream and downstream of each screen. The basket starts to rotate when a preset upstream water level is exceeded due to screen surface blinding. The rotating screen drum lifts the screenings and drops them into the centrally arranged trough. Screenings removal from the drum is supported by a scraper brush and a spray nozzle bar. Plant effluent water (PEW) is supplied by a solenoid valves. In the event PEW pressure is low a pressure switch generates an alarm. A screw conveyor in the trough rotates with the drum and transports the screenings through a closed and inclined pipe. The conveying screw transports, dewaters and compacts the screenings, without any odor nuisance, and discharges them into the dumpster. Screened wastewater is combined in a pipeline that discharges to the MBR. Sodium hydroxide is added to the line for pH control and monitored for TSS and pH. An E-stop is located locally and the LCP. Energizing the E-Stop shuts down the equipment immediately and generates an alarm.

Specifics on the sodium hydroxide feed system are located in Att E-Proposal Form 10-Chemical Storage and Feed.

Normal Operation

One fine screen runs in Remote Auto. One unit shall be operated when the MBR is in service.

Abnormal Operation

- Fine Screen No. 1 shall be operated in Remote Manual.
- Fine Screen No. 1 shall be operated in Hand.
- Fine Screen No. 2 shall be placed in service. Open the manual supply and out let valves to Screen No. 2. Energize the LCP and place controls in in Auto. Inlet and outlet valves to Screen No. 1 should be shut. If possible run the screen to remove as much material as possible. Place Screen No. 1 controls in Off.

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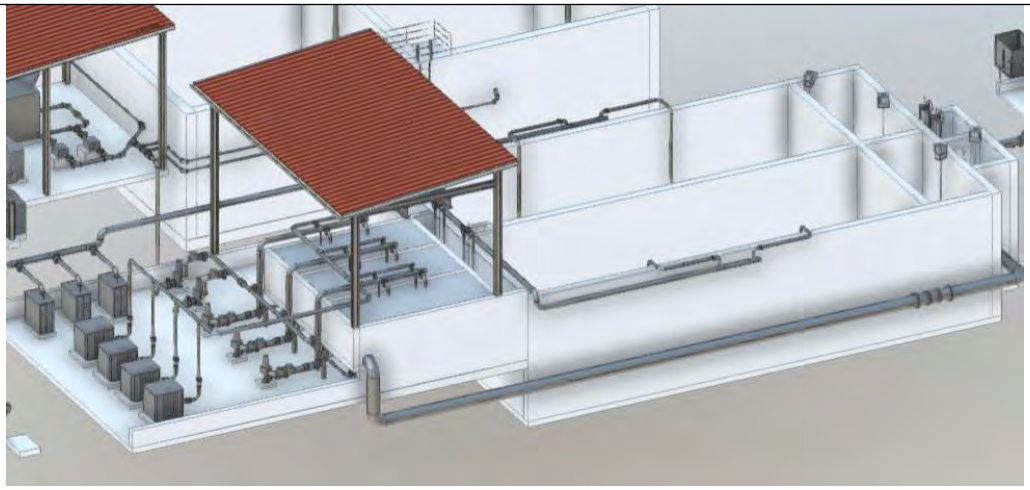
Attachment E, Proposal Form 5

System Description – Membrane Bio-Reactor



A Biological Nutrient Reduction System with a Membrane Bio-Reactor is furnished to perform BOD and nutrient removal along with filtration ahead of advanced treatment with RO or discharge to the ocean.

Key Overall Facility Features

- Two BNR process trains each with ability to treat max month flow of 1.16 mgd of screened and degritted wastewater with full redundancy. Max day flow of 1.88 mgd will utilize both basins. BNR does not need to be sized to handle 2.75 mgd equalized maximum day flow because the SAFE system handles peak flows rather than requiring them to be processed with MBR.
- MLSS will be less than 8,000 mg/l in BNR basins and less than 10,000 mg/l in MBR tanks.
- BNR basins utilize cast-in-place concrete construction with 18-ft sidewater depth.
- Total anoxic volume of 60,000 gallons. 30,000 gallons per train. Anoxic volume in each train divided into two zones.
- Total aerobic volume of 420,000 gallons. 210,000 gallons per train. Aerobic volume in each train served by two diffuser grids.
- 1.5 ft of in-basin equalization volume (anoxic and aerobic) for a total volume of 26,670 gallons.
- BNR process air supplied by single-stage, high-speed turbo blowers. Blowers are on Adjustable Frequency Drives to allow optimization of air flow.
- Manual isolation gates for each treatment train.
- RAS deox volume of 10,000 gallons total furnished in the RAS pipe Deox Tank upstream of BNR inlet splitter.
- Membrane Bioreactor System including:
    - Membrane cassettes and supporting structures.
    - Membrane filtrate pumps.
    - Membrane backpulse pumps. *(if required by system supplier)*
    - Membrane filtrate collection / backpulse distribution headers.
    - Membrane tank drain pumps. *(if required by system supplier)*
    - Membrane scour air blowers.
    - Membrane scour air distribution headers.
    - Valves, instrumentation, and controls equipment for operation of MBR system.
    - Compressed air system for operation of MBR equipment. *(if required by system supplier)*
    - Clean-in-place system via injection of citric acid or sodium hypochlorite into back pulse

line. *(not within MBR Supplier scope)*

- Canopy system over MBR tanks.
- Monorails for MBR cassette removal.
- Basin cover system over MBR feed channel, tanks, and RAS collection channel.
- Surface wasting in BNR basins and post-MBR WAS collection with common WAS pumping wetwell. Selectively removes filamentous bacteria to optimize BNR operation.
- Manufacturer: Fibercast, Suez, Evoqua, or equal.

Equipment – Anoxic Mixers

- 4 @ 2.5 hp each (to be optimized in design).
- Submersible, mast mounted.
- Manufacturer: Sulzer, Flow Systems, or equal.

Equipment – RAS Deox Mixer

- 1 @ 1 to 2.5 hp each (to be optimized in design).
- Submersible, mast mounted.
- Manufacturer: Sulzer, Flow Systems, or equal.

Equipment – Fine Bubble Diffused Aeration

- Two aeration zones per train.
- 675 scfm maximum Zone 1 airflow (per train). Minimum 170 diffusers (per train).
- 353 scfm maximum Zone 2 airflow (per train). Minimum 90 diffusers (per train).
- EPDM membrane discs with PVC components, fittings, manifolds, and laterals.
- Manufacturer: Xylem, Environmental Dynamics, Sanitaire, or equal.

Equipment – BNR Process Blowers

- 3 @ 1,050 scfm each, 24.9 psia discharge pressure. 2 duty / 1 standby.
- Single-stage, high-speed turbo blower w/ weather enclosure and VFD/AFD.
- Supplying air to fine bubble diffuser system. Air control, metering equipment, and logic included to control and optimize aeration.
- Manufacturer: Lone Star, Aerzen, Sulzer, or equal.

Equipment – BNR RAS Pumps

- 3 @ 2,300 gpm each, 2.5 ft TDH. Once for each MBR tank. 2 duty / 1 standby.
- Horizontal, submersible propeller pump.
- Manufacturer: Sulzer, Flow Systems, or equal.

Equipment – Rotating Pipe WAS/Scum Collection Weirs

- 24” diameter, 21’-6” span.
- FRP with 304SS components as required.
- Manufacturer: To be determined in detailed design.

Equipment – BNR WAS Pumps

- 2 @ 40 gpm each, 25 ft TDH. 1 duty / 1 standby.
- Vertical, submersible centrifugal pump.
- Manufacturer: DXP, Xylem, Flygt, or equal.

Attachment E, Proposal Form 5
System Description – Membrane Bio-Reactor

Equipment – Membrane Filtration System (specific equipment package subject to change based on MBR System Supplier requirements)

- 1.0 mgd annual average, 1.16 mgd max month, and 1.88 mgd max day treatment capacity. 10 gfd at annual average flow and 17 gfd at max month flow.
- *Three membrane trains. 650 gpm each.*
- Membrane Cassettes
  - 2 per MBR train.
  - Integrated scour air distribution.
- Membrane Filtrate Pumps
  - 3 @ 675 gpm, 30ft TDH.
  - Vertical centrifugal pumps
  - Manufacturer selection by MBR Supplier.
- Membrane Backpulse Pumps
  - 2 @ 675 gpm, 30ft TDH. 1 duty / 1 standby.
  - Vertical centrifugal pumps
  - Manufacturer selection by MBR Supplier.
- Membrane Tank Drain Pumps
  - 2 @ 250 gpm, 15ft TDH. 1 duty / 1 standby.
  - Vertical centrifugal pumps
  - Manufacturer selection by MBR Supplier.
- Membrane Scour Air Blowers
  - 4 @ 270 scfm, 6 psi. 3 duty / 1 standby.
  - Rotary lobe blowers w/ weather enclosure.
  - Manufacturer selection by MBR Supplier.
- Compress Air System
  - Complete with dryers, receiver tank, and control equipment.
  - Capacity requirements by MBR Supplier.
- Connections on MBR Supplier provided piping to accommodate CIP chemicals.

Control Features

- BNR Process Blowers
  - Local Control panels with Blower Master Control panel communication to SCADA.
  - System supplies/controls air based on DO control within aeration zones.
- MBR System
  - Local Control panels with MBR Master Control panel communication to SCADA.
  - Control of all MBR Supplier provided equipment is within the scope of Supplier.
- Anoxic/Deox Mixers
  - Operators manually select which unit(s) operate and leave them running continuously.
- RAS Pumps
  - Operators manually select which unit(s) operate and leave them running continuously.
  - Pump speed to be varied based on filtrate flow.
- WAS Pumps
  - Wetwell level control. Lead/lag selectable by Operator.

  - Post-MBR WAS wasting valve duration and frequency Operator definable in SCADA.
- WAS/Scum Collection Rotating Pipe Weirs
  - Operator definable duration and frequency in SCADA.

Variations from PCR

- MBR system is being designed with a capacity of 1.88 mgd rather than 2.75 mgd as listed in the RFP. This change is one of the benefits of Filanc Black & Veatch's innovative SAFE Systems approach to handling peak flows. Approximately 10,000 gallons of equalization volume is furnished within the BNR tanks to ease operations during daily diurnals, in particular minimum day diurnals, as requested by the City in the Proprietary Meeting.
- MBR cassette removal monorails provided in lieu of a bridge crane for simplicity and lower capital cost.
- Blowers and compressor equipment are not located in a Process Building. Sound/weather enclosures will be provided to allow equipment to operate outside.
- Scour blower selection will be by the MBR System Supplier and therefore may not meet all of the stated criteria for blower efficiency or allowable manufacturers.
- CIP will utilize MF filtrate, not RO permeate. This is industry standard practice and there is no process benefit to using the higher cost RO product.

Attachment E, Proposal Form 5

Operations Description – Membrane Bio-Reactor

Purpose

The MBR Area contains processes that accomplish secondary treatment and filtration. The purpose of the area is to convert dissolved and colloidal material to a product that can be separated from the liquid stream and to create an effluent (called permeate) suitable for the RO Facility.

Air is drawn through a set of filters to remove particulate matter,

Description

Biological Reactor

Wastewater that has passed through the fine screens and return activated sludge (RAS) flows are combined at the Bioreactor Splitter Box. An oxygen reduction probe (ORP) is located in box and provides an indication of the environmental condition of the biomass (aerobic, anoxic, and anaerobic). Using manually operated gates the flow can be directed to either activated sludge (AS) train. Flow is directed over a weir into the anoxic (AN) zone. The zone is mixed gently to encourage contact between food and the biomass. In an anoxic environment the biomass uses combined oxygen (nitrate) as an energy source. This is an effective way to convert nitrate to nitrogen gas and reduce overall nitrogen. The anoxic zone denitrifies the RAS before the mixed liquor (ML) flows into the aerobic zone. The AS system is configured for nitrification and denitrification. Solids are held in the aeration basins for a period of time that allows carbonaceous BOD removal as well as conversion of ammonia to nitrate. . A ML probe is located at the end of the aeration basin to monitor suspended solids concentration. The filtered wastewater, called permeate, is transferred to the RO Feed Tank.

Aeration Blower

The blowers will be used to compress air for injection into the aeration basins to maintain aerobic biological activity. Each blower will be equipped with inlet guide vanes, variable diffuser vanes, and a control system to optimize efficiency. Vanes will modulate based on process requirements and ambient conditions. Temperature detection will be provided for each blower. Pressure will be monitored on both the suction and blower discharge lines. A discharge electric isolation discharge valve will be provided for each blower. Aeration air pressure is measured at the blower aeration air manifold and is used in blower control. Meters are provided on each aeration basin dropleg to the fine bubble diffusers. Dissolved oxygen (DO) and ORP\temperature probes are located in the aerobic zone. The DO probes are also used as a control element blower operation to maintain a DO setpoint

Scum/Foam Control

Floating solids are periodically removed from the aeration basin surface using the rotating weir located at the end of the basin. The material will be transferred to the WAS Wetwell. This prevents foam from accumulating in the system.

WAS

The WAS Wetwell receives scum from the aeration basins and a portion of RAS that is diverted to the WAS to control sludge retention time (SRT). An electrically controlled valve is used isolate wetwell inlet. Two submersible pumps transfer WAS sludge to the aerobic digesters. WAS pump flowrate is adjusted as needed to maintain the require SRT. Pressure gauges are located on the discharge of each pump. The pumps discharge to a common manifold that is metered.

MBR

Operations Description – Membrane Bio-Reactor

Mixed liquor effluent flows from the AS plant to the ML Collection Channel which is equipped with a RAS Pump transfer biomass into the MBR. A level switch is located in the channel that is activated should the channel level reach the high-high setpoint. The biomass flows over a weir and into the MBR where the membranes are located. The membranes filter the inorganics and organics larger than the membrane pore size and provide a degree of pathogen removal. The membranes are used to provide a portion of the disinfection and aid in removing some organics that contribute to disinfection byproducts.

Scour Air Blower

Each MBR cassette receives a continuous air flow to maintain an aerobic environment. Air is supplied by membrane scour blowers. Ambient air is compressed through the blowers and then discharged through piping to each MBR cassette. MBR level is continuously monitored, displayed locally and transmitted to SCADA. Discrete level sensors are used to generate alarms for high-high and low-low levels. Operating outside of these levels could adversely impact MBR operation.

Solids that slough off the membranes are drawn from the aeration basins. A portion of the solids are removed from the system through the WAS pumps and transferred to the solids area for aerobic digestion and subsequent dewatering. Most of the MBR solids are returned to the AS system via the DeOx Tank. The tank is mixed gently without the addition of any food. The purpose of the tank is to remove free oxygen from the biomass. The deoxygenated biomass is discharged into the AN basin influent where it is blended with screened and degritted wastewater.

Membrane Cleaning Options

Biological fouling occurs when aerobic and anaerobic bacteria, fungus, and algae colonize on the membrane surface and begin growing. Precipitative fouling is the scale formation when compounds in the wastewater are concentrated beyond their solubility. Precipitative fouling usually does not occur in the membranes unless the wastewater has a high pH combined with hard water. Adsorptive fouling occurs when oil, polymers, surfactant, and hydrocarbons adhere to the membrane surface and clog the membrane pores. Cake formation (sludging) occurs when the membranes accumulate solids between the membrane fibers that do not allow wastewater to reach the membrane surfaces. Cleaning options are described below

a. Membrane Backwash System

The backpulse system supplies water forced through the lumen (inside) of the membrane fiber to the outside surface. The water flushes any material (foulant) that has accumulated on the membrane surface, and flushes it into the membrane basin. A backpulse pressure of 10 psi and a flow rate one and a half times the production flow are applied to the membranes every 15 minutes for 15 seconds (these times are Operator adjustable). The backpulse water remains in the basin and is filtered as ML.

b. Clean in Place (CIP)

Two types of CIP cleans are used on the membranes to deep clean the membranes when the TMP increases to 12 psi or the membrane recovery is lower than a predetermined value.

Maintenance CIP Clean

The ***maintenance clean*** uses a low dosage (100 mg/L, which dilutes to 10 mg/L in the basin) of sodium hypochlorite, and the chemical is backpulsed through the membranes (inside to outside) into the basin. The membrane basin remains full during the maintenance clean. The membrane control

system then cycles to a relaxation mode to soak the membranes for 1 to 5 minutes (Operator preset time). The membranes then cycle into the production mode, and the basin content is filtered as normal. The maintenance clean is performed every 24 hours, and is completed with the membrane basin full of water

Recovery CIP Clean

The ***recovery clean*** is run every 3 weeks or at determined intervals based on operational experience. The recovery clean can use either sodium hypochlorite or citric acid. The sodium hypochlorite dissolves and removes organic materials and citric acid dissolves and removes inorganics that have fouled or blocked the membranes. Sodium hypochlorite is fed at 10,000 mg/L or 1 percent solution concentration; citric acid is fed at 1,000 mg/L. Softened water is used and the water is heated prior to the CIP clean to increase the efficiency of the chemical if needed in the cleaning process.

The recovery clean is performed with the membrane basin empty. The CIP pump draws water from the softened water storage tank. As the water is drawn from the softened water tank, sodium hypochlorite or citric acid is fed into the CIP pump discharge and backpulsed into the membranes. The backpulse carries the specified chemical from the inside of the membrane fiber to the outside at the full concentration. The backwash pumps then fill the membrane train/basin with potable water from the finished water reservoir; the water is then transferred through the membrane fill line to the specified train. The water in the basin dilutes the chemical concentration; the membranes soak in the chemical water in the basin for 4 hours before the water goes to the next train or ends the clean. The membrane train/basin water is drained and sent to the CIP disposal basin or transferred to the next membrane train that undergoes the following cycled recovery clean. The membrane train/basin water may be transferred and used in four recovery cleans before being diverted to the CIP disposal basin. Operational experience determines the recovery clean basin water recycle.

Normal Operation

The MBR equipment normally operated in Remote Auto. The ML will be less than 8,000 mg/l in BNR basins and less than 10,000 mg/l in MBR tanks.

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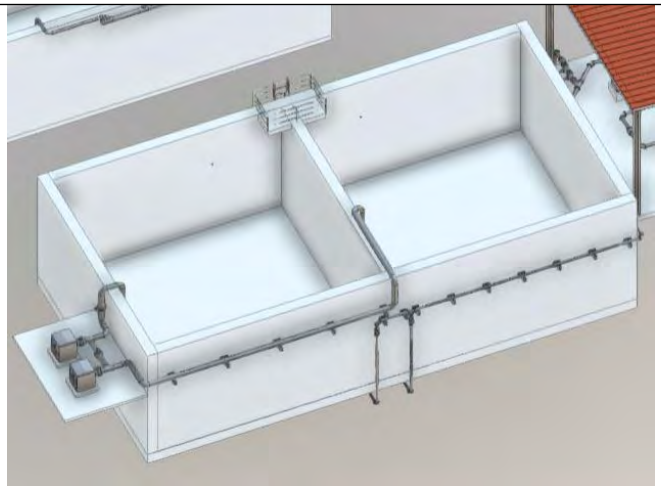
Attachment E, Proposal Form 6
System Description – Aerobic Sludge Digester



A two-zone aerobic sludge digester / WAS holding tank are provided to store and aerate WAS sludge. Each zone is designed to operate independently, and it is expected that normally only one zone will be in use to minimize sludge age for optimization of dewatering system performance. Each zone includes a mixer to mix the WAS sludge and coarse bubble diffusers to aerate it.

Key Overall Facility Features

- Two cell concrete tank with ability to store 14 days of sludge at AAF conditions with 1.15 safety factor built into tank volume – sidewater depth of 20.7 feet
- Tank is divided into two cells to allow operators to use half the volume for normal operations. In general, it is recommended to minimize sludge storage time.
- Access platform at the top of the tank for mixer maintenance.
- Influent and effluent isolation to tank.
- Isolation valves above ground to bypass tank and send straight to dewatering system.
- Two aeration blowers are included directly adjacent to tank to improve blower efficiency.

Equipment – Blowers

- 2 @ 700 scfm each. 1 duty / 1 standby
- Supplies air to coarse bubble diffuser grids
- Manufacturer: Kaeser Compressors, Universal Blower Pac, or equal.

Equipment – Coarse Bubble Diffusers

- 2 grids, on per cell of digester
- 304L stainless steel
- Manufacturer: DI, Sanitaire, or equal.

Equipment – Mixers

- 2 provided, one in each cell, to alternate with aeration in order to keep solids mixed.
- 10 hp each
- Manufacturer: Sulzer, Flow Systems, Flygt, or equal.

Control Features

- Local control panel by blower manufacturer with PLC start/stop and monitoring.
- Plant PLC turns blowers on/off are based off time and level to promote denitrification and alkalinity management.

System Description – Aerobic Sludge Digester

- Plant PLC turns mixers on/off to provide sludge mixing when blowers are off or continuously if operators select.
- Operators manually select which unit(s) and tank(s) operate and leave them running continuously.

Variations from PCR

- None.

Attachment E, Proposal Form 6

Operations Description – Aerobic Sludge Digester

Purpose

The aerobic digesters are aerated tanks hold sludge wasted from the MBR. The tanks act as a reservoir for feed sludge to the belt press and provide some stabilization of biomass as aerobic digesters.

Description

The facility is designed to operate the belt press two days a week. The sludge holding tanks act as a reservoir for sludge that feeds the belt press. The tank is aerated using diffusers to keep the environment oxic for aerobic and facultative bacteria. The microorganisms use the oxygen and obtain energy from incoming organic matter in the WAS. When the food supply is limited the microorganisms consume their own protoplasm to satisfy their energy requirements. Eventually the cells undergo lysis and release degradable organic matter which is then available for other microorganisms and biologically destroys volatile solids. The digester freeboard/head space will be minimized to reduce potential for odor accumulation. A mixer is located in the tanks and can be used to lift solids from the bottom of the tank.

Normal Operation

MBR waste active sludge is continuously sent to the sludge holding tanks. The blower runs as required to maintain an aerobic environment in the tanks. The mixer can be operated only when the aeration is off, or continuously as required to keep WAS sludge mixed.

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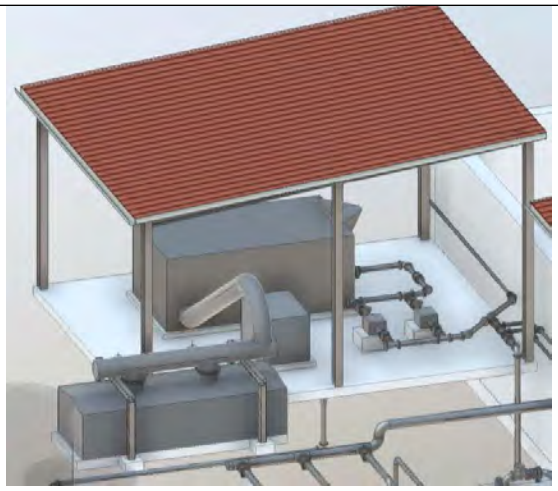
Attachment E, Proposal Form 7
System Description – Sludge Dewatering



A belt filter press sludge dewatering system is furnished to dewater aerated WAS sludge down to a water content suitable for hauling and disposal. Belt filter press technology was selected over a screw press because screw press manufacturers will not guarantee the solids concentration needed by the City.

Key Overall Facility Features

- 1 Belt Filter Press to be operated 2 days per week, 8 hours per day.
- 1 Conveyance System to convey dewatered solids to a 40 yard roll-off container (container provided by hauling company).
- 1 dual-port dumpster conveyor system to selectively distribute dewatered solids in the dumpster. Furnished with cover to minimize odor release.
- 2 rotary lobe pumps to feed the belt filter press either from the aerobic digester tank or directly from the WAS pipe.
- Polymer storage and feed equipment provided directly adjacent to belt filter press.

Equipment – Belt Filter Press

- 1 unit
- Minimum guaranteed dry solids concentration: 17%
- Solids flow: 1,313 lbs/hour.
- Liquid flow: 305 gal/min.
- Polymer system provided in Chemical Storage and Feed Form.
- Manufacturer: Komline-Sanderson, BDP, Charter Machine Company, or equal.

Equipment – Rotary Lobe Feed Pumps

- 2 (1 duty, 1 standby).
- Capacity: 305 gal/min ea.
- Manufacturer: Borger, Netzsch, or equal.

Equipment - Conveyor

- 1 angled conveyor to lift solids from belt filter press up to dumpster distribution conveyor.
- 1 horizontal conveyor with 2 electric knife gate valves above dumpster to distribute dewatered solids evenly.
- Manufacturer: JDV, Custom Conveyor Corporation, or equal.

Attachment E, Proposal Form 7
System Description – Sludge Dewatering

Control Features

- Local control panel by dewatering equipment manufacturer with Plant PLC start/stop and monitoring.
- Dewatering equipment local control panel will communicate for coordinated operation with polymer feed system and sludge feed pumps.
- Knife gate valves on dumpster conveyor are motorized with operators manually selecting which to open in order to distribute dewatered solids.

Variations from PCR

- Instead of a dumpser-veyor type system to distribute solids in the dumpster, a dual-port conveyor system is furnished. This system allows operators to select which half of the dumpster to load solids into. This system includes splash guards and covering to minimize odor release. This is a common system for distribution of solids of this concentration into a dumpster for hauling and provides a better cost value to the City.

Operations Description – Sludge Dewatering

Purpose

The dewatering system dewaters aerobically digested sludge to reduce the moisture content so that it can be handled as a dry cake instead of a liquid. Cake is dropped onto a conveyor which transports the cake to a dumpster for temporary storage. Water removed from the sludge is called filtrate and drains to the sewer. The dewatered sludge product weighs less which reduces transport and ultimate disposal costs to reuse sites.

Description

Belt Press Feed Pumps

Two dewatering sludge pumps each equipped with variable frequency drive (VFD) drives transfer stabilized sludge from the aerobic digesters to the belt press. Pressure is displayed locally on the pump suction and discharge. In the event of low suction pressure or high discharge pressure the dewater pump shuts down. Prior to pump start up the seal water low pressure switch must not be energized. The pumps discharge to common discharge line where the flowrate is measured, displayed locally and transmitted to the PLC. Polymer is added to the sludge feed as a coagulant to enhance coagulation. Dosage is based on the sludge feed rate and is set through SCADA.

Once pumps and VFDs are energized the pumps are controlled using the local control panel (LCP). With the control selector switch in the Hand position the pumps run continuously with the speed set manually at the VFD. In the Off position the pumps do not run. In the Remote position power is transferred to the PLC and the SCADA interface used to set controls. In Remote Auto the BFP LCP controls pump operation.

Polymer Feed System

Refer to Att E-Proposal Form 10-Chemical Storage and Feed for details on the Polymer Feed System.

Belt Filter Press

Sludge is transferred from the aerobic digester to the belt press using rotary lobe pumps. The belt press consists of a drive, gear reducer, a set of two continuously moving permeable belts, hydraulic system, belt wash system, and associated controls. Polymer is used as a coagulating agent to help release water from the sludge. Polymer is added to the feed pump discharge line prior to discharge onto the press.

The dewatering LCP controls dewatering operating using a control selector switch. In the On position the dewatering system starts by starting the cake conveyors and opening the dumpster gates. The plant service water (PSW) solenoid valve opens to supply the two belt press washwater boxes. The drive motors start which moves the belts through the wash boxes to wet the belt. The PSW line has a low pressure switch that shuts down the belt press in the event there is insufficient water pressure to clean the belts. The polymer feed system is then called to operate (the polymer metering pump must be in Auto control). The conditioned sludge is discharged onto the upper belt in the gravity drainage section. The sludge is evenly distributed onto the belt through an inlet distribution assembly. The sludge is retained in this section by rubber-edged guide plates. A series of plows promotes sludge dewatering by constantly turning over the sludge to expedite water drainage and ensure even distribution across the entire width of the belt filter. The belt over this section is supported on a fixed plastic grid. Initial dewatering takes place by the water draining through the sludge mass and belt. The drainage is collected in a separate trough, located under the belt. The dewatering system does

not run if the control selector switch is in the Off position. An Estop is also located on the Dewatering LCP and will stop the dewatering option if the button is pushed.

The partially-dewatered sludge is transported to the vertical dewatering zone. The tapered V-shaped vertical chamber, which has a variable opening, is formed by the two downward-moving belts. The end walls are formed by two flexible seals, covered by a low friction plastic strip and fixed to the frame of the press. In this vertical zone, each band is supported by rigid perforated plastic grids over which the belts slide. The two belts move from the vertical zone and pass around a large perforated drum fitted with internal scoops which carry the filtrate outwardly. The filtrate passes from the inner surface of the belt/sludge sandwich to discharge ports on one end of the drum.

The sludge is contained between the two belts and travels between a series of shear-producing rollers where additional water is released due to increasing pressures. The water is drained into a collection trough. All of the rollers are of the freely rotating type, except the last one which is the drive roller. After passing over this roller, the belts separate. Spring-loaded scraper blades are provided to separate the cake from the belt at the point of cake discharge. The cake drops onto the inclines conveyor

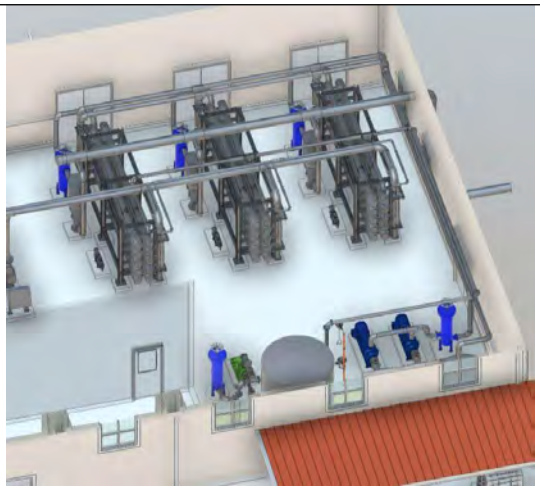
Cake Conveyance

An inclined screw conveyor transports cake to the dual-port dumpster distribution screw conveyor. Motorized gates are located on the bottom of the shaftless conveyor that permits the cake to fall into the dumpster. Each conveyor is controlled from a LCP using a control selector switch. In the Local position the conveyors are controlled using Start and Stop switches; in Off the conveyors do not run; in Remote position control is passed to the PLC and operation set through the SCADA interface. In Remote Auto the conveyors are controlled as part of the dewatering start and stop sequence.

Normal Operation

The belt press runs continuously for the duration of the sludge processing event. The belt press, sludge feed and polymer feed system operate in Remote Auto through the Master Control Panel. The automated startup and shutdown sequences for the components are managed by the MCP. The polymer dosage and belt speed are adjusted by the Plant Operator.

Attachment E, Proposal Form 8
System Description – Reverse Osmosis System



A reverse osmosis system if furnished to remove dissolved solids, bacteria, and some viruses as the primary treatment step for turning MBR filtrate into water suitable for indirect potable reuse. The system is furnished within a building complete with CIP and Flushing systems.

Key Overall Facility Features

- RO Feed Tank 30,000 gallons
- Three duty RO units sized with a permeate capacity of 215 gpm per unit to produce a total RO permeate volume of 825 AFY.
- Average element flux < 12 gfd; single element flux < 16 gfd
- Recovery: Design = 80%, Minimum 75%, Maximum 85%
- RO System including:
    - RO high pressure feed pumps, motors, and AFD's dedicated to each unit
    - RO units
    - RO sampling lines and sample sink
    - Clean in place (CIP) system and flushing system including tanks, pumps, motors,
    - Neutralization system.
    - RO Inter-stage booster pumps, motors and AFDs.
    - Instrumentation and control system
    - Cartridge filters and cartridge filter elements.
- Manufacturer / System Supplier: H20 Innovation USA, Inc. Suez, Wigen Water Tech, or equal.

Equipment – RO Units

- 3 duty @ 215 gpm design permeate flow rate per unit.
- Number of Stages per Unit = 2
- Number of RO elements per pressure vessel = 7.
- Number of Stage 1 pressure vessels = 7
- Number of Stage 2 pressure vessels = 3
- Manufacturer: Selected by System Supplier.

Attachment E, Proposal Form 8

System Description – Reverse Osmosis System

Equipment – RO High Pressure Pumps

- 1 duty dedicated per RO unit.
- Vertical turbine.
- AFD drive.
- Operating capacity 202 gpm to 287 gpm
- NPSHa = 30 ft
- Motor Power (to be provided by ROSS)
- Manufacturer: Selected by System Supplier.

Equipment – RO Inter-Stage Booster Pump

- 1 duty dedicated per RO unit.
- Minimum rated head = 50 psi.
- Pump type (selected by ROSS). Anticipated to be end-suction centrifugal or vertical turbine in can.
- AFD drive.
- Manufacturer: Selected by System Supplier.

Equipment – RO CIP Tank

- 1 tank, vertical cylindrical, dome top, flat bottom, FRP, minimum usable storage volume 900 gallons
- 1 tank heater, sized to heat the temperature of the CIP solution 10 °C in 3 hours.
- Manufacturer: Selected by System Supplier.

Equipment – RO Neutralization Tank

- 1 tank, vertical cylindrical, dome top, flat bottom, FRP, minimum usable storage volume 1,800 gallons or one acid or base cleaning solution volume including one volume of flush water. 900 gallons.
- 1 tank heater, sized to heat the temperature of the CIP solution 10 °C in 3 hours.
- Manufacturer: Selected by System Supplier.

Equipment – CIP Recirculation Pumps

- 2 @ 350 gpm, 140 ft TDH. 1 duty / 1 standby.
- Horizontal end suction centrifugal pump.
- Manufacturer: Selected by System Supplier.

Equipment – RO Flush Tank

- 1 tank, vertical cylindrical, dome top, flat bottom, FRP, minimum usable storage volume 2,300 gallons
- 1 tank heater, sized to heat the temperature of the CIP solution 10 °C in 3 hours.
- Manufacturer: Selected by System Supplier.

Equipment – RO Flush Pumps

- 2 @ 210 gpm each, 140 ft TDH. 1 duty / 1 standby.
- Horizontal end suction centrifugal pump.
- Manufacturer: Selected by System Supplier.

Attachment E, Proposal Form 8

System Description – Reverse Osmosis System

Equipment – RO Feed Cartridge Filter Vessels

- 3 cartridge filter vessels, 300 gpm design capacity, 316 SS (1 per RO unit).
- Horizontal or vertical vessel orientation
- Maximum loading rate @ design flow rate = 3.5 gpm per 10 inch equivalent length
- Maximum clean element head loss @ design flow rate < 3 psi
- Maximum dirty element head loss @ design flow rate = 15 psi
- Manufacturer: Selected by System Supplier.

Equipment – RO CIP Cartridge Filters

- 3 cartridge filter vessels, 300 gpm design capacity, 316 SS (1 per RO unit).
- Horizontal or vertical vessel orientation
- Maximum loading rate @ design flow rate = 3.5 gpm per 10 inch equivalent length
- Maximum clean element head loss @ design flow rate < 3 psi
- Maximum dirty element head loss @ design flow rate = 15 psi
- *Manufacturer Parker Hannifin Corp., 3M, Pall or equal.*
- Manufacturer: Selected by System Supplier.

Equipment – RO Flush Cartridge Filters

- 1 cartridge filter vessel, 180 gpm design capacity, 316 SS (1 per RO unit).
- Horizontal vessel orientation
- Maximum loading rate @ design flow rate < 5 gpm per 10 inch equivalent length
- Maximum clean element head loss @ design flow rate < 3 psi
- Maximum dirty element head loss @ design flow rate = 15 psi
- Manufacturer: Selected by System Supplier.

Equipment – RO elements

- 8 inch by 40”, thin film composite, spiral wound
- Manufacturer: Selected by System Supplier. Anticipated to be DOW, Hydranautics, Toray, or equal.

Equipment – RO pressure vessels

- Fiber glass reinforced plastic
- Minimum pressure ranting = 300 psi for operating temperatures (4.4 to 88 °C)
- Manufacturer: Selected by System Supplier.

Control Features

- The RO system shall be controlled by a PLC that is integrated into a Plant Control System.
- RO High Pressure Feed Pumps
    - Each high pressure pump (with AFD) shall be controlled to achieve a permeate flow set point of that RO unit (sum of the permeate flow from each stage of the RO unit).
- RO Units
    - RO units shall automatically be brought into and out of service to maintain a minimum level set point in the RO feed tank.
- Concentrate Control Valves
    - Each concentrate control valve shall be controlled to achieve a set recovery of that unit.
- Booster Pumps

- Each booster pump shall be boost the pressure of the second stage feed to balance the flux between first stage and second stage by controlling the permeate flow of the first stage.

- Pre-Operative Feed Water RO Unit Bypass
  - Controls shall include a pre-operative bypass executed when the first unit is brought into service with all other units remaining offline. During this procedure cartridge filter effluent shall bypass all the RO units, allowing feed water parameters to stabilize at a set point and chemical flows to stabilize before feed water is admitted to the membranes.
- Post-Operative Feed Water RO Unit Flush
  - Controls shall include an automatic post-operative feed water flush cycle which shall be initiated automatically upon shutdown of the plant, unless the operator selected no feed flush option. The purpose of the post-operative feed water flush cycle is to ensure that concentrate is flushed from the membranes to prevent fouling of the membranes, corrosion and scale accumulation.
- Post-Operative Permeate RO Unit Flush
  - Controls shall include an automatic post-operative permeate flush cycle which shall be initiated automatically upon shutdown of the unit following a post-operative feed water flush cycle as selected by the operator. no feed flush option. The purpose of the post-operative permeate flush is to ensure that concentrate is flushed from the membranes to prevent fouling of the membranes during shutdown for extended periods of time.

Variations from PCR

- Average flux > 12 gfd during times when one RO unit is offline or unavailable for maintenance / cleaning, assuming 98% online factor.

Attachment E, Proposal Form 8

Operations Description – Reverse Osmosis System

Purpose

The RO system is fed from the MBRs. Flow is received at the RO Feed Tank which stores MBR permeate. The Tanks may be bypassed and flow directed RO Feed Tank 2 or both tanks may be bypassed and flow directed to the Outfall Pump Station (OPS). ROP bypass flow is combined with the RO feed tank line that flows to the OPS Normally the tanks supply feed to the RO feed pumps.

RO removes dissolved constituents from the influent water, which achieves permeate salinity control and additional pathogen log removal credits. The RO feed water is pretreated with cartridge filters to protect the RO membranes against damage from large particles. Finally, the water is pressurized and passed through three stages of RO membrane elements with a pressure boost before the third stage to achieve flux balance. RO permeate (ROP) is discharged to the UVAOP for disinfection.

Description

The RO system shall be controlled by a PLC that is integrated into a plant control system that operates the RO feed tanks, RO high pressure feed pumps, concentrate control valves , booster pumps, cartridge filters, CIP makeup and neutralization systems.

RO Feed System

The MBR permeate pumps discharge to the two RO feed tanks. The tank level is measured, displayed locally and transmitted to PLC. The tank has switches that are used to activate the High-High and Low-Low Levels.

Pump controls are set locally. With the control selector switch in the Local position the pump are operated using Start and Stop pushbuttons and the speed adjusted using a potentiometer; in the Off position the pumps to not run; in the Remote position control is passed to PLC. Pump pressure is displayed locally. Pump duty selection (lead, lag or set a put to be out of service) is set from the configuration screen. In the event the lead pump fails the lag pump is promoted to the lead pump role; the third pump is used as a standby pump. When a pump is selected as out of service the pump is taken out of the control loop. In Remote Auto the pump(s) start or stop and adjusts speed uniformly to maintain set distribution pressure. If distribution pressure continues to rise with one pump in operation at minimum speed, that pump will cycle off and allow the air-bladder tank to supply those low demands. The pump will automatically restart when distribution pressure dips indicating the air-bladder tank is not keeping up with demands. The pumps discharge to a common manifold where flow, discharge pressure and pH are measured, displayed locally and transmitted to PLC.

Sodium hypochlorite and antiscalent are added to the RO feed supply line. A locally mounted flow meter measures, displays and transmits to PLC. After chemical has been added a sample pump pulls a portion of the flow from the feed line and discharges it to the RO Feed Analytical Panel where conductivity, turbidity, ORP, chlorine, pH and sodium hypochlorite concentrations are measured, displayed and transmitted to the PLC.

RO Membranes

The RO high pressure feed pumps (with AFD) shall be controlled to achieve a permeate flow set point of that RO unit (sum of the permeate flow from each stage of the RO unit). One feed pump is dedicated to Stage 1 of each RO unit. The RO units shall automatically be brought into and out of service to maintain a minimum level set point in the RO feed tank. Concentrate control valves shall be

controlled to achieve a set recovery of that unit. A booster pump is used to increase second stage feed flow to balance the flux between first stage and second stage by controlling the permeate flow of the first stage. Pressure is measured on the RO permeate (ROP) and RO concentrate (ROC). Conductivity is measured on the ROP of each stage, displayed locally and transmitted to PLC. The ROP flow rate is measured locally displayed and transmitted to PLC. Pressure is monitored locally, displayed and transmitted to PLC.

ROP pressure is monitored, displayed locally and transmitted to the PLC. In the event of high pressure a pressure switch generates an alarm at the PLC and an air vent release valve opens. A flow meter measures, displays and transmits the RO Unit ROP to PLC. ROP outlet piping three locations. During a normal operation ROP is directed to the UV system for disinfection through a flow control valve. Valve controls are set locally. In Local valve position is set using the Open and Close selector switch; in Remote control is passed to the PLC that controls the RO System. Flow not directed to the UV system is a split between the OPS and the RO CIP System. Note that RO train ROP to the outfall is combined in a single line to the OPS.

ROC pressure is monitored, displayed locally and transmitted to the PLC. In the event of high pressure an air vent release valve opens. A flow meter measures, displays and transmits the RO Unit flow to the PLC. During a normal operation ROC flows through the line at a preset flow rate that is set through a flow control valve. Valve controls are set locally. In Local valve position is set using the Open and Close selector switch; in Remote control is passed to the PLC that controls the RO System. Flow not directed to the UV system is split between the OPS and the RO CIP System. Conductivity and pressure are locally measured, displayed and transmitted to the PLC.

RO Sequencing

Pre-Operative Feed Water RO Unit Bypass

A pre-operative bypass shall be executed when the first unit is brought into service with all other units remaining offline. During this procedure cartridge filter effluent shall bypass all the RO units, allowing feed water parameters to stabilize at a set point and chemical flows to stabilize before feed water is admitted to the membranes.

Post-Operative Feed Water RO Unit Flush

An automatic post-operative feed water flush cycle which shall be initiated automatically upon shutdown of the plant, unless the Operator selected no feed flush option. The purpose of the post-operative feed water flush cycle is to ensure that concentrate is flushed from the membranes to prevent fouling of the membranes, corrosion and scale accumulation.

Post-Operative Permeate Water RO Unit Flush

The membrane flush system is used to remove salt and scale buildup at the RO membrane surface that normally occurs during the membrane permeation process upon normal shutdown of the RO train. By flushing the membranes with RO permeate, any concentrated salts are washed from the membranes, minimizing possible scaling during system shutdown time periods. The flushing system is automatically energized during the normal RO system shutdown cycle or can be manually started by the facility operator.

RO Flushing System

A portion of the ROP is directed to the RO Flush Tank for use in flushing the membranes. A flow

control valve is located on the flushing feed to admit solution during the flushing cycle. Valve controls are set locally. In Local valve position is set using the Open and Close selector switch; in Remote control is passed to the PLC that controls the RO System.

The tank level is measured, displayed locally and transmitted to PLC. The tank has switches that are used to activate the High-High and Low-Low Levels.

The tanks supply the RO flush pumps which discharge the ROP through the cartridge filer. The filtered ROP is divided between the CIP Makeup Tank and each RO feed line. Pump controls are set locally. In the On position the pump runs continuously; in the Off position the pumps does not run. Pump duty selection (duty, standby, or out of service) and pump start and stop levels are set from the configuration screen. In the event the Duty pump fails the Standby pump runs. When a pump is selected as out of service the pump is taken out of the control loop. The Duty pump starts at a preset low tank level and stops when the high level setpoint is reached. Discharge pressure is shown locally on the pump discharge. Pressure is monitored on the cartridge filter supply and is displayed locally and transmitted to PLC.

RO CIP Makeup Tank

RO CIP solution is formulated in the RO CIP Makeup Tank. Citric acid, ROP from the RO Flush Tank and sodium hydroxide are combined. The ROP line includes a flow meter and flow control valve to measure the makeup water volume added to the tank. The tank includes a site gauge to determine CIP level, a low level switch and a high level switch. On low level an alarm is generated to notify the Operator. The high level switch signals that an overflow event is imminent. Increase flows to the tank overflows to the RO CIP Containment Area.

The CIP Pumps draw from the CIP Makeup Tank discharge flow through the membrane and return the flow to the CIP Makeup Tank.

RO Neutralization Tank

The Neutralization Tank contains a solution of citric acid and sodium hydroxide that is blended together using a mixer. Mixer controls are located at the MCC and include a control selectors switch (Local-Off-Remote [LOR]), and reset pushbutton. In the Local position the pump runs continuously when the local control switch is in Start and stops when the switch is in Stop. Placing the local control switch in LO locks out the mixer. The neutralization solution returns to the Neutralization Tank through the RO Cleaning line. The tank includes a site gauge to determine, a low level switch and a high level switch. On low level an alarm is generated to notify the Operator. The high level switch signals that an overflow event is imminent. Increase flows to the tank overflows to the RO CIP Containment Area. A pH analyzer and level sensor are located on the overflow line. Both are displayed locally and transmitted to PLC.

Chemical Feed Systems

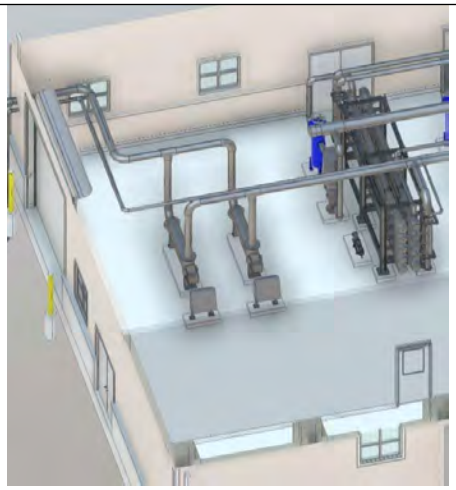
Refer to Att E-Proposal Form 10-Chemical Storage and Feed for details.

Normal Operation

Normally the system operates in Remote Auto.

Morro Bay Anticipated RO Feed Water Quality (basis of Design for proposed RO System)		
(all units in mg/L unless stated otherwise)		
Parameter	Typical value	Maximum value
Temperature (°C)	16.1	14-22
Conductivity (µS/cm)	1,312	1,471
pH (standard units)	6.8	7
Total Dissolved Solids	918	1,029
Turbidity (NTU)	0.1	0.2
Alkalinity (mg/L as CaCO3)	90	110
Chloride	250	315
Fluoride	0.36	1
Sulfate	125	165
Nitrate as N	8.9	15.6
Dissolved Organic Carbon	10	15
Total Organic Carbon	10	15
Calcium	169	186
Iron, µg/L	0.07	0.23
Magnesium	74	81
Potassium	12	17
Silica	12	24
Sodium	157	194
Aluminum, µg/L	0.08	0.11
Barium	0.01	0.02
Manganese	0.04	0.05
Strontium	0.34	0.42
Phosphate as P	3.40	5

Attachment E, Proposal Form 9
System Description – UVAOP System



A UVAOP system is provided to disinfect RO permeate and destroy any carry-over pharmaceutical or endocrine disrupting compounds. The system will be housed in the RO Building.

Key Overall Facility Features

- Located indoors in the RO building
- Power & Control Panel included with equipment
- UV lamps: Low-pressure high output (LPHO)
- Oxidant: Chlorine (delivered as 12.5% sodium hypochlorite solution)
- Cleaning System:
- UV AOP System including:
    - UV Reactors / lamps
    - Cleaning system (portable cart or automatic mechanical/chemical wiping system)
    - Power / Control Panels
    - Master Control Panel
    - Meters and Instrumentation
    - Safety Equipment
    - Special tools /spare parts
    - Oxidant storage and injection system.
- Treatment Requirements:
    - 1,4 Dioxane target log reduction 0.5 (DDW requirements for IPR)
- UV System Manufacturer/Supplier: Xylem, Trojan, Aquionics, or equal

Equipment – UV Reactors

- Required UV Dose (TBD by UV system suppliers)
- 2 @ 0.31 – 0.93 MGD each, 1 duty, 1 standby.

Equipment – Power & Control Panel

- Located adjacent to UV reactors in the UV reactor room
- NEMA Rating 4
- Temperature range 5 to 106 F
- Power Supply 480 V, 60 hz, 3-phase.

Attachment E, Proposal Form 9
System Description – UVAOP System

Equipment – Cleaning Equipment

- Due to the low pH and mineral content of the RO permeate cleaning of UV lamp sleeves is not required for AWT applications such as Morro Bay WRF. However, to conform to the RFP, two cleaning system options were evaluated. Option 1). Portable cleaning system consisting of cart, equipped with acidic commercial cleaning solution, 5 gallon bucket, sponges, gloves, tools to disconnect the quartz sleeve/lamp, lint free wipes, etc.. Option 2): Equip the UV reactors with automatic online mechanical/chemical cleaning system consisting of wiper rings, electric driven wiping mechanisms and brushes to periodically clean the quartz sleeves and the UV intensity sensor face on a set periodic interval. The two options have similar cost and therefore we will work with the City during the final design to select the preferred approach.

Equipment – Oxidant and Storage Injection

- Required chlorine dose (2-4 mg/L)
- See Proposal Form 10 – Chemical Storage and Feed – Sodium Hypochlorite.

Control Features

- The UV AOP system will be controlled by a vendor furnished Master Control Panel that is integrated into a Plant Control System.
- UV power
    - The UV power will be adjusted automatically via the reactor control panel based on changes in influent flow, temperature, pH, UVT, oxidant residual, and lamp age to achieve the desired target treatment requirements.

Variations from PCR

- The UV AOP design exceeds the specified 1,4 Dioxane reduction of 0.5 log per the PCR. The system was sized to account for possible increased levels of 1,4 Dioxane and NDMA in the influent water and associated CA Notification levels The maximum influent concentrations of 1,4 Dioxane and NDMA used for the basis of design are based on review of similar AWT's in CA. The design provides the following log reduction of target contaminants.
    - 1,4 Dioxane target log reduction >0.70 (based on anticipated maximum influent concentration of 5 µg/L, DDW requirements for IPR and CA notification levels).
    - NDMA target log reduction >0.84 (based on anticipated maximum influent concentration of 69.8 ng/L, DDW requirements for IPR and CA notification levels).

Future water quality characterization could be done during the initial design phase to confirm the basis of design. If the concentrations are lower it may be possible to decrease the cost of the AOP system.

Attachment E, Proposal Form 9
Operations Description – UVAOP System

Purpose

The UVAOP receives water from the RO system, or directly from the MBR System. The UVAOP provides two mechanisms for treating organic contaminants – direct photolysis and oxidation with sodium hypochlorite. Hypochlorite is fed ahead of the UV units. Using the combined technology RO permeate is disinfected prior to indirect potable reuse.

Description

The UV system receives permeate from the RO units and discharges disinfected water to the Product Water Storage Tank. The UV system is an enclosed system that functions to provide specific wavelengths of electromagnetic radiation to inactivate microorganisms by damaging their DNA and rendering them unable to replicate.

The two UV units each have a reactor vessel that contains its own individual enclosure to control the vessel which is connected to the Master Control Panel. The control panel sends and receives signals to and from the Plant Control System for remotely monitoring and operating the system. The system will be operated in operated in a **Local Manual/Auto** mode through the UV Control Panel or, in a **Remote Manual/Auto** mode through SCADA. The UV power will be adjusted automatically based on changes in influent flow, temperature, pH, UVT, oxidant dose, and lamp age to achieve the desired target treatment requirements.

Each UV reactor is provided with a chemically free automatic wiping system which functions to avoid formation of organic and inorganic deposits on the UV lamps. The wiper assembly is actuated by a geared motor and operates automatically, provided the UV lamps are on and the system valves are open. Wiping intervals per hour are adjustable directly at the wiper control box, and range from one to seven wiping cycles per hour. A cycle consists of the wiper moving back and forth twice.

Sodium hypochlorite operation is described in Att E-Proposal Form 10-Chemical Storage and Feed .

Normal Operation

The UVAOP system operates in Remote Auto. The UV power will be adjusted automatically via the PLC based on changes in influent flow, temperature, pH, UVT, oxidant dose, and lamp age to achieve the desired target treatment requirements.

Wiping intervals per hour are adjustable directly at the wiper control box, and range from one to seven wiping cycles per hour. A cycle consists of the wiper moving back and forth twice.

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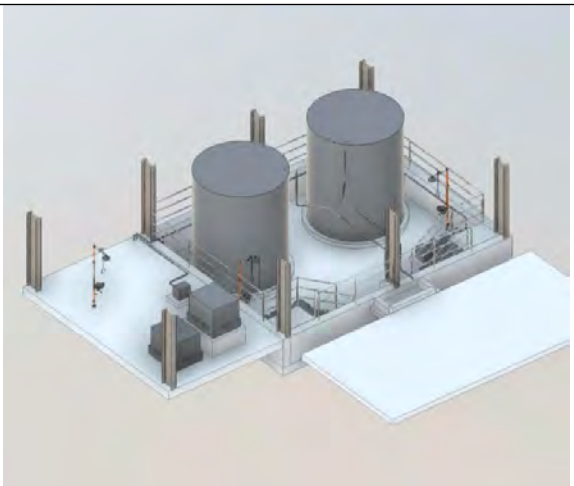
System Description – Chemical Storage and Feed



Treatment plants require the addition of various chemicals to ensure the proper treatment of the influent waste water. These chemicals are stored on site and dosed into the main process flows at the desired points. These chemicals are often hazardous and can cause damage to plant personnel or the environment if not handled properly. The facilities were designed with safety in mind to avoid potential harm.

Key Overall Facility Features

- Central Chemical Storage and Feed Facility will house sodium hypochlorite, sodium hydroxide, and sodium bisulfite. These chemicals are centralized as hypochlorite and hydroxide are stored in bulk, and bisulfite is dosed at a location where storage is impractical.
- The RO Building will be constructed with a lean-to structure for antiscalant and citric acid, and will also contain space for a future chemical (such as sulfuric acid) if deemed necessary in the future.
- The MBR facility will house its own small citric acid dosing system.
- The Aerobic Sludge Digestion facility will contain a polymer feeder / blender skid for dosing upstream of the sludge press equipment.
- Dosing pump skids will feature peristaltic pumps for metering and transferring chemicals.
- All facilities will feature secondary containment of bulk stored chemicals or secondary tubs for tote stored chemicals to ensure any chemical spills are kept from the environment.
- A shelf-spare of each pump type will be furnished in lieu of online spares as required by the RFP.
- Manufacturer: Prominent, Lutz-JESCO, Miltron Roy, or equal.

Equipment – Storage Tanks

- Sodium hypochlorite (12.5%) and sodium hydroxide (25%) will be stored onsite in FRP storage tanks.
- The tanks are approximately 10ft diameter by 10ft usable depth, or sufficient to contain a bulk truck delivery.
- These storage tanks will be located within a coated concrete secondary containment area to ensure any chemical spills are kept from the environment.

Equipment – Storage IBCs

- All other chemicals will be stored within 330 gallon Intermediate Bulk Containers, or IBCs.
- This size of tote will be sufficient for more than 15 days of average plant use.

System Description – Chemical Storage and Feed

- The totes will sit upon secondary containment tubs so that any spills will be contained and protected from the environment.

Equipment – Pumping Skids

- Chemical pumps will be skidded and prewired, to reduce complicated small bore piping and termination of wiring done in the field.
- The pumps will be peristaltic type, with on board controllers.

Equipment – Polymer Feeder / Blender Skid

- The chemical pump will be skidded and prewired, to reduce complicated small bore piping and termination of wiring done in the field.
- The blender will feature a mixing chamber to properly blend the emulsion polymer to aid in dewatering the sludge.
- The pump will be peristaltic type, with on board controllers.

Truck Unloading Station

- The chemical facility will be located adjacent to the road to allow chemical delivery trucks access for unloading.
- The location where trucks will park to offload chemicals will be depressed such that any large spills will be contained. The depressed area will drain into the secondary storage area so that it can be properly neutralized and disposed of without the risk of damage to the environment.

Control Features

- The truck unloading area will have audible alarms that alert the driver in the event of overfilling.
- All pumps will have the ability to be remotely controlled via the plant PLC, or locally for operator testing or manual feeding.

Variations from PCR

- **General:** Written approval from equipment and chemical vendors that the equipment meets their requirements has not been requested or provided at this stage. The systems will be designed with common safety and configuration standards for chemical facilities at wastewater plants.
- **Chemical Storage:** Safety splash shields have not been planned for between secondary containment areas. This is not typically done at water or wastewater treatment facilities and would add cost while reducing equipment accessibility. Additionally, these areas are typically noted as restricted access to avoid personnel being close to this equipment.
- **Feed Pumps:** The selected pumps will be sized to deliver the required flow plus the specified safety factor. The intent of the requirements listed in the RFP document will be met using manufacturer's standard equipment to the extent possible in order to ensure the availability of spare parts and to reduce project costs associated with customized equipment.

Attachment E, Proposal Form 10

Operations Description – Chemical Storage and Feed

Purpose

The chemical feed systems are operated to treatment chemicals at the required dose to various places in the process. Each chemical injection point has at least one pump dedicated to it for direct control of chemical dosage.

Description

All chemical systems will normally be operated in Remote-Auto. The systems will be designed to operate in dose control. Operators will periodically perform draw-down calibrations to input the correlation between pump speed and volume pumped into the Plant PLC system. For each injection point, operators will set a required chemical dose. The Plant PLC systems will vary the pump speed as required to deliver the required dose. The calibrated chemical metering pump is used to monitor the delivered chemical flow rate.

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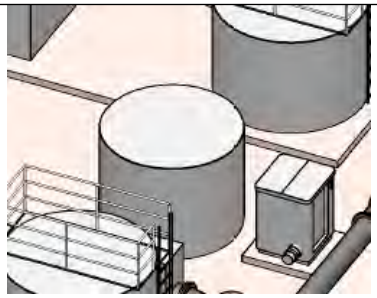
Attachment E, Proposal Form 11
System Description – Odor Control



An odor control system is furnished at the headworks for odor control.

Key Overall Facility Features

- 1 packaged biofilter system with centrifugal fan for headworks odor control (See Proposal Form 1 and 2 for headworks equipment).
- Biofilter system vessel includes humidification chamber (Stage 1) followed by engineered media biofilter for odorant removal (Stage 2)
- Recirculation pump for Stage 1
- Irrigation system to distribute reclaimed water to Stage 2
- Nutrient tank and feed pump
- Standard instrumentation, control panel, and water panel

Equipment – Biofilter System

- 1 FRP tower with corrosion resistant components.
- Media: Stage 1 = Synthetic, structured; Stage 2 = Engineered, inorganic.
- Empty Bed Residence Time: Stage 1 = 2 seconds; Stage 2 = 30 seconds.
- 99% H_2S removal efficiency or 0.1 ppm discharge.
- Manufacturer: Integrity Municipal Systems, ECS, BioAir, or equal.

Equipment - Fan

- 1 centrifugal fan with sound attenuating enclosure.
- 650 cfm airflow for headworks odor control.
- Manufacturer: Furnished by packaged biofilter manufacturer.

Equipment – Nutrient Storage and Feed System

- 1 nutrient tank and feed system.
- Tank material and capacity: linear or cross-linked polyethylene resin, <100 gal. Furnished by biofilter manufacturer.
- Manufacturer: Furnished by packaged biofilter manufacturer.

Control Features

- Local control and water panel by packaged biofilter manufacturer with Plant PLC start/stop and monitoring.
- Operators manually select which unit(s) operate and leave them running continuously.
- Local control panel initiates operation of fan, irrigation system, and nutrient feed system.

Variations from PCR

- None noted.

Attachment E, Proposal Form 11

Operations Description – Odor Control

Purpose

The Odor Control shall draw foul air from the Headworks and discharged the air to the biological Odor Scrubber.

Description

The odor control system uses microorganisms to metabolize odorous. An odor control fan draws odorous air from the head works through a fan pre-filter to capture particulates and discharges it to the once through scrubber. Treated air vents from the top of the scrubber to atmosphere.

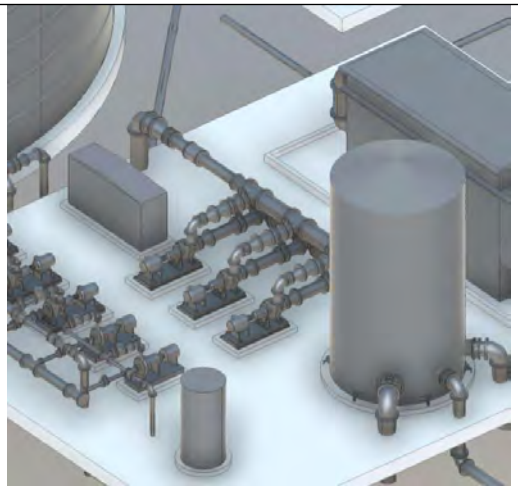
A differential pressure switch monitors the pressure drop across the prefilter. If the pressure drop is excessive the filter should be inspected for water accumulation or a dirty filter. Fan controls are set at the Local Control Station (LCS). Placing the control selector switch in Local pump operation is set using the Start or Stop switch; in Off the fan does not run; in Remote control is passed to the PLC and controlled through the SCADA screen. Fan status and control mode are passed from the LCP to the Odor Control Panel.

The filter media is highly porous with a special coating of nutrients and buffering agents to provide an optimal surface for biofilm growth without media degradation. The hydrogen sulfide reducing bacteria grow due to the nutrients and use the hydrogen sulfide as a food source. As long as nutrients are present, hydrogen sulfide is present in the incoming air flow, and enough water is being recirculated to help with sloughing of the bioslime, hydrogen sulfide reduction takes place. A differential pressure switch monitors the pressure drop across the media. If the pressure drop is excessive the filter should be inspected for excessive bioslime growth..

Normal Operation

The odor control system runs continuously in Remote Auto.

System Description – (Effluent) Outfall Pump Station



An Ocean Outfall Pump Station is provided to pump excess MBR Filtrate or SAFE Treated water to the ocean outfall. RO Reject also goes to the outfall, but residual pressure is used to drive it to the outfall without additional pumping.

Key Overall Facility Features

- Outfall Balancing Tank to receive flows from MBR system, SAFE System, or RO train effluent bypass. Balancing Tank allows three identical size pumps to be used over a wide flow range.
- Ocean Outfall pumps to deliver water to the Outfall Disinfection Contactor Pipeline and on to the Ocean Outfall.
- Outfall Disinfection Contactor Pipeline located on-site to provide required disinfection volume without requiring a tank to maintain. Dechlorination feed facility and point of compliance are located onsite for ease of operation.
- Pump type and materials selected for good efficiency and operating life.
- Flow meter for delivered flow monitoring.

Equipment – Outfall Pumps

- 3 @ 2,503 gpm @ 65 ft TDH each. 2 duty / 1 standby rated to deliver peak hour WRF influent flow rate less the feed flow to RO system.
- In event the RO system is offline during a peak hour flow event, the pumps are also designed to deliver 1,884 gpm @ 84 ft TDH each to deliver outfall flow equal to entire WRF influent flow rate with all three pumps in operation.
- All three pumps are the same size for ease of operation and equipment maintenance.
- All three pumps on VFD to allow direct control of pumping rate to maintain Outfall Balancing Tank level and required outfall flow. VFDs were also furnished on all three pumps to simplify operation instead of having to juggle operation of constant-speed pumps with variable-speed pumps.
- End-suction centrifugal pumps with epoxy lined casing, stainless steel impellers, and mechanical seals for corrosion resistance and long service-life.
- Manufacturer: Fairbanks Morse/Pentair, Grunfos, Xylem, or equal.

Control Features

- Operated directly by plant PLC system.
- Operators select lead, lag, and lag-lag pumps, or set a pump to be out of service.

System Description – (Effluent) Outfall Pump Station

- PLC starts or stops pumps and adjusts speed uniformly to maintain low level in Outfall Balancing Tank. In lower flow scenarios, the system will cycle a pump on and off at minimum speed and use the Balancing Tank to equalize the flow as needed to have less than 6 starts on each pump per hour.
- Pumps can be manually operated in the PLC to start/stop and set operating speed if needed.

Variations from PCR

- The size for the Ocean Outfall Line to the existing outfall was listed in the RFP as 16" with size to be coordinated during design. This design assumes a 20" C900 PVC pipe will be utilized from the plant site to the high-point at Quintana Rd. and Kings Ave. with 16" C900 thereafter to optimize pump design for an overall best value between the pipe and pump station. The high-point at Quintana Rd. and Kings Ave. being the hydraulic governing feature. An air/vacuum relief valve is recommended at the high-point to ensure a siphon does not develop down to the existing outfall which could create large negative pressures and collapse the pipeline.

Operations Description – (Effluent) Outfall Pump Station

Purpose

The Outfall Balancing Tank will receive flows from MBR system, SAFE system, or RO train effluent bypass. The ocean outfall pumps deliver water to the Outfall Disinfection Contactor Pipeline for where sodium hypochlorite is added for disinfection. Disinfection requirements are met without including the tank volume. The flow is dechlorinated with sodium bisulfite prior to ocean outfall.

Description

Outfall Balancing Tank

The Outfall Balancing Tank acts as a reservoir for flows from MBR system, SAFE system, or RO train effluent bypass. The tank level is measured continuously, displayed locally and transmitted to SCADA. In the event inflow to the tank is greater than outflow an overflow line directs flow to the ground.

Outfall Pumps

Three VFD driven centrifugal pumps operate periodically to transfer the contents of the Outfall Balancing Tank to the ocean outfall. With the pumps energized control is set locally using the control selector switch (Hand-Off-Remote). In the Hand position the pump runs continuously; in Off the pump does not run; in Remote control is transferred to SCADA. In Remote Auto the pump duty role s are selected lead, lag, and lag-lag pumps, or out of service) are set at SCADA. Selecting Out of Service removes the pump from the control scheme which inhibits associated alarms. At a preset high tank level the pumps start and run continuously. Pump speed is adjusted to maintain a preset flow rate from the outfall pumps. Pump operation stops at a preset low level. In lower flow scenarios, the system will cycle a pump on and off at minimum speed and use the Balancing Tank to equalize the flow as needed to have less than 6 starts on each pump per hour. A flow meter is located on the pump discharge manifold and is used to control the outfall pump speed as well as the sodium hypochlorite feed pumps.

Chemical Fed Systems

Refer to Att E-Proposal Form 10-Chemical Storage and Feed for details on the sodium hypochlorite and sodium bisulfite chemical systems.

Normal Operation

The Outfall Balancing Tank is in continuous operations. The pumps normally operate in Remote Auto as required to meet an adjustable outfall pump flow rate.

Alternative Operation

- The pumps normally operate in Remote Manual through SCADA.
- The pumps may be run locally from the VFDs.

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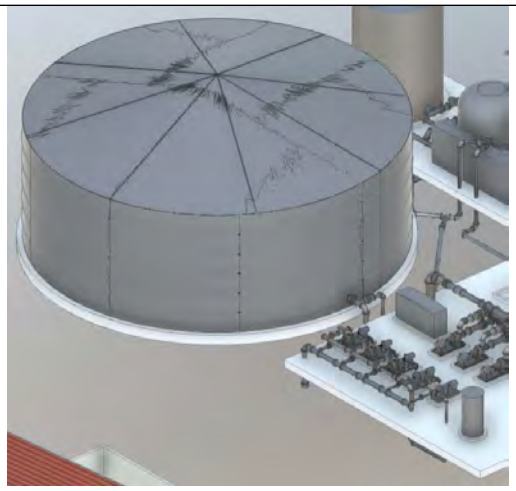
Attachment E, Proposal Form 13

System Description – IPR (Product Water) Tank and Pumps



A large tank is provided to store finished IPR (Product) water on-site. IPR Pumps are furnished to pump this water to the Morro Wellfield. The IPR (Product) Water Tank is also used to furnish the Onsite Recycled Water Pumps (see form 14) and flushing water for the Calcite Remineralization System (see form 15) to clean new deliveries of media.

Key Overall Facility Features

- 500,000 gallon tank for on-site storage of IPR Product Water.
- IPR Pumps to pump IPR Product Water for indirect potable reuse via groundwater injection at the Morro Wellfield.
- Pump type and materials selected for good efficiency and operating life.
- Flow meter for delivered flow monitoring and control.
- Sodium Hypochlorite (chlorine) Injection to maintain residual for transmission and obtain virus reduction credits.

Equipment – Product Water Storage Tank

- 500,000 gallon glass-lined bolted steel tank.
- Bypass piping furnished for flexibility in maintenance or inspection operations.
- Vent with bug-screen.
- Access manway furnished.
- Manufacturer/Fabricator: California Aquastore-CST, Engineering America, or equal

Equipment – IPR Pumps

- 3 @ 323 gpm @ 63 ft TDH each. 2 duty / 1 standby. Rated to deliver up to full RO production capacity of 0.93 mgd. All three pumps are the same size for ease of operation and equipment maintenance.
- All three pumps are the same size for ease of operation and equipment maintenance.
- All three pumps on VFD to allow direct control of pumping flow or pressure.
- VFDs were also furnished on all three pumps to simplify operation instead of having to juggle operation of constant-speed pumps with variable-speed pumps.
- End-suction centrifugal pumps with epoxy lined casing, stainless steel impellers, and mechanical seals.
- Manufacturer: Fairbanks Morse/Pentair, Grunfos, Xylem, or equal

Attachment E, Proposal Form 13

System Description – IPR (Product Water) Tank and Pumps

Control Features

- Operated directly by plant PLC system.
- Operators select lead, lag, and lag-lag pumps, or set a put to be out of service.
- PLC starts or stops pumps and adjusts speed uniformly to maintain either operator input flow setpoint or pressure setpoint.
- Pumps can be manually operated in the PLC to start/stop and set operating speed if needed.

Variations from PCR

- No variations noted.
- The size for the IPR line to Morro Wellfield was not indicated in the RFP. This design assumes a 10" C900 PVC pipe will be utilized with the high-point at Quintana Rd. and Kings Ave. being the hydraulic governing feature. An air/vacuum relief valve is recommended at the high-point to ensure a siphon does not develop down to the Morro Wellfield which could create large negative pressures and collapse the pipeline.

Attachment E, Proposal Form 13

Operations Description – IPR (Product Water) Tank and Pumps

Purpose

The IPR Product Water Storage system provides operational storage and pumping of the disinfected product water. The storage tank supplies the recycled water pumps, on-site reclaimed water pumped. In the event the tank level reaches the overflow pipe product water is discharged to the ocean outfall wetwell. Chemicals are added before flow enters the tank to stabilize the water. Sodium hydroxide is added to lower the pH to reduce the corrosive nature as water is conveyed distribution areas. Sodium hypochlorite is added to maintain chlorine residual in the distribution system.

Description

The Product Water Storage Tank is level is measured, displayed locally and transmitted to SCADA. The tank has switches that are used to activate the High-High and Low-Low Levels. Tank discharge water is monitored for chlorine residual, conductivity and pH. Values are transmitted to SCADA.

The tanks supply the product water pumps which transfer product water to the groundwater discharge. Pump controls are set locally. In the Hand position the pump are operated locally using Start and Stop pushbuttons and the speed adjusted using a potentiometer; in the Off position the pumps to not run; in the Remote position control is passed to SCADA. Pump pressure is displayed locally. Pump duty selection (lead, lag, and lag-lag pumps, or set a put to be out of service) is set from the configuration screen. In the event the lead pump fails the lag pump is promoted to the lead pump role; should the lag pump fail the lag-lag pump is promoted to the lag pump role. When a pump is selected as out of service the pump is taken out of the control loop. The pump start, stop and adjust speed to maintain the input flow setpoint or pressure setpoint. A pressure switch located on the pump discharge generates an alarm to SCADA and shuts down a pump.

The product water pump discharge to a common manifold. Flow, discharge pressure and pH are measured, displayed locally and transmitted to SCADA.

Normal Operation

Normally the system operates in Remote Auto with all pumps in service and each pump selected for a duty role (lead, lag and lag-lag).

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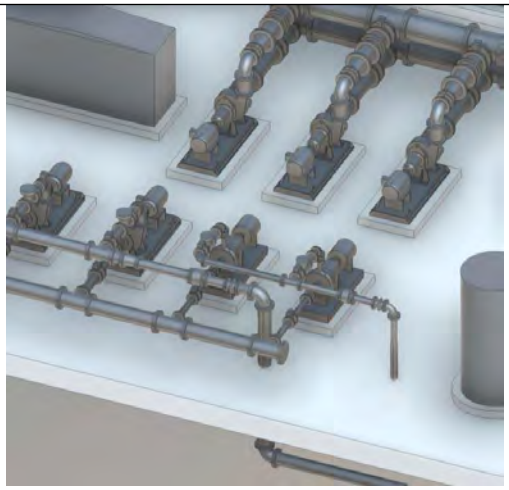
System Description – On-Site Recycled Water Pump Station



An On-site Recycled Water Pump Station is furnished to deliver IPR (Product) water to a distribution system on the site to supply various water uses around the site such as irrigation, process spray water, and washdown.

Key Overall Facility Features

- Pumps to deliver IPR water from the Product Water Storage Tank into a plant-wide recycled water distribution system.
- 500 gallon air-bladder tank to supply low demands below minimum pump flow rates.
- Pump type and materials selected for good efficiency and operating life.
- Flow meter for delivered flow monitoring.

Equipment – Outfall Pumps

- 2 pumps rated for 75 gpm @ 175 ft TDH each. 1 duty/1 standby for normal plant demands. 2 duty for higher demand periods such as large washdown demands or irrigation with normal plant demands.
- Both pumps are the same size for ease of operation and equipment maintenance.
- Both pumps on VFD to allow direct control of distribution pressure. VFDs were also furnished on both pumps to simplify operation instead of having to juggle operation of one constant-speed pump and one variable-speed pump.
- End-suction centrifugal pumps with epoxy lined casing, stainless steel impellers, and mechanical seals for corrosion resistance and long service-life.
- Manufacturer: Fairbanks Morse/Pentair, Grundfos, Xylem or equal

Equipment – Air Bladder Tank

- One 500 gallon air-bladder tank to supply low demands between pump operation cycles.
- Manual charging of the air-bladder is done semi-annually with a portable compressor.
- Steel vessel with EPDM or similar bladder. All wetted steel components are epoxy lined.
- Manufacturer: Amtrol WellXTroll, or similar.

Control Features

- Operated directly by plant PLC system.
- Operators select lead and lag pumps, or set a pump to be out of service.
- PLC starts or stops pumps and adjusts speed uniformly to maintain set distribution pressure. If

distribution pressure continues to rise with one pump in operation at minimum speed, that pump will cycle off and allow the air-bladder tank to supply those low demands. The pump will automatically restart when distribution pressure dips indicating the air-bladder tank is not keeping up with demands.

Variations from PCR

- No variations noted.

Attachment E, Proposal Form 14

Operations Description – On-Site Recycled Water Pump Station

Purpose

The Onsite Recycled Water Pump Station supplies water from the Product Water Tank to various non-potable water demands on the site such as irrigation, process sprays, and washdown.

Description

Pump controls are set locally. With the control selector switch in the Local position the pump are operated using Start and Stop pushbuttons and the speed adjusted using a potentiometer; in the Off position the pumps to not run; in the Remote position control is passed to SCADA. Pump pressure is displayed locally. Pump duty selection (lead, lag or set a put to be out of service) is set from the configuration screen. In the event the lead pump fails the lag pump is promoted to the lead pump role; the third pump is used as a standby pump. When a pump is selected as out of service the pump is taken out of the control loop. In Remote Auto the pump(s) start or stop and adjusts speed uniformly to maintain set distribution pressure. If distribution pressure continues to rise with one pump in operation at minimum speed, that pump will cycle off and allow the air-bladder tank to supply those low demands. The pump will automatically restart when distribution pressure dips indicating the air-bladder tank is not keeping up with demands. The pumps discharge to a common manifold where flow, discharge pressure and pH are measured, displayed locally and transmitted to SCADA.

Normal Operation

Normally the system operates in Remote Auto with two pumps selected for service and pump duty roles selected (lead | lag). The air bladder tank equalizes differences between the pump output and the system demand without operator intervention.

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Attachment E, Proposal Form 15

System Description – Calcite Remineralization System

Reverse Osmosis permeate is aggressive and can react with piping systems and mechanical equipment. To protect equipment, minerals must be put back into the water to stabilize the effluent. The effluent will pass through a vessel containing calcite which will dissolve into the water which will add hardness, alkalinity and increase the pH to protect downstream equipment from corrosion.

Key Overall Facility Features

- Upflow pressure vessels containing calcite to stabilize the RO effluent.
- Flush pump provided to remove fines when media is periodically loaded.
- Flush Tank provided to receive the calcite vessel flush flow before disposal to not overwhelm the drain system.
- Manual isolation valves for operation.

Equipment – Calcite Contactor Vessels

- Two vessels provided, sized to allow for the entire flow to pass through a single vessel so that the other can be taken offline for service or media loading.
- Painted carbon steel construction with epoxy interior coating.
- Manufacturer: Wigen Water Technologies, Tonka Water, or equal.

Equipment – Flush Pump

- One flush pump provided due to infrequency of washing.
- End suction centrifugal pump to be supplied as part of Calcite Contactor System Package.
- Manufacturer: To be determined by Calcite Contactor System Manufacturer.

Control Features

- Manual device, with alarms provided to indicate high differential pressure.
- Backwash sequence is manually initiated and executed.

Variations from PCR

- None noted.

Attachment E, Proposal Form 15

Operations Description – Calcite Remineralization System

Purpose

The remineralization system adds minerals that were taken out during the RO process back into the UV effluent to stabilize the water.

Description

Calcite Vessels

UV effluent shall pass through a vessel containing calcite which will dissolve into the water and add hardness, alkalinity and increase the pH to protect downstream equipment from corrosion. The system is designed to permit full plant flow through the online (duty) vessel. A second vessel is used in a standby role when the duty vessel requires while cleaning. UV effluent flowing through the online vessel dissolves some of the media to a neutral pH (about 7.0) and delivers stabilized water to the Product Water Tank (PWT). Manually operated valves are used to position one tank for duty and one for standby. Pressure is monitored locally on the vessel inlet and out. The differential pressure is measured across the media bed in each vessel. At a preset high differential pressure a switch is energized which generates an alarm to SCADA. The Operator then switches vessels to maintain UV effluent remineralization. The offline vessel is configured to discharge to the BHT and the Flush Pump is energized.

It takes around 20 minutes at 15 gpm/ft² to clear fines out of new calcite. The BHT has a small pipe that contains a motor operated valve that bleeds the contents out over 24 hours to the plant sewer and thus to the head of the plant. Regulating the rate in this manner insures that the plant is not upset.

Flush Pump

The Flush Pump is controlled locally from the local control panel (LCP). With the control selector switch in the Local position the pump is controlled using the Start/Stop handswitch. In the Start position the pump runs continuously; in the Off positon the pump does not run. In the Stop position the pump does not run. With the control selector switch in the Off position the pump does not run; in the Remote position pump control is transferred to the PLC and operation set through SCADA. Pump speed can be adjusted locally or through SCADA. Pump discharge pressure is displayed locally. The pump will shut down on high temperature or motor overload. Pump status, operating mode and alarms are transmitted to SCADA thru the PLC.

Backwash Holding Tank (BHT)

BHT level is measured and displayed locally and the level transmitted to SCADA. In the event of a high tank level an overflow directs the water to the ground. A motorized tank drain is used to drain the tank contents to the sewer or storm drain. Controls are mounted on the valve actuator. With the control selector switch in the Local the valve is set using the position handswitch. In the Open position the valves opens; in the Off position the valve does not move; in the Closed position the valve shuts. Valve status, operating mode and alarms are transmitted to SCADA thru the PLC. In the Remote position control is transferred to SCADA where the valve can be opened or closed. A flow meter is located on the drain line and measures, displays locally and transmits the flowrate to SCAD.

Normal Operation

One vessel is normally on line and the Flush Pump is Off. Vessel discharge is directed to the PWT.

Abnormal Operation.

Operations Description – Calcite Remineralization System

On high differential pressure the offline vessel shall be placed online and the originally online vessel shall be have the inlet and PWT outlet line shut. The BHT outlet line shall be opened and the Flush Pump run for a period of 20 minutes

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Attachment E, Proposal Form 16
System Description – Civil Site

Key Overall Facility Features

- Earthwork required to develop a graded platform for the new Water Reclamation Facility
- Access roads within the WRF plant site
- Stormwater management within the WRF plant site
- Yard piping (both process and utility) within the WRF plant site
- Chemical distribution ductbank
- Site electrical facilities including power distribution and site lighting (reference Electrical Proposal Form for information)

Equipment – Sanitary Lift Station

- 1 lift station with duplex submersible pump configuration
- Pumps appropriate for raw wastewater application
- Assumed flowrate of up to 300 gpm; assumed rated head 60-ft
- Controls based on float switch located within manhole with alarm signal sent to plant SCADA/PLC system.
- Manufacturer: DXP, Xylem, Flygt, or similar.

Variations from PCR

- Section 5.7, Items 4 and 8: Based on information provided by the City in Addendum No. 2 related to available flow and pressure at the tie-in point for firewater supply, it has been determined that sufficient flow and pressure should be available to meet the requirements of NFPA without including a firewater pump system or a firewater tank. Therefore, these components have been omitted from the proposal. Any changes in availability of flow or pressure could require re-introduction of these facilities and will require price adjustment.
- Section 5.8, Item 3 indicates slopes of unpaved areas should not exceed 3H:1V. However, the geotechnical report (provided as Appendix J of the RFP and as prepared by Yeh and Associated, dated November 28, 2017) indicates that cut slopes and fill slopes can be constructed at up to 2H:1V (reference section 7.1.7). Exception to the maximum slopes indicated in the RFP was taken and the geotechnical recommendations were used for the development of the graded platform provided in this proposal. This exception only applies to the cut and fill slopes at the perimeter of the WRF site platform and all slopes of unpaved area within the plant site itself are well below the 3H:1V slope.

Attachment E, Proposal Form 16
Operations Description – Civil Site

Purpose
Provide a functional layout that allows good access for operations and maintenance activities.
Description
Facilities are accessible along a corridor that runs the length of the plant. Sufficient space has been allocated such that a crane can be deployed to assist with maintenance activities. The selected site has good drainage that moves water away from the plant during rain events.
Normal Operation
Does Not Apply.

Attachment E, Proposal Form 17
System Description – Electrical

Key Overall Facility Features

- Onsite primary infrastructure to a utility pad-mounted transformer and for the transformer secondary lateral to the service switchboard per PG&E's requirements.
- Provide space for future PV equipment adjacent to the main service switchboard.
- A radial distribution network for both of the normal and emergency 480Y/277V, three-phase, four wire systems and the 208Y/120V, three-phase, four-wire systems within the site.
- A main electrical building housing the main service switchboard and transfer switch, 2 motor control centers for the headwork, dewatering area and chemical storage, and a transformer for serving the panel that will provide the 120V branch-circuits at and near the equipment.
- 1 motor control center located in RO electrical room to serve the RO, UV, Product Water, and Administrative Building.
- 1 Diesel Emergency Generator to backup the entire site.
- Site electrical facilities including power distribution and site lighting (reference Electrical Proposal Form for information)

Equipment – Utility Electrical Service

- Furnish and install 1 direct-buried PVC underground ductbank for the primary service PG&E cable as per the PG&E's requirement.
- Furnish and install the an utility transformer concrete pad as per the PG&'s requirements.
- Install the PG&E furnished utility transformer with secondary service rated at 480VAC.
- Furnish and install direct-buried PVC underground ductbanks from the utility transformer to a main service board in the Electrical Building per the PG&E's requirement.
- Furnish and install a main service board rated at 480VAC, 2000 Amp, with a utility metering package and utility cable entry compartment in the Electrical Building.

Equipment – Electrical Building

- A 40' X 12' X 10' (LXWXH) pre-engineering FRP building with HVAC unit and lightings.
- The Electrical Building houses the utility main service board, an automatic transfer switch, future space for the PV equipment, 2 motor control centers, 480/280/120 dry type transformer, the main plant PLC panel, power and lighting panels.

Equipment – Main Service Switchboard

- A 480Y/277V, three-phase, four-wire, 2000A, indoor rated switchboard including pull section, distribution section, and automatic transfer section bussed together for a complete unit
- 4 X distribution breakers for 3 motor control centers and 1 future PV connection.
- Metering package for the utility power
- Surge protection device

Equipment – Site Electrical Distribution Infrastructure

- The underground direct-buried PVC ductbanks for the PG&E's cables will be per the PG&E's requirements. Manholes and handholes will be provided per the PG&E's requirements.
- All site underground duckbanks will be concrete encased Schedule 40 PVC conduits with buried depth per the City's requirements and electrical code requirements.
- Aluminum cable trays for different voltage classes as primary distribution raceway in non-hazardous area.

Attachment E, Proposal Form 17
System Description – Electrical

Equipment – Motor Control Centers & VFDs

- 2 indoor rated MCC's in Electrical Building and 1 indoor rated MCC in RO Electrical Building.
- All MCC's are per IEEE and NEMA standards
- All MCC's have fully rated tin plated copper bus bar, hardwired magnetic combination starters with protection and feeder breakers.
- 18 pulse VFD's for equipment rated 100 hp or larger.

Variations from PCR

- See text above for description of proposed electrical design criteria, some of these criteria may differ from select criteria listed in the RFP. Any deviations were made to furnish the best overall value to the City while being consistent with customary wastewater facility design standards and meeting all applicable codes.

Attachment E, Proposal Form 17
Operations Description – Electrical

Purpose

The electrical generator provides backup power to the facility in the event of an electrical power disruption from the primary source.

Description

The diesel driven engine-generator system includes the following components:

- Engine-generator unit
- Exhaust silencer
- Engine starting batteries with charger
- Day tank
- Underground fuel storage tank
- Switchgear

Normal Operation

The emergency generator should be operated weekly to verify expected operation.

The unit automatically starts and connects to the plant's electrical loads when initiated from the automatic transfer scheme. Power is transferred to the emergency generator during a power loss from PG&E. Once PG&E power is restored the engine generator is taken off line.

The emergency engine-generator is normally operated in the Standby mode. Upon loss of utility power, a protective relay sends a signal to the MCP calling for the engine-generator to start. The MCP automatically starts the engine-generator, and ramps it up to rated voltage and speed. The MCP sends an Open signal to the utility breaker on the switchgear. After receiving verification the utility breaker is opened and an open transfer time delay has expired, the MCP closes the generator breaker at the switchgear, allowing the engine-generator to connect to the switchgear load bus. Upon return an adequate air supply to the utility power, the protective relay removes its signal from the MCP; the MCP transfers the load back to the utility source in either an open or closed transition fashion. The engine-generator is disconnected from the load bus, and continues to run until the predetermined and adjustable cool-down relay has expired.

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Attachment E, Proposal Form 18
System Description – I&C

Key Overall Facility Features

- A self-healing fiber optic ring configuration for the plant control network.
- Ethernet based communications between the Plant PLCs and the SCADA I/O servers.
- Ethernet based communications between Plant PLC's and vendor PLC's.
- Distributed Remote I/O panels in RO area, Chemical area, MBR area, Solids area, and Headwork area to minimize hardwired cabling.
- Dual firewall DMZ (demilitarized zone) design to separate the Plant Control Network and the Office Network.
- Redundant Historian Servers and I/O Servers to increase the reliability of the SCADA network.
- CMMS Package for maintenance purpose.
- Wireless network within the site facilities for the ease of access of the plant control network.
- Multiple SCADA HMI licenses for on-site and off-site accesses.
- UPS for main Plant PLC, SCADA servers and operation computers.

Equipment – PLC, SCADA

- The main Plant PLC's make and model will be in accordance to the SCADA Master Plan requirement.
- Redundant processors, communication modules and power supply modules for the main Plant OLC.
- The main Plant PLC located indoor in the Electrical Building.
- Redundant I/O servers and Historian servers will be provided.
- 1 X Operator PC with full SCADA HMI run-time license, 1 X Engineering Workstation with full SCADA development license will be provided.
- 3 additional SCADA HMI run-time licenses will be installed on the City's remote computer and tablet PC's.

Variations from PCR

- Section 9.2.1, Field Bus Device Network. Per section 9.4.1, it requires the analog I/O modules to be 4-20mA. In order to provide consistent I/O design, all I/O's for the project will be hardwired signals instead of field bus devices.
- Section 9.4.1 requests the vendor PLC's to be same as the rest of the Plant PLC. Since the SCADA Master Plan is not available to determine what PLC platform is required, standard equipment vendor PLC is included in the proposal instead.
- Section 9.5.1 requests the duplicate functionality of vendor HMI screens on the SCADA HMI with all parameters can be monitored and controlled. As the SCADA Master Plan is not available to determine the PLC platform so standard equipment vendor PLC package is included in the proposal. Not all the control functions can be duplicated on the SCADA HMI screens for the standard equipment vendor PLC package. Instead, high level commands for the equipment packages will be provided at the SCADA HMI level but no component level commands will be provided.
- Section 9.5.1 requests the vendor screens to conform with the City's SCADA Standard. Since the SCADA Master Plan is not available, standard equipment vendor PLC packages with the vendor standard screens are provided instead.
- Section 9.2.1 requests access nodes in the site. Instead of providing access nodes, 2 HMI full run-time licenses will be installed on the City's tablet computers so the operator will be able to access the Plant SCADA on site through the wireless network.

Attachment E, Proposal Form 18
Operations Description – I&C

Purpose

For Operations the instrumentation and controls (I&C) rolls up to the Supervisor Control and Data Acquisition (SCADA) system. SCADA allows an Operator in a location central to make set point changes on distant process controllers, to open or close valves or switches, to monitor alarms, and to gather measurement information. The SCADA systems provides streamlined control of plant processes from a single user interface.

Description

The SCADA system is a control system architecture that uses networked computers to control, alarm and store data. Peripheral devices such as programmable logic controllers and discrete PID controllers interface to the process equipment.

Normal Operation

The Operator uses SCADA for the following:

- Monitor equipment status,
- Operate selected equipment remotely
- Alarm notification,
- Review and adjust operational setpoints,
- Identify equipment that is **in** service and out of service (not in the control loop),
- The SCADA Historian is used to accumulate data required for reporting.

Attachment E, Proposal Form 19
System and Operational Description – Architectural

Key Overall Facility Features

- Buildings for the Operations Facility, Maintenance Facility, and RO/UV (Advanced Treatment) Building
- Various canopies for parking areas, outdoor process equipment, and general storage
- Landscaping and Screening in strategic locations around the WRF site to enhance the visual presentation of the site to the public and adjacent property owners

Purpose

To provide an overall aesthetic scheme for the WRF including conceptual building and canopy exteriors, landscaping plans which present the WRF as an agricultural facility consistent with current property use. Also, provide durable, low maintenance facilities in conformance to controlling structural criteria and considering the intended use of each facility within the WRF process scheme.

Description

- The Operations Building will be the focal point of the WRF aesthetic presentation to the community as this building will be located at the "front" of the plant relative to the site entrance and the nearby scenic Highway 1. The facility will present a horse barn style incorporating a clerestory and rooflines consistent with barn structures. Most other buildings on site will either be partially or completely hidden from the highway viewpoint by the Operations Building. The building is planned as a metal building with non-ferrous and coated metal wall panels, 4-ft tall burnished CMU wainscoting and non-ferrous, metal roof panels.
- The Maintenance Building and RO/UV Building are planned adjacent to one another in the middle part of the plant. These buildings are planned with similar finishes to the Operations Building but without the clerestory.
- Various covered parking canopies and canopies covering outdoor process equipment in the MBR and Dewatering Areas are also planned. Roofing materials for the canopies are planned to generally match those of the buildings.
- Landscaping will generally be a mix of larger, stand-alone trees such as California sycamores and live oaks. Where screenings areas are needed adjacent to the visitors parking area, next to the MBR facility, and in the area across the 2-lane plant road near the Maintenance Building,

decorative grasses and small bushes are planned. Finally, stormwater basins are planned as grass-lined with some internal planting such as tall grasses. These basins are planned with overflow outlets to help promote infiltration into the soil and improve water quality of runoff.

Variations from the PCR

- None noted.

Attachment E, Proposal Form 20
System and Operational Description – Structural

Key Overall Facility Features

- Foundations for various Process and General (Administration, Operation, and Maintenance) Facilities
- Buildings for the Operations Facility, Maintenance Facility, and RO/UV Building
- Various canopies for parking areas, outdoor process equipment, and general storage
- Miscellaneous concrete yard structures (e.g. manholes, vaults, etc.)
- Tanks including the large volume Recycled Water Tank

Variations from the PCR

- Section 4.3, Item 3: The RFP states that the advanced treatment building (RO/UV Building) should be design for gravity and lateral loads from a second-storage addition of the same floor area. It was noted that no addition information on the building expansion requirement (clear height of second story, explanation of planned future use to predict required loading, etc.). Therefore, Filanc-B&V inquired on this requirement during proprietary meetings held between B&V management and City of Morro Bay representatives. Based on those conversations, Filanc-B&V has omitted any allowances for future second-story expansion of the RO/UV building.
- Section 4.5, Item 2: In general retaining walls were not implemented to develop the overall site graded platform. However, in order to maintain work-able cross slopes for the graded site platform in the areas of the Operations Building and the General Facilities (especially the covered equipment parking areas), short (5-ft tall or less) retaining walls are planned to develop finished grading levels. The plan for finished grading will be further developed during detailed design and are not included in the drawing set provided as part of the Filanc-B&V proposal drawing set. However, pricing for these shorter retaining walls are based on the use of concrete retaining block (CBR) walls in lieu of cast-in-place gravity retaining walls.

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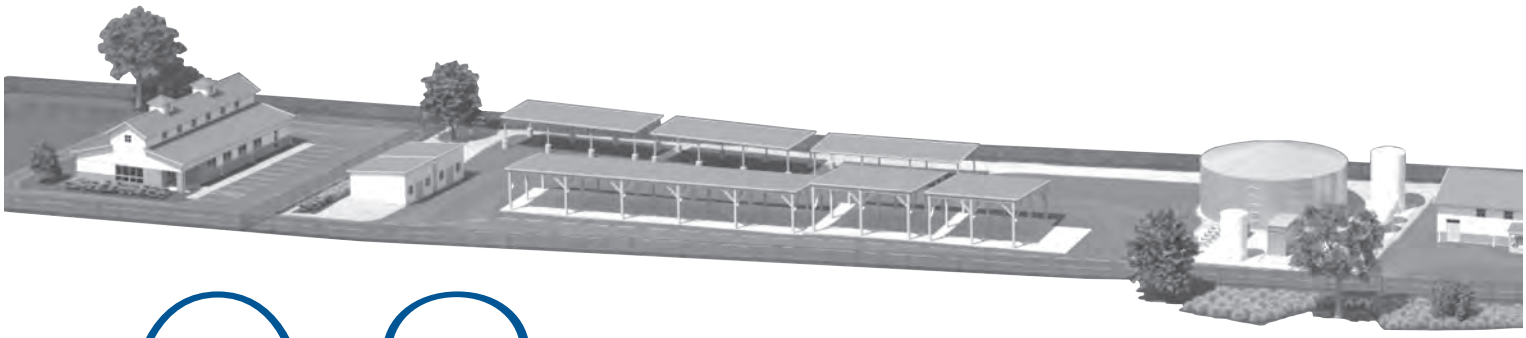
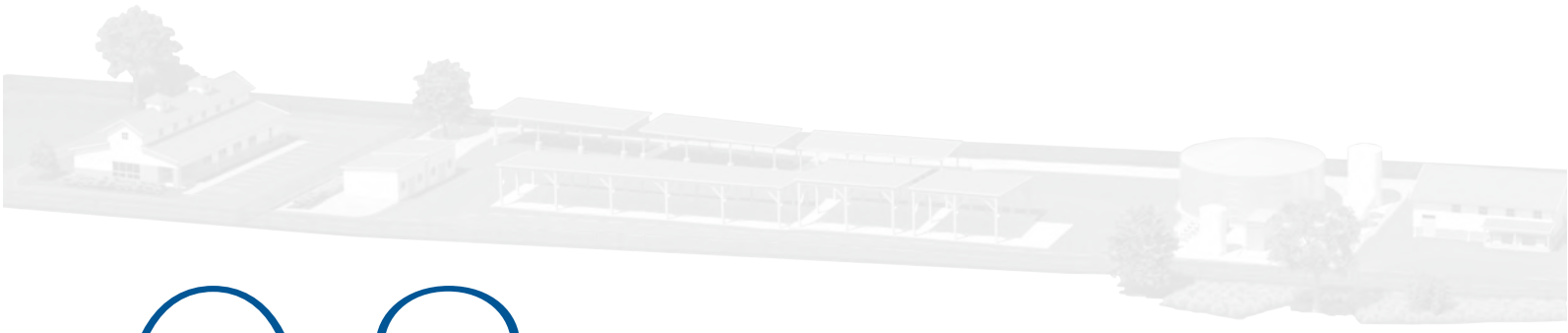


08 PERFORMANCE GUARANTEE



08

PERFORMANCE GUARANTEES

One of the best attributes of the DB delivery method is the feature that allows Owners to verify the performance of the facility. No other delivery method features this element because the risk is spread amongst multiple contractual entities. Design-build keeps the performance of the facility with the singular contractual entity.

Morro Bay has requested performance guarantees for the effluent water quality, power, consumables, and equipment availability. FBV is offering guarantees on the following:

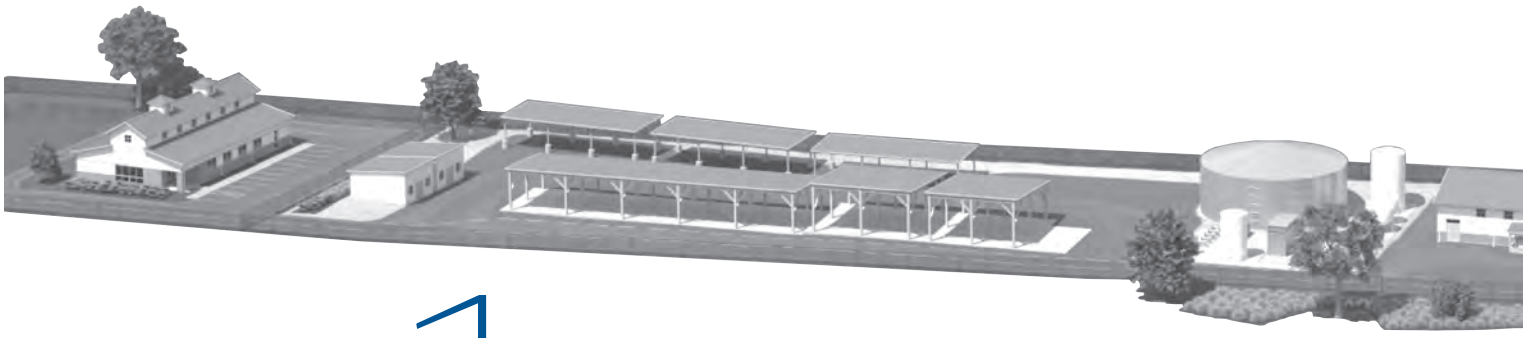
- Effluent water quality for the ocean outfall
- Effluent water quality for recycle water for groundwater injection
- Performance of the dewatering facility
- Power performance
- Chemical use

The details of our guarantees are in Appendix 4. Our guarantees also include our proposed liquidated damages should the facility fail to meet the guarantees.

The verification of the guarantees will be conducted during the Performance and Operation Testing Period as stipulated in Section 12.6 of the Performance Criteria Report. This time period is six months.

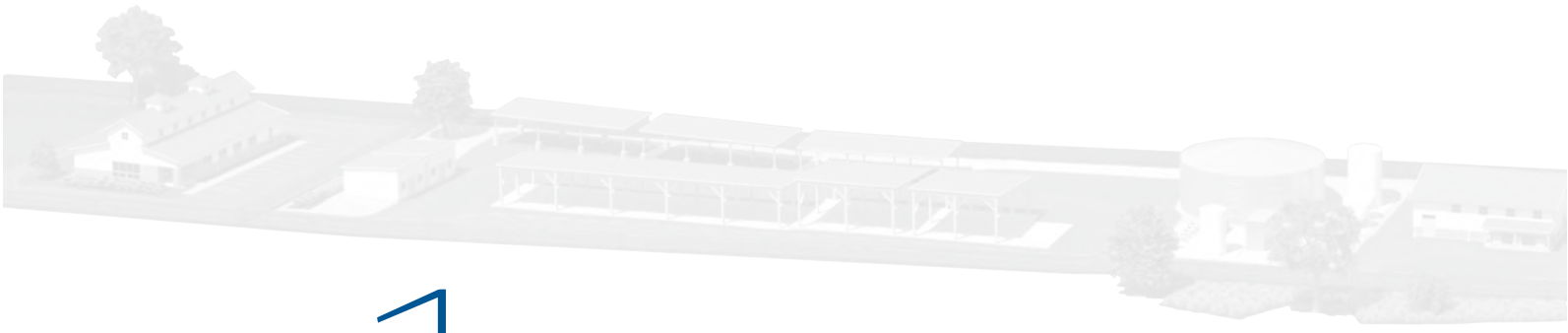
FBV will work side-by-side with the City Staff to ensure the verification period is a success for the City. FBV will provide an operator who is familiar with operating these types of facilities and will provide the necessary support to City Staff during the verification period.

FBV looks forward to working with the City of Morro Bay on the specifics of the guarantees and making sure they meet the City's needs.



APPENDIX 1

PROPOSED DB CONTRACT CHANGES



APPENDIX 1

PROPOSED DESIGN-BUILD CONTRACT CHANGES

Introduction to Comments to the Attachment B Proposed DB Agreement

Attached are the FBV comments to the Attachment B Proposed DB Agreement. We look forward to sitting down to discuss our comments. We have provided brief comments with brief explanations to assist with informing the reason for the comments. We know we can successfully arrive at a contract that suits both the City of Morro Bay's needs while also balancing risk between the two parties. We believe that an in-person negotiation meeting will go much further to better understand the parties positions and fully discuss the issues and arrive at a solution that meets all party's needs. Our price proposal reflects the contract and the comments we have attached. Not many of the legal comments will change what we have proposed. We do not foresee any of our comments keeping FBV from entering into a contract with the City of Morro Bay.

Comments to Morro Bay Proposed Attachment B Proposed DB Agreement

No.	Agreement Section	Comment	Explanation	Possible Impact on Commercial Term in the Contract Docs or Perf Criteria Report
1	NEW	Incorporate new section as follows: "Limitation of Liability. Notwithstanding anything to the contrary contained elsewhere in the Contract Documents or this Agreement, and to the fullest extent permitted by law, the total cumulative liability of Design/Build Entity and any of Design/Build Entity's related companies to City for all claims, losses, damages, and expenses resulting in any way from the performance or non-performance of this Agreement, whether arising under breach of contract or warranty, indemnity, tort (including negligence), strict liability, or other basis of legal liability, shall not be greater than the amount of compensation actually received by Design/Build Entity under this Agreement."	The request for a limit of liability is not intended to protect FBV from our company or subcontractors from acts of intentional misconduct or fraud, but rather to limit the liability of assigned responsibility for acts on the site that are out of our control or influence. We request that our liability be limited to the total value of the contract.	By reducing our total risk exposure by establishing a limit of liability, we are able to provide a more cost-effective proposal. We respectfully request this be added.
2	NEW	Incorporate new section as follows: "Consequential Damages. Notwithstanding anything in this Agreement or the Contract Documents to the contrary, Design/Build Entity shall not be liable to City for any losses of use, profits, business, reputation or financing or for consequential losses or damages, whether arising in contract, warranty, tort (including negligence), strict liability or otherwise."	To provide for a waiver of consequential damages for attenuated damages.	In order to provide a more cost-effective proposal, we respectfully request this be added.
3	Recital J	Delete second paragraph.	The Design-Builder must be able to rely upon the documents which formed its proposal and which its price and risk were based upon.	The Design/Build Entity cannot be bound by terms and components except as they appear in its Proposal.
4	Article 1.1, Defenition Act of God	Revise to read: “Act of God: An Act of God shall include without limitation wars, floods, unusual delay in transportation, epidemics, earthquakes, adverse weather conditions not reasonably anticipated, fires, wild fires, forest fires, mudslides, tidal waves, , tropical storm, and any other acts, omissions, conditions, events, or circumstances beyond Design-Builder’s control and due to no fault of its own or those for whom Design-Builder is.”	Design Builder has no way to price for acts of God.	The contract currently references a definition of “acts of God” that is very narrow and only includes tsunamis and earthquakes greater than a certain magnitude. Other acts of God are out of our control such as wildfires, flooding, etc. We respectfully request this be revised as shown. This way, the City will only pay if such events do occur and impact the Project or the Work. Otherwise, the Design/Build Entity will need to add contingency for events that may never occur.
5	Defenitions Article 1	We suggest that there be defenitions added for the 6 month performance testing/verification period and also for the demolition work and associated times (if that is added to the Scope)		
6	Defenitions Section 1.18A	At the end of the clause, add a new sentence: “For the avoidance of doubt, and notwithstanding the foregoing, the costs listed in SCHEDULE A-1 COST, are not included as part of Overhead or Fee.	For clarity, the costs shown in SCHEDULE A-1 COST, are not included in overhead and our pricing does not include them in that. We are categorizing those costs as direct costs.	We are not proposing a change in the wording, but offer the interpretation we applied to develop our Cost Proposal
7	Defenitions Section 1.22	After “Contract Documents”, add “, but excluding the 6-month Performance Testing Period/Verification Period and the demolition of the existing WWTP”.	It needs to be clear that Final Completion of the Project occurs prior to the start of the 6 month verification period and that it will also occur prior to completion of the demolition scope should that be awarded.	
8	1.11	Include "Proposed Change Order" as a valid term for the same concept as the defined "Change Proposal".	"Proposed Changed Order" is the term used by Procore.	
9	1.14	Change the term "Architect of Record" to "Engineer of Record".	This is primarily an engineering design project.	
10	1.26	Replace "… does not achieve the Certificates of Final Completion for the Project as required in…" with "... does not achieve the dates required in ..."	This will avoid conflict with Section 7.7, which specifies LDs for more than just Final Completion.	

No.	Agreement Section	Comment	Explanation	Possible Impact on Commercial Term in the Contract Docs or Perf Criteria Report
11	2.4.2	Last sentence, change “the documents that provide the higher quality” to “the documents included in the Design/Build Entity's Technical Proposal”.	The Design-Builder must be able to rely upon the documents which formed its proposal and which its price and risk were based upon.	The Design/Build Entity has provided documentation in the proposal to show the basis of our design and price. Some of our approaches deviate
12	3.10.2	First Paragraph, final sentence, delete “significant” and change “may” to “shall”.	The Design/Build Entity should be able to recover costs in the event there are differing site conditions. Design/Build Entity should be entitled to relief if such conditions cause	We respectfully request this change be made so that risk can be better balanced.
13	3.10.3	Delete	This is inconsistent with 3.11, first paragraph, and also with 3.10.2.	Inconsisten provision. Please harmonize with other sections to alleviate confusion
14	3.18.1; 1st paragraph	Change "…. Final Completion." to "… Substantial Completion." at the end of the first sentence.	Warranties should commence to run upon Substantial Completion, when the project is ready to be used.	Vendors warranties begin when substantial completion is achieved.
15	3.18.1, 2nd paragraph	Add “at Design/Build Entity’s option” after “repair or replace”.	To clarify that this is Design Builder’s responsibility.	We respectfully request that this be revised to show that this is the responsibility of the Design-Builder so that it is clear the contractural obligation is between the Design-Builder and its suppliers.
16	7.5.1 (b) .2	Change “execution of this Agreement” to “submission of the Proposal”.	Design Builder has set prices and times based on the date it submits its priced proposal. Changes after that time may affect Design/Build Entity’s costs and times for	Because we are committing to a price for the project beginning with the date of proposal submission in May and contract execution will not be for
17	7.7	Ist and 2nd paragraphs, change Liquidated Damages associated with Final Completion to $1,000 per day.	Limits the exposure to the Design/Build Entity if delays beyond its control prevents issuance of Certificate of Final Completion	It reduces costs of the contract
18	7.7	3rd Paragraph, delete the 3rd and 4th sentences, which begin “This paragraph shall not ...” Replace with: “The liquidated damages provided herein shall be in lieu of all liability for any	LDs should be the remedy for damages arising from any delay in the times of performance so that the Design/Build Entity can adequately assess and price for the	We respectfully request this be revised to allow for us to manage defined risk in a balanced manner between all the parties.
19	7.7.2	Request modified language	Design/Build Entity seeks language that affords due process before City takes "unilateral" action.	No cost impacts to proposed price
20	8.1.1	In last sentence, delete the word “materially”.	Changes in cost or time should entitle Design/Build Entity to a Change Order.	Materially is not defined and it is important to define when we are entitled to change orders. The City and the Design-Build entity can manage this risk
21	8.2.1	Delete subparts 2 and 3	The value of a Change Order should not be unilaterally determined.	No cost impacts to proposed price
22	10.1.2	Delete the sentence "The City's written decision shall be final and binding on the party(ies)."	The sentence in question appears to negate the option to proceed to the procedures identified in Public Contract Code Section 20104, also referenced in this Section.	No cost impacts to proposed price
23	11.1.6	Add “prior to Final Completion of the Work” at the end of the first sentence.	To be consistent with 11.1.9	No cost impacts to proposed price
24	11.1.9	Add “except to the extent covered by the insurance required to be maintained under this Agreement” after “own cost”. Also, add at the end of the sentence “prior to Final Completion of the Work”	To define that insurance coverages will be looked to first prior to Design/Build Entity having to self-fund.	The Parties are paying to have insurance which may cover this risk and including that premium cost in the pricing. If it will not be used, this would add additional cost.
25	12.1.1 b ii 10)	Delete “10) Errors & Omissions”.	This is covered by the Professional Liability currently shown as item 17	This is duplicative and would not be a coverage under the CGL. Comments from our insurance carrier/broker.

No.	Agreement Section	Comment	Explanation	Possible Impact on Commercial Term in the Contract Docs or Perf Criteria Report
26	12.1.1 b ii b. ii.	Renumber this to be 12.1.1 c and then renumber the remaining numerals below it	Professional Liability coverage is a separate coverage and not a feature of CGL insurance. It should not be shown as one of the components of the CGL under b ii, but as its own category of coverage.	Comments from our insurance carrier/broker.
27	12.1.1 b. ii. 18)	Renumber this to be 12.1.1 d and then renumber the remaining numerals below it	Builder's Risk would be a separate coverage and not part of the CGL	Comments from our insurance carrier/broker.
28	12.1.1 b. ii. 20)	Renumber this to be 12.1.1 e and then renumber the remaining numerals below it	Pollution Liability would be a separate coverage from the CGL	Comments from our insurance carrier/broker.
29	12.2.1	Change " in any way arising out of this Agreement or the Work, including but not limited to the acts" to "to the extent caused by the negligent acts" At the end of the sentence, change the period to a comma and add: "in the performance of this Agreement or the Work."	This will result in an indemnity tied to the negligent acts of the Design/Build Entity and its subcontractors, resulting in an un-insurable risk.	Design/Build Entity cannot accept risks for which it cannot provide adequate risk transfer through insurance when such is available. This results in a more easily quantifiable risk mitigation solution.
30	12.2.1 (i)	First line, replace "or the design or " with "failure of the design to comply with the professional standard of care or defect in"	Defects in design should be referenced in accordance with the professional standard of care in order to be covered by the Professional Liability policy.	This is a design-build contract and thus certain aspects of a traditional construction contract must be revised to allow insurability of the
31	12.2.1 (ii)	Same as comment above	Same as comment above	Same as comment 22
32	12.2.1 (iii)	Change "of this Agreement" to "of the Proposal".	To be consistent with proposed change to Section 7.5.1. b .2	
33	12.2.1 (vi)	Delete and change to "not used".	This is so broad that it will result in non-insurable events. Need to be tied to negligence which has been accomplished in the earlier provisions.	
34	14.4.3	Change "Final Completion" to "Substantial Completion (as defined by the applicable statute)"	Statute of repose should run in accordance with the statutory definitions.	The City of Morro Bay will have beneficial use of the facility once substantial completion is achieved.
35	Exhibit C Guaranty	Upon selection, we may provide comments after review by corporate counsel.	Attachment B Proposed DB Agreement	Our Team can provide the parental guarantee and do not see any issues regardless of the final contract terms. However, until the final contract is negotiated we will wait comment on the guarantee form.

SCHEDULE A-1 COST

The following costs, whether on site or off-site, are included in the direct job costs of the project and are not part of the overhead fee regardless of how many hours per week they work on the project:

D-Design Costs (whether Black & Veatch or sub consultant including labor multiplier)

L-Project Manager (Gary Silverman)

L-Construction Manager (Chad Brown)

L- Safety Site Manager

L- Safety auditing L- QA/QC auditing

L- Scheduler

L- Craft Supervision

L- Construction detailing (both on-site and off-site including multiplier)

L -Craft Labor

L- Procurement Staff

L- Accounts Payable/Receivable/Payroll (on -site and off-site)

L- Project Cost Controls

L- Estimating costs for 60% GMP & 90% GMP

L- Estimating support for buyout

L- Contracts manager

L- Labor Burden and Fringes including workman's comp insurance, employee benefits/insurances, taxes ect.

M- Permanent Materials

M-Consumable Materials

E-Construction Equipment(owned or rented)

E- Vehicles for staff (owned or rented)

E- Small tools

S- Subcontractors (including sub bonds)

S- 3rd party inspections for soils, concrete, welding, structural and masonry

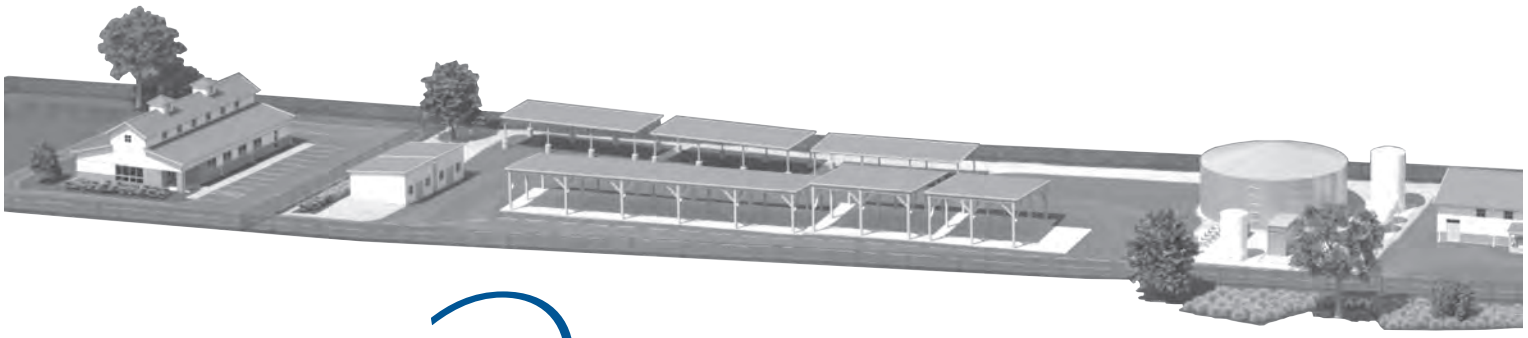
O- Insurance

O- Bonds

O- Permit Fees

O-Escalation costs

O- Contingency



APPENDIX 2

O&M COMMISSIONING REPORT SAMPLE

STARTUP, COMMISSIONING AND ACCEPTANCE PLAN

PREPARED FOR

Morro Bay WRF

BLACK & VEATCH

Table of Contents

1.0 Acronyms and Abbreviations

AA	Aeration Air
AS	Air Scour
ADWF	Average Dry Weather Flow
DO	Dissolved Oxygen
ESM	Equipment Service Manual
FAT	Functional Acceptance Test
IM	Influent Main
MBR	Membrane Reactor
O&M	Operations and Maintenance
ORP	Oxygen Reduction Potential
PHF	Peak Hour Flow
PLC	Programmable Logic Controller
RAS	Return Activated Sludge
RAT	Reliability Acceptance Testing
RO	Reverse Osmosis
ROF	Reverse Osmosis Feed
ROP	Reverse Osmosis Permeate
SAFE	Stormwater Adaptive Filtration Equipment
SCADA	Supervisory Control and Data Acquisition
TSS	Total Suspended Solids
UVAOP	Ultraviolet Advanced Oxidation Process
WAS	Waste Activated Sludge

2.0 Introduction

2.1 BACKGROUND

The City of Morro Bay Water Reclamation Facility (WRF) is designed to treat an annual average flow of 0.97 million gallons per day (MGD) of wastewater through full advanced treatment. The WRF provides primary, secondary, tertiary and advanced treatment, and it produces recycled water meeting standards for a groundwater replenishment reuse project (GRRP) using subsurface application, as defined in California Code of Regulations (CCR) Title 22 recycled water requirements. The WRF is located at the South Bay Boulevard (SBB) site (Figure 1). Recycled water is conveyed to injection wells in the Morro Valley. An effluent pipeline conveys advanced treatment waste streams, including brine, to the existing Morro Bay Cayucos Sanitary District (MBCSD) jointly-owned ocean outfall at the site of the existing wastewater treatment plant (WWTP).

Figure 1 Morro Bay WTF [REPLACE WITH CONCEPTUAL LAYOUT]

A process flow schematic is shown in Figure 2 and should be referenced throughout the commissioning plan.

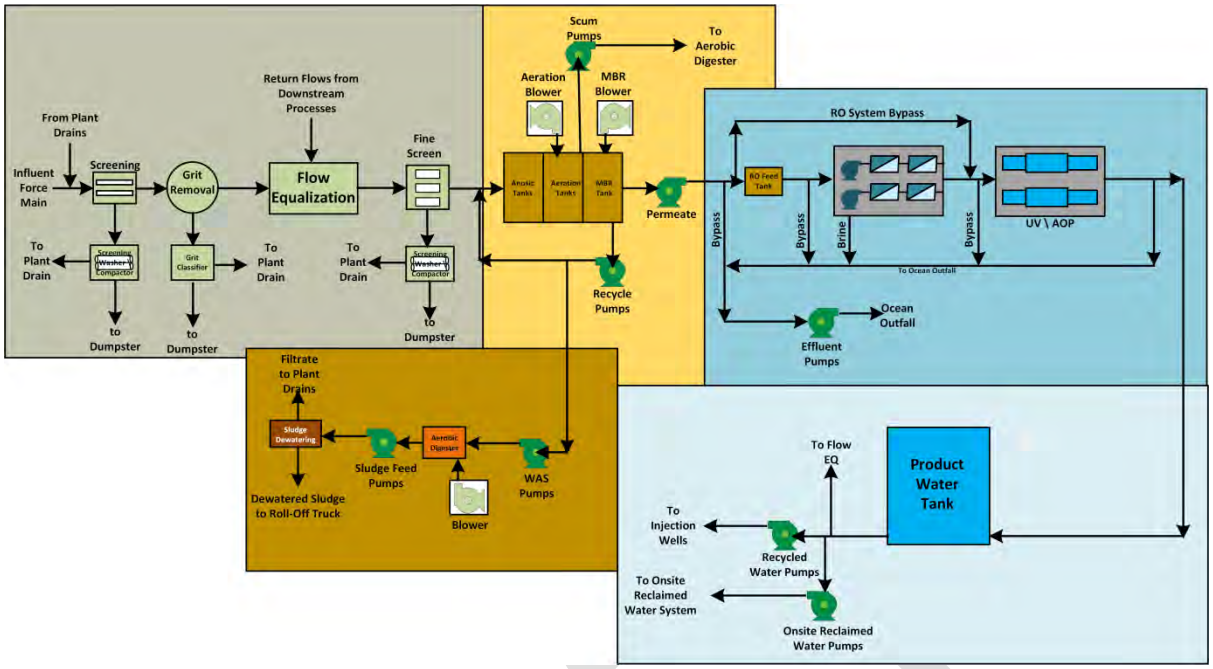


Figure 2 Process Schematic

3.0 Roles and Responsibilities

3.1 COMMISSIONING MANAGER

The roles and responsibilities of the commissioning manager include the following:

- Manage and direct operations and commissioning to achieve a successful project delivery.
- Manage all the phases of commissioning from construction handover to performance testing and ensure existing facilities remain operational.
- Provide leadership and technical direction to the commissioning staff.
- Liaise with the operator to achieve plant handover.
- Liaise with construction on meeting the schedule and ensuring the quality of the turnover packages.
- Interface with vendors to meet and commission the plant in accordance with the schedule.
- Ensure that the commissioning process is planned and carried out while meeting the scheduled dates.
- Provide accurate reports on the progress and status of the commissioning.
- Ensure final water quality and effluent quality is compliant with the specification.
- Ensure that the commissioning process is planned and carried out with the safety of all personnel considered.
- Ensure that the commissioning process is planned and carried out without any environmental incidents.
- Ensure that all Quality Assurance (QA) documents are properly completed and issued.
- Ensure compliance with regulatory and permit requirements.
- Ensure that the delivery process is planned and carried out with the safety of all personnel considered.
- Ensure that the delivery process is planned and carried out without any environmental incidents

3.2 OPERATIONS MANAGER

The roles and responsibilities of the operations manager include the following:

- Manage and maintain the operation of the treatment plant before client handover.
- Provide the main operations liaison post-plant handover to the client.
- Ensure the final water quality and effluent quality of both plants is compliant with the specification.
- Before any work is carried out, issue, approve and control access for any work in the treatment plant.
- Ensure lockout/tagout (LOTO) procedures are fully implemented and controlled.
- Act as the main point of contact between commissioning and operations.
- Ensure that the treatment plant operation is carried out with the safety of all personnel considered.

- Ensure that the treatment plant operation is carried out without any environmental incidents.
- Ensure compliance with regulatory and permit requirements.

3.3 I&C LEAD

- Provide leadership technical direction for the commissioning ICA trades.
- Ensure all I&C systems are tested, calibrated and verified correct for plant start up.
- Complete all activities and handover entire packages in accordance with the schedule
- Complete commissioning packs, records and QA documents in accordance with the system / turnover dates
- Verify and audit all construction turnover packages.
- Interface with vendors as required
- Provide assistance on start-up and commissioning activities to ensure the plant is available to run in accordance with the schedule.
- Ensure LOTO procedures are fully implemented and controlled.
- Ensure that the commissioning process is planned and carried out with the safety of all personnel considered.
- Ensure that the commissioning process is planned and carried out without any environmental incidents.

3.4 ELECTRICAL LEAD

The roles and responsibilities of the electrical lead include the following:

- Provide leadership and technical direction and systems for the commissioning electrical trades.
- Ensure all electrical systems are tested, calibrated and verified correct for plant startup.
- Complete all activities and submit the entire package in accordance with the schedule
- Complete commissioning packs, records and QA documents in accordance with the system/turnover dates.
- Verify and audit all construction turnover packages.
- Interface with vendors as required.
- Provide assistance on startup and commissioning activities to ensure the plant is available to run in accordance with the schedule.
- Ensure LOTO procedures are fully implemented and controlled.
- Ensure that the commissioning process is planned and carried out with the safety of all personnel considered.
- Ensure that the commissioning process is planned and carried out without any environmental incidents.

3.5 SCADA LEAD

The roles and responsibilities of the supervisory control and data acquisition (SCADA) Lead include the following:

- Provide leadership and technical direction to the commissioning programmers.

- Report to and work with the I&C lead on pre-startup testing and functions.
- Report to and work with the process start on commissioning issues and changes.
- Ensure all SCADA Programmable Logic Controller (PLC) Site Acceptance Plans (SAT) are verified correct for plant startup.
- Audit the string logic on the SATs.
- Review and approve the SATs.
- Ensure vendor software packages are turned over and accessible.
- Verify that vendor software packages properly communicate what they need to.
- Complete all activities and submit the entire package in accordance with the schedule.
- Provide assistance on startup and commissioning activities to ensure the plant is available to run in accordance with the schedule.
- Ensure that the commissioning process is planned and carried out with the safety of all personnel considered.
- Ensure that the commissioning process is planned and carried out without any environmental incidents.

3.6 MB WRF OPERATIONS

The city is responsible for the effluent quality. During the course of the acceptance test unit, operations will be directed by the district's certified operators. This responsibility includes the following:

- Liaison with the main operations manager during functional and acceptance testing.
- Maintain process integrity and effluent water quality.
- Provide operations support for WRF equipment operation that are not installed under this contract.
- Provide at least one operator for eight hours per day during the acceptance test period.
- Manage and maintain the operation of the treatment plant before client submit.
- Witness some or all of the tests and participate in the evaluation of the process performance.

- performance.

4.0 Safety

Safety will conform to the requirements of the site safety management plan with a focus on the following items.

4.1 RISK ASSESSMENTS

A risk assessment will be performed for all major commissioning activities to determine the following:

- Is there a danger to personnel?
- Is there a potential environmental impact?
- What procedures and work instructions apply to the activity?
- A safe work method for the activity.
- What safety equipment is required?
- What chemical are to be used?
- What equipment is to be used?
- What isolation lockout and tagging will be in place?
- Are there any confined space issues?

The risk assessment form should be complete and properly filed for records. The commissioning engineers shall liaise with the plant manager to ensure all site activities are included in any risk assessment considerations and each party is aware of the other's activities.

4.2 JOB SAFETY ANALYSIS (JSA)

JSAs should be filled out daily for each activity and reviewed with all personnel on site and be signed and dated.

Emphasis will be on:

- Consultation and talking to everyone about the daily activities.
- What is the process flow?
- What equipment is isolated?
- What safety equipment is required?
- What environmental controls are required?
- What chemicals are to be used and what precautions are required?
- What are the expected noise levels?
- The roles and responsibilities of all personnel involved.
- What to do in the event of an emergency.
- The JSA sheet will be signed by everyone working on the nominated tasks.

4.3 LOCKOUT AND TAGGING

For commissioning activities, the LOTO procedure should be enforced and properly managed.

- All electrical isolations should be locked, isolated and tagged.
- Mechanical equipment including valves and equipment should be isolated and tagged in accordance with the commissioning activities taking place. The commissioning engineer should be responsible for the placement and control of the danger/isolation tags.
- Process equipment should be isolated and tagged in accordance with the commissioning activities taking place. The commissioning engineer is responsible for the placement and control of the danger/isolation tags.

4.4 CONFINED SPACE

Where a working area is defined as a confined space by the risk assessment confined space, procedures will be enforced and in accordance and they will comply with current confined space regulations.

4.5 CHEMICAL STORAGE AND HANDLING

The site chemical register will be kept up to date to include all chemicals on site that will be used for both commissioning and plant startup. SDSs will be added for all new chemicals and instructions included on the JSA and induction meetings. Any personnel required to work on, in, and around chemicals will complete a site chemical introduction before working with the chemicals.

Spill response equipment should be available at chemical storage and handling areas.

4.6 SAFETY SYSTEMS FOR PLANT OPERATION

Once the treatment plant becomes operational, the treatment plant safety management system will be enforced. Construction safety systems protocols and procedures, where relevant, are to be moved under the umbrella of the Operations Treatment Plant Safety Plan.

Construction/punch list activities should be in accordance with the requirements of the operations team and the permits lock out procedures should be enforced. The operator should be advised of all activities taking place at the treatment plant and will make allowances for work that will be carried out in conjunction with operational requirements.

No work should be carried out on the treatment plant without a permit or permission issued from commissioning/operations team.

4.7 COMMUNICATIONS PROTOCOL

4.7.1 Operations Emergency Procedure

To initiate an emergency call:

1. Dial emergency services: Fire/Police/Ambulance on 911 and, when answered, state "This is an emergency."
2. Tell emergency services:

a. Your name.
b. The location of emergency.
c. The nature of emergency (Fire / First Aid / Rescue / Haz Chem Spill).
d. What help is required.
e. Stay calm and obey all directions given by emergency services.

To evacuate adjacent site construction areas and/or notify them of pending emergency services, contact the site radio control officer using: The emergency 2-way radio channel 1- (emergency channel) and state in a clear voice “EMERGENCY- EMERGENCY-EMERGENCY” or use phone number 555.1212 and, when answered, state “This is an emergency.”

Emergency Contacts

POSITION	NAME	CONTACT NUMBER
Construction Manager	Chad Brown	925.949.5419
Commissioning Manager	Jorj Long	913.458.2000
Morro Bay Plant Manager	Joe Mueller	916.826.3912

5.0 Commissioning

5.1 DEFINITIONS

TERM	DESCRIPTION
Construction Turnover	Construction complete, system walk down punch list, pressure testing, tank testing pipeline flushing and lubrication.
Pre-Commissioning	Testing of individual equipment and plant on an equipment type basis or individual equipment type within a system.
Commissioning	Generic term that includes all the commissioning phases.
Systems Commissioning	A period for the collaborative testing of multiple systems.
Process Commissioning	A period for the testing of the whole plant to establish all water quality / process conditions in readiness for the performance testing.
Performance Testing	Completed following commissioning. A 30 day test on whole plant where performance is monitored.

5.2 TURNOVER PACKAGES

5.2.1 Turnover Package Definition

The complete turnover packages will be defined as highlighted marked up P&IDs.

5.2.2 Turnover Package Handover

The following table lists the turnover packages.

AREA	PACKAGE	SYSTEM DESCRIPTION
11	1	Influent (Coarse) Screening
11	2	Grit Removal
11	3	
11	4	Fine Screening
11	5	Membrane Bioreactor (MBR)
11	6	Aerobic Sludge Digester
11	7	Sludge Dewatering
11	8	Reverse Osmosis
11	9	Ultraviolet Advanced Oxidation Process
11	10	Chemical Storage and Feed Facilities
11	11	Odor Control

5.3 CONSTRUCTION TURNOVER

A daily coordination meeting with representatives from each discipline will report progress and be accountable for each system submit. The aim of the meeting is to ensure the package submission is on time and to flag any issues early so they can be addressed.

The construction teams will turn over the packages to commissioning on the agreed dates. It is the responsibility of the area engineer to complete all the tasks and sign off a finished package/system; it's not the responsibility of commissioning to verify on behalf of construction whether systems are complete or correct. This is assumed.

Commissioning will attend and review the system and walk it down only when it's complete, as listed below, and the paperwork is complete and presented as a package. Any system or package found not to conform to the P&ID's drawings and specifications will be returned to construction for rectification and the responsible engineer will have to account for why it does not conform to the design.

Any additional work identified by commissioning that was not in the original design will be subject to a Request For Information (RFI) and site instruction.

The following tasks should be complete before submitting.

5.3.1 Civil

- Complete all construction activities in accordance with the schedule.
- Complete, check and sign off plant for compliance with the drawings specifications and site instructions.
- Complete and sign off all QA paperwork and construction records.
- Complete and issue "As built" drawings.
- Forward all paperwork to the project compliance manager.
- Water testing of all concrete tanks should be in accordance with the water testing procedure.
- Repair any structures that fail and retest.
- Punch list inspect each unit, identify defects, and correct.
- Outstanding defects should be entered into defects log.
- Sign off and handover the turnover package part as complete.

5.3.2 Mechanical

- Complete all construction activities in accordance with the schedule.
- Complete check system and sign off system for compliance with P&IDS GA drawings specifications and site instructions.
- Complete and sign off all QA paperwork ITPs and construction records.
- Complete and issue "As built" drawings.
- Forward all paperwork on to the QA department.
- Walk down each system, identify punch list items, and begin fixing the defects.
- Outstanding defects should be entered into the defects log.
- Hydraulic test of tanks. Invite commissioning to witness.
- Hydraulic and or pressure test all pipelines. Invite commissioning to witness.
- Flush and clean tanks and piping. Invite commissioning to witness.
- Purge all lines, as required. Invite commissioning to witness.

- Seal up each system and sign off as complete and ready for submission. Invite commissioning to witness.
- Clean up each area bund off.
- Sign off and submit the turnover package part as complete.

5.3.3 Electrical / Instrument

- Complete all construction activities in accordance with the schedule.
- Complete all testing and verification. Invite commissioning to witness.
- Complete all QA documentation to verify labelling connections and point-to-point testing.
- Complete and check system and sign off system for compliance with P&ID drawings specifications and site instructions.
- Complete and issue “As built” drawings.
- Walk down each system, identify punch list items, and initiate defect rectification.
- Outstanding defects should be entered into the defects log.
- Sign off and hand over the turnover package part as complete.

5.3.4 Process Startup

- Startup and coordinate operation with the city's plant manager.
- Test the plant and verify the process.
- Perform collaborative tests on individual and multiple systems and packages.
- Establish water and effluent flow in accordance with the design.
- Establish the chemical dosing process.
- Structure and control lab testing from the sample points.
- Provide leadership and technical direction to operations, commissioning and the client.
- Run optimize and fine tune the plant ready for the performance trial.
- Ensure the plant performs and passes the performance trial.
- Monitor compliance of final water quality and effluent quality with the specification and regulations and report non-compliances to commissioning manager.
- Liaise with commissioning for defect resolution.
- Liaise with and provide direction to vendors to meet process and contractual requirements.
- Hand over the plant to operations with an accurate set of operation instructions.
- Correct and revise all controlled process documents.
- Ensure that the operations activities are planned and carried out with the safety of all personnel considered.
- Ensure that operations are planned and carried out without any environmental incidents.

5.4 HANDOVER COMPLETION

- Provide leadership and technical direction for the commissioning trades.
- Ensure startup activities are planned and carried out and meet the scheduled dates.
- Liaise, direct, and control vendors to meet and commission plant in accordance with the schedule.
- Document that final water quality and effluent quality is compliant with the specification.
- Ensure LOTO procedures are fully implemented and controlled.
- Ensure that the commissioning process is planned and carried out with the safety of all personnel considered.
- Ensure that the commissioning process is planned and carried out without any environmental incidents.

5.5 ACCEPTANCE TEST TURNOVER

- Provide leadership, technical direction, and systems for commissioning.
- Ensure startup activities are planned and carried out and meet the scheduled dates.
- Liaise, direct, and control vendors to meet and commission the plant in accordance with the schedule.
- Document that final water quality and effluent quality is compliant with the specification.
- Ensure LOTO procedures are fully implemented and controlled.
- Ensure that the commissioning process is planned and carried out with the safety of all personnel considered.
- Ensure that the commissioning process is planned and carried out without any environmental incidents.

5.6 CONSTRUCTION TURNOVER

- Ensure that all construction teams complete activities on time and handover systems in accordance with the turnover package schedule.
- Ensure the handed over system is fully complete as required by this document.
- Provide leadership and technical direction to the package engineers and construction staff.
- Liaise with commissioning on turnover package progress and be accountable for dates.
- Hand over all documentation complete and properly signed in accordance with the turn over schedule.
- Ensure that the construction activities are planned and carried out with the safety of all personnel considered.
- Ensure that the construction activities are planned and carried out without any environmental incidents.

6.0 Functional Acceptance Test

The functional acceptance test (FAT) purpose is to insure that the PLC and Operator Graphics software configuration is working in conjunction with the hardware and plant as intended. This test is accomplished with the system on-line under normal operating conditions using clean water.

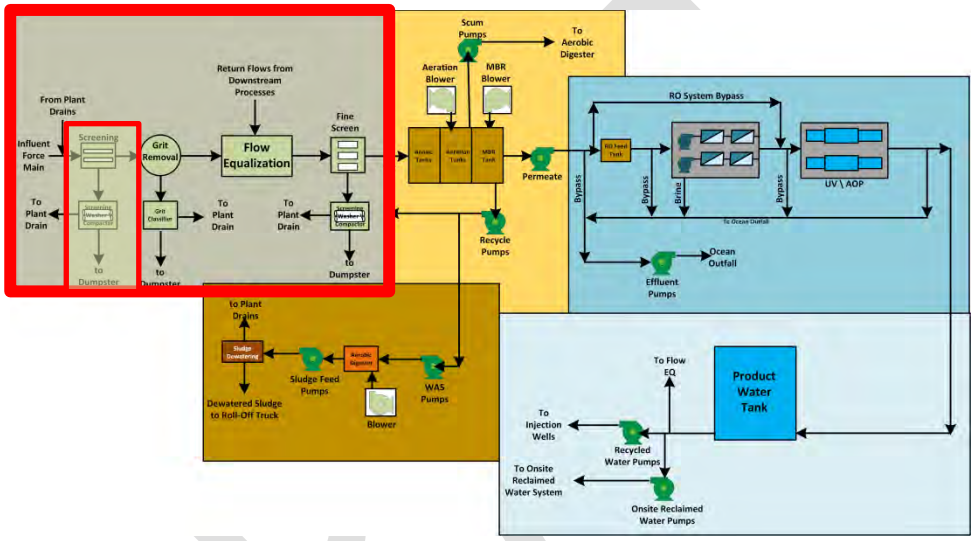
The plant systems, as defined as the turnover packages, will be prioritized based on the construction schedule and turnover status. A detailed step-by-step commissioning procedure will be developed by the commissioning team. These activities, to be completed for each section or system, will typically be a functional test of each system/area.

- For hardwired systems, this will consist of local panel functional testing of batching systems and local control.
- For PLC/SCADA systems, this will consist of PLC/SCADA automatic operation and testing from the operator's interface panel/SCADA.
    - In both cases, the compliance with the intended control and operation will be recorded on the functional specification and supporting documents generated by the software developers. e.g. Loops drawings and ITPs.
    - A record of alarms tested will be kept by highlighting and signing off a copy of the alarm schedule in the functional specification.
    - SCADA screens will be reviewed for functionality on a system-by-system basis.
- Dosing pump calibration will be completed. Calibration curves should be generated.
- System performance assessment.
    - Are systems stable?
    - Is the batching/pumping appropriate for the process?
    - Are there pressure surges or excess vibration?

7.0 Process Commissioning

7.1 HEADWORKS AREA – COARSE SCREENINGS

The headworks receives raw sewage from the influent main (IM). The flow is combined with plant drainage and directed into the screenings channels. The channels are equipped with mechanical bar screens that have s dedicated screenings washer/press. Screenings are directed to a washer/compactor before discharging into a dumpster. The screenings channels have removal covers to contain odor and direct the odorous air to the headworks odor control system. The screenings system may be bypassed by directing flow to the screenings effluent channel.



The Vactor Washdown Area provides a location for dumping sewage from the utility's vactor trucks. The Vactor Washdown Area has two areas, each sized to allow washdown of a full vactor truck, with sloping concrete floors draining to a sump. The sump is connected to the plant drain system to transport materials to the headworks.

HEADWORKS AREA COARSE SCREENINGS					
ACTIVITY	TEST MEDIA	FLOW MGD	SOURCE	DISPOSAL	REQUIRED PRECEDENT ACTIVITY
Initial Equipment Testing: Bar Screens Washer/Compactors Screenings Container Vactor Truck Dump Gates & Valves Instrumentation	NA	NA	NA	Plant Drain	Construction
FT	PW	ADWF	Potable Water	FEQ	Initial Testing

HEADWORKS AREA COARSE SCREENINGS					
ACTIVITY	TEST MEDIA	FLOW MGD	SOURCE	DISPOSAL	REQUIRED PRECEDENT ACTIVITY
RAT	IM	Various	Headworks	FEQ	FT
Training/Operation Assistance	IM	ADWF to PHFF	Headworks	FEQ	Initial Testing

Monitor and Record

Influent TSS, VSS, COD, BOD_5

Ancillary Systems

Odor Control System

RAT Activity

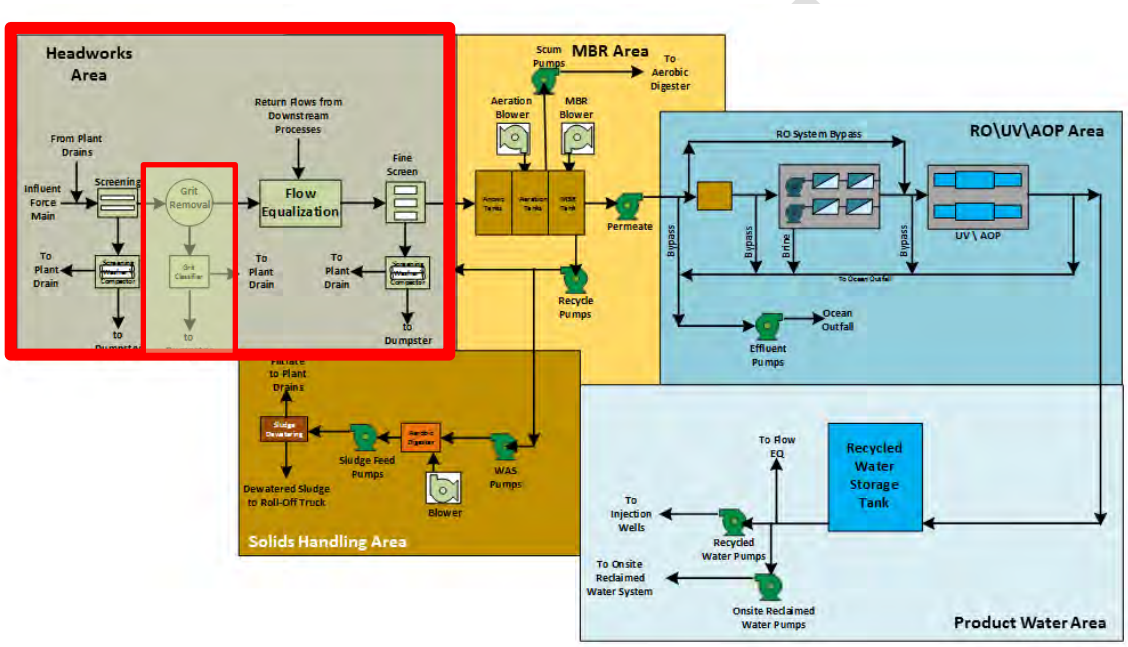
Demonstrate flow can bypass the screens to the screen effluent channel.

RAT Process Targets

Screening Compactor: Minimum 50% weight volume reductions.

7.2 HEADWORKS AREA – GRIT REMOVAL

The Grit Removal Facility receives screened flows and separates grit from the influent stream. The process is important because grit carried over to downstream processes can cause excessive wear and tear on equipment, which requires expensive replacement parts and excessive time out of service. Additionally, excessive grit accumulation can reduce the effectiveness of the MBR and aerobic digester. Grit slurry is pumped to grit separator / washer and the grit separated from organic material is stored in a dumpster. The degritted flow is discharged to the Splitter Box.



HEADWORKS AREA – GRIT REMOVAL SYSTEM					
ACTIVITY	**TEST MEDIA**	**FLOW MGD**	**SOURCE**	**DISPOSAL**	**REQUIRED PRECEDENT ACTIVITY**
Initial Equipment Testing: Grit Basins Grit Pumps Grit Separator & Classifier Grit Container Gates & Valves Instrumentation	NA	NA	NA	NA	Construction
FT	PW	ADWF	Recycled Flow	Screening Effluent	Equipment Testing

HEADWORKS AREA – GRIT REMOVAL SYSTEM					
ACTIVITY	**TEST MEDIA**	**FLOW MGD**	**SOURCE**	**DISPOSAL**	**REQUIRED PRECEDENT ACTIVITY**
				Channel	Approved ESMs
RAT	Screening Effluent	Various	Screening Channel	Splitter Box	FT Completed Approved draft O&M Manual
Training/Operation Assistance	Screening Effluent	ADWF to PHFF	Screening Channel	Splitter Box	Initial Testing

Monitor and/or Record

Grit Pump operation and pressure
Grit separator/classifier operation has heavy organics and low levels of light organics
Grit container level

Associated Systems

Plant Water System

RAT Activities

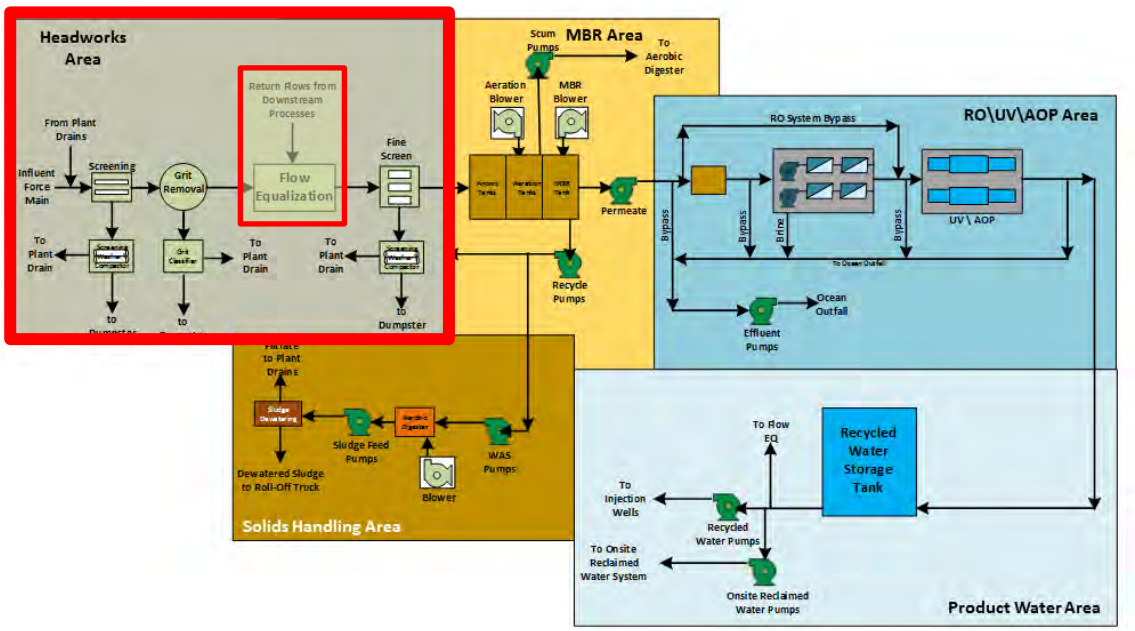
Flush grit basin and grit pump
By pass grit system to Splitter Box

RAT Process Targets

At AAF: 95% Grit > 50 mesh
85% of grit > 70 mesh but < 50 mesh
65% of grit > 100 mesh but < 80 mesh

7.3 HEADWORKS AREA – SPLITTER BOX

Degritted flows and SAFE are discharged to the Splitter Box. A weir in the box is set to divert high flows to the SAFE for treatment. The box allows the plant to mitigate diurnal flow variations and reduce peak loadings that occur over a 24-hour period. The process also helps to maintain constant flow and loadings on the MBR during peak flow events and supplement flow to the basins with stored screened and degritted flows during low flow periods. Normally Splitter Box flow is directed to Fine Screen 1, alternatively flow can also be discharged to Fine Screen 2.



HEADWORKS AREA – SPLITTER BOX					
ACTIVITY	**TEST MEDIA**	**FLOW MGD**	**SOURCE**	**DISPOSAL**	**REQUIRED PRECEDENT ACTIVITY**
Initial Equipment Testing: Splitter Box Weir Instrumentation	NA	NA	NA	NA	Construction
FT	PW	ADWF	PW	Fine Screens & SAFE	Equipment Testing Approved ESMs
RAT	Grit Effluent	Various	Grit Effluent Channel	Fine Screens & SAFE	FT Completed Approved draft O&M Manual
Training/Operation Assistance	PW and Grit Effluent	ADWF to PHFF	Grit Effluent Channel	Fine Screens &	Initial Testing

HEADWORKS AREA – SPLITTER BOX					
ACTIVITY	**TEST MEDIA**	**FLOW MGD**	**SOURCE**	**DISPOSAL**	**REQUIRED PRECEDENT ACTIVITY**
				SAFE	

Monitor and/or Record

Splitter Box Level

RAT Activities

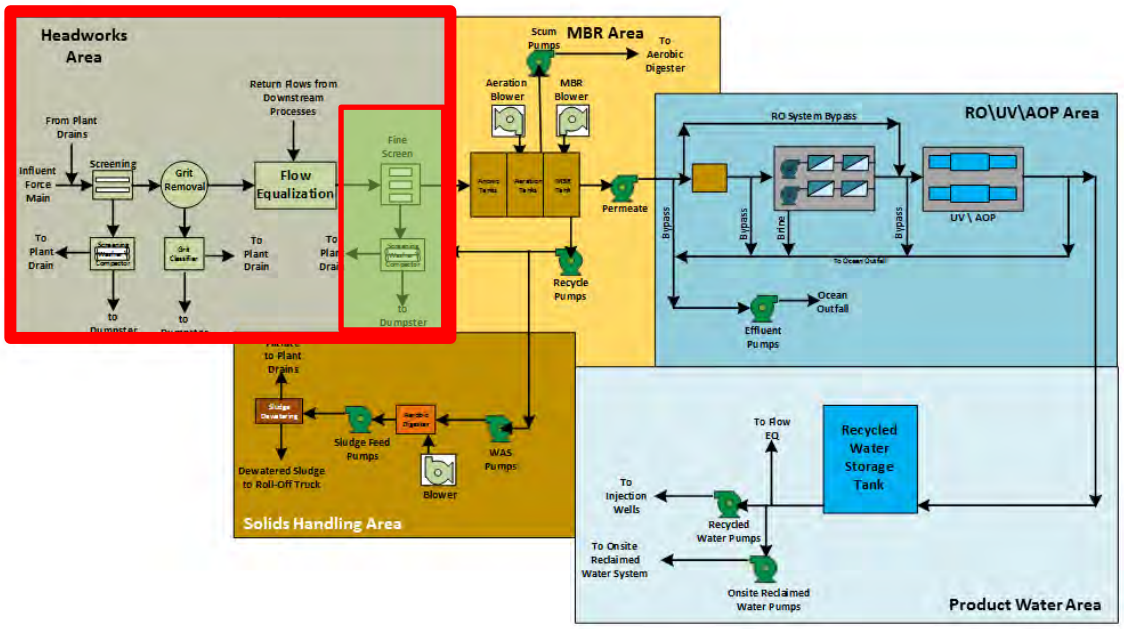
Splitter Box can direct flows to SAFE, Fine Screen 1 and Fine Screen 2

RAT Process Targets

None.

7.4 HEADWORKS AREA – FINE SCREENS

The fine screens receive flow from the Splitter Box. The screens collect, wash, dewater, compress, convey, and discharge solids to a screening container. There is one screenings washer compactor dedicated to each screen. Screened wastewater flows are discharged to the MBR. Sodium hydroxide can be added to the screened effluent channel to control wastewater pH. Fine screens are used to insure the MF modules do not get blinded or damaged which would reduce flow to the MBR.



HEADWORKS AREA – FINE SCREENS					
ACTIVITY	**TEST MEDIA**	**FLOW MGD**	**SOURCE**	**DISPOSAL**	**REQUIRED PRECEDENT ACTIVITY**
Initial Equipment Testing: Fine Screen Washer/Compactor Screenings Container	NA	NA	NA	NA	Construction
FT	Degritted wastewater	ADWF	Splitter Box	MBR	Equipment Testing Approved ESMs
RAT	Degritted wastewater	Various	Splitter Box	MBR	FT Completed Approved draft O&M Manual
Training/Operation Assistance	Degritted wastewater	ADWF to PHFF	Splitter Box	MBR	Initial Testing
RAT Monitor and/or Record					

HEADWORKS AREA – FINE SCREENS					
ACTIVITY	**TEST MEDIA**	**FLOW MGD**	**SOURCE**	**DISPOSAL**	**REQUIRED PRECEDENT ACTIVITY**
Screening effluent TSS and pH Screenings influent flow **RAT Activities** Sodium hydroxide feed system responds with changes in pH **Associated System** Plant Water **RAT Process Targets** Screens are capable of handling 50% of equalized PDF. Compactors reduce screenings 50% volume and by weight.					

7.5 MEMBRANE BIOREACTOR AREA - MBR

The MBRs are a combination of a suspended growth biological treatment method using activated sludge, with membrane filtration equipment. Flows that have passed through fine screens are metered into the secondary system (MBRs). Wastewater passes through basins with different environmental conditions. The MBR effluent, called filtrate, is discharged to the RO Feed Tank that acts has a reservoir to the RO system

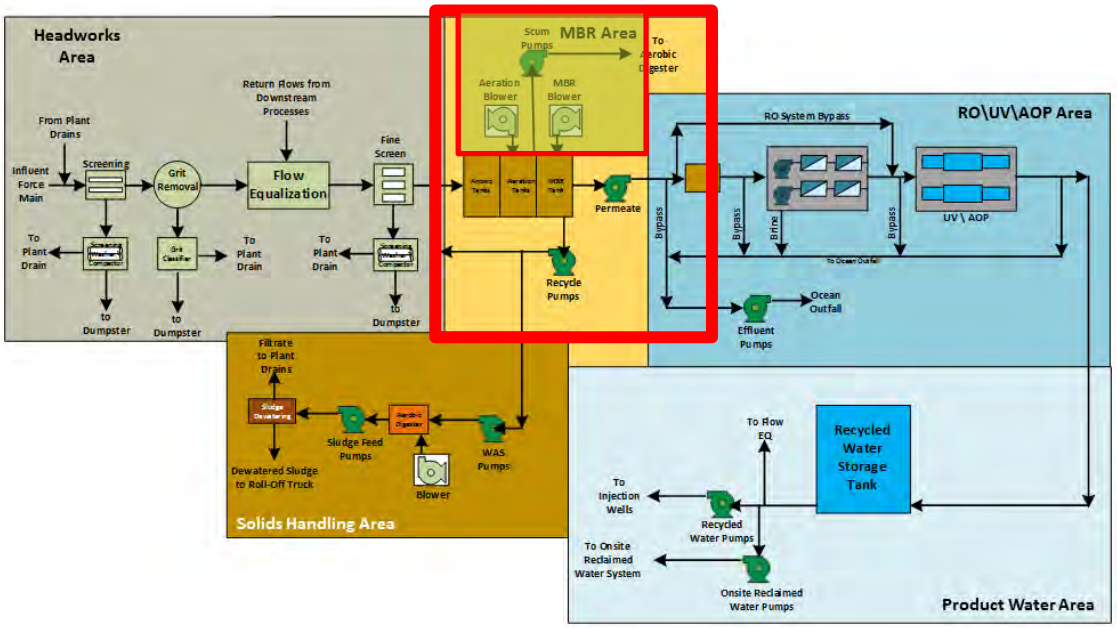
Morro Bay WWTP activated sludge system biomass will be evaluated for use as seed to start the MBR. Should the biomass be have poor settling characteristics alternative sources will be evaluated which could include other wastewater treatment plants or starting the system with bacteria naturally present in the waste waters.

MEMBRANE BIOREACTOR AREA					
ACTIVITY	TEST MEDIA	FLOW MGD	SOURCE	DISPOSAL	REQUIRED PRECEDENT ACTIVITY
Initial Equipment Testing: MBR Membranes MBR Permeate Pumps MF Backpulse System RAS Pumps WAS Pumps Drain Pump Sprays Pump Mixers Scour Blowers Gates and Valves Instrumentation	NA	NA	NA	NA	Equipment installation
FT	PW	ADWF	PW	RO Feed Tank	Equipment Testing Approved ESMs
RAT	Process Water	Various	Fine Screen Effluent	RO Feed Tank	FT Completed Biomass established Approved draft O&M Manual
Training/Operation Assistance	PW & Process Water	ADWF to PHFF	PW & Fine Screen Effluent	RO Feed Tank	Initial Testing
RAT Monitor and/or Record Membrane Scour Blower Temperature, Pressure and Flow MBR Splitter Box ORP WAS Flow RAS Flow					

MEMBRANE BIOREACTOR AREA					
ACTIVITY	**TEST MEDIA**	**FLOW MGD**	**SOURCE**	**DISPOSAL**	**REQUIRED PRECEDENT ACTIVITY**
Mixer Operation MBR Permeate Pump suction and discharge pressure MBR Permeate Pump flow MBR Backpressure Tank Supply Temperature and Ammonia Analyzer Compressed air system pressure **RAT Activities** Empty each MF Tank **Auxiliary Systems** Aeration Air System MBR Backwash\CIP System **RAT Process Targets** Design Flux: 17 gal/ft² (GFD) at MMF; 10 GFD at AAF. Maintenance returns TMP to within 0.2 psi of starting TMP. MLSS: 8,000 to 10,000 mg/L MBR effluent turbidity is less than 1.0					

7.6 MEMBRANE BIOREACTOR AREA – AERATION AIR SYSTEM

The aeration air blowers compress ambient air and discharge it to the oxic cells of the MBR through fine bubble diffusers.

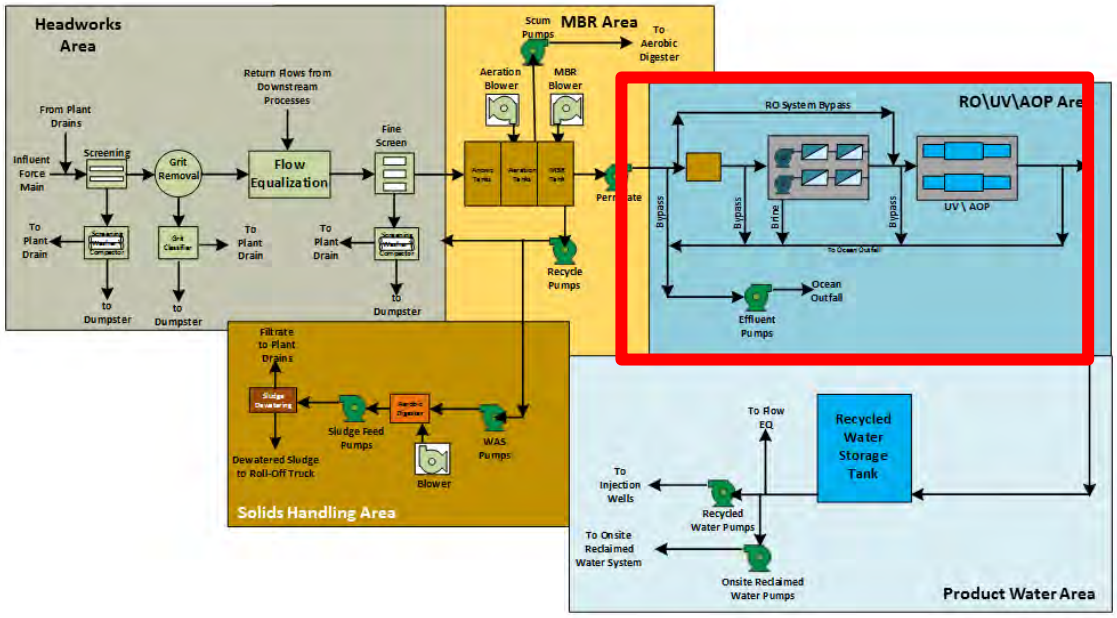


MEMBRANE BIOREACTOR AREA – AERATION AIR SYSTEM						
ACTIVITY	**TEST MEDIA**	**FLOW MGD**	**SOURCE**	**DISPOSAL**	**REQUIRED PRECEDENT ACTIVITY**	**PRECEDENT ACTIVITIES OF GREATEST RISK**
Initial Equipment Testing: Blowers Compressed Air System Diffusers Valves Instrumentation	NA	NA	NA	NA	Construction	Equipment installation
FT	Ambient Air	ADWF	Inlet Filter	Aeration Air System	Initial Testing	Equipment Testing Approved ESMs
RAT	Ambient Air	Various	Inlet Filter	Aeration Air System	FT	FT Completed Approved draft O&M Manual
Training/Operation Assistance	Ambient Air	ADWF to PHFF	Inlet Filter	Aeration Basins	Initial Testing	Initial Testing

MEMBRANE BIOREACTOR AREA – AERATION AIR SYSTEM						
ACTIVITY	TEST MEDIA	FLOW MGD	SOURCE	DISPOSAL	REQUIRED PRECEDENT ACTIVITY	PRECEDENT ACTIVITIES OF GREATEST RISK
Monitor and/or Record Blower inlet and discharge temperature and pressure Total aeration air flow Aeration air flow to each dropleg Oxic zone dissolved oxygen **RAT Activities** Maintain oxic cell D.O. and pressure setpoints. **Associated System** Aeration Air System INstrumenta Air System **RAT Process Targets** Maintain oxic cell D.O. and pressure setpoints.						

7.7 REVERSE OSMOSIS (RO) / ULTRAVIOLET ADVANCED OXIDATION PROCESS (UVAOP) AREA – RO SYSTEM

The RO system is fed from the MBRs. Flow is received at the RO Feed Tank which stores MBR permeate. RO removes dissolved constituents from the influent water, which achieves permeate salinity control and additional pathogen log removal credits. The RO feed water is pretreated with cartridge filters to protect the RO membranes against damage from large particles. Finally, the water is pressurized and passed through three stages of RO membrane elements with a pressure boost before the third stage to achieve flux balance. RO permeate (ROP) is discharged to the to the UVAOP for disinfection.



REVERSE OSMOSIS / ULTRAVIOLET/ ADVANCED OXIDATION PROCESS AREA – RO SYSTEM					
ACTIVITY	**TEST MEDIA**	**FLOW MGD**	**SOURCE**	**DISPOSAL**	**REQUIRED PRECEDENT ACTIVITY**
Initial Equipment Testing: RO Feed System RO Membranes RO CIP System RO Flushing System Antiscalant Feed System Citric Acid Feed Sytem Gates & Valves Instrumentation	NA	NA	NA	NA	Construction
FT	Plant Water Membranes not	ADWF	Backpulse Tank	UVAOP	Equipment Testing Approved ESMs

REVERSE OSMOSIS / ULTRAVIOLET/ ADVANCED OXIDATION PROCESS AREA – RO SYSTEM					
ACTIVITY	**TEST MEDIA**	**FLOW MGD**	**SOURCE**	**DISPOSAL**	**REQUIRED PRECEDENT ACTIVITY**
	installed				
RAT	Membrane	Various	Backpulse Tank	UVAOP	FT Completed Approved draft O&M Manual
Training/Operation Assistance	Membrane	ADWF to PHFF	Backpulse Tank	UVAOP	Initial Testing

Monitor and/or Record

MFF flow
RO Feed Tank level
Feed and Permeate flows
ROP SDI, Turbidity, conductivity, ORP, pH, chloramines
ROF Conductivity, turbidity, ORP, pH, chlorine, chloramines
RO Feed Pump pressure
RO Unit inlet and outlet pressure, outlet flow and conductivity,
Booster Pump pressure
RO Neutralization Tank level and pH
CIP Makeup Tank 1 level
CIP Cartridge Tank inlet and outlet pressure, differential pressure, pH
RO Flush Tank level
RO Flush Pump discharge pressure
RO Flush Cartridge Filter inlet pressure

RAT Activities

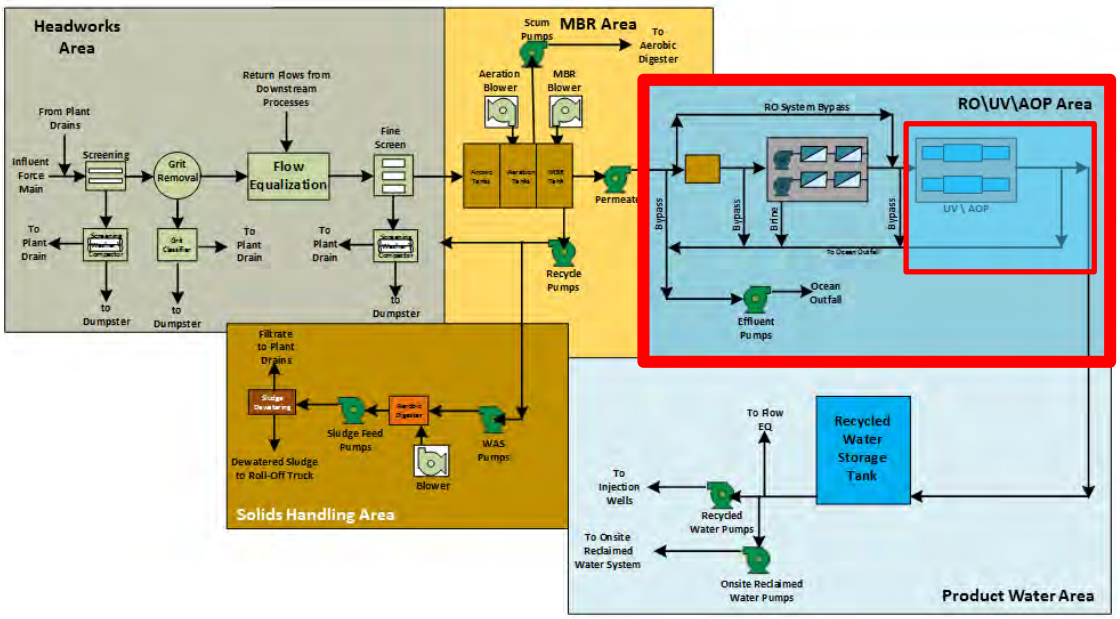
Demonstrate gravity flushing
Demonstrate off spec water to ocean outfall.
Demonstrate off spec water to FEQ.

RAT Process Targets

RO Product Water must meet recycled water requirements in WDO CCR Title 22,
TOC < 0.25 mg/L
UVT > 95%
Minimum Capacity: 0.67 MGD
Maximum Average Design Flux: 12 GFD
Maximum Single Element Flux: GFD
Recovery: 80%

7.8 RO\UV\AOP AREA –UVAOP

The UVAOP receives water from the RO system, or directly from the MBR System. The UVAOP provides two mechanisms for treating organic contaminants – direct photolysis and oxidation with sodium hypochlorite. Hypochlorite is fed ahead of the UV units. Using the combined technology RO permeate is disinfected prior to ocean outfall and indirect potable reuse.

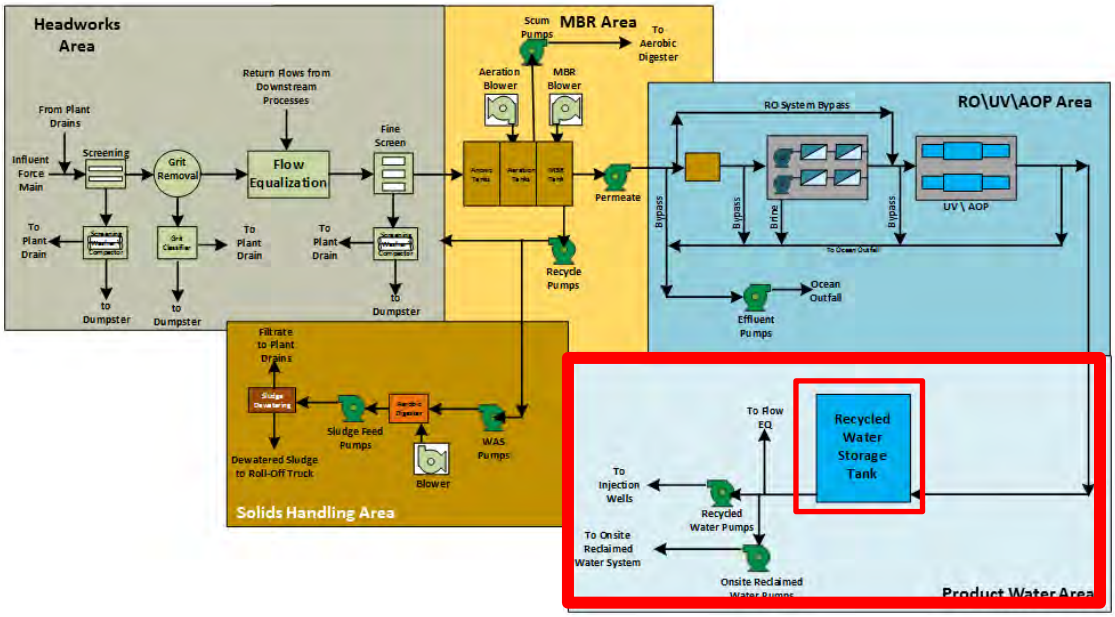


UV \ AOP DISINFECTION SYSTEM					
ACTIVITY	**TEST MEDIA**	**FLOW MGD**	**SOURCE**	**DISPOSAL**	**REQUIRED PRECEDENT ACTIVITY**
Initial Equipment Testing: UV Units Sodium Hypochlorite Feed System	NA	NA	NA	NA	Equipment installation
FT	UV Lamps	ADWF	PW	Product Water Storage Tank	Equipment Testing Approved ESMs
RAT	UV Lamps	Various	ROP	Recycled Water Storage Tank	FT Completed Approved draft O&M Manual
Training/Operation Assistance	UV Lamps	ADWF to PHFF	ROP	Recycled Water Storage Tank	Initial Testing

UV \ AOP DISINFECTION SYSTEM					
ACTIVITY	**TEST MEDIA**	**FLOW MGD**	**SOURCE**	**DISPOSAL**	**REQUIRED PRECEDENT ACTIVITY**
RAT Monitor and/or Record UV effluent flow UV effluent transmissivity Sodium hypochlorite feed rate **RAT Targets** 1,4 Dioxane reduction: 0.5 log					

7.9 PRODUCT WATER AREA - STORAGE

The Product Water Storage Tank provides operational storage for the recycled water. Chemicals are added before flow enters the tank to stabilize the water. Sodium hydroxide is added to lower the pH to reduce the corrosive nature as water is conveyed distribution areas. Sodium hypochlorite is added breakpoints any remaining chloramine and maintains chlorine residual in the distribution system.

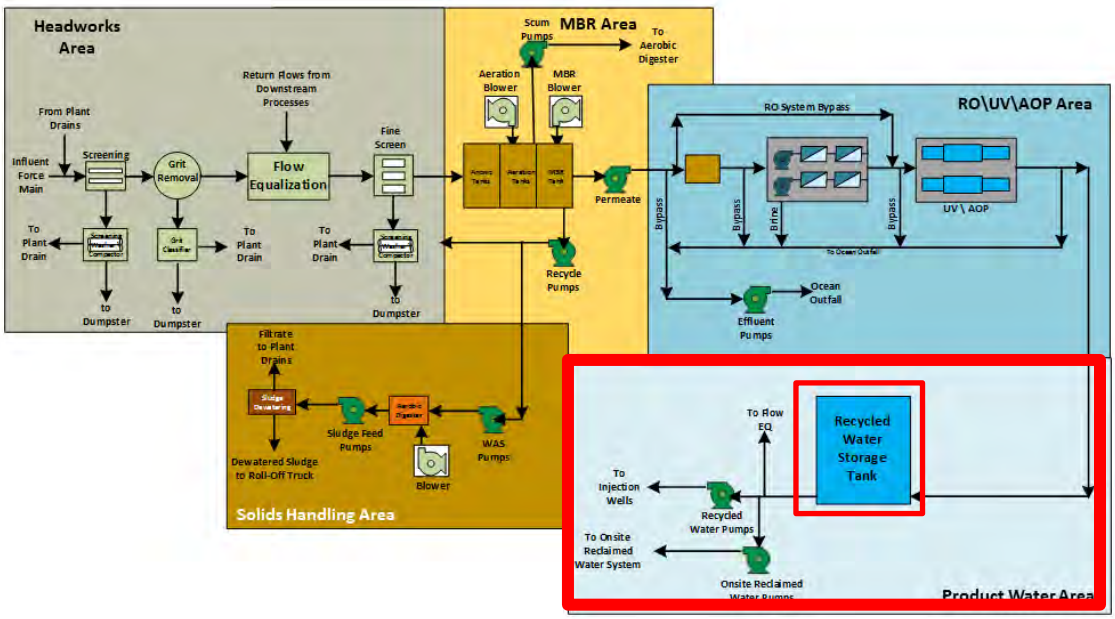


PRODUCT WATER AREA - STORAGE					
TESTING	**WATER QUALITY**	**FLOW MGD**	**SOURCE**	**DISPOSAL**	**REQUIRED PRECEDENT ACTIVITY**
Initial Equipment Testing Product Water Storage Tank Product Water Pumps Sodium Hypochlorite Feed System Sodium Hydroxide Feed System Valves Instrumentation	NA	NA	NA	NA	Construction
FT	Product Water	ADWF	AOP	Sewer	Equipment Testing Approved ESMs
RAT	Product Water	Various	AOP	Sewer initially then to Recycle or	FT Completed Approved draft O&M Manual

PRODUCT WATER AREA - STORAGE					
TESTING	**WATER QUALITY**	**FLOW MGD**	**SOURCE**	**DISPOSAL**	**REQUIRED PRECEDENT ACTIVITY**
				Reclaimed Water Pumps	
Training/Operation Assistance	Product Water	ADWF to PHFF	AOP	Recycle or Reclaimed Water Pumps	Initial Testing
Monitor and/or Record Product Water Storage Tank Level Product Water pH, Conductivity and Chlorine Residual					

7.10 PRODUCT WATER AREA - STORAGE

The Product Water Storage Tank provides operational storage for the recycled water. Chemicals are added before flow enters the tank to stabilize the water. Sodium hydroxide is added to lower the pH to reduce the corrosive nature as water is conveyed distribution areas. Sodium hypochlorite is added breakpoints any remaining chloramine and maintains chlorine residual in the distribution system.

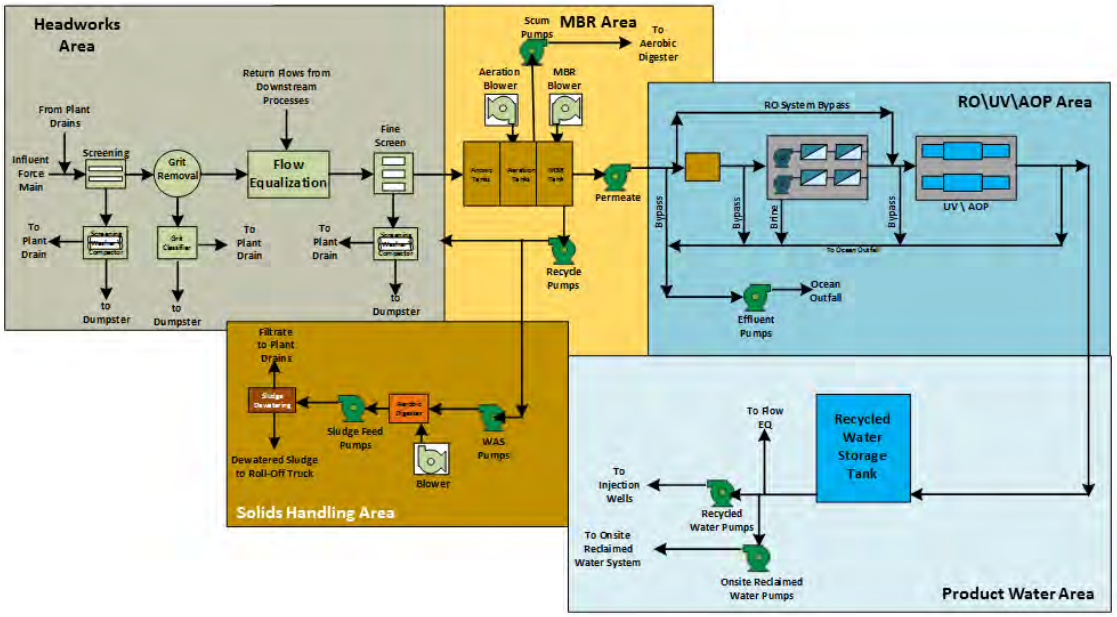


PRODUCT WATER AREA - STORAGE					
TESTING	**WATER QUALITY**	**FLOW MGD**	**SOURCE**	**DISPOSAL**	**REQUIRED PRECEDENT ACTIVITY**
Initial Equipment Testing Product Water Storage Tank Product Water Pumps Sodium Hypochlorite Feed System Sodium Hydroxide Feed System Valves Instrumentation	NA	NA	NA	NA	Construction
FT	Product Water	ADWF	AOP	Sewer	Equipment Testing Approved ESMs
RAT	Product Water	Various	AOP	Sewer initially then to Recycle or	FT Completed Approved draft O&M Manual

PRODUCT WATER AREA - STORAGE					
TESTING	**WATER QUALITY**	**FLOW MGD**	**SOURCE**	**DISPOSAL**	**REQUIRED PRECEDENT ACTIVITY**
				Reclaimed Water Pumps	
Training/Operation Assistance	Product Water	ADWF to PHFF	AOP	Recycle or Reclaimed Water Pumps	Initial Testing
Monitor and/or Record Product Water Storage Tank Level Product Water pH, Conductivity and Chlorine Residual					

7.11 STORMWATER ADAPTIVE FILTRATION EQUIPMENT (SAFE)

The process objective is to perform auxiliary filtering of peak flows beyond the capacity of the biological treatment process and deliver the treated flow to the ocean outfall. The system is comprised of a disk filtration unit, backwash pump and solids pump. Filter solids are removed from the system and wasted to the Headworks Splitter Box. Scum and backwash filter are directed to the plant drain.

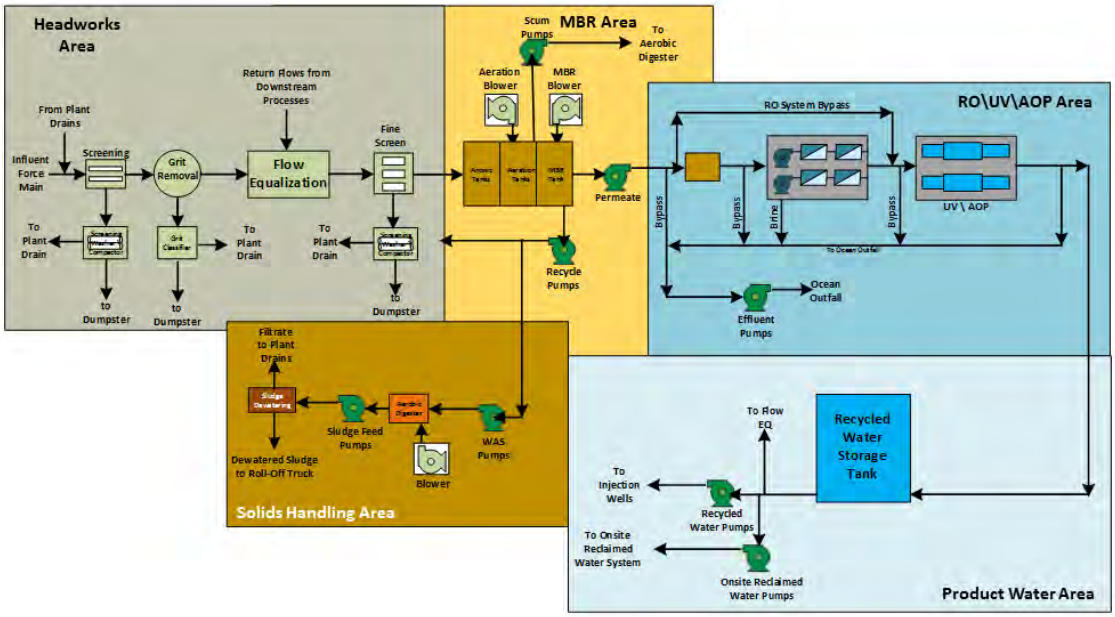


PRODUCT WATER AREA – SAFE					
TESTING	**WATER QUALITY**	**FLOW MGD**	**SOURCE**	**DISPOSAL**	**REQUIRED PRECEDENT ACTIVITY**
Initial Equipment Testing Disk Filter Unit Backwash Pump Waste Pump Valves Instrumentation	NA	NA	NA	NA	Construction
FT	Grit Effluent Channel	ADWF	Splitter Box	Ocean Outfall	Equipment Testing Approved ESMs
RAT	Grit Effluent Channel	Various	Splitter Box	Ocean Outfall	FT Completed Approved draft O&M Manual
Training/Operation Assistance	Grit Effluent Channel	ADWF to PHF	Splitter Box	Ocean Outfall	Initial Testing

PRODUCT WATER AREA – SAFE					
TESTING	**WATER QUALITY**	**FLOW MGD**	**SOURCE**	**DISPOSAL**	**REQUIRED PRECEDENT ACTIVITY**
Monitor and/or Record					
Product Water Storage Tank Level					
Product Water pH, Conductivity and Chlorine Residual					
Product Water Pump pressure					
Product Water pump discharge pressure and pH					
Reclaimed Water discharge pressure					

7.12 OCEAN OUTFALL SYSTEM

The ocean outfall system handles RO Feed Tank overflow, SAFE effluent and RO concentrate. RO Feed Tank overflow and SAFE flows are discharged to the Outfall Balancing Tank which is then transferred to the ocean outfall by the Balancing Pumps. Both flows are treated with sodium hypochlorite for disinfection then dechlorinated with sodium bisulfite prior to ocean outfall.



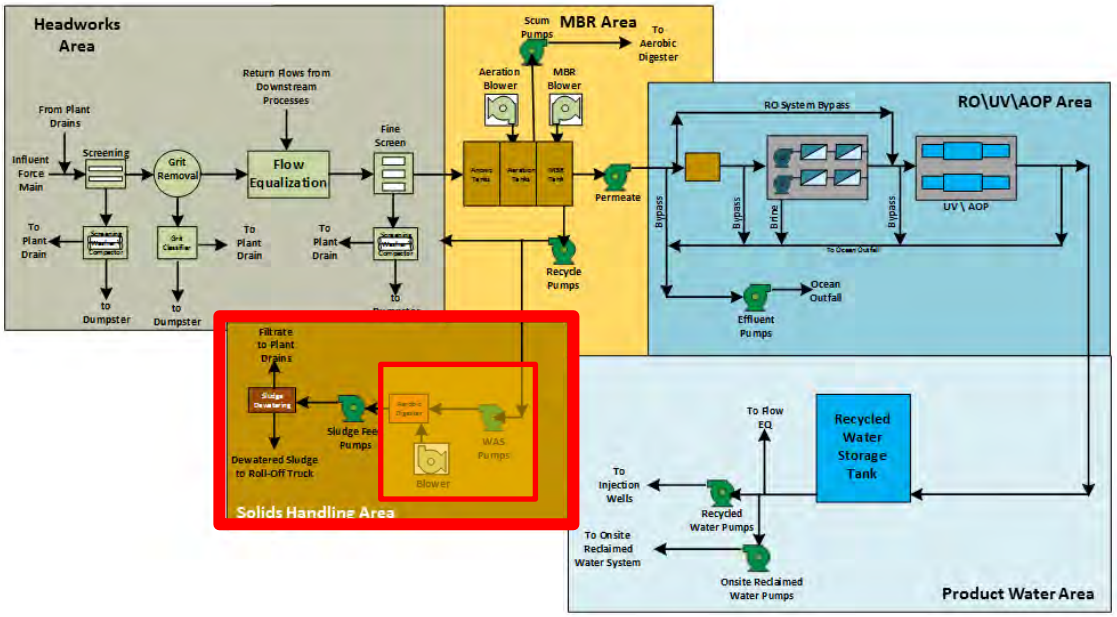
PRODUCT WATER AREA – OCEAN OUTFLOW SYSTEM					
TESTING	**WATER QUALITY**	**FLOW MGD**	**SOURCE**	**DISPOSAL**	**REQUIRED PRECEDENT ACTIVITY**
Initial Equipment Testing Outfall Balancing Tank Outfall Pumps Sodium Hypochlorite Feed System Sodium Bisulfite Feed System Valves Instrumentation	NA	NA	NA	NA	Construction
FT	PW	ADWF	PW	Ocean Outfall	Equipment Testing Approved ESMs
RAT	ROP SAFE ROC	Various	ROP	Ocean Outfall	FT Completed Approved draft O&M Manual
Training/Operation Assistance	ROP SAFE	ADWF to PHF	SAFE	Ocean Outfall	Initial Testing

PRODUCT WATER AREA – OCEAN OUTFLOW SYSTEM					
TESTING	WATER QUALITY	FLOW MGD	SOURCE	DISPOSAL	REQUIRED PRECEDENT ACTIVITY
	ROC				
Monitor and/or Record Product Water Storage Tank Level Product Water pH, Conductivity and Chlorine Residual Product Water Pump pressure Product Water pump discharge pressure and pH Reclaimed Water discharge pressure					

8.0 Solids Handling Area

8.1 SOLIDS HANDLING AREA – AEROBIC SLUDGE DIGESTER

Aerobic digestion is a biological treatment process that uses long periods of aeration to stabilize and reduce the mass of organic waste by biologically destroying volatile solids. This process extends decomposition of solids and regrowth of organisms to a point in which available energy in active cells and storage of waste materials is sufficiently low to permit waste sludge to be considered stable. The digester receives stores, aerates, and digests activated sludge wasted from the MBR process. The digester freeboard/head space will be minimized to reduce potential for odor accumulation.



SOLIDS HANDLING AREA – AEROBIC SLUDGE DIGESTER					
ACTIVITY	**TEST MEDIA**	**FLOW MGD**	**SOURCE**	**DISPOSAL**	**REQUIRED PRECEDENT ACTIVITY**
Initial Equipment Testing: Digester Blowers Diffusers Gates & Valves Instrumentation	NA	NA	NA	Plant Drain	Construction
FT	PW	ADWF	PW	Plant Drain	Equipment Testing Approved ESMs
RAT	WAS	Various	WAS Pump	Belt Press	FT Completed Approved draft O&M Manual

SOLIDS HANDLING AREA – AEROBIC SLUDGE DIGESTER					
ACTIVITY	**TEST MEDIA**	**FLOW MGD**	**SOURCE**	**DISPOSAL**	**REQUIRED PRECEDENT ACTIVITY**
Training/Operation Assistance	PW / WAS	ADWF to PHFF	WRP	Load Out Facility	Initial Testing

Monitor and/or Record

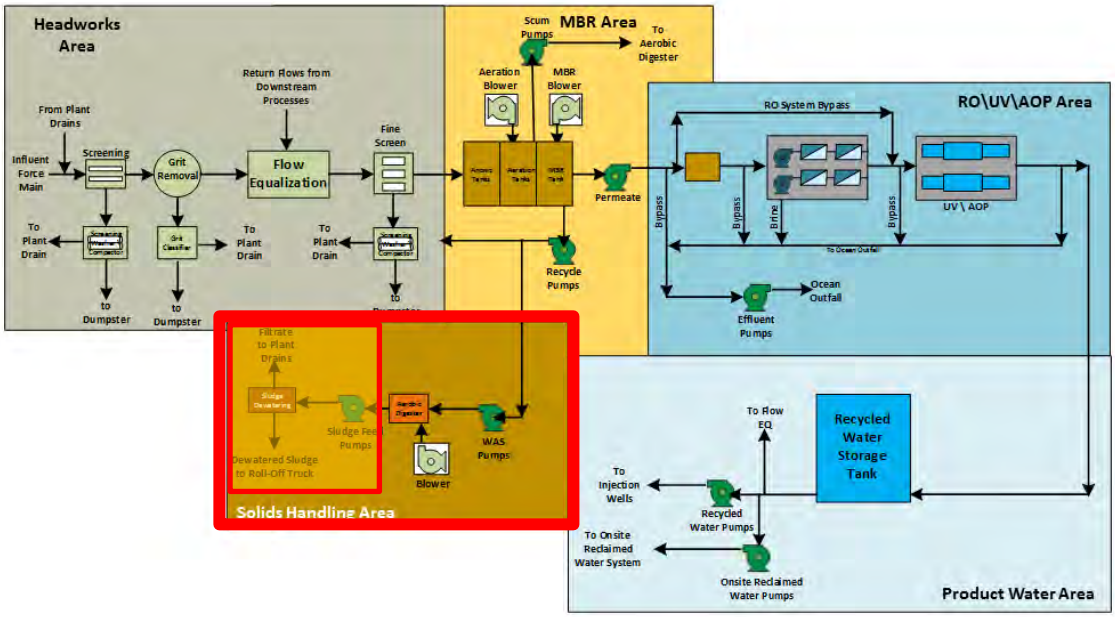
- WAS Flow, MGD
- WAS MLSS, mg/L; MLVSS mg/L
- Aerobic Digester MLSS, mg/L; MLVSS, mg/L
- Temperature
- SRT, days
- Organic Loading Rate, lbs. VSS/day/ft³
- OUR, mg O_2/g VSS-h

RAT Process Targets

- D.O., ppm: 0.5 to 2.0
- pH: 7.0 to 8.0
- Temperature , °F: > 50
- Mixing, ft³/min/1000 ft³: 20 to 35
- SRT, days: 10

8.2 SOLIDS HANDLING AREA- SLUDGE DEWATERING

Belt filter presses are used to dewater solids from digested waste activated sludge. The purpose of dewatering is to decrease the volume of solids hauled offsite by removing a portion of the water contained.



SOLIDS HANDLING AREA – SLUDGE DEWATERING					
ACTIVITY	**TEST MEDIA**	**FLOW MGD**	**SOURCE**	**DISPOSAL**	**REQUIRED PRECEDENT ACTIVITY**
Initial Equipment Testing: Sludge Feed Pump Polymer Feed System Gates & Valves Instrumentation	NA	NA	NA	Plant Drain	Equipment installation
FAT	RW	ADWF	RW	Plant Drain	Equipment Testing Approved ESMs
RAT	Aerobic Digested Sludge	Various	Sludge Feed Pumps	Dumpster	FT Completed Approved draft O&M Manual
Training/Operation Assistance	Plant Influent	ADWF to PHFF	Sludge Feed Pumps	Dumpster	Initial Testing
Monitor and Record • Hydraulic Loading, gpm/ft²					

SOLIDS HANDLING AREA – SLUDGE DEWATERING					
ACTIVITY	**TEST MEDIA**	**FLOW MGD**	**SOURCE**	**DISPOSAL**	**REQUIRED PRECEDENT ACTIVITY**
• Solids Loading, lbs/day/ ft² • Percent Capture, % • Filtrate TSS, mg/L • Cake Concentration, % • Feed Rate, gpm • Wet Cake, tons\hour • Dry Cake, tons\hour • Polymer Concentration, % • Polymer Feed Rate, gpm **RAT Process Targets** • Sludge Feed Concentration,%: 5.5 • Cake Concertation, %: 15%					

9.0 Acceptance Testing

While the intent is to execute the acceptance test on schedule, there are certain external factors that may influence how the test is conducted. The acceptance test plan and schedule will be developed with the input of the city.

After all certification, functional, and equipment tests have been performed and all equipment has successfully met startup requirements, acceptance testing should be completed. The acceptance test consists of a two week period where the facility operates as a complete system. Acceptance testing shall start after the acceptance test plan has been approved by the city and regulatory agencies, and authorization has been received from the city. After successful completion of the acceptance test, the transitional operation phase will begin.

The WRF shall be operated as follows:

- Demonstrate the WRF achieves permitted conditions under normal operation.
- Demonstrate emergency generator operation. Effluent quality and capability to process the influent should not be diminished due to an automatic transfer to the emergency generator.
- Demonstrate the uninterruptible power supply (UPS) for power and controls performs without loss of data and control.
- Demonstrate manual shutdown, manual startup, automatic shutdown, automatic startup, and automatic transfer of equipment that requires any or all of those functions without interruption of flow or quality of effluent.
- Reports should be developed in accordance with the requirements of the regulatory agencies with certification of the results demonstrating performance, all relevant data measured and recorded during the testing, and any calculations that were used in determining test results.

10.0 Water Quality Maintenance

10.1 FAILSAFE FEATURES

In the Morro Bay WTF preliminary design provisions were made to ensure that public health protection is maintained, even under failure conditions. Failsafe features utilize information from the critical control point (CCP) monitoring to rapidly identify periods when the advanced treated water does not meet (or cannot demonstrate) specifications ("off-specification" flows). This information is used to trigger the implementation of a failsafe (resiliency) feature that responds by preventing release of off-specification water. Failsafe features provide greater operational flexibility by allowing the plant to experience failures, but in such a way that it does not threaten public health. The specific failsafe features planned for Morro Bay WTF include facilities to divert off-specification water.

10.2 MEASURES FOR PATHOGEN CONTROL AND OFF-SPECIFICATION WATER MONITORING

1. This design aims to routinely achieve pathogen log reduction values in excess of the minimum log reductions that would be required. The intent of this design strategy is to provide a buffer so that even if an individual process or monitor fails, the facility does not generate off-specification water.
2. In order to monitor for off-specification water, CCPs using industry established surrogates will be used to provide assurance that each process is providing the anticipated performance as a pathogen barrier. Surrogates are used because direct real-time monitoring of pathogens is not practical and surrogates are the standard approach to demonstrate compliance with log removal requirements in conventional drinking water treatment plants.
3. Each CCP is monitored using an established monitoring technique and verification of its performance is used to establish pathogen log reduction credits during operation. The table below summarizes the CCPs envisioned for the MB WTF, and a brief description of each of these CCPs is provided in the following paragraphs.

The following subsections describe failsafe features.

10.2.1 Measures for Pathogen Control and Off-Specification Water Monitoring

MB WTF design centers on the concept of consistently achieving pathogen log reduction values in excess of the minimum log reduction that would be required. With this design strategy, the WTF will have a buffer so that even if an individual process or monitor fails, the facility will not generate off-spec water. Facility operation includes the CCPs, the CCPs envisioned which are elaborated on below.

10.2.2 Use of SCADA in the Critical Control Point Management Process

Using monitoring data for flow and for surrogates at all the CCPs, SCADA will be used to continuously calculate and display the plant's performance in meeting its performance goals. Each surrogate for each CCP will be separately displayed and, using colors and flashing lights, SCADA will provide operational staff with a clear picture of the WTF status as a whole as well as each CCP. Operators will know where they stand at all times.

10.2.3 Facilities for Diversion of Off-Specification Water

Off-spec water could be produced at the following CCPs in the treatment process:

- MBR.
- RO.
- UV/AOP.
- Product Water Tank

In the event MBR does not meet RO water quality requirements the RO supply line from the RO Feed Tanks can be closed causing the tank to overflow. The off-spec MBR effluent is directed to the Ocean Outfall Pump Station. Each of the RO trains is provided with a ROP dump to discharge any off-spec water to the ocean outfall system. Should the UVAOP effluent be off-spec the RO system would be stopped until water quality issues are resolved. As with ROP that is off-spec flow is directed to the ocean outfall system. In the event the Product Water Tank contains off-spec water the tank can be isolated and the flow returned to the plant by the sewers or directed to the Outfall wetwell. Using the CCP methodology there are multiple opportunities to safely intercept and divert off-spec flows without sending it to the groundwater IPR or distribution system.

10.3 SAMPLING AND SITE LABORATORY TESTING

Sample collection and site laboratory testing will be conducted in accordance with the sample collection program.

10.3.1 Raw Water Characteristics

Raw water characteristics and flows are as follows.

TABLE 10-1 START-UP FLOW AND LOAD SUMMARY

PARAMETER	ANNUAL AVERAGE	MAXIMUM MONTH
Flow, MGD	0.85	1.02
BOD_5, mg/L	440	470
TSS, mg/L	490	540
TKN, mg/L	70	74

10.3.2 Online Monitoring

The process will be measured with the respective analyzers for water quality. The analyzers will generally measure turbidity, pH, conductivity, ORP, chlorine residual, ammonia, and other parameters. All analytical measured signals will be transmitted to SCADA or the process area PLC. All process measurements that are required to meet permit requirements will have redundant analytical instruments to ensure that no instrument failure results in a permit violation.

Table 10-1 lists the locations and purpose of the online analyzers.

TABLE 10-2 ONLINE ANALYZERS

ANALYZER	LOCATION	PURPOSE
Ammonia Analyzer	MBR Backpulse Tank	Display ammonia concentration to RO Feed Tank
Conductivity	ROF ROP Stage 1 ROP Stage 2 ROP Unit 1 Vessels Concentrate from RO Unit 1 Vessels RO ROP Unit 2 Vessels Concentrate from RO Unit 2 Vessels ROP Unit 3 Vessels Concentrate from RO Unit 3 Vessels FTE Analyzer Panel	Display conductivity.
Chlorine Analyzer	ROF FTE Analyzer Panel Dechlorination Facility	Display chlorine concentration.
Chloramine Analyzer	ROF	Display chloramine concentration
DO Analyzer	MBR Aerobic Zone Sludge Holding Tanks	Display dissolved oxygen concentration.
Nitrate Analyzer	Permeate Pump Discharge	Display ammonia concentration.
ORP Analyzers	ROF MBR Splitter Box	Display oxidation reduction potential.
pH Analyzer	Fine Screen Effluent ROF RO Cartridge Filter Effluent pH CIP Pump Discharge FTE Analyzer Panel Product Water Pump Discharge Manifold IPR Pump Discharge Analyzer Panel	Display pH which is used as an expression of the degree of acidity or alkalinity of a solution
TSS Analyzer	Fine Screen Effluent	Display total suspended solids concentration.
Transmissivity Meter	UV Effluent	Display transmissivity.
Turbidity Meter	ROF Filtrate Pump Discharge	Display turbidity concentration.

10.3.3 Site Testing

The Morro Bay WTF process field sampling schedule is provided in the table below.

Table 10-3 Morro Bay WTF Process Control Liquid Sampling Schedule

PARAMETER	FREQUENCY	SAMPLE TYPE
Plant Influent		
Alkalinity, mg/L	Daily	Composite
BOD, mg/L	Daily	Composite
TSS, mg/L	Daily	Composite
COD, mg/L	Daily	Composite
TKN, , mg/L	Daily	Composite
pH, std. units	Daily	Grab
MBR Effluent		
Alkalinity, mg/L	3/week	Composite
Total BOD_5, mg/L	3/week	Composite
COD, mg/L	3/week	Composite
NH_3-N, mg/L	3/week	Composite
Phosphorus	3/week	Composite
TKN, mg/L	3/week	Composite
TSS, mg/L	3/week	Composite
VFA, mg/L	3/week	Composite
VSS, mg/L	3/week	Composite
RO Influent		
SDI	Daily	Grab
RO Effluent		
Conductivity	Daily	Grab
Turbidity, NTU	Daily	Grab
UV/AOP		
pH	Daily	Grab
TSS, mg/L	Daily	Composite
Final Effluent		
Total BOD_5, mg/L	3/week	Composite
COD, mg/L	3/week	Composite

PARAMETER	FREQUENCY	SAMPLE TYPE
NH_3-N, mg/L	3/week	Composite
pH	3/week	Composite
TSS, mg/L	3/week	Composite

Table 10-4 Morro Bay WTF Process Control Solids Sampling Schedule

PARAMETER	FREQUENCY	SAMPLE TYPE
Aerobic Digester		
TSS, mg/L	Daily	Grab
VSS, mg/L	Daily	Grab
Belt Press		
Solids, %	Daily	Grab
Volatile Solids, %	Daily	Grab

10.3.4 Certified Laboratory Testing

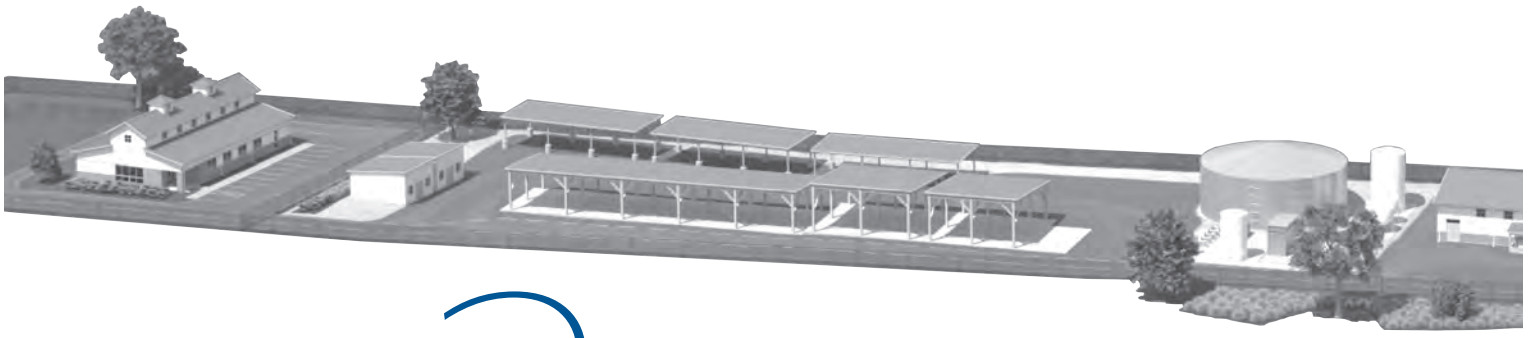
The sampling schedule for the certified lab is provided in the table below.

TABLE 10-5 MORRO BAY WTF CERTIFIED LAB LIQUID SAMPLING SCHEDULE

PARAMETER	FREQUENCY	SAMPLE TYPE
Influent Monitoring		
Daily Flow, MGD	Daily	Metered
Maximum Daily Flow, MGD	Daily	Metered
Mean Daily Flow, MGD	Monthly	Calculated
BOD_5 (20 °C), mg/L	Weekly	24-hr Composite
Total Suspended Solids, mg/L	Weekly	24-hr Composite
Outfall M-001		
Total Chlorine Residual, µg/L	Daily	Grab
Total Coliform, MPN	5 Days/Week	Grab
Temperature, °C	5 Days/Week	Grab
Turbidity, NTU	5 Days/Week	Grab
BOD_5, 20 °C, mg/L	Weekly	24-hr Composite

TABLE 10-5 MORRO BAY WTF CERTIFIED LAB LIQUID SAMPLING SCHEDULE

PARAMETER	FREQUENCY	SAMPLE TYPE
Total Suspended Solids, mg/L	Weekly	24-hr Composite
pH	Weekly	Grab
Settleable Solids, mL/L	Weekly	Grab
Grease and Oil, mg/L	Weekly	Grab
Chronic Toxicity, TUc	Annual	24-hr Composite
Ammonia (as N), mg/L	Annual	Grab
Nitrate (as N), mg/L	Annual	Grab
Urea (as N), mg/L	Annual	Grab
Ortho-Phosphate (as P), mg/L	Annual	Grab
Dissolved Silica (SiO2), mg/L	Annual	Grab



APPENDIX 3

SCHEDULE

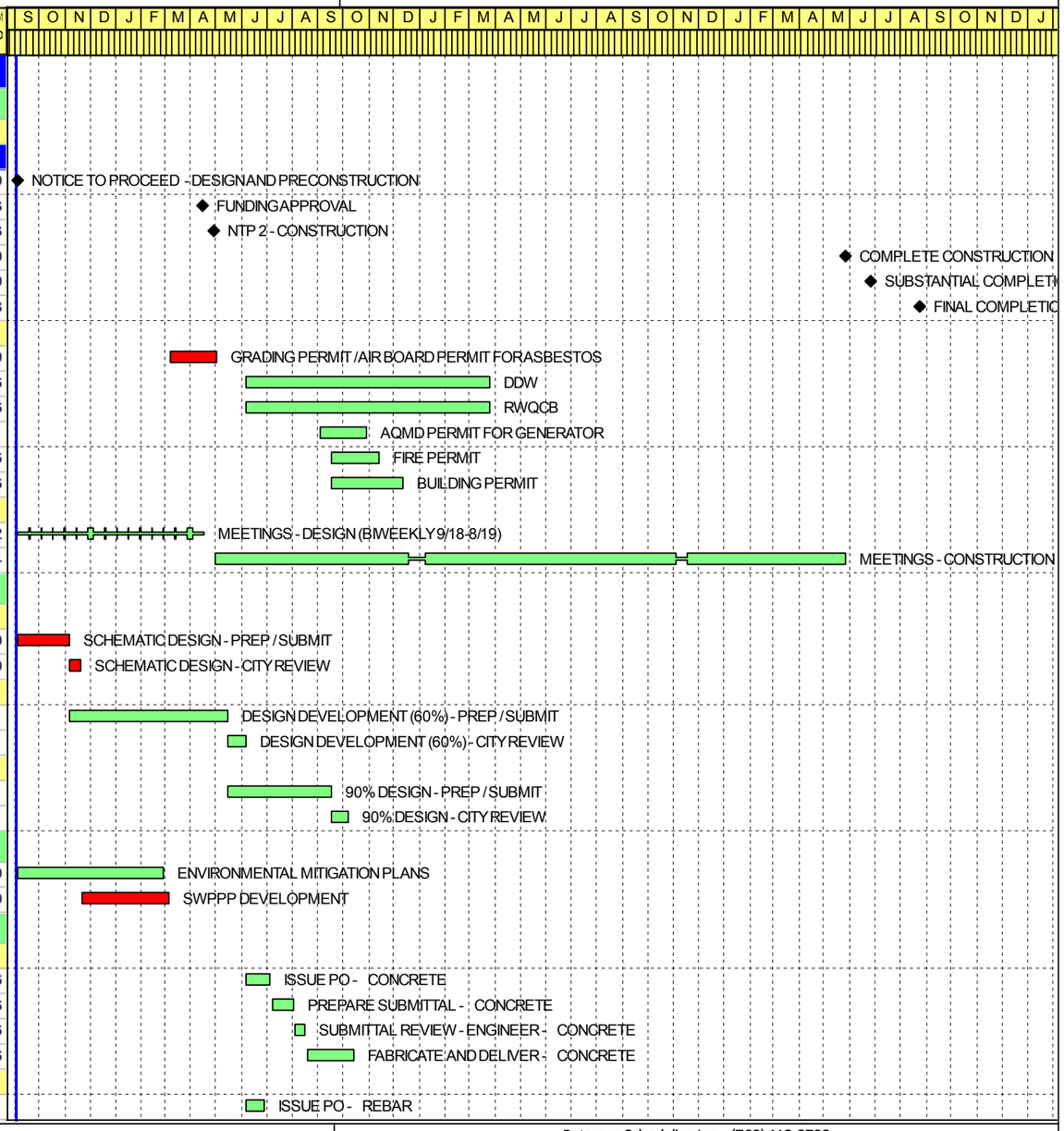
WATER RECLAMATION FACILITY (WRF) ONSITE IMPROVEMENTS - City of Morro Bay
MORR-RFP
Project Start: 09/04/18
Data Date: 09/04/18
Project Finish: 12/30/21

PROJECT BAR CHART

WATER RECLAMATION FACILITY (WRF) ONSITE IMPROVEMENTS - City of Morro Bay

FILANC RV

Activity ID	Activity Name	Orig Dur	Start	Finish
WATER RECLAMATION FACILITY (WRF) ONSITE IMPROVEMENTS - City of Morro Bay				
GENERAL CONDITIONS				
MILESTONES				
CONTRACT MILESTONES				
NTP-DES-PCON	NOTICE TO PROCEED - DESIGN AND PRECONSTRUCTION	0	09/04/18	
FUND	FUNDING APPROVAL	0	04/15/19*	
NTP-CONS	NTP 2 - CONSTRUCTION	0	04/29/19	
CN-1510	COMPLETE CONSTRUCTION	0		05/27/21
CN-1590	SUBSTANTIAL COMPLETION	0		06/25/21
CN-1650	FINAL COMPLETION	0		08/23/21
INTERACTION APPROVALS FROM GOVERNING AGENCIES				
PT-400	GRADING PERMIT / AIR BOARD PERMIT FOR ASBESTOS	40	03/07/19	05/01/19
PT-440	DDW	200	06/07/19	03/25/20
PT-450	RWQCB	200	06/07/19	03/25/20
PT-420	AQMD PERMIT FOR GENERATOR	40	09/03/19	10/28/19
PT-430	FIRE PERMIT	40	09/17/19	11/12/19
PT-410	BUILDING PERMIT	60	09/17/19	12/12/19
PROJECT MANAGEMENT				
PM-050	MEETINGS - DESIGN (BIWEEKLY 9/18-8/19)	18	09/05/18	04/17/19
PM-150	MEETINGS - CONSTRUCTION (WEEKLY 5/19-9/21)	106	05/01/19	05/26/21
DESIGN				
SCHEMATIC DESIGN				
DE-200	SCHEMATIC DESIGN - PREP / SUBMIT	45	09/04/18	11/05/18
DE-210	SCHEMATIC DESIGN - CITY REVIEW	10	11/06/18	11/20/18
DESIGN DEVELOPMENT				
DE-250	DESIGN DEVELOPMENT (60%) - PREP / SUBMIT	130	11/06/18	05/15/19
DE-260	DESIGN DEVELOPMENT (60%) - CITY REVIEW	15	05/16/19	06/06/19
90% DESIGN				
DE-300	90% DESIGN - PREP / SUBMIT	85	05/16/19	09/16/19
DE-310	90% DESIGN - CITY REVIEW	15	09/17/19	10/07/19
PRE-CONSTRUCTION (SPECIAL OWNER REQUIREMENTS)				
PC-320	ENVIRONMENTAL MITIGATION PLANS	120	09/04/18	02/27/19
PC-310	SWPPP DEVELOPMENT	70	11/21/18	03/06/19
MATERIAL PROCUREMENT (SUBMITTALS/SHOP DRAWINGS - APPROVALS - FABRICATION - DELIVERY)				
CONCRETE				
P0-500	ISSUE PO - CONCRETE	20	06/07/19	07/05/19
P2-500	PREPARE SUBMITTAL - CONCRETE	20	07/08/19	08/02/19
P4-500	SUBMITTAL REVIEW - ENGINEER - CONCRETE	10	08/05/19	08/16/19
P7-500	FABRICATE AND DELIVER - CONCRETE	40	08/19/19	10/14/19
REBAR				
P0-510	ISSUE PO - REBAR	15	06/07/19	06/27/19



Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

TASK filter: All Activities

PROJECT BAR CHART
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Peterson Scheduling Inc (760) 413-8793

Date	Revision	Checked	Approved

WATER RECLAMATION FACILITY (WRF) ONSITE IMPROVEMENTS - City of Morro Bay
MORR-RFP
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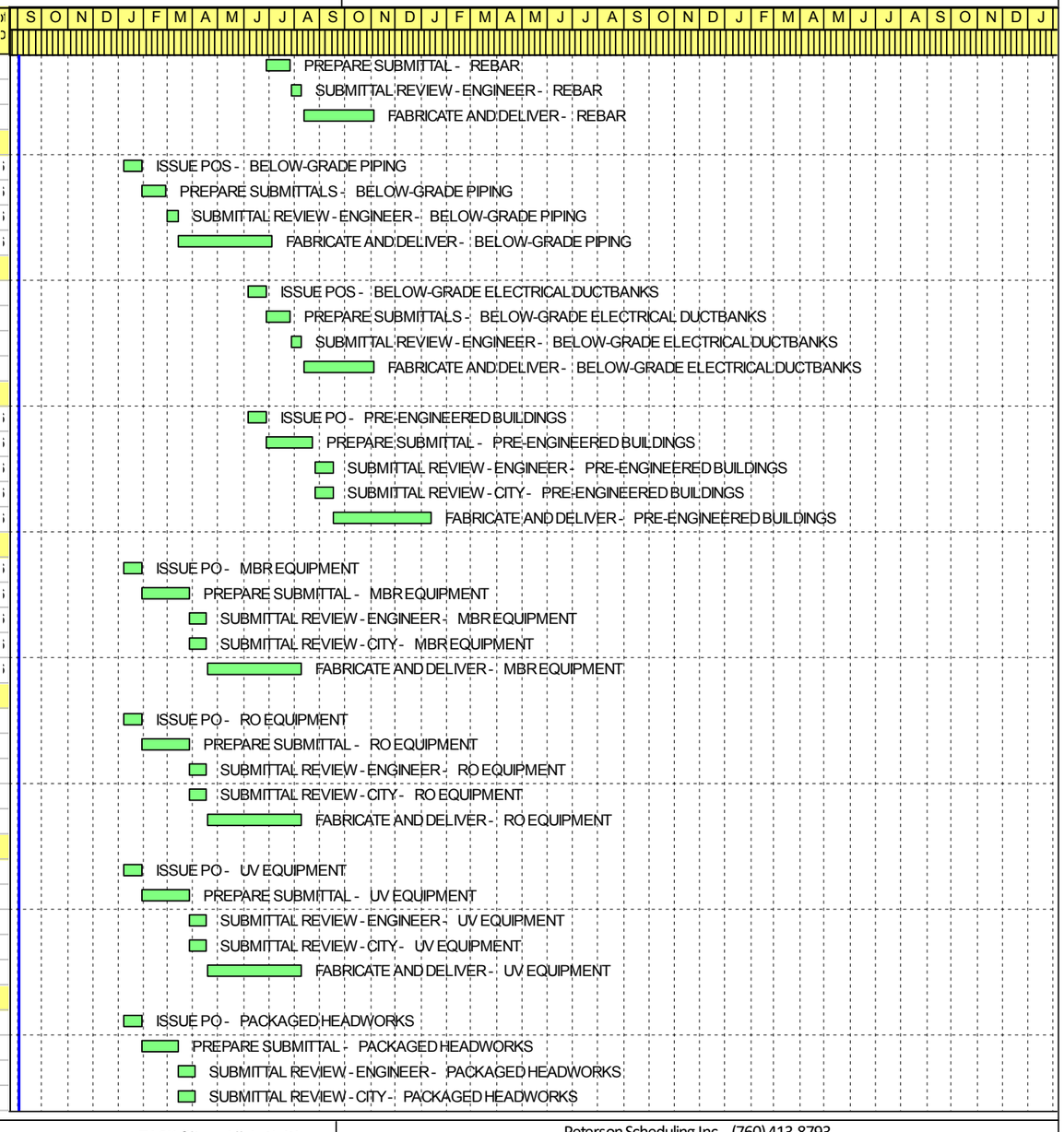
PROJECT BAR CHART

WATER RECLAMATION FACILITY (WRF)
ONSITE IMPROVEMENTS - City of Morro Bay

FILANC RV

Activity ID	Activity Name	Orig Dur	Start	Finish
P2-510	PREPARE SUBMITTAL - REBAR	20	06/28/19	07/26/19
P4-510	SUBMITTAL REVIEW - ENGINEER - REBAR	10	07/29/19	08/09/19
P7-510	FABRICATE AND DELIVER - REBAR	60	08/12/19	11/04/19
BELOW GRADE PIPING				
P0-520	ISSUE POS - BELOW-GRADE PIPING	15	01/08/19	01/29/19
P2-520	PREPARE SUBMITTALS - BELOW-GRADE PIPING	20	01/30/19	02/27/19
P4-520	SUBMITTAL REVIEW - ENGINEER - BELOW-GRADE PIPING	10	02/28/19	03/13/19
P7-520	FABRICATE AND DELIVER - BELOW-GRADE PIPING	80	03/14/19	07/05/19
BELOW GRADE ELECTRICAL DUCTBANKS				
P0-530	ISSUE POS - BELOW-GRADE ELECTRICAL DUCTBANKS	15	06/07/19	06/27/19
P2-530	PREPARE SUBMITTALS - BELOW-GRADE ELECTRICAL DUCTBANKS	20	06/28/19	07/26/19
P4-530	SUBMITTAL REVIEW - ENGINEER - BELOW-GRADE ELECTRICAL DUCTBANKS	10	07/29/19	08/09/19
P7-530	FABRICATE AND DELIVER - BELOW-GRADE ELECTRICAL DUCTBANKS	60	08/12/19	11/04/19
PRE-ENGINEERED BUILDINGS				
P0-540	ISSUE PO - PRE-ENGINEERED BUILDINGS	15	06/07/19	06/27/19
P2-540	PREPARE SUBMITTAL - PRE-ENGINEERED BUILDINGS	40	06/28/19	08/23/19
P4-540	SUBMITTAL REVIEW - ENGINEER - PRE-ENGINEERED BUILDINGS	15	08/26/19	09/16/19
P5-540	SUBMITTAL REVIEW - CITY - PRE-ENGINEERED BUILDINGS	15	08/26/19	09/16/19
P7-540	FABRICATE AND DELIVER - PRE-ENGINEERED BUILDINGS	80	09/17/19	01/13/20
MBR EQUIPMENT				
P0-550	ISSUE PO - MBR EQUIPMENT	15	01/08/19	01/29/19
P2-550	PREPARE SUBMITTAL - MBR EQUIPMENT	40	01/30/19	03/27/19
P4-550	SUBMITTAL REVIEW - ENGINEER - MBR EQUIPMENT	15	03/28/19	04/17/19
P5-550	SUBMITTAL REVIEW - CITY - MBR EQUIPMENT	15	03/28/19	04/17/19
P7-550	FABRICATE AND DELIVER - MBR EQUIPMENT	80	04/18/19	08/09/19
REVERSE OSMOSIS EQUIPMENT				
P0-560	ISSUE PO - RO EQUIPMENT	15	01/08/19	01/29/19
P2-560	PREPARE SUBMITTAL - RO EQUIPMENT	40	01/30/19	03/27/19
P4-560	SUBMITTAL REVIEW - ENGINEER - RO EQUIPMENT	15	03/28/19	04/17/19
P5-560	SUBMITTAL REVIEW - CITY - RO EQUIPMENT	15	03/28/19	04/17/19
P7-560	FABRICATE AND DELIVER - RO EQUIPMENT	80	04/18/19	08/09/19
UV EQUIPMENT				
P0-570	ISSUE PO - UV EQUIPMENT	15	01/08/19	01/29/19
P2-570	PREPARE SUBMITTAL - UV EQUIPMENT	40	01/30/19	03/27/19
P4-570	SUBMITTAL REVIEW - ENGINEER - UV EQUIPMENT	15	03/28/19	04/17/19
P5-570	SUBMITTAL REVIEW - CITY - UV EQUIPMENT	15	03/28/19	04/17/19
P7-570	FABRICATE AND DELIVER - UV EQUIPMENT	80	04/18/19	08/09/19
PACKAGED HEADWORKS				
P0-580	ISSUE PO - PACKAGED HEADWORKS	15	01/08/19	01/29/19
P2-580	PREPARE SUBMITTAL - PACKAGED HEADWORKS	30	01/30/19	03/13/19
P4-580	SUBMITTAL REVIEW - ENGINEER - PACKAGED HEADWORKS	15	03/14/19	04/03/19
P5-580	SUBMITTAL REVIEW - CITY - PACKAGED HEADWORKS	15	03/14/19	04/03/19



Remaining Level of Effort
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Actual Work
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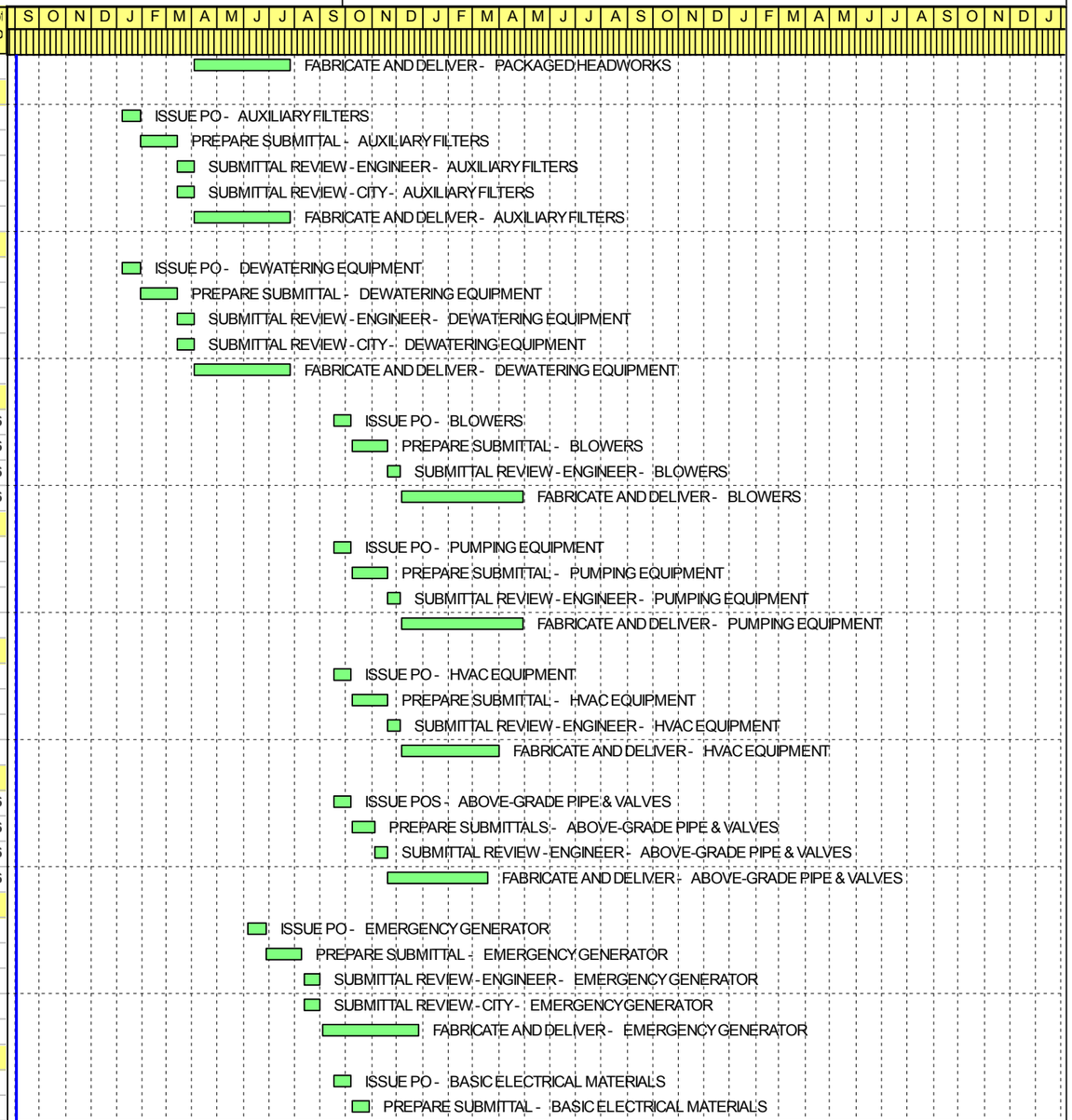
WATER RECLAMATION FACILITY (WRF)
ONSITE IMPROVEMENTS - City of Morro Bay

Activity ID	Activity Name	Orig Dur	Start	Finish
P7-580	FABRICATE AND DELIVER - PACKAGED HEADWORKS	80	04/04/19	07/26/19
AUXILLIARY FILTERS				
P0-590	ISSUE PO - AUXILIARY FILTERS	15	01/08/19	01/29/19
P2-590	PREPARE SUBMITTAL - AUXILIARY FILTERS	30	01/30/19	03/13/19
P4-590	SUBMITTAL REVIEW - ENGINEER - AUXILIARY FILTERS	15	03/14/19	04/03/19
P5-590	SUBMITTAL REVIEW - CITY - AUXILIARY FILTERS	15	03/14/19	04/03/19
P7-590	FABRICATE AND DELIVER - AUXILIARY FILTERS	80	04/04/19	07/26/19
DEWATERING EQUIPMENT				
P0-600	ISSUE PO - DEWATERING EQUIPMENT	15	01/08/19	01/29/19
P2-600	PREPARE SUBMITTAL - DEWATERING EQUIPMENT	30	01/30/19	03/13/19
P4-600	SUBMITTAL REVIEW - ENGINEER - DEWATERING EQUIPMENT	15	03/14/19	04/03/19
P5-600	SUBMITTAL REVIEW - CITY - DEWATERING EQUIPMENT	15	03/14/19	04/03/19
P7-600	FABRICATE AND DELIVER - DEWATERING EQUIPMENT	80	04/04/19	07/26/19
BLOWERS				
P0-610	ISSUE PO - BLOWERS	15	09/17/19	10/07/19
P2-610	PREPARE SUBMITTAL - BLOWERS	30	10/08/19	11/19/19
P4-610	SUBMITTAL REVIEW - ENGINEER - BLOWERS	10	11/20/19	12/05/19
P7-610	FABRICATE AND DELIVER - BLOWERS	100	12/06/19	04/29/20
PUMPING EQUIPMENT				
P0-620	ISSUE PO - PUMPING EQUIPMENT	15	09/17/19	10/07/19
P2-620	PREPARE SUBMITTAL - PUMPING EQUIPMENT	30	10/08/19	11/19/19
P4-620	SUBMITTAL REVIEW - ENGINEER - PUMPING EQUIPMENT	10	11/20/19	12/05/19
P7-620	FABRICATE AND DELIVER - PUMPING EQUIPMENT	100	12/06/19	04/29/20
HVAC EQUIPMENT				
P0-630	ISSUE PO - HVAC EQUIPMENT	15	09/17/19	10/07/19
P2-630	PREPARE SUBMITTAL - HVAC EQUIPMENT	30	10/08/19	11/19/19
P4-630	SUBMITTAL REVIEW - ENGINEER - HVAC EQUIPMENT	10	11/20/19	12/05/19
P7-630	FABRICATE AND DELIVER - HVAC EQUIPMENT	80	12/06/19	04/01/20
ABOVE GRADE PIPE & VALVES				
P0-640	ISSUE POS - ABOVE-GRADE PIPE & VALVES	15	09/17/19	10/07/19
P2-640	PREPARE SUBMITTALS - ABOVE-GRADE PIPE & VALVES	20	10/08/19	11/04/19
P4-640	SUBMITTAL REVIEW - ENGINEER - ABOVE-GRADE PIPE & VALVES	10	11/05/19	11/19/19
P7-640	FABRICATE AND DELIVER - ABOVE-GRADE PIPE & VALVES	80	11/20/19	03/18/20
EMERGENCY GENERATOR				
P0-650	ISSUE PO - EMERGENCY GENERATOR	15	06/07/19	06/27/19
P2-650	PREPARE SUBMITTAL - EMERGENCY GENERATOR	30	06/28/19	08/09/19
P4-650	SUBMITTAL REVIEW - ENGINEER - EMERGENCY GENERATOR	15	08/12/19	08/30/19
P5-650	SUBMITTAL REVIEW - CITY - EMERGENCYGENERATOR	15	08/12/19	08/30/19
P7-650	FABRICATE AND DELIVER - EMERGENCY GENERATOR	80	09/03/19	12/27/19
BASIC ELECTRICAL MATERIALS				
P0-740	ISSUE PO - BASIC ELECTRICAL MATERIALS	15	09/17/19	10/07/19
P2-740	PREPARE SUBMITTAL - BASIC ELECTRICAL MATERIALS	15	10/08/19	10/28/19



Remaining Level of Effort
Actual Level of Effort
Actual Work
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Milestone

TASK filter: All Activities

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Peterson Scheduling Inc (760) 413-8793

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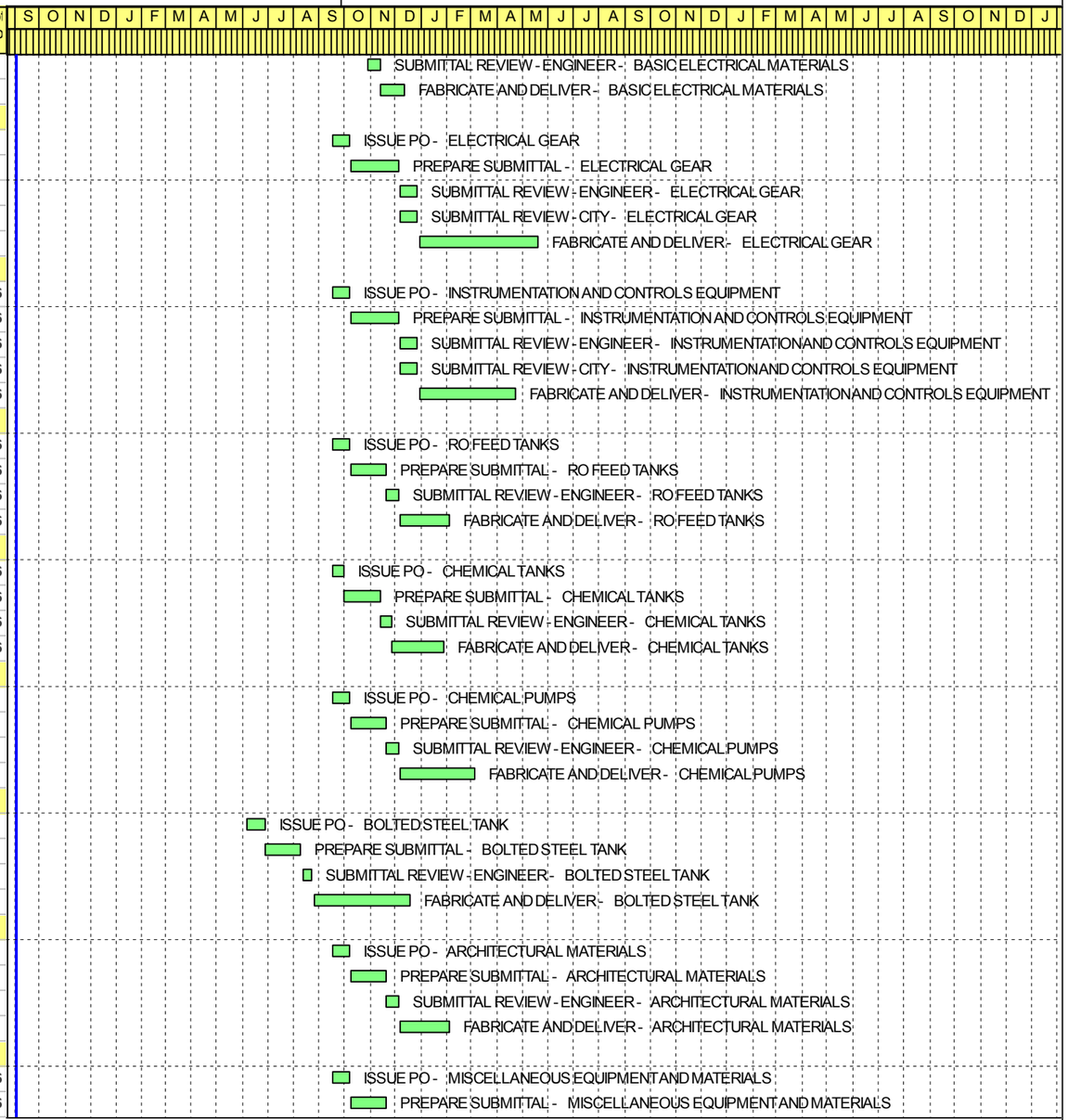
PROJECT BAR CHART

WATER RECLAMATION FACILITY (WRF)
ONSITE IMPROVEMENTS - City of Morro Bay

FILANC RV

Activity ID	Activity Name	Orig Dur	Start	Finish
P4-740	SUBMITTAL REVIEW - ENGINEER - BASIC ELECTRICAL MATERIALS	10	10/29/19	11/12/19
P7-740	FABRICATE AND DELIVER - BASIC ELECTRICAL MATERIALS	20	11/13/19	12/12/19
ELECTRICAL GEAR				
P0-660	ISSUE PO - ELECTRICAL GEAR	15	09/17/19	10/07/19
P2-660	PREPARE SUBMITTAL - ELECTRICAL GEAR	40	10/08/19	12/05/19
P4-660	SUBMITTAL REVIEW - ENGINEER - ELECTRICAL GEAR	15	12/06/19	12/27/19
P5-660	SUBMITTAL REVIEW - CITY - ELECTRICAL GEAR	15	12/06/19	12/27/19
P7-660	FABRICATE AND DELIVER - ELECTRICAL GEAR	100	12/30/19	05/20/20
INSTRUMENTATION & CONTROLS EQUIPMENT				
P0-670	ISSUE PO - INSTRUMENTATION AND CONTROLS EQUIPMENT	15	09/17/19	10/07/19
P2-670	PREPARE SUBMITTAL - INSTRUMENTATION AND CONTROLS EQUIPMENT	40	10/08/19	12/05/19
P4-670	SUBMITTAL REVIEW - ENGINEER - INSTRUMENTATIONAND CONTROLS EQUIPMENT	15	12/06/19	12/27/19
P5-670	SUBMITTAL REVIEW - CITY - INSTRUMENTATIONAND CONTROLS EQUIPMENT	15	12/06/19	12/27/19
P7-670	FABRICATE AND DELIVER - INSTRUMENTATIONAND CONTROLS EQUIPMENT	80	12/30/19	04/22/20
RO FEED TANKS				
P0-680	ISSUE PO - RO FEED TANKS	15	09/17/19	10/07/19
P2-680	PREPARE SUBMITTAL - RO FEED TANKS	30	10/08/19	11/19/19
P4-680	SUBMITTAL REVIEW - ENGINEER - RO FEED TANKS	10	11/20/19	12/05/19
P7-680	FABRICATE AND DELIVER - RO FEED TANKS	40	12/06/19	02/04/20
CHEMICAL TANKS				
P0-690	ISSUE PO - CHEMICAL TANKS	10	09/17/19	09/30/19
P2-690	PREPARE SUBMITTAL - CHEMICAL TANKS	30	10/01/19	11/12/19
P4-690	SUBMITTAL REVIEW - ENGINEER - CHEMICAL TANKS	10	11/13/19	11/26/19
P7-690	FABRICATE AND DELIVER - CHEMICAL TANKS	40	11/27/19	01/28/20
CHEMICAL PUMPS				
P0-700	ISSUE PO - CHEMICAL PUMPS	15	09/17/19	10/07/19
P2-700	PREPARE SUBMITTAL - CHEMICAL PUMPS	30	10/08/19	11/19/19
P4-700	SUBMITTAL REVIEW - ENGINEER - CHEMICAL PUMPS	10	11/20/19	12/05/19
P7-700	FABRICATE AND DELIVER - CHEMICAL PUMPS	60	12/06/19	03/04/20
BOLTED STEEL TANK				
P0-710	ISSUE PO - BOLTED STEEL TANK	15	06/07/19	06/27/19
P2-710	PREPARE SUBMITTAL - BOLTED STEEL TANK	30	06/28/19	08/09/19
P4-710	SUBMITTAL REVIEW - ENGINEER - BOLTED STEEL TANK	10	08/12/19	08/23/19
P7-710	FABRICATE AND DELIVER - BOLTED STEEL TANK	80	08/26/19	12/19/19
ARCHITECTURAL MATERIALS				
P0-720	ISSUE PO - ARCHITECTURAL MATERIALS	15	09/17/19	10/07/19
P2-720	PREPARE SUBMITTAL - ARCHITECTURAL MATERIALS	30	10/08/19	11/19/19
P4-720	SUBMITTAL REVIEW - ENGINEER - ARCHITECTURAL MATERIALS	10	11/20/19	12/05/19
P7-720	FABRICATE AND DELIVER - ARCHITECTURAL MATERIALS	40	12/06/19	02/04/20
MISCELLANEOUS EQUIPMENT & MATERIALS				
P0-730	ISSUE PO - MISCELLANEOUS EQUIPMENT AND MATERIALS	15	09/17/19	10/07/19
P2-730	PREPARE SUBMITTAL - MISCELLANEOUS EQUIPMENT AND MATERIALS	30	10/08/19	11/19/19



Remaining Level of Effort
Actual Level of Effort
Actual Work
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Milestone

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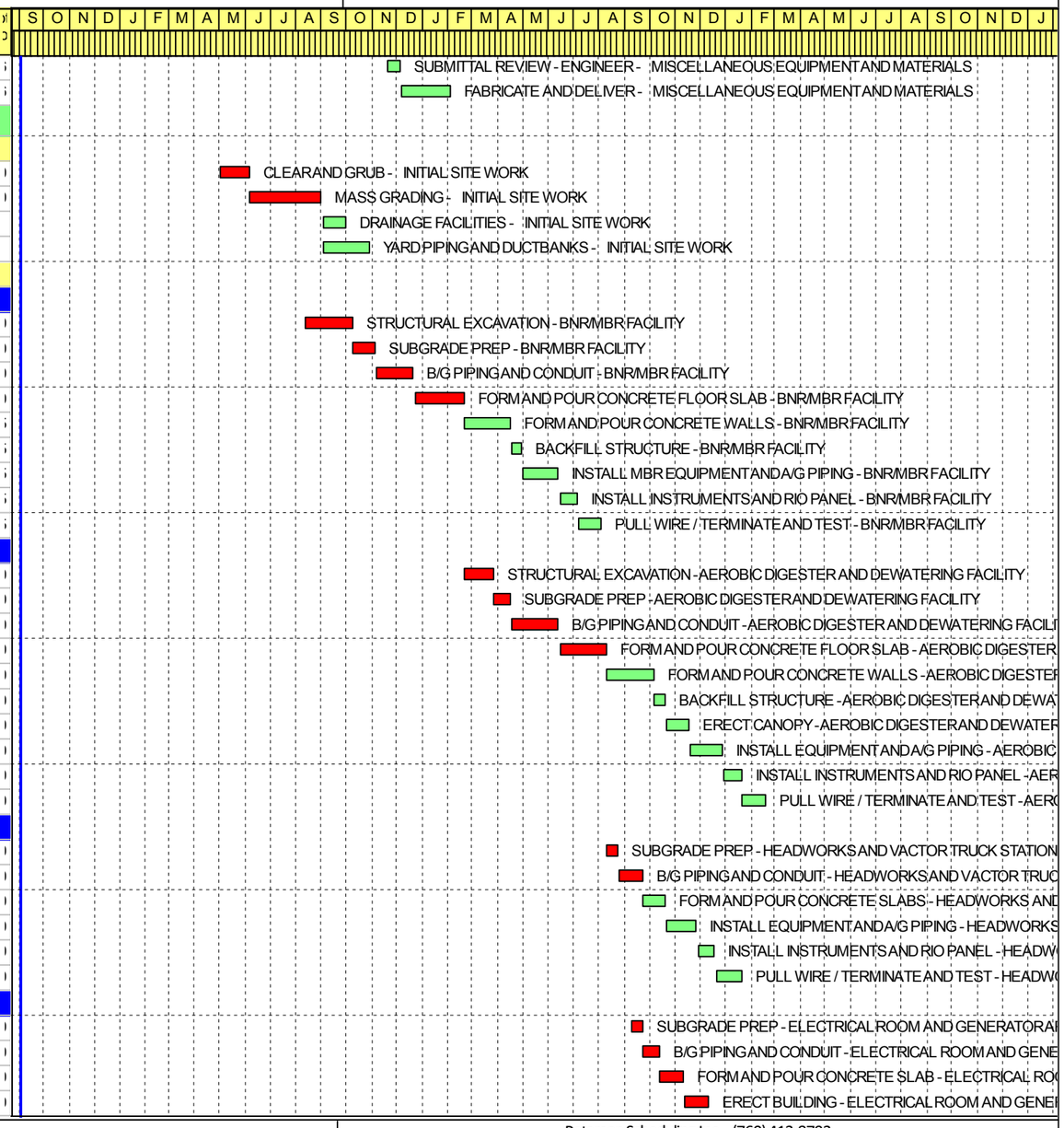
Peterson Scheduling Inc (760) 413-8793

Date	Revision	Checked	Approved

Activity ID	Activity Name	Orig Dur	Start	Finish
P4-730	SUBMITTAL REVIEW - ENGINEER - MISCELLANEOUS EQUIPMENT AND MATERIALS	10	11/20/19	12/05/19
P7-730	FABRICATE AND DELIVER - MISCELLANEOUS EQUIPMENT AND MATERIALS	40	12/06/19	02/04/20
CONSTRUCTION				
INITIAL SITE-WIDE EARTHWORK				
CN-0500	CLEAR AND GRUB - INITIAL SITE WORK	25	05/02/19	06/06/19
CN-0510	MASS GRADING - INITIAL SITE WORK	60	06/07/19	08/30/19
CN-0520	DRAINAGE FACILITIES - INITIAL SITE WORK	20	09/03/19	09/30/19
CN-0530	YARD PIPING AND DUCTBANKS - INITIAL SITE WORK	40	09/03/19	10/28/19
NORTH PROCESS AREA				
BNR / MBR FACILITY				
CN-0560	STRUCTURAL EXCAVATION - BNR/MBR FACILITY	40	08/13/19	10/08/19
CN-0570	SUBGRADE PREP - BNR/MBR FACILITY	20	10/09/19	11/05/19
CN-0580	B/G PIPING AND CONDUIT - BNR/MBR FACILITY	30	11/06/19	12/20/19
CN-0590	FORM AND POUR CONCRETE FLOOR SLAB - BNR/MBR FACILITY	40	12/23/19	02/20/20
CN-0600	FORM AND POUR CONCRETE WALLS - BNR/MBR FACILITY	40	02/21/20	04/16/20
CN-0610	BACKFILL STRUCTURE - BNR/MBR FACILITY	10	04/17/20	04/30/20
CN-0620	INSTALL MBR EQUIPMENT AND A/G PIPING - BNR/MBR FACILITY	30	05/01/20	06/12/20
CN-0630	INSTALL INSTRUMENTS AND RIO PANEL - BNR/MBR FACILITY	15	06/15/20	07/06/20
CN-0640	PULL WIRE / TERMINATE AND TEST - BNR/MBR FACILITY	20	07/07/20	08/03/20
AEROBIC DIGESTER AND DEWATERING FACILITY				
CN-0710	STRUCTURAL EXCAVATION - AEROBIC DIGESTER AND DEWATERING FACILITY	25	02/21/20	03/26/20
CN-0720	SUBGRADE PREP - AEROBIC DIGESTER AND DEWATERING FACILITY	15	03/27/20	04/16/20
CN-0730	B/G PIPING AND CONDUIT - AEROBIC DIGESTER AND DEWATERING FACILITY	40	04/17/20	06/12/20
CN-0740	FORM AND POUR CONCRETE FLOOR SLAB - AEROBIC DIGESTER AND DEWATERING FA	40	06/15/20	08/10/20
CN-0750	FORM AND POUR CONCRETE WALLS - AEROBIC DIGESTER AND DEWATERING FACILITY	40	08/11/20	10/06/20
CN-0760	BACKFILL STRUCTURE - AEROBIC DIGESTER AND DEWATERING FACILITY	10	10/07/20	10/20/20
CN-0770	ERECT CANOPY - AEROBIC DIGESTER AND DEWATERING FACILITY	20	10/21/20	11/18/20
CN-0780	INSTALL EQUIPMENT AND A/G PIPING - AEROBIC DIGESTER AND DEWATERING FACILITY	25	11/19/20	12/28/20
CN-0790	INSTALL INSTRUMENTS AND RIO PANEL - AEROBIC DIGESTER AND DEWATERING FACILI	15	12/29/20	01/20/21
CN-0800	PULL WIRE / TERMINATE AND TEST - AEROBIC DIGESTER AND DEWATERING FACILITY	20	01/21/21	02/18/21
HEADWORKS AND VACTOR TRUCK STATION				
CN-0820	SUBGRADE PREP - HEADWORKS AND VACTOR TRUCK STATION	10	08/11/20	08/24/20
CN-0830	B/G PIPING AND CONDUIT - HEADWORKS AND VACTOR TRUCK STATION	20	08/25/20	09/22/20
CN-0840	FORM AND POUR CONCRETE SLABS - HEADWORKS AND VACTOR TRUCK STATION	20	09/23/20	10/20/20
CN-0850	INSTALL EQUIPMENT AND A/G PIPING - HEADWORKS AND VACTOR TRUCK STATION	25	10/21/20	11/25/20
CN-0860	INSTALL INSTRUMENTS AND RIO PANEL - HEADWORKS AND VACTOR TRUCK STATION	15	11/30/20	12/18/20
CN-0870	PULL WIRE / TERMINATE AND TEST - HEADWORKS AND VACTOR TRUCK STATION	20	12/21/20	01/20/21
ELECTRICAL ROOM & GENERATOR AREA				
CN-0890	SUBGRADE PREP - ELECTRICAL ROOM AND GENERATOR AREA	10	09/09/20	09/22/20
CN-0900	B/G PIPING AND CONDUIT - ELECTRICAL ROOM AND GENERATOR AREA	15	09/23/20	10/13/20
CN-0910	FORM AND POUR CONCRETE SLAB - ELECTRICAL ROOM AND GENERATOR AREA	20	10/14/20	11/10/20
CN-0920	ERECT BUILDING - ELECTRICAL ROOM AND GENERATOR AREA	20	11/12/20	12/11/20



Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

TASK filter: All Activities

PROJECT BAR CHART
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Peterson Scheduling Inc (760) 413-8793

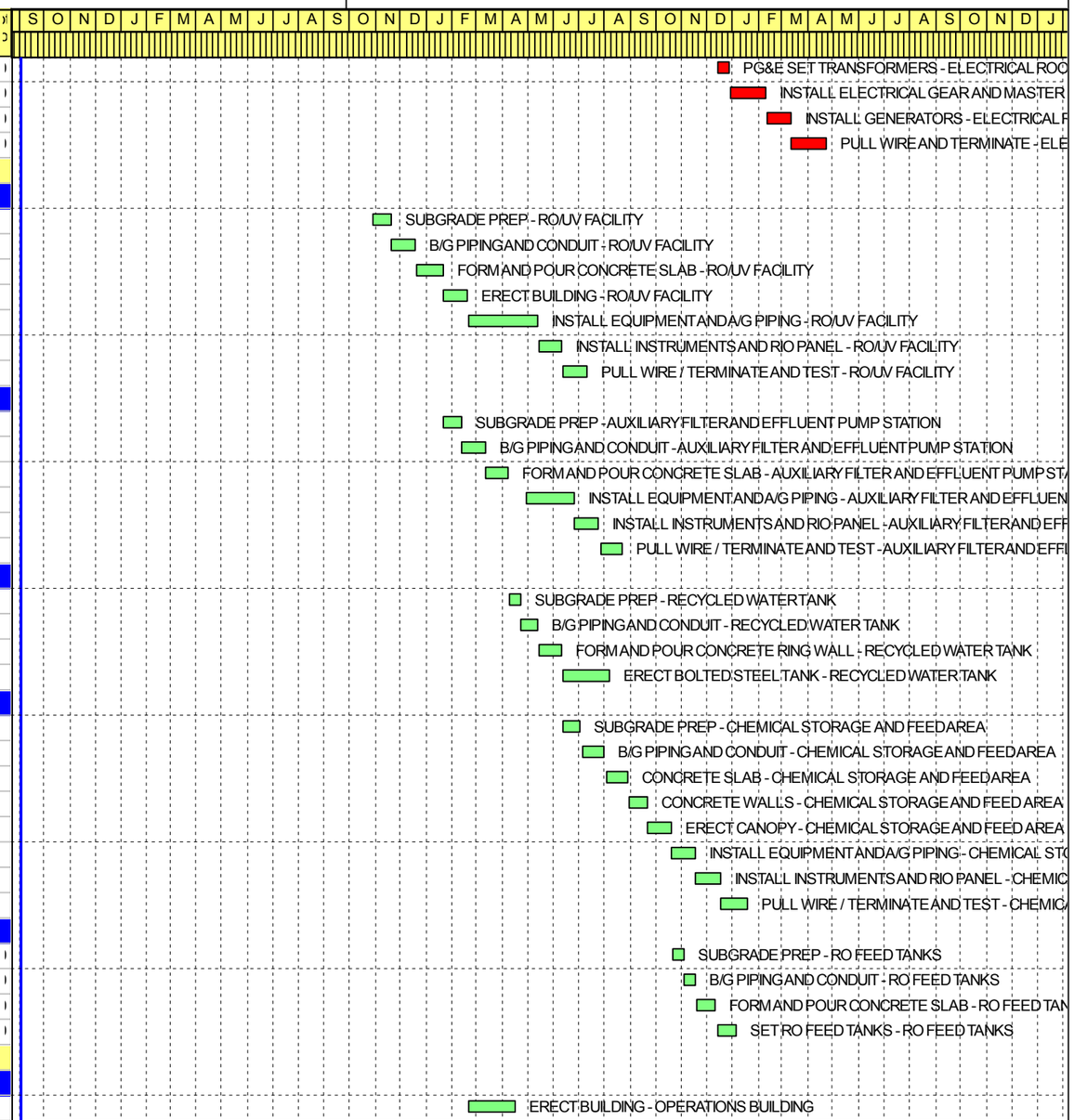
Date	Revision	Checked	Approved

WATER RECLAMATION FACILITY (WRF) ONSITE IMPROVEMENTS - City of Morro Bay
MORR-RFP
Project Start: 09/04/18
Data Date: 09/04/18
Project Finish: 12/30/21

PROJECT BAR CHART

WATER RECLAMATION FACILITY (WRF) ONSITE IMPROVEMENTS - City of Morro Bay

Activity ID	Activity Name	Orig Dur	Start	Finish
CN-0930	PG&E SET TRANSFORMERS - ELECTRICAL ROOM AND GENERATOR AREA	10	12/14/20	12/28/20
CN-0940	INSTALL ELECTRICAL GEAR AND MASTER PLC - ELECTRICAL ROOM AND GENERATOR/	30	12/29/20	02/10/21
CN-0950	INSTALL GENERATORS - ELECTRICAL ROOM AND GENERATOR AREA	20	02/11/21	03/11/21
CN-0960	PULL WIRE AND TERMINATE - ELECTRICAL ROOM AND GENERATOR AREA	30	03/12/21	04/22/21
SOUTH PROCESS AREA				
RO / UV FACILITY				
CN-1040	SUBGRADE PREP - RO/UV FACILITY	15	10/29/19	11/19/19
CN-1050	B/G PIPING AND CONDUIT - RO/UV FACILITY	20	11/20/19	12/19/19
CN-1060	FORM AND POUR CONCRETE SLAB - RO/UV FACILITY	20	12/20/19	01/21/20
CN-1070	ERECT BUILDING - RO/UV FACILITY	20	01/22/20	02/19/20
CN-1080	INSTALL EQUIPMENT AND A/G PIPING - RO/UV FACILITY	60	02/20/20	05/13/20
CN-1090	INSTALL INSTRUMENTS AND RIO PANEL - RO/UV FACILITY	20	05/14/20	06/11/20
CN-1100	PULL WIRE / TERMINATE AND TEST - RO/UV FACILITY	20	06/12/20	07/10/20
AUXILLIARY FILTER & EFFLUENT PUMP STATION				
CN-1120	SUBGRADE PREP - AUXILIARY FILTER AND EFFLUENT PUMP STATION	15	01/22/20	02/11/20
CN-1130	B/G PIPING AND CONDUIT - AUXILIARY FILTER AND EFFLUENT PUMP STATION	20	02/12/20	03/11/20
CN-1140	FORM AND POUR CONCRETE SLAB - AUXILIARY FILTER AND EFFLUENT PUMP STATION	20	03/12/20	04/08/20
CN-1150	INSTALL EQUIPMENT AND A/G PIPING - AUXILIARY FILTER AND EFFLUENT PUMP STATION	40	04/30/20	06/25/20
CN-1160	INSTALL INSTRUMENTS AND RIO PANEL - AUXILIARY FILTER AND EFFLUENT PUMP STATI	20	06/26/20	07/24/20
CN-1170	PULL WIRE / TERMINATE AND TEST - AUXILIARY FILTER AND EFFLUENT PUMP STATION	20	07/27/20	08/21/20
RECYCLED WATER TANK				
CN-1190	SUBGRADE PREP - RECYCLED WATER TANK	10	04/09/20	04/22/20
CN-1200	B/G PIPING AND CONDUIT - RECYCLED WATER TANK	15	04/23/20	05/13/20
CN-1210	FORM AND POUR CONCRETE RING WALL - RECYCLED WATER TANK	20	05/14/20	06/11/20
CN-1220	ERECT BOLTED STEEL TANK - RECYCLED WATER TANK	40	06/12/20	08/07/20
CHEMICAL STORAGE AND FEED AREA				
CN-1240	SUBGRADE PREP - CHEMICAL STORAGE AND FEED AREA	15	06/12/20	07/02/20
CN-1250	B/G PIPING AND CONDUIT - CHEMICAL STORAGE AND FEED AREA	20	07/06/20	07/31/20
CN-1260	CONCRETE SLAB - CHEMICAL STORAGE AND FEED AREA	20	08/03/20	08/28/20
CN-1270	CONCRETE WALLS - CHEMICAL STORAGE AND FEED AREA	15	08/31/20	09/21/20
CN-1280	ERECT CANOPY - CHEMICAL STORAGE AND FEED AREA	20	09/22/20	10/19/20
CN-1290	INSTALL EQUIPMENT AND A/G PIPING - CHEMICAL STORAGE AND FEED AREA	20	10/20/20	11/17/20
CN-1300	INSTALL INSTRUMENTS AND RIO PANEL - CHEMICAL STORAGE AND FEED AREA	20	11/18/20	12/17/20
CN-1310	PULL WIRE / TERMINATE AND TEST - CHEMICAL STORAGE AND FEED AREA	20	12/18/20	01/19/21
RO FEED TANKS				
CN-0980	SUBGRADE PREP - RO FEED TANKS	10	10/21/20	11/03/20
CN-0990	B/G PIPING AND CONDUIT - RO FEED TANKS	10	11/04/20	11/18/20
CN-1000	FORM AND POUR CONCRETE SLAB - RO FEED TANKS	15	11/19/20	12/11/20
CN-1010	SET RO FEED TANKS - RO FEED TANKS	15	12/14/20	01/05/21
BUILDINGS AND STORAGE AREAS				
OPERATIONS BUILDING				
CN-1340	ERECT BUILDING - OPERATIONS BUILDING	40	02/20/20	04/15/20



Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

TASK filter: All Activities

PROJECT BAR CHART
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Peterson Scheduling Inc (760) 413-8793

Date	Revision	Checked	Approved

WATER RECLAMATION FACILITY (WRF) ONSITE IMPROVEMENTS - City of Morro Bay
MORR-RFP
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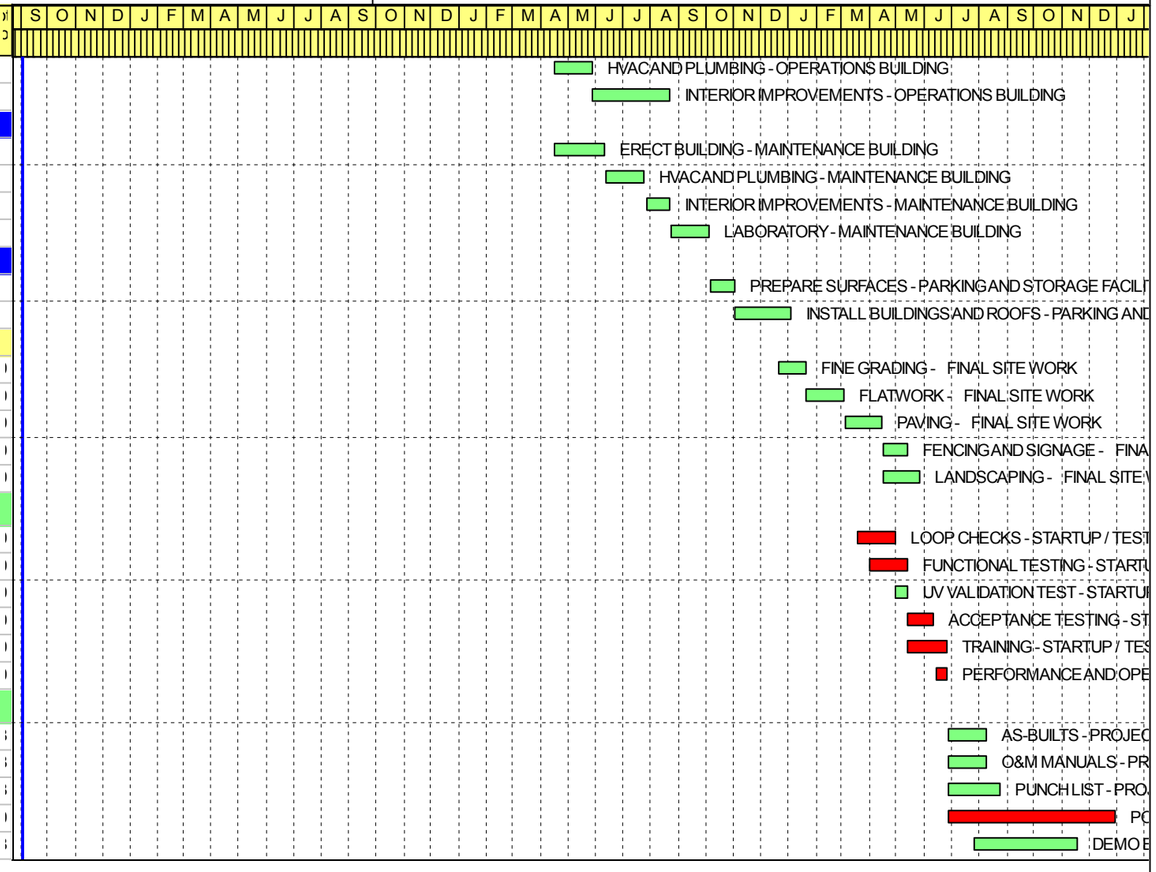
PROJECT BAR CHART

WATER RECLAMATION FACILITY (WRF)
ONSITE IMPROVEMENTS - City of Morro Bay

FILANC RV

Activity ID	Activity Name	Orig Dur	Start	Finish
CN-1350	HVAC AND PLUMBING - OPERATIONS BUILDING	30	04/16/20	05/28/20
CN-1360	INTERIOR IMPROVEMENTS - OPERATIONS BUILDING	60	05/29/20	08/21/20
MAINTENANCE BUILDING				
CN-1380	ERECT BUILDING - MAINTENANCE BUILDING	40	04/16/20	06/11/20
CN-1390	HVAC AND PLUMBING - MAINTENANCE BUILDING	30	06/12/20	07/24/20
CN-1400	INTERIOR IMPROVEMENTS - MAINTENANCE BUILDING	20	07/27/20	08/21/20
CN-1410	LABORATORY - MAINTENANCE BUILDING	30	08/24/20	10/05/20
PARKING AND STORAGE FACILITIES				
CN-1430	PREPARE SURFACES - PARKING AND STORAGE FACILITIES	20	10/06/20	11/02/20
CN-1440	INSTALL BUILDINGS AND ROOFS - PARKING AND STORAGE FACILITIES	40	11/03/20	01/04/21
FINISH SITEWORK				
CN-1460	FINE GRADING - FINAL SITE WORK	20	12/21/20	01/20/21
CN-1470	FLATWORK - FINAL SITE WORK	30	01/21/21	03/04/21
CN-1480	PAVING - FINAL SITE WORK	30	03/05/21	04/15/21
CN-1490	FENCING AND SIGNAGE - FINAL SITE WORK	20	04/16/21	05/13/21
CN-1500	LANDSCAPING - FINAL SITE WORK	30	04/16/21	05/27/21
START-UP / COMMISSIONING				
CN-1530	LOOP CHECKS - STARTUP / TESTING AND TRAINING	30	03/19/21	04/29/21
CN-1540	FUNCTIONAL TESTING - STARTUP / TESTING AND TRAINING	30	04/02/21	05/13/21
CN-1560	UV VALIDATION TEST - STARTUP / TESTING AND TRAINING	10	04/30/21	05/13/21
CN-1550	ACCEPTANCE TESTING - STARTUP / TESTING AND TRAINING	20	05/14/21	06/11/21
CN-1580	TRAINING - STARTUP / TESTING AND TRAINING	30	05/14/21	06/25/21
CN-1570	PERFORMANCE AND OPERATIONAL TESTING - STARTUP / TESTING AND TRAINING	10	06/14/21	06/25/21
PROJECT CLOSE-OUT				
CN-1620	AS-BUILTS - PROJECT CLOSEOUT	30	06/28/21	08/09/21
CN-1630	O&M MANUALS - PROJECT CLOSEOUT	30	06/28/21	08/09/21
CN-1640	PUNCH LIST - PROJECT CLOSEOUT	40	06/28/21	08/23/21
CN-1600	POST COMMISSIONING (6 MONTHS)	128	06/28/21	12/30/21
CN-1660	DEMO EXISTING PLANT	80	07/27/21	11/17/21



Remaining Level of Effort
Actual Level of Effort
Actual Work
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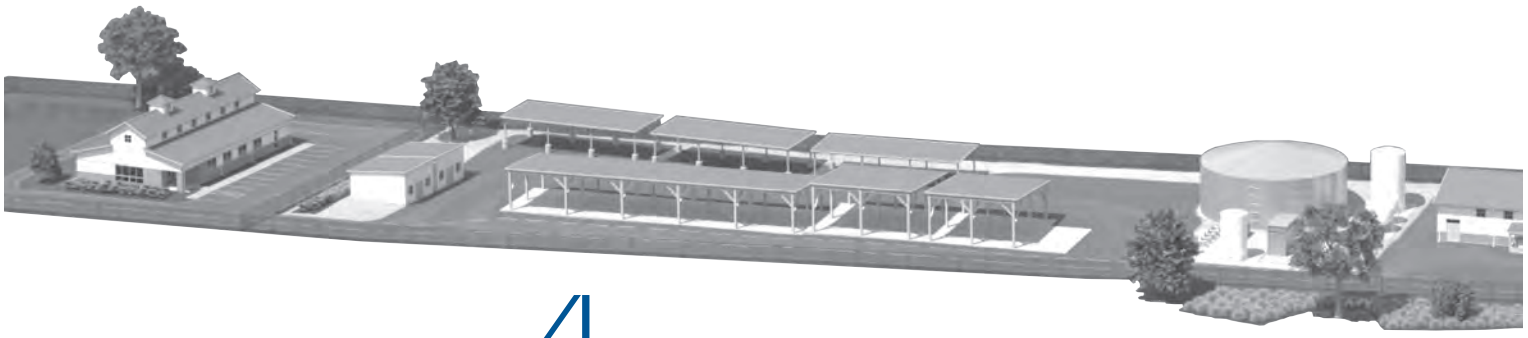

APPENDIX 4

PERFORMANCE GUARANTEES BACKUP

Morro Bay WRF Process Performance Guarantees & Testing Protocols

This section presents the process systems design envelope, process treatment performance guarantees and requisite testing protocols for the Morro Bay WRF designed and constructed by the FBV JV.

This document refers to the verification period for testing our guarantees in this document. The verification period is defined as the six month Performance and Operation Testing as described in Section 12.6 of the Performance Criteria Report.

Section 1: Conditions of the Process Treatment Performance Guarantee

The Process Treatment Performance Guarantees presented in "Water Quality Guarantee Treatment Performance Guarantees" are subject to the following:

i. Water quality guarantees are only provided for those samples collected at the sample locations noted in Table 6. Should other samples be collected by FBV and analyzed at other locations, those other samples, results and other related data shall not form part of or be considered in determining whether the water quality guarantees have been met.
ii. Dewatered solids quality guarantee(s) noted in "Dewatered Solids Guarantees " are only provided using those sludge samples collected at the locations indicated in Table 6. No guarantees are provided for any other sampling locations, or for samples collected or analyzed during the Facility Acceptance or Performance Testing Period. It is noted that FBV or their designees may collect, analyze and share results from sampling and analyses of samples collected at other locations for process monitoring purposes; these samples, results and other related data do not form part of the water quality guarantees, however.
iii. All samples being used for guarantees will be handled and where necessary preserved in accordance with Standard Methods for the Examination of Water and Waste water, 21st edition (APHA). Failure to do so will result in such results not being admissible for the determination of the Process Treatment Performance Guarantees.
iv. All analyses will be conducted in accordance with Standard Methods for the Examination of Water and Waste water, 21st edition (APHA) by a NELAC certified lab. Any non-standard tests will be conducted in accordance with written instructions and/or guidance provided by FBV staff or designees.
v. The influent water quality shall fall within the design envelope listed in Table 1.
vi. The influent shall contain no constituents, listed or unlisted, regulated or unregulated, which are deleterious or harmful to, inhibit, alter or interfere with any of the treatment processes of the Morro Bay WRF.
vii. Development, completion, implementation or reporting of any occurrence studies related to the presence of regulated, unregulated, indicator or surrogate compounds in the collection or sewer system is not included the scope of FBV and shall not form any part of the Work under the Contract. Any such efforts required for regulatory or permit compliance are to be completed by the City of Morro Bay.
viii. Operation and maintenance of all systems, equipment and components of the Morro Bay WRF must be in accordance with FBV Operations and Maintenance manuals and/or guidelines and/or requirements and/or recommendations and manufacturer system/equipment manufacturers' manuals and recommendations.

ix. The City of Morro Bay is responsible for implementing an effective Enhanced Source Control Program in accordance with 22 CCR § 60320.206, 22 CA ADC § 60320.206. The Enhanced Source Control program shall be developed by the City of Morro Bay and approved by California State Water Resources Control Board Division of Drinking Water prior to the startup and commissioning of the Morro Bay WRF.

Table 1. Influent Water Quality Parameter Design Envelope during 6-month Performance Testing Period

Parameter	Unit	Minimum Daily Value	30-d Rolling Average	Maximum Monthly Average	Maximum Daily Value	Maximum Peak Hour
Influent Flow	MGD	0.40	0.87	1.04	2.08	7.90
5-day Biochemical Oxygen Demand (BOD_5)	mg/L		350	370		
	lb/d				4,700	
5-day Soluble Biochemical Oxygen Demand (Soluble BOD_5)	mg/L		110	135		
	lb/d				1,650	
Chemical Oxygen Demand (COD)	mg/L		700	780		
	lb/d				10,570	
Soluble Chemical Oxygen Demand (Soluble COD)	mg/L		200	230		
	lb/d				4,000	
Total Fats, Oil and Grease (FOG)	mg/L		80	90	120	
Free Oils	mg/L		1	1	1	
Mineral or Non-Biodegradable Oils	mg/L		5	5	5	
Total Suspended Solids (TSS)	mg/L		390	430		
	lb/d				6,000	
Volatile Suspended Solids (VSS)	mg/L		300	360		
	lb/d				5,100	
Total Dissolved Solids (TDS)	mg/L		850	920	1,020	
Total Kjeldahl Nitrogen (TKN)	mg-N/L		55	65		
	lb/d				750	
Soluble Kjeldahl Nitrogen (Soluble TKN)	mg-N/L		48	55		
	lb/d				640	
Ammonia Nitrogen	mg-N/L	15	47	54		
	lb/d				640	
Nitrite Nitrogen	mg-N/L		1	1	1	
Nitrate Nitrogen	mg-N/L		1	1	1	
Total Phosphorus	mg-P/L	3.0	6.0	8.0	8.0	
Ortho Phosphorus	mg-P/L	3.0	4.0	5.0	5.0	
pH	S.U.	6.95	7-7.5	7-7.5	7-7.5	

Table 1. Influent Water Quality Parameter Design Envelope during 6-month Performance Testing Period

Parameter	Unit	Minimum Daily Value	30-d Rolling Average	Maximum Monthly Average	Maximum Daily Value	Maximum Peak Hour
Alkalinity	mg/L as $CaCO_3$	190	200	220	270	
Temperature	^oC	17	20	21	24	
Chloride (Cl-)			210	240	310	
Fluoride (Fl-)			0.25	0.3	0.8	
Sulfate (SO_4^{2}-)			100	120	155	
Iron	mg/L		0.14	0.20	0.20	
Magnesium	mg/L		60	80	90	
Calcium	mg/L		150	170	185	
Potassium	mg/L		8	12	15	
Silica	mg/L		7	10	20	
Sodium	mg/L		120	150	190	
Aluminum	mg/L		0.06	0.07	0.08	
Barium	mg/L		0.01	0.01	0.01	
Manganese	mg/L		0.03	0.03	0.04	
Strontium	mg/L		0.20	0.30	0.40	
N-Nitrosodimethylamine	mg/L		30	40	65	
Allylthiourea	mg/L		2	3	3	

Section 2: Water Quality Guarantees

Section 2.1: Ocean Discharge Effluent Quality

Ocean Discharge Effluent Quality will be demonstrated to meet the limits noted in Table 2 during the 6-month Performance Testing period.

i. In the event that any of the Ocean Discharge Effluent Quality criteria are not met during the 6-month Performance Testing period due to:
   a. failure of the City of Morro Bay to provide influent water which meets the conditions specified in Table 1 ; or
   b. failure of the City of Morro Bay to operate and maintain the Morro Bay WRF in accordance with FBV Operations and Maintenance manuals and/or guidelines and/or requirements and/or recommendations and manufacturer system/equipment manufacturers' manuals and recommendations,

   Then FBV shall be deemed to have met all water quality guarantees stated in Table 2 as of the date the Performance Testing period began.

Table 2. Guaranteed Ocean Discharge Effluent Quality during 6-month Performance Testing Period

Parameter	Unit	Maximum Weekly Average	Maximum Monthly Average	Maximum Daily Value
5-day Biochemical Oxygen Demand (BOD_5)	mg/L	45	30	--
Oil and Grease (FOG)	mg/L	40	25	75
Total Suspended Solids (TSS)	mg/L	45	30	--
Settleable Solids	mL/L	1.5	1.0	3.0
pH	S.U.	6.0-9.0	6.0-9.0	6.0-9.0
Turbidity	NTU	100	75	225
		30-day Geometric Mean		**Maximum Value**
Total Coliform	MPN/100-mL	23		2,400

Section 2.2: Groundwater Recharge Effluent Quality

Groundwater Recharge Effluent Quality will be demonstrated to meet the limits expressly set forth in Table 3 during the 6-month Performance Testing period.

ii. In the event that any of the Groundwater Recharge Effluent Quality criteria are not met during the 6-month Performance Testing period due to:

c. failure of the City of Morro Bay to provide influent water which meets the conditions specified in Table 1;

d. failure of the City of Morro Bay to meet all the stipulations noted in 8.1; or

e. failure of the City of Morro Bay to operate and maintain the Morro Bay WRF in accordance with FBV Operations and Maintenance manuals and/or guidelines and/or requirements and/or recommendations and manufacturer system/equipment manufacturers' manuals and recommendations,

Then FBV shall be deemed to have met all water quality guarantees stated in Table 3 as of the date the 6-month Performance Testing Period began.

iii. Log reduction values (LRV) for pathogens shall be calculated as shown in Equation (1), below.

$$LRV = log_{10}\left[\frac{Influent\ Pathogen\ Concentration}{Groundwater\ Recharge\ Effluent\ Pathogen\ Concentration}\right] \quad (1)$$

a. Influent and Groundwater Recharge Effluent Pathogen Concentrations shall be determined using the respective grab samples designated for pathogen measurement (see Article 4).

b. Samples at each sample location shall be collected in triplicate and the mean value of the pathogen concentration shall be utilized in Equation 1.

c. For each sampling event, the groundwater recharge effluent grab sample set (a sample set consists of three replicate samples) shall be collected six (6) hours after the influent sample set is collected.

d. Each of the three (3) replicate samples shall be collected a minimum of 15 minutes and a maximum of 30 minutes apart.
e. In such cases that the Groundwater Recharge Effluent pathogen concentration is at a level that does not permit demonstration of the requisite 3-log removal due to method detection limits, then FBV shall be deemed to have met all water quality guarantees stated in Table 3.

iv. Log reduction values (LRV) for 1,4-dioxane shall be calculated as shown in Equation (2), below.

$$LRV = log_{10}\left[\frac{RO\ Permeate\ concentration\ of\ 1{,}4-dioxane}{Groundwater\ Recharge\ Effluent concentration\ of\ 1{,}4-dioxane}\right] \quad (2)$$

a. RO Filtrate and Groundwater Recharge Effluent Pathogen Concentrations shall be determined using grab samples.
b. Samples at each sample location shall be collected in triplicate and the mean value of the 1,4-dioxane concentration shall be utilized in Equation 2.
c. For each sampling event, the groundwater recharge effluent grab sample set (a sample set consists of three replicate samples) shall be collected 6 – 8 minutes after the RO filtrate sample set is collected. Note that this interval will be confirmed based on the final design of the UV-AOP system prior to commencement of the acceptance or performance testing.
d. Each of the three (3) replicate samples shall be collected a minimum of 3 minutes and a maximum of 6 minutes apart.
e. Performance testing for the UV-AOP process using 1,4-dioxane LRV as described here shall be used to demonstrate successfully performance of the UV-AOP system only one (1) time during the 6-month performance testing period.
f. In such cases that the influent concentration is at a level that does not permit demonstration of the requisite log removal based on measurements in the effluent due to method detection limits, then FBV shall be deemed to have met the requisite log removal value provided the effluent value is below the level of detection.

Table 3. Guaranteed Groundwater Recharge Effluent Quality during 6-month Performance Testing Period

Parameter	Unit	Maximum Weekly Average	Maximum Monthly Average	Maximum Daily Value
Total Nitrogen (TN)	mg-N/L	10	10	10
5-day Biochemical Oxygen Demand (BOD_5)	mg/L	30	30	30
Total Suspended Solids (TSS)	mg/L	5	5	5
		Minimum		**Maximum**
pH	S.U.	6.5		8.0
		95% of Samples have Maximum Value of		
Total Organic Carbon (TOC)	mg/L	0.25		
		Minimum Value		**Notes**
Enteric Virus Reduction	log	11		See Article 2.iv
Cryptosporidium Oocyst Reduction	log	10		See Article 2.iv
Giardia Cyst Reduction	log	10		See Article 2.iv
		Minimum Value		**Notes**
1,4 dioxane reduction	log	0.50		See Article 2.v
		Minimum Value		**Notes**
Langmuir Saturation Index		0.00		

Section 3: Dewatered Solids Guarantees

Section 3.1: Dewatered Sludge Solids Concentration Guarantee

i. Thickened sludge/Dewatering Process Feed samples will be collected at the location and frequency noted in Table 6.

ii. Dewatered sludge samples will be collected at the location and frequency noted in Table 6.

iii. Dewatered sludge samples shall be collected during the period the dewatering process is operating. Samples shall be collected a minimum of one (1) hours after commencement of operation and a minimum of one (1) hour prior to cessation of operation.

iv. The daily average dewatered solids concentration shall be calculated as the arithmetic average of the concentration of a minimum of two (2) samples collected during the period the dewatering process is operating.

v. The monthly average dewatered solids concentration shall be calculated as the arithmetic average of the concentration of calculated daily average concentrations samples collected during the period the dewatering process is operating.

vi. Dewatered sludge dry solids quality will meet the limits noted in Table 4 during the Performance Testing period. Solids quality criteria and parameters not expressly set forth in Table 4 are not guaranteed.

v. In the event that any of the Dewatered Sludge Dry Solids criteria are not met during the 6-month Performance Testing Period due to:

f. failure of the City of Morro Bay to provide influent water which meets the conditions specified in Table 4;

g. Failure of the City of Morro Bay to meet all the stipulations noted in Section 1; or

h. failure of the City of Morro Bay to operate and maintain the Morro Bay WRF in accordance with FBV Operations and Maintenance manuals and/or guidelines and/or requirements and/or recommendations and manufacturer system/equipment manufacturers' manuals and recommendations,

Then FBV, shall be deemed to have met all the dewatered sludge solids guarantees stated in Table 4 as of the commencement date of the 6-month Performance Testing Period.

Table 4. Guaranteed Dewatered Sludge Dry Solids Concentration during 6-month Performance Testing Period

Parameter	Unit	Minimum Monthly Average
Dewatered Sludge Solids Concentration	%	16

Section 3.2: Dewatering Process Solids Capture Efficiency

Dewatering Process Solids Capture Efficiency will meet the limits expressly set forth in Table 5 during the Performance Testing period.

vii. The Dewatering Process Solids Capture Efficiency will be calculated by comparison of the thickened sludge/dewatering process feed loading and suspended solids lost in the dewatering process return flow (i.e., filtrate and washwater)

viii. Thickened Sludge/Dewatering Process Feed Loading shall be calculated as shown in Equation (3).

a. The average thickened sludge flow in Equation (3) will be calculated as the arithmetic average of the flow beginning one (1) hour after commencement of daily operation till one (1) hour prior to cessation of daily operation using the dewatering system feed flowmeter

$$Thickened\ Sludge\ Feed\ Loading\ Rate\ \left(\frac{dry-tons}{d}\right) = Average\ Thickened\ Sludge\ Flow\ \left(\frac{gal}{d}\right)\ x\ 8.343\ \left(\frac{lb-wet}{gal}\right) x\ Dry\ Solids\ Content\ \left(\frac{lb-dry}{lb-wet}\right) x \frac{1}{2000}\left(\frac{ton}{lb}\right) \quad (3)$$

ix. Sludge dewatering polymer feed rate shall be calculated as shown in Equation (4).

$$Polymer\ Feed\ Rate\ \left(\frac{lb-Active\ Polymer}{d}\right) = Polymer\ Dose\ \left(\frac{lb}{dry-ton}\right) x\ Thickened\ Sludge\ Feed\ Loading\ Rate\ \left(\frac{dry-tons}{d}\right) \quad (4)$$

x. Sludge dewatering polymer dilution water feed rate shall be calculated as shown in Equation (5).

a. The Polymer Density and Active Polymer Fraction are polymer specific values which will be determined prior to the prior testing period, during the acceptance testing period by FBV and/or its designees in conjunction with the dewatering equipment system supplier, dewatering polymer supplier and Morro Bay staff.

$$Polymer\ Dilutation\ Water\ Flowrate\ \left(\frac{gal}{d}\right) = \frac{Polymer\ Feed\ Rate\ \left(\frac{lb - Active\ Polymer}{d}\right)}{(Active\ Polymer\ Fraction\ \left(\frac{lb - Active\ Polymer}{lb - Polymer}\right) x Polymer Density\ (\frac{lb - Polymer}{gal}))}\ x\ Polymer\ Dilution\ (\%) \quad (5)$$

xi. The dewatered sludge cake produced shall be calculated based on the Average Thickened Sludge Feed Loading Rate and an assumed solids capture rate of 95% as shown in Equation (6).

$$Dewatered\ Sludge\ Cake\ Produced\ \left(\frac{dry - tons}{d}\right) = Thickened\ sludge\ Feed\ Loading\ Rate\ \left(\frac{dry - tons}{d}\right) x Capture\ Rate\ (\%) \quad (6)$$

xii. The dewatered sludge wet cake produced shall be calculated based on the Dewatered Sludge Cake Produced and an assumed dewatered sludge concentration of 17% as shown in Equation (6).

$$Dewatered\ Sludge\ Wet\ Cake\ Produced\ \left(\frac{wet - tons}{d}\right) = \frac{Dewatered\ Sludge\ Cake\ Produced\left(\frac{dry - tons}{d}\right)}{Dewatered\ Sludge\ Concentration\ (\%)} x \quad (7)$$

xiii. The Dewatered Sludge Cake Water Content shall be calculated as shown in Equation (8).

$$Dewatered\ Sludge\ Cake\ Water\ Content\ \left(\frac{gal}{d}\right) = \frac{\left[Dewatered\ Sludge\ Wet\ Cake\ Produced\ \left(\frac{wet - tons}{d}\right) - Dewatered\ Sludge\ Cake\ Produced\ \left(\frac{dry - tons}{d}\right)\right] x\ 2{,}000\ \left(\frac{lb}{ton}\right)}{8.343\ (\frac{lb}{gal})} \quad (8)$$

xiv. The Filtrate Flow shall be calculated as shown in Equation (9).

$$Filtrate\ Flow\ \left(\frac{gal}{d}\right) = Average\ Thickened\ Sludge\ Flow\ \left(\frac{gal}{d}\right) + Polymer\ Dilutation\ Water\ Flowrate\ \left(\frac{gal}{d}\right) - Dewatered\ Sludge\ Cake\ Water\ Content\ \left(\frac{gal}{d}\right) \quad (9)$$

xv. The Filtrate Solids Concentration shall be calculated as shown in Equation (10).

a. The Filtrate TSS Concentration shown in Equation (10) will be calculated using samples as indicated in Table 6.

$$Filtrate\ Flow\ \left(\frac{gal}{d}\right)\ x\ 8.343\ \left(\frac{lb}{gal}\right) x\ Filtrate\ TSS\ Concentration\ \left(\frac{mg}{L}\right) = Filtrate\ Solids\ Content\ \left(\frac{lb}{d}\right) \quad (10)$$

xvi. The Dewatering Process Solids Capture Efficiency shall be calculated as shown in Equation (11).

$$Solids\ Capture\ Efficiency\ (\%)) = \frac{\left[Thickened\ Sludge\ Feed\ Loading\ Rate\ \left(\frac{dry-tons}{d}\right) x 2{,}000\ \left(\frac{lb}{ton}\right)\right] - Filtrate\ Solids\ Content\ \left(\frac{lb}{d}\right)}{\left[Thickened\ Sludge\ Feed\ Loading\ Rate\ \left(\frac{dry-tons}{d}\right) x 2{,}000\ \left(\frac{lb}{ton}\right)\right]} = \quad (11)$$

xvii. The monthly average Dewatering Process Solids Capture Efficiency shall be calculated as the arithmetic average of the calculated daily average Dewatering Process Solids Capture Efficiency calculated for all days when the dewatering process is operational.

xviii. In the event that the Dewatering Process Solids Capture Efficiency criteria is not met during the 6-month performance testing period due to:

i. failure of the City of Morro Bay to provide influent water which meets the conditions specified in Section 1;

j. Failure of the City of Morro Bay to meet all the stipulations noted in "Conditions of the Process Treatment Performance Guarantee"; or

k. failure of the City of Morro Bay to operate and maintain the Morro Bay WRF in accordance with FBV Operations and Maintenance manuals and/or guidelines and/or requirements and/or recommendations and manufacturer system/equipment manufacturers' manuals and recommendations,

Then FBV shall be deemed to have met all the dewatered sludge solids guarantees stated in Table 5.

Table 5. Guaranteed Dewatering Process Solids Capture Efficiency during 6-month Performance Testing Period

Parameter	Unit	Minimum Monthly Average
Dewatering Process Solids Capture Efficiency	%	95

Section 4: Sampling Locations and Collection Requirements

i. Samples shall be collected at the locations and at the sampling frequency noted in Table 6.
ii. Final sampling locations will be developed in collaboration with Morro Bay staff during the design process and indicated on a sampling diagram prior to the acceptance and/or performance testing period.
iii. Finalized sampling locations for regulatory mandated samples will be confirmed by the Regional Water Quality Board.

Table 6 Sampling Locations, Sample Types and Sampling Frequency during 6-month Performance Testing Period

Sample Identification	Sample Type/ Matrix	Sampling Location	Sample Type	Sample Frequency
Influent Samples				
Influent – Non-pathogenic pollutants	Water	Downstream of Headworks	24-hour Flow Proportional Composite	Minimum 5 samples per week
Influent – Pathogen Measurements	Water	Downstream of Headworks	Grab	As required by RWQB in accordance with NPDES permit
Ocean Discharge Effluent Samples				
Ocean Discharge Effluent – Non-pathogenic pollutants	Water	Ocean Outfall, NPDES Monitoring Location	24-hour Flow Proportional Composite	Minimum 5 samples per week
Ocean Discharge Effluent – Pathogen Measurement	Water	Ocean Outfall, NPDES Monitoring Location	Grab	As required by RWQB in accordance with NPDES permit
Groundwater Recharge Effluent Samples				
Groundwater Recharge Effluent – Non-pathogenic pollutants	Water	CA RWQB Specified Monitoring Location	24-hour Flow Proportional Composite	Minimum 5 samples per week

Table 6 Sampling Locations, Sample Types and Sampling Frequency during 6-month Performance Testing Period

Sample Identification	Sample Type/ Matrix	Sampling Location	Sample Type	Sample Frequency
Groundwater Recharge Effluent – Pathogen Measurements	Water	CA RWQB Specified Monitoring Location	Grab	As required by RWQB in accordance with CCR Title 22 Requirements
Thickened Sludge/Dewatering Process Feed Samples				
Thickened Solids	Sludge/Solids	Downstream of Sludge Dewatering Process Feed Pumps	Composite of 4 grab samples taken over a minimum period of 10-min	Minimum 2 samples per shift
Dewatered Sludge Samples				
Dewatered Solids	Sludge/Solids	Sludge Cake Conveyer	Composite of 4 grab samples taken over a minimum period of 10-min	Minimum 2 samples per shift
Dewatering Filtrate Samples				
Dewatered Filtrate	Water	Dewatering Process – Filtrate Sampling Point	Composite of 4 grab samples taken over a minimum period of 10-min	Minimum 2 samples per shift

Section 5: Operating cost guarantees

Section 5.1: Introduction

The power consumption of specified items of equipment and the consumption of specified chemicals will be guaranteed by FBV as set forth below. The guarantee for these parameters is provided as a single aggregated guarantee reflecting the aggregated cost of the power and chemicals consumed and will be measured during the verification period. Should the guaranteed parameters not be met during this time period, then FBV JV will pay liquidated damages as defined herein, and payment of such liquidated damages shall be City's sole and exclusive remedy for FBV's failure to meet such guarantees at any time. FBV JV shall have no liability for any variation from such guaranteed parameters which occurs after the verification period.

Section 5.2: Power consumption

As required by the RFP, FBV guarantees the power consumption of the items of equipment listed in Table 7 which have nameplate powers in excess of 10 HP.

Table 7 Equipment for which power consumption is guaranteed

Equipment
MBR filtrate Pumps
MBR Process Blowers
MBR Scour Blowers
RO Stage 1 feed Pumps
UV Reactors
Sludge Storage Aeration Blowers

Equipment over 10HP which forms part of the storm water flow treatment and membrane cleaning and flushing system and which only operate occasionally, either during wet weather events or during cleaning/flushing operations, are excluded from the power guarantee.

The power consumption for the above equipment (other than those excluded above) is guaranteed at 4730 KWH of electricity consumed per million gallons of influent entering the plant.

Section 5.3: Chemicals consumption

The guaranteed chemical consumptions are given in Table 8

Table 8 Chemicals consumption guaranteed

Chemical	Form	Point of application	Guaranteed Value	Units
Antiscalant	As delivered	RO feed	26.4	lb/MG plant inflow
Sodium Bisulfite	38% solution	Ocean Outfall	0.55	Gal/MG plant inflow
Sodium Hypochlorite	12.5% solution	Ocean Outfall, RO Reject Water, RO feed, UVAOP, Product water	108	Gal/MG plant inflow
Sodium Hydroxide	25 % solution	MBR, ROCIP, Product water	72	Gal/MG plant inflow
Polyelectrolyte	>50 % active	Belt filter Press	7	Gal/MG plant inflow
Calcite	100%	Calcite filter	508	lb/MG plant inflow

Chemicals not specifically stated in Table 8 are excluded from the chemical consumption guarantee. Citric acid which is used intermittently for the cleaning of the MBR and RO elements is specifically excluded from the guarantee.

Section 5.4: Cost of electricity and chemicals

For the evaluation of the guarantees and the calculation of Liquidated Damages, the costs stipulated in Table 9 shall be used regardless of actual costs.

Table 9 Stipulated power and chemical unit costs

Consumable	Form	Unit cost	Units
Power	As metered	$0.12	KWH
Antiscalant	As delivered	$2.15	lb
Sodium Bisulfite	38% solution	$4.20	Gal
Sodium Hypochlorite	12.5% solution	$1.25	Gal
Sodium Hydroxide	25 % solution	$1.71	Gal
Polyelectrolyte	>50 % active	$21.65	Gal
Calcite	100%	$0.175	lb

Section 5.5 Evaluation of the consumable cost guarantee

The consumable cost guarantee shall only apply to the power and chemicals used during the verification period and only to those elements previously specified.

The SCADA system will record the items listed in Table 10

Table 10 SCADA recorded parameters for guarantee evaluation

Parameter	Unit	Designation
Plant totalized inflow	MG	Inflow
MBR filtrate Pump totalized Power	KWH	MBR filtrate power
MBR Process Blower totalized Power	KWH	MBR Process air Power
MBR Scour Blower totalized Power	KWH	MBR Scour air power
RO Stage 1 feed Pump totalized Power	KWH	RO pump power
UV Reactor totalized Power	KWH	UV power
Sludge Storage Aeration Blower totalized Power	KWH	Sludge air power

At the start of the verification period initial values ($_{initial}$) shall be recorded for:

- The parameters in Table 10
- The on-site inventory of chemicals in Table 8

During the verification test all deliveries to site ($_{delivered}$) of the chemicals in table 8 shall be recorded including the volume of mass of the delivery as appropriate and the concentration of the delivered chemical.

At the end of the verification period initial values ($_{final}$) shall be recorded for:

- The parameters in Table 10
- The on-site inventory of chemicals in Table 8

The plant inflow during the test is given by:

$$Inflow_{test} = Inflow_{final} - inflow_{initial} \quad (11)$$

The power consumed during the test is given by:

$$Power_{test} = (MBR\ filtrate\ power\ _{final} - MBR\ filtrate\ power_{initial}) + (MBR\ process\ air\ power\ _{final} - MBR\ process\ air\ power_{initial}) + (MBR\ scour\ air\ power\ _{final} - MBR\ scour\ air\ power_{initial}) + (RO\ pump\ power\ _{final} - RO\ pump\ power_{initial}) + (UV\ power\ _{final} - UV\ power_{initial}) + Sludge\ air\ power\ _{final} - sludge\ air) \quad (12)$$

The power consumed per MG during the test is given by:

$$unit\ power_{test} = \frac{Power\ _{test}}{Inflow\ _{test}} \quad (13)$$

The antiscalant use during the test is given by:

$$antiscalant_{test} = antiscalant\ _{final} + antiscalant_{delivery} - antiscalant_{initial} \quad (14)$$

The antiscalant consumed per MG during the test is given by:

$$unit\ antiscalant_{test} = \frac{antiscalant\ _{test}}{Inflow\ _{test}} \quad (15)$$

The Sodium Bisulphite use during the test is given by:

$$sodium\ bisulphite_{test} = sodium\ bisulphite\ _{final} + sodium\ bisulphite_{delivery} - sodium\ bisulphite_{initial} \quad (16)$$

The Sodium Bisulphite consumed per MG during the test is given by:

$$unit\ sodium\ bisulphite_{test} = \frac{sodium\ bisulphite\ _{test}}{Inflow\ _{test}} \quad (17)$$

The Sodium Hypochlorite use during the test is given by:

$$sodium\ hypochlorite_{test} = sodium\ hypochlorite\ _{final} + sodium\ hypochlorite_{delivery} - sodium\ hypochlorite_{initial} \quad (18)$$

The Sodium Hypochlorite consumed per MG during the test is given by:

$$unit\ sodium\ hypochlorite_{test} = \frac{sodium\ hypochlorite\ _{test}}{Inflow\ _{test}} \quad (19)$$

The Sodium Hydroxide use during the test is given by:

$$sodium\ hydroxide_{test} = sodium\ hydroxide\ _{final} + sodium\ hydroxide_{delivery} - sodium\ hydroxide_{initial} \quad (20)$$

The Sodium Hydroxide consumed per MG during the test is given by:

$$unit\ sodium\ hydroxide_{test} = \frac{sodium\ hydroxide\ _{test}}{Inflow\ _{test}} \quad (21)$$

The polyelectrolyte use during the test is given by:

$$polyelectrolyte_{test} = polyelectrolyte\ _{final} + polyelectrolyte_{delivery} - polyelectrolyte_{initial} \quad (22)$$

The polyelectrolyte consumed per MG during the test is given by:

$$unit\ polyelectrolyte_{test} = \frac{polyelectrolyte\ _{test}}{Inflow\ _{test}} \quad (23)$$

The Calcite use during the test is given by:

$$calcite_{test} = calcite\ _{final} + calcite_{delivery} - calcite_{initial} \quad (24)$$

The Calcite consumed per MG during the test is given by:

$$unit\ calcite_{test} = \frac{calcite\ _{test}}{Inflow\ _{test}} \quad (25)$$

Section 5.6: Evaluation of liquidated damages for consumable costs

The guaranteed power and chemical cost for the plant at the design annual average flow rate is $398,391.22 as shown in Table 11 derived using the guaranteed values from table 8 , the stipulated unit costs from table 9 and an annual inflow of 354.09 MG (0.97 MGD x 365 days) **.**

Table 11 guaranteed annual power and chemical cost

Consumable	Guaranteed value	Units	Unit cost	Units	Annual flow MG	Annual cost
Power	4730	KWH/MG	$0.12	KWH	354.05	$ 200,958.78
Antiscalant	26.4	lb/MG	$2.15	lb	354.05	$ 20,095.88
Sodium Bisulfite	0.55	Gal/MG	$4.20	Gal	354.05	$ 817.86
Sodium Hypochlorite	108	Gal/MG	$1.25	Gal	354.05	$ 47,796.75
Sodium Hydroxide	72	Gal/MG	$1.71	Gal	354.05	$ 43,590.64
Polyelectrolyte	7	Gal/MG	$21.65	Gal	354.05	$ 53,656.28
Calcite	508	lb/MG	$0.175	lb	354.05	$ 31,475.05
Total cost						$ 398,391.22

The actual annual power and chemical cost at design average throughput as measured during the verification period and using the stipulated unit costs from table 9 is

$$\begin{aligned} &Power\ and\ Chemical\ annual\ cost_{test} \\ &= (unit\ power_{test} \times 0.12 + unit\ antiscalant_{test} \times 2.15 + unit\ sodium\ bisulphite_{test} \times 4.20 \\ &+ unit\ sodium\ hypochlorite_{test} \times 1.25 + unit\ sodium\ hydroxide_{test} \times 1.71 \\ &+ unit\ polyelectrolyte_{test} \times 21..65 + unit\ calcite_{test} \times 0.175)x354.05 \end{aligned} \quad (26)$$

Provided the value calculated for $Power\ and\ Chemical\ annual\ cost_{test}$ is less than $ 398,391.11 the power and chemicals consumables guarantees shall be met, the test passed, and no liquidated damages are payable nor shall any damages become payable should usage differ after the verification period.

If the value calculated for $Power\ and\ Chemical\ annual\ cost_{test}$ is greater than $ 398,391.11 then the excess power and chemical cost shall be calculated.

$$Excess\ Power\ and\ Chemical\ annual\ cost_{test} = Power\ and\ Chemical\ annual\ cost_{test} - 398391.11 \quad (27)$$

Liquidated damages shall be payable calculated on a Net Present Value basis assessed over a 10 year period with a 5% discount rate

This shall be calculated as:

$$Liquidated\ Damage = Excess\ Power\ and\ Chemical\ annual\ cost_{test} \times 7.7217 \quad (27)$$

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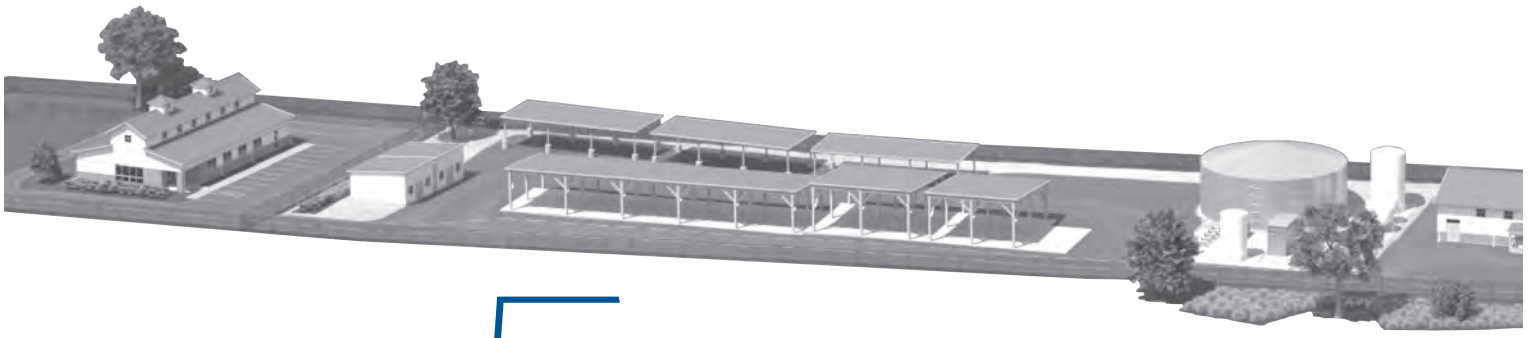

APPENDIX 5

LIFE CYCLE COSTS BACKUP

CITY OF MORRO BAY
WATER RECLAMATION FACILITY PROJECT

LIFE CYCLE COST ANALYSIS

JOINT VENTURE

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30 Year Life Cycle Cost Calculation Summary

Morro Bay	Units	Total	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051
Headworks Total Cost	[$]	$ 3,881,622	$ -	$ -	$ -	$ -	$ 1,070,013	$ 106,154	$ 108,344	$ 110,442	$ 112,722	$ 114,904	$ 117,275	$ 119,546	$ 122,013	$ 124,376	$ 138,818	$ 129,401	$ 132,071	$ 134,629	$ 137,407	$ 140,068	$ 142,958	$ 145,726	$ 148,734	$ 151,614	$ 307,544	$ 157,739	$ 160,994	$ 164,112	$ 167,498	$ 170,742	$ 174,265	$ 177,640	$ 181,305	$ 184,816
MBR/BNR Total Cost	[$]	$ 7,692,685	$ -	$ -	$ -	$ -	$ 1,231,573	$ 211,302	$ 215,866	$ 219,839	$ 224,587	$ 229,198	$ 233,660	$ 237,960	$ 612,919	$ 247,574	$ 335,125	$ 257,576	$ 263,139	$ 267,982	$ 273,770	$ 279,391	$ 718,133	$ 290,073	$ 296,338	$ 301,791	$ 408,515	$ 313,984	$ 320,766	$ 326,669	$ 841,407	$ 340,577	$ 347,207	$ 353,597	$ 361,234	$ 367,882
RO Total Cost	[$]	$ 4,519,775	$ -	$ -	$ -	$ -	$ 752,582	$ 127,973	$ 130,735	$ 133,143	$ 136,017	$ 238,910	$ 141,512	$ 144,118	$ 147,229	$ 149,941	$ 290,812	$ 155,998	$ 159,366	$ 162,301	$ 165,804	$ 291,230	$ 172,502	$ 175,680	$ 179,471	$ 182,777	$ 354,498	$ 190,161	$ 194,266	$ 197,844	$ 202,114	$ 355,008	$ 210,279	$ 214,152	$ 218,775	$ 222,804
UV Total Cost	[$]	$ 1,684,481	$ -	$ -	$ -	$ -	$ 309,997	$ 43,710	$ 44,584	$ 45,476	$ 46,385	$ 107,068	$ 48,259	$ 49,224	$ 50,209	$ 51,213	$ 118,211	$ 53,282	$ 54,348	$ 55,435	$ 56,543	$ 130,515	$ 58,828	$ 60,004	$ 61,204	$ 62,428	$ 144,099	$ 64,951	$ 66,250	$ 67,575	$ 68,926	$ 159,097	$ 71,711	$ 73,145	$ 74,608	$ 76,100
Product Water Total Cost	[$]	$ 1,073,815	$ -	$ -	$ -	$ -	$ 117,470	$ 36,019	$ 37,359	$ 37,475	$ 38,868	$ 38,988	$ 40,439	$ 40,564	$ 42,072	$ 42,202	$ 47,731	$ 43,907	$ 45,541	$ 45,681	$ 47,380	$ 55,539	$ 49,295	$ 49,447	$ 51,286	$ 51,444	$ 58,183	$ 53,523	$ 55,514	$ 55,685	$ 57,756	$ 57,935	$ 60,090	$ 60,275	$ 62,517	$ 62,711
SAFE System Total Cost	[$]	$ 2,588,171	$ -	$ -	$ -	$ -	$ 2,129,439	$ 22,537	$ 23,224	$ 23,447	$ 24,162	$ 24,395	$ 25,139	$ 25,380	$ 26,154	$ 26,406	$ 44,364	$ 27,472	$ 28,310	$ 28,582	$ 29,454	$ 29,737	$ 30,644	$ 30,938	$ 31,882	$ 32,188	$ 54,079	$ 33,489	$ 34,510	$ 34,842	$ 35,904	$ 36,249	$ 37,355	$ 37,714	$ 38,864	$ 39,237
Solids Total Cost	[$]	$ 7,884,611	$ -	$ -	$ -	$ -	$ 771,041	$ 269,641	$ 275,102	$ 280,535	$ 286,216	$ 297,844	$ 297,779	$ 303,660	$ 309,809	$ 315,928	$ 371,146	$ 328,691	$ 335,347	$ 341,970	$ 348,895	$ 363,070	$ 362,991	$ 370,160	$ 377,656	$ 385,114	$ 452,425	$ 400,673	$ 408,787	$ 416,860	$ 425,301	$ 442,580	$ 442,484	$ 451,222	$ 460,360	$ 469,452
Chemical Feed Total Cost	[$]	$ 5,244,313	$ -	$ -	$ -	$ -	$ 332,047	$ 174,732	$ 178,227	$ 181,791	$ 185,427	$ 242,915	$ 192,919	$ 196,777	$ 200,713	$ 204,727	$ 280,073	$ 212,998	$ 217,258	$ 221,603	$ 226,035	$ 296,112	$ 235,167	$ 239,870	$ 244,667	$ 249,561	$ 510,294	$ 259,643	$ 264,836	$ 270,133	$ 275,535	$ 360,959	$ 286,667	$ 292,400	$ 298,248	$ 304,213
Miscellaneous Total Cost	[$]	$ 1,078,258	$ -	$ -	$ -	$ -	$ 416,962	$ 21,208	$ 21,632	$ 22,065	$ 22,506	$ 23,912	$ 23,415	$ 23,883	$ 24,361	$ 24,848	$ 113,487	$ 25,852	$ 26,369	$ 26,897	$ 27,435	$ 29,149	$ 28,543	$ 29,114	$ 29,696	$ 30,290	$ 138,339	$ 31,514	$ 32,144	$ 32,787	$ 33,443	$ 35,532	$ 34,794	$ 35,490	$ 36,199	$ 36,923
Morro Bay Total Cost	[$]	**$ 35,647,731**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 7,131,123**	**$ 1,013,276**	**$ 1,035,074**	**$ 1,054,213**	**$ 1,076,891**	**$ 1,318,134**	**$ 1,120,397**	**$ 1,141,114**	**$ 1,535,480**	**$ 1,187,215**	**$ 1,739,767**	**$ 1,235,178**	**$ 1,261,749**	**$ 1,285,080**	**$ 1,312,724**	**$ 1,614,811**	**$ 1,799,060**	**$ 1,391,011**	**$ 1,420,934**	**$ 1,447,208**	**$ 2,427,977**	**$ 1,505,675**	**$ 1,538,065**	**$ 1,566,505**	**$ 2,107,885**	**$ 1,958,678**	**$ 1,664,851**	**$ 1,695,635**	**$ 1,732,111**	**$ 1,764,139**

Equipment/System	Units	Total	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051
Headworks																																				
Coarse Bar Screen	[$]	$ 812,212	$ -	$ -	$ -	$ -	$ 206,824	$ 23,267	$ 23,732	$ 24,207	$ 24,691	$ 25,185	$ 25,689	$ 26,203	$ 26,727	$ 27,261	$ 34,404	$ 28,362	$ 28,930	$ 29,508	$ 30,098	$ 30,700	$ 31,314	$ 31,941	$ 32,580	$ 33,231	$ 41,938	$ 34,574	$ 35,265	$ 35,970	$ 36,690	$ 37,424	$ 38,172	$ 38,936	$ 39,714	$ 40,509
Washer Compactor, Coarse	[$]	$ 435,967	$ -	$ -	$ -	$ -	$ 120,293	$ 12,291	$ 12,537	$ 12,787	$ 13,043	$ 13,304	$ 13,570	$ 13,842	$ 14,118	$ 14,401	$ 16,008	$ 14,983	$ 15,282	$ 15,588	$ 15,900	$ 16,218	$ 16,542	$ 16,873	$ 17,210	$ 17,554	$ 19,514	$ 18,264	$ 18,629	$ 19,001	$ 19,382	$ 19,769	$ 20,165	$ 20,568	$ 20,979	$ 21,399
Vortex Grit Basin	[$]	$ 290,021	$ -	$ -	$ -	$ -	$ 184,159	$ 4,564	$ 4,656	$ 4,749	$ 4,844	$ 4,941	$ 5,039	$ 5,140	$ 5,243	$ 5,348	$ 5,455	$ 5,564	$ 5,675	$ 5,789	$ 5,904	$ 6,023	$ 6,143	$ 6,266	$ 6,391	$ 6,519	$ 6,649	$ 6,782	$ 6,918	$ 7,056	$ 7,197	$ 7,341	$ 7,488	$ 7,638	$ 7,791	$ 7,947
Pump, Grit	[$]	$ 187,726	$ -	$ -	$ -	$ -	$ 33,906	$ 5,923	$ 6,109	$ 6,162	$ 6,355	$ 6,411	$ 6,612	$ 6,670	$ 6,879	$ 6,939	$ 7,157	$ 7,220	$ 7,446	$ 7,511	$ 7,747	$ 7,815	$ 8,060	$ 8,130	$ 8,386	$ 8,459	$ 8,724	$ 8,801	$ 9,077	$ 9,156	$ 9,444	$ 9,526	$ 9,825	$ 9,911	$ 10,222	$ 10,311
Grit Separator Classifier	[$]	$ 372,506	$ -	$ -	$ -	$ -	$ 55,222	$ 12,164	$ 12,407	$ 12,655	$ 12,908	$ 13,166	$ 13,429	$ 13,698	$ 13,972	$ 14,251	$ 15,856	$ 14,827	$ 15,124	$ 15,426	$ 15,735	$ 16,049	$ 16,370	$ 16,698	$ 17,032	$ 17,372	$ 19,328	$ 18,074	$ 18,436	$ 18,805	$ 19,181	$ 19,564	$ 19,956	$ 20,355	$ 20,762	$ 21,177
Headworks Splitter Box	[$]	$ 84,625	$ -	$ -	$ -	$ -	$ 39,676	$ 1,826	$ 1,863	$ 1,900	$ 1,938	$ 1,977	$ 2,016	$ 2,057	$ 2,098	$ 2,140	$ 2,183	$ 2,226	$ 2,271	$ 2,316	$ 2,363	$ 2,410	$ 2,458	$ 2,507	$ 2,557	$ 2,608	$ 2,661	$ 2,714	$ 2,768	$ 2,823	$ 2,880	$ 2,938	$ 2,996	$ 3,056	$ 3,117	$ 3,180
Fine Screens	[$]	$ 563,677	$ -	$ -	$ -	$ -	$ 181,248	$ 14,933	$ 15,232	$ 15,536	$ 15,847	$ 16,164	$ 16,487	$ 16,817	$ 17,153	$ 17,496	$ 20,485	$ 18,203	$ 18,567	$ 18,939	$ 19,317	$ 19,704	$ 20,098	$ 20,500	$ 20,910	$ 21,328	$ 24,971	$ 22,190	$ 22,633	$ 23,086	$ 23,548	$ 24,019	$ 24,499	$ 24,989	$ 25,489	$ 25,999
Washer Compactor, Fine	[$]	$ 78,257	$ -	$ -	$ -	$ -	$ 76,068	$ 304	$ 310	$ 316	$ 322	$ 329	$ 336	$ 342	$ 349	$ 356	$ 363	$ 370	$ 378	$ 385	$ 393	$ 401	$ 409	$ 417	$ 426	$ 434	$ 443	$ 452	$ 461	$ 470	$ 479	$ 489	$ 499	$ 509	$ 519	$ 529
Conveyor, Fine Screens	[$]	$ 652,129	$ -	$ -	$ -	$ -	$ 71,662	$ 22,307	$ 22,753	$ 23,208	$ 23,673	$ 24,146	$ 24,629	$ 25,121	$ 25,624	$ 26,136	$ 26,659	$ 27,192	$ 27,736	$ 28,291	$ 28,857	$ 29,434	$ 30,023	$ 30,623	$ 31,235	$ 31,860	$ 32,497	$ 33,147	$ 33,810	$ 34,486	$ 35,176	$ 35,880	$ 36,597	$ 37,329	$ 38,076	$ 38,837
Fan, Odor Control	[$]	$ 173,212	$ -	$ -	$ -	$ -	$ 21,404	$ 5,271	$ 5,376	$ 5,484	$ 5,593	$ 5,705	$ 5,819	$ 5,936	$ 6,054	$ 6,175	$ 6,299	$ 6,425	$ 6,553	$ 6,684	$ 6,818	$ 6,954	$ 7,094	$ 7,235	$ 7,380	$ 7,528	$ 31,805	$ 7,832	$ 7,988	$ 8,148	$ 8,311	$ 8,477	$ 8,647	$ 8,820	$ 8,996	$ 9,176
Scrubber, Odor Control	[$]	$ 231,291	$ -	$ -	$ -	$ -	$ 79,551	$ 3,305	$ 3,371	$ 3,438	$ 3,507	$ 3,577	$ 3,648	$ 3,721	$ 3,796	$ 3,872	$ 3,949	$ 4,028	$ 4,109	$ 4,191	$ 4,275	$ 4,360	$ 4,447	$ 4,536	$ 4,627	$ 4,720	$ 119,013	$ 4,910	$ 5,009	$ 5,109	$ 5,211	$ 5,315	$ 5,421	$ 5,530	$ 5,640	$ 5,753
Headworks Total Cost	[$]	**$ 3,881,622**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 1,070,013**	**$ 106,154**	**$ 108,344**	**$ 110,442**	**$ 112,722**	**$ 114,904**	**$ 117,275**	**$ 119,546**	**$ 122,013**	**$ 124,376**	**$ 138,818**	**$ 129,401**	**$ 132,071**	**$ 134,629**	**$ 137,407**	**$ 140,068**	**$ 142,958**	**$ 145,726**	**$ 148,734**	**$ 151,614**	**$ 307,544**	**$ 157,739**	**$ 160,994**	**$ 164,112**	**$ 167,498**	**$ 170,742**	**$ 174,265**	**$ 177,640**	**$ 181,305**	**$ 184,816**
MBR-BNR																																				
MBR Membrane Train	[$]	$ 1,662,300	$ -	$ -	$ -	$ -	$ 405,100	$ 15,733	$ 16,048	$ 16,369	$ 16,696	$ 17,030	$ 17,371	$ 17,718	$ 387,892	$ 18,434	$ 18,803	$ 19,179	$ 19,562	$ 19,953	$ 20,353	$ 20,760	$ 454,477	$ 21,598	$ 22,030	$ 22,471	$ 22,920	$ 23,379	$ 23,846	$ 24,323	$ 532,492	$ 25,306	$ 25,812	$ 26,328	$ 26,855	$ 27,392
Pump, MBR, RAS	[$]	$ 363,350	$ -	$ -	$ -	$ -	$ 56,949	$ 11,782	$ 12,119	$ 12,258	$ 12,609	$ 12,754	$ 13,118	$ 13,269	$ 13,648	$ 13,805	$ 14,200	$ 14,363	$ 14,773	$ 14,943	$ 15,370	$ 15,547	$ 15,991	$ 16,175	$ 16,637	$ 16,828	$ 17,309	$ 17,508	$ 18,009	$ 18,215	$ 18,736	$ 18,951	$ 19,493	$ 19,717	$ 20,281	$ 20,513
Pump, MBR, WAS	[$]	$ 180,568	$ -	$ -	$ -	$ -	$ 35,741	$ 5,585	$ 5,765	$ 5,811	$ 5,998	$ 6,046	$ 6,240	$ 6,290	$ 6,492	$ 6,544	$ 6,754	$ 6,809	$ 7,027	$ 7,084	$ 7,311	$ 7,370	$ 7,606	$ 7,668	$ 7,914	$ 7,977	$ 8,233	$ 8,300	$ 8,566	$ 8,635	$ 8,912	$ 8,984	$ 9,272	$ 9,347	$ 9,647	$ 9,724
Pump, MBR, Filtrate	[$]	$ 598,721	$ -	$ -	$ -	$ -	$ 131,361	$ 18,126	$ 18,590	$ 18,858	$ 19,341	$ 19,620	$ 20,122	$ 20,413	$ 20,935	$ 21,238	$ 21,781	$ 22,096	$ 22,661	$ 22,988	$ 23,577	$ 23,917	$ 24,529	$ 24,883	$ 25,520	$ 25,889	$ 26,551	$ 26,934	$ 27,624	$ 28,023	$ 28,740	$ 29,155	$ 29,901	$ 30,333	$ 31,109	$ 31,558
Pump, MBR, Backpulse	[$]	$ 189,438	$ -	$ -	$ -	$ -	$ 48,617	$ 5,470	$ 5,647	$ 5,691	$ 5,875	$ 5,921	$ 6,113	$ 6,160	$ 6,360	$ 6,409	$ 6,617	$ 6,668	$ 6,884	$ 6,938	$ 7,162	$ 7,218	$ 7,451	$ 7,510	$ 7,752	$ 7,813	$ 8,066	$ 8,129	$ 8,392	$ 8,457	$ 8,731	$ 8,799	$ 9,083	$ 9,154	$ 9,450	$ 9,524
Pump, MBR, Drain	[$]	$ 276,548	$ -	$ -	$ -	$ -	$ 48,874	$ 5,688	$ 5,802	$ 5,918	$ 6,036	$ 6,635	$ 6,280	$ 6,405	$ 6,533	$ 6,664	$ 60,104	$ 6,933	$ 7,072	$ 7,213	$ 7,358	$ 8,088	$ 7,655	$ 7,808	$ 7,964	$ 8,124	$ 73,267	$ 8,452	$ 8,621	$ 8,793	$ 8,969	$ 9,859	$ 9,331	$ 9,518	$ 9,708	$ 9,903
Blower, MBR, BNR Aeration	[$]	$ 2,502,307	$ -	$ -	$ -	$ -	$ 278,524	$ 85,471	$ 87,180	$ 88,924	$ 90,702	$ 92,516	$ 94,367	$ 96,254	$ 98,179	$ 100,143	$ 102,146	$ 104,188	$ 106,272	$ 108,398	$ 110,566	$ 112,777	$ 115,032	$ 117,333	$ 119,680	$ 122,073	$ 124,515	$ 127,005	$ 129,545	$ 132,136	$ 134,779	$ 137,474	$ 140,224	$ 143,028	$ 145,889	$ 148,807
Blower, MBR Scour	[$]	$ 865,384	$ -	$ -	$ -	$ -	$ 138,056	$ 28,091	$ 28,653	$ 29,226	$ 29,810	$ 30,407	$ 31,015	$ 31,635	$ 32,268	$ 32,913	$ 33,571	$ 34,243	$ 34,928	$ 35,626	$ 36,339	$ 37,065	$ 37,807	$ 38,563	$ 39,334	$ 40,121	$ 40,923	$ 41,742	$ 42,576	$ 43,428	$ 44,297	$ 45,182	$ 46,086	$ 47,008	$ 47,948	$ 48,907
Mixer, MBR, Anoxic	[$]	$ 728,391	$ -	$ -	$ -	$ -	$ 40,504	$ 25,195	$ 25,699	$ 26,213	$ 26,737	$ 27,272	$ 27,817	$ 28,373	$ 28,941	$ 29,520	$ 49,375	$ 30,712	$ 31,327	$ 31,953	$ 32,592	$ 33,244	$ 33,909	$ 34,587	$ 35,279	$ 35,984	$ 60,187	$ 37,438	$ 38,187	$ 38,951	$ 39,730	$ 40,524	$ 41,335	$ 42,161	$ 43,005	$ 43,865
Mixer, MBR, Deox	[$]	$ 81,782	$ -	$ -	$ -	$ -	$ 10,062	$ 2,204	$ 2,248	$ 2,293	$ 2,339	$ 2,385	$ 2,433	$ 2,482	$ 2,531	$ 2,582	$ 12,266	$ 2,686	$ 2,740	$ 2,795	$ 2,851	$ 2,908	$ 2,966	$ 3,025	$ 3,086	$ 3,148	$ 14,952	$ 3,275	$ 3,340	$ 3,407	$ 3,475	$ 3,545	$ 3,616	$ 3,688	$ 3,762	$ 3,837
Air Compressor, MBR	[$]	$ 154,733	$ -	$ -	$ -	$ -	$ 26,343	$ 4,964	$ 5,064	$ 5,165	$ 5,268	$ 5,374	$ 5,481	$ 5,591	$ 5,703	$ 5,817	$ 5,933	$ 6,052	$ 6,173	$ 6,296	$ 6,422	$ 6,550	$ 6,681	$ 6,815	$ 6,951	$ 7,090	$ 7,232	$ 7,377	$ 7,524	$ 7,675	$ 7,828	$ 7,985	$ 8,145	$ 8,308	$ 8,474	$ 8,643
Compressed Air Refrigerator	[$]	$ 89,162	$ -	$ -	$ -	$ -	$ 11,441	$ 2,992	$ 3,052	$ 3,113	$ 3,175	$ 3,239	$ 3,304	$ 3,370	$ 3,437	$ 3,506	$ 3,576	$ 3,647	$ 3,720	$ 3,795	$ 3,871	$ 3,948	$ 4,027	$ 4,108	$ 4,190	$ 4,274	$ 4,359	$ 4,446	$ 4,535	$ 4,626	$ 4,718	$ 4,813	$ 4,909	$ 5,007	$ 5,107	$ 5,209
MBR/BNR Total Cost	[$]	**$ 7,692,685**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 1,231,573**	**$ 211,302**	**$ 215,866**	**$ 219,839**	**$ 224,587**	**$ 229,198**	**$ 233,660**	**$ 237,960**	**$ 612,919**	**$ 247,574**	**$ 335,125**	**$ 257,576**	**$ 263,139**	**$ 267,982**	**$ 273,770**	**$ 279,391**	**$ 718,133**	**$ 290,073**	**$ 296,338**	**$ 301,791**	**$ 408,515**	**$ 313,984**	**$ 320,766**	**$ 326,669**	**$ 841,407**	**$ 340,577**	**$ 347,207**	**$ 353,597**	**$ 361,234**	**$ 367,882**
RO																																				
RO Feed Tank	[$]	$ 117,375	$ -	$ -	$ -	$ -	$ 47,965	$ 2,553	$ 2,604	$ 2,656	$ 2,709	$ 2,764	$ 2,819	$ 2,875	$ 2,933	$ 2,991	$ 7,010	$ 3,112	$ 3,175	$ 3,238	$ 3,303	$ 3,369	$ 3,436	$ 3,505	$ 3,575	$ 3,647	$ 8,545	$ 3,794	$ 3,870	$ 3,947	$ 4,026	$ 4,107	$ 4,189	$ 4,273	$ 4,358	$ 4,445
Pump, RO Stage 1	[$]	$ 1,789,275	$ -	$ -	$ -	$ -	$ 127,282	$ 63,582	$ 64,854	$ 66,151	$ 67,474	$ 68,824	$ 70,200	$ 71,604	$ 73,036	$ 74,497	$ 77,056	$ 77,507	$ 79,057	$ 80,638	$ 82,251	$ 83,896	$ 85,573	$ 87,285	$ 89,031	$ 90,811	$ 93,930	$ 94,480	$ 96,370	$ 98,297	$ 100,263	$ 102,268	$ 104,314	$ 106,400	$ 108,528	$ 110,698
Pump, RO Stage 2	[$]	$ 358,218	$ -	$ -	$ -	$ -	$ 75,598	$ 10,931	$ 11,251	$ 11,373	$ 11,706	$ 11,832	$ 12,179	$ 12,310	$ 12,671	$ 12,807	$ 13,182	$ 13,325	$ 13,715	$ 13,863	$ 14,269	$ 14,423	$ 14,846	$ 15,006	$ 15,445	$ 15,612	$ 16,069	$ 16,243	$ 16,718	$ 16,899	$ 17,394	$ 17,582	$ 18,097	$ 18,292	$ 18,828	$ 19,031
RO Feed Cart Filt	[$]	$ 258,863	$ -	$ -	$ -	$ -	$ 116,068	$ 5,773	$ 5,888	$ 6,006	$ 6,126	$ 6,249	$ 6,374	$ 6,501	$ 6,631	$ 6,764	$ 6,899	$ 7,037	$ 7,178	$ 7,322	$ 7,468	$ 7,617	$ 7,770	$ 7,925	$ 8,084	$ 8,245	$ 8,410	$ 8,578	$ 8,750	$ 8,925	$ 9,103	$ 9,285	$ 9,471	$ 9,661	$ 9,854	$ 10,051
RO Train	[$]	$ 1,144,050	$ -	$ -	$ -	$ -	$ 73,210	$ 24,991	$ 25,491	$ 26,001	$ 26,521	$ 127,439	$ 27,592	$ 28,144	$ 28,707	$ 29,281	$ 140,703	$ 30,464	$ 31,073	$ 31,694	$ 32,328	$ 155,347	$ 33,634	$ 34,307	$ 34,993	$ 35,693	$ 171,516	$ 37,135	$ 37,878	$ 38,635	$ 39,408	$ 189,367	$ 41,000	$ 41,820	$ 42,657	$ 43,510
Pump, RO, CIP	[$]	$ 248,202	$ -	$ -	$ -	$ -	$ 113,534	$ 5,440	$ 5,583	$ 5,660	$ 5,808	$ 5,889	$ 6,043	$ 6,127	$ 6,287	$ 6,374	$ 6,541	$ 6,632	$ 6,805	$ 6,900	$ 7,080	$ 7,178	$ 7,366	$ 7,468	$ 7,664	$ 7,770	$ 7,974	$ 8,084	$ 8,296	$ 8,411	$ 8,631	$ 8,750	$ 8,980	$ 9,104	$ 9,342	$ 9,472
Cartridge Filt, RO CIP	[$]	$ 86,288	$ -	$ -	$ -	$ -	$ 38,689	$ 1,924	$ 1,963	$ 2,002	$ 2,042	$ 2,083	$ 2,125	$ 2,167	$ 2,210	$ 2,255	$ 2,300	$ 2,346	$ 2,393	$ 2,441	$ 2,489	$ 2,539	$ 2,590	$ 2,642	$ 2,695	$ 2,748	$ 2,803	$ 2,859	$ 2,917	$ 2,975	$ 3,034	$ 3,095	$ 3,157	$ 3,220	$ 3,285	$ 3,350
CIP Dry Chem Eductor, RO	[$]	$ 31,582	$ -	$ -	$ -	$ -	$ 2,601	$ 997	$ 1,017	$ 1,037	$ 1,058	$ 1,079	$ 1,100	$ 1,122	$ 1,145	$ 1,168	$ 3,170	$ 1,215	$ 1,239	$ 1,264	$ 1,289	$ 1,315	$ 1,341	$ 1,368	$ 1,396	$ 1,424	$ 3,865	$ 1,481	$ 1,511	$ 1,541	$ 1,572	$ 1,603	$ 1,635	$ 1,668	$ 1,701	$ 1,735
Pump, RO Flush	[$]	$ 194,193	$ -	$ -	$ -	$ -	$ 52,974	$ 5,498	$ 5,676	$ 5,720	$ 5,905	$ 5,951	$ 6,143	$ 6,192	$ 6,392	$ 6,442	$ 6,650	$ 6,702	$ 6,919	$ 6,973	$ 7,198	$ 7,255	$ 7,489	$ 7,548	$ 7,791	$ 7,853	$ 8,106	$ 8,170	$ 8,434	$ 8,500	$ 8,774	$ 8,843	$ 9,129	$ 9,201	$ 9,498	$ 9,572
Tank, RO Flush	[$]	$ 47,900	$ -	$ -	$ -	$ -	$ 18,470	$ 1,174	$ 1,197	$ 1,221	$ 1,246	$ 1,271	$ 1,296	$ 1,322	$ 1,349	$ 1,376	$ 1,403	$ 1,431	$ 1,460	$ 1,489	$ 1,519	$ 1,549	$ 1,580	$ 1,612	$ 1,644	$ 1,677	$ 1,710	$ 1,745	$ 1,779	$ 1,815	$ 1,851	$ 1,888	$ 1,926	$ 1,965	$ 2,004	$ 2,044
Cart Filt, RO Flush	[$]	$ 86,288	$ -	$ -	$ -	$ -	$ 38,689	$ 1,924	$ 1,963	$ 2,002	$ 2,042	$ 2,083	$ 2,125	$ 2,167	$ 2,210	$ 2,255	$ 2,300	$ 2,346	$ 2,393	$ 2,441	$ 2,489	$ 2,539	$ 2,590	$ 2,642	$ 2,695	$ 2,748	$ 2,803	$ 2,859	$ 2,917	$ 2,975	$ 3,034	$ 3,095	$ 3,157	$ 3,220	$ 3,285	$ 3,350
CIP Makeup Tank, RO	[$]	$ 43,900	$ -	$ -	$ -	$ -	$ 14,140	$ 1,174	$ 1,197	$ 1,221	$ 1,246	$ 1,271	$ 1,296	$ 1,322	$ 1,349	$ 1,376	$ 1,403	$ 1,431	$ 1,460	$ 1,489	$ 1,519	$ 1,549	$ 1,580	$ 1,612	$ 1,644	$ 1,677	$ 1,710	$ 1,745	$ 1,779	$ 1,815	$ 1,851	$ 1,888	$ 1,926	$ 1,965	$ 2,004	$ 2,044
Neutralization Tank, RO	[$]	$ 45,900	$ -	$ -	$ -	$ -	$ 16,305	$ 1,174	$ 1,197	$ 1,221	$ 1,246	$ 1,271	$ 1,296	$ 1,322	$ 1,349	$ 1,376	$ 1,403	$ 1,431	$ 1,460	$ 1,489	$ 1,519	$ 1,549	$ 1,580	$ 1,612	$ 1,644	$ 1,677	$ 1,710	$ 1,745	$ 1,779	$ 1,815	$ 1,851	$ 1,888	$ 1,926	$ 1,965	$ 2,004	$ 2,044
Mixer, RO Neut. Tank	[$]	$ 67,742	$ -	$ -	$ -	$ -	$ 17,057	$ 837	$ 854	$ 871	$ 888	$ 906	$ 924	$ 943	$ 961	$ 981	$ 20,792	$ 1,020	$ 1,041	$ 1,061	$ 1,083	$ 1,104	$ 1,126	$ 1,149	$ 1,172	$ 1,195	$ 25,346	$ 1,244	$ 1,269	$ 1,294	$ 1,320	$ 1,346	$ 1,373	$ 1,401	$ 1,429	$ 1,457
RO Total Cost	[$]	**$ 4,519,775**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 752,582**	**$ 127,973**	**$ 130,735**	**$ 133,143**	**$ 136,017**	**$ 238,910**	**$ 141,512**	**$ 144,118**	**$ 147,229**	**$ 149,941**	**$ 290,812**	**$ 155,998**	**$ 159,366**	**$ 162,301**	**$ 165,804**	**$ 291,230**	**$ 172,502**	**$ 175,680**	**$ 179,471**	**$ 182,777**	**$ 354,498**	**$ 190,161**	**$ 194,266**	**$ 197,844**	**$ 202,114**	**$ 355,008**	**$ 210,279**	**$ 214,152**	**$ 218,775**	**$ 222,804**
UV																																				
UV Disinfection Unit	[$]	$ 1,684,481	$ -	$ -	$ -	$ -	$ 309,997	$ 43,710	$ 44,584	$ 45,476	$ 46,385	$ 107,068	$ 48,259	$ 49,224	$ 50,209	$ 51,213	$ 118,211	$ 53,282	$ 54,348	$ 55,435	$ 56,543	$ 130,515	$ 58,828	$ 60,004	$ 61,204	$ 62,428	$ 144,099	$ 64,951	$ 66,250	$ 67,575	$ 68,926	$ 159,097	$ 71,711	$ 73,145	$ 74,608	$ 76,100
UV Total Cost	[$]	**$ 1,684,481**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 309,997**	**$ 43,710**	**$ 44,584**	**$ 45,476**	**$ 46,385**	**$ 107,068**	**$ 48,259**	**$ 49,224**	**$ 50,209**	**$ 51,213**	**$ 118,211**	**$ 53,282**	**$ 54,348**	**$ 55,435**	**$ 56,543**	**$ 130,515**	**$ 58,828**	**$ 60,004**	**$ 61,204**	**$ 62,428**	**$ 144,099**	**$ 64,951**	**$ 66,250**	**$ 67,575**	**$ 68,926**	**$ 159,097**	**$ 71,711**	**$ 73,145**	**$ 74,608**	**$ 76,100**
Product Water																																				
Pump, RO Product (to IPR)	[$]	$ 528,574	$ -	$ -	$ -	$ -	$ 66,049	$ 17,753	$ 18,209	$ 18,470	$ 18,945	$ 19,216	$ 19,710	$ 19,992	$ 20,506	$ 20,800	$ 21,335	$ 21,640	$ 22,197	$ 22,515	$ 23,094	$ 23,424	$ 24,026	$ 24,371	$ 24,997	$ 25,355	$ 26,007	$ 26,380	$ 27,058	$ 27,445	$ 28,151	$ 28,554	$ 29,288	$ 29,708	$ 30,471	$ 30,908
Pump, RO Product (on-site)	[$]	$ 236,066	$ -	$ -	$ -	$ -	$ 26,233	$ 8,033	$ 8,261	$ 8,357	$ 8,595	$ 8,695	$ 8,942	$ 9,046	$ 9,303	$ 9,412	$ 9,679	$ 9,792	$ 10,070	$ 10,187	$ 10,477	$ 10,599	$ 10,900	$ 11,027	$ 11,341	$ 11,473	$ 11,799	$ 11,936	$ 12,275	$ 12,418	$ 12,771	$ 12,920	$ 13,287	$ 13,442	$ 13,824	$ 13,985
Tank, Product Water	[$]	$ 83,875	$ -	$ -	$ -	$ -	$ 11,704	$ 2,553	$ 2,604	$ 2,656	$ 2,709	$ 2,764	$ 2,819	$ 2,875	$ 2,933	$ 2,991	$ 7,010	$ 3,112	$ 3,175	$ 3,238	$ 3,303	$ 3,369	$ 3,436	$ 3,505	$ 3,575	$ 3,647	$ 8,545	$ 3,794	$ 3,870	$ 3,947	$ 4,026	$ 4,107	$ 4,189	$ 4,273	$ 4,358	$ 4,445
Tank, Air Bladder	[$]	$ 225,300	$ -	$ -	$ -	$ -	$ 13,483	$ 7,681	$ 8,285	$ 7,991	$ 8,620	$ 8,314	$ 8,968	$ 8,650	$ 9,330	$ 8,999	$ 9,707	$ 9,363	$ 10,099	$ 9,741	$ 10,507	$ 18,147	$ 10,932	$ 10,544	$ 11,373	$ 10,970	$ 11,833	$ 11,413	$ 12,311	$ 11,874	$ 12,808	$ 12,354	$ 13,326	$ 12,853	$ 13,864	$ 13,372
Product Water Total Cost	[$]	**$ 1,073,815**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 117,470**	**$ 36,019**	**$ 37,359**	**$ 37,475**	**$ 38,868**	**$ 38,988**	**$ 40,439**	**$ 40,564**	**$ 42,072**	**$ 42,202**	**$ 47,731**	**$ 43,907**	**$ 45,541**	**$ 45,681**	**$ 47,380**	**$ 55,539**	**$ 49,295**	**$ 49,447**	**$ 51,286**	**$ 51,444**	**$ 58,183**	**$ 53,523**	**$ 55,514**	**$ 55,685**	**$ 57,756**	**$ 57,935**	**$ 60,090**	**$ 60,275**	**$ 62,517**	**$ 62,711**
SAFE System																																				
Disc Filter, SAFE	[$]	$ 1,293,318	$ -	$ -	$ -	$ -	$ 1,301,564	$ 2,698	$ 2,752	$ 2,807	$ 2,863	$ 2,921	$ 2,979	$ 3,039	$ 3,099	$ 3,161	$ 16,419	$ 3,289	$ 3,355	$ 3,422	$ 3,491	$ 3,560	$ 3,632	$ 3,704	$ 3,778	$ 3,854	$ 20,015	$ 4,010	$ 4,090	$ 4,172	$ 4,255	$ 4,340	$ 4,427	$ 4,515	$ 4,606	$ 4,698
Pump, SAFE, Solids	[$]	$ 155,289	$ -	$ -	$ -	$ -	$ 15,994	$ 5,318	$ 5,492	$ 5,532	$ 5,713	$ 5,756	$ 5,944	$ 5,988	$ 6,184	$ 6,230	$ 6,434	$ 6,482	$ 6,694	$ 6,744	$ 6,965	$ 7,016	$ 7,246	$ 7,300	$ 7,539	$ 7,595	$ 7,843	$ 7,902	$ 8,160	$ 8,221	$ 8,490	$ 8,553	$ 8,833	$ 8,899	$ 9,190	$ 9,258
Pump, SAFE, BW Waste	[$]	$ 170,361	$ -	$ -	$ -	$ -	$ 32,233	$ 5,320	$ 5,494	$ 5,535	$ 5,716	$ 5,759	$ 5,947	$ 5,991	$ 6,187	$ 6,234	$ 6,437	$ 6,485	$ 6,697	$ 6,747	$ 6,968	$ 7,020	$ 7,250	$ 7,304	$ 7,542	$ 7,599	$ 7,847	$ 7,906	$ 8,164	$ 8,225	$ 8,494	$ 8,557	$ 8,837	$ 8,903	$ 9,194	$ 9,263
Tank, Outfall	[$]	$ 557,900	$ -	$ -	$ -	$ -	$ 564,016	$ 1,174	$ 1,197	$ 1,221	$ 1,246	$ 1,271	$ 1,296	$ 1,322	$ 1,349	$ 1,376	$ 5,361	$ 1,431	$ 1,460	$ 1,489	$ 1,519	$ 1,549	$ 1,580	$ 1,612	$ 1,644	$ 1,677	$ 6,536	$ 1,745	$ 1,779	$ 1,815	$ 1,851	$ 1,888	$ 1,926	$ 1,965	$ 2,004	$ 2,044
Pump, Outfall to Ocean	[$]	$ 411,302	$ -	$ -	$ -	$ -	$ 215,631	$ 8,027	$ 8,289	$ 8,351	$ 8,623	$ 8,688	$ 8,972	$ 9,039	$ 9,334	$ 9,405	$ 9,711	$ 9,785	$ 10,104	$ 10,180	$ 10,512	$ 10,591	$ 10,937	$ 11,019	$ 11,379	$ 11,464	$ 11,838	$ 11,927	$ 12,316	$ 12,409	$ 12,814	$ 12,911	$ 13,332	$ 13,432	$ 13,870	$ 13,975
SAFE System Total Cost	[$]	**$ 2,588,171**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 2,129,439**	**$ 22,537**	**$ 23,224**	**$ 23,447**	**$ 24,162**	**$ 24,395**	**$ 25,139**	**$ 25,380**	**$ 26,154**	**$ 26,406**	**$ 44,364**	**$ 27,472**	**$ 28,310**	**$ 28,582**	**$ 29,454**	**$ 29,737**	**$ 30,644**	**$ 30,938**	**$ 31,882**	**$ 32,188**	**$ 54,079**	**$ 33,489**	**$ 34,510**	**$ 34,842**	**$ 35,904**	**$ 36,249**	**$ 37,355**	**$ 37,714**	**$ 38,864**	**$ 39,237**
Solids																																				
Blower, Sludge Storage Aeration	[$]	$ 963,214	$ -	$ -	$ -	$ -	$ 87,699	$ 33,587	$ 34,258	$ 34,944	$ 35,642	$ 36,355	$ 37,082	$ 37,824	$ 38,580	$ 39,352	$ 40,139	$ 40,942	$ 41,761	$ 42,596	$ 43,448	$ 44,317	$ 45,203	$ 46,107	$ 47,029	$ 47,970	$ 48,929	$ 49,908	$ 50,906	$ 51,924	$ 52,963	$ 54,022	$ 55,102	$ 56,204	$ 57,329	$ 58,475
Pump, Sludge	[$]	$ 216,164	$ -	$ -	$ -	$ -	$ 70,508	$ 5,718	$ 5,900	$ 5,949	$ 6,138	$ 6,189	$ 6,386	$ 6,439	$ 6,644	$ 6,699	$ 6,912	$ 6,970	$ 7,192	$ 7,252	$ 7,482	$ 7,545	$ 7,785	$ 7,849	$ 8,099	$ 8,166	$ 8,426	$ 8,496	$ 8,767	$ 8,840	$ 9,121	$ 9,197	$ 9,489	$ 9,568	$ 9,873	$ 9,955
Belt Press	[$]	$ 6,316,242	$ -	$ -	$ -	$ -	$ 567,624	$ 219,554	$ 223,945	$ 228,424	$ 232,992	$ 243,628	$ 242,405	$ 247,253	$ 252,198	$ 257,242	$ 268,985	$ 267,635	$ 272,988	$ 278,447	$ 284,016	$ 296,981	$ 295,491	$ 301,400	$ 307,428	$ 313,577	$ 327,891	$ 326,246	$ 332,770	$ 339,426	$ 346,214	$ 362,018	$ 360,201	$ 367,405	$ 374,754	$ 382,249
Mixer, Sludge Storage	[$]	$ 388,991	$ -	$ -	$ -	$ -	$ 45,209	$ 10,783	$ 10,999	$ 11,218	$ 11,443	$ 11,672	$ 11,905	$ 12,143	$ 12,386	$ 12,634	$ 55,110	$ 13,144	$ 13,407	$ 13,675	$ 13,949	$ 14,228	$ 14,512	$ 14,803	$ 15,099	$ 15,401	$ 67,179	$ 16,023	$ 16,343	$ 16,670	$ 17,003	$ 17,344	$ 17,690	$ 18,044	$ 18,405	$ 18,773
Solids Total Cost	[$]	**$ 7,884,611**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 771,041**	**$ 269,641**	**$ 275,102**	**$ 280,535**	**$ 286,216**	**$ 297,844**	**$ 297,779**	**$ 303,660**	**$ 309,809**	**$ 315,928**	**$ 371,146**	**$ 328,691**	**$ 335,347**	**$ 341,970**	**$ 348,895**	**$ 363,070**	**$ 362,991**	**$ 370,160**	**$ 377,656**	**$ 385,114**	**$ 452,425**	**$ 400,673**	**$ 408,787**	**$ 416,860**	**$ 425,301**	**$ 442,580**	**$ 442,484**	**$ 451,222**	**$ 460,360**	**$ 469,452**
Chemical Feed																																				
Chem Pump, Antiscalant-RO Feed	[$]	$ 606,719	$ -	$ -	$ -	$ -	$ 24,280	$ 21,674	$ 22,107	$ 22,549	$ 23,000	$ 27,046	$ 23,930	$ 24,408	$ 24,896	$ 25,394	$ 29,861	$ 26,420	$ 26,949	$ 27,488	$ 28,037	$ 32,969	$ 29,170	$ 29,754	$ 30,349	$ 30,956	$ 36,400	$ 32,206	$ 32,850	$ 33,507	$ 34,177	$ 40,189	$ 35,558	$ 36,269	$ 36,995	$ 37,735
Chem Pump, Bisulfite-Outfall	[$]	$ 67,967	$ -	$ -	$ -	$ -	$ 4,841	$ 1,846	$ 1,883	$ 1,921	$ 1,959	$ 5,584	$ 2,038	$ 2,079	$ 2,121	$ 2,163	$ 6,165	$ 2,251	$ 2,296	$ 2,342	$ 2,388	$ 6,807	$ 2,485	$ 2,535	$ 2,585	$ 2,637	$ 7,515	$ 2,743	$ 2,798	$ 2,854	$ 2,911	$ 8,297	$ 3,029	$ 3,090	$ 3,151	$ 3,214
Chem Pump, Hypo-MBR	[$]	$ 75,992	$ -	$ -	$ -	$ -	$ 5,130	$ 2,142	$ 2,184	$ 2,228	$ 2,273	$ 5,903	$ 2,365	$ 2,412	$ 2,460	$ 2,509	$ 6,518	$ 2,611	$ 2,663	$ 2,716	$ 2,770	$ 7,196	$ 2,882	$ 2,940	$ 2,999	$ 3,059	$ 7,945	$ 3,182	$ 3,246	$ 3,311	$ 3,377	$ 8,772	$ 3,514	$ 3,584	$ 3,656	$ 3,729
Chem Pump, Hypo-Outfall, No ROC	[$]	$ 52,102	$ -	$ -	$ -	$ -	$ 4,268	$ 1,262	$ 1,288	$ 1,313	$ 1,340	$ 4,952	$ 1,394	$ 1,422	$ 1,450	$ 1,479	$ 5,467	$ 1,539	$ 1,570	$ 1,601	$ 1,633	$ 6,036	$ 1,699	$ 1,733	$ 1,768	$ 1,803	$ 6,664	$ 1,876	$ 1,913	$ 1,952	$ 1,991	$ 7,358	$ 2,071	$ 2,113	$ 2,155	$ 2,198
Chem Pump, Hypo-RO Reject	[$]	$ 100,948	$ -	$ -	$ -	$ -	$ 6,031	$ 3,060	$ 3,121	$ 3,184	$ 3,247	$ 6,898	$ 3,379	$ 3,446	$ 3,515	$ 3,585	$ 7,616	$ 3,730	$ 3,805	$ 3,881	$ 3,959	$ 8,408	$ 4,118	$ 4,201	$ 4,285	$ 4,371	$ 9,283	$ 4,547	$ 4,638	$ 4,731	$ 4,825	$ 10,249	$ 5,020	$ 5,121	$ 5,223	$ 5,328
Chem Pump, Hypo-RO Feed	[$]	$ 676,588	$ -	$ -	$ -	$ -	$ 26,801	$ 24,245	$ 24,730	$ 25,225	$ 25,729	$ 29,829	$ 26,769	$ 27,304	$ 27,850	$ 28,407	$ 32,934	$ 29,555	$ 30,146	$ 30,749	$ 31,364	$ 36,361	$ 32,631	$ 33,283	$ 33,949	$ 34,628	$ 40,146	$ 36,027	$ 36,748	$ 37,483	$ 38,232	$ 44,324	$ 39,777	$ 40,572	$ 41,384	$ 42,211
Chem Pump, Hypo-UVAOP	[$]	$ 349,371	$ -	$ -	$ -	$ -	$ 14,994	$ 12,203	$ 12,447	$ 12,696	$ 12,950	$ 16,794	$ 13,473	$ 13,742	$ 14,017	$ 14,297	$ 18,542	$ 14,875	$ 15,173	$ 15,476	$ 15,785	$ 20,472	$ 16,423	$ 16,752	$ 17,087	$ 17,428	$ 22,602	$ 18,133	$ 18,495	$ 18,865	$ 19,242	$ 24,955	$ 20,020	$ 20,420	$ 20,829	$ 21,245
Chem Pump, Hypo-Product Water	[$]	$ 125,107	$ -	$ -	$ -	$ -	$ 6,903	$ 3,949	$ 4,028	$ 4,109	$ 4,191	$ 7,860	$ 4,360	$ 4,447	$ 4,536	$ 4,627	$ 8,678	$ 4,814	$ 4,910	$ 5,009	$ 5,109	$ 9,581	$ 5,315	$ 5,421	$ 5,530	$ 5,640	$ 10,579	$ 5,868	$ 5,986	$ 6,105	$ 6,227	$ 11,680	$ 6,479	$ 6,609	$ 6,741	$ 6,876
Chem Pump, Hydrox-MBR	[$]	$ 249,274	$ -	$ -	$ -	$ -	$ 11,383	$ 8,519	$ 8,689	$ 8,863	$ 9,040	$ 12,806	$ 9,406	$ 9,594	$ 9,786	$ 9,981	$ 14,139	$ 10,384	$ 10,592	$ 10,804	$ 11,020	$ 15,611	$ 11,465	$ 11,695	$ 11,928	$ 12,167	$ 17,236	$ 12,659	$ 12,912	$ 13,170	$ 13,433	$ 19,030	$ 13,976	$ 14,256	$ 14,541	$ 14,832
Chem Pump, Hydrox-RO CIP	[$]	$ 64,301	$ -	$ -	$ -	$ -	$ 4,709	$ 1,711	$ 1,746	$ 1,781	$ 1,816	$ 5,438	$ 1,890	$ 1,927	$ 1,966	$ 2,005	$ 6,004	$ 2,086	$ 2,128	$ 2,170	$ 2,214	$ 6,629	$ 2,303	$ 2,349	$ 2,396	$ 2,444	$ 7,318	$ 2,543	$ 2,594	$ 2,646	$ 2,699	$ 8,080	$ 2,808	$ 2,864	$ 2,921	$ 2,980
Chem Pump, Hydrox-Product Water	[$]	$ 138,674	$ -	$ -	$ -	$ -	$ 7,392	$ 4,448	$ 4,537	$ 4,628	$ 4,721	$ 8,400	$ 4,911	$ 5,010	$ 5,110	$ 5,212	$ 9,275	$ 5,423	$ 5,531	$ 5,642	$ 5,755	$ 10,240	$ 5,987	$ 6,107	$ 6,229	$ 6,354	$ 11,306	$ 6,610	$ 6,742	$ 6,877	$ 7,015	$ 12,483	$ 7,298	$ 7,444	$ 7,593	$ 7,745
Chem Pump, Polymer-Belt Press	[$]	$ 1,075,050	$ -	$ -	$ -	$ -	$ 41,178	$ 38,910	$ 39,688	$ 40,482	$ 41,291	$ 45,702	$ 42,959	$ 43,819	$ 44,695	$ 45,589	$ 50,459	$ 47,431	$ 48,379	$ 49,347	$ 50,334	$ 55,711	$ 52,367	$ 53,415	$ 54,483	$ 55,573	$ 61,509	$ 57,818	$ 58,974	$ 60,153	$ 61,357	$ 67,911	$ 63,835	$ 65,112	$ 66,414	$ 67,743
Chem Pump, Citric Acid-MBR	[$]	$ 80,701	$ -	$ -	$ -	$ -	$ 5,300	$ 2,315	$ 2,361	$ 2,408	$ 2,457	$ 6,091	$ 2,556	$ 2,607	$ 2,659	$ 2,712	$ 6,725	$ 2,822	$ 2,878	$ 2,936	$ 2,995	$ 7,425	$ 3,116	$ 3,178	$ 3,241	$ 3,306	$ 8,198	$ 3,440	$ 3,509	$ 3,579	$ 3,650	$ 9,051	$ 3,798	$ 3,874	$ 3,951	$ 4,030
Chem Pump, Citric Acid-RO CIP	[$]	$ 96,266	$ -	$ -	$ -	$ -	$ 5,862	$ 2,888	$ 2,946	$ 3,004	$ 3,065	$ 6,711	$ 3,188	$ 3,252	$ 3,317	$ 3,383	$ 7,410	$ 3,520	$ 3,591	$ 3,662	$ 3,736	$ 8,181	$ 3,887	$ 3,964	$ 4,044	$ 4,124	$ 9,032	$ 4,291	$ 4,377	$ 4,464	$ 4,554	$ 9,972	$ 4,738	$ 4,832	$ 4,929	$ 5,028
Contactor, Calcite-Product Wast	[$]	$ 1,029,788	$ -	$ -	$ -	$ -	$ 39,544	$ 37,244	$ 37,989	$ 38,749	$ 39,524	$ 43,899	$ 41,120	$ 41,943	$ 42,782	$ 43,637	$ 48,468	$ 45,400	$ 46,308	$ 47,234	$ 48,179	$ 53,513	$ 50,125	$ 51,128	$ 52,150	$ 53,193	$ 59,083	$ 55,342	$ 56,449	$ 57,578	$ 58,730	$ 65,232	$ 61,103	$ 62,325	$ 63,571	$ 64,842
Tank, Polymer Feed	[$]	$ 175,790	$ -	$ -	$ -	$ -	$ 46,537	$ 3,305	$ 3,371	$ 3,438	$ 3,507	$ 3,577	$ 3,648	$ 3,721	$ 3,796	$ 3,872	$ 7,908	$ 4,028	$ 4,109	$ 4,191	$ 4,275	$ 4,360	$ 4,447	$ 4,536	$ 4,627	$ 4,720	$ 73,977	$ 4,910	$ 5,009	$ 5,109	$ 5,211	$ 5,315	$ 5,421	$ 5,530	$ 5,640	$ 5,753
Tank, NaOCl	[$]	$ 107,900	$ -	$ -	$ -	$ -	$ 39,036	$ 1,174	$ 1,197	$ 1,221	$ 1,246	$ 1,271	$ 1,296	$ 1,322	$ 1,349	$ 1,376	$ 5,361	$ 1,431	$ 1,460	$ 1,489	$ 1,519	$ 1,549	$ 1,580	$ 1,612	$ 1,644	$ 1,677	$ 62,831	$ 1,745	$ 1,779	$ 1,815	$ 1,851	$ 1,888	$ 1,926	$ 1,965	$ 2,004	$ 2,044
Tank, NaOH	[$]	$ 97,900	$ -	$ -	$ -	$ -	$ 33,624	$ 1,174	$ 1,197	$ 1,221	$ 1,246	$ 1,271	$ 1,296	$ 1,322	$ 1,349	$ 1,376	$ 5,361	$ 1,431	$ 1,460	$ 1,489	$ 1,519	$ 1,549	$ 1,580	$ 1,612	$ 1,644	$ 1,677	$ 54,789	$ 1,745	$ 1,779	$ 1,815	$ 1,851	$ 1,888	$ 1,926	$ 1,965	$ 2,004	$ 2,044
Tote, NaHSO3	[$]	$ 24,625	$ -	$ -	$ -	$ -	$ 1,412	$ 888	$ 906	$ 924	$ 942	$ 961	$ 980	$ 1,000	$ 1,020	$ 1,040	$ 1,061	$ 1,082	$ 1,104	$ 1,126	$ 1,149	$ 1,172	$ 1,195	$ 1,219	$ 1,243	$ 1,268	$ 1,293	$ 1,319	$ 1,346	$ 1,373	$ 1,400	$ 1,428	$ 1,457	$ 1,486	$ 1,515	$ 1,546
Tote, Citric Acid	[$]	$ 24,625	$ -	$ -	$ -	$ -	$ 1,412	$ 888	$ 906	$ 924	$ 942	$ 961	$ 980	$ 1,000	$ 1,020	$ 1,040	$ 1,061	$ 1,082	$ 1,104	$ 1,126	$ 1,149	$ 1,172	$ 1,195	$ 1,219	$ 1,243	$ 1,268	$ 1,293	$ 1,319	$ 1,346	$ 1,373	$ 1,400	$ 1,428	$ 1,457	$ 1,486	$ 1,515	$ 1,546
Tote, Antiscalant	[$]	$ 24,625	$ -	$ -	$ -	$ -	$ 1,412	$ 888	$ 906	$ 924	$ 942	$ 961	$ 980	$ 1,000	$ 1,020	$ 1,040	$ 1,061	$ 1,082	$ 1,104	$ 1,126	$ 1,149	$ 1,172	$ 1,195	$ 1,219	$ 1,243	$ 1,268	$ 1,293	$ 1,319	$ 1,346	$ 1,373	$ 1,400	$ 1,428	$ 1,457	$ 1,486	$ 1,515	$ 1,546
Chemical Feed Total Cost	[$]	**$ 5,244,313**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 332,047**	**$ 174,732**	**$ 178,227**	**$ 181,791**	**$ 185,427**	**$ 242,915**	**$ 192,919**	**$ 196,777**	**$ 200,713**	**$ 204,727**	**$ 280,073**	**$ 212,998**	**$ 217,258**	**$ 221,603**	**$ 226,035**	**$ 296,112**	**$ 235,167**	**$ 239,870**	**$ 244,667**	**$ 249,561**	**$ 510,294**	**$ 259,643**	**$ 264,836**	**$ 270,133**	**$ 275,535**	**$ 360,959**	**$ 286,667**	**$ 292,400**	**$ 298,248**	**$ 304,213**
Miscellaneous																																				
Pump, Plant Drain	[$]	$ 330,615	$ -	$ -	$ -	$ -	$ 60,566	$ 6,574	$ 6,705	$ 6,839	$ 6,976	$ 7,593	$ 7,258	$ 7,403	$ 7,551	$ 7,702	$ 74,358	$ 8,013	$ 8,173	$ 8,337	$ 8,504	$ 9,256	$ 8,847	$ 9,024	$ 9,204	$ 9,389	$ 90,642	$ 9,768	$ 9,963	$ 10,163	$ 10,366	$ 11,283	$ 10,785	$ 11,000	$ 11,220	$ 11,445
Pump, Vactor Truck Sewage	[$]	$ 204,644	$ -	$ -	$ -	$ -	$ 22,899	$ 5,691	$ 5,805	$ 5,921	$ 6,040	$ 6,638	$ 6,284	$ 6,409	$ 6,538	$ 6,668	$ 28,441	$ 6,938	$ 7,076	$ 7,218	$ 7,362	$ 8,092	$ 7,660	$ 7,813	$ 7,969	$ 8,129	$ 34,670	$ 8,457	$ 8,626	$ 8,799	$ 8,975	$ 9,864	$ 9,337	$ 9,524	$ 9,714	$ 9,909
Em. Generator	[$]	$ 543,000	$ -	$ -	$ -	$ -	$ 333,497	$ 8,943	$ 9,122	$ 9,304	$ 9,490	$ 9,680	$ 9,874	$ 10,071	$ 10,273	$ 10,478	$ 10,688	$ 10,902	$ 11,120	$ 11,342	$ 11,569	$ 11,800	$ 12,036	$ 12,277	$ 12,522	$ 12,773	$ 13,028	$ 13,289	$ 13,555	$ 13,826	$ 14,102	$ 14,384	$ 14,672	$ 14,965	$ 15,265	$ 15,570
Miscellaneous Total Cost	[$]	**$ 1,078,258**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 416,962**	**$ 21,208**	**$ 21,632**	**$ 22,065**	**$ 22,506**	**$ 23,912**	**$ 23,415**	**$ 23,883**	**$ 24,361**	**$ 24,848**	**$ 113,487**	**$ 25,852**	**$ 26,369**	**$ 26,897**	**$ 27,435**	**$ 29,149**	**$ 28,543**	**$ 29,114**	**$ 29,696**	**$ 30,290**	**$ 138,339**	**$ 31,514**	**$ 32,144**	**$ 32,787**	**$ 33,443**	**$ 35,532**	**$ 34,794**	**$ 35,490**	**$ 36,199**	**$ 36,923**

CITY OF MORRO BAY
WATER RECLAMATION FACILITY PROJECT

EQUIPMENT DATA SHEETS: ELECTRICAL, CHEMICAL, AND O&M

JOINT VENTURE

FILANC

BLACK & VEATCH

Life Cycle Cost Analysis
Coarse Bar Screen
File Updated: 5/2/2018
Updated By: JTS

CITY OF MORRO BAY WATER RECLAMATION FACILITY PROJECT

Electrical Load

Design Condition

Equipment Type	No. Units		Flow (rated) [MGD]	HP (rated)	HP (name plate)	Motor Eff.	Power draw [kW]			
Screen	2		8.14	2	2	95%	1.6			

Notes:

Scenario 1, Min Day (0.67 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Screen	2	1	0.67	2	2	95%	1.6	4	1	6

Notes: Assume operation at nameplate horsepower. Assume 5 min on, 25 min off (4 hours/d) with one screen always operating

Scenario 2, Avg Day (0.97 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Screen	2	1	0.97	2	2	95%	1.6	4	333	2093

Notes: Assume operation at nameplate horsepower. Assume 5 min on, 25 min off (4 hours/d) with one screen always operating

Scenario 3, Max Month (1.16 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Screen	2	1	1.16	2	2	95%	1.6	4	30	188

Notes: Assume operation at nameplate horsepower. Assume 5 min on, 25 min off (4 hours/d) with one screen always operating

Scenario 4, Max Day (2.75 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Screen	2	1	2.75	2	2	95%	1.6	4.8	1	8

Notes: Assume operation at nameplate horsepower. Assume 6 min on, 24 min off (4.8 hours/d) with one screen always operating

Total kWh/yr:	2295

Operations and Maintenance

Coarse Bar Screen

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
General visual inspection, check motor operation, vibration, conveyor, debris buildup	Preventive	OP	1	Daily	365	0	3				
Clean bar screens	Preventive	OP	1	Daily	365	0	91				
Grease bearings	Preventive	OP	1	Monthly	12	0	2				
Calibrate instrumentation, alarms and communications to SCADA	Preventive	MI	1	Annual	1	1		1			
Rebuild bar screen	Corrective	MM	2	10 Years	0	16				3	2500
MCC Switchgear cleaning and testing	Preventive	RMT	2	Annual	1	2			4		
Replace coarse bar screens				30+ Years							LCCA
						Total, each unit (hr)	96	1	4	3	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	96	1	4	3	
						No. Units	2	2	2	2	
						Total hours by staff type	193	1	8	6	
						Annualized hours and materials	208				$500

CITY OF MORRO BAY WATER RECLAMATION FACILITY PROJECT

Electrical Load

Design Condition

Equipment Type	No. Units		Flow (rated) [MGD]	HP (rated)	HP (name plate)	Motor Eff.	Power draw [kW]			
Grit Washer	1		8.14	3	3	95%	2.4			
Notes:										

Scenario 1, Min Day (0.67 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Grit Washer	1	1	0.67	3	3	95%	2.4	4	1	9
Notes: Assume operation at nameplate horsepower. Assume 5 min on, 25 min off (4 hours/d) with one screen always operating										

Scenario 2, Avg Day (0.97 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Grit Washer	1	1	0.97	3	3	95%	2.4	4	333	3139
Notes: Assume operation at nameplate horsepower. Assume 5 min on, 25 min off (4 hours/d) with one screen always operating										

Scenario 3, Max Month (1.16 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Grit Washer	1	1	1.16	3	3	95%	2.4	4	30	283
Notes: Assume operation at nameplate horsepower. Assume 5 min on, 25 min off (4 hours/d) with one screen always operating										

Scenario 4, Max Day (2.75 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Grit Washer	1	1	2.75	3	3	95%	2.4	4.8	1	11
Notes: Assume operation at nameplate horsepower. Assume 6 min on, 24 min off (4.8 hours/d) with one screen always operating										

Total kWh/yr:	3442

Operations and Maintenance

Washer Compactor, Coarse

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
General visual inspection, check motor operation, vibration, conveyor, debris buildup	Preventive	OP	1	Daily	365	0	3				
Clean washer / compactor	Preventive	OP	1	Daily	365	0	91				
Grease bearings	Preventive	OP	1	Monthly	12	0	2				
Calibrate instrumentation, alarms and communications to SCADA	Preventive	MI	1	Annual	1	1		1			
Rebuild washer / compactor	Corrective	MM	2	10 Years	0	32				6	1000
MCC Switchgear cleaning and testing	Preventive	RMT	2	Annual	1	2			4		
Replcae washer compactor				30+ Years							LCCA
						Total, each unit (hr)	96	1	4	6	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	96	1	4	6	
						No. Units	1	1	1	1	
						Total hours by staff type	96	1	4	6	
						Annualized Hours and Materials	107				$100

Electrical Load

Design Condition

Equipment Type	No. Units		Flow (rated) [MGD]	HP (rated)	HP (name plate)	Motor Eff.	Power draw [kW]			
Grit Basin	2		8.14	1	1	95%	0.8			

Scenario 1, Min Day (0.67 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Grit Basin	2	1	8.14	1	1	95%	0.8	24	1	19

Notes: Assumes one grit basin baffle operating.

Scenario 2, Avg Day (0.97 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Grit Basin	2	1	8.14	1	1	95%	0.8	24	333	6278

Notes: Assumes one grit basin baffle operating.

Scenario 3, Max Month (1.16 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Grit Basin	2	1	8.14	1	1	95%	0.8	24	30	565

Notes: Assumes one grit basin baffle operating.

Scenario 4, Max Day (2.75 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Grit Basin	2	1	8.14	1	1	95%	0.8	24.0	1	19

Notes: Assumes one grit basin baffle operating.

Total kWh/yr:	6881

Operations and Maintenance

Vortex Grit Basin

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
General visual inspection	Preventive	OP	1	Daily	365	0	3				
Wash down	Preventive	OP	1	Weekly	52	0	13				
Calibrate Level instrumentation, alarms and communications to SCADA	Preventive	MI	1	Annual	1	1		1			
Replace grit basin				30+ Years							LCCA
						Total, each unit (hr)	16	1			
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	16	1			
						No. Units	2	2	2	2	
						Total hours by staff type	32	1			
						Annualized Hours and Materials	33				$0

Electrical Load

Design Condition

Equipment Type	No. Units		Flow (rated) [gpm]	TDH (rated) [ft]	HP (rated)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]			
Grit Pump	2		250	25	4.2	5	40%	95%	N/A	3.1			

Notes:

Scenario 1, Min Day (0.67 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gpm]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Grit Pump	2	1	250	25	3.9	5	40%	94%	-	3.1	4	1	13

Notes: Assume pump operates 4 minutes on, 20 minutes off (4 hr/d).

Scenario 2, Avg Day (0.97 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gpm]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Grit Pump	2	1	250	25	3.9	5	40%	94%	-	3.1	4	333	4182

Notes: Assume pump operates 4 minutes on, 20 minutes off (4 hr/d).

Scenario 3, Max Month (1.16 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gpm]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Grit Pump	2	1	250	25	3.9	5	40%	94%	-	3.1	4	30	376

Notes: Assume pump operates 4 minutes on, 20 minutes off (4 hr/d).

Scenario 4, Max Day (2.75 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gpm]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Grit Pump	2	1	250	25	3.9	5	40%	94%	-	3.1	4.8	1	15

Notes: Assume pump operates 4 minutes on, 20 minutes off (4 hr/d).

Total kWh/yr: 4586

CITY OF MORRO BAY WATER RECLAMATION FACILITY PROJECT

Operations and Maintenance

Pump, Grit

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
General visual inspection - bump pumps to verify operation.	Preventive	OP	1	Daily	365	0	3				
Visually inspect pump suction / discharge pressures are within process design	Preventive	OP	1	Daily	365	0	2				
Check pump integrity											
Lubricate pump and motor bearings	Preventive	MM	1	Quarterly	4	1				4	5
Check shaft alignment (laser alignment)	Preventive	MM	1	Quarterly	4	1				4	
Check pump performance - head pressure, pump flow rate, amp draw,	Preventive	MM	1	Annual	1	1				1	
Perform vibration spectrum analysis on pump.	Preventive	RMT	1	Annual	1	0			0		
Replace mechanical seal	Preventive	MM	1	2 Years	1	2				1	30
MCC Switchgear cleaning and testing	Preventive	RMT	2	Annual	1	4			8		
Confirm proper operation of alarms and communication with SCADA	Preventive	MI	1	Annual	1	1		1			
Replace Pump				30+ Years							LCCA
						Total, each unit (hr)	5	1	8	10	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	5	1	8	10	
						No. Units	2	2	2	2	
						Total hours by staff type	10	1	17	20	
						Annualized Hours and Materials	48				$70

Electrical Load

Design Condition

Equipment Type	No. Units		Flow (rated) [MGD]	HP (rated)	HP (name plate)	Motor Eff.	Power draw [kW]			
Grit Classif.	1		8.14	1	1	95%	0.8			

Notes:

Scenario 1, Min Day (0.67 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Grit Classif.	1	1	0.67	1	1	95%	0.8	4	1	3

Notes: Assume 5 minutes off and 25 minutes off cycle.

Scenario 2, Avg Day (0.97 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Grit Classif.	1	1	0.97	1	1	95%	0.8	4	333	1046

Notes: Assume 5 minutes off and 25 minutes off cycle.

Scenario 3, Max Month (1.16 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Grit Classif.	1	1	1.16	1	1	95%	0.8	4	30	94

Notes: Assume 5 minutes off and 25 minutes off cycle.

Scenario 4, Max Day (2.75 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Grit Classif.	1	1	2.75	1	1	95%	0.8	4.8	1	4

Notes: Assume 5 minutes off and 25 minutes off cycle.

Total kWh/yr:	1147

Operations and Maintenance

Grit Separator Classifier

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
General visual inspection, check motor operation, vibration, conveyor, debris buildup	Preventive	OP	1	Daily	365	0	3				
Clean washer / compactor	Preventive	OP	1	Daily	365	0	91				
Grease bearings	Preventive	OP	1	Monthly	12	0	2				
Calibrate instrumentation, alarms and communications to SCADA	Preventive	MI	1	Annual	1	1		1			
Rebuild separator / Classifier	Corrective	MM	2	10 Years	0	40				8	1000
MCC Switchgear cleaning and testing	Preventive	RMT	2	Annual	1	2			4		
Replace grit separator / classifier				30+ Years							LCCA
						Total, each unit (hr)	96	1	4	8	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	96	1	4	8	
						No. Units	1	1	1	1	
						Total hours by staff type	96	1	4	8	
						Annualized Hours and Materials	109				$100

Electrical Load

Design Condition

Equipment Type	No. Units		Flow (rated) [MGD]	HP (rated)	HP (name plate)	Motor Eff.	Power draw [kW]			
Splitter Box	1		-	-	-	-				

Notes: No electrical load

Scenario 1, Min Day (0.67 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Splitter Box	1			-	-	-	-		1	-

Scenario 2, Avg Day (0.97 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Splitter Box	1			-	-	-	-		333	-

Scenario 3, Max Month (1.16 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Splitter Box	1				-	-	-		30	-

Scenario 4, Max Day (2.75 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Splitter Box	1			-	-	-	-		1	-

Total kWh/yr:	0

Operations and Maintenance

Headworks Splitter Box

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
General visual inspection	Preventive	OP	1	Daily	365	0	3				
Wash down	Preventive	OP	1	Weekly	52	0	13				
Calibrate Level instrumentation, alarms and communications to SCADA	Preventive	MI	1	Annual	1	1		1			
Replace splitter box				30+ Years							LCCA
						Total, each unit (hr)	16	1			
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	16	1			
						No. Units	1	1	1	1	
						Total hours by staff type	16	1			
						Annualized Hours and Materials	17				$0

CITY OF MORRO BAY WATER RECLAMATION FACILITY PROJECT

Electrical Load

Design Condition

Equipment Type	No. Units		Flow (rated) [MGD]	HP (rated)	HP (name plate)	Motor Eff.	Power draw [kW]			
Fine Screen	2		1.88	2	2	95%	1.6			

Notes:

Scenario 1, Min Day (0.67 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Fine Screen	2	1	0.67	2	2	95%	1.6	4	1	6

Notes: Assume operation at nameplate horsepower. Assume 5 min on, 25 min off (4 hours/d) with one screen operating.

Scenario 2, Avg Day (0.97 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Fine Screen	2	1	0.97	2	2	95%	1.6	4	333	2093

Notes: Assume operation at nameplate horsepower. Assume 5 min on, 25 min off (4 hours/d) with one screen operating.

Scenario 3, Max Month (1.16 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Fine Screen	2	1	1.16	2	2	95%	1.6	4	30	188

Notes: Assume operation at nameplate horsepower. Assume 5 min on, 25 min off (4 hours/d) with one screen operating.

Scenario 4, Max Day (2.75 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Fine Screen	2	1	1.88	2	2	95%	1.6	4	1	6

Notes: Assume operation at nameplate horsepower. Assume 5 min on, 25 min off (4 hours/d) with one screen operating.

Total kWh/yr:	2294

CITY OF MORRO BAY WATER RECLAMATION FACILITY PROJECT

Operations and Maintenance

Fine Screens

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
Check that the filter operates properly.	Preventive	OP	1	Daily	365	0	6				
Clean the 3/4" filter (close the 3/4" valve and operate a flushing cycle in order to release pressure and then open the bowl):	Preventive	OP	1	Weekly	52	0	3				
Check that there is grease on the drive shaft, and drive bushing. Add grease if necessary.	Preventive	MM	1	Weekly	52	0				9	
Take care of any leakage from the scanner shaft. If necessary, replace the sealing flange internal O-Ring.	Preventive	MM	1	Weekly	52	1				26	20
Calibrate instrumentation, alarms and communications to SCADA	Preventive	MI	1	Annual	1	1		1			
Rebuild Fine Screen / Compactor	Corrective	MM	2	10 Years	0	40				8	1000
MCC Switchgear cleaning and testing	Preventive	RMT	2	Annual	1	2			4		
Replace packaged fine screen w/ washer compactor				30+ Years							LCCA
						Total, each unit (hr)	9	1	4	43	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	9	1	4	43	
						No. Units	2	2	2	2	
						Total hours by staff type	17	1	8	85	
						Annualized Hours and Materials	112				$2,280

CITY OF MORRO BAY WATER RECLAMATION FACILITY PROJECT

Electrical Load

Design Condition

Equipment Type	No. Units		Flow (rated) [MGD]	HP (rated)	HP (name plate)	Motor Eff.	Power draw [kW]			
Grit Washer	2		1.88	2	2	95%	1.6			

Notes:

Scenario 1, Min Day (0.67 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Grit Washer	2	1	0.67	2	2	95%	1.6	4	1	6

Notes: Assume operation at nameplate horsepower. Assume 5 min on, 25 min off (4 hours/d) with one washer compactor operating

Scenario 2, Avg Day (0.97 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Grit Washer	2	1	0.97	2	2	95%	1.6	4	333	2093

Notes: Assume operation at nameplate horsepower. Assume 5 min on, 25 min off (4 hours/d) with one washer compactor operating

Scenario 3, Max Month (1.16 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Grit Washer	2	1	1.16	2	2	95%	1.6	4	30	188

Notes: Assume operation at nameplate horsepower. Assume 5 min on, 25 min off (4 hours/d) with one washer compactor operating

Scenario 4, Max Day (2.75 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Grit Washer	2	1	2.75	2	2	95%	1.6	4	1	6

Notes: Assume operation at nameplate horsepower. Assume 5 min on, 25 min off (4 hours/d) with one washer compactor operating

Total kWh/yr:	2294

Operations and Maintenance

Washer Compactor, Fine

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
Total, each unit (hr)											
Adjustment Factor							1	1	1	1	
Adjusted hours, each unit											
No. Units							2	2	2	2	
Total hours by staff type											
Annualized Hours and Materials											

**See Fine Screens page for O&M hours. Treated as packaged system.

CITY OF MORRO BAY WATER RECLAMATION FACILITY PROJECT

Electrical Load

Design Condition

Equipment Type	No. Units		Flow (rated) [MGD]	HP (rated)	HP (name plate)	Motor Eff.	Power draw [kW]			
Screw Conv.	2		1.88	1	1	95%	0.8			

Notes:

Scenario 1, Min Day (0.67 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Screw Conv.	2	1	0.67	1	1	95%	0.8	4	1	3

Notes: Assume operation at nameplate horsepower. Assume 5 min on, 25 min off (4 hours/d) with one conveyor operating

Scenario 2, Avg Day (0.97 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Screw Conv.	2	1	0.97	1	1	95%	0.8	4	333	1046

Notes: Assume operation at nameplate horsepower. Assume 5 min on, 25 min off (4 hours/d) with one conveyor operating

Scenario 3, Max Month (1.16 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Screw Conv.	2	1	1.16	1	1	95%	0.8	4	30	94

Notes: Assume operation at nameplate horsepower. Assume 5 min on, 25 min off (4 hours/d) with one conveyor operating

Scenario 4, Max Day (2.75 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Screw Conv.	2	1	1.88	1	1	95%	0.8	4	1	3

Notes: Assume operation at nameplate horsepower. Assume 5 min on, 25 min off (4 hours/d) with one conveyor operating

Total kWh/yr:	1147

Operations and Maintenance

Conveyor, Fine Screens

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
General visual inspection, check motor operation, vibration, conveyor, debris buildup	Preventive	OP	1	Daily	365	0	6				
Clean conveyor	Preventive	OP	1	Daily	365	0	91				
Grease roller bearings	Preventive	OP	1	Monthly	12	0	2				
Calibrate instrumentation, alarms and communications to SCADA	Preventive	MI	1	Annual	1	1		1			
Replcae fine screen conveyor and discharge chute				30+ Years							LCCA
						Total, each unit (hr)	99	1			
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	99	1			
						No. Units	2	2	2	2	
						Total hours by staff type	199	2			
						Annualized Hours and Materials	201				$0

Electrical Load

Design Condition

Equipment Type	No. Units				HP (name plate)	Motor Eff.	Power draw [kW]			
Fan	1				3	95%	0.0			

Notes:

Operating Scenario

Equipment Type	No. Units	Units Operating			HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Fan	1	1			3	95%	2.4	24	365	20628

Notes: Assume operation at name plate horsepower 24/7.

Total kWh/yr: 20628

CITY OF MORRO BAY WATER RECLAMATION FACILITY PROJECT

Operations and Maintenance

Odor Control Fan

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
General visual inspection	Preventive	OP	1	Daily	365	0	6				
Perform vibration spectrum analysis on pump.	Predictive	RMT	1	Quarterly	4	1			2		
Check impeller for buildup of foreign material and wear.	Preventive	MM	1	Monthly	12	0				3	
Check V-Belt Drives for Proper Alignment and Tension	Preventive	MM	1	Quarterly	4	0				1	
Lubricate the fan and motor bearings	Preventive	MM	1	Monthly	12	0				3	
Calibrate instrumentation, alarms and communications to SCADA	Preventive	MI	1	Annual	1	1		1			
Tighten all bolts and setscrews	Preventive	MM	1	Monthly	12	0				3	
MCC Switchgear cleaning and testing	Preventive	RMT	2	Annual	1	2			4		
Replace Scrubber Fan/Blower Unit	Preventive	MM	1	20 Years	0	8				0	LCCA
						Total, each unit (hr)	6	1	6	10	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	6	1	6	10	
						No. Units	1	1	1	1	
						Total hours by staff type	6	1	6	10	
						Annualized Hours and Materials	23				$0

Electrical Load

Design Condition

Equipment Type	No. Units				HP (name plate)	Motor Eff.	Power draw [kW]			
Pump	1				0.75	95%	0.6			

Notes: Recirc. pump in scrubber.

Operating Scenario

Equipment Type	No. Units	Units Operating			HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	1	1			0.75	95%	0.6	24	365	5157

Notes: Assume operation at name plate horsepower 24/7.

Total kWh/yr: 5157

Operations and Maintenance

Odor Control Scrubber

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
General visual inspection	Preventive	OP	1	Daily	365	0	3				
Inspect packing for accumulation.	Preventive	OP	1	Monthly	12	0	0				
Calibrate instrumentation, alarms and communications to SCADA	Preventive	MI	1	Quarterly	4	1		2			
Inspect/clean all motors, drives, belts and bearings.	Preventive	MI	1	Monthly	12	0		0			
Check all pulleys and belts for proper alignment and tension.	Preventive	MM	1	Monthly	12	0				0	
Check all bolted connections and tighten as required.	Preventive	MM	1	Monthly	12	0				0	
Drain and clean inside of wet scrubber reservoir.	Preventive	OP	1	Quarterly	4	1	2				
Lubricate all motor bearings as required.	Preventive	MI	1	Quarterly	4	0		1			
Check stuffing box on recirculation pump with mechanical seals for leakage.	Preventive	MM	1	Quarterly	4	0				0	
Inspect Nozzles, Clean as necessary	Preventive	MM	1	Semi-Annual	2	0				0	
Clean tower packing and mist eliminator	Preventive	MM	2	Semi-Annual	2	1				4	
Replace pH sensor membrane	Preventive	MI	1	Annual	1	1		1			500
MCC Switchgear cleaning and testing	Preventive	RMT	2	Annual	1	2			4		
Replace Air Scrubber	Preventive	MM	2	20 Years	0	8				1	LCCA
						Total, each unit (hr)	5	4	4	5	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	5	4	4	5	
						No. Units	1	1	1	1	
						Total hours by staff type	5	4	4	5	
						Annualized Hours and Materials	19				$500

Electrical Load

Design Condition

Equipment Type	No. Units		Flow (rated) [MGD]	HP (rated)	HP (name plate)	Motor Eff.	Power draw [kW]			
Membrane	3									

Notes: No electrical load.

Scenario 1, Min Day (0.67 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Membrane	3			-	0	0%	-		1	-

Scenario 2, Avg Day (0.97 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Membrane	3			-	0	0%	-		333	-

Scenario 3, Max Month (1.16 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Membrane	3			-	0	0%	-		30	-

Scenario 4, Max Day (2.75 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Membrane	3			-	0	0%	-		1	-

Total kWh/yr:	0

CITY OF MORRO BAY WATER RECLAMATION FACILITY PROJECT

Operations and Maintenance

MBR Membrane Train

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
General process visual inspection	Preventive	OP	1	Daily	365	0	18				
MBR Process Sampling and analytical Area - TSS, VSS											
Observe dewatering cycle and backwash	Preventive	OP	1	Daily	365	0	18				
Maintenance recovery cleaning	Corrective	OP	1	Semi-Annual	2	2	4				
Calibrate instrumentation, alarms and communications to SCADA for each UV train	Corrective	MI	1	Annual	1	1		1			
MCC Switchgear cleaning and testing	Preventive	RMT	2	Annual	1	2			4		
Replace membrane	Corrective	MM	2	Every 8 Years	0	8				2	97200
Replace MBR system				30+ Years							LCCA
						Total, each unit (hr)	41	1	4	2	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	41	1	4	2	
						No. Units	3	3	3	3	
						Total hours by staff type	122	3	12	6	
						Annualized Hours and Materials	143				$36,450

Electrical Load

Design Condition

Equipment Type	No. Units		Flow (rated) [gpm]	TDH (rated) [ft]	HP (rated)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]			
Pump	3		2300	2.5	6.3	7.5	40%	60%	96%	4.7			

Notes: Electrical design assumes 5 HP motor, vendor selections are showing approximately 7.5 HP needed. Changed to 7.5 HP.

Scenario 1, Min Day (0.67 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gpm]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	3	1	1637.8	2.5	2.6	7.5	40%	91%	96%	2.2	24	1	53

Notes: Ratio of RAS flow to plant flow is 3.52:1. Apply this ratio to 0.67 MGD to get 1967 gpm required for RAS pumps. Assume one pump operating at required flow.

Scenario 2, Avg Day (0.97 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gpm]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	3	2	1185.6	2.5	1.9	7.5	40%	90%	96%	3.2	24	333	25802

Notes: Ratio of RAS flow to plant flow is 3.52:1. Apply this ratio to 0.97 MGD to get 2848 gpm required for RAS pumps. Assume two pumps operating at half of required flow.

Scenario 3, Max Month (1.16 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gpm]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	3	2	1417.8	2.5	2.2	7.5	40%	91%	96%	3.8	24	30	2756

Notes: Ratio of RAS flow to plant flow is 3.52:1. Apply this ratio to 11.6 MGD to get 3405 gpm required for RAS pumps. Assume two pumps operating at half of required flow.

Scenario 4, Max Day (2.75 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gpm]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	3	2	2300	2.5	3.6	7.5	40%	93%	96%	6.1	24	1	146

Notes: Capacity of MBR system is 1.88 MGD. Excess flow goes to SAFE system. Assume full design flow in this scenario, 2 pumps operating at 2300 gpm each.

Total kWh/yr:	28757

Operations and Maintenance

Pump, MBR, RAS

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
General visual inspection - bump pumps to verify operation.	Preventive	OP	1	Daily	365	0	3				
Visually inspect pump suction / discharge pressures are within process design	Preventive	OP	1	Daily	365	0	2				
Check pump integrity											
Lubricate pump and motor bearings	Preventive	MM	1	Quarterly	4	1				4	5
Check shaft alignment (laser alignment)	Preventive	MM	1	Quarterly	4	1				4	
Check pump performance - head pressure, pump flow rate, amp draw,	Preventive	MM	1	Annual	1	1				1	
Perform vibration spectrum analysis on pump.	Preventive	RMT	1	Annual	1	0			0		
Replace mechanical seal	Preventive	MM	1	2 Years	1	2				1	30
MCC Switchgear cleaning and testing	Preventive	RMT	2	Annual	1	4			8		
Confirm proper operation of alarms and communication with SCADA	Preventive	MI	1	Annual	1	1		1			
Replace Pump				30+ Years							LCCA
						Total, each unit (hr)	5	1	8	10	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	5	1	8	10	
						No. Units	3	3	3	3	
						Total hours by staff type	15	2	25	30	
						Annualized Hours and Materials	72				$105

Electrical Load

Design Condition

Equipment Type	No. Units		Flow (rated) [gpm]	TDH (rated) [ft]	HP (rated)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]			
Pump	2		40.0	35	1.2	1.5	50%	60%	N/A	0.9			

Notes:

Scenario 1, Min Day (0.67 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gpm]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	2	1	15.3	35	0.3	1.5	50%	89%	-	0.2	24	1	5

Notes: Assumed to be same solids loading rate as scenario 2 and therefore same WAS flow rate.

Scenario 2, Avg Day (0.97 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gpm]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	2	1	15.3	35	0.3	1.5	50%	89%	-	0.2	24	333	1812

Notes: WAS flow rate based on solids loading rate. See document linked below for calculation.

LCCA Energy - Side Calcs

Scenario 3, Max Month (1.16 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gpm]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	2	1	20.3	35	0.4	1.5	50%	90%	-	0.3	24	30	214

Notes: Ratio of WAS-Q to Plant-Q is 0.030656:1. Apply this ratio to influent flow to get actual WAS flow in this scenario. Assume one pump duty with capacity of 40 gpm, operating continuously (24hrs/d).

Scenario 4, Max Day (2.75 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gpm]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	2	1	29	35	0.5	1.5	50%	91%	-	0.4	24	1	10

Notes: Ratio of WAS-Q to Plant-Q is 0.030656:1. Apply this ratio to influent flow to get actual WAS flow in this scenario. Assume one pump duty with capacity of 40 gpm, operating continuously (24hrs/d).

Total kWh/yr:	2042

Operations and Maintenance

Pump, MBR, WAS

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
General visual inspection - bump pumps to verify operation.	Preventive	OP	1	Daily	365	0	3				
Visually inspect pump suction / discharge pressures are within process design	Preventive	OP	1	Daily	365	0	2				
Check pump integrity											
Lubricate pump and motor bearings	Preventive	MM	1	Quarterly	4	1				4	5
Check shaft alignment (laser alignment)	Preventive	MM	1	Quarterly	4	1				4	
Check pump performance - head pressure, pump flow rate, amp draw,	Preventive	MM	1	Annual	1	1				1	
Perform vibration spectrum analysis on pump.	Preventive	RMT	1	Annual	1	0			0		
Replace mechanical seal	Preventive	MM	1	2 Years	1	2				1	30
MCC Switchgear cleaning and testing	Preventive	RMT	2	Annual	1	4			8		
Confirm proper operation of alarms and communication with SCADA	Preventive	MI	1	Annual	1	1		1			
Replace Pump				30+ Years							LCCA
						Total, each unit (hr)	5	1	8	10	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	5	1	8	10	
						No. Units	2	2	2	2	
						Total hours by staff type	10	1	17	20	
						Annualized Hours and Materials	48				$70

Electrical Load

Design Condition

Equipment Type	No. Units		Flow (rated) [gpm]	TDH (rated) [ft]	HP (rated)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]			
Pump	3		700	45	11.8	15	74%	95%	96%	8.8			

Notes:

Scenario 1, Min Day (0.67 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gpm]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	3	1	450	45	6.9	15	74%	93%	96%	5.8	24	1	139

Notes: Filtrate flow equal to MBR influent flow minus WAS flow.

Scenario 2, Avg Day (0.97 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gpm]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	3	2	329.2	45	5.1	15	74%	91%	96%	8.6	24	333	68782

Notes: Filtrate flow equal to MBR influent flow minus WAS flow.

Scenario 3, Max Month (1.16 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gpm]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	3	2	392.6	45	6.0	15	74%	92%	96%	10.2	24	30	7327

Notes: Filtrate flow equal to MBR influent flow minus WAS flow.

Scenario 4, Max Day (2.75 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gpm]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	3	2	638.3	45	9.8	15	74%	94%	96%	16.3	24	1	390

Notes: MBR capacity 1.88MGD, filtrate flow equal to 1.88MGD minus WAS flow.

Total kWh/yr:	76638

Operations and Maintenance

Pump, MBR, Filtrate

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
General visual inspection - bump pumps to verify operation.	Preventive	OP	1	Daily	365	0	3				
Visually inspect pump suction / discharge pressures are within process design	Preventive	OP	1	Daily	365	0	2				
Check pump integrity											
Lubricate pump and motor bearings	Preventive	MM	1	Quarterly	4	1				4	5
Check shaft alignment (laser alignment)	Preventive	MM	1	Quarterly	4	1				4	
Check pump performance - head pressure, pump flow rate, amp draw,	Preventive	MM	1	Annual	1	1				1	
Perform vibration spectrum analysis on pump.	Preventive	RMT	1	Annual	1	0			0		
Replace mechanical seal	Preventive	MM	1	2 Years	1	2				1	30
MCC Switchgear cleaning and testing	Preventive	RMT	2	Annual	1	4			8		
Confirm proper operation of alarms and communication with SCADA	Preventive	MI	1	Annual	1	1		1			
Replace Pump				30+ Years							LCCA
						Total, each unit (hr)	5	1	8	10	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	5	1	8	10	
						No. Units	3	3	3	3	
						Total hours by staff type	15	2	25	30	
						Annualized Hours and Materials	72				$105

Electrical Load

Design Condition

Equipment Type	No. Units		Flow (rated) [gpm]	TDH (rated) [ft]	HP (rated)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]			
Pump	2		675	35	8.8	10	74%	95%	96%	6.6			

Notes:

NaOCl Maintenance Clean

Equipment Type	No. Units	Units Operating	Flow (actual) [gpm]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	2	1	675	35	8.1	10	74%	94%	96%	6.7	1	110	732

Notes: Assume maintenance clean occurs once every 10 days for one hour. This will occur for all 3 trains.

NaOCl CIP Cycle

Equipment Type	No. Units	Units Operating	Flow (actual) [gpm]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	2	1	675	35	8.1	10	74%	94%	96%	6.7	4	11	294

Notes: Assume CIP clean occurs once every 100 days in all 3 trains (11 total cleanings per year) for 8 hours. Assume pump runs for half of the cleaning cycle time (4 hours/clean).

Citric Acid CIP Cycle

Equipment Type	No. Units	Units Operating	Flow (actual) [gpm]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	2	1	675	35	8.1	10	74%	94%	96%	6.7	4	6	147

Notes: Assume CIP clean occurs once every 200 days in all 3 trains (5.5 total cleanings per year) for 8 hours. Assume pump runs for half of the cleaning cycle time (4 hours/clean).

Total kWh/yr:	1173

CITY OF MORRO BAY WATER RECLAMATION FACILITY PROJECT

Operations and Maintenance

Pump, MBR, Backpulse

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
General visual inspection - bump pumps to verify operation.	Preventive	OP	1	Daily	365	0	3				
Visually inspect pump suction / discharge pressures are within process design	Preventive	OP	1	Daily	365	0	2				
Check pump integrity											
Lubricate pump and motor bearings	Preventive	MM	1	Quarterly	4	1				4	5
Check shaft alignment (laser alignment)	Preventive	MM	1	Quarterly	4	1				4	
Check pump performance - head pressure, pump flow rate, amp draw,	Preventive	MM	1	Annual	1	1				1	
Perform vibration spectrum analysis on pump.	Preventive	RMT	1	Annual	1	0			0		
Replace mechanical seal	Preventive	MM	1	2 Years	1	2				1	30
MCC Switchgear cleaning and testing	Preventive	RMT	2	Annual	1	4			8		
Confirm proper operation of alarms and communication with SCADA	Preventive	MI	1	Annual	1	1		1			
Replace Pump				30+ Years							LCCA
						Total, each unit (hr)	5	1	8	10	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	5	1	8	10	
						No. Units	2	2	2	2	
						Total hours by staff type	10	1	17	20	
						Annualized Hours and Materials	48				$70

Electrical Load

Design Condition

Equipment Type	No. Units		Flow (rated) [gpm]	TDH (rated) [ft]	HP (rated)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]			
Pump	2		250	25	2.2	5	75%	95%	N/A	1.7			

Notes:

Operating Condition

Equipment Type	No. Units	Units Operating	Flow (actual) [gpm]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	2	2	250	25	2.1	5	75%	92%	-	3.4	8	1	27

Notes: Assume MBR tank is drained once every 2 years at 250 gpm. Tank volume = 480,000 gal. Assume both pumps used simultaneously (i.e. time to empty equals 16 hours)

Total kWh/yr:	27

Operations and Maintenance

Pump, MBR, Drain

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
General visual inspection for surface water mixing / agitation	Preventive	OP	1	Daily	365	0	3				
Pull pump from liquid stream for visual inspection for debris on impeller, impeller wear, electrical cable integrity, cable / chain integrity	Preventive	OP	1	Monthly	12	1	6				
Replace horizontal Submersible Pump wire cable / chain	Corrective	MM	1	5 Years	0	2				0	200
Check pump performance - amp draw	Preventive	OP	1	Quarterly	12	1	12				
MCC Switchgear cleaning and testing	Preventive	RMT	2	Annual	1	2			4		
Replace horizontal Submersible Pump	Corrective	MM	1	10 Years	0	3				0	LCCA
						Total, each unit (hr)	21		4	1	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	21		4	1	
						No. Units	2	2	2	2	
						Total hours by staff type	42		8	1	
						Annualized Hours and Materials	51				$70

Electrical Load

Design Condition

Equipment Type	No. Units	Units Operating	Flow (rated) [scfm]	dP (rated) [psi]	HP (rated)	HP (name plate)	Blower Eff.	Motor Eff.	VFD Eff.	Power draw [kW]			
Blower	3	2	1050	10.6	77.2	75	69%	95%	96%	115.2			

Notes:

Scenario 1, Min Day (0.67 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [scfm]	dP (actual) [psi]	HP (actual)	HP (name plate)	Blower Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Blower	3	1	600	9.7	36.8	75	69%	93%	96%	30.8	24	1	739

Notes: aeration rates based on process design, assuming continuous operation. For discharge pressure: sidewater depth above diffuser = 17ft (7.48psi), add 1.1 psi for diffuser headloss, add 0.9 for losses in pipes/valves, add 0.3 for inlet losses.

Scenario 2, Avg Day (0.97 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [scfm]	dP (actual) [psi]	HP (actual)	HP (name plate)	Blower Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Blower	3	2	550	9.7	33.8	75	69%	93%	96%	56.6	24	333	453034

Notes: aeration rates based on process design, assuming continuous operation. For discharge pressure: sidewater depth above diffuser = 17ft (7.48psi), add 1.1 psi for diffuser headloss, add 0.9 for losses in pipes/valves, add 0.3 for inlet losses.

Scenario 3, Max Month (1.16 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [scfm]	dP (actual) [psi]	HP (actual)	HP (name plate)	Blower Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Blower	3	2	800	9.7	49.1	75	69%	94%	96%	81.3	24	30	58567

Notes: aeration rates based on process design, assuming continuous operation. For discharge pressure: sidewater depth above diffuser = 17ft (7.48psi), add 1.1 psi for diffuser headloss, add 0.9 for losses in pipes/valves, add 0.3 for inlet losses.

Scenario 4, Max Day (2.75 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [scfm]	dP (actual) [psi]	HP (actual)	HP (name plate)	Blower Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Blower	3	2	1050	9.7	64.5	75	69%	94%	96%	106.9	24	1	2565

Notes: aeration rates based on process design, assuming continuous operation. For discharge pressure: sidewater depth above diffuser = 17ft (7.48psi), add 1.1 psi for diffuser headloss, add 0.9 for losses in pipes/valves, add 0.3 for inlet losses.

Total kWh/yr: 514905

CITY OF MORRO BAY WATER RECLAMATION FACILITY PROJECT

Operations and Maintenance

Blower, MBR, BNR Aeration

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
Inspect blower and controls	Preventive	OP	1	Daily	365	0	3				
Confirm proper operation of the blower, temperature, pressures, and flow (CFM)	Preventive	OP	1	Daily	365	0	3				
Record operating conditions, temperature, pressures, and flow	Predictive	OP	1	Daily	365						
Intake filter - check filter for contamination, replace if necessary (max. -45 bar), and replace filter insert	Corrective	MM	1	Monthly	12	0				3	200
Air intake/air exhaust openings - of acoustic hood, check and clean	Corrective	MM	1	Monthly	12	0				3	
V-belt pulley alignment - check, correct if necessary	Corrective	MM	1	Quarterly	4	1				2	
Perform manufactures PM maintenance	Corrective	MM	1	Semi-Annual	2	2				4	150
Calibrate instrumentation, alarms and communications to SCADA	Preventive	MI	1	Annual	1	1		1			
Calibrate pressure, differential, temperature, and flow instrumentation	Corrective	MI	1	Annual	1	2		2			
MCC Switchgear cleaning and testing	Preventive	RMT	2	Annual	1	2			4		
Replace blower				30+ Years							LCCA
						Total, each unit (hr)	6	3	4	12	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	6	3	4	12	
						No. Units	3	3	3	3	
						Total hours by staff type	18	9	12	36	
						Annualized Hours and Materials	75				$8,100

Electrical Load

Design Condition

Equipment Type	No. Units	Units Operating	Flow (rated) [scfm]	dP (rated) [psi]	HP (rated)	HP (name plate)	Blower Eff.	Motor Eff.	VFD Eff.	Power draw [kW]			
Blower	4	3	270	6	11.8	10	66%	95%	96%	26.3			

Notes:

Scenario 1, Min Day (0.67 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [scfm]	dP (rated) [psi]	HP (actual)	HP (name plate)	Blower Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Blower	4	2	210.5	6	8.4	10	66%	94%	96%	13.8	8.4	1	116

Notes: Assume scour blowers operate 35% of the time in all active trains.

Scenario 2, Avg Day (0.97 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [scfm]	dP (rated) [psi]	HP (actual)	HP (name plate)	Blower Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Blower	4	2	210.5	6	8.4	10	66%	94%	96%	13.8	8.4	333	38748

Notes: Assume scour blowers operate 35% of the time in all active trains.

Scenario 3, Max Month (1.16 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [scfm]	dP (rated) [psi]	HP (actual)	HP (name plate)	Blower Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Blower	4	3	270	6	10.7	10	66%	92%	96%	27.1	8.4	30	6821

Notes: Assume scour blowers operate 35% of the time in all active trains.

Scenario 4, Max Day (2.75 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [scfm]	dP (rated) [psi]	HP (actual)	HP (name plate)	Blower Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Blower	4	3	270	6	10.7	10	66%	92%	96%	27.1	8.4	1	227

Notes: Assume scour blowers operate 35% of the time in all active trains.

Total kWh/yr:	45912

CITY OF MORRO BAY WATER RECLAMATION FACILITY PROJECT

Operations and Maintenance

Blower, MBR Scour

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
Inspect blower and controls	Preventive	OP	1	Daily	365	0	3				
Confirm proper operation of the blower, temperature, pressures, and flow (CFM)	Preventive	OP	1	Daily	365	0	3				
Record operating conditions, temperature, pressures, and flow	Predictive	OP	1	Daily	365						
Intake filter - check filter for contamination, replace if necessary (max. -45 bar), and replace filter insert	Corrective	MM	1	Monthly	12	0				3	200
Air intake/air exhaust openings - of acoustic hood, check and clean	Corrective	MM	1	Monthly	12	0				3	
V-belt pulley alignment - check, correct if necessary	Corrective	MM	1	Quarterly	4	1				2	
Perform manufactures PM maintenance	Corrective	MM	1	Semi-Annual	2	2				4	150
Calibrate instrumentation, alarms and communications to SCADA	Preventive	MI	1	Annual	1	1		1			
Calibrate pressure, differential, temperature, and flow instrumentation	Corrective	MI	1	Annual	1	2		2			
MCC Switchgear cleaning and testing	Preventive	RMT	2	Annual	1	2			4		
Replace blower				30+ Years							LCCA
						Total, each unit (hr)	6	3	4	12	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	6	3	4	12	
						No. Units	4	4	4	4	
						Total hours by staff type	24	12	16	48	
						Annualized Hours and Materials	100				$10,800

CITY OF MORRO BAY WATER RECLAMATION FACILITY PROJECT

Electrical Load

Design Condition

Equipment Type	No. Units		HP (name plate)	Motor Eff.	Power draw [kW]			
Mixer	4		1.5	95%	1.2			
Notes:								

Scenario 1, Min Day (0.67 MGD)

Equipment Type	No. Units	Units Operating	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Mixer	4	2	1.5	95%	9.4	24	1	226
Notes:								

Scenario 2, Avg Day (0.97 MGD)

Equipment Type	No. Units	Units Operating	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Mixer	4	4	1.5	95%	18.8	24	333	150672
Notes:								

Scenario 3, Max Month (1.16 MGD)

Equipment Type	No. Units	Units Operating	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Mixer	4	4	1.5	95%	18.8	24	30	13564
Notes:								

Scenario 4, Max Day (2.75 MGD)

Equipment Type	No. Units	Units Operating	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Mixer	4	4	1.5	95%	18.8	24	1	452
Notes:								

Total kWh/yr:	164914

Operations and Maintenance

Mixer, MBR, Anoxic

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
General visual inspection for excessive noise and vibration	Preventive	OP	1	Daily	365	0	3				
Visual inspection of mixer blade for debris and wear	Preventive	OP	1	Weekly	52	0	4				
Mixer replacement	Corrective	MM	1	10 Years	0	1				0	LCCA
						Total, each unit (hr)	7			0	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	7			0	
						No. Units	4	4	4	4	
						Total hours by staff type	30			1	
						Annualized Hours and Materials	30				$0

CITY OF MORRO BAY WATER RECLAMATION FACILITY PROJECT

Electrical Load

Design Condition

Equipment Type	No. Units		HP (name plate)	Motor Eff.	Power draw [kW]			
Mixer	1		1.5	95%	1.2			
Notes:								

Scenario 1, Min Day (0.67 MGD)

Equipment Type	No. Units	Units Operating	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Mixer	1	1	1.5	95%	1.2	24	1	28
Notes:								

Scenario 2, Avg Day (0.97 MGD)

Equipment Type	No. Units	Units Operating	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Mixer	1	1	1.5	95%	1.2	24	333	9417
Notes:								

Scenario 3, Max Month (1.16 MGD)

Equipment Type	No. Units	Units Operating	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Mixer	1	1	1.5	95%	1.2	24	30	848
Notes:								

Scenario 4, Max Day (2.75 MGD)

Equipment Type	No. Units	Units Operating	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Mixer	1	1	1.5	95%	1.2	24	1	28
Notes:								

Total kWh/yr:	10321

Operations and Maintenance

Mixer, MBR, Deox

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
General visual inspection for excessive noise and vibration	Preventive	OP	1	Daily	365	0	3				
Visual inspection of mixer blade for debris and wear	Preventive	OP	1	Weekly	52	0	4				
Mixer replacement	Corrective	MM	1	10 Years	0	1				0	LCCA
						Total, each unit (hr)	7			0	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	7			0	
						No. Units	1	1	1	1	
						Total hours by staff type	7			0	
						Annualized Hours and Materials	8				$0

Electrical Load

Design Condition

Equipment Type	No. Units		HP (name plate)	Motor Eff.	Power draw [kW]			
Compressor	1		2.5	95%	2.0			
Notes:								

Scenario 1, Min Day (0.67 MGD)

Equipment Type	No. Units	Units Operating	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Compressor	1	1	2.5	95%	2.0	2	1	5
Notes: Assume compressor runs 10% of the time in all scenarios.								

Scenario 2, Avg Day (0.97 MGD)

Equipment Type	No. Units	Units Operating	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Compressor	1	1	2.5	95%	2.0	2	333	1570
Notes: Assume compressor runs 10% of the time in all scenarios.								

Scenario 3, Max Month (1.16 MGD)

Equipment Type	No. Units	Units Operating	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Compressor	1	1	2.5	95%	2.0	2	30	141
Notes: Assume compressor runs 10% of the time in all scenarios.								

Scenario 4, Max Day (2.75 MGD)

Equipment Type	No. Units	Units Operating	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Compressor	1	1	2.5	95%	2.0	2	1	5
Notes: Assume compressor runs 10% of the time in all scenarios.								

Total kWh/yr:	1720

Operations and Maintenance

Air Compressor, MBR

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
Confirm proper operation of the air compressors	Predictive	OP	1	Daily	365	0	3				
Note amount of time compressor is loaded-unloaded	Preventive	OP	1	Daily	365	0	6				
Perform unit service checks	Preventive	MM	1	Monthly	12	1				6	
Replace inlet air filter	Preventive	MM	1	Semi-Annual	2	0				1	15
Repair and replace component as required by manufacture O&M	Preventive	MM	1	Annual	1	2				2	100
Confirm proper operation of alarms and communication with SCADA	Preventive	MI	1	Annual	1	1		1			
Perform calibration procedures	Preventive	MI	1	Annual	1	2		2			
MCC Switchgear cleaning and testing	Preventive	RMT	2	Annual	1	2			4		
Visual Inspection for operating pressure range	Preventive	OP	1	Daily	365	0	3				
Open bottom drain to check for water/condensate and oil, and auto drain system is functioning as designed	Preventive	OP	1	Daily	365	0	6				
Check pressure relief functions properly to relief at designed pressure	Predictive	MM	1	Annual	1	0				0	
Internal inspection and certification	Preventive	RMT	1	3 Years	0	2			1		
Visual Inspection for operating pressure range and differential pressure across filter	Preventive	OP	1	Daily	365	0	3				
Record feed, discharge, and differential pressures											
Open - drain to check for water condensate and oil	Preventive	OP	1	Daily	365	0	3				
Replace filter cartridge	Corrective	OP	1	Semi-Annual	2	1	1				15
Replace compressed air receiver				30+ Years							LCCA
Replace filter system	Corrective	MM	1	10 Years	0	1				0	LCCA
Replcae air compressor				30+ Years							LCCA
						Total, each unit (hr)	25	3	5	9	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	25	3	5	9	
						No. Units	1	1	1	1	
						Total hours by staff type	25	3	5	9	
						Annualized Hours and Materials	41				$160

Electrical Load

Design Condition

Equipment Type	No. Units		HP (name plate)	Motor Eff.	Power draw [kW]			
Refrigerator	1		1	95%	0.8			

Notes:

Scenario 1, Min Day (0.67 MGD)

Equipment Type	No. Units	Units Operating	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Refrigerator	1	1	1	95%	0.8	2	1	2

Notes: Assume compressor runs 10% of the time in all scenarios. Unit runs whenever compressor runs.

Scenario 2, Avg Day (0.97 MGD)

Equipment Type	No. Units	Units Operating	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Refrigerator	1	1	1	95%	0.8	2	333	628

Notes: Assume compressor runs 10% of the time in all scenarios. Unit runs whenever compressor runs.

Scenario 3, Max Month (1.16 MGD)

Equipment Type	No. Units	Units Operating	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Refrigerator	1	1	1	95%	0.8	2	30	57

Notes: Assume compressor runs 10% of the time in all scenarios. Unit runs whenever compressor runs.

Scenario 4, Max Day (2.75 MGD)

Equipment Type	No. Units	Units Operating	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Refrigerator	1	1	1	95%	0.8	2	1	2

Notes: Assume compressor runs 10% of the time in all scenarios. Unit runs whenever compressor runs.

Total kWh/yr:	688

Operations and Maintenance

Compressed Air Refrigerator

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
Confirm proper operation of the compressors, temperature and pressures	Predictive	OP	1	Daily	365	0	3				
Note amount of time compressor is loaded-unloaded											
Perform unit service checks	Preventive	MM	1	Monthly	12	1				6	
Replace air filter	Preventive	MM	1	Semi-Annual	2	0				1	20
Repair and replace component as required by manufacture O&M	Preventive	MM	1	Annual	1	4				4	100
Confirm proper operation of alarms and communications with SCADA	Preventive	MI	1	Quarterly	4	0		1			
Perform calibration procedures											
Open bottom drain to check for water/condensate and oil, and auto drain system is functioning as designed	Preventive	OP	1	Daily	365	0	6				
Check pressure relief functions properly to relief at designed pressure	Predictive	MM	1	Annual	1	0				0	
MCC Switchgear cleaning and testing	Preventive	RMT	2	Annual	1	2			4		
Replace Refrigerated Air Dryer				30+ Years							LCCA
						Total, each unit (hr)	9	1	4	11	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	9	1	4	11	
						No. Units	1	1	1	1	
						Total hours by staff type	9	1	4	11	
						Annualized Hours and Materials	25				$140

CITY OF MORRO BAY WATER RECLAMATION FACILITY PROJECT

Electrical Load

Design Condition

Equipment Type	No. Units		Flow (rated) [MGD]	HP (rated)	HP (name plate)	Motor Eff.	Power draw [kW]			
Tank	1									

Notes: No electrical load.

Scenario 1, Min Day (0.67 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Tank	1			-	0	0%	-		1	-

Scenario 2, Avg Day (0.97 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Tank	1			-	0	0%	-		333	-

Scenario 3, Max Month (1.16 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Tank	1			-	0	0%	-		30	-

Scenario 4, Max Day (2.75 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Tank	1			-	0	0%	-		1	-

Total kWh/yr:	0

Operations and Maintenance

RO Feed Tank

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
General visual inspection	Preventive	OP	1	Daily	365	0	6				
Visual inspection of exterior level gauge	Preventive	OP	1	Daily	365	0	3				
Calibrate level transmitter	Preventive	MI	1	Annual	1	1		1			
Check level alarms (Float and level transmitter)	Preventive	MI	1	Annual	1	1		1			
Drain tank for inspection entry	Corrective	MM	3	Annual	1	4				12	
Recoat interior				30+ Years							
Recoat Exterior	Corrective	MM	1	10 Years	0	8				1	3000
Float and transmitter parts replacement	Corrective	MI	1	10 Years	0	2		0			0
Replace steel tank				30+ Years							LCCA
						Total, each unit (hr)	9	1		13	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	9	1		13	
						No. Units	1	1	1	1	
						Total hours by staff type	9	1		13	
						Annualized Hours and Materials	23				$300

Electrical Load

Design Condition

Equipment Type	No. Units		Flow (rated) [gpm]	TDH (rated) [ft]	HP (rated)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]			
Pump	3		287	373	38.0	40	78%	95%	96%	28.4			

Notes:

Scenario 1, Min Day (0.67 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gpm]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	3	2	232.6	268	20.2	40	78%	93%	96%	33.7	24	1	810

Notes:

Scenario 2, Avg Day (0.97 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gpm]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	3	3	224.5	268	19.5	40	78%	93%	96%	48.9	24	333	391172

Notes:

Scenario 3, Max Month (1.16 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gpm]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	3	3	268.5	268	23.3	40	78%	94%	96%	58.1	24	30	41840

Notes:

Scenario 4, Max Day (2.75 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gpm]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	3	3	268.5	268	23.3	40	78%	94%	96%	58.1	24	1	1395

Notes: Treatment capacity for RO is 1.16 MGD split amongst 3 trains.

Total kWh/yr:	435217

Operations and Maintenance

Pump, RO Stage 1

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
General visual inspection for excessive noise, vibration, seal leakage, and bearing oil level	Preventive	OP	1	Daily	365	0	3				
Visually inspect pump suction / discharge pressures are within process design	Preventive	OP	1	Quarterly	4	0	0				
Check pump performance - amp draw	Preventive	OP	1	Annual	1	1	1				
Change motor bearing oil	Preventive	OP	1	Annual	1	2	2				20
Pump rebuild (seals, bearings as needed, alignment)	Preventive	MM	1	5 Years	0	8				2	250
Pump replacement coupling alignment (laser alignment)	Preventive	MM	1	5 Years	0	1				0	
MCC Switchgear cleaning and testing	Preventive	RMT	2	Annual	1	4			8		
Confirm proper operation of alarms and communication with SCADA	Preventive	MI	1	Quarterly	4	1		2			
Replace Pump				30+ Years							LCCA
						Total, each unit (hr)	6	2	8	2	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	6	2	8	2	
						No. Units	3	3	3	3	
						Total hours by staff type	18	6	24	5	
						Annualized Hours and Materials	54				$210

Electrical Load

Design Condition

Equipment Type	No. Units		Flow (rated) [gpm]	TDH (rated) [ft]	HP (rated)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]			
Pump	3		121	70	2.9	3	80%	95%	96%	2.2			

Notes:

Scenario 1, Min Day (0.67 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gpm]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	3	2	46.5	69.3	1.0	3	80%	91%	96%	1.7	24	1	42

Notes: Flow based on 80% recovery in train 1.

Scenario 2, Avg Day (0.97 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gpm]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	3	3	44.9	69.3	1.0	3	80%	91%	96%	2.5	24	333	20075

Notes: Flow based on 80% recovery in train 1.

Scenario 3, Max Month (1.16 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gpm]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	3	3	53.7	69.3	1.2	3	80%	92%	96%	3.0	24	30	2144

Notes: Flow based on 80% recovery in train 1.

Scenario 4, Max Day (2.75 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gpm]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	3	3	53.7	69.3	1.2	3	80%	92%	96%	3.0	24	1	71

Notes: Flow based on 80% recovery in train 1.

Total kWh/yr:	22332

Operations and Maintenance

Pump, RO Stage 2

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
General visual inspection - bump pumps to verify operation.	Preventive	OP	1	Daily	365	0	3				
Visually inspect pump suction / discharge pressures are within process design	Preventive	OP	1	Daily	365	0	2				
Check pump integrity											
Lubricate pump and motor bearings	Preventive	MM	1	Quarterly	4	1				4	5
Check shaft alignment (laser alignment)	Preventive	MM	1	Quarterly	4	1				4	
Check pump performance - head pressure, pump flow rate, amp draw,	Preventive	MM	1	Annual	1	1				1	
Perform vibration spectrum analysis on pump.	Preventive	RMT	1	Annual	1	0			0		
Replace mechanical seal	Preventive	MM	1	2 Years	1	2				1	30
MCC Switchgear cleaning and testing	Preventive	RMT	2	Annual	1	4			8		
Confirm proper operation of alarms and communication with SCADA	Preventive	MI	1	Annual	1	1		1			
Replace Pump				30+ Years							LCCA
						Total, each unit (hr)	5	1	8	10	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	5	1	8	10	
						No. Units	3	3	3	3	
						Total hours by staff type	15	2	25	30	
						Annualized Hours and Materials	72				$105

CITY OF MORRO BAY WATER RECLAMATION FACILITY PROJECT

Electrical Load

Design Condition

Equipment Type	No. Units		Flow (rated) [MGD]	HP (rated)	HP (name plate)	Motor Eff.	Power draw [kW]			
Cart. Filter	3									

Notes: No electrical load.

Scenario 1, Min Day (0.67 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Cart. Filter	3			-	0	0%	-		1	-

Scenario 2, Avg Day (0.97 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Cart. Filter	3			-	0	0%	-		333	-

Scenario 3, Max Month (1.16 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Cart. Filter	3			-	0	0%	-		30	-

Scenario 4, Max Day (2.75 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Cart. Filter	3			-	0	0%	-		1	-

Total kWh/yr:	0

CITY OF MORRO BAY WATER RECLAMATION FACILITY PROJECT

Operations and Maintenance

RO Feed Cart Filt

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
General inspection including leaks, unusual noises, line pressure and differential pressure	Preventive	OP	1	Daily	365	0	3				
Record feed, discharge, and differential pressures	Preventive	OP	1	Daily	365						
Confirm proper operation of alarms	Preventive	MI	1	Annual	1	0		0			
Check waterproof	Corrective	MM	1	Monthly	12	0				0	
Check supports and fittings of the equipment	Corrective	MM	1	Semi-Annual	2	0				0	
Check corrosion and make painting adjustments	Corrective	MM	1	2 Years	1	0				0	
Protect external bolting with grease					1						
Replace cartridges	Corrective	MM	1	Semi-Annual	2	2				4	500
Check bolting of inlet / outlet pipes	Corrective	MM	1	2 Years	1	1				0	
Replace cartridge filter				30+ Years							LCCA
						Total, each unit (hr)	3	0		4	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	3	0		4	
						No. Units	3	3	3	3	
						Total hours by staff type	9	0		13	
						Annualized Hours and Materials	22				$1,000

CITY OF MORRO BAY WATER RECLAMATION FACILITY PROJECT

Electrical Load

Design Condition

Equipment Type	No. Units		Flow (rated) [MGD]	HP (rated)	HP (name plate)	Motor Eff.	Power draw [kW]			
Tank	3						#DIV/0!			

Notes: No electrical load.

Scenario 1, Min Day (0.67 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Tank	3			-	0	0%	-		1	-

Scenario 2, Avg Day (0.97 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Tank	3			-	0	0%	-		333	-

Scenario 3, Max Month (1.16 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Tank	3			-	0	0%	-		30	-

Scenario 4, Max Day (2.75 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Tank	3			-	0	0%	-		1	-

Total kWh/yr:	0

CITY OF MORRO BAY WATER RECLAMATION FACILITY PROJECT

Operations and Maintenance

RO Train

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
Visual Inspection for operating pressure range, differential pressure across membrane stages and leaks	Preventive	OP	1	Daily	365	0	55				
Routine readings											
Process sampling (Includes routine sampling and SDI testing)											
Pressure vessel flow and profile sampling					12						
Calibrate instrumentation, alarms and communications to SCADA	Corrective	MI	1	Annual	1	1		1			
MCC Switchgear cleaning and testing	Preventive	RMT	2	Annual	1	2			4		
Membrane replacement	Corrective	OP	2	Every 5 Years	0	8	3				28000
Clean-in-place operations (this includes Operator time to ordering & receiving, prepare and batch cleaning chemicals, perform typical CIP sampling and data recording, neutralizing spent chemicals)	Corrective	OP	1	Semi-Annual	2	4	8				0
Calibrate instrumentation, alarms and communications to SCADA for each CIP	Corrective	MI	1	Semi-Annual	2	1		1			
MCC Switchgear cleaning and testing	Preventive	RMT	2	Annual	1	2			4		
Replace Vessels and Equipment				30+ Years							LCCA
						Total, each unit (hr)	66	2	8		
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	66	2	8		
						No. Units	3	3	3	3	
						Total hours by staff type	198	5	24		
						Annualized Hours and Materials	226				$16,800

Electrical Load

Design Condition

Equipment Type	No. Units		Flow (rated) [gpm]	TDH (rated) [ft]	HP (rated)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]			
Pump	2		350	140	17.4	20	78%	95%	96%	13.0			

Notes:

Operating Condition

Equipment Type	No. Units	Units Operating	Flow (actual) [gpm]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	2	1	350	140	15.9	20	78%	94%	96%	13.1	12	6	946

Notes: Assumes one CIP cycle, twice per year, for each train. Assume 12 hours per CIP cycle.

Total kWh/yr: 946

Operations and Maintenance

Pump, RO, CIP

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
General visual inspection - bump pumps to verify operation.	Preventive	OP	1	Daily	365	0	3				
Visually inspect pump suction / discharge pressures are within process design	Preventive	OP	1	Daily	365	0	2				
Check pump integrity											
Lubricate pump and motor bearings	Preventive	MM	1	Quarterly	4	1				4	5
Check shaft alignment (laser alignment)	Preventive	MM	1	Quarterly	4	1				4	
Check pump performance - head pressure, pump flow rate, amp draw,	Preventive	MM	1	Annual	1	1				1	
Perform vibration spectrum analysis on pump.	Preventive	RMT	1	Annual	1	0			0		
Replace mechanical seal	Preventive	MM	1	2 Years	1	2				1	30
MCC Switchgear cleaning and testing	Preventive	RMT	2	Annual	1	4			8		
Confirm proper operation of alarms and communication with SCADA	Preventive	MI	1	Annual	1	1		1			
Replace Pump				30+ Years							LCCA
						Total, each unit (hr)	5	1	8	10	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	5	1	8	10	
						No. Units	2	2	2	2	
						Total hours by staff type	10	1	17	20	
						Annualized Hours and Materials	48				$70

CITY OF MORRO BAY WATER RECLAMATION FACILITY PROJECT

Electrical Load

Design Condition

Equipment Type	No. Units		Flow (rated) [MGD]	HP (rated)	HP (name plate)	Motor Eff.	Power draw [kW]			
Cart. Filter	1						#DIV/0!			

Notes: No electrical load.

Scenario 1, Min Day (0.67 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Cart. Filter	1			-	0	0%	-		1	-

Scenario 2, Avg Day (0.97 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Cart. Filter	1			-	0	0%	-		333	-

Scenario 3, Max Month (1.16 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Cart. Filter	1			-	0	0%	-		30	-

Scenario 4, Max Day (2.75 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Cart. Filter	1			-	0	0%	-		1	-

Total kWh/yr:	0

CITY OF MORRO BAY WATER RECLAMATION FACILITY PROJECT

Operations and Maintenance

Cartridge Filt, RO CIP

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
General inspection including leaks, unusual noises, line pressure and differential pressure	Preventive	OP	1	Daily	365	0	3				
Record feed, discharge, and differential pressures	Preventive	OP	1	Daily	365						
Confirm proper operation of alarms	Preventive	MI	1	Annual	1	0		0			
Check waterproof	Corrective	MM	1	Monthly	12	0				0	
Check supports and fittings of the equipment	Corrective	MM	1	Semi-Annual	2	0				0	
Check corrosion and make painting adjustments	Corrective	MM	1	2 Years	1	0				0	
Protect external bolting with grease					1						
Replace cartridges	Corrective	MM	1	Semi-Annual	2	2				4	500
Check bolting of inlet / outlet pipes	Corrective	MM	1	2 Years	1	1				0	
Replace cartridge filter				30+ Years							LCCA
						Total, each unit (hr)	3	0		4	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	3	0		4	
						No. Units	1	1	1	1	
						Total hours by staff type	3	0		4	
						Annualized Hours and Materials	7				$1,000

CITY OF MORRO BAY WATER RECLAMATION FACILITY PROJECT

Electrical Load

Design Condition

Equipment Type	No. Units		HP (name plate)	Motor Eff.	Power draw [kW]			
Mixer	1		60	95%	47.1			

Notes:

Operating Scenario

Equipment Type	No. Units	Units Operating	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Mixer	1	1	60	95%	47.1	3	6	848

Notes: Assumes 45kW heater to raise 1800 gal water in tank from 75 deg F to 105 deg F. For each pound of water, 1 BTU is required per degree F. 1800 gal x 8.31 lb/gal x 30 deg F = 448,740 BTU required for heating. For each kW electric resistive heat 3412 btu/hr supplied. Therefore one heating cycle takes ~3 hours. Assume 2 CIPs per year in each train.

Scenario 2, Avg Day (0.97 MGD)

Equipment Type	No. Units	Units Operating	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Mixer	1		60	95%	-		333	0

Notes:

Scenario 3, Max Month (1.16 MGD)

Equipment Type	No. Units	Units Operating	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Mixer	1		60	95%	-		30	0

Notes:

Scenario 4, Max Day (2.75 MGD)

Equipment Type	No. Units	Units Operating	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Mixer	1		60	95%	-		1	0

Notes:

Total kWh/yr:	848

Operations and Maintenance

CIP Dry Chem Eductor, RO

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
Check Eductor is ready to be used, is clean and heater operational	Preventive	OP	1	Semi-Annual	2	1	1				
Clean Eductor after use of chemicals	Corrective	OP	1	Semi-Annual	2	1	1				
Calibrate instrumentation, alarms and communications to SCADA for each CIP	Corrective	MI	1	Semi-Annual	2	1		2			
MCC Switchgear cleaning and testing	Preventive	RMT	2	Annual	1	2			4		
Replcae eductor	Corrective	RMT	1	10 Years	0	0			0		LCAA
						Total, each unit (hr)	2	2	4		
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	2	2	4		
						No. Units	1	1	1	1	
						Total hours by staff type	2	2	4		
						Annualized Hours and Materials	8				$0

Electrical Load

Design Condition

Equipment Type	No. Units		Flow (rated) [gpm]	TDH (rated) [ft]	HP (rated)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]			
Pump	2		210	140	10.0	15	78%	95%	N/A	7.5			

Notes:

Scenario 1, Min Day (0.67 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gpm]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	2	1	210	140	9.5	15	78%	94%	-	7.6	0.25	1	2

Notes: Assume one flush for turndown from 3 trains to 2. Assume flush cycle to be 15 minutes.

Scenario 2, Avg Day (0.97 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gpm]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	2	1	210	140	9.5	15	78%	94%	-	7.6	0.5	333	1263

Notes: Assume 2 flushes per day for rotation of trains. Assume each flush cycle to be 15 minutes.

Scenario 3, Max Month (1.16 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gpm]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	2	1	210	140	9.5	15	78%	94%	-	7.6	0.5	30	114

Notes: Assume 2 flushes per day for rotation of trains. Assume each flush cycle to be 15 minutes.

Scenario 4, Max Day (2.75 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gpm]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	2	1	210	140	9.5	15	78%	94%	-	7.6	0.5	1	4

Notes: Assume 2 flushes per day for rotation of trains. Assume each flush cycle to be 15 minutes.

Total kWh/yr:	1382

Operations and Maintenance

Pump, RO Flush

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
General visual inspection - bump pumps to verify operation.	Preventive	OP	1	Daily	365	0	3				
Visually inspect pump suction / discharge pressures are within process design	Preventive	OP	1	Daily	365	0	2				
Check pump integrity											
Lubricate pump and motor bearings	Preventive	MM	1	Quarterly	4	1				4	5
Check shaft alignment (laser alignment)	Preventive	MM	1	Quarterly	4	1				4	
Check pump performance - head pressure, pump flow rate, amp draw,	Preventive	MM	1	Annual	1	1				1	
Perform vibration spectrum analysis on pump.	Preventive	RMT	1	Annual	1	0			0		
Replace mechanical seal	Preventive	MM	1	2 Years	1	2				1	30
MCC Switchgear cleaning and testing	Preventive	RMT	2	Annual	1	4			8		
Confirm proper operation of alarms and communication with SCADA	Preventive	MI	1	Annual	1	1		1			
Replace Pump				30+ Years							LCCA
						Total, each unit (hr)	5	1	8	10	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	5	1	8	10	
						No. Units	2	2	2	2	
						Total hours by staff type	10	1	17	20	
						Annualized Hours and Materials	48				$70

CITY OF MORRO BAY WATER RECLAMATION FACILITY PROJECT

Electrical Load

Design Condition

Equipment Type	No. Units		Flow (rated) [MGD]	HP (rated)	HP (name plate)	Motor Eff.	Power draw [kW]			
Tank	1						#DIV/0!			

Notes: No electrical load.

Scenario 1, Min Day (0.67 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Tank	1			-	0	0%	-		1	-

Scenario 2, Avg Day (0.97 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Tank	1			-	0	0%	-		333	-

Scenario 3, Max Month (1.16 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Tank	1			-	0	0%	-		30	-

Scenario 4, Max Day (2.75 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Tank	1			-	0	0%	-		1	-

Total kWh/yr:	0

Operations and Maintenance

Tank, RO Flush

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
General visual inspection	Preventive	OP	1	Daily	365	0	3				
Visual inspection of exterior level gauge	Preventive	OP	1	Daily	365	0	3				
Calibrate level transmitter	Preventive	MI	1	Annual	1	1		1			
Check level alarms	Preventive	MI	1	Annual	1	0		0			
Drain tank for inspection entry	Corrective	MM	3	Annual	1	1				3	
Replace FRP tank	Corrective	MM	2	20 Years	0	8				1	LCCA
						Total, each unit (hr)	6	1		4	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	6	1		4	
						No. Units	1	1	1	1	
						Total hours by staff type	6	1		4	
						Annualized Hours and Materials	11				$0

CITY OF MORRO BAY WATER RECLAMATION FACILITY PROJECT

Electrical Load

Design Condition

Equipment Type	No. Units		Flow (rated) [MGD]	HP (rated)	HP (name plate)	Motor Eff.	Power draw [kW]			
Cart. Filter	1						#DIV/0!			

Notes: No electrical load.

Scenario 1, Min Day (0.67 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Cart. Filter	1			-	0	0%	-		1	-

Scenario 2, Avg Day (0.97 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Cart. Filter	1			-	0	0%	-		333	-

Scenario 3, Max Month (1.16 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Cart. Filter	1			-	0	0%	-		30	-

Scenario 4, Max Day (2.75 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Cart. Filter	1			-	0	0%	-		1	-

Total kWh/yr:	0

CITY OF MORRO BAY WATER RECLAMATION FACILITY PROJECT

Operations and Maintenance

Cart Filt, RO Flush

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
General inspection including leaks, unusual noises, line pressure and differential pressure	Preventive	OP	1	Daily	365	0	3				
Record feed, discharge, and differential pressures	Preventive	OP	1	Daily	365						
Confirm proper operation of alarms	Preventive	MI	1	Annual	1	0		0			
Check waterproof	Corrective	MM	1	Monthly	12	0				0	
Check supports and fittings of the equipment	Corrective	MM	1	Semi-Annual	2	0				0	
Check corrosion and make painting adjustments	Corrective	MM	1	2 Years	1	0				0	
Protect external bolting with grease					1						
Replace cartridges	Corrective	MM	1	Semi-Annual	2	2				4	500
Check bolting of inlet / outlet pipes	Corrective	MM	1	2 Years	1	1				0	
Replace cartridge filter				30+ Years							LCCA
						Total, each unit (hr)	3	0		4	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	3	0		4	
						No. Units	1	1	1	1	
						Total hours by staff type	3	0		4	
						Annualized Hours and Materials	7				$1,000

CITY OF MORRO BAY WATER RECLAMATION FACILITY PROJECT

Electrical Load

Design Condition

Equipment Type	No. Units		Flow (rated) [MGD]	HP (rated)	HP (name plate)	Motor Eff.	Power draw [kW]			
Tank	1						#DIV/0!			

Notes: No electrical load.

Scenario 1, Min Day (0.67 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Tank	1			-	0	0%	-		1	-

Scenario 2, Avg Day (0.97 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Tank	1			-	0	0%	-		333	-

Scenario 3, Max Month (1.16 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Tank	1			-	0	0%	-		30	-

Scenario 4, Max Day (2.75 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Tank	1			-	0	0%	-		1	-

Total kWh/yr:	0

Operations and Maintenance

CIP Makeup Tank, RO

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
General visual inspection	Preventive	OP	1	Daily	365	0	3				
Visual inspection of exterior level gauge	Preventive	OP	1	Daily	365	0	3				
Calibrate level transmitter	Preventive	MI	1	Annual	1	1		1			
Check level alarms	Preventive	MI	1	Annual	1	0		0			
Drain tank for inspection entry	Corrective	MM	3	Annual	1	1				3	
Replace FRP tank	Corrective	MM	2	20 Years	0	8				1	LCCA
						Total, each unit (hr)	6	1		4	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	6	1		4	
						No. Units	1	1	1	1	
						Total hours by staff type	6	1		4	
						Annualized Hours and Materials	11				$0

CITY OF MORRO BAY WATER RECLAMATION FACILITY PROJECT

Electrical Load

Design Condition

Equipment Type	No. Units		Flow (rated) [MGD]	HP (rated)	HP (name plate)	Motor Eff.	Power draw [kW]			
Tank	1						#DIV/0!			

Notes: No electrical load.

Scenario 1, Min Day (0.67 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Tank	1			-	0	0%	-		1	-

Scenario 2, Avg Day (0.97 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Tank	1			-	0	0%	-		333	-

Scenario 3, Max Month (1.16 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Tank	1			-	0	0%	-		30	-

Scenario 4, Max Day (2.75 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Tank	1			-	0	0%	-		1	-

Total kWh/yr:	0

Operations and Maintenance

Neutralization Tank, RO

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
General visual inspection	Preventive	OP	1	Daily	365	0	3				
Visual inspection of exterior level gauge	Preventive	OP	1	Daily	365	0	3				
Calibrate level transmitter	Preventive	MI	1	Annual	1	1		1			
Check level alarms	Preventive	MI	1	Annual	1	0		0			
Drain tank for inspection entry	Corrective	MM	3	Annual	1	1				3	
Replace FRP tank	Corrective	MM	2	20 Years	0	8				1	LCCA
						Total, each unit (hr)	6	1		4	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	6	1		4	
						No. Units	1	1	1	1	
						Total hours by staff type	6	1		4	
						Annualized Hours and Materials	11				$0

CITY OF MORRO BAY WATER RECLAMATION FACILITY PROJECT

Electrical Load

Design Condition

Equipment Type	No. Units		Flow (rated) [MGD]	HP (rated)	HP (name plate)	Motor Eff.	Power draw [kW]			
Mixer	1			1	1	95%	0.8			

Notes: Assuming 1 HP, no data provided.

Operating Scenario

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Mixer	1	1		1	1	95%	0.8	1	6	5

Notes: Assume mixer runs for 1 hour during each CIP cycle. Assume 2 CIP cycles per year for each train.

Total kWh/yr:	5

CITY OF MORRO BAY WATER RECLAMATION FACILITY PROJECT

Operations and Maintenance

Mixer, RO Neut. Tank

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
General visual inspection for excessive noise and vibration	Preventive	OP	1	Daily	365	0.008	3.04167				
Visual inspection of mixer blade for debris and wear	Preventive	OP	1	Weekly	52	0.083	4.33333				
Mixer replacement	Corrective	MM	1	10 Years	0.1	1				0.2	LCCA
						Total, each unit (hr)	7			0	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	7			0	
						No. Units	1	1	1	1	
						Total hours by staff type	7			0	
						Annualized Hours and Materials	8				$0

CITY OF MORRO BAY WATER RECLAMATION FACILITY PROJECT

Electrical Load

Design Condition

Equipment Type	No. Units		Flow (rated) [MGD]			Motor Eff.	Power draw [kW]			
Lamp	2		0.93			N/A	16.5			

Notes:

Scenario 1, Min Day (0.67 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	Flow Ratio		Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Lamp	2	1	0.54	0.58		N/A	9.5	24	1	228

Notes: Preliminary power usage data provided suggests power usage for UV lamps between 14.4 and 18.5 kW at design flow (0.93mgd). The average of that range has been used in all flow scenarios as an estimation of the required power for the lamps. UV power usage is proportionalized to % of vessel capacity to approximate usage.

Scenario 2, Avg Day (0.97 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	Flow Ratio		Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Lamp	2	1	0.78	0.83		N/A	13.7	24	333	109781

Notes: Preliminary power usage data provided suggests power usage for UV lamps between 14.4 and 18.5 kW at design flow (0.93mgd). The average of that range has been used in all flow scenarios as an estimation of the required power for the lamps. UV power usage is proportionalized to % of vessel capacity to approximate usage.

Scenario 3, Max Month (1.16 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	Flow Ratio		Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Lamp	2	1	0.93	1		N/A	16.5	24	30	11844

Notes: Preliminary power usage data provided suggests power usage for UV lamps between 14.4 and 18.5 kW at design flow (0.93mgd). The average of that range has been used in all flow scenarios as an estimation of the required power for the lamps. UV power usage is proportionalized to % of vessel capacity to approximate usage.

Scenario 4, Max Day (2.75 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	Flow Ratio		Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Lamp	2	1	0.93	1		N/A	16.5	24	1	395

Notes: Preliminary power usage data provided suggests power usage for UV lamps between 14.4 and 18.5 kW at design flow (0.93mgd). The average of that range has been used in all flow scenarios as an estimation of the required power for the lamps. UV power usage is proportionalized to % of vessel capacity to approximate usage.

Total kWh/yr:	122247

Operations and Maintenance

UV Disinfection Unit

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
Visual Inspection for UV train	Preventive	OP	1	Daily	365	0	18				
Perform routine Transmittance sampling											
Inspect UV operation	Preventive	OP	1	Daily	365	0	30				
Clean UV sleeves	Preventive	OP	2	Semi-Annual	2	6	24				50
Replace ballasts	Preventive	MM	1	5 Years	0	3				1	25000
Replace UV lamps and quartz sleeves	Preventive	MM	1	3 Years	0	4				1	20520
Staff time to replace UV lamps	Corrective	OP	1	2 Years	1	4	2				
Clean UV sensor and quartz probe	Preventive	OP	1	Semi-Annual	2	1	2				
Staff time to clean UV lamps	Preventive	OP	1	Quarterly	4	8	32				
Replace ventilation cabinet filters	Preventive	MM	1	Semi-Annual	2	1				1	30
Check earth leakage circuit breaker for proper operation	Preventive	MI	1	Semi-Annual	2	1		2			
Calibrate instrumentation, alarms and communications to SCADA for each UV train	Corrective	MI	1	Semi-Annual	2	1		2			
MCC Switchgear cleaning and testing	Preventive	RMT	2	Annual	1	4			8		
Replace UIV unit				30+ Years							LCCA
						Total, each unit (hr)	109	4	8	3	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	109	4	8	3	
						No. Units	2	2	2	2	
						Total hours by staff type	217	8	16	6	
						Annualized Hours and Materials	247				$23,986

Electrical Load

Design Condition

Equipment Type	No. Units		Flow (rated) [gpm]	TDH (rated) [ft]	HP (rated)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]			
Pump	3		323	63	7.1	7.5	80%	95%	96%	5.3			

Notes:

Scenario 1, Min Day (0.67 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gpm]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	3	2	206.4	50.32	3.3	7.5	80%	92%	96%	5.5	24	1	132

Notes: Assume all flow from UV treatment goes to IPR less the flow to on-site pumps (assumed to 37.5 gpm at all times).

Scenario 2, Avg Day (0.97 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gpm]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	3	2	306.5	51.73	5.0	7.5	80%	94%	96%	8.3	24	333	66344

Notes: Assume all flow from UV treatment goes to IPR less the flow to on-site pumps (assumed to 37.5 gpm at all times).

Scenario 3, Max Month (1.16 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gpm]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	3	3	246	50.78	3.9	7.5	80%	93%	96%	9.9	24	30	7106

Notes: Assume all flow from UV treatment goes to IPR less the flow to on-site pumps (assumed to 37.5 gpm at all times).

Scenario 4, Max Day (2.75 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gpm]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	3	3	246	50.78	3.9	7.5	80%	93%	96%	9.9	24	1	237

Notes: Assume all flow from UV treatment goes to IPR less the flow to on-site pumps (assumed to 37.5 gpm at all times).

Total kWh/yr:	73819

Operations and Maintenance

Pump, RO Product (to IPR)

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
General visual inspection - bump pumps to verify operation.	Preventive	OP	1	Daily	365	0	3				
Visually inspect pump suction / discharge pressures are within process design	Preventive	OP	1	Daily	365	0	2				
Check pump integrity											
Lubricate pump and motor bearings	Preventive	MM	1	Quarterly	4	1				4	5
Check shaft alignment (laser alignment)	Preventive	MM	1	Quarterly	4	1				4	
Check pump performance - head pressure, pump flow rate, amp draw,	Preventive	MM	1	Annual	1	1				1	
Perform vibration spectrum analysis on pump.	Preventive	RMT	1	Annual	1	0			0		
Replace mechanical seal	Preventive	MM	1	2 Years	1	2				1	30
MCC Switchgear cleaning and testing	Preventive	RMT	2	Annual	1	4			8		
Confirm proper operation of alarms and communication with SCADA	Preventive	MI	1	Annual	1	1		1			
Replace Pump				30+ Years							LCCA
						Total, each unit (hr)	5	1	8	10	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	5	1	8	10	
						No. Units	3	3	3	3	
						Total hours by staff type	15	2	25	30	
						Annualized Hours and Materials	72				$105

CITY OF MORRO BAY WATER RECLAMATION FACILITY PROJECT

Electrical Load

Design Condition

Equipment Type	No. Units		Flow (rated) [gpm]	TDH (rated) [ft]	HP (rated)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]			
Pump	2		75	175	6.1	7.5	60%	95%	96%	4.5			

Notes: 5 HP was assumed in design, may need to be 7.5 HP based on vendor efficiencies.

Scenario 1, Min Day (0.67 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gpm]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	2	1	37.5	175	2.8	7.5	60%	92%	96%	2.3	24	1	56

Notes: Assume one pump operating at half rated flow in all scenarios (24/7).

Scenario 2, Avg Day (0.97 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gpm]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	2	1	37.5	175	2.8	7.5	60%	92%	96%	2.3	24	333	18716

Notes: Assume one pump operating at half rated flow in all scenarios (24/7).

Scenario 3, Max Month (1.16 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gpm]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	2	1	37.5	175	2.8	7.5	60%	92%	96%	2.3	24	30	1685

Notes: Assume one pump operating at half rated flow in all scenarios (24/7).

Scenario 4, Max Day (2.75 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gpm]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	2	1	37.5	175	2.8	7.5	60%	92%	96%	2.3	24	1	56

Notes: Assume one pump operating at half rated flow in all scenarios (24/7).

Total kWh/yr:	20514

Operations and Maintenance

Pump, RO Product (on-site)

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
General visual inspection - bump pumps to verify operation.	Preventive	OP	1	Daily	365	0	3				
Visually inspect pump suction / discharge pressures are within process design	Preventive	OP	1	Daily	365	0	2				
Check pump integrity											
Lubricate pump and motor bearings	Preventive	MM	1	Quarterly	4	1				4	5
Check shaft alignment (laser alignment)	Preventive	MM	1	Quarterly	4	1				4	
Check pump performance - head pressure, pump flow rate, amp draw,	Preventive	MM	1	Annual	1	1				1	
Perform vibration spectrum analysis on pump.	Preventive	RMT	1	Annual	1	0			0		
Replace mechanical seal	Preventive	MM	1	2 Years	1	2				1	30
MCC Switchgear cleaning and testing	Preventive	RMT	2	Annual	1	4			8		
Confirm proper operation of alarms and communication with SCADA	Preventive	MI	1	Annual	1	1		1			
Replace Pump				30+ Years							LCCA
						Total, each unit (hr)	5	1	8	10	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	5	1	8	10	
						No. Units	2	2	2	2	
						Total hours by staff type	10	1	17	20	
						Annualized Hours and Materials	48				$70

CITY OF MORRO BAY WATER RECLAMATION FACILITY PROJECT

Electrical Load

Design Condition

Equipment Type	No. Units		Flow (rated) [MGD]	HP (rated)	HP (name plate)	Motor Eff.	Power draw [kW]			
Tank	1									

Notes: No electrical load.

Scenario 1, Min Day (0.67 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Tank	1			-	0	0%	-		1	-

Scenario 2, Avg Day (0.97 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Tank	1			-	0	0%	-		333	-

Scenario 3, Max Month (1.16 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Tank	1			-	0	0%	-		30	-

Scenario 4, Max Day (2.75 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Tank	1			-	0	0%	-		1	-

Total kWh/yr:	0

Operations and Maintenance

Tank, Product Water

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
General visual inspection	Preventive	OP	1	Daily	365	0	6				
Visual inspection of exterior level gauge	Preventive	OP	1	Daily	365	0	3				
Calibrate level transmitter	Preventive	MI	1	Annual	1	1		1			
Check level alarms (Float and level transmitter)	Preventive	MI	1	Annual	1	1		1			
Drain tank for inspection entry	Corrective	MM	3	Annual	1	4				12	
Recoat interior				30+ Years							
Recoat Exterior	Corrective	MM	1	10 Years	0	8				1	3000
Float and transmitter parts replacement	Corrective	MI	1	10 Years	0	2		0			0
Replace steel tank				30+ Years							LCCA
						Total, each unit (hr)	9	1		13	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	9	1		13	
						No. Units	1	1	1	1	
						Total hours by staff type	9	1		13	
						Annualized Hours and Materials	23				$300

Electrical Load

Design Condition

Equipment Type	No. Units		Flow (rated) [MGD]	HP (rated)	HP (name plate)	Motor Eff.	Power draw [kW]			
Tank	1						#DIV/0!			

Notes: No electrical load.

Scenario 1, Min Day (0.67 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Tank	1			-	0	0%	-		1	-

Scenario 2, Avg Day (0.97 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Tank	1			-	0	0%	-		333	-

Scenario 3, Max Month (1.16 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Tank	1			-	0	0%	-		30	-

Scenario 4, Max Day (2.75 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Tank	1			-	0	0%	-		1	-

Total kWh/yr:	0

Operations and Maintenance

Tank, Air Bladder

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
General visual inspection	Preventive	OP	1	Daily	365	0	30				
Check for water leaks	Preventive	OP	1	Daily	365	0	30				
Check Air Bladder air pad	Corrective	MM	1	Monthly	12	1				6	
Air Bladder Replacement	Corrective	MM	2	5 Years	1	2				2	400
Visual Inspection External Instrumentation / replacement	Corrective	MM	1	5 Years	0	1				0	
Replace Air Bladder Storage Tank		MM	1	15 Years	0	8				1	LCCA
						Total, each unit (hr)	61			9	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	61			9	
						No. Units	1	1	1	1	
						Total hours by staff type	61			9	
						Annualized Hours and Materials	70				$200

Electrical Load

Design Condition

Equipment Type	No. Units		Flow (rated) [MGD]	HP (rated)	HP (name plate)	Motor Eff.	Power draw [kW]			
Disc Filter	1		6.26	1	1	95%	0.8			

Notes:

Scenario 1, Min Day (0.67 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Disc Filter	1	0	0	1	1	95%	0.8	0	1	0

Notes: SAFE system only operates when plant influent flow exceeds 1.88 MGD.

Scenario 2, Avg Day (0.97 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Disc Filter	1	0	0	1	1	95%	0.8	0	333	0

Notes: SAFE system only operates when plant influent flow exceeds 1.88 MGD.

Scenario 3, Max Month (1.16 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Disc Filter	1	0	0	1	1	95%	0.8	0	30	0

Notes: SAFE system only operates when plant influent flow exceeds 1.88 MGD.

Scenario 4, Max Day (2.75 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Disc Filter	1	1	0.87	1	1	95%	0.8	24	1	19

Notes: SAFE system treats any flow in excess of 1.88 MGD.

Total kWh/yr:	19

CITY OF MORRO BAY WATER RECLAMATION FACILITY PROJECT

Operations and Maintenance

Disc Filter Drive, SAFE

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
Perform routine process sampling											
General process visual inspection	Preventive	OP	1	Quarterly	4	2	8				
Wash down areas accumulation debris	Preventive	OP	1	Quarterly	4	1	4				
Check backwash and solids pump operation,	Preventive	OP	1	Quarterly	4	0	0				
Monitor backwash cycle to be backwashing and functioning properly	Preventive	OP	1	Quarterly	4	0	1				
Check backwash valve actuators	Predictive	OP	1	Quarterly	4	0	0				
Check rotary drive motor for excessive noise and vibration	Preventive	OP	1	Quarterly	4	0	0				
Check drive chain for debris	Preventive	OP	1	Quarterly	4	0	0				
Adjust drive chain	Corrective	MM	1	Annual	1	0				0	
Inspect filter cloth	Predictive	MM	2	Quarterly	4	0				1	
Replace filter cloth	Corrective	MM	2	10 Years	0	8				2	10000
Calibrate instrumentation, alarms and communications to SCADA	Preventive	MI	1	Quarterly	4	1		4			
MCC Switchgear cleaning and testing	Preventive	RMT	2	Annual	1	2			4		
Replace disk filter unit				30+ Years							LCCA
						Total, each unit (hr)	13	4	4	3	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	13	4	4	3	
						No. Units	1	1	1	1	
						Total hours by staff type	13	4	4	3	
						Annualized Hours and Materials	24				$1,000

Electrical Load

Design Condition

Equipment Type	No. Units		Flow (rated) [gpm]	TDH (rated) [ft]	HP (rated)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]			
Pump	2		520	75	13.3	20	78%	95%	N/A	9.9			

Notes:

Scenario 1, Min Day (0.67 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gpm]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	2	0	0	75	0.0	20	78%	86%	-	0.0	0	1	0

Notes: SAFE system only operates when plant influent flow exceeds 1.88 MGD.

Scenario 2, Avg Day (0.97 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gpm]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	2	0	0	75	0.0	20	78%	86%	-	0.0	0	333	0

Notes: SAFE system only operates when plant influent flow exceeds 1.88 MGD.

Scenario 3, Max Month (1.16 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gpm]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	2	0	0	75	0.0	20	78%	86%	-	0.0	0	30	0

Notes: SAFE system only operates when plant influent flow exceeds 1.88 MGD.

Scenario 4, Max Day (2.75 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gpm]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	2	1	520	75	12.6	20	78%	94%	-	10.1	2	1	20

Notes: Assume solids pump runs 5 minutes per hour.

Total kWh/yr:	20

Operations and Maintenance

Pump, SAFE, Solids

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
General visual inspection - bump pumps to verify operation.	Preventive	OP	1	Daily	365	0	3				
Visually inspect pump suction / discharge pressures are within process design	Preventive	OP	1	Daily	365	0	2				
Check pump integrity											
Lubricate pump and motor bearings	Preventive	MM	1	Quarterly	4	1				4	5
Check shaft alignment (laser alignment)	Preventive	MM	1	Quarterly	4	1				4	
Check pump performance - head pressure, pump flow rate, amp draw,	Preventive	MM	1	Annual	1	1				1	
Perform vibration spectrum analysis on pump.	Preventive	RMT	1	Annual	1	0			0		
Replace mechanical seal	Preventive	MM	1	2 Years	1	2				1	30
MCC Switchgear cleaning and testing	Preventive	RMT	2	Annual	1	4			8		
Confirm proper operation of alarms and communication with SCADA	Preventive	MI	1	Annual	1	1		1			
Replace Pump				30+ Years							LCCA
						Total, each unit (hr)	5	1	8	10	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	5	1	8	10	
						No. Units	2	2	2	2	
						Total hours by staff type	10	1	17	20	
						Annualized Hours and Materials	48				$70

Electrical Load

Design Condition

Equipment Type	No. Units		Flow (rated) [gpm]	TDH (rated) [ft]	HP (rated)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]			
Pump	2		520	75	13.3	20	78%	95%	N/A	9.9			

Notes:

Scenario 1, Min Day (0.67 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gpm]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	2	0	0	75	0.0	20	78%	86%	-	0.0	0	1	0

Notes: SAFE system only operates when plant influent flow exceeds 1.88 MGD.

Scenario 2, Avg Day (0.97 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gpm]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	2	0	0	75	0.0	20	78%	86%	-	0.0	0	333	0

Notes: SAFE system only operates when plant influent flow exceeds 1.88 MGD.

Scenario 3, Max Month (1.16 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gpm]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	2	0	0	75	0.0	20	78%	86%	-	0.0	0	30	0

Notes: SAFE system only operates when plant influent flow exceeds 1.88 MGD.

Scenario 4, Max Day (2.75 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gpm]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	2	1	520	75	12.6	20	78%	94%	-	10.1	4	1	40

Notes: Assume backwash pump runs 10 minutes per hour.

Total kWh/yr:	40

Operations and Maintenance

Pump, SAFE, BW Waste

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
General visual inspection - bump pumps to verify operation.	Preventive	OP	1	Daily	365	0	3				
Visually inspect pump suction / discharge pressures are within process design	Preventive	OP	1	Daily	365	0	2				
Check pump integrity											
Lubricate pump and motor bearings	Preventive	MM	1	Quarterly	4	1				4	5
Check shaft alignment (laser alignment)	Preventive	MM	1	Quarterly	4	1				4	
Check pump performance - head pressure, pump flow rate, amp draw,	Preventive	MM	1	Annual	1	1				1	
Perform vibration spectrum analysis on pump.	Preventive	RMT	1	Annual	1	0			0		
Replace mechanical seal	Preventive	MM	1	2 Years	1	2				1	30
MCC Switchgear cleaning and testing	Preventive	RMT	2	Annual	1	4			8		
Confirm proper operation of alarms and communication with SCADA	Preventive	MI	1	Annual	1	1		1			
Replace Pump				30+ Years							LCCA
						Total, each unit (hr)	5	1	8	10	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	5	1	8	10	
						No. Units	2	2	2	2	
						Total hours by staff type	10	1	17	20	
						Annualized Hours and Materials	48				$70

Electrical Load

Design Condition

Equipment Type	No. Units		Flow (rated) [MGD]	HP (rated)	HP (name plate)	Motor Eff.	Power draw [kW]			
Tank	1									

Notes: No electrical load.

Scenario 1, Min Day (0.67 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Tank	1			-	0	0%	-		1	-

Scenario 2, Avg Day (0.97 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Tank	1			-	0	0%	-		333	-

Scenario 3, Max Month (1.16 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Tank	1			-	0	0%	-		30	-

Scenario 4, Max Day (2.75 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [MGD]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Tank	1			-	0	0%	-		1	-

Total kWh/yr:	0

Operations and Maintenance

Tank, Outfall

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
General visual inspection	Preventive	OP	1	Daily	365	0	3				
Visual inspection of exterior level gauge	Preventive	OP	1	Daily	365	0	3				
Calibrate level transmitter	Preventive	MI	1	Annual	1	1		1			
Check level alarms	Preventive	MI	1	Annual	1	0		0			
Drain tank for inspection entry	Corrective	MM	3	Annual	1	1				3	
Replace FRP tank	Corrective	MM	2	20 Years	0	8				1	LCCA
						Total, each unit (hr)	6	1		4	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	6	1		4	
						No. Units	1	1	1	1	
						Total hours by staff type	6	1		4	
						Annualized Hours and Materials	11				$0

Electrical Load

Design Condition

Equipment Type	No. Units		Flow (rated) [gpm]	TDH (rated) [ft]	HP (rated)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]			
Pump	3		2503	65	56.4	60	80%	95%	96%	42.0			

Notes:

Scenario 1, Min Day (0.67 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gpm]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	3	0	0	65	0.0	60	80%	86%	96%	0.0	0	1	0

Notes:

Scenario 2, Avg Day (0.97 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gpm]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	3	0	0	65	0.0	60	80%	86%	96%	0.0	0	333	0

Notes:

Scenario 3, Max Month (1.16 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gpm]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	3	0	0	65	0.0	60	80%	86%	96%	0.0	0	30	0

Notes:

Scenario 4, Max Day (2.75 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gpm]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	3	1	1326	48	20.1	60	80%	91%	96%	17.1	24	1	410

Notes: Assume 20% of flow to RO goes to ocean outfall at all times. RO treatment capacity is 1.16 MGD, all flow over 1.16 MGD goes to ocean outfall via overflow weir in RO feed tank.

Total kWh/yr:	410

Operations and Maintenance

Pump, Outfall to Ocean

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
General visual inspection - bump pumps to verify operation.	Preventive	OP	1	Daily	365	0	3				
Visually inspect pump suction / discharge pressures are within process design	Preventive	OP	1	Daily	365	0	2				
Check pump integrity											
Lubricate pump and motor bearings	Preventive	MM	1	Quarterly	4	1				4	5
Check shaft alignment (laser alignment)	Preventive	MM	1	Quarterly	4	1				4	
Check pump performance - head pressure, pump flow rate, amp draw,	Preventive	MM	1	Annual	1	1				1	
Perform vibration spectrum analysis on pump.	Preventive	RMT	1	Annual	1	0			0		
Replace mechanical seal	Preventive	MM	1	2 Years	1	2				1	30
MCC Switchgear cleaning and testing	Preventive	RMT	2	Annual	1	4			8		
Confirm proper operation of alarms and communication with SCADA	Preventive	MI	1	Annual	1	1		1			
Replace Pump				30+ Years							LCCA
						Total, each unit (hr)	5	1	8	10	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	5	1	8	10	
						No. Units	3	3	3	3	
						Total hours by staff type	15	2	25	30	
						Annualized Hours and Materials	72				$105

Electrical Load

Design Condition

Equipment Type	No. Units	Units Operating	Flow (rated) [scfm]	dP (rated) [psi]	HP (rated)	HP (name plate)	Blower Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Blower	2	1	700	9.2	46.7	30	66%	95%	96%	34.8	24	365	305197

Notes:

Operating Condition

Equipment Type	No. Units	Units Operating	Flow (actual) [scfm]	dP (rated) [psi]	HP (actual)	HP (name plate)	Blower Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Blower	2	1	700	9.2	42.6	30	66%	87%	96%	38.1	12.0	365	166698

Notes: Assume blower will operate 50% of the time.

Total kWh/yr: 166698

Operations and Maintenance

Blower, Sludge Storage Aeration

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
Inspect blower and controls	Preventive	OP	1	Daily	365	0	3				
Confirm proper operation of the blower, temperature, pressures, and flow (CFM)	Preventive	OP	1	Daily	365	0	3				
Record operating conditions, temperature, pressures, and flow	Predictive	OP	1	Daily	365						
Intake filter - check filter for contamination, replace if necessary (max. -45 bar), and replace filter insert	Corrective	MM	1	Monthly	12	0				3	200
Air intake/air exhaust openings - of acoustic hood, check and clean	Corrective	MM	1	Monthly	12	0				3	
V-belt pulley alignment - check, correct if necessary	Corrective	MM	1	Quarterly	4	1				2	
Perform manufactures PM maintenance	Corrective	MM	1	Semi-Annual	2	2				4	150
Calibrate instrumentation, alarms and communications to SCADA	Preventive	MI	1	Annual	1	1		1			
Calibrate pressure, differential, temperature, and flow instrumentation	Corrective	MI	1	Annual	1	2		2			
MCC Switchgear cleaning and testing	Preventive	RMT	2	Annual	1	2			4		
Replace blower				30+ Years							LCCA
						Total, each unit (hr)	6	3	4	12	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	6	3	4	12	
						No. Units	2	2	2	2	
						Total hours by staff type	12	6	8	24	
						Annualized Hours and Materials	50				$5,400

Electrical Load

Design Condition

Equipment Type	No. Units		Flow (rated) [gpm]	TDH (rated) [ft]	HP (rated)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]			
Pump	2		305	40	4.8	5	70%	95%	96%	3.6			

Notes:

Operating Condition

Equipment Type	No. Units	Units Operating	Flow (actual) [gpm]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	2	1	305	40	4.4	5	70%	94%	96%	3.7	8	104	3041

Notes: Assume equipment in solids area operates twice per week for 8 hours per day.

Total kWh/yr: 3041

CITY OF MORRO BAY WATER RECLAMATION FACILITY PROJECT

Operations and Maintenance

Pump, Sludge

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
General visual inspection - bump pumps to verify operation.	Preventive	OP	1	Daily	365	0	3				
Visually inspect pump suction / discharge pressures are within process design	Preventive	OP	1	Daily	365	0	2				
Check pump integrity											
Lubricate pump and motor bearings	Preventive	MM	1	Quarterly	4	1				4	5
Check shaft alignment (laser alignment)	Preventive	MM	1	Quarterly	4	1				4	
Check pump performance - head pressure, pump flow rate, amp draw,	Preventive	MM	1	Annual	1	1				1	
Perform vibration spectrum analysis on pump.	Preventive	RMT	1	Annual	1	0			0		
Replace mechanical seal	Preventive	MM	1	2 Years	1	2				1	30
MCC Switchgear cleaning and testing	Preventive	RMT	2	Annual	1	4			8		
Confirm proper operation of alarms and communication with SCADA	Preventive	MI	1	Annual	1	1		1			
Replace Pump				30+ Years							LCCA
						Total, each unit (hr)	5	1	8	10	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	5	1	8	10	
						No. Units	2	2	2	2	
						Total hours by staff type	10	1	17	20	
						Annualized Hours and Materials	48				$70

Electrical Load

Design Condition

Equipment Type	No. Units		Flow (rated) [gpm]	HP (rated)	HP (name plate)	Motor Eff.	Power draw [kW]			
Belt Press	2		305	2	2	95%	1.6			

Notes:

Operating Scenario

Equipment Type	No. Units	Units Operating	Flow (actual) [gpm]	HP (actual)	HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Belt Press	2	1	305	2	2	95%	1.6	8	104	1306

Notes: Assume equipment in solids area operates twice per week for 8 hours per day.

Total kWh/yr:	1306

CITY OF MORRO BAY WATER RECLAMATION FACILITY PROJECT

Operations and Maintenance

Belt Press

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
Filter press operation (continuous)		OP	1	Weekly	52	16	832				
Check that the filter operates properly		OP									
Wash down & clean-up	Preventive	OP	1	Weekly	52	2	104				
Filter belt adjustment	Corrective	MM	1	Monthly	12	1				12	
Maintenance Repair	Corrective	MM	2	Quarterly	4	2				16	100
Lubricate bearings	Preventive	OP	1	Monthly	12	1	12				5
Maintain belt press electrical	Preventive	RMT	1	Annual	1	4			4		0
MCC Switchgear cleaning and testing	Preventive	RMT	2	Annual	1	4			8		
Replace belt, bearings as needed	Preventive	MM	2	5 Years	0	8				3	5000
Replace belt filter press				30+ Years							LCCA
						Total, each unit (hr)	948		12	31	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	948		12	31	
						No. Units	2	2	2	2	
						Total hours by staff type	1896		24	62	
						Annualized Hours and Materials	1982				$1,460

Electrical Load

Design Condition

Equipment Type	No. Units				HP (name plate)	Motor Eff.	Power draw [kW]			
Mixer	2				10	95%	0.0			

Notes:

Operating Scenario

Equipment Type	No. Units	Units Operating			HP (name plate)	Motor Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Mixer	2	1			10	95%	7.8	24	365	68761

Notes: Assume mixer operates 100% of the time with one tank in operation on average. Assume operation at nameplate HP.

Total kWh/yr:	68761

Operations and Maintenance

Mixer, Sludge Storage

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
General visual inspection for excessive noise and vibration	Preventive	OP	1	Daily	365	0	3				
Visual inspection of mixer blade for debris and wear	Preventive	OP	1	Weekly	52	0	4				
Mixer replacement	Corrective	MM	1	10 Years	0	1				0	LCCA
						Total, each unit (hr)	7			0	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	7			0	
						No. Units	2	2	2	2	
						Total hours by staff type	15			0	
						Annualized Hours and Materials	15				$0

Life Cycle Cost Analysis
Chem Pump, Antiscalant-RO Feed
File Updated: 5/2/2018
Updated By: TDE

CITY OF MORRO BAY WATER RECLAMATION FACILITY PROJECT

Electrical Load & Chemical Cost

Design Condition

Equipment Type	No. Units	Flow (rated) [gph]	TDH (rated) [ft]	HP (rated)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	
Pump	1	50	403	0.6	0.5	15%	95%	96%	0.5	

Notes: Pump flow is based on chemical usage. The process flow is flow of wastewater where the chemical is being injected or fed.

Scenario 1, Min Day (0.67 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gph]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	1	1	0.07	95	0.0002	0.5	15%	86%	96%	0.0	24	1	0.0

Chemical	Process Flow (gph)	Dose (mg/L)	Chemical Usage (gph)	$/Gallon	$ Chem/yr
Antisclant	27,917	3.00	0.073	20.59	$36

Scenario 2, Avg Day (0.97 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gph]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	1	1	0.10	95	0.0003	0.5	15%	86%	96%	0.0	24	333	2

Chemical	Process Flow (gph)	Dose (mg/L)	Chemical Usage (gph)	$/Gallon	$ Chem/yr
Antisclant	39,167	3.00	0.102	$20.59	$16,852

Scenario 3, Max Month (1.16 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gph]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	1	1	0.11	95	0.0003	0.5	15%	86%	96%	0.0	24	30	0

Chemical	Process Flow (gph)	Dose (mg/L)	Chemical Usage (gph)	$/Gallon	$ Chem/yr
Antisclant	41,250	3.00	0.108	$20.59	$1,598

Scenario 4, Max Day (2.75 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gph]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	1	1	0.12	95	0.0003	0.5	15%	86%	96%	0.0	24	1	0

Chemical	Process Flow (gph)	Dose (mg/L)	Chemical Usage (gph)	$/Gallon	$ Chem/yr
Antisclant	46,667	3.00	0.122	$20.59	$60

Total kWh/yr:	2
Total Chem Cost $/yr:	18546

CITY OF MORRO BAY WATER RECLAMATION FACILITY PROJECT

Operations and Maintenance

Chem Pump, Antiscalant-RO Feed

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
General visual inspection for leaks and damage, bump pumps, check pump housing and gearbox lubricant level	Preventive	OP	1	Daily	365	0	3				
Replace pump housing lubricant	Preventive	MM	1	Annual	1	2				2	
Replace hose	Corrective	OP	1	Quarterly	4	1	2				50
Perform volumetric calibration	Predictive	OP	1	Annual	1	1	1				
Record discharge pressure and flow											
Calibrate flow meter and discharge pressure transmitter	Preventive	MI	1	Annual	1	1		1			
Confirm proper operation of alarms and communication with SCADA	Preventive	MI	1	Annual	1	1		1			
Pump Replacement	Corrective	MM	1	5 Years	0	2				0	LCCA
						Total, each unit (hr)	6	2		2	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	6	2		2	
						No. Units	1	1	1	1	
						Total hours by staff type	6	2		2	
						Annualized Hours and Materials	9				$200

Electrical Load & Chemical Cost

Design Condition

Equipment Type	No. Units	Flow (rated) [gph]	TDH (rated) [ft]	HP (rated)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	
Pump	1	50	95	0.1	0.5	15%	95%	96%	0.1	

Notes: Pump flow is based on chemical usage. The process flow is flow of wastewater where the chemical is being injected or fed.

Scenario 1, Min Day (0.67 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gph]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	1	1	0.01	95	0.0000	0.5	15%	86%	96%	0.0	24	1	0

Chemical	Process Flow (gph)	Dose (mg/L)	Chemical Usage (gph)	$/Gallon	$ Chem/yr
Sodium Bisulfite	5,417	1.50	0.008	4.20	$1

Scenario 2, Avg Day (0.97 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gph]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	1	1	0.01	95	0.0000	0.5	15%	86%	96%	0.0	24	333	0

Chemical	Process Flow (gph)	Dose (mg/L)	Chemical Usage (gph)	$/Gallon	$ Chem/yr
Sodium Bisulfite	9,167	1.50	0.014	$4.20	$470

Scenario 3, Max Month (1.16 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gph]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	1	1	0.02	95	0.0001	0.5	15%	86%	96%	0.0	24	30	0

Chemical	Process Flow (gph)	Dose (mg/L)	Chemical Usage (gph)	$/Gallon	$ Chem/yr
Sodium Bisulfite	15,417	1.50	0.023	$4.20	$70

Scenario 4, Max Day (2.75 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gph]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	1	1	0.47	95	0.0013	0.5	15%	86%	96%	0.0	24	1	0

Chemical	Process Flow (gph)	Dose (mg/L)	Chemical Usage (gph)	$/Gallon	$ Chem/yr
Sodium Bisulfite	77,083	1.50	0.470	$4.20	$47

Total kWh/yr:	0
Total Chem Cost $/yr:	588

Operations and Maintenance

Chem Pump, Bisulfite-Outfall

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
General visual inspection for leaks and damage, bump pumps, check pump housing and gearbox lubricant level	Preventive	OP	1	Daily	365	0.008	3.04167				
Replace pump housing lubricant	Preventive	MM	1	Annual	1	1.5				1.5	
Replace hose	Corrective	OP	1	Quarterly	4	0.5	2				50
Perform volumetric calibration	Predictive	OP	1	Annual	1	0.5	0.5				
Record discharge pressure and flow											
Calibrate flow meter and discharge pressure transmitter	Preventive	MI	1	Annual	1	1		1			#REF!
Confirm proper operation of alarms and communication with SCADA	Preventive	MI	1	Annual	1	0.5		0.5			
Pump Replacement	Corrective	MM	1	5 Years	0.2	1.5				0.3	LCCA
						Total, each unit (hr)	6	2		2	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	6	2		2	
						No. Units	1	1	1	1	
						Total hours by staff type	6	2		2	
						Annualized Hours and Materials	9				$200

Electrical Load & Chemical Cost

Design Condition

Equipment Type	No. Units	Flow (rated) [gph]	TDH (rated) [ft]	HP (rated)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	
Pump	1	50	70	0.1	0.5	30%	95%	96%	0.0	

Notes: Pump flow is based on chemical usage. The maintenance clean is based on 0.025 lb sodium-hypochlorite/module. A maintenance clean is performed every 10 days. A maintenance clean runs 30 minutes per train.

MBR Maintenance Clean (hypochlorite)

Equipment Type	No. Units	Units Operating	Flow (actual) [gph]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	1	1	12.50	95	0.02	0.5	30%	86%	96%	0.0	0.5	110	1

Chemical	Process Flow (gpm)	Dose (gal/Clean)	Chemical Usage (gph)	$/Gallon	$ Chem/yr
Sodium Hypochlorite	675	6.25	12.50	1.25	$855

Total kWh/yr:	1
Total Chem Cost $/yr:	855

Operations and Maintenance

Chem Pump, Hypo-MBR

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
General visual inspection for leaks and damage, bump pumps, check pump housing and gearbox lubricant level	Preventive	OP	1	Daily	365	0.008	3.04167				
Replace pump housing lubricant	Preventive	MM	1	Annual	1	1.5				1.5	
Replace hose	Corrective	OP	1	Quarterly	4	0.5	2				50
Perform volumetric calibration	Predictive	OP	1	Annual	1	0.5	0.5				
Record discharge pressure and flow											
Calibrate flow meter and discharge pressure transmitter	Preventive	MI	1	Annual	1	1		1			#REF!
Confirm proper operation of alarms and communication with SCADA	Preventive	MI	1	Annual	1	0.5		0.5			
Pump Replacement	Corrective	MM	1	5 Years	0.2	1.5				0.3	LCCA
						Total, each unit (hr)	6	2		2	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	6	2		2	
						No. Units	1	1	1	1	
						Total hours by staff type	6	2		2	
						Annualized Hours and Materials	9				$200

Life Cycle Cost Analysis
Chem Pump, Hypo-Outfall, No ROC
File Updated: 5/2/2018
Updated By: TDE

CITY OF MORRO BAY WATER RECLAMATION FACILITY PROJECT

Electrical Load & Chemical Cost

Design Condition

Equipment Type	No. Units	Flow (rated) [gph]	TDH (rated) [ft]	HP (rated)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	
Pump	1	50	95	0.1	0.5	15%	95%	96%	0.1	

Notes: Pump flow is based on chemical usage. The process flow is flow of wastewater where the chemical is being injected or fed.

Scenario 1, Min Day (0.67 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gph]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	1	0	0.00	95	0.0000	0.5	15%	86%	96%	0.0	0	1	0

Chemical	Process Flow (gph)	Dose (mg/L)	Chemical Usage (gph)	$/Gallon	$ Chem/yr
Sodium Hypochlorite	0	0.00	0.000	1.25	$0

Scenario 2, Avg Day (0.97 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gph]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	1	0	0.04	95	0.0001	0.5	15%	86%	96%	0.0	0	333	0

Chemical	Process Flow (gph)	Dose (mg/L)	Chemical Usage (gph)	$/Gallon	$ Chem/yr
Sodium Hypochlorite	1,250	0.00	0.036	$1.25	$0

Scenario 3, Max Month (1.16 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gph]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	1	0	0.21	95	0.0005	0.5	15%	86%	96%	0.0	0	30	0

Chemical	Process Flow (gph)	Dose (mg/L)	Chemical Usage (gph)	$/Gallon	$ Chem/yr
Sodium Hypochlorite	7,083	0.00	0.206	$1.25	$0

Scenario 4, Max Day (2.75 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gph]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	1	1	1.97	95	0.0053	0.5	15%	86%	96%	0.0	24	1	0

Chemical	Process Flow (gph)	Dose (mg/L)	Chemical Usage (gph)	$/Gallon	$ Chem/yr
Sodium Hypochlorite	67,917	3.00	1.974	$1.25	$59

Total kWh/yr:	0
Total Chem Cost $/yr:	59

CITY OF MORRO BAY WATER RECLAMATION FACILITY PROJECT

Operations and Maintenance

Chem Pump, Hypo-Outfall, No ROC

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
General visual inspection for leaks and damage, bump pumps, check pump housing and gearbox lubricant level	Preventive	OP	1	Daily	365	0.008	3.04167				
Replace pump housing lubricant	Preventive	MM	1	Annual	1	1.5				1.5	
Replace hose	Corrective	OP	1	Quarterly	4	0.5	2				50
Perform volumetric calibration	Predictive	OP	1	Annual	1	0.5	0.5				
Record discharge pressure and flow											
Calibrate flow meter and discharge pressure transmitter	Preventive	MI	1	Annual	1	1		1			#REF!
Confirm proper operation of alarms and communication with SCADA	Preventive	MI	1	Annual	1	0.5		0.5			
Pump Replacement	Corrective	MM	1	5 Years	0.2	1.5				0.3	LCCA
						Total, each unit (hr)	6	2		2	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	6	2		2	
						No. Units	1	1	1	1	
						Total hours by staff type	6	2		2	
						Annualized Hours and Materials	9				$200

Life Cycle Cost Analysis
Chem Pump, Hypo-RO Reject
File Updated: 5/2/2018
Updated By: TDE

CITY OF MORRO BAY WATER RECLAMATION FACILITY PROJECT

Electrical Load & Chemical Cost

Design Condition

Equipment Type	No. Units	Flow (rated) [gph]	TDH (rated) [ft]	HP (rated)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	
Pump	1	50	373	0.6	0.5	15%	95%	96%	0.4	

Notes: Pump flow is based on chemical usage. The process flow is flow of wastewater where the chemical is being injected or fed.

Scenario 1, Min Day (0.67 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gph]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	1	1	0.10	95	0.0003	0.5	15%	86%	96%	0.0	24	1	0

Chemical	Process Flow (gph)	Dose (mg/L)	Chemical Usage (gph)	$/Gallon	$ Chem/yr
Sodium Hypochlorite	5,417	2.00	0.105	1.25	$3

Scenario 2, Avg Day (0.97 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gph]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	1	1	0.15	95	0.0004	0.5	15%	86%	96%	0.0	24	333	3

Chemical	Process Flow (gph)	Dose (mg/L)	Chemical Usage (gph)	$/Gallon	$ Chem/yr
Sodium Hypochlorite	7,917	2.00	0.153	$1.25	$1,533

Scenario 3, Max Month (1.16 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gph]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	1	1	0.16	95	0.0004	0.5	15%	86%	96%	0.0	24	30	0

Chemical	Process Flow (gph)	Dose (mg/L)	Chemical Usage (gph)	$/Gallon	$ Chem/yr
Sodium Hypochlorite	8,333	2.00	0.161	$1.25	$145

Scenario 4, Max Day (2.75 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gph]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	1	1	0.18	95	0.0005	0.5	15%	86%	96%	0.0	24	1	0

Chemical	Process Flow (gph)	Dose (mg/L)	Chemical Usage (gph)	$/Gallon	$ Chem/yr
Sodium Hypochlorite	9,167	2.00	0.178	$1.25	$5

Total kWh/yr:	3
Total Chem Cost $/yr:	1687

CITY OF MORRO BAY WATER RECLAMATION FACILITY PROJECT

Operations and Maintenance

Chem Pump, Hypo-RO Reject

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
General visual inspection for leaks and damage, bump pumps, check pump housing and gearbox lubricant level	Preventive	OP	1	Daily	365	0.008	3.04167				
Replace pump housing lubricant	Preventive	MM	1	Annual	1	1.5				1.5	
Replace hose	Corrective	OP	1	Quarterly	4	0.5	2				50
Perform volumetric calibration	Predictive	OP	1	Annual	1	0.5	0.5				
Record discharge pressure and flow											
Calibrate flow meter and discharge pressure transmitter	Preventive	MI	1	Annual	1	1		1			#REF!
Confirm proper operation of alarms and communication with SCADA	Preventive	MI	1	Annual	1	0.5		0.5			
Pump Replacement	Corrective	MM	1	5 Years	0.2	1.5				0.3	LCCA
						Total, each unit (hr)	6	2		2	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	6	2		2	
						No. Units	1	1	1	1	
						Total hours by staff type	6	2		2	
						Annualized Hours and Materials	9				$200

Life Cycle Cost Analysis
Chem Pump, Hypo-RO Feed
File Updated: 5/2/2018
Updated By: TDE

CITY OF MORRO BAY WATER RECLAMATION FACILITY PROJECT

Electrical Load & Chemical Cost

Design Condition

Equipment Type	No. Units	Flow (rated) [gph]	TDH (rated) [ft]	HP (rated)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	
Pump	1	50	403	0.6	0.5	15%	95%	96%	0.5	

Notes: Pump flow is based on chemical usage. The process flow is flow of wastewater where the chemical is being injected or fed.

Scenario 1, Min Day (0.67 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gph]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	1	1	1.35	95	0.0036	0.5	15%	86%	96%	0.0	24	1	0

Chemical	Process Flow (gph)	Dose (mg/L)	Chemical Usage (gph)	$/Gallon	$ Chem/yr
Sodium Hypochlorite	27,917	5.00	1.352	1.25	$41

Scenario 2, Avg Day (0.97 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gph]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	1	1	1.90	95	0.0051	0.5	15%	86%	96%	0.0	24	333	37

Chemical	Process Flow (gph)	Dose (mg/L)	Chemical Usage (gph)	$/Gallon	$ Chem/yr
Sodium Hypochlorite	39,167	5.00	1.897	$1.25	$18,964

Scenario 3, Max Month (1.16 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gph]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	1	1	2.00	95	0.0053	0.5	15%	86%	96%	0.0	24	30	3

Chemical	Process Flow (gph)	Dose (mg/L)	Chemical Usage (gph)	$/Gallon	$ Chem/yr
Sodium Hypochlorite	41,250	5.00	1.998	$1.25	$1,798

Scenario 4, Max Day (2.75 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gph]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	1	1	2.26	95	0.0060	0.5	15%	86%	96%	0.0	24	1	0

Chemical	Process Flow (gph)	Dose (mg/L)	Chemical Usage (gph)	$/Gallon	$ Chem/yr
Sodium Hypochlorite	46,667	5.00	2.260	$1.25	$68

Total kWh/yr:	40
Total Chem Cost $/yr:	20871

CITY OF MORRO BAY WATER RECLAMATION FACILITY PROJECT

Operations and Maintenance

Chem Pump, Hypo-RO Feed

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
General visual inspection for leaks and damage, bump pumps, check pump housing and gearbox lubricant level	Preventive	OP	1	Daily	365	0.008	3.04167				
Replace pump housing lubricant	Preventive	MM	1	Annual	1	1.5				1.5	
Replace hose	Corrective	OP	1	Quarterly	4	0.5	2				50
Perform volumetric calibration	Predictive	OP	1	Annual	1	0.5	0.5				
Record discharge pressure and flow											
Calibrate flow meter and discharge pressure transmitter	Preventive	MI	1	Annual	1	1		1			#REF!
Confirm proper operation of alarms and communication with SCADA	Preventive	MI	1	Annual	1	0.5		0.5			
Pump Replacement	Corrective	MM	1	5 Years	0.2	1.5				0.3	LCCA
						Total, each unit (hr)	6	2		2	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	6	2		2	
						No. Units	1	1	1	1	
						Total hours by staff type	6	2		2	
						Annualized Hours and Materials	9				$200

CITY OF MORRO BAY WATER RECLAMATION FACILITY PROJECT

Electrical Load & Chemical Cost

Design Condition

Equipment Type	No. Units	Flow (rated) [gph]	TDH (rated) [ft]	HP (rated)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	
Pump	1	50	363	0.6	0.5	15%	95%	96%	0.4	

Notes: Pump flow is based on chemical usage. The process flow is flow of wastewater where the chemical is being injected or fed.

Scenario 1, Min Day (0.67 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gph]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	1	1	0.56	95	0.0015	0.5	15%	86%	96%	0.0	24	1	0

Chemical	Process Flow (gph)	Dose (mg/L)	Chemical Usage (gph)	$/Gallon	$ Chem/yr
Sodium Hypochlorite	22,500	3.00	0.563	1.25	$17

Scenario 2, Avg Day (0.97 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gph]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	1	1	0.91	95	0.0024	0.5	15%	86%	96%	0.0	24	333	18

Chemical	Process Flow (gph)	Dose (mg/L)	Chemical Usage (gph)	$/Gallon	$ Chem/yr
Sodium Hypochlorite	31,167	3.00	0.906	$1.25	$9,054

Scenario 3, Max Month (1.16 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gph]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	1	1	0.96	95	0.0026	0.5	15%	86%	96%	0.0	24	30	2

Chemical	Process Flow (gph)	Dose (mg/L)	Chemical Usage (gph)	$/Gallon	$ Chem/yr
Sodium Hypochlorite	32,958	3.00	0.958	$1.25	$862

Scenario 4, Max Day (2.75 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gph]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	1	1	1.09	95	0.0029	0.5	15%	86%	96%	0.0	24	1	0

Chemical	Process Flow (gph)	Dose (mg/L)	Chemical Usage (gph)	$/Gallon	$ Chem/yr
Sodium Hypochlorite	37,417	3.00	1.087	$1.25	$33

Total kWh/yr:	19
Total Chem Cost $/yr:	9966

CITY OF MORRO BAY WATER RECLAMATION FACILITY PROJECT

Operations and Maintenance

Chem Pump, Hypo-UVAOP

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
General visual inspection for leaks and damage, bump pumps, check pump housing and gearbox lubricant level	Preventive	OP	1	Daily	365	0.008	3.04167				
Replace pump housing lubricant	Preventive	MM	1	Annual	1	1.5				1.5	
Replace hose	Corrective	OP	1	Quarterly	4	0.5	2				50
Perform volumetric calibration	Predictive	OP	1	Annual	1	0.5	0.5				
Record discharge pressure and flow											
Calibrate flow meter and discharge pressure transmitter	Preventive	MI	1	Annual	1	1		1			#REF!
Confirm proper operation of alarms and communication with SCADA	Preventive	MI	1	Annual	1	0.5		0.5			
Pump Replacement	Corrective	MM	1	5 Years	0.2	1.5				0.3	LCCA
						Total, each unit (hr)	6	2		2	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	6	2		2	
						No. Units	1	1	1	1	
						Total hours by staff type	6	2		2	
						Annualized Hours and Materials	9				$200

Life Cycle Cost Analysis
Chem Pump, Hypo-Product Water
File Updated: 5/2/2018
Updated By: TDE

CITY OF MORRO BAY WATER RECLAMATION FACILITY PROJECT

Electrical Load & Chemical Cost

Design Condition

Equipment Type	No. Units	Flow (rated) [gph]	TDH (rated) [ft]	HP (rated)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	
Pump	1	50	70	0.1	0.5	15%	95%	96%	0.1	

Notes: Pump flow is based on chemical usage. The process flow is flow of wastewater where the chemical is being injected or fed.

Scenario 1, Min Day (0.67 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gph]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	1	1	0.16	95	0.0004	0.5	15%	86%	96%	0.0	24	1	0

Chemical	Process Flow (gph)	Dose (mg/L)	Chemical Usage (gph)	$/Gallon	$ Chem/yr
Sodium Hypochlorite	22,500	0.75	0.163	1.25	$5

Scenario 2, Avg Day (0.97 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gph]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	1	1	0.23	95	0.0006	0.5	15%	86%	96%	0.0	24	333	4

Chemical	Process Flow (gph)	Dose (mg/L)	Chemical Usage (gph)	$/Gallon	$ Chem/yr
Sodium Hypochlorite	31,167	0.75	0.226	$1.25	$2,264

Scenario 3, Max Month (1.16 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gph]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	1	1	0.24	95	0.0006	0.5	15%	86%	96%	0.0	24	30	0

Chemical	Process Flow (gph)	Dose (mg/L)	Chemical Usage (gph)	$/Gallon	$ Chem/yr
Sodium Hypochlorite	32,958	0.75	0.239	$1.25	$215

Scenario 4, Max Day (2.75 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gph]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	1	1	0.27	95	0.0007	0.5	15%	86%	96%	0.0	24	1	0

Chemical	Process Flow (gph)	Dose (mg/L)	Chemical Usage (gph)	$/Gallon	$ Chem/yr
Sodium Hypochlorite	37,417	0.75	0.272	$1.25	$8

Total kWh/yr:	5
Total Chem Cost $/yr:	2492

Operations and Maintenance

Chem Pump, Hypo-Product Water											
Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
General visual inspection for leaks and damage, bump pumps, check pump housing and gearbox lubricant level	Preventive	OP	1	Daily	365	0.008	3.04167				
Replace pump housing lubricant	Preventive	MM	1	Annual	1	1.5				1.5	
Replace hose	Corrective	OP	1	Quarterly	4	0.5	2				50
Perform volumetric calibration	Predictive	OP	1	Annual	1	0.5	0.5				
Record discharge pressure and flow											
Calibrate flow meter and discharge pressure transmitter	Preventive	MI	1	Annual	1	1		1			#REF!
Confirm proper operation of alarms and communication with SCADA	Preventive	MI	1	Annual	1	0.5		0.5			
Pump Replacement	Corrective	MM	1	5 Years	0.2	1.5				0.3	LCCA
						Total, each unit (hr)	6	2		2	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	6	2		2	
						No. Units	1	1	1	1	
						Total hours by staff type	6	2		2	
						Annualized Hours and Materials	9				$200

Life Cycle Cost Analysis
Chem Pump, Hydrox-MBR
File Updated: 5/2/2018
Updated By: TDE

CITY OF MORRO BAY WATER RECLAMATION FACILITY PROJECT

Electrical Load & Chemical Cost

Design Condition

Equipment Type	No. Units	Flow (rated) [gph]	TDH (rated) [ft]	HP (rated)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	
Pump	1	50	70	0.1	0.5	15%	95%	96%	0.1	

Notes: External alkalinity needs are based on 3 factors: 1) the influent ammonia concentration, 2) the influent alkalinity concentration, and 3) the target alkalinity in the MBR filtrate. We anticipate there is adequate alkalinity in the influent wastewater under Min. Day, Average Day, and Max. Day conditions. However, under Maximum Month conditions when ammonia concentrations are greatest, we anticipate there will be insufficient alkalinity in the influent to meet the target concentration in the MBR filtrate, and supplementary alkalinity will be required.

Scenario 1, Min Day (0.67 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gph]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	1	0	0.00	95	0.0000	0.5	15%	86%	96%	0.0	24	1	0

Chemical	Process Flow (gph)	Dose (lb/d)	Chemical Usage (gph)	$/Gallon	$ Chem/yr
Sodium Hydroxide	27,917	0.00	0.000	1.71	$0

Scenario 2, Avg Day (0.97 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gph]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	1	0	0.00	95	0.0000	0.5	15%	86%	96%	0.0	24	333	0

Chemical	Process Flow (gph)	Dose (lb/d)	Chemical Usage (gph)	$/Gallon	$ Chem/yr
Sodium Hydroxide	40,353	0.00	0.000	$1.71	$0

Scenario 3, Max Month (1.16 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gph]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	1	1	5.39	95	0.0144	0.5	15%	86%	96%	0.0	24	30	9

Chemical	Process Flow (gph)	Dose (lb/d)	Chemical Usage (gph)	$/Gallon	$ Chem/yr
Sodium Hydroxide	48,349	0.34	5.385	$1.71	$6,631

Scenario 4, Max Day (2.75 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gph]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	1	1	0.00	95	0.0000	0.5	15%	86%	96%	0.0	24	1	0

Chemical	Process Flow (gph)	Dose (lb/d)	Chemical Usage (gph)	$/Gallon	$ Chem/yr
Sodium Hydroxide	78,333	0.00	0.000	$1.71	$0

Total kWh/yr:	9
Total Chem Cost $/yr:	6631

Operations and Maintenance

Chem Pump, Hydrox-MBR

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
General visual inspection for leaks and damage, bump pumps, check pump housing and gearbox lubricant level	Preventive	OP	1	Daily	365	0.008	3.04167				
Replace pump housing lubricant	Preventive	MM	1	Annual	1	1.5				1.5	
Replace hose	Corrective	OP	1	Quarterly	4	0.5	2				50
Perform volumetric calibration	Predictive	OP	1	Annual	1	0.5	0.5				
Record discharge pressure and flow											
Calibrate flow meter and discharge pressure transmitter	Preventive	MI	1	Annual	1	1		1			#REF!
Confirm proper operation of alarms and communication with SCADA	Preventive	MI	1	Annual	1	0.5		0.5			
Pump Replacement	Corrective	MM	1	5 Years	0.2	1.5				0.3	LCCA
						Total, each unit (hr)	6	2		2	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	6	2		2	
						No. Units	1	1	1	1	
						Total hours by staff type	6	2		2	
						Annualized Hours and Materials	9				$200

Electrical Load & Chemical Cost

Design Condition

Equipment Type	No. Units	Flow (rated) [gph]	TDH (rated) [ft]	HP (rated)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	
Pump	1	50	70	0.1	0.5	15%	95%	96%	0.1	

Notes: Pump flow is based on chemical usage. Chemical usage is based on cleaning 3 RO skids. A clean is performed 2x per year.

RO CIP - high ph

Equipment Type	No. Units	Units Operating	Flow (actual) [gph]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	1	1	1.36	95	0.00	0.5	15%	86%	96%	0.0	2.5	6	0

Chemical	Process Flow (gpm)	Dose (gal/CIP batch)	Chemical Usage (gph)	$/Gallon	$ Chem/yr
Sodium Hydroxide	batch	3.40	1.36	1.71	$35

RO CIP Neutralization - neutralize low ph CIP batch

Equipment Type	No. Units	Units Operating	Flow (actual) [gph]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	1	1	16.15	95	0.04	0.5	15%	87%	96%	0.0	2.60	6	1

Chemical	Process Flow (gpm)	Dose (gal/CIP batch)	Chemical Usage (gph)	$/Gallon	$ Chem/yr
Sodium Hydroxide	batch neautralization	42.00	16.15	1.71	$431

Total kWh/yr:	1
Total Chem Cost $/yr:	466

Operations and Maintenance

Chem Pump, Hydrox-RO CIP

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
General visual inspection for leaks and damage, bump pumps, check pump housing and gearbox lubricant level	Preventive	OP	1	Daily	365	0.008	3.04167				
Replace pump housing lubricant	Preventive	MM	1	Annual	1	1.5				1.5	
Replace hose	Corrective	OP	1	Quarterly	4	0.5	2				50
Perform volumetric calibration	Predictive	OP	1	Annual	1	0.5	0.5				
Record discharge pressure and flow											
Calibrate flow meter and discharge pressure transmitter	Preventive	MI	1	Annual	1	1		1			#REF!
Confirm proper operation of alarms and communication with SCADA	Preventive	MI	1	Annual	1	0.5		0.5			
Pump Replacement	Corrective	MM	1	5 Years	0.2	1.5				0.3	LCCA
						Total, each unit (hr)	6	2		2	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	6	2		2	
						No. Units	1	1	1	1	
						Total hours by staff type	6	2		2	
						Annualized Hours and Materials	9				$200

Life Cycle Cost Analysis
Chem Pump, Hydrox-Product Water
File Updated: 5/2/2018
Updated By: TDE

CITY OF MORRO BAY WATER RECLAMATION FACILITY PROJECT

Electrical Load & Chemical Cost

Design Condition

Equipment Type	No. Units	Flow (rated) [gph]	TDH (rated) [ft]	HP (rated)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	
Pump	1	50	70	0.1	0.5	15%	95%	96%	0.1	

Notes: Pump flow is based on chemical usage. The process flow is flow of wastewater where the chemical is being injected or fed.

Scenario 1, Min Day (0.67 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gph]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	1	1	0.14	95	0.0004	0.5	15%	86%	96%	0.0	24	1	0

Chemical	Process Flow (gph)	Dose (mg/L)	Chemical Usage (gph)	$/Gallon	$ Chem/yr
Sodium Hypochlorite	22,500	2.00	0.141	1.71	$6

Scenario 2, Avg Day (0.97 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gph]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	1	1	0.20	95	0.0005	0.5	15%	86%	96%	0.0	24	333	4

Chemical	Process Flow (gph)	Dose (mg/L)	Chemical Usage (gph)	$/Gallon	$ Chem/yr
Sodium Hypochlorite	31,250	2.00	0.196	$1.71	$2,675

Scenario 3, Max Month (1.16 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gph]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	1	1	0.21	95	0.0005	0.5	15%	86%	96%	0.0	24	30	0

Chemical	Process Flow (gph)	Dose (mg/L)	Chemical Usage (gph)	$/Gallon	$ Chem/yr
Sodium Hypochlorite	32,917	2.00	0.206	$1.71	$254

Scenario 4, Max Day (2.75 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gph]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	1	1	0.23	95	0.0006	0.5	15%	86%	96%	0.0	24	1	0

Chemical	Process Flow (gph)	Dose (mg/L)	Chemical Usage (gph)	$/Gallon	$ Chem/yr
Sodium Hypochlorite	37,417	2.00	0.234	$1.71	$10

Total kWh/yr:	4
Total Chem Cost $/yr:	2944

CITY OF MORRO BAY WATER RECLAMATION FACILITY PROJECT

Operations and Maintenance

Chem Pump, Hydrox-Product Water

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
General visual inspection for leaks and damage, bump pumps, check pump housing and gearbox lubricant level	Preventive	OP	1	Daily	365	0.008	3.04167				
Replace pump housing lubricant	Preventive	MM	1	Annual	1	1.5				1.5	
Replace hose	Corrective	OP	1	Quarterly	4	0.5	2				50
Perform volumetric calibration	Predictive	OP	1	Annual	1	0.5	0.5				
Record discharge pressure and flow											
Calibrate flow meter and discharge pressure transmitter	Preventive	MI	1	Annual	1	1		1			#REF!
Confirm proper operation of alarms and communication with SCADA	Preventive	MI	1	Annual	1	0.5		0.5			
Pump Replacement	Corrective	MM	1	5 Years	0.2	1.5				0.3	LCCA
						Total, each unit (hr)	6	2		2	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	6	2		2	
						No. Units	1	1	1	1	
						Total hours by staff type	6	2		2	
						Annualized Hours and Materials	9				$200

Electrical Load & Chemical Cost

Design Condition

Equipment Type	No. Units	Flow (rated) [gph]	TDH (rated) [ft]	HP (rated)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	
Pump	1	50	70	0.1	0.5	15%	95%	96%	0.1	

Notes: Pump flow is based on chemical usage. The process flow is flow of wastewater where the chemical is being injected or fed.

Scenario 1, Min Day (0.67 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gph]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	1	1	1.44	95	0.0038	0.5	15%	86%	96%	0.0	8	0.29	0

Chemical	Solids Produced	Dose (lb/dry ton)	Chemical Usage (gph)	$/Gallon	$ Chem/yr
Thickening Polymer	1581 lb/d	17.00	1.438	21.65	$71

Scenario 2, Avg Day (0.97 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gph]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	1	1	1.82	95	0.0049	0.5	15%	86%	96%	0.0	8	95	3

Chemical	Solids Produced	Dose (lb/dry ton)	Chemical Usage (gph)	$/Gallon	$ Chem/yr
Thickening Polymer	2004 lb/d	17.00	1.822	$21.65	$30,052

Scenario 3, Max Month (1.16 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gph]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	1	1	2.63	95	0.0070	0.5	15%	86%	96%	0.0	8	9	0

Chemical	Solids Produced	Dose (lb/dry ton)	Chemical Usage (gph)	$/Gallon	$ Chem/yr
Thickening Polymer	2892 lb/d	17.00	2.630	$21.65	$3,904

Scenario 4, Max Day (2.75 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gph]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	1	1	2.63	95	0.0070	0.5	15%	86%	96%	0.0	8	0	0

Chemical	Solids Produced	Dose (lb/dry ton)	Chemical Usage (gph)	$/Gallon	$ Chem/yr
Thickening Polymer	2892 lb/d	17.00	2.630	$21.65	$130

Total kWh/yr:	4
Total Chem Cost $/yr:	34157

CITY OF MORRO BAY WATER RECLAMATION FACILITY PROJECT

Operations and Maintenance

Chem Pump, Polymer-Belt Press

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
General visual inspection for leaks and damage, bump pumps, check pump housing and gearbox lubricant level	Preventive	OP	1	Daily	365	0.008	3.04167				
Replace pump housing lubricant	Preventive	MM	1	Annual	1	1.5				1.5	
Replace hose	Corrective	OP	1	Quarterly	4	0.5	2				50
Perform volumetric calibration	Predictive	OP	1	Annual	1	0.5	0.5				
Record discharge pressure and flow											
Calibrate flow meter and discharge pressure transmitter	Preventive	MI	1	Annual	1	1		1			#REF!
Confirm proper operation of alarms and communication with SCADA	Preventive	MI	1	Annual	1	0.5		0.5			
Pump Replacement	Corrective	MM	1	5 Years	0.2	1.5				0.3	LCCA
						Total, each unit (hr)	6	2		2	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	6	2		2	
						No. Units	1	1	1	1	
						Total hours by staff type	6	2		2	
						Annualized Hours and Materials	9				$200

Electrical Load & Chemical Cost

Design Condition

Equipment Type	No. Units	Flow (rated) [gph]	TDH (rated) [ft]	HP (rated)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	
Pump	1	50	70	0.1	0.5	15%	95%	96%	0.1	

Notes: Pump flow is based on chemical usage. The recovery clean is based on 1.8 lb of citric acid/module. A recovery clean is performed 2 times per year. A recovery clean doses citric for approx 60 minutes per train.

MBR Recovery Clean

Equipment Type	No. Units	Units Operating	Flow (actual) [gph]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	1	1	25.00	95	0.07	0.5	15%	88%	96%	0.1	1.0	6	0.4

Chemical	Process Flow (gpm)	Dose (gal/Clean)	Chemical Usage (gph)	$/Gallon	$ Chem/yr
Citric Acid	675	25.00	25.00	6.75	$1,013

Total kWh/yr:	0
Total Chem Cost $/yr:	1013

CITY OF MORRO BAY WATER RECLAMATION FACILITY PROJECT

Operations and Maintenance

Chem Pump, Citric Acid-MBR

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
General visual inspection for leaks and damage, bump pumps, check pump housing and gearbox lubricant level	Preventive	OP	1	Daily	365	0.008	3.04167				
Replace pump housing lubricant	Preventive	MM	1	Annual	1	1.5				1.5	
Replace hose	Corrective	OP	1	Quarterly	4	0.5	2				50
Perform volumetric calibration	Predictive	OP	1	Annual	1	0.5	0.5				
Record discharge pressure and flow											
Calibrate flow meter and discharge pressure transmitter	Preventive	MI	1	Annual	1	1		1			#REF!
Confirm proper operation of alarms and communication with SCADA	Preventive	MI	1	Annual	1	0.5		0.5			
Pump Replacement	Corrective	MM	1	5 Years	0.2	1.5				0.3	LCCA
						Total, each unit (hr)	6	2		2	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	6	2		2	
						No. Units	1	1	1	1	
						Total hours by staff type	6	2		2	
						Annualized Hours and Materials	9				$200

Electrical Load & Chemical Cost

Design Condition

Equipment Type	No. Units	Flow (rated) [gph]	TDH (rated) [ft]	HP (rated)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	
Pump	1	50	70	0.108	0.5	15%	95%	96%	0.1	

Notes: Pump flow is based on chemical usage. Chemical usage is based on cleaning 3 RO skids. A clean is performed 2x per year. Target concentration of citric cleaning solution is 2%.

RO CIP - low ph

Equipment Type	No. Units	Units Operating	Flow (actual) [gph]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	1	1	14.00	95	0.037	0.5	15%	87%	96%	0.0	2.5	6	0

Chemical	Process Flow (gpm)	Dose (gal/CIP batch)	Chemical Usage (gph)	$/Gallon	$ Chem/yr
Citric Acid	Batch	35.00	14.00	6.75	$1,418

RO CIP Neutralization - neutralize high ph CIP batch

Equipment Type	No. Units	Units Operating	Flow (actual) [gph]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	1	1	11.24	95	0.030	0.5	15%	87%	96%	0.0	0.25	6	0

Chemical	Process Flow (gpm)	Dose (gal/CIP batch)	Chemical Usage (gph)	$/Gallon	$ Chem/yr
Citric Acid	Batch Neutralization	2.81	11.24	6.75	$114

Total kWh/yr:	1
Total Chem Cost $/yr:	1531

Operations and Maintenance

Chem Pump, Citric Acid-RO CIP

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
General visual inspection for leaks and damage, bump pumps, check pump housing and gearbox lubricant level	Preventive	OP	1	Daily	365	0.008	3.04167				
Replace pump housing lubricant	Preventive	MM	1	Annual	1	1.5				1.5	
Replace hose	Corrective	OP	1	Quarterly	4	0.5	2				50
Perform volumetric calibration	Predictive	OP	1	Annual	1	0.5	0.5				
Record discharge pressure and flow											
Calibrate flow meter and discharge pressure transmitter	Preventive	MI	1	Annual	1	1		1			#REF!
Confirm proper operation of alarms and communication with SCADA	Preventive	MI	1	Annual	1	0.5		0.5			
Pump Replacement	Corrective	MM	1	5 Years	0.2	1.5				0.3	LCCA
						Total, each unit (hr)	6	2		2	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	6	2		2	
						No. Units	1	1	1	1	
						Total hours by staff type	6	2		2	
						Annualized Hours and Materials	9				$200

Electrical Load & Chemical Cost

Design Condition

Equipment Type	No. Units	Flow (rated) [gph]	TDH (rated) [ft]	HP (rated)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	
BW Pump	2	27,120	56	9.0	30	78%	95%	96%	6.7	

Notes: Electrical usage listed is for backwash pump for contactor. Pump flow is based on backwash flow from the contactor. Assume backwashing 20 miuntes every month.

Scenario 1, Min Day (0.67 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gph]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
BW Pump	2	1	27,120	95	13.9	30	78%	93%	96%	11.7	0.01	1	0

Chemical	Process Flow (MGD)	Dose (lb/MGD)	Chemical Usage	$/lb	$ Chem/yr
Calcite	0.54	600.00	324.00 lb/d	0.17	$57

Scenario 2, Avg Day (0.97 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gph]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
BW Pump	2	1	27,120	95	13.9	30	78%	93%	96%	11.7	0.01	333	43

Chemical	Process Flow (MGD)	Dose (lb/MGD)	Chemical Usage	$/lb	$ Chem/yr
Calcite	0.75	600.00	448.80 lb/d	$0.17	$26,116

Scenario 3, Max Month (1.16 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gph]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
BW Pump	2	1	27,120	95	13.9	30	78%	93%	96%	11.7	0.01	30	4

Chemical	Process Flow (MGD)	Dose (lb/MGD)	Chemical Usage	$/lb	$ Chem/yr
Calcite	0.79	600.00	474.60 lb/d	$0.17	$2,486

Scenario 4, Max Day (2.75 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gph]	TDH (actual) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
BW Pump	2	1	27,120	95	13.9	30	78%	93%	96%	11.7	0.01	1	0

Chemical	Process Flow (MGD)	Dose (lb/MGD)	Chemical Usage	$/lb	$ Chem/yr
Calcite	0.90	600.00	538.80 lb/d	$0.17	$94

Total kWh/yr:	47
Total Chem Cost $/yr:	28753

Operations and Maintenance

Contactor, Calcite-Product Wast

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
General visual inspection - bump pumps to verify operation.	Preventive	OP	1	Daily	365	0.008	3.04167				
Visually inspect pump suction / discharge pressures are within process design	Preventive	OP	1	Daily	365	0.006	2.02778				
Check pump integrity											
Lubricate pump and motor bearings	Preventive	MM	1	Quarterly	4	1				4	5
Check shaft alignment (laser alignment)	Preventive	MM	1	Quarterly	4	1				4	
Check pump performance - head pressure, pump flow rate, amp draw,	Preventive	MM	1	Annual	1	1				1	
Perform vibration spectrum analysis on pump.	Preventive	RMT	1	Annual	1	0.3			0.3		
Replace mechanical seal	Preventive	MM	1	2 Years	0.5	2				1	30
MCC Switchgear cleaning and testing	Preventive	RMT	2	Annual	1	4			8		
Confirm proper operation of alarms and communication with SCADA	Preventive	MI	1	Annual	1	0.5		0.5			
Replace Pump				30+ Years							LCCA
						Total, each unit (hr)	5	1	8	10	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	5	1	8	10	
						No. Units	2	2	2	2	
						Total hours by staff type	10	1	17	20	
						Annualized Hours and Materials	48				$70

Electrical Load

Design Condition

Equipment Type	No. Units									
Tank	1									

Notes: No electrical load.

Scenario 1, Min Day (0.67 MGD)

Equipment Type										
Tank										

Scenario 2, Avg Day (0.97 MGD)

Equipment Type										
Tank										

Scenario 3, Max Month (1.16 MGD)

Equipment Type										
Tank										

Scenario 4, Max Day (2.75 MGD)

Equipment Type										
Tank										

Total kWh/yr:	0

CITY OF MORRO BAY WATER RECLAMATION FACILITY PROJECT

Operations and Maintenance

Tank and Blend Sys Polymer Feed

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
General visual inspection	Preventive	OP	1	Daily	365	0	3				
Visual inspection of exterior level gauge	Preventive	OP	1	Daily	365	0	3				
Calibrate level transmitter	Preventive	MI	1	Annual	1	1		1			
Check level alarms	Preventive	MI	1	Annual	1	0		0			
Drain tank for inspection entry	Corrective	MM	3	Annual	1	1				3	
General visual inspection	Preventive	OP	1	Daily	365	0	3				
Repair and replace the pumps component as required by manufacture O&M	Preventive	MM	1	Annual	1	2				2	
Clean mixing chamber	Preventive	OP	1	Monthly	12	1	6				
Check pump flow rate	Preventive	OP	1	Daily	365	0	3				
Calibrate instrumentation, alarms and communications to SCADA	Preventive	MI	1	Annual	1	1		1			
Perform pump service checks					0						
Exercise valves					0						
Confirm proper operation of alarms	Preventive	MI	1	Annual	0	1		0			
Confirm storage tanks liquid level controls	Preventive	MI	2	Annual	0	1		0			
MCC Switchgear cleaning and testing	Preventive	RMT	2	Annual	1	2			4		
Replcace polymer blend system		MM	1	15 Years	0	8				1	LCCA
Replace FRP tank	Corrective	MM	2	20 Years	0	8				1	LCCA
						Total, each unit (hr)	18	1	4	6	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	18	1	4	6	
						No. Units	1	1	1	1	
						Total hours by staff type	18	1	4	6	
						Annualized Hours and Materials	30				$0

Electrical Load

Design Condition

Equipment Type	No. Units									
Tank	1									

Notes: No electrical load.

Scenario 1, Min Day (0.67 MGD)

Equipment Type										
Tank										

Scenario 2, Avg Day (0.97 MGD)

Equipment Type										
Tank										

Scenario 3, Max Month (1.16 MGD)

Equipment Type										
Tank										

Scenario 4, Max Day (2.75 MGD)

Equipment Type										
Tank										

Total kWh/yr:	0

Operations and Maintenance

Tank, NaOCl

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
General visual inspection	Preventive	OP	1	Daily	365	0	3				
Visual inspection of exterior level gauge	Preventive	OP	1	Daily	365	0	3				
Calibrate level transmitter	Preventive	MI	1	Annual	1	1		1			
Check level alarms	Preventive	MI	1	Annual	1	0		0			
Drain tank for inspection entry	Corrective	MM	3	Annual	1	1				3	
Replace FRP tank	Corrective	MM	2	20 Years	0	8				1	LCCA
						Total, each unit (hr)	6	1		4	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	6	1		4	
						No. Units	1	1	1	1	
						Total hours by staff type	6	1		4	
						Annualized Hours and Materials	11				$0

Electrical Load

Design Condition

Equipment Type	No. Units									
Tank	1									

Notes: No electrical load.

Scenario 1, Min Day (0.67 MGD)

Equipment Type										
Tank										

Scenario 2, Avg Day (0.97 MGD)

Equipment Type										
Tank										

Scenario 3, Max Month (1.16 MGD)

Equipment Type										
Tank										

Scenario 4, Max Day (2.75 MGD)

Equipment Type										
Tank										

Total kWh/yr:	0

Operations and Maintenance

Tank, NaOH

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
General visual inspection	Preventive	OP	1	Daily	365	0	3				
Visual inspection of exterior level gauge	Preventive	OP	1	Daily	365	0	3				
Calibrate level transmitter	Preventive	MI	1	Annual	1	1		1			
Check level alarms	Preventive	MI	1	Annual	1	0		0			
Drain tank for inspection entry	Corrective	MM	3	Annual	1	1				3	
Replace FRP tank	Corrective	MM	2	20 Years	0	8				1	LCCA
						Total, each unit (hr)	6	1		4	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	6	1		4	
						No. Units	1	1	1	1	
						Total hours by staff type	6	1		4	
						Annualized Hours and Materials	11				$0

Electrical Load

Design Condition

Equipment Type	No. Units									
Tank	1									

Notes: No electrical load.

Scenario 1, Min Day (0.67 MGD)

Equipment Type										
Tank										

Scenario 2, Avg Day (0.97 MGD)

Equipment Type										
Tank										

Scenario 3, Max Month (1.16 MGD)

Equipment Type										
Tank										

Scenario 4, Max Day (2.75 MGD)

Equipment Type										
Tank										

Total kWh/yr:	0

Operations and Maintenance

Tote, NaHSO3

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
General visual inspection, leaks, content level,	Preventive	OP	1	Daily	365	0	3				
Calibrate level transmitter	Preventive	MI	1	Quarterly	4	1		2			
Check level alarms	Preventive	MI	1	Quarterly	4	0		1			
Drain tank for inspection											
Inspect tank	Preventive	MM	1	Quarterly	4	1				2	
Tote replacement (included in chemical feed contract)											N/A
						Total, each unit (hr)	3	3		2	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	3	3		2	
						No. Units	1	1	1	1	
						Total hours by staff type	3	3		2	
						Annualized Hours and Materials	8				$0

Electrical Load

Design Condition

Equipment Type	No. Units									
Tank	1									

Notes: No electrical load.

Scenario 1, Min Day (0.67 MGD)

Equipment Type										
Tank										

Scenario 2, Avg Day (0.97 MGD)

Equipment Type										
Tank										

Scenario 3, Max Month (1.16 MGD)

Equipment Type										
Tank										

Scenario 4, Max Day (2.75 MGD)

Equipment Type										
Tank										

Total kWh/yr:	0

Operations and Maintenance

Tote, Citric Acid

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
General visual inspection, leaks, content level,	Preventive	OP	1	Daily	365	0	3				
Calibrate level transmitter	Preventive	MI	1	Quarterly	4	1		2			
Check level alarms	Preventive	MI	1	Quarterly	4	0		1			
Drain tank for inspection											
Inspect tank	Preventive	MM	1	Quarterly	4	1				2	
Tote replacement (included in chemical feed contract)											N/A
						Total, each unit (hr)	3	3		2	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	3	3		2	
						No. Units	1	1	1	1	
						Total hours by staff type	3	3		2	
						Annualized Hours and Materials	8				$0

Electrical Load

Design Condition

Equipment Type	No. Units									
Tank	1									

Notes: No electrical load.

Scenario 1, Min Day (0.67 MGD)

Equipment Type										
Tank										

Scenario 2, Avg Day (0.97 MGD)

Equipment Type										
Tank										

Scenario 3, Max Month (1.16 MGD)

Equipment Type										
Tank										

Scenario 4, Max Day (2.75 MGD)

Equipment Type										
Tank										

Total kWh/yr:	0

Operations and Maintenance

Tote, Antiscalant

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
General visual inspection, leaks, content level,	Preventive	OP	1	Daily	365	0	3				
Calibrate level transmitter	Preventive	MI	1	Quarterly	4	1		2			
Check level alarms	Preventive	MI	1	Quarterly	4	0		1			
Drain tank for inspection											
Inspect tank	Preventive	MM	1	Quarterly	4	1				2	
Tote replacement (included in chemical feed contract)											N/A
						Total, each unit (hr)	3	3		2	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	3	3		2	
						No. Units	1	1	1	1	
						Total hours by staff type	3	3		2	
						Annualized Hours and Materials	8				$0

Electrical Load

Design Condition

Equipment Type	No. Units		Flow (rated) [gpm]	TDH (rated) [ft]	HP (rated)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]			
Pump	2		100	90	2.5	2.5	95%	95%	N/A	1.9			

Notes:

Operating Scenario

Equipment Type	No. Units	Units Operating	Flow (actual) [gpm]	TDH (rated) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	2	1	100	90	2.4	2.5	95%	93%	-	1.9	9.6	365	6712

Notes: Assume average flow of 40 gpm. Assume pump will cycle at full flow to meet this flow (9.6 hours run time per day).

Total kWh/yr: 6712

Operations and Maintenance

Mat. C

Pump, Plant Drain

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
General visual inspection for surface water mixing / agitation	Preventive	OP	1	Daily	365	0	3				
Pull pump from liquid stream for visual inspection for debris on impeller, impeller wear, electrical cable integrity, cable / chain integrity	Preventive	OP	1	Monthly	12	1	6				
Replace horizontal Submersible Pump wire cable / chain	Corrective	MM	1	5 Years	0	2				0	200
Check pump performance - amp draw	Preventive	OP	1	Quarterly	12	1	12				
MCC Switchgear cleaning and testing	Preventive	RMT	2	Annual	1	2			4		
Replace horizontal Submersible Pump	Corrective	MM	1	10 Years	0	3				0	LCCA
						Total, each unit (hr)	21		4	1	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	21		4	1	
						No. Units	2	2	2	2	
						Total hours by staff type	42		8	1	
						Annualized Hours and Materials	51				$80

Electrical Load

Design Condition

Equipment Type	No. Units		Flow (rated) [gpm]	TDH (rated) [ft]	HP (rated)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]			
Pump	2		50	40	0.7	2	80%	95%	N/A	0.5			

Notes:

Scenario 1, Min Day (0.67 MGD)

Equipment Type	No. Units	Units Operating	Flow (actual) [gpm]	TDH (rated) [ft]	HP (actual)	HP (name plate)	Pump Eff.	Motor Eff.	VFD Eff.	Power draw [kW]	Op Time [hr/d]	Op Freq. [d/yr]	Annual kWh
Pump	2	1	50	40	0.6	2	80%	91%	-	0.5	2	52	54

Notes: Assume pump runs 2 hours once per week.

Total kWh/yr: 54

Operations and Maintenance

Mat. C

Pump, Vactor Truck Sewage

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
General visual inspection for surface water mixing / agitation	Preventive	OP	1	Daily	365	0	3				
Pull pump from liquid stream for visual inspection for debris on impeller, impeller wear, electrical cable integrity, cable / chain integrity	Preventive	OP	1	Monthly	12	1	6				
Replace horizontal Submersible Pump wire cable / chain	Corrective	MM	1	5 Years	0	2				0	200
Check pump performance - amp draw	Preventive	OP	1	Quarterly	12	1	12				
MCC Switchgear cleaning and testing	Preventive	RMT	2	Annual	1	2			4		
Replace horizontal Submersible Pump	Corrective	MM	1	10 Years	0	3				0	LCCA
						Total, each unit (hr)	21		4	1	
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit	21		4	1	
						No. Units	2	2	2	2	
						Total hours by staff type	42		8	1	
						Annualized Hours and Materials	51				$80

Electrical Load

Design Condition

Equipment Type	No. Units								
Emergency Generator	1								

Notes: The emergency generator only draws power when the main power is offline. The emergency generator power is accounted for in the power requirements for all other equipment at the facility.

Total kWh/yr:	0

CITY OF MORRO BAY WATER RECLAMATION FACILITY PROJECT

Operations and Maintenance

Em. Generator

Task	Task Type	Type of Staff	No. of Staff	Freq.	Yearly Events	Req. Time (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Mat. Cost/ Event
Off-load running test	Predictive	RMT	1	Monthly	12	1			6		
On-load connection test	Preventive	MI	1	Monthly	12	1		6			
Mechanical inspection	Preventive	RMT	1	Monthly	12	2			24		
Safety devices test	Preventive	RMT	1	Monthly	12	2			24		
Battery check	Preventive	MI	1	Monthly	12	1		12			
Control panel check	Preventive	MI	1	Monthly	12	1		6			
Calibrate instrumentation, alarms and communications to SCADA	Preventive	MI	1	Annual	1	1		1			
MCC Switchgear cleaning and testing	Preventive	RMT	2	Annual	1	1			2		
Replace Generator				30+ Years							LCCA
						Total, each unit (hr)		25	56		
						Adjustment Factor	1	1	1	1	
						Adjusted hours, each unit		25	56		
						No. Units	1	1	1	1	
						Total hours by staff type		25	56		
						Annualized Hours and Materials	81				$0

CITY OF MORRO BAY
WATER RECLAMATION FACILITY PROJECT

ESTIMATED O&M ACTIVITIES

JOINT VENTURE

FILANC BLACK & VEATCH

Estimated Equipment Operations and Maintenance Requirements

		Task	Task Type	Type of Staff	Number of Staff	Frequency	Yearly Events	Required Time per staff (hr)	OP[1] Labor (hrs/yr)	MI[2] Labor (hrs/yr)	RMT[3] Labor (hrs/yr)	MM[4] Labor (hrs/yr)	Material Cost (each event)	Assumptions / Notes
8.8		**Peristaltic Pumps (Based on 150 gph pump)**												
		General visual inspection for leaks and damage, bump pumps, check pump housing and gearbox lubricant level	Preventive	OP	1	Daily	365.00	0.01	3.04	0.00	0.00	0.00		
		Replace pump housing lubricant	Preventive	MM	1	Annual	1.00	1.50	0.00	0.00	0.00	1.50		
		Replace hose	Corrective	OP	1	Quarterly	4.00	0.50	2.00	0.00	0.00	0.00	$50	1 hose at $50
		Perform volumetric calibration	Predictive	OP	1	Annual	1.00	0.50	0.50	0.00	0.00	0.00		
		Record discharge pressure and flow					0.00		0.00	0.00	0.00	0.00		
		Calibrate flow meter and discharge pressure transmitter	Preventive	MI	1	Annual	1.00	1.00	0.00	1.00	0.00	0.00		Milton Roy C14136
		Confirm proper operation of alarms and communication with SCADA	Preventive	MI	1	Annual	1.00	0.50	0.00	0.50	0.00	0.00		
		Pump Replacement	Corrective	MM	1	5 Years	0.20	1.50	0.00	0.00	0.00	0.30	LCCA	
		Annualized Subtotal Each Mechanical Bar Screen							**5.54**	**1.50**	**0.00**	**1.80**	$200	

		Task	Task Type	Type of Staff	Number of Staff	Frequency	Yearly Events	Required Time per staff (hr)	OP[1] Labor (hrs/yr)	MI[2] Labor (hrs/yr)	RMT[3] Labor (hrs/yr)	MM[4] Labor (hrs/yr)	Material Cost (each event)	Assumptions / Notes
6.7		**Sample Pump (Based on 1/2 Hp pump)**												
		General visual inspection for leaks, motor bearing noise, and damage	Preventive	OP	1	Daily	365.00	0.01	3.04	0.00	0.00	0.00		
		Check sample pump for adequate flow	Preventive	OP	1	Daily	365.00	0.01	3.04	0.00	0.00	0.00		
		Replace pump	Corrective	MM	1	5 Years	0.20	3.00	0.00	0.00	0.00	0.60	LCCA	1/2 Hp 120/240V + CPVC fittings and glue
		Annualized Subtotal Each Sample Pump							**6.08**	**0.00**	**0.00**	**0.60**	$0	

		Task	Task Type	Type of Staff	Number of Staff	Frequency	Yearly Events	Required Time per staff (hr)	OP[1] Labor (hrs/yr)	MI[2] Labor (hrs/yr)	RMT[3] Labor (hrs/yr)	MM[4] Labor (hrs/yr)	Material Cost (each event)	Assumptions / Notes
23.9		**Centrifugal Pump (Based on a 25 Hp pump)**												
		General visual inspection - bump pumps to verify operation.	Preventive	OP	1	Daily	365.00	0.01	3.04	0.00	0.00	0.00		
		Visually inspect pump suction / discharge pressures are within process design	Preventive	OP	1	Daily	365.00	0.01	2.03	0.00	0.00	0.00		
		Check pump integrity					0.00		0.00	0.00	0.00	0.00		
		Lubricate pump and motor bearings	Preventive	MM	1	Quarterly	4.00	1.00	0.00	0.00	0.00	4.00	$5	Lubrication oil
		Check shaft alignment (laser alignment)	Preventive	MM	1	Quarterly	4.00	1.00	0.00	0.00	0.00	4.00		
		Check pump performance - head pressure, pump flow rate, amp draw,	Preventive	MM	1	Annual	1.00	1.00	0.00	0.00	0.00	1.00		
		Perform vibration spectrum analysis on pump.	Preventive	RMT	1	Annual	1.00	0.30	0.00	0.00	0.30	0.00		
		Replace mechanical seal	Preventive	MM	1	2 Years	0.50	2.00	0.00	0.00	0.00	1.00	$30	Mechanical seal
		MCC Switchgear cleaning and testing	Preventive	RMT	2	Annual	1.00	4.00	0.00	0.00	8.00	0.00		

		Task	Task Type	Type of Staff	Number of Staff	Frequency	Yearly Events	Required Time per staff (hr)	OP[1] Labor (hrs/yr)	MI[2] Labor (hrs/yr)	RMT[3] Labor (hrs/yr)	MM[4] Labor (hrs/yr)	Material Cost (each event)	Assumptions / Notes
		Confirm proper operation of alarms and communication with SCADA	Preventive	MI	1	Annual	1.00	0.50	0.00	0.50	0.00	0.00		
		Replace Pump				30+ Years							LCCA	
		Annualized Subtotal Each Centrifugal Pump							**5.07**	**0.50**	**8.30**	**10.00**	$35	
25.7		**Horizontal Submersible Propeller Pump (Based on 5 hp unit)**												
		General visual inspection for surface water mixing / agitation	Preventive	OP	1	Daily	365.00	0.01	3.04	0.00	0.00	0.00		
		Pull pump from liquid stream for visual inspection for debris on impeller, impeller wear, electrical cable integrity, cable / chain integrity	Preventive	OP	1	Monthly	12.00	0.50	6.00	0.00	0.00	0.00		
		Replace horizontal Submersible Pump wire cable / chain	Corrective	MM	1	5 Years	0.20	2.00	0.00	0.00	0.00	0.40	$200	
		Check pump performance - amp draw	Preventive	OP	1	Quarterly	12.00	1.00	12.00	0.00	0.00	0.00		Wire cable / chain
		MCC Switchgear cleaning and testing	Preventive	RMT	2	Annual	1.00	2.00	0.00	0.00	4.00	0.00		
		Replace horizontal Submersible Pump	Corrective	MM	1	10 Years	0.10	3.00	0.00	0.00	0.00	0.30	LCCA	
		Annualized Subtotal Each Submersible Pump							**21.04**	**0.00**	**4.00**	**0.70**	$40	
17.9		**RO Feed Pump (Based on 100 Hp pump)**												
		General visual inspection for excessive noise, vibration, seal leakage, and bearing oil level	Preventive	OP	1	Daily	365.00	0.01	3.04	0.00	0.00	0.00		
		Visually inspect pump suction / discharge pressures are within process design	Preventive	OP	1	Quarterly	4.00	0.01	0.03	0.00	0.00	0.00		
		Check pump performance - amp draw	Preventive	OP	1	Annual	1.00	1.00	1.00	0.00	0.00	0.00		
		Change motor bearing oil	Preventive	OP	1	Annual	1.00	2.00	2.00	0.00	0.00	0.00	$20	Lubrication oil
		Pump rebuild (seals, bearings as needed, alignment)	Preventive	MM	1	5 Years	0.20	8.00	0.00	0.00	0.00	1.60	$250	
		Pump replacement coupling alignment (laser alignment)	Preventive	MM	1	5 Years	0.20	1.00	0.00	0.00	0.00	0.20		???
		MCC Switchgear cleaning and testing	Preventive	RMT	2	Annual	1.00	4.00	0.00	0.00	8.00	0.00		???
		Confirm proper operation of alarms and communication with SCADA	Preventive	MI	1	Quarterly	4.00	0.50	0.00	2.00	0.00	0.00		
		Replace Pump				30+ Years							LCCA	
		Annualized Subtotal Each RO Feed Pump							**6.08**	**2.00**	**8.00**	**1.80**	$70	

		Task	Task Type	Type of Staff	Number of Staff	Frequency	Yearly Events	Required Time per staff (hr)	OP[1] Labor (hrs/yr)	MI[2] Labor (hrs/yr)	RMT[3] Labor (hrs/yr)	MM[4] Labor (hrs/yr)	Material Cost (each event)	Assumptions / Notes
6.7		**Sluice Gates**												
		General visual inspection	Preventive	OP	1	Weekly	52.00	0.01	0.43	0.00	0.00	0.00		
		Clean the gate with clear water to remove all deposits	Preventive	OP	1	Quarterly	4.00	0.50	2.00	0.00	0.00	0.00		
		Inspect the resilient seals and slides	Preventive	MM	1	Annual	1.00	0.25	0.00	0.00	0.00	0.25		
		Inspect stem threads and lift nut threads for wear	Preventive	MM	1	Quarterly	4.00	0.25	0.00	0.00	0.00	1.00		
		Clean and lubricate the stem	Preventive	MM	1	Quarterly	4.00	0.50	0.00	0.00	0.00	2.00	$5	Grease lubricant
		Check all fasteners for tightness	Preventive	MM	1	Semi-Annual	2.00	0.50	0.00	0.00	0.00	1.00		
		Replace gate and actuator				30+ Years							LCCA	
		Annualized Subtotal Each Sluice Gate							**2.43**	**0.00**	**0.00**	**4.25**	$20	

		Task	Task Type	Type of Staff	Number of Staff	Frequency	Yearly Events	Required Time per staff (hr)	OP[1] Labor (hrs/yr)	MI[2] Labor (hrs/yr)	RMT[3] Labor (hrs/yr)	MM[4] Labor (hrs/yr)	Material Cost (each event)	Assumptions / Notes
7.6		**Submersible Mixers (Based on 1 Hp direct drive)**												
		General visual inspection for excessive noise and vibration	Preventive	OP	1	Daily	365.00	0.01	3.04	0.00	0.00	0.00		
		Visual inspection of mixer blade for debris and wear	Preventive	OP	1	Weekly	52.00	0.08	4.33	0.00	0.00	0.00		
		Mixer replacement	Corrective	MM	1	10 Years	0.10	1.00	0.00	0.00	0.00	0.20	LCCA	
		Annualized Subtotal Each Mixers							**7.38**	**0.00**	**0.00**	**0.20**	$0	

		Task	Task Type	Type of Staff	Number of Staff	Frequency	Yearly Events	Required Time per staff (hr)	OP[1] Labor (hrs/yr)	MI[2] Labor (hrs/yr)	RMT[3] Labor (hrs/yr)	MM[4] Labor (hrs/yr)	Material Cost (each event)	Assumptions / Notes
8.4		**Vertical Mixer (Based on 1 Hp mixer)**												
		Electrical consumption measurement	Predictive	RMT	1	Quarterly	4.00	0.25	0.00	0.00	1.00	0.00		
		Check if unusual noise	Preventive	OP	1	Daily	365.00	0.01	3.04	0.00	0.00	0.00		
		Check mixer alignment	Preventive	MM	1	2 Years	0.50	0.01	0.00	0.00	0.00	0.00		
		Check fittings of the mixer	Preventive	MM	1	Quarterly	4.00	0.01	0.00	0.00	0.00	0.03		
		Check electrical connections	Preventive	MI	1	2 Years	0.50	0.01	0.00	0.00	0.00	0.00		
		Screw motor power terminals	Preventive	MI	1	Annual	1.00	0.01	0.00	0.01	0.00	0.00		
		Check earth connection	Preventive	MI	1	2 Years	0.50	0.01	0.00	0.00	0.00	0.00		
		Insulation level test	Predictive	RMT	1	2 Years	0.50	0.01	0.00	0.00	0.00	0.00		
		Check oil level	Preventive	MM	1	Quarterly	4.00	0.17	0.00	0.00	0.00	0.67		
		Replace oil	Preventive	MM	1	Annual	1.00	1.00	0.00	0.00	0.00	1.00		
		Replace motor	Corrective	MM	1	10 Years	0.10	3.00	0.00	0.00	0.00	0.30		
		Replace mixer	Corrective	MM	1	30+ Years	0.10	3.00	0.00	0.00	0.00	0.30		

		Task	Task Type	Type of Staff	Number of Staff	Frequency	Yearly Events	Required Time per staff (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Material Cost (each event)	Assumptions / Notes
		Confirm proper operation of alarms and communication with SCADA	Preventive	MI	1	Quarterly	4.00	0.50	0.00	2.00	0.00	0.00		
		NO VERTICAL MIXERS IN PROJECT												
		Annualized Subtotal Each Submersible Mixer							**3.04**	**2.02**	**1.00**	**2.30**	$0	
7.4		**Cartridge Filters**												
		General inspection including leaks, unusual noises, line pressure and differential pressure	Preventive	OP	1	Daily	365.00	0.01	3.04	0.00	0.00	0.00		
		Record feed, discharge, and differential pressures	Preventive	OP	1	Daily	365.00	0.00	0.00	0.00	0.00	0.00		SCADA records values, no direct operator time needed.
		Confirm proper operation of alarms	Preventive	MI	1	Annual	1.00	0.02	0.00	0.02	0.00	0.00		
		Check waterproof	Corrective	MM	1	Monthly	12.00	0.01	0.00	0.00	0.00	0.10		
		Check supports and fittings of the equipment	Corrective	MM	1	Semi-Annual	2.00	0.01	0.00	0.00	0.00	0.02		
		Check corrosion and make painting adjustments	Corrective	MM	1	2 Years	0.50	0.01	0.00	0.00	0.00	0.00		
		Protect external bolting with grease					0.50		0.00	0.00	0.00	0.00		
		Replace cartridges	Corrective	MM	1	Semi-Annual	2.00	2.00	0.00	0.00	0.00	4.00	$500	
		Check bolting of inlet / outlet pipes	Corrective	MM	1	2 Years	0.50	0.50	0.00	0.00	0.00	0.25		
		Replace cartridge filter				30+ Years							LCCA	
		Annualized Subtotal Each Cartridge Filters							**3.04**	**0.02**	**0.00**	**4.37**	$1,000	
24.1		**Air Compressor (Based on 15-Hp 50 cfm)**												
		Confirm proper operation of the air compressors	Predictive	OP	1	Daily	365.00	0.01	3.04	0.00	0.00	0.00		
		Note amount of time compressor is loaded-unloaded	Preventive	OP	1	Daily	365.00	0.02	6.08	0.00	0.00	0.00		
		Perform unit service checks	Preventive	MM	1	Monthly	12.00	0.50	0.00	0.00	0.00	6.00		
		Replace inlet air filter	Preventive	MM	1	Semi-Annual	2.00	0.25	0.00	0.00	0.00	0.50	$15	
		Repair and replace component as required by manufacture O&M	Preventive	MM	1	Annual	1.00	2.00	0.00	0.00	0.00	2.00	$100	
		Confirm proper operation of alarms and communication with SCADA	Preventive	MI	1	Annual	1.00	0.50	0.00	0.50	0.00	0.00		
		Perform calibration procedures	Preventive	MI	1	Annual	1.00	2.00	0.00	2.00	0.00	0.00		
		MCC Switchgear cleaning and testing	Preventive	RMT	2	Annual	1.00	2.00	0.00	0.00	4.00	0.00		
		Replcae air compressor				30+ Years							LCCA	
		Annualized Subtotal Each Air Compressor							**9.13**	**2.50**	**4.00**	**8.50**	$130	
10.0		**Compressed Air Receiver (Based on a 120 gal Vertical tank)**												
		Visual Inspection for operating pressure range	Preventive	OP	1	Daily	365.00	0.01	3.04	0.00	0.00	0.00		
		Open bottom drain to check for water/condensate and oil, and auto drain system is functioning as designed	Preventive	OP	1	Daily	365.00	0.02	6.08	0.00	0.00	0.00		
		Check pressure relief functions properly to relief at designed pressure	Predictive	MM	1	Annual	1.00	0.25	0.00	0.00	0.00	0.25		
		Internal inspection and certification	Preventive	RMT	1	3 Years	0.33	2.00	0.00	0.00	0.67	0.00		

		Task	Task Type	Type of Staff	Number of Staff	Frequency	Yearly Events	Required Time per staff (hr)	OP[1] Labor (hrs/yr)	MI[2] Labor (hrs/yr)	RMT[3] Labor (hrs/yr)	MM[4] Labor (hrs/yr)	Material Cost (each event)	Assumptions / Notes
		Replace compressed air receiver				30+ Years							LCCA	
		Annualized Subtotal Each Compressed Air Receiver							**9.13**	**0.00**	**0.67**	**0.25**	$0	
7.1		**Compressed Air Filter System**												
		Visual Inspection for operating pressure range and differential pressure across filter	Preventive	OP	1	Daily	365.00	0.01	3.04	0.00	0.00	0.00		
		Record feed, discharge, and differential pressures					0.00		0.00	0.00	0.00	0.00		
		Open - drain to check for water condensate and oil	Preventive	OP	1	Daily	365.00	0.01	3.04	0.00	0.00	0.00		
		Replace filter cartridge	Corrective	OP	1	Semi-Annual	2.00	0.50	1.00	0.00	0.00	0.00	$15	Cartridge filter
		Replace filter system	Corrective	MM	1	10 Years	0.10	0.50	0.00	0.00	0.00	0.05	LCCA	
		Annualized Subtotal Each Compressed Air Filter System							**7.08**	**0.00**	**0.00**	**0.05**	$30	
24.9		**Compressed Air - Refrigerated Air Dryer (Based on 7.5-Hp 25 cfm)**												
		Confirm proper operation of the compressors, temperature and pressures	Predictive	OP	1	Daily	365.00	0.01	3.04	0.00	0.00	0.00		
		Note amount of time compressor is loaded-unloaded					0.00		0.00	0.00	0.00	0.00		
		Perform unit service checks	Preventive	MM	1	Monthly	12.00	0.50	0.00	0.00	0.00	6.00		
		Replace air filter	Preventive	MM	1	Semi-Annual	2.00	0.25	0.00	0.00	0.00	0.50	$20	
		Repair and replace component as required by manufacture O&M	Preventive	MM	1	Annual	1.00	4.00	0.00	0.00	0.00	4.00	$100	
		Confirm proper operation of alarms and communications with SCADA	Preventive	MI	1	Quarterly	4.00	0.25	0.00	1.00	0.00	0.00		
		Perform calibration procedures					0.00		0.00	0.00	0.00	0.00		
		Open bottom drain to check for water/condensate and oil, and auto drain system is functioning as designed	Preventive	OP	1	Daily	365.00	0.02	6.08	0.00	0.00	0.00		
		Check pressure relief functions properly to relief at designed pressure	Predictive	MM	1	Annual	1.00	0.25	0.00	0.00	0.00	0.25		
		MCC Switchgear cleaning and testing	Preventive	RMT	2	Annual	1.00	2.00	0.00	0.00	4.00	0.00		
		Replace Refrigerated Air Dryer				30+ Years							LCCA	
		Annualized Subtotal Each Compressed Air - Refrigerated Air Dryer							**9.13**	**1.00**	**4.00**	**10.75**	$140	
25.1		**Blowers (VFD unit - 750 to 1500 cfs sized unit)**												

		Task	Task Type	Type of Staff	Number of Staff	Frequency	Yearly Events	Required Time per staff (hr)	OP[1] Labor (hrs/yr)	MI[2] Labor (hrs/yr)	RMT[3] Labor (hrs/yr)	MM[4] Labor (hrs/yr)	Material Cost (each event)	Assumptions / Notes
		Inspect blower and controls	Preventive	OP	1	Daily	365.00	0.01	3.04	0.00	0.00	0.00		
		Confirm proper operation of the blower, temperature, pressures, and flow (CFM)	Preventive	OP	1	Daily	365.00	0.01	3.04	0.00	0.00	0.00		
		Record operating conditions, temperature, pressures, and flow	Predictive	OP	1	Daily	365.00	0.00	0.00	0.00	0.00	0.00		
		Intake filter - check filter for contamination, replace if necessary (max. -45 bar), and replace filter insert	Corrective	MM	1	Monthly	12.00	0.25	0.00	0.00	0.00	3.00	$200	
		Air intake/air exhaust openings - of acoustic hood, check and clean	Corrective	MM	1	Monthly	12.00	0.25	0.00	0.00	0.00	3.00		
		V-belt pulley alignment - check, correct if necessary	Corrective	MM	1	Quarterly	4.00	0.50	0.00	0.00	0.00	2.00		
		Perform manufactures PM maintenance	Corrective	MM	1	Semi-Annual	2.00	2.00	0.00	0.00	0.00	4.00	$150	
		Calibrate instrumentation, alarms and communications to SCADA	Preventive	MI	1	Annual	1.00	1.00	0.00	1.00	0.00	0.00		
		Calibrate pressure, differential, temperature, and flow instrumentation	Corrective	MI	1	Annual	1.00	2.00	0.00	2.00	0.00	0.00		
		MCC Switchgear cleaning and testing	Preventive	RMT	2	Annual	1.00	2.00	0.00	0.00	4.00	0.00		
		Replace blower				30+ Years							LCCA	
		Annualized Subtotal Each Blowers							**6.08**	**3.00**	**4.00**	**12.00**	$2,700	
23.1		**Steel Tank (30,000 to 500,000 gal)**												
		General visual inspection	Preventive	OP	1	Daily	365.00	0.02	6.08	0.00	0.00	0.00		
		Visual inspection of exterior level gauge	Preventive	OP	1	Daily	365.00	0.01	3.04	0.00	0.00	0.00		
		Calibrate level transmitter	Preventive	MI	1	Annual	1.00	0.50	0.00	0.50	0.00	0.00		
		Check level alarms (Float and level transmitter)	Preventive	MI	1	Annual	1.00	0.50	0.00	0.50	0.00	0.00		
		Drain tank for inspection entry	Corrective	MM	3	Annual	1.00	4.00	0.00	0.00	0.00	12.00		
		Recoat interior				30+ Years								N/A for glass-lined steel tank
		Recoat Exterior	Corrective	MM	1	10 Years	0.10	8.00	0.00	0.00	0.00	0.80	$3,000	
		Float and transmitter parts replacement	Corrective	MI	1	10 Years	0.10	2.00	0.00	0.20	0.00	0.00	$0	
		Replace steel tank				30+ Years							LCCA	
		Annualized Subtotal Each Steel Tank							**9.13**	**1.20**	**0.00**	**12.80**	$300	
10.6		**FRP Tank (small to 12,000 gal)**												
		General visual inspection	Preventive	OP	1	Daily	365.00	0.01	3.04	0.00	0.00	0.00		
		Visual inspection of exterior level gauge	Preventive	OP	1	Daily	365.00	0.01	3.04	0.00	0.00	0.00		
		Calibrate level transmitter	Preventive	MI	1	Annual	1.00	0.50	0.00	0.50	0.00	0.00		
		Check level alarms	Preventive	MI	1	Annual	1.00	0.25	0.00	0.25	0.00	0.00		
		Drain tank for inspection entry	Corrective	MM	3	Annual	1.00	1.00	0.00	0.00	0.00	3.00		

		Task	Task Type	Type of Staff	Number of Staff	Frequency	Yearly Events	Required Time per staff (hr)	OP[1] Labor (hrs/yr)	MI[2] Labor (hrs/yr)	RMT[3] Labor (hrs/yr)	MM[4] Labor (hrs/yr)	Material Cost (each event)	Assumptions / Notes
		Replace FRP tank	Corrective	MM	2	20 Years	0.05	8.00	0.00	0.00	0.00	0.80	LCCA	majority of work included in repl contract
		Annualized Subtotal Each FRP							**6.08**	**0.75**	**0.00**	**3.80**	$0	
69.6		**Air Bladder Storage Tank Based on a 150 gal tank)**												
		General visual inspection	Preventive	OP	1	Daily	365.00	0.08	30.42	0.00	0.00	0.00		
		Check for water leaks	Preventive	OP	1	Daily	365.00	0.08	30.42	0.00	0.00	0.00		
		Check Air Bladder air pad	Corrective	MM	1	Monthly	12.00	0.50	0.00	0.00	0.00	6.00		
		Air Bladder Replacement	Corrective	MM	2	5 Years	0.50	2.00	0.00	0.00	0.00	2.00	$400	
		Visual Inspection External Instrumentation / replacement	Corrective	MM	1	5 Years	0.20	1.00	0.00	0.00	0.00	0.20		
		Replace Air Bladder Storage Tank		MM	1	15 Years	0.07	8.00	0.00	0.00	0.00	0.53	LCCA	majority of work included in repl contract
		Annualized Subtotal Each Air Bladder Storage Tank							**60.83**	**0.00**	**0.00**	**8.73**	$200	
8.0		**Chemical Storage Totes (Based on 330 gal tote)**												
		General visual inspection, leaks, content level,	Preventive	OP	1	Daily	365.00	0.01	3.04	0.00	0.00	0.00		
		Calibrate level transmitter	Preventive	MI	1	Quarterly	4.00	0.50	0.00	2.00	0.00	0.00		
		Check level alarms	Preventive	MI	1	Quarterly	4.00	0.25	0.00	1.00	0.00	0.00		
		Drain tank for inspection					0.00		0.00	0.00	0.00	0.00		
		Inspect tank	Preventive	MM	1	Quarterly	4.00	0.50	0.00	0.00	0.00	2.00		
		Tote replacement (included in chemical feed contract)											N/A	
		Annualized Subtotal Each Chemical Storage Totes							**3.04**	**3.00**	**0.00**	**2.00**	$0	
18.7		**Air Scrubber**												
		General visual inspection	Preventive	OP	1	Daily	365.00	0.01	3.04	0.00	0.00	0.00		
		Inspect packing for accumulation.	Preventive	OP	1	Monthly	12.00	0.02	0.20	0.00	0.00	0.00		
		Calibrate instrumentation, alarms and communications to SCADA	Preventive	MI	1	Quarterly	4.00	0.50	0.00	2.00	0.00	0.00		
		Inspect/clean all motors, drives, belts and bearings.	Preventive	MI	1	Monthly	12.00	0.02	0.00	0.20	0.00	0.00		
		Check all pulleys and belts for proper alignment and tension.	Preventive	MM	1	Monthly	12.00	0.02	0.00	0.00	0.00	0.20		
		Check all bolted connections and tighten as required.	Preventive	MM	1	Monthly	12.00	0.02	0.00	0.00	0.00	0.20		
		Drain and clean inside of wet scrubber reservoir.	Preventive	OP	1	Quarterly	4.00	0.50	2.00	0.00	0.00	0.00		

		Task	Task Type	Type of Staff	Number of Staff	Frequency	Yearly Events	Required Time per staff (hr)	OP(1) Labor (hrs/yr)	MI(2) Labor (hrs/yr)	RMT(3) Labor (hrs/yr)	MM(4) Labor (hrs/yr)	Material Cost (each event)	Assumptions / Notes
		Lubricate all motor bearings as required.	Preventive	MI	1	Quarterly	4.00	0.25	0.00	1.00	0.00	0.00		
		Check stuffing box on recirculation pump with mechanical seals for leakage.	Preventive	MM	1	Quarterly	4.00	0.02	0.00	0.00	0.00	0.07		
		Inspect Nozzles, Clean as necessary	Preventive	MM	1	Semi-Annual	2.00	0.02	0.00	0.00	0.00	0.03		
		Clean tower packing and mist eliminator	Preventive	MM	2	Semi-Annual	2.00	1.00	0.00	0.00	0.00	4.00		
		Replace pH sensor membrane	Preventive	MI	1	Annual	1.00	1.00	0.00	1.00	0.00	0.00	$500	
		MCC Switchgear cleaning and testing	Preventive	RMT	2	Annual	1.00	2.00	0.00	0.00	4.00	0.00		
		Replace Air Scrubber	Preventive	MM	2	20 Years	0.05	8.00	0.00	0.00	0.00	0.80	LCCA	majority of work included in repl contract
		Annualized Subtotal Each Air Scrubber							**5.24**	**4.20**	**4.00**	**5.30**	$500	
23.0		**Odor Control Scrubber Fan**												
		General visual inspection	Preventive	OP	1	Daily	365.00	0.02	6.08	0.00	0.00	0.00		
		Perform vibration spectrum analysis on pump.	Predictive	RMT	1	Quarterly	4.00	0.50	0.00	0.00	2.00	0.00		
		Check impeller for buildup of foreign material and wear.	Preventive	MM	1	Monthly	12.00	0.25	0.00	0.00	0.00	3.00		
		Check V-Belt Drives for Proper Alignment and Tension	Preventive	MM	1	Quarterly	4.00	0.25	0.00	0.00	0.00	1.00		
		Lubricate the fan and motor bearings	Preventive	MM	1	Monthly	12.00	0.25	0.00	0.00	0.00	3.00		
		Calibrate instrumentation, alarms and communications to SCADA	Preventive	MI	1	Annual	1.00	0.50	0.00	0.50	0.00	0.00		
		Tighten all bolts and setscrews	Preventive	MM	1	Monthly	12.00	0.25	0.00	0.00	0.00	3.00		
		MCC Switchgear cleaning and testing	Preventive	RMT	2	Annual	1.00	2.00	0.00	0.00	4.00	0.00		
		Replace Scrubber Fan/Blower Unit	Preventive	MM	1	20 Years	0.05	8.00	0.00	0.00	0.00	0.40	LCCA	majority of work included in repl contract
		Annualized Subtotal Each Odor Control Scrubber Fan							**6.08**	**0.50**	**6.00**	**10.40**	$0	
81.0		**Generator Set (Based on a 400 KW generator)**												
		Off-load running test	Predictive	RMT	1	Monthly	12.00	0.50	0.00	0.00	6.00	0.00		
		On-load connection test	Preventive	MI	1	Monthly	12.00	0.50	0.00	6.00	0.00	0.00		
		Mechanical inspection	Preventive	RMT	1	Monthly	12.00	2.00	0.00	0.00	24.00	0.00		
		Safety devices test	Preventive	RMT	1	Monthly	12.00	2.00	0.00	0.00	24.00	0.00		
		Battery check	Preventive	MI	1	Monthly	12.00	1.00	0.00	12.00	0.00	0.00		
		Control panel check	Preventive	MI	1	Monthly	12.00	0.50	0.00	6.00	0.00	0.00		
		Calibrate instrumentation, alarms and communications to SCADA	Preventive	MI	1	Annual	1.00	1.00	0.00	1.00	0.00	0.00		
		MCC Switchgear cleaning and testing	Preventive	RMT	2	Annual	1.00	1.00	0.00	0.00	2.00	0.00		
		Replace Generator				30+ Years							LCCA	
		Annualized Subtotal Each Generator Set							**0.00**	**25.00**	**56.00**	**0.00**	$0	
100.3		**Fine Screen Conveyor and Discharge Chute**												
		General visual inspection, check motor operation, vibration, conveyor, debris buildup	Preventive	OP	1	Daily	365.00	0.02	6.08	0.00	0.00	0.00		

		Task	Task Type	Type of Staff	Number of Staff	Frequency	Yearly Events	Required Time per staff (hr)	OP[1] Labor (hrs/yr)	MI[2] Labor (hrs/yr)	RMT[3] Labor (hrs/yr)	MM[4] Labor (hrs/yr)	Material Cost (each event)	Assumptions / Notes
		Clean conveyor	Preventive	OP	1	Daily	365.00	0.25	91.25	0.00	0.00	0.00		
		Grease roller bearings	Preventive	OP	1	Monthly	12.00	0.17	2.00	0.00	0.00	0.00		
		Calibrate instrumentation, alarms and communications to SCADA	Preventive	MI	1	Annual	1.00	1.00	0.00	1.00	0.00	0.00		
		Replcae fine screen conveyor and discharge chute				30+ Years							LCCA	
		Annualized Subtotal Each Fine Screen Conveyor and Discharge Chute							**99.33**	**1.00**	**0.00**	**0.00**	$0	

19.3		**Polymer Blend System**												
		General visual inspection	Preventive	OP	1	Daily	365.00	0.01	3.04	0.00	0.00	0.00		
		Repair and replace the pumps component as required by manufacture O&M	Preventive	MM	1	Annual	1.00	2.00	0.00	0.00	0.00	2.00		
		Clean mixing chamber	Preventive	OP	1	Monthly	12.00	0.50	6.00	0.00	0.00	0.00		
		Check pump flow rate	Preventive	OP	1	Daily	365.00	0.01	3.04	0.00	0.00	0.00		
		Calibrate instrumentation, alarms and communications to SCADA	Preventive	MI	1	Annual	1.00	0.50	0.00	0.50	0.00	0.00		
		Perform pump service checks					0.12		0.00	0.00	0.00	0.00		
		Exercise valves					0.12		0.00	0.00	0.00	0.00		
		Confirm proper operation of alarms	Preventive	MI	1	Annual	0.12	0.50	0.00	0.06	0.00	0.00		
		Confirm storage tanks liquid level controls	Preventive	MI	2	Annual	0.12	0.50	0.00	0.12	0.00	0.00		
		MCC Switchgear cleaning and testing	Preventive	RMT	2	Annual	1.00	2.00	0.00	0.00	4.00	0.00		
		Replcace polymer blend system		MM	1	15 Years	0.07	8.00	0.00	0.00	0.00	0.53	LCCA	
		Annualized Subtotal Each Air Bladder Storage Tank							**12.08**	**0.68**	**4.00**	**2.53**	$0	

104.0		**Coarse Bar Screens**												
		General visual inspection, check motor operation, vibration, conveyor, debris buildup	Preventive	OP	1	Daily	365.00	0.01	3.04	0.00	0.00	0.00		
		Clean bar screens	Preventive	OP	1	Daily	365.00	0.25	91.25	0.00	0.00	0.00		
		Grease bearings	Preventive	OP	1	Monthly	12.00	0.17	2.00	0.00	0.00	0.00		
		Calibrate instrumentation, alarms and communications to SCADA	Preventive	MI	1	Annual	1.00	0.50	0.00	0.50	0.00	0.00		
		Rebuild bar screen	Corrective	MM	2	10 Years	0.10	16.00	0.00	0.00	0.00	3.20	$2,500	
		MCC Switchgear cleaning and testing	Preventive	RMT	2	Annual	1.00	2.00	0.00	0.00	4.00	0.00		

		Task	Task Type	Type of Staff	Number of Staff	Frequency	Yearly Events	Required Time per staff (hr)	OP[1] Labor (hrs/yr)	MI[2] Labor (hrs/yr)	RMT[3] Labor (hrs/yr)	MM[4] Labor (hrs/yr)	Material Cost (each event)	Assumptions / Notes
		Replace coarse bar screens				30+ Years	0.00		0.00	0.00	0.00	0.00	LCCA	
		Annualized Subtotal Each Coarse Bar Screens							**96.29**	**0.50**	**4.00**	**3.20**	$250	
107.2		**Washer / Compactor**												
		General visual inspection, check motor operation, vibration, conveyor, debris buildup	Preventive	OP	1	Daily	365.00	0.01	3.04	0.00	0.00	0.00		
		Clean washer / compactor	Preventive	OP	1	Daily	365.00	0.25	91.25	0.00	0.00	0.00		
		Grease bearings	Preventive	OP	1	Monthly	12.00	0.17	2.00	0.00	0.00	0.00		
		Calibrate instrumentation, alarms and communications to SCADA	Preventive	MI	1	Annual	1.00	0.50	0.00	0.50	0.00	0.00		
		Rebuild washer / compactor	Corrective	MM	2	10 Years	0.10	32.00	0.00	0.00	0.00	6.40	$1,000	
		MCC Switchgear cleaning and testing	Preventive	RMT	2	Annual	1.00	2.00	0.00	0.00	4.00	0.00		
		Replcae washer compactor				30+ Years							LCCA	expect long life due to avg flow 1/8th of capacity.
		Annualized Subtotal Each Washer / Compactor							**96.29**	**0.50**	**4.00**	**6.40**	$100	
16.5		**Grit Basin**												
		General visual inspection	Preventive	OP	1	Daily	365.00	0.01	3.04	0.00	0.00	0.00		
		Wash down	Preventive	OP	1	Weekly	52.00	0.25	13.00	0.00	0.00	0.00		
		Calibrate Level instrumentation, alarms and communications to SCADA	Preventive	MI	1	Annual	1.00	0.50	0.00	0.50	0.00	0.00		
		Replace grit basin				30+ Years							LCCA	expect long life due to avg flow 1/8th of capacity.
		Annualized Subtotal Each grit Basin							**16.04**	**0.50**	**0.00**	**0.00**	$0	
16.5		**Splitter Box**												
		General visual inspection	Preventive	OP	1	Daily	365.00	0.01	3.04	0.00	0.00	0.00		
		Wash down	Preventive	OP	1	Weekly	52.00	0.25	13.00	0.00	0.00	0.00		
		Calibrate Level instrumentation, alarms and communications to SCADA	Preventive	MI	1	Annual	1.00	0.50	0.00	0.50	0.00	0.00		

		Task	Task Type	Type of Staff	Number of Staff	Frequency	Yearly Events	Required Time per staff (hr)	OP[1] Labor (hrs/yr)	MI[2] Labor (hrs/yr)	RMT[3] Labor (hrs/yr)	MM[4] Labor (hrs/yr)	Material Cost (each event)	Assumptions / Notes
		Replace splitter box				30+ Years							LCCA	
		Annualized Subtotal Each Splitter Box							**16.04**	**0.50**	**0.00**	**0.00**	$0	
108.8		**Grit Separator and Classifier**												
		General visual inspection, check motor operation, vibration, conveyor, debris buildup	Preventive	OP	1	Daily	365.00	0.01	3.04	0.00	0.00	0.00		
		Clean washer / compactor	Preventive	OP	1	Daily	365.00	0.25	91.25	0.00	0.00	0.00		
		Grease bearings	Preventive	OP	1	Monthly	12.00	0.17	2.00	0.00	0.00	0.00		
		Calibrate instrumentation, alarms and communications to SCADA	Preventive	MI	1	Annual	1.00	0.50	0.00	0.50	0.00	0.00		
		Rebuild separator / Classifier	Corrective	MM	2	10 Years	0.10	40.00	0.00	0.00	0.00	8.00	$1,000	
		MCC Switchgear cleaning and testing	Preventive	RMT	2	Annual	1.00	2.00	0.00	0.00	4.00	0.00		
		Replace grit separator / classifier				30+ Years							LCCA	expect long life due to avg flow 1/8th of capacity.
		Annualized Subtotal Each Grit Separator and Classifier							**96.29**	**0.50**	**4.00**	**8.00**	$100	
55.9		**Packaged Fine Screen w/Washer Compactor**												
		Check that the filter operates properly.	Preventive	OP	1	Daily	365.00	0.02	6.08	0.00	0.00	0.00		
		Clean the 3/4" filter (close the 3/4" valve and operate a flushing cycle in order to release pressure and then open the bowl):	Preventive	OP	1	Weekly	52.00	0.05	2.60	0.00	0.00	0.00		
		Check that there is grease on the drive shaft, and drive bushing. Add grease if necessary.	Preventive	MM	1	Weekly	52.00	0.17	0.00	0.00	0.00	8.67		
		Take care of any leakage from the scanner shaft. If necessary, replace the sealing flange internal O-Ring.	Preventive	MM	1	Weekly	52.00	0.50	0.00	0.00	0.00	26.00	$20	
		Calibrate instrumentation, alarms and communications to SCADA	Preventive	MI	1	Annual	1.00	0.50	0.00	0.50	0.00	0.00		
		Rebuild Fine Screen / Compactor	Corrective	MM	2	10 Years	0.10	40.00	0.00	0.00	0.00	8.00	$1,000	
		MCC Switchgear cleaning and testing	Preventive	RMT	2	Annual	1.00	2.00	0.00	0.00	4.00	0.00		
		Replace packaged fine screen w/ washer compactor				30+ Years							LCCA	expect long life due to avg flow 1/2 of capacity.
		Annualized Subtotal Each Packaged Fine Screen w/Washer Compactor							**8.68**	**0.50**	**4.00**	**42.67**	$1,140	

		Task	Task Type	Type of Staff	Number of Staff	Frequency	Yearly Events	Required Time per staff (hr)	OP[1] Labor (hrs/yr)	MI[2] Labor (hrs/yr)	RMT[3] Labor (hrs/yr)	MM[4] Labor (hrs/yr)	Material Cost (each event)	Assumptions / Notes
991.2		**Belt Filter Press**												
		Filter press operation (continuous)		OP	1	Weekly	52.00	16.00	832.00	0.00	0.00	0.00		
		Check that the filter operates properly		OP			0.00		0.00	0.00	0.00	0.00		
		Wash down & clean-up	Preventive	OP	1	Weekly	52.00	2.00	104.00	0.00	0.00	0.00		
		Filter belt adjustment	Corrective	MM	1	Monthly	12.00	1.00	0.00	0.00	0.00	12.00		
		Maintenance Repair	Corrective	MM	2	Quarterly	4.00	2.00	0.00	0.00	0.00	16.00	$100	
		Lubricate bearings	Preventive	OP	1	Monthly	12.00	1.00	12.00	0.00	0.00	0.00	$5	
		Maintain belt press electrical	Preventive	RMT	1	Annual	1.00	4.00	0.00	0.00	4.00	0.00	$0	
		MCC Switchgear cleaning and testing	Preventive	RMT	2	Annual	1.00	4.00	0.00	0.00	8.00	0.00		
		Replace belt, bearings as needed	Preventive	MM	2	5 Years	0.20	8.00	0.00	0.00	0.00	3.20	$5,000	
		Replace belt filter press				30+ Years							LCCA	
		Annualized Subtotal Each Belt Filter Press							**948.00**	**0.00**	**12.00**	**31.20**	$1,460	

24.4		**Disk Filter (Wet Weather Events 4-each)**												
		Perform routine process sampling					0.00		0.00	0.00	0.00	0.00		
		General process visual inspection	Preventive	OP	1	Quarterly	4.00	2.00	8.00	0.00	0.00	0.00		
		Wash down areas accumulation debris	Preventive	OP	1	Quarterly	4.00	1.00	4.00	0.00	0.00	0.00		
		Check backwash and solids pump operation,	Preventive	OP	1	Quarterly	4.00	0.02	0.07	0.00	0.00	0.00		
		Monitor backwash cycle to be backwashing and functioning properly	Preventive	OP	1	Quarterly	4.00	0.25	1.00	0.00	0.00	0.00		
		Check backwash valve actuators	Predictive	OP	1	Quarterly	4.00	0.03	0.13	0.00	0.00	0.00		
		Check rotary drive motor for excessive noise and vibration	Preventive	OP	1	Quarterly	4.00	0.02	0.07	0.00	0.00	0.00		
		Check drive chain for debris	Preventive	OP	1	Quarterly	4.00	0.02	0.07	0.00	0.00	0.00		
		Adjust drive chain	Corrective	MM	1	Annual	1.00	0.02	0.00	0.00	0.00	0.02		
		Inspect filter cloth	Predictive	MM	2	Quarterly	4.00	0.18	0.00	0.00	0.00	1.47		
		Replace filter cloth	Corrective	MM	2	10 Years	0.10	8.00	0.00	0.00	0.00	1.60	$10,000	
		Calibrate instrumentation, alarms and communications to SCADA	Preventive	MI	1	Quarterly	4.00	1.00	0.00	4.00	0.00	0.00		
		MCC Switchgear cleaning and testing	Preventive	RMT	2	Annual	1.00	2.00	0.00	0.00	4.00	0.00		
		Replace disk filter unit				30+ Years							LCCA	
		Annualized Subtotal Each Disk Filter							**13.33**	**4.00**	**4.00**	**3.08**	$1,000	

75.5		**RO Train**												
		Visual Inspection for operating pressure range, differential pressure across membrane stages and leaks	Preventive	OP	1	Daily	365.00	0.15	54.75	0.00	0.00	0.00		
		Routine readings					0.00		0.00	0.00	0.00	0.00		
		Process sampling (Includes routine sampling and SDI testing)					0.00		0.00	0.00	0.00	0.00		
		Pressure vessel flow and profile sampling					12.00		0.00	0.00	0.00	0.00		
		Calibrate instrumentation, alarms and communications to SCADA	Corrective	MI	1	Annual	1.00	0.50	0.00	0.50	0.00	0.00		
		MCC Switchgear cleaning and testing	Preventive	RMT	2	Annual	1.00	2.00	0.00	0.00	4.00	0.00		
		Membrane replacement	Corrective	OP	2	Every 5 Years	0.20	8.00	3.20	0.00	0.00	0.00	$28,000	single train 7 mem/vessel, 7 first, 3 second = 70 memb.
		Clean-in-place operations (this includes Operator time to ordering & receiving, prepare and batch cleaning chemicals, perform typical CIP sampling and data recording, neutralizing spent chemicals)	Corrective	OP	1	Semi-Annual	2.00	4.00	8.00	0.00	0.00	0.00	$0	chems accounted for elsewhere
		Calibrate instrumentation, alarms and communications to SCADA for each CIP	Corrective	MI	1	Semi-Annual	2.00	0.50	0.00	1.00	0.00	0.00		

		Task	Task Type	Type of Staff	Number of Staff	Frequency	Yearly Events	Required Time per staff (hr)	OP[1] Labor (hrs/yr)	MI[2] Labor (hrs/yr)	RMT[3] Labor (hrs/yr)	MM[4] Labor (hrs/yr)	Material Cost (each event)	Assumptions / Notes
		MCC Switchgear cleaning and testing	Preventive	RMT	2	Annual	1.00	2.00	0.00	0.00	4.00	0.00		
		Replace Vessels and Equipment				30+ Years							LCCA	
		Annualized Subtotal Each RO Trains							**65.95**	**1.50**	**8.00**	**0.00**	$5,600	
8.0		**Dry Chemical Eductor and Inline Heater**												
		Check Eductor is ready to be used, is clean and heater operational	Preventive	OP	1	Semi-Annual	2.00	0.50	1.00	0.00	0.00	0.00		
		Clean Eductor after use of chemicals	Corrective	OP	1	Semi-Annual	2.00	0.50	1.00	0.00	0.00	0.00		
		Calibrate instrumentation, alarms and communications to SCADA for each CIP	Corrective	MI	1	Semi-Annual	2.00	1.00	0.00	2.00	0.00	0.00		
		MCC Switchgear cleaning and testing	Preventive	RMT	2	Annual	1.00	2.00	0.00	0.00	4.00	0.00		
		Replcae eductor	Corrective	RMT	1	10 Years	0.10	0.10	0.00	0.00	0.01	0.00	LCAA	
		Annualized Subtotal Each Dry Chemical Eductor and Inline Heater							**2.00**	**2.00**	**4.01**	**0.00**	$0	
123.6		**UV Disinfection Unit**												
		Visual Inspection for UV train	Preventive	OP	1	Daily	365.00	0.05	18.25	0.00	0.00	0.00		
		Perform routine Transmittance sampling					0.00		0.00	0.00	0.00	0.00		
		Inspect UV operation	Preventive	OP	1	Daily	365.00	0.08	30.42	0.00	0.00	0.00		
		Clean UV sleeves	Preventive	OP	2	Semi-Annual	2.00	6.00	24.00	0.00	0.00	0.00	$50	clean sleeves by hand as needed or with chemical solution
		Replace ballasts	Preventive	MM	1	5 Years	0.20	3.00	0.00	0.00	0.00	0.60	$25,000	ballasts for 1 vessel
		Replace UV lamps and quartz sleeves	Preventive	MM	1	3 Years	0.33	4.00	0.00	0.00	0.00	1.33	$20,520	bulbs for 1 vessel, 12000 hour run, 50% duty cycle
		Staff time to replace UV lamps	Corrective	OP	1	2 Years	0.50	4.00	2.00	0.00	0.00	0.00		
		Clean UV sensor and quartz probe	Preventive	OP	1	Semi-Annual	2.00	1.00	2.00	0.00	0.00	0.00		
		Staff time to clean UV lamps	Preventive	OP	1	Quarterly	4.00	8.00	32.00	0.00	0.00	0.00		
		Replace ventilation cabinet filters	Preventive	MM	1	Semi-Annual	2.00	0.50	0.00	0.00	0.00	1.00	$30	Cabinet air filters
		Check earth leakage circuit breaker for proper operation	Preventive	MI	1	Semi-Annual	2.00	1.00	0.00	2.00	0.00	0.00		
		Calibrate instrumentation, alarms and communications to SCADA for each UV train	Corrective	MI	1	Semi-Annual	2.00	1.00	0.00	2.00	0.00	0.00		
		MCC Switchgear cleaning and testing	Preventive	RMT	2	Annual	1.00	4.00	0.00	0.00	8.00	0.00		
		Replace UIV unit				30+ Years							LCCA	
		Annualized Subtotal Each UV Disinfection Unit							**108.67**	**4.00**	**8.00**	**2.93**	$11,993	
		MBR Membrane Train												
47.5														
		General process visual inspection	Preventive	OP	1	Daily	365.00	0.05	18.25	0.00	0.00	0.00		

		Task	Task Type	Type of Staff	Number of Staff	Frequency	Yearly Events	Required Time per staff (hr)	OP[1] Labor (hrs/yr)	MI[2] Labor (hrs/yr)	RMT[3] Labor (hrs/yr)	MM[4] Labor (hrs/yr)	Material Cost (each event)	Assumptions / Notes
		MBR Process Sampling and analytical Area - TSS, VSS					0.00		0.00	0.00	0.00	0.00		
		Observe dewatering cycle and backwash	Preventive	OP	1	Daily	365.00	0.05	18.25	0.00	0.00	0.00		
		Maintenance recovery cleaning	Corrective	OP	1	Semi-Annual	2.00	2.00	4.00	0.00	0.00	0.00		
		Calibrate instrumentation, alarms and communications to SCADA for each UV train	Corrective	MI	1	Annual	1.00	1.00	0.00	1.00	0.00	0.00		
		MCC Switchgear cleaning and testing	Preventive	RMT	2	Annual	1.00	2.00	0.00	0.00	4.00	0.00		
		Replace membrane	Corrective	MM	2	Every 8 Years	0.13	8.00	0.00	0.00	0.00	2.00	$97,200	Majority of labor included in membrane cost
														1 cassettes/train x 72 modules x $1350 per module
		Replace MBR system				30+ Years							LCCA	
		Annualized Subtotal Each MBR Process							**40.50**	**1.00**	**4.00**	**2.00**	$12,150	

		Process Sampling, Analytical, and Documentation												
1035.8														
		Headworks Area -	Preventive	OP	1	Daily	365.00	0.25	91.25	0.00	0.00	0.00		
		MBR Area - TSS, VSS	Preventive	OP	1	Daily	365.00	1.00	365.00	0.00	0.00	0.00		
		RO/UV Area - SDI, Profiles, Transmittance	Preventive	OP	1	Daily	365.00	0.75	273.75	0.00	0.00	0.00		
		Solids/Digester Area -	Preventive	OP	1	Daily	365.00	0.50	182.50	0.00	0.00	0.00		
		Product Water Area -	Preventive	OP	1	Daily	365.00	0.25	91.25	0.00	0.00	0.00		
		Auxiliary Treatment Area -	Preventive	OP	1	Quarterly	4.00	4.00	16.00	0.00	0.00	0.00		Based on 4 Wet-Weather events / year
		Outfall Area - Chlorine / Dechlorination Verification	Preventive	OP	1	Quarterly	4.00	4.00	16.00	0.00	0.00	0.00		Based on 4 Wet-Weather events / year
		Annualized Subtotal Each rocess Sampling, Analytical, and Documentation							**1035.75**	**0.00**	**0.00**	**0.00**	$0	

Section 2. Current Critical Work Effort – Cost Reduction/Rate Impact Mitigation

The City recognizes the financial magnitude of the WRF program and impact on the community. As a result, City staff has focused their efforts on increasing the program's affordability and reducing those financial impacts on its ratepayers through the following actions:

- Selecting the preferred proposer for completion of the WRF onsite improvements that represents the best value for the City;
- Evaluating alternatives for configuration of the WRF Facilities Building;
- Providing insight into the previous water and sewer rate increases that began in 2015;
- Making modifications to the City's existing Utility Discount Program;
- Establishing a City Rate Review Process; and
- Pursuing state and federal funding, in the form of low-interest loans and grants

Section 2.A Procurement Process for the WRF Onsite Improvements
After receiving the proposals, City staff and the program management team met with members of the WRFCAC WRF Subcommittee to provide the technical content of the proposals and kick-off the review process. The proposals were initially reviewed by that subcommittee, City staff, and program management team for compliance with the RFP and technical accuracy.

Based on the review of the two proposals, both DB teams were invited to participate in 1.5-hour interviews held at the Fire Station Training Room on June 1, 2018. Following the interviews, the members of the evaluation team met as a group to discuss the proposal review and interviews, and evaluate each against the selection criteria and weights established in the RFP (below).

Criterion	Possible Score
Technical Proposal	
Management Proposal	3
Quality Assurance and Quality Control	3
Schedule and Cost Control	4
Team/City Collaboration and Integration	3
Design Development and Management	3
Project Sequencing and Scheduling	4
Proposed Design and Performance Guarantees	20
Price Proposal and Life-Cycle Cost	60
Total	**100**

The results of the evaluation are presented in the table below. The DB proposal with the lowest life-cycle cost was awarded the maximum score of 60. The score given to the DB with the higher cost is based on the relative difference between the life-cycle costs for each proposal (*i.e.*, the number of points awarded was 5% lower than the maximum since the life-cycle cost was 5% higher). The rationale for each of the scores assigned for all technical categories, along with the actual scores, is presented in the table below:

Filanc/Black & Veatch		AECOM/W.M. Lyles Co.	
Rationale	**Score**	**Score**	**Rationale**
Management Approach			
• More balanced team between engineering and construction • More cohesive team • Joint venture formed • Ability to competitively procure more extensive subconsultants (*i.e.*, instrumentation and controls)	**3**	**1**	• Joint venture formed
Quality Assurance and Quality Control			
• QA/QC plans addressed in proposal, but not highlighted in interview	**1**	**1**	• QA/QC plans addressed in proposal, but not highlighted in interview
Schedule and Cost Control			
• 6-month early completion compared to the baseline schedule • High-level of due diligence demonstrated for costing	**4**	**2**	• Ability to complete the project on schedule
Team/City Collaboration and Integration			
• Colocation and collaboration highlighted in the interview • Technical team location in proximity to key technical team for program manager (*i.e.*, Walnut Creek) and City • Incorporation of City ideas and concepts • Attendance at both confidential meetings	**3**	**1**	• Attendance at only a single proprietary meeting
Design Development and Management			
• Greater level of design detail (*e.g.*, specific rationale behind selection of biosolids dewatering technology) • More operationally friendly site layout	**3**	**1**	
Project Sequencing and Scheduling			
• 4D model (i.e., 3D model sequenced with time)	**4**	**2**	
Proposed Design and Performance Guarantees			
• Design innovation from the use of the SAFE process for handling wet weather flows • Options for increasing the	**15**	**14**	• More conventional process approach • More conventional IPR treatment process with

permitability of the SAFE system (*i.e.*, chemical additional, advanced monitoring, alternative processes) • More consistent effluent quality with membrane bioreactor (MBR) • Very tight range on performance criteria			sequencing batch reactor and full advanced treatment (i.e., more easily permittable) • Less consistent process performance with SBR • Greater range for performance criteria
Price Proposal and Life-Cycle Cost			
60		**57**	
Total			
93		**79**	

The construction cost in the Filanc/Black & Veatch proposal for the WRF onsite improvements is approximately $20 Million less than the estimate presented to Council for this portion of the program in September 2017.

Recommendation for Council Regarding Preferred Proposer

Staff recommends the Council select Filanc/Black & Veatch as the preferred proposer and direct staff to enter into negotiations with the goal of returning with a contract for Council approval after certification of the Final EIR and successful completion of the Proposition 218 process.

Section 2.B 2015 Rate Increase Background

With the adoption of the 2015 rate increases, one of the expectations was for those rate increases to generate additional revenue to fund existing capital and infrastructure needs, as well as generate funds to support the WRF program. During that time, the state of California experienced the most severe drought in State history. Concurrently, the City chose to defer most capital and infrastructure needs pending a comprehensive review of needs, development of a plan and progression on the WRF program. The drought, coupled with the conservative deferral of capital expenditures, has affected the accumulation of monies in the water and sewer accumulation funds.

Since the 2015 rate increase went into effect, the City has accumulated an additional $2.8 Million of available cash between the sewer and water funds to assist with funding of the WRF project. Funding of the preliminary phases of the WRF project under a pay-as-you-go approach helps reduce debt and overall principal and interest owed by the City, thereby reducing overall project costs.

Included in Attachment 1 is a summary of the Water and Sewer Rate increases, revenue increases since the rate increases went into effect, and overall increases to the accumulation of available cash (FY 2014/15 through FY 2016/17). Staff will continue to update that information with FY 2017/18 figures, once the current fiscal year is closed-out in late fall of 2018. Staff is currently projecting the FY 2018/19 proposed WRF budget of $9.4 Million will be fully funded with available cash within the water and sewer funds, thereby further delaying drawdown of the State Revolving Loan Fund (SRF) planning loan.

The 2015 rate study was based on some key financial assumptions, including funding a new

$75 Million WRF with the Cayucos Sanitary District (CSD) funding 25 percent to 30 percent of that new facility. The following is taken directly from the 2015 Proposition 218 Notice:

> "The proposed rates assume the City can obtain low-interest-rate financing from the Clean Water State Revolving Fund Financing Program to fund the planned new $75 Million Water Reclamation Facility. If the facility ends up costing significantly more than estimated or state-subsidized financing is not available, then the City may need to re-evaluate rate increases in future years."

Since the adoption of those rates, two key assumptions have changed:
1. The City no longer expects 25 percent to 30 percent cost sharing with the CSD
2. The City now has more refined cost estimates for the various components of the WRF program.

Given those significant changes in assumptions, as identified in the previous Proposition 218 notice, the BRC and the City are now reevaluating rates that would be needed to support the cost of the new facility.

Section 2.C WRF Facility Building Evaluation

City Council requested a review of the proposed operations and maintenance buildings for the WRF, and staff engaged the assistance of RRM Design Group to conduct an evaluation of options. According to that study, the City could realize savings in the overall cost of the WRF program by continuing to use the existing WWTP buildings as shown in Attachment 2 to house a portion of the water and wastewater operations staff, with the remainder housed at the WRF.

While the existing WWTP operations building reuse makes up about half of the total operations buildings at the proposed WRF site, some of the functions of the operations building will need to be shifted to the WRF maintenance building for split operations and it will need to grow by about 20 percent over what is currently proposed. This reuse of existing remodeled facilities and minimal facilities on the WRF site results in a net cost savings of between 8 to 18 percent for reusing existing facilities on the existing WWTP site and corporation yard. Therefore, the total net savings in initial cost would be somewhere in the range of $640,000 to $1.4 Million (option 2 below).

An additional alternative (option 3) would be to construct minimal facilities at the WRF and continue to use the existing facilities "as-is" with a plan for future upgrades as additional funds are available. This could achieve between 25 and 50 percent savings in building costs at the new WRF site thus saving between $2 - $4 Million. However, this will require future work at the existing site to bring those facilities up to meeting the needs of staff.

While those savings are measurable for option 2 and 3, as a percentage of the total WRF program, the magnitude of the savings do not out-weigh potential negative impacts on operation of the utilities division and to the existing wastewater treatment plant site. Specifically, splitting of the utilities division between the WRF and existing WWTP site would result in a loss of operational efficiencies by not having all staff collocated. With the new WRF and its potable reuse components, it will require staff with certification in water treatment and distribution to operate those portions of the facility. With the lean makeup of utility staffing, splitting the staffing into two operations centers could cause loss of productivity. Furthermore, by retaining structures at the existing site, as would be necessitated by maintaining a portion

EXHIBIT VI. ALTERNATIVES ANALYSIS

A Project Alternatives analysis was presented in the letter of interest and is included in the Water Reclamation Plan. The Alternatives Analysis section of the Water Reclamation Plan is attached as **Exhibit VI**.

SECTION 7 PROJECT ALTERNATIVE ANALYSIS

Based on the market assessment and hydrogeological screenings, the project alternatives that appear feasible and are further analyzed herein are summarized in **Table 7-1**.

Table 7-1: Summary of Project Alternatives

Alternative #	Title	Brief Description
0	No Recycled Water Project (Discharge to existing ocean outfall)	With no recycled water project, the City would continue discharging treated effluent to the existing ocean outfall.
1	Urban Reuse	Recycled water pipeline from WRF to City with turnouts to various urban commercial and landscape irrigation users for potential potable water offset, and recycled water to Morro Bay Golf Course.
2	Delivery of recycled water to agricultural users in exchange for pumped groundwater delivered to the City – "Agricultural Exchange"	Recycled water pipeline to properties in the Morro Valley along Hwy 41 to deliver recycled water for agricultural irrigation in exchange for groundwater sent back to the City. Alternative would include potable water pipeline from upper Morro Valley to City.
3	Indirect potable reuse: Groundwater replenishment using subsurface application at the Narrows (injection wells) – "Indirect Potable Reuse – East"	Recycled water pipeline to new groundwater injection wells east of Hwy 1 and south of Hwy 41, near the Narrows, for groundwater replenishment. Groundwater extracted from existing City wells in the Morro Valley would be treated at the City's existing water treatment plant.
4	Indirect potable reuse: Groundwater replenishment using subsurface application near the bike path (injection wells) – "Indirect Potable Reuse – West"	Recycled water pipeline to new groundwater injection wells west of Hwy 1 and south of Hwy 41, near the bike path adjacent to Lila Keiser Park, for groundwater replenishment. Groundwater extracted from existing City wells in the Morro Valley would be treated at the City's existing water treatment plant.

7.1 Evaluation Criteria

In order to evaluate the various recycled water alternatives, evaluation criteria were defined based on the WRF Project Community Goals adopted by City Council. The WRF project community goals and applicability comments from **Section 1** are included again in **Table 7-2** for reference. These project goals were the focus for the Draft FMP and were used to evaluate technologies and processes for the WRF. It should be noted that any recycled water project would be required to submit a Title 22 Report to the RWQCB and SWRCB DDW for review and approval and obtain agreements and contracts with recycled water users prior to project implementation.

Table 7-2: WRF Project Community Goals		
Community Goal	**Applicability for WRF**	**Applicability for Recycled Water**
Produce tertiary disinfected recycled water	WRF project is to be designed accordingly	Allows for multitude of recycled water uses and provides basis for advanced treatment
Produce reclaimed wastewater cost-effectively	Draft FMP considered costs in treatment evaluation	Project alternative assessment will include capital and operating costs and consider total amount of recycled water produced
Allow for onsite composting	Reviewed as part of Draft FMP. Onsite composting is not recommended, regional facility composting will be more cost effective and more compatible for neighbors	Not Applicable
Design for energy recovery	Draft FMP considered energy recovery for WRF	Project alternatives analysis will consider energy usage
Design to treat for contaminants of emerging concern (CECs)	Draft FMP included consideration in treatment evaluation	Advanced treatment would provide additional treatment for CECs
Allow for other municipal uses	Draft FMP considered for WRF site planning	Not Applicable
Ensure compatibility with neighboring land uses	Draft FMP considered for WRF site planning	Consideration for major infrastructure siting
Operational WRF within five years	WRF project is on schedule	Project alternatives analysis will consider potential challenges that could delay the project.

The recycled water project alternatives were evaluated based on the following criteria, aligning with the community project goals:

- ❑ Comparative capital and operating costs
- ❑ Compatibility with neighboring land uses and impact during construction
    - o Total pipeline length
    - o Land acquisition
- ❑ Reliability of recycled water uses and potential for schedule delays
- ❑ Potential to benefit the City's potable water supply (as described below)

This evaluation also considers the potential to benefit the City's potable water supply, either by offsetting potable water demand through delivery and use of recycled water or by a more direct method of supplementing the City's groundwater supply using injection wells (indirect potable reuse). The City currently relies on imported water from the SWP as the primary source of water. During times of low deliveries, or when the annual SWP maintenance occurs, the City utilizes brackish groundwater from the Morro Valley Groundwater Basin, treated through the BWRO at the Water Treatment Plant. Currently, only groundwater from the City's Morro Valley wells can be treated at the BWRO facility, and there is no treatment available for the Chorro Valley wells, which have also been high in nitrates and TDS. Reducing dependence on imported water by offsetting demand or supplementing with recycled water would increase reliability of the City's water supply and could reduce long-term costs. The SWP consists of a complex network of reservoirs, aquaducts, powerplants and pumping plants. Increasing the City's local supply of water

provides additional resiliency and reduces the risk of interruption of an imported water supply due to damage caused by earthquakes, climate change, or some other natural disaster. The costs of SWP are anticipated to rise with required improvements as facilities age and critical projects are identified. The City may be able to maintain their SWP allocation, and arrange contracts to transfer their allocation of water to other SWP customers.

7.2 Planning and Design Assumptions

City records and various reports were used to develop the basis for design assumptions for the recycled water project alternatives. **Section 2** and **Section 3** detail the historical water produced and imported as well as the metered usage. Conservation efforts mandated by the State of California have resulted in a substantial reduction in demand in recent years. The City's main source of water is the SWP which has become increasingly unreliable in recent years due to drought conditions.

Preliminary design criteria for the WRF from the Draft FMP were used to develop planning and design assumptions in the comparison of the recycled water alternatives. The City identified one of the main goals of the WRF project is to produce disinfected tertiary recycled water. To best achieve this level of treatment using industry standard technologies, the Draft FMP identified two liquid treatment alternatives, with potential for future expansion to advanced treatment. One alternative was a conventional treatment option consisting of screening, grit removal, flow equalization, secondary treatment with sequencing batch reactor, tertiary treatment achieved through microfiltration, and disinfection by ultraviolet radiation. The other alternative, a combined secondary and tertiary treatment option, involved screening, grit removal, flow equalization, secondary and tertiary treatment through a membrane bioreactor process, and disinfection by ultraviolet radiation. The membrane bioreactor acts as both a biological treatment process and a filtration process. A brief discussion and process flow diagrams for the treatment alternatives is provided in **Section 4.3**.

Advanced treatment will likely be required for the recycled water projects under consideration, and will be discussed in a later section. Both treatment systems would provide adequate biological treatment for reverse osmosis, but the conventional treatment option would require addition of membrane filters as a pretreatment step to reverse osmosis. The ultraviolet disinfection process can also be coupled with hydrogen peroxide treatment to provide an advanced oxidation process (AOP).

WRF influent flows and anticipated recoveries of the treatment technologies outlined in the Draft FMP used to develop the preliminary design criteria for recycled water pipelines, storage, and advanced treatment facilities for each alternative are listed in **Table 7-3.**

Table 7-3: Anticipated Recoveries and WRF Influent Flow Rate

Average Annual Flow – WRF Influent at Buildout	0.97 MGD / 1087 AFY
Microfiltration Recovery	95%
Membrane Bioreactor Recovery	95%
Reverse Osmosis Recovery	80%
Reverse Osmosis salt rejection	98%
Estimated Future Annual Production from WRF at Buildout	825 – 1087 AFY
Note: Volume of recycled water depends on the amount of advanced treatment required.	

Table 7-4 summarizes the preliminary design criteria used for sizing the recycled water pipelines and pump stations for the various alternatives.

Table 7-4: Preliminary Hydraulic Design Criteria	
Parameter	Criteria
Minimum Service Pressure for Spray Irrigation	45 PSI
Minimum Service Pressure for Drip Irrigation	15 PSI
ADD Pipeline Velocity	< 5 fps
PHD Pipeline Velocity	< 10 fps
Hazen-Williams Roughness Coefficient	130

7.3 Project Alternative 0: No Recycled Water Project

Project Alternative 0: No Recycled Water Project would consist of constructing a new WRF and either deferring or removing the recycled water component from the overall project. A treated effluent discharge pipeline would be constructed from the WRF to the existing ocean outfall. This line would be installed with any of the project alternatives, as it is planned for operational or wet weather discharge, during times when recycled water could not be delivered, and to transport brine discharge from reverse osmosis treatment. Due to the need to provide for full discharge flow during wet weather events, the preliminary sizing for the discharge pipeline is the same under each project alternative scenario.

The anticipated water quality requirements for ocean discharge are described in **Section 5.4**. A new NPDES permit will be prepared for the WRF and the effluent limitations are expected to require full secondary treatment at a minimum.

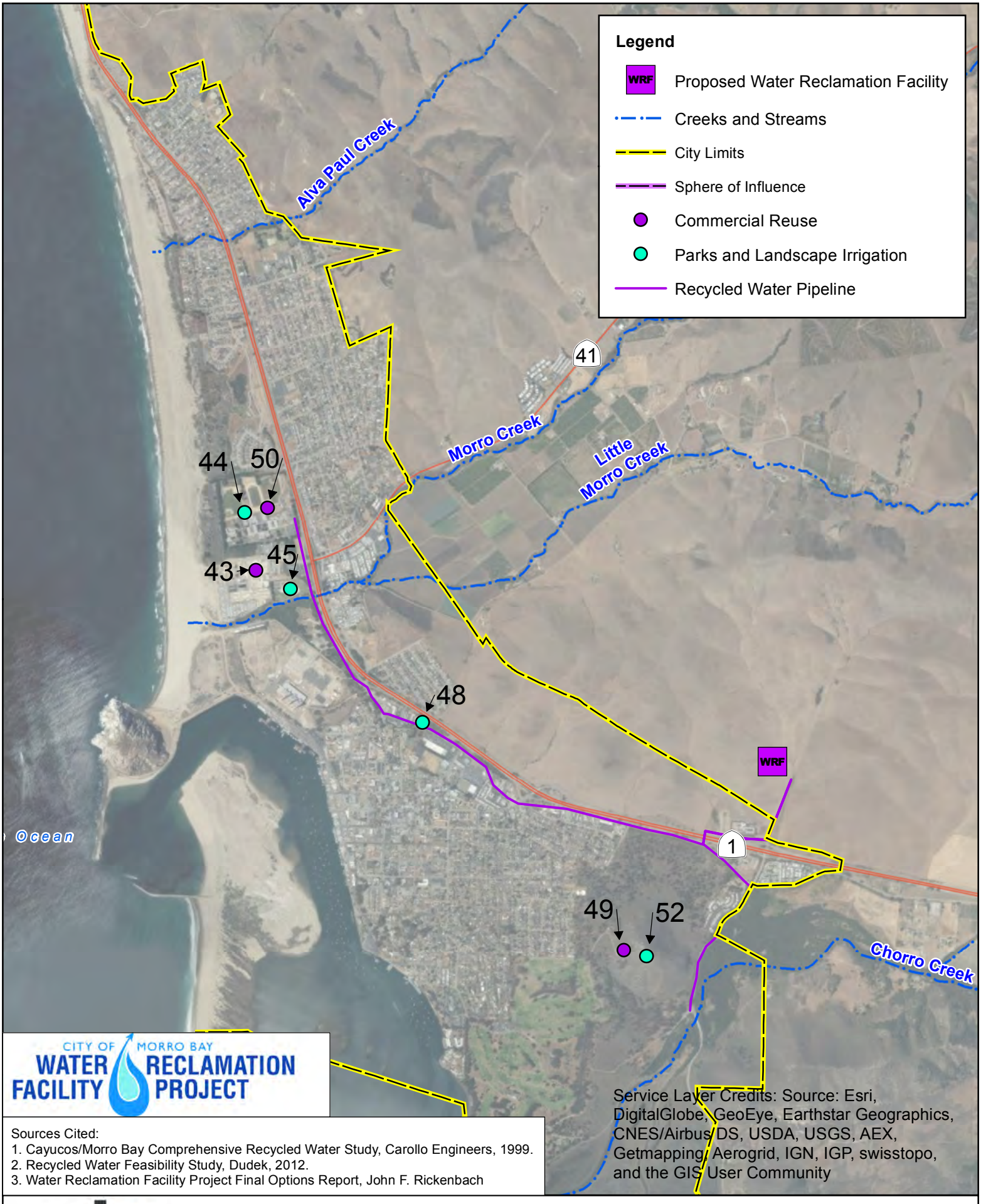
The Draft FMP evaluated two treatment process trains for the WRF based on the community goals for the project: an SBR process (Option A) and an MBR process (Option B). Membrane filters would be installed downstream of the SBR to allow tertiary treatment, and both process alternatives would include disinfection. The Draft FMP provided budgetary-level cost opinions for each alternative. If Alternative 0 is pursued, and the WRF is designed for full secondary treatment instead of treatment to produce disinfected tertiary recycled water, then a SBR plant without the membrane filters would provide full secondary treatment. Assuming membrane filtration and UV disinfection are not required, and disinfection is provided by a chlorine contact basin instead, a full secondary plant is anticipated to cost approximately $12 million less, as summarized in **Table 7-5**. Though full secondary treatment does not meet the Community project goal of producing tertiary disinfected recycled water, it is anticipated that this treatment level would be required for ocean discharge. Therefore, the cost estimate was developed for this report to provide a basis for evaluation of alternatives and relative cost of a recycled water project.

Table 7-5: Cost Opinion for Alternative 0 No Recycled Water Project Alternative		
	Tertiary Disinfected Treatment	Full Secondary Treatment Only (No recycled water)
Estimated Construction Cost Opinion	$118,600,000	$106,400,000
Notes: Estimated cost opinions based on information presented in the Draft FMP for "Option A", SBR process, and includes the WRF lift station, pipelines, and treatment plant without any recycled water components, engineering and design, and 25% construction contingency. Estimated cost for Option B –MBR with tertiary treatment and disinfection is approximately $120,300,000. This cost opinion does not include additional program costs, such as construction management, property acquisition, and demolition of the existing WWTP. (See Table 7-19 for estimated full WRF program costs).		

This project alternative would not provide recycled water. Production of recycled water is a community goal defined for the WRF project, and the City has long held a goal to produce and utilize recycled water. The Local Coastal Plan sets reclaimed water as the City's second highest priority for its water supply, next to State Water; and states that water reclamation should be pursued when funded by a potential user, required as part of a wastewater plant upgrade or permit condition, or when it is shown as cost effective for City use. Whether it is cost effective to produce and distribute recycled water will need to be determined. This alternative is presented to assist with that evaluation. Alternative 0 is anticipated to be the least expensive alternative that would meet discharge requirements.

7.4 Project Alternative 1: Urban Reuse

Project Alternative 1: Urban Reuse consists of providing recycled water to urban commercial and landscape irrigation uses in the City and to the Morro Bay Golf Course as shown in **Figure 7.1**.



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Sources Cited:
1. Cayucos/Morro Bay Comprehensive Recycled Water Study, Carollo Engineers, 1999.
2. Recycled Water Feasibility Study, Dudek, 2012.
3. Water Reclamation Facility Project Final Options Report, John F. Rickenbach

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mkn WATER - WASTEWATER - REUSE

Master Water Reclamation Plan
Figure 7-1:
Alternative 1: Urban Irrigation

1 in = 2,500 feet

0 2,500 5,000

N

7.4.1 Preliminary Design Assumptions

Water quality regulations (CCR Title 22) require that unrestricted irrigation of commercial landscapes, parks, and playgrounds must be tertiary disinfected recycled water. Some limited commercial uses, such as the High School bus facility and the City maintenance yard, may only require secondary disinfected recycled water. However, the required treatment will be dictated by the highest quality required for the recycled water users. It is anticipated that salts removal (reverse osmosis) will be needed to reduce chlorides and other dissolved solids. However, for this alternative, a side stream of the WRF effluent would be treated by reverse osmosis and blended back with the tertiary disinfected recycled water to achieve the target TDS and chloride concentrations.

The majority of the urban recycled water uses identified are for landscape irrigation of grasses, which are primarily sensitive to chloride concentration in varying degrees, depending on the type of grass. Based on the water quality guidelines for irrigation, chloride concentrations of less than 142 mg/L represent no problem for irrigation, and concentrations between 142 and 355 mg/L represent increasing problems. This study assumes chloride is removed proportionally to TDS, and chloride concentrations between 142 and 355 mg/L are approximately equal to TDS concentrations between 387 and 914 mg/L. A mass balance was performed assuming a tertiary disinfected effluent TDS concentration (influent to the advanced treatment system) of 942 mg/L and a final TDS concentration target of 600 mg/L to estimate the size of the reverse osmosis system. As shown in **Figure 7-2**, this blending scenario would yield a TDS concentration slightly lower than 600 mg/L for planning purposes.

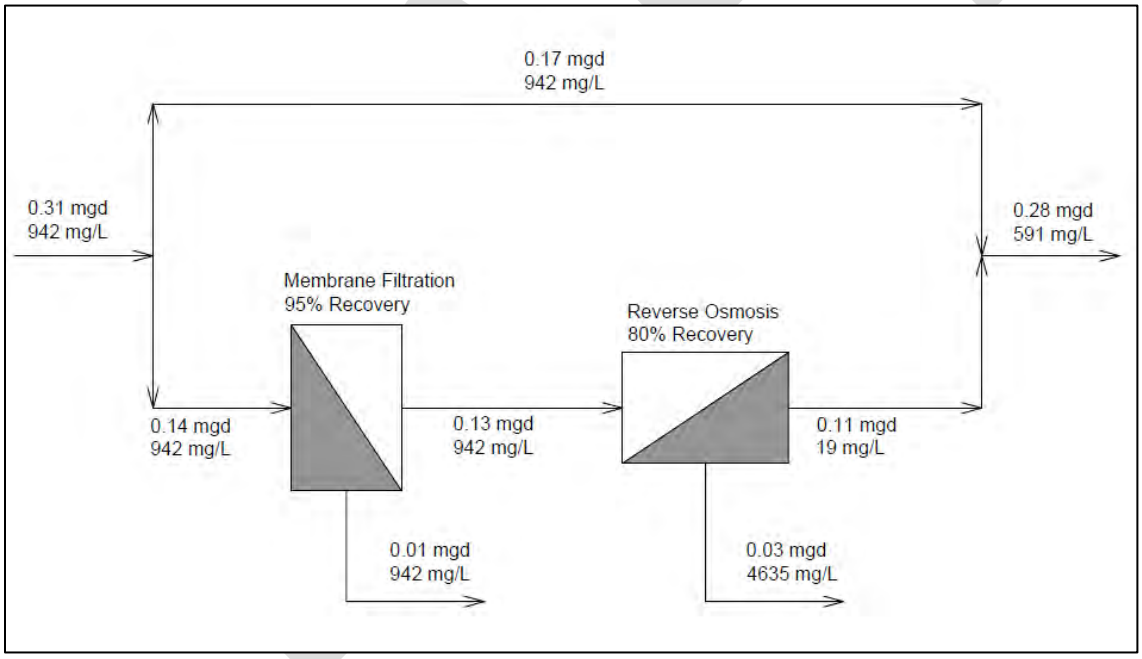


Figure 7-2: Blending Scenario for Alternative 1: Urban Reuse

The preliminary design assumptions for Alternative 1 are summarized in **Table 7-6**. The recycled water opportunities identified for this alternative represent a water demand that is less than half of the estimated recycled water available. To allow for future expansion as additional opportunities are secured, this alternative assumes that the recycled water pipeline from the WRF to the City will be sized for the future potential flow rate. The advanced treatment system is also sized for future potential demands with two trains, providing one redundant train for current demands. It is assumed the recycled water pump station will be sized for current demands and upgraded if/when future opportunities are identified. A recycled water tank at the WRF is recommended to provide operational storage for approximately 20 hours of average day production at buildout.

Table 7-6: Alternative 1 Urban Reuse Preliminary Design Assumptions	
Advanced Treatment	
Process	Reverse Osmosis
Recycled water quality target	600 mg/L TDS
RO permeate flow rate (current)	100 gpm
RO permeate flow rate (future)	200 gpm
RO Influent TDS	942 mg/L
RO permeate TDS	18 mg/L
Recycled water flows	
Average Annual Flow (current/future)	351.4 AFY/ 703 AFY
Average Day Flow (current/future)	0.31 MGD / 0.62 MGD
Peak Hour Flow (current/future)	0.93 MGD / 1.86 MGD
Recycled water pump station (current)	
Estimated Total Dynamic Head (TDH)	Approx. 100 feet TDH
Estimated horsepower required	25 HP
Configuration	(2) 30 HP pumps (1 duty, 1 standby)
Recycled water pipeline	
Material	PVC
Diameter	12-inch
Length	19,140 linear feet
Recycled water storage tank volume	500,000 gallons

7.4.2 Recycled Water Usage

The anticipated recycled water users for Alternative 1 are shown on **Figure 7-1** and summarized in the table below. The four potential users in the City make up an estimated 45.4 AFY of water demand, which could be offset by recycled water. These users were chosen because they are near or directly along the anticipated pipeline route for the WRF project, and represent the bulk of the recycled water market. Additional potential recycled water opportunities within the City have been identified in the past, and may be added at some point in the future if the alternative is pursued. The Morro Bay Golf Course may use up to 306 AFY. However, since the golf course does not currently utilize City water, this total would not offset potable water use for the City. It is important to note that nearly 99 percent of the usage for this alternative is for irrigation of landscape. During period of wet weather very little recycled water will be utilized. It is assumed the WRF will discharge to the existing ocean outfall during the wet weather months.

Table 7-7: Urban Reuse Recycled Water Opportunities			
Site ID	**Reuse Opportunity**	**Reuse Type**	**Estimated Annual Demand (AFY)**
43	City Maintenance Yard	Industrial	1.5
44	Morro Bay High School	Landscape	24.2
45	Lila Keiser Park	Landscape	6.2
48	South side of Highway 1	Landscape	10.0
50	Morro Bay High School Bus Facility	Commercial	3.5
Annual Demand Subtotal (Potential City potable water offset)			**45.4**
49	Morro Bay Golf Course	Landscape	300
52	Morro Bay State Park/Golf Course	Commercial	6.0
Annual Demand Total (City plus golf course)			**351.4**
Demand Estimates taken from Morro Bay New Water Reclamation Facility – Water Reuse Opportunities (MKN, 2014); Outreach by John F Rickenbach Planning and Environmental Consulting and RRM Design Group; and City Billing Data (1/2015-9/2016)			

7.4.3 Preliminary Cost Opinion

A preliminary opinion of probable cost was developed for general guidance to the City in preparing a planning-level budget and evaluating alternatives. Assumptions have been included based on the information available and preliminary design criteria described above. **Table 7-8** summarizes the opinion of probable construction cost and annual operating and maintenance costs. Appendix B summarizes the methodology and assumptions used to develop the cost opinion.

Table 7-8: Cost Opinion for Alternative 1 Urban Reuse				
Recycled Water Project Capital Costs				
Description	**Quantity**	**Unit**	**Unit Cost**	**Total Estimated Cost**
Reverse Osmosis System	1	LS	$1,000,000	$1,000,000
Recycled water pump station	1	LS	$400,000	$400,000
Recycled water pipeline (Open Area)	0.3	MI	$1,452,000	$435,600
Recycled water pipeline (Open Area + Sidewalk/trees)	1.1	MI	$1,557,600	$1,713,400
Recycled water pipeline (Road/City)	2.3	MI	$1,716,000	$3,946,800
Highway crossing (jack and bore)	400	LF	$650	$260,000
Storage Tank	500,000	GAL	$2	$1,000,000
			Subtotal Capital Cost	**$8,755,800**
Escalation (2%)				$175,116
Engineering and Administration (30%)				$2,627,000
Project Contingency (25%)				$2,189,000
			Total Capital Cost	**$13,800,000**
Annualized Project Cost (SRF Loan, 3% Interest, 30-year period; A/P = 0.051)				**$710,000**

Table 7-8: Cost Opinion for Alternative 1 Urban Reuse	
Annual Operation and Maintenance Cost	
Description	**Estimated Cost**
Advanced Treatment O&M	$70,000
Recycled Water Pumping Electricity	$20,000
Repair and Replacement (1% of capital)	$87,558
Staffing	$96,000
Monitoring and Reporting	$48,000
Total Annual O&M Cost	**$322,000**
Anticipated Cost Per Acre-Foot of Water Supply Benefit	
Total Anticipated Annual Cost	$1,032,000
Estimated Total Recycled Water Demand (AFY)	351.4
Estimated Water Supply Benefit (AFY)	45.4
Notes: **1.** Cost opinion does not include service connections or recycled water onsite costs (adjustments to irrigation systems, cross-connection control, etc.) **2.** Cost opinion includes the recycled water project only, and does not include costs for the WRF.	

7.4.4 Preliminary Alternative Evaluation

The total estimated recycled water demand for Alternative 1 is approximately 40% to 45% of the estimated recycled water available. The majority of the potential recycled water use under this alternative is allocated to the Morro Bay Golf Course. Since the golf course does not use City water, the potential water supply benefit for this alternative is limited to up to 45.4 AFY (approximately 5% of the recycled water available).

The capital and estimated annual operating costs are relatively low compared to the other options. However, the annual cost per acre-foot of potential water supply benefit is very high, due to the low benefit to potable water supplies.

Each recycled water customer would require a service lateral and flow meter, and onsite retrofits for cross connection control between recycled water and potable water plumbing. Service connections and onsite retrofits vary in size, complexity, and cost; therefore, these costs are not reflected in the preliminary cost opinion above.

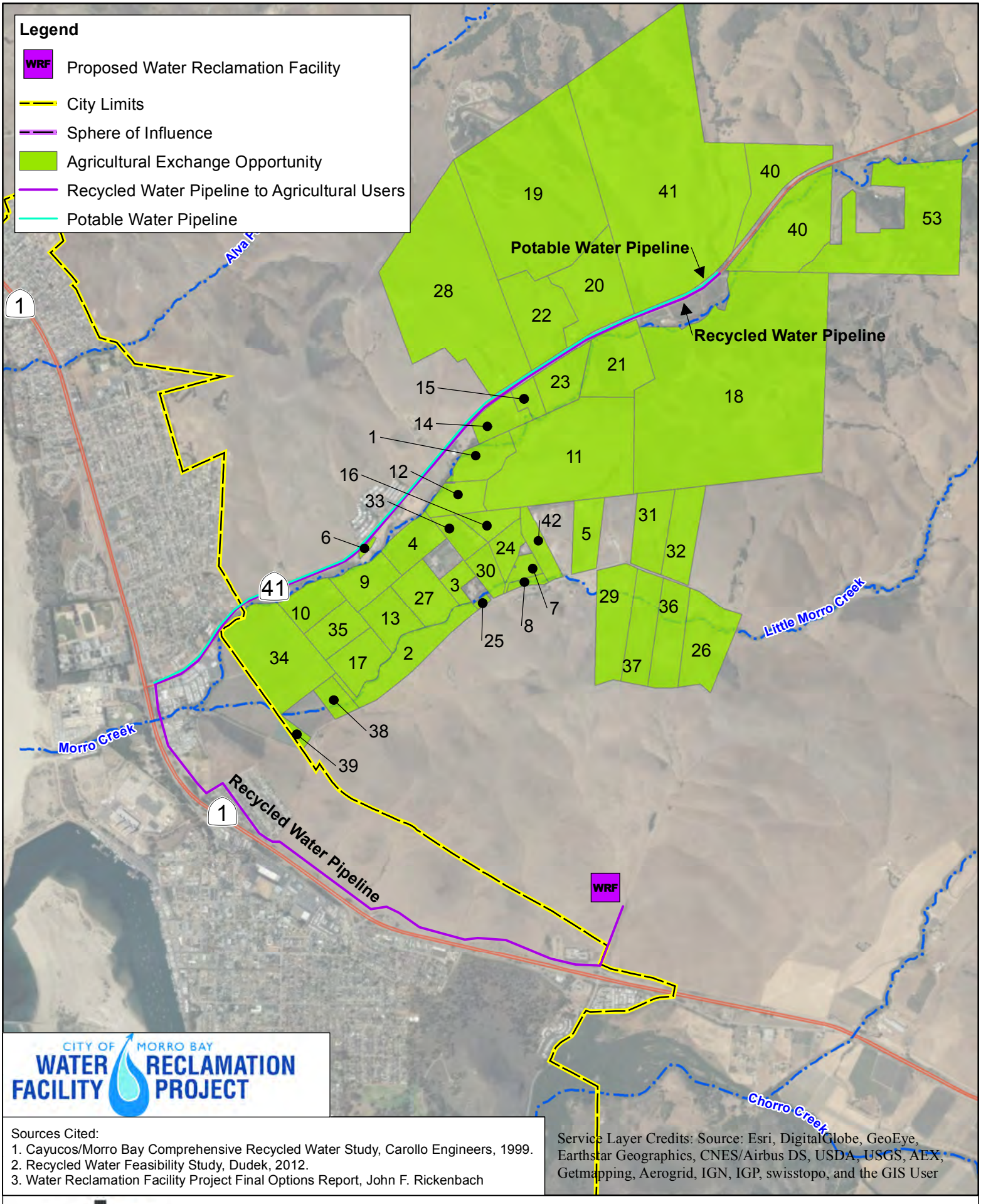
The energy use for this alternative is relatively low, with an estimated 15% of the effluent requiring advanced treatment (for current identified opportunities) and approximately 25 hp pumps required for recycled water delivery.

Design of onsite irrigation systems will be required to limit the potential for human contact and have signs posted to clearly indicate the use of recycled water. All major above-grade infrastructure for the project will be contained at the WRF site. Compatibility with neighbors is considered to be favorable for this alternative.

7.5 Project Alternative 2: Agricultural Exchange

Project Alternative 2: Agricultural Exchange consists of delivering recycled water to agricultural properties for the purposes of irrigation in exchange for groundwater pumped and delivered to the City. Major project components and

potential agricultural exchange opportunities are shown in **Figure 7-3**. Demands associated with each property are referenced in the figure by site number and can be seen in **Table 7-10**. For the scenario to be attractive to the agricultural community, it is assumed the volume of groundwater delivered back to the City would be less than the volume of recycled water provided. The City would install and operate a new well pump at the landowner's existing well and a potable water pipeline back to the City's system. Alternatively, a branch from the land owner's existing wellhead and a booster pump station could be installed to feed the potable water line back to the City. If the groundwater is extracted from the upper Morro Valley, the quality may be such that additional treatment (beyond disinfection) is not required.



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3. Water Reclamation Facility Project Final Options Report, John F. Rickenbach

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mkn WATER - WASTEWATER - REUSE

Master Water Reclamation Plan
Figure 7-3
Alternative 2: Agricultural Exchange

1 inch = 2,500 feet

0 5,000

N

7.5.1 Preliminary Design Assumptions

To evaluate the alternative, this study assumes one to three landowners in the upper Morro Valley will participate. Negotiations and contracts would need to be developed with the individual land owners, but for the purposes of this study, it is assumed that the contracts would outline a two-to-one ratio of recycled water delivered to groundwater returned.

Based on the water quality regulations (CCR Title 22), undisinfected secondary recycled water could be used to irrigate orchards where the edible portion does not contact the recycled water. However, due to the chloride sensitivity of avocado trees, advanced treatment (reverse osmosis) will be needed.

Reverse osmosis systems require a high quality influent to maintain reasonable costs for membrane operation and maintenance. Additionally, one of the WRF Project Community Goals is to produce disinfected tertiary recycled water. Both treatment process trains described in the Draft FMP would provide tertiary disinfected recycled water quality, and adequate treatment for a reverse osmosis system.

For this alternative, a side stream would be treated by the reverse osmosis system and blended back with the tertiary disinfected recycled water to achieve the target TDS and chloride concentrations. The majority of the agricultural irrigation in the Morro Valley is for avocado crops, which are primarily sensitive to chloride concentrations. This study assumes a target chloride concentration goal of less than 80 mg/L. Unfortunately, existing analyses of WWTP effluent do not include chloride analysis, so an estimate of chloride concentration was made by assuming bicarbonate concentration of 350 mg/L, sulfate of 40 mg/L, and hardness of about 200 mg/L (as CaCO3). Using these values and TDS of 942 mg/L, sodium chloride concentration is estimated at 482 mg/L, giving chloride concentration of 258 mg/L. This chloride concentration is consistent with the collection system testing performed in June and July of 2016 as part of the Salinity Source Identification and Control Program, which found average daytime and nighttime chloride concentrations of 172 mg/L and 319 mg/L, respectively. Reverse osmosis (RO) performance projections using this assumed water quality predict permeate chloride concentration of 3.5 mg/L. Mass balance calculations indicate that a blended water TDS concentration of about 300 mg/L will provide the desired chloride concentration of 80 mg/L. This blend consists of about 75 percent RO permeate and 25 percent effluent. With RO recovery of 80 percent and effluent flow of 0.97 MGD, blended irrigation water production will be about 0.79 MGD (**Figure 7-4).**

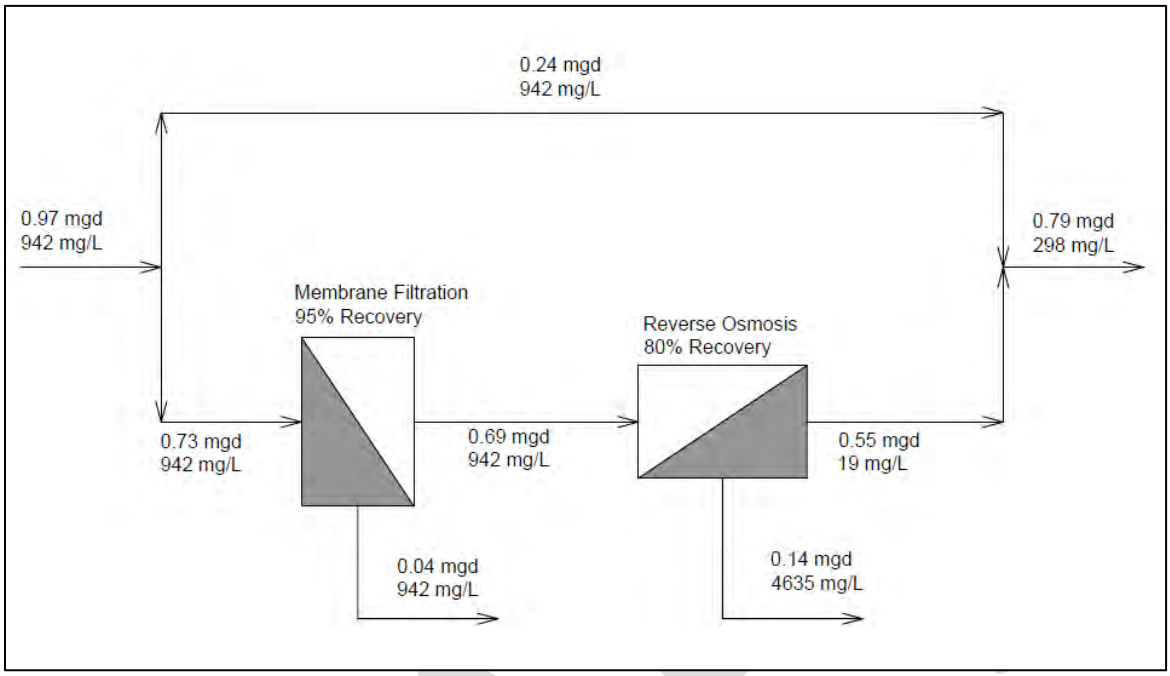


Figure 7-4: Blending Scenario for Alternative 2: Agricultural Exchange

The preliminary design assumptions for Alternative 1 are summarized in **Table 7-9**. A recycled water tank at the WRF is recommended to provide operational storage, which might not be required if the recycled water users are able to provide adequate operational storage. This study assumes a constant delivery rate equal to the average daily flow.

Table 7-9: Alternative 2 Agricultural Exchange Preliminary Design Assumptions	
Advanced Treatment	
Process	Reverse Osmosis
Recycled water quality target	80 mg/L chloride
RO permeate flow rate	385 gpm
RO Influent chloride	258 mg/L
RO permeate chloride	3.5 mg/L
Recycled water flow rate	
Average Day Flow	0.79 MGD
Average Annual Flow	885 AFY
Recycled water pump station	
Estimated Total Dynamic Head (TDH)	Approx. 260 feet TDH
Estimated horsepower	45 HP
Configuration	(2) 50 HP pumps (1 duty, 1 standby)
Recycled water pipeline	
Material	PVC
Diameter	12 inch
Length	28,240 linear feet
Recycled water storage tank volume	500,000 gallons
Potable water pipeline	
Material	PVC
Diameter	8 inch
Length	14,770 linear feet
Average annual potable water supply	442 AFY

7.5.2 Recycled Water Usage

This study assumes one to three large landowners will participate in a program to receive the full amount of recycled water available at a constant rate in exchange for groundwater at a two to one ratio, respectively. Based on the anticipated treated effluent flow rates from the Draft FMP and the water quality requirements for the recycled water, a mass balance was developed as described above, estimating approximately 885 AFY of recycled water will be available. From initial discussions with potential users, the assumed potential water supply benefit to the City is half this amount, 442 AFY.

A preliminary list of potential users and preliminary water demand estimates is included below in **Table 7-10**. Preliminary demand estimates assume 2.5 feet per year per acre of irrigated area. Site numbers correlate with opportunities presented in **Figure 7-3**.

Table 7-10: Anticipated Recycled Water Demands from Agricultural Exchange Users			
Site #	**Size (Acres)**	**Estimated Irrigated Acreage**	**Average Demand Estimate (AFY)**
1	18.1	9.8	24.4
2	33.2	33.2	82.9
3	9.9	8.9	22.3
4	20.0	17.4	43.4
5	19.7	17.0	42.4

Table 7-10: Anticipated Recycled Water Demands from Agricultural Exchange Users			
Site #	**Size (Acres)**	**Estimated Irrigated Acreage**	**Average Demand Estimate (AFY)**
6	1.3	0.4	1.0
7	6.3	4.7	11.9
8	3.4	1.8	4.5
9	19.2	17.6	12.0
10	21.1	20.0	50.0
11	126.7	17.2	43.1
12	17.1	13.5	33.7
13	20.1	18.9	47.2
14	15.7	14.2	35.4
15	7.9	6.4	15.8
16	12.3	3.8	3.7
17	23.3	23.3	58.2
18	349.5	248.1	620.3
19	186.6	56.0	140.0
20	50.6	50.1	125.1
21	38.4	36.4	91.1
22	46.0	34.5	86.2
23	23.6	20.5	51.3
24	11.1	10.0	25.0
25	1.3	1.0	2.6
26	40.0	2.4	6.0
27	19.6	19.2	47.9
28	176.4	7.9	19.8
29	38.6	10.4	26.1
30	10.8	9.7	24.3
31	25.7	7.7	19.3
32	27.0	1.4	3.4
33	12.0	6.9	17.3
34	62.0	58.3	145.8
35	20.1	20.1	50.3
36	29.1	7.9	19.6
37	31.4	12.9	32.1
38	9.8	8.8	22.1
39	5.7	5.2	13.0
40	98.4	37.7	94.2
41	350.9	14.4	30.9
42	12.2	4.0	10.0
53	111.7	29.3	90.0
Note: Demands estimated by owner or by assuming 2.5 feet/year/irrigated acre			

7.5.3 Preliminary Cost Opinion

A preliminary opinion of probable cost was developed for general guidance to the City in preparing a planning-level budget and evaluating alternatives. Assumptions have been included based on the information available and preliminary design criteria described above. **Table 7-11** summarizes the opinion of probable construction cost and annual operating and maintenance costs. Appendix B summarizes the methodology and assumptions used to develop the cost opinion.

Table 7-11: Cost Opinion for Alternative 2 Agricultural Exchange

Recycled Water Project Capital Costs				
Description	**Quantity**	**Unit**	**Unit Cost**	**Total Estimated Cost**
Reverse Osmosis System	1	LS	$1,700,000	$1,700,000
Recycled water pump station	1	LS	$500,000	$500,000
Recycled water pipeline (Open Area)	1.6	MI	$1,452,000	$2,323,200
Recycled water pipeline (Open Area + Trees)	0.3	MI	$1,557,600	$467,300
Recycled water pipeline (Road/City)	3.6	MI	$1,716,000	$6,177,600
Stream crossings (assume 100 ft HDD each)	3	EA	$65,000	$195,000
Potable water pipeline (Road/City)	3.6	MI	$1,584,000	$5,702,400
Storage Tank	500,000	GAL	$2	$1,000,000
			Subtotal Capital Cost	**$18,070,000**
Escalation (2%)				$361,400
Engineering and Administration (30%)				$5,421,000
Project Contingency (25%)				$4,518,000
			Total Capital Cost	**$28,400,000**
Annualized Project Cost (SRF Loan, 3% Interest, 30-year period; A/P = 0.051)				**$1,450,000**
Annual Operation and Maintenance Cost				
Description				**Estimated Cost**
Advanced Treatment O&M				$130,000
Recycled Water Pumping Electricity				$75,000
Repair and Replacement (1% of capital)				$180,700
Staffing				$96,000
Monitoring and Reporting				$30,000
Total Annual O&M Cost				**$511,700**
Anticipated Cost Per Acre-Foot of Water Supply Benefit				
Total Anticipated Annual Cost				$1,961,700
Estimated Water Supply Benefit (AFY)				442

Notes:
1. Cost of groundwater pump or potable water booster station and associated piping, electrical, and instrumentation is not included in this cost opinion. Cost opinion includes the recycled water project only, and does not include costs for the WRF.
2. Cost opinion assumes new potable water pipeline will tie to the City's system east of Hwy 1 and no highway crossing would be required.

7.5.4 Preliminary Alternative Evaluation

This analysis assumes Alternative 2 could utilize the full amount of recycled water available and provide a potable water supply benefit to the City of 442 AFY, approximately half of the recycled water delivered.

When compared to Alternative 1, the capital and estimated annual operating costs are higher. However, the annual cost per acre-foot of potential water supply benefit is much lower than Alternative 1, due to the greater estimated water supply benefit.

Each recycled water customer would require a turnout and a flow meter, and onsite retrofits for cross connection control may be required. Service connections and onsite retrofits vary in size, complexity, and cost. It is assumed the individual landowners will be responsible for compliance with the regulations and associates costs for recycled water usage and systems within their properties. For example, retrofits to existing irrigation systems may be required to ensure compliance with the regulations, which include application at agronomic rates and no runoff or overspray from the property.

The energy use for this alternative is moderate, compared to the other alternatives, with an estimated 70 percent of the effluent requiring advanced treatment and approximately 45 horsepower required for recycled water pumping.

All major above-grade infrastructure for the project will be contained at the WRF site. With regard to infrastructure and potential visual, odor, or noise impacts, compatibility with neighbors is not considered to be significant for this alternative. However, there has been some concern expressed by agricultural landowners in the Morro Valley regarding the potential impact to crop value and private drinking water wells from irrigation with recycled water on adjacent or nearby properties. Title 22 requires no runoff of recycled water from property edges, and a minimum 100-foot setback of recycled water irrigation and recycled water impoundments from any domestic water supply wells. A well survey and Title 22 report would be required to ensure proper setbacks from drinking water wells.

To date, the City has not entered into any agreements with landowners in the Morro Valley to receive recycled water. There is limited interest in utilizing recycled water, and general unwillingness to enter into a contract with the City to reduce pumping or provide groundwater, with the exception of a few Morro Valley landowners who have expressed interest in developing a memorandum of understanding for a mutually beneficial exchange arrangement. To date, discussions with these landowners have been preliminary and the terms have not been negotiated. Any changes to the water quality requirements, amount of recycled water delivered, and/or amount of potable water for the City would affect the cost opinion and assessment. Should the City wish to pursue this alternative, the legal rights associated with the users delivering water outside of their property would need to be explored.

7.6 Project Alternative 3: Indirect Potable Reuse – East

Project Alternative 3: Indirect Potable Reuse – East involves conveying recycled water to four separate injection wells near the Narrows where it will be used to replenish the groundwater basin as shown in **Figure 7-5**. The water will be extracted from existing City wells and treated at the City's existing BWRO treatment facility for potable use. The recycled water pipeline would run along the eastern side of Highway 1 to Bolton Drive, east on Radcliff Avenue, north on Main Street, and West down Errol Street. At this point in time the City has not acquired land or investigated potential right of way acquisition to construct the injection wells and a siting study would be required to identify and evaluate potential injection well locations.

7.6.1 Preliminary Design Assumptions

Title 22 requires any GRRP using subsurface application to treat the recycled water using full advanced treatment. The accepted technology for full advanced treatment is reverse osmosis and an AOP. General injection and recovery well locations were derived using hydraulic modeling, and driven by residence time requirements set by the California DDW As described in **Section 5.5**, residence time credits are granted through evidence of retention through groundwater modeling or pilot testing.

A storage tank of 500,000 gallons was assumed for this alternative to provide operation storage for equipment maintenance or precipitation events which may inhibit the ability to add water to the aquifer. The tank will allow for at least two days of operating volume for two injection wells. The preliminary design assumptions for Alternative 3 are summarized in **Table 7-12**.

Table 7-12: Alternative 3 Indirect Potable Reuse – East Preliminary Design Assumptions	
Advanced Treatment	
Process	Reverse Osmosis and Advanced Oxidation
Average Flow rate	560 gpm
Recycled water flow rate	
Average Day Flow	0.74 MGD
Average Annual Flow	825 AFY
Recycled water pump station	
Estimated Total Dynamic Head (TDH)	Approx. 150 feet TDH
Estimated horsepower	27 HP
Configuration	(2) 30 HP pumps (1 duty, 1 standby)
Recycled water pipeline	
Material	PVC
Diameter	12 inch
Length	15,100 linear feet
Recycled water storage tank volume	500,000 gallons
Number of injection wells	4
Average Injection well capacity	206 AFY
Number of pumping wells	5 (existing City wells)
Travel time between injection and extraction	Approx. 4 months

CITY OF MORRO BAY WATER RECLAMATION FACILITY PROJECT

Sources Cited:
1. Lower Morro Valley Basin Screening Level Groundater Modeling for Injection Feasibility (GSI Water Solutions, Inc. 2016)

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User

mkn WATER - WASTEWATER - REUSE

Master Water Reclamation Plan
Figure 7-5:
Alternative 3: Indirect Potable Reuse - East

1 inch = 2,500 feet

0 5,000

N

7.6.2 Recycled Water Usage

Preliminary hydraulic modeling summarized in the report, "Lower Morro Valley Basin Screening-Level Groundwater Modeling for Injection Feasibility" (Draft January 30, 2017, GSI Water Solutions, Inc.) concluded that an injection and pumping configuration of four new injection wells near the narrows and extraction from five existing City wells could achieve injection of the full volume of recycled water (up to 825 AFY) and could support extraction of 943 AFY. According to the model, total amount of extraction is limited by seawater intrusion. The City's existing wells would not require any updates in order to capture the recycled water. The modeling also concluded that additional wells may be needed depending on how often the injection wells clog. To verify the results of the model and begin permitting discussion with DDW, pilot scale testing is recommended and DDW should be involved in the planning and implementation thereof. Since the residence time demonstrated in the groundwater models was close to the required four months of residence time, permitting would likely not move forward based on the model results alone. Pilot testing will allow the City to refine preliminary assumptions, design criteria, and budgetary cost opinion.

It is assumed that the groundwater extracted from the City wells will be treated at the existing water treatment plant through the BWRO system. Groundwater from the Morro Valley is high in nitrates and TDS. Over time, these concentrations may become lower with the influence of the highly treated recycled water. The BWRO system currently has an efficiency of 80%, with 20% of the product lost as concentrate. In addition to pilot testing, it is recommended that the City perform an assessment of the additional treatment than may be required for the groundwater. It is possible that acceptable quality could be achieved by treating a portion of the groundwater through the BWRO and blending with the rest, thereby reducing the amount of water lost through treatment.

7.6.3 Preliminary Cost Opinion

A preliminary opinion of probable cost was developed for general guidance to the City in preparing a planning-level budget and evaluating alternatives. Assumptions have been included based on the information available and preliminary design criteria described above. **Table 7-13** summarizes the opinion of probable construction cost and annual operating and maintenance costs. **Appendix B** summarizes the methodology and assumptions used to develop the cost opinion.

Table 7-13: Cost Opinion for Alternative 3 Indirect Potable Reuse - East

Recycled Water Project Capital Costs

Description	Quantity	Unit	Unit Cost	Total Estimated Cost
Advanced Treatment, RW pump station, and RW pipeline to Quintana (2900 LF)	1	LS	$10,580,755	$10,580,755
Recycled water pipeline (Open Area)	1.3	MI	$1,452,000	$1,887,600
Recycled water pipeline (Open Area + Trees)	0.3	MI	$1,557,600	$467,300
Recycled water pipeline (Road/City)	0.9	MI	$1,716,000	$1,544,400
Stream crossings (assume 100 ft HDD each)	3	EA	$65,000	$195,000
Injection well, piping and appurtenances	4	EA	$210,000	$840,000
Electrical, instruments and controls at injection well	4	EA	$70,000	$280,000
Monitoring well	8	EA	$84,000	$672,000
Storage tank	500,000	GAL	$2	$1,000,000
			Subtotal Capital Cost	**$17,467,055**

Table 7-13: Cost Opinion for Alternative 3 Indirect Potable Reuse - East	
Escalation (2%)	$349,341
Engineering and Administration (30%)	$5,241,000
Project Contingency (25%)	$4,367,000
Total Capital Cost	**$27,500,000**
Annualized Project Cost (SRF Loan, 3% Interest, 30-year period; A/P = 0.051)	**$1,410,000**
Annual Operation and Maintenance Cost	
Description	**Estimated Cost**
Advanced Treatment O&M	$160,000
Recycled Water Pumping Electricity	$30,000
Repair and Replacement (1% of capital)	$174,382
Staffing	$120,000
Monitoring and Reporting	$78,000
Extraction and Treatment ($1000/AF)	$943,000
Total Annual O&M Cost	**$1,510,000**
Anticipated Cost Per Acre Foot of Water Supply Benefit	
Total Anticipated Annual Cost	$2,920,000
Estimated Water Supply Benefit (AFY)	943
Notes: 1. Cost opinion does not include property research, land acquisition, or pilot testing. Cost opinion includes the recycled water project only, and does not include costs for the WRF.	

7.6.4 Preliminary Alternative Evaluation

Alternative 3 would utilize the full amount of recycled water available and provide an estimated potable water supply benefit to the City of 993 AFY. This would be a significant addition to the City's potable water portfolio, representing nearly 90% of the City's potable water demand, based on the 2015 value (1,074 AF). As described in **Section 3**, the City currently participates in the State Water Project (SWP) through a contract with Central California Water Authority (CCWA). With an allocation of 1,313 AFY, take-or-pay stipulations, and unpredictable availability, the annual cost of State Water varies. The City's State Water cost is estimated at $1,600 per AF at full allocation. The cost for 2016/17 fiscal year was $2,100 per AF.

When compared to Alternatives 1 and 2, the capital and estimated annual operating costs are higher. However, the annual cost per acre-foot of potential water supply benefit is lower than the first two alternatives, due to the greater estimated water supply benefit.

Alternative 3 has greater reliability than the first two alternatives due to no additional recycled water customers to coordinate with or contracts to negotiate.

The energy use for this alternative is high compared to the other alternatives, with the full volume of recycled water requiring advanced treatment, although recycled water pumping requirements are relatively low at a motor size of approximately 30 hp.

The major above-grade infrastructure for the project will be contained at the WRF site, with the exception of the injection and monitoring wells. Potential impacts of the injection and monitoring wells are considered minor. The injection wells should require a relatively small site, with some manifold piping, a motorized flow control valve and flow meter, and electrical and controls panels. No pumps or motors will be needed at the wells.

7.7 Project Alternative 4: Indirect Potable Reuse – West

Project Alternative 4: Indirect Potable Reuse - West involves conveying recycled water to 4 separate injection wells near the bike path north of the power plant where it will be used to replenish the groundwater table as shown in **Figure 7-6**. The water will be extracted from existing City wells for treatment at the City BWRO treatment facility. The recycled water pipeline would run along the western side of Highway 1 along Quintana Road to Main Street where it would generally follow the bike path to the injection wells. At this point in time the City has not acquired land or investigated potential right of way acquisition to construct the injection wells and a siting study would be required to identify and evaluate potential injection well locations.

7.7.1 Preliminary Design Assumptions

Title 22 requires any GRRP using subsurface application to treat the recycled water using full advanced treatment. The accepted technology for full advanced treatment is reverse osmosis and an AOP. General injection and recovery well locations were derived using hydraulic modeling, and driven by residence time requirements set by the California DDW. As described in **Section 5.4.5**, residence time credits are granted through evidence of retention through groundwater modeling or pilot testing.

A storage tank of 500,000 gallons was assumed for this alternative to provide operation storage for equipment maintenance or precipitation events which may inhibit the ability to add water to the aquifer. The tank will allow for at least two days of operating volume for two injection wells. The preliminary design assumptions for Alternative 4 are summarized in **Table 7-14**.

Table 7-14: Alternative 4 Indirect Potable Reuse – West Preliminary Design Assumptions	
Advanced Treatment	
Process	Reverse Osmosis and Advanced Oxidation
Flow rate	560 gpm
Recycled water flow rate	
Average Day Flow	0.72 MGD
Average Annual Flow	804 AFY
Recycled water pump station	
Estimated Total Dynamic Head (TDH)	Approx. 60 feet TDH
Estimated horsepower	10 HP
Configuration	(2) 15 HP pumps (1 duty, 1 standby)
Recycled water pipeline	
Material	PVC
Diameter	12 inch
Length	15,200 linear feet
Recycled water storage tank volume	500,000 gallons
Number of injection wells	4
Average Injection well capacity	206 AFY
Number of pumping wells	4 (existing City wells)
Travel time between injection and extraction	Approx. 4 months

CITY OF MORRO BAY WATER RECLAMATION FACILITY PROJECT

Sources Cited:
1. Lower Morro Valley Basin Screening Level Groundater Modeling for Injection Feasibility (GSI Water Solutions, Inc. 2016)

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User

mkn WATER - WASTEWATER - REUSE

Master Water Reclamation Plan
Figure 7-6:
Alternative 4: Indirect Potable Reuse - West

1 inch = 2,500 feet

0 5,000

N

7.7.2 Recycled Water Usage

Preliminary hydraulic modeling summarized in the report, "Lower Morro Valley Basin Screening-Level Groundwater Modeling for Injection Feasibility" (Draft January 30, 2017, GSI Water Solutions, Inc.) concluded that an injection and pumping configuration of four new injection wells near the bike path and power plant property and four existing wells pumping could achieve injection of nearly the full volume of recycled water (804 AFY) and could support extraction of 1,119 AFY. The City's existing wells would not require any updates in order to capture the recycled water. The modeling also concluded that additional wells may be needed depending on how often the injection wells clog.

To verify the results of the model and begin permitting discussion with DDW, pilot scale testing is recommended and DDW be involved in the planning and implementation thereof. Since the residence time demonstrated in the groundwater models was close to the required four months of residence time, permitting would likely not move forward based on the model results alone. Pilot testing will allow the City to refine preliminary assumptions, design criteria, and budgetary cost opinion.

It is assumed that the groundwater extracted from the City wells will be treated at the existing water treatment plant through the BWRO system. Groundwater from the Morro Valley is high in nitrates and TDS. Over time, these concentrations may become lower with the influence of the highly treated recycled water. The BWRO system currently has an efficiency of 80%, with 20% of the product lost as concentrate. In addition to pilot testing, it is recommended that the City perform an assessment of the additional treatment than may be required for the groundwater. It is possible that acceptable quality could be achieved by treated a portion of the groundwater through the BWRO and blending with the rest, thereby reducing the amount of water lost through treatment.

7.7.3 Preliminary Cost Opinion

A preliminary opinion of probable cost was developed for general guidance to the City in preparing a planning-level budget and evaluating alternatives. Assumptions have been included based on the information available and preliminary design criteria described above. **Table 7-15** summarizes the opinion of probable construction cost and annual operating and maintenance costs. **Appendix B** summarizes the methodology and assumptions used to develop the cost opinion.

Table 7-15: Cost Opinion for Alternative 4 Indirect Potable Reuse - West

Recycled Water Project Capital Costs				
Description	**Quantity**	**Unit**	**Unit Cost**	**Total cost**
Advanced Treatment, RW pump station, and RW pipeline to Quintana (2900 LF)	1	LS	$10,580,755	$10,580,755
Recycled water pipeline (Open Area)	0.3	MI	$1,452,000	$435,600
Recycled water pipeline (Open Area + Sidewalks/Trees)	0.6	MI	$1,557,600	$934,600
Recycled water pipeline (Road/City)	1.6	MI	$1,716,000	$2,745,600
Highway crossing (jack and bore)	400	LF	$650	$260,000
Injection Well, piping and appurtenances	4	EA	$210,000	$840,000
Electrical, instruments and controls at injection well	4	EA	$70,000	$280,000
Monitoring Wells	8	EA	$84,000	$672,000
Storage Tank	500,000	GAL	$2	$1,000,000
			Subtotal Capital Cost	**$17,748,555**
Escalation (2%)				$354,171
Engineering and Administration (30%)				$5,325,000

Table 7-15: Cost Opinion for Alternative 4 Indirect Potable Reuse - West	
Project Contingency (25%)	$4,438,000
Total Capital Cost	**$27,870,000**
Annualized Project Cost (SRF Loan, 3% Interest, 30-year period; A/P = 0.051)	**$1,430,000**
Annual Operation and Maintenance Cost	
Description	**Estimated Cost**
Advanced Treatment O&M	$160,000
Recycled Water Pumping Electricity	$15,000
Repair and Replacement (1% of capital)	$177,486
Staffing	$120,000
Monitoring and Reporting	$78,000
Extraction and Treatment ($1000/AF)	$1,119,000
Total Annual O&M Cost	**$1,670,000**
Anticipated Cost Per Acre Foot of Water Supply Benefit	
Total Anticipated Annual Cost	$3,100,000
Estimated Water Supply Benefit (AFY)	1119
Notes: 1. Cost opinion does not include property research, land acquisition, or pilot testing. Cost opinion includes the recycled water project only, and does not include costs for the WRF.	

7.7.4 Preliminary Alternative Evaluation

Alternative 4 would utilize the full amount of recycled water available and provide an estimated potable water supply benefit to the City of 1,119 AFY. This would be a significant impact to the City's potable water portfolio, fulfilling all of the City's current potable water demand, based on the 2015 value (1,074 AF). As described in **Section 3,** the City currently participates in the State Water Project (SWP) through a contract with Central California Water Authority (CCWA). With an allocation of 1,313 AFY, take-or-pay stipulations, and unpredictable availability, the annual cost of State Water varies. The City's State Water cost is estimated at $1600 per AF at full allocation. The cost for the 2016/17 fiscal year was $2,100 per AF.

When compared to other alternatives, the capital and estimated annual operating costs are highest. However, the annual cost per acre-foot of potential water supply benefit is lowest, due to the greatest estimated water supply benefit.

Alternative 4 has greater reliability than the first two alternatives due to no additional recycled water customers to coordinate with or contracts to negotiate.

The energy use for this alternative is high compared to the other alternatives, with the full volume of recycled water requiring advanced treatment; though recycled water pumping requirements are the lowest of the three alternatives, at approximately 10 horsepower.

The major above-grade infrastructure for the project will be contained at the WRF site, with the exception of the injection and monitoring wells. Potential impacts of the injection and monitoring wells are considered minor. The injection wells should require a relatively small site, with some manifold piping, a motorized flow control valve and flow meter, and electrical and controls panels. No pumps or motors will be needed at the wells.

7.8 Summary of Project Alternatives

A qualitative comparison of the four recycled water project alternatives is summarized in **Table 7-16** based on the community project goals. Alternative 0 is not included, since it would not provide a recycled water project. **Table 7-17** contains the qualitative ranking with 1 being low and 4 being high.

Table 7-16: Recycled Water Project Qualitative Comparison

Criteria	Alternative 1 Urban Reuse	Alternative 2 Agricultural Exchange	Alternative 3 IPR East	Alternative 4 IPR West
Potential City water supply benefit (AFY)	Limited: 45.4	Half the amount of recycled water available: 442	More than recycled water amount: 943	More than recycled water amount: 1,119
New pipeline length (LF)	19,200	43,000	15,100	15,200
Land acquisition	No additional easements	Several Easements required	Land required for siting new injection wells near the Narrows	Land required for siting new injection wells near power plant property
Reliability	Only interest expressed from golf course; relies on contracts with potential users	Limited interest based on outreach to date; relies on contracts with potential users	City controlled	City controlled

Table 7-17: Comparative Qualitative Ranking

Criteria	Alternative 1 Urban Reuse	Alternative 2 Agricultural Exchange	Alternative 3 IPR East	Alternative 4 IPR West
Potential City water supply benefit	1	2	4	4
Pipeline length	2	1	4	3
Land acquisition	4	3	1	2
Reliability	1	1	3	3
Total	**8**	**7**	**12**	**12**

A summary of the project alternative capital and annual costs and potable water supply benefit is provided in **Table 7-18**. The capital costs include the WRF lift station, pipelines, and treatment facilities, and the recycled water advanced treatment, pump station, storage tank, injections wells, pipelines, engineering and design, and construction contingency. Additional program costs associated with the project are described in **Table 7-19**.

Table 7-18: Summary of Recycled Water Project Alternatives Cost and Water Supply Benefit				
	Alternative 1	**Alternative 2**	**Alternative 3**	**Alternative 4**
	Urban Reuse	**Agricultural Exchange**	**IPR East**	**IPR West**
Estimated Recycled Water Project Capital Construction Cost	$13,800,000	$28,400,000	$27,500,000	$27,870,000
Annualized Recycled Water Project Cost Payment[1]	$710,000	$1,450,000	$1,410,000	$1,430,000
Estimated Recycled Water Annual O&M Cost	$322,000	$511,700	$1,510,000	$1,670,000
Total Estimated Recycled Water Project Annual Cost	$1,032,000	$1,961,700	$2,920,000	$3,100,000
Estimated Water Supply Benefit (AFY)	45.4 [2]	442	943	1119

Notes:
1) Annualized Project Cost (SRF Loan, 3% Interest, 30-year period; A/P = 0.051)
2) Estimated water supply benefit for Alternative 1 does not include Morro Bay Golf Course and State Park (306 AFY demand) as they currently use a non-potable well.
3) Alternative 0 is not included here, as the estimated capital construction cost for recycled water project would be $0 and there would be no water supply benefit.
4) Estimated Recycled Water Annual O&M Costs and Total Estimated Recycled Water Project Annual Costs for Alternatives 3 and 4 include $1000 per acre-foot (for 943 acre-feet and 1119 acre-feet, respectively) for extraction and treatment of groundwater at the existing water treatment plant.
5) Additional program costs, such as construction management, property acquisition, and demolition of the existing WWTP, are not reflected here. See Table 7-19.

7.9 Conclusions from Project Alternatives Evaluation

The recycled water project alternatives were evaluated based on the community goals for the project. Evaluation criteria include capital cost, operating cost, neighborhood compatibility, reliability, and potential water supply benefit. The following main conclusions can be made:

- The highest water supply benefit would be realized through indirect potable reuse (IPR) (Alternatives 3 and 4). Based on preliminary modeling, it appears Alternative 4 could support the majority, if not all, of the City's current water demand with an estimated water supply benefit of over 1100 AFY. This could significantly reduce or eliminate reliance on imported water.
- The least expensive alternative is no recycled water project (Alternative 0), followed by urban reuse (Alternative 1). Alternative 0 provides no water supply benefit and Alternative 1 provides the least, an estimated 45.4 AFY water supply benefit.
- The capital costs for agricultural exchange (Alternative 2) and IPR (Alternatives 3 and 4) are similar, but IPR has significantly higher water supply benefit if a higher exchange rate is not possible for Alternative 2. Agricultural exchange relies on successful contract negotiations with landowners, adding some uncertainty.

Based on the analyses presented herein, the recommended recycled water project is IPR, Alternative 3 or 4, with the main difference consisting of the locations for injection and extraction wells. The IPR alternative provides the highest potential water supply benefit. Supplementing the potable water supply with highly treated recycled water is the highest form of allowable beneficial reuse, and will allow the City to reduce or eliminate reliance on imported water.

To further refine the project assumptions and costs, the recommended next steps are summarized as follows:

- Rate study update
- Consultation with DDW
- Siting study for injection wells
- Pilot study for injection and extraction
- Groundwater modeling update (after/with pilot study)
- Assessment of groundwater treatment and blending options at existing WTP
- Design of recycled water system, including advanced treatment, injection wells, pumps and pipelines

The City is planning to construct the new WRF within the next five years. If a recycled water project is pursued, there could be significant savings realized by completing the construction at the same time as the WRF. The estimated total program capital costs for Alternatives 0 through 4 are summarized in **Table 7-19**. The total program costs include the total cost for the WRF as presented in the Facility Master Plan; additional estimated program costs including decommissioning of the existing WWTP, property acquisition for the WRF, permitting and environmental mitigation, and construction management; and estimated recycled water project costs as presented earlier in this section.

Alternative 0 (No Recycled Water Project) presents a WRF that produces secondary disinfected effluent which is discharged to the ocean for an estimated total program cost of approximately $124 million. Alternatives 3 and 4, the recommended recycled water project, consists of a WRF and full IPR recycled water program for an estimated total cost of approximately $167 million.

Table 7-19: Comparison of Total Estimated Program Costs					
	Alternative 0	**Alternative 1**	**Alternative 2**	**Alternative 3**	**Alternative 4**
	No Recycled Water Project (Secondary only)	**Urban Reuse**	**Agricultural Exchange**	**IPR East**	**IPR West**
WRF Capital Costs					
Estimated WRF Capital Construction Cost	$79,350,000	$89,710,000	$89,710,000	$89,710,000	$89,710,000
Engineering/Design (WRF)	$7,730,000	$8,740,000	$8,740,000	$8,740,000	$8,740,000
Procurement (4% WRF)	$3,174,000	$3,588,400	$3,588,400	$3,588,400	$3,588,400
Project Admin & CM (12% WRF)	$9,522,000	$10,765,200	$10,765,200	$10,765,200	$10,765,200
Permitting, monitoring, and mitigation (1% WRF)	$793,500	$897,100	$897,100	$897,100	$897,100
Existing WWTP Demolition	$3,300,000	$3,300,000	$3,300,000	$3,300,000	$3,300,000
Property Acquisition (WRF)	$300,000	$300,000	$300,000	$300,000	$300,000
Recycled Water Project Capital Costs					
Estimated Recycled Water Project Capital Construction Cost	$0	$8,940,000	$18,440,000	$17,820,000	$18,110,000
Engineering/Admin (RW)	$0	$2,630,000	$5,430,000	$5,250,000	$5,3230,000
Subtotal Program Capital Cost Opinion (rounded)	**$104,200,000**	**$128,900,000**	**$141,700,000**	**$140,400,000**	**$140,700,000**
Construction Contingency	$19,320,000	$24,040,000	$26,370,000	$26,220,000	$26,290,000
Total Program Capital Cost Opinion	**$123,520,000**	**$152,940,000**	**$167,570,000**	**$166,620,000**	**$166,990,000**

Notes:

1) Estimated WRF Capital Construction Cost includes the WRF Project (lift station, pipelines, and treatment plant) without any recycled water components, based on costs presented in the Draft FMP, not including construction contingency or engineering/design, which are shown separately.
2) Cost assumptions for Alternative 0 are based on secondary treatment only, SBR option as described in **Section 7.3**. Alternative 0 does not fulfill the community project goals to produce tertiary disinfected wastewater or to produce reclaimed water.
3) WRF costs for Alternatives 1 – 4 assume the MBR option from the Draft FMP. Based on estimates in the Draft FMP, the total program capital cost opinion for Alternatives 1 – 4 would be approximately $2M less with the SBR option.
4) Construction contingency consists of 25% of construction cost subtotal(s).

7.10 Environmental Considerations

An Environmental Impact Report (EIR) is currently being prepared for the proposed WRF and related actions, including the Master Water Reclamation Plan. The scope of the EIR is based on the Notice of Preparation (NOP) that was publicly distributed on August 8, 2016. In addition, there was a public workshop held on August 16, 2016, to take further input on the scope of the EIR. Because an EIR is being prepared, no Initial Study was required or prepared. Instead, the NOP identifies the following issues areas for comprehensive review in the EIR, consistent with most of the issues included in the CEQA Initial Study Checklist:

- Aesthetics
- Agricultural and Forestry Resources
- Air Quality
- Biological Resources
- Cultural and Paleontological Resources
- Geology, Soils and Seismicity
- Greenhouse Gas Emissions
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Recreation
- Noise
- Population and Housing/Growth Inducement
- Public Services
- Traffic and Transportation
- Utilities and Energy
- Cumulative Impacts

The NOP, included as Appendix D, contains a complete discussion of each of these issues, and how the analysis of each will be framed within the EIR. The Draft EIR is expected to be publicly available in August 2017, with the Final EIR likely to be completed and certified in November 2017.

EXHIBIT VII. SYSTEM ENGINEER'S REPORT

A summary of the most relevant plans is included in Section B, page B-9. At this time, there is nothing to submit for **Exhibit VII.**

EXHIBIT VIII. OPERATIONS AND MAINTENANCE PLAN

The Design-Build Contractor will be responsible for developing a Final Operations and Maintenance Plan as part of asset management included in their scope of work. A draft Operations and Maintenance Plan is included in Section C. At this time, there is nothing to submit for **Exhibit VIII.**

EXHIBIT IX. CASH FLOW PRO FORMA

The Cash Flow Pro Forma is attached as **Exhibit IX**, and is provided in Excel format.

City of Morro Bay

WIFIA Application - Exhibit IX

Cash Flow Pro Forma

With WRF Project Funding & Debt Service Estimates

Assumes WIFIA & Bond Financing

Draft 07/05/18

BARTLE WELLS ASSOCIATES
INDEPENDENT PUBLIC FINANCE ADVISORS

Table 1
City of Morro Bay
Water Reclamation Facility Project Cost Estimate

	Construction Costs[1]	Soft Costs	Project Reserves[2]	Total Cost
Projected Capital Costs				
Includes permitting, design, procurement, construction, and management.				
Water Reclamation Facility	$62,616,000	$8,489,000	$3,131,000	$74,236,000
Conveyance Facilities	21,086,000	2,820,000	2,343,000	26,249,000
Offsite Recycled Water Facilities[3]	8,592,000	2,648,000	859,000	12,099,000
General Program Implementation	0	5,160,000	0	5,160,000
Subtotal	92,294,000	19,117,000	6,333,000	117,744,000
Prior Project Expenditures	0	5,063,000		5,063,000
Total	92,294,000	24,180,000		122,807,000
Total with Reserve Contingency				*126,000,000*
Annual Operating & Maintenance Expenses				
Projected online starting January 1, 2022.		2018 Estimate	Cost Inflation	2022 Projection
WRF Wastewater Operations		$2,383,000	$299,000	$2,682,000
Conveyance to WRF		246,000	31,000	277,000
Recycled Water Operations		193,000	24,000	217,000

Source: Carollo Engineers, WRF Program Revised Cost Estimates as of 6/20/18.

1 Construction costs Include estimated cost inflation to construction mid-point where applicable.

2 Project Reserves are placeholder estimates for additional project funding requirements (e.g. outside project scope) with funding subject to City control.

3 Offsite Recycled Water Facilities assume West alternative and include property acquisition estimate.

Table 2
City of Morro Bay
Water vs. Wastewater Cost Breakdown

Project Component	Total Cost	Water		Wastewater	
Water Reclamation Facility	$74,236,000	$21,528,000	29.0%	$52,708,000	71.0%
Conveyance Facilities	26,249,000	0	0.0%	26,249,000	100.0%
Offsite Recycled Wtr Facilities	12,099,000	12,099,000	100.0%	0	0.0%
General Program Implementation*	5,160,000	1,541,000	29.9%	3,619,000	70.1%
Prior Project Expenditures	5,063,000	244,000	4.8%	4,819,000	95.2%
Total	122,807,000	35,412,000	28.8%	87,395,000	71.2%

* Allocated based on proportionate share of total future facility costs.

Table 3
City of Morro Bay
Water Reclamation Facility Project Costs by Fiscal Year

	Prior Costs			Projected Costs			
	Prior	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
Soft Costs	2,800,000	1,423,000	840,000	8,490,000	5,218,000	3,160,000	2,248,000
Construction					35,512,000	35,512,000	21,271,000
Project Reserves					2,377,000	2,377,000	1,579,000
Annual Total	2,800,000	1,423,000	840,000	8,490,000	43,107,000	41,049,000	25,098,000
Subtotal			*5,063,000*				*117,744,000*
Total							*122,807,000*

Table 4 S
City of Morro Bay
Water Reclamation Facility Projected Funding Sources

	Total	% of Ttl	Water	% of Source	Wastewater	% of Source
WRF Total Project Costs	$122,807,000		$35,412,000	28.8%	87,395,000	71.2%
Projected Funding Sources						
WIFIA Loan	60,175,000	49.0%	17,352,000	28.8%	42,823,000	71.2%
SRF Planning Loan	10,300,000	8.4%	2,970,000	28.8%	7,330,000	71.2%
Revenue Bonds	24,700,000	20.1%	10,246,000	41.5%	14,454,000	58.5%
Sewer New Cash Funding	17,969,000	14.6%	0	0.0%	17,969,000	100.0%
Water New Cash Funding	4,600,000	3.7%	4,600,000	100.0%	0	0.0%
Prior Cash Contributions	5,063,000	4.1%	244,000	4.8%	4,819,000	95.2%
Total	122,807,000	100.0%	35,412,000	28.8%	87,395,000	71.2%

Table 5
City of Morro Bay
WIFIA Financing Sources & Uses

SOURCES OF FUNDS		
WIFIA Loan		$67,800,000
USES OF FUNDS		
WRF Project Funding[1]	49% of total project cost	$60,175,000
Application/Credit Reimbursement Fee	estimated	300,000
Other Issuance Costs (est)	estimated	50,000
Accrued Interest During Construction[2]	estimated	3,911,000
Debt-Funded Reserve Fund	likely	3,360,000
Contingency/Rounding		4,000
Total Uses		67,800,000

1 49% of Total WRF Project Cost
2 Assumes steady gradual drawdown of loan funds over 2 years, plus 1 year add'l accrued interest.

Table 6
City of Morro Bay
Draft WIFIA Loan Repayment Schedule

WIFIA Loan Amount	$67,800,000
Repayment Term	35 Years
Interest Rate	3.25%

Payment Number	Fiscal Year Ending	Principal	Interest	Total Debt Service	Principal Balance
1	2023	$769,582	$2,203,500	$2,973,082	$67,030,418
2	2024	794,593	2,178,489	2,973,082	66,235,824
3	2025	820,418	2,152,664	2,973,082	65,415,407
4	2026	847,081	2,126,001	2,973,082	64,568,325
5	2027	874,611	2,098,471	2,973,082	63,693,714
6	2028	903,036	2,070,046	2,973,082	62,790,678
7	2029	932,385	2,040,697	2,973,082	61,858,293
8	2030	962,688	2,010,395	2,973,082	60,895,605
9	2031	1,442,975	1,979,107	3,422,082	59,452,630
10	2032	1,489,872	1,932,210	3,422,082	57,962,758
11	2033	1,538,292	1,883,790	3,422,082	56,424,466
12	2034	1,588,287	1,833,795	3,422,082	54,836,179
13	2035	1,639,906	1,782,176	3,422,082	53,196,273
14	2036	1,693,203	1,728,879	3,422,082	51,503,069
15	2037	1,748,232	1,673,850	3,422,082	49,754,837
16	2038	1,805,050	1,617,032	3,422,082	47,949,787
17	2039	1,863,714	1,558,368	3,422,082	46,086,073
18	2040	1,924,285	1,497,797	3,422,082	44,161,788
19	2041	1,986,824	1,435,258	3,422,082	42,174,964
20	2042	2,051,396	1,370,686	3,422,082	40,123,568
21	2043	2,118,066	1,304,016	3,422,082	38,005,502
22	2044	2,186,903	1,235,179	3,422,082	35,818,599
23	2045	2,257,978	1,164,104	3,422,082	33,560,621
24	2046	2,331,362	1,090,720	3,422,082	31,229,259
25	2047	2,407,131	1,014,951	3,422,082	28,822,128
26	2048	2,485,363	936,719	3,422,082	26,336,765
27	2049	2,566,137	855,945	3,422,082	23,770,628
28	2050	2,649,537	772,545	3,422,082	21,121,091
29	2051	2,735,647	686,435	3,422,082	18,385,444
30	2052	2,824,555	597,527	3,422,082	15,560,889
31	2053	2,916,353	505,729	3,422,082	12,644,536
32	2054	3,011,135	410,947	3,422,082	9,633,401
33	2055	3,108,997	313,086	3,422,082	6,524,404
34	2056	3,210,039	212,043	3,422,082	3,314,365
35	2057	3,314,365	107,717	3,422,082	0
Total		67,800,000	48,380,874	116,180,874	1,420,842,286

Note: Debt repayment is partially reduced over first 8 years to result in roughly level annual debt service on total combined debt.

Table 7
City of Morro Bay
Bond Debt Service Estimates

		30-Year Bonds w/22-Year Amort
Funding Target		$24,700,000
Issue Size		
Project Funding	Estimates	24,700,000
Underwriter's Discount	*0.70%*	177,300
Issuance Costs		200,000
Bond Insurance	*0.40%*	202,700
Reserve Surety Bond	*2.25%*	42,100
Rounding		1,600
Total		25,323,700
Financing Terms		
Repayment Term		30
Amortization Term (years)		22
Interest Rate[2]	Planning Est.	4.70%
Annual Debt Service		
During 8-Year Interest-Only Period		1,190,000
During 22-Year Principal Amortization Period		1,871,000

Estimates shown for financial planning purposes, actual costs and rates may vary.

Current Estimated Rates	*June 7, 2018 Rates*	*Inflation Adjusted Rate*
WIFIA Rate (Est. 25-Year SLGS)	3.05%	0.91%
30-Year Bond Rate (est.)	4.25%	2.08%
SRF Rate	1.80%	-0.32%
2017 CPI-U	2.13%	

Table 8
City of Morro Bay
Debt Service Amortization Schedules

Fiscal Year Ending	SRF Planning Loan	WIFIA Loan	Revenue Bonds	Total Debt Service
Project $	$10,300,000	$60,175,000	$24,700,000	$95,175,000
Term	10 Years	35 Years	30 Years	TIC
Avg Rate	1.70%	3.25%	4.70%	3.48%
2021	1,130,000		595,000	1,725,000
2022	1,130,000		1,190,000	2,320,000
2023	1,130,000	2,973,000	1,190,000	5,293,000
2024	1,130,000	2,973,000	1,190,000	5,293,000
2025	1,130,000	2,973,000	1,190,000	5,293,000
2026	1,130,000	2,973,000	1,190,000	5,293,000
2027	1,130,000	2,973,000	1,190,000	5,293,000
2028	1,130,000	2,973,000	1,190,000	5,293,000
2029	1,130,000	2,973,000	1,190,000	5,293,000
2030	1,130,000	2,973,000	1,190,000	5,293,000
2031		3,422,000	1,871,000	5,293,000
2032		3,422,000	1,871,000	5,293,000
2033		3,422,000	1,871,000	5,293,000
2034		3,422,000	1,871,000	5,293,000
2035		3,422,000	1,871,000	5,293,000
2036		3,422,000	1,871,000	5,293,000
2037		3,422,000	1,871,000	5,293,000
2038		3,422,000	1,871,000	5,293,000
2039		3,422,000	1,871,000	5,293,000
2040		3,422,000	1,871,000	5,293,000
2041		3,422,000	1,871,000	5,293,000
2042		3,422,000	1,871,000	5,293,000
2043		3,422,000	1,871,000	5,293,000
2044		3,422,000	1,871,000	5,293,000
2045		3,422,000	1,871,000	5,293,000
2046		3,422,000	1,871,000	5,293,000
2047		3,422,000	1,871,000	5,293,000
2048		3,422,000	1,871,000	5,293,000
2049		3,422,000	1,871,000	5,293,000
2050		3,422,000	1,871,000	5,293,000
2051		3,422,000	1,871,000	5,293,000
2052		3,422,000	1,871,000	5,293,000
2053		3,422,000		3,422,000
2054		3,422,000		3,422,000
2055		3,422,000		3,422,000
2056		3,422,000		3,422,000
2057		3,422,000		3,422,000

Table 9
City of Morro Bay
Sewer Debt Service Allocation

Fiscal Year Ending	SRF Planning Loan	WIFIA Loan	Revenue Bonds	Total Debt Service
Amount	$10,300,000	$60,175,000	$24,700,000	$95,175,000
Term	10 Years	35 Years	30 Years	
Avg Rate	1.70%	3.25%	4.70%	
Sewer %	71.2%	71.2%	58.5%	67.9%
Sewer $	$7,330,000	$42,823,000	$14,454,000	$64,607,000
2021	804,000		348,000	1,152,000
2022	804,000		696,000	1,500,000
2023	804,000	2,116,000	696,000	3,616,000
2024	804,000	2,116,000	696,000	3,616,000
2025	804,000	2,116,000	696,000	3,616,000
2026	804,000	2,116,000	696,000	3,616,000
2027	804,000	2,116,000	696,000	3,616,000
2028	804,000	2,116,000	696,000	3,616,000
2029	804,000	2,116,000	696,000	3,616,000
2030	804,000	2,116,000	696,000	3,616,000
2031		2,435,000	1,095,000	3,530,000
2032		2,435,000	1,095,000	3,530,000
2033		2,435,000	1,095,000	3,530,000
2034		2,435,000	1,095,000	3,530,000
2035		2,435,000	1,095,000	3,530,000
2036		2,435,000	1,095,000	3,530,000
2037		2,435,000	1,095,000	3,530,000
2038		2,435,000	1,095,000	3,530,000
2039		2,435,000	1,095,000	3,530,000
2040		2,435,000	1,095,000	3,530,000
2041		2,435,000	1,095,000	3,530,000
2042		2,435,000	1,095,000	3,530,000
2043		2,435,000	1,095,000	3,530,000
2044		2,435,000	1,095,000	3,530,000
2045		2,435,000	1,095,000	3,530,000
2046		2,435,000	1,095,000	3,530,000
2047		2,435,000	1,095,000	3,530,000
2048		2,435,000	1,095,000	3,530,000
2049		2,435,000	1,095,000	3,530,000
2050		2,435,000	1,095,000	3,530,000
2051		2,435,000	1,095,000	3,530,000
2052		2,435,000	1,095,000	3,530,000
2053		2,435,000		2,435,000
2054		2,435,000		2,435,000
2055		2,435,000		2,435,000
2056		2,435,000		2,435,000
2057		2,435,000		2,435,000

Table 10
City of Morro Bay
Water Debt Service Allocation

Fiscal Year Ending	SRF Planning Loan	WIFIA Loan	Revenue Bonds	Total Debt Service
Amount	$10,300,000	$60,175,000	$24,700,000	$95,175,000
Term	10 Years	35 Years	30 Years	
Avg Rate	1.70%	3.25%	4.70%	
Water %	28.8%	28.8%	41.5%	32.1%
Water $	$2,970,000	$17,352,000	$10,246,000	$30,568,000
2021	326,000		247,000	573,000
2022	326,000		494,000	820,000
2023	326,000	857,000	494,000	1,677,000
2024	326,000	857,000	494,000	1,677,000
2025	326,000	857,000	494,000	1,677,000
2026	326,000	857,000	494,000	1,677,000
2027	326,000	857,000	494,000	1,677,000
2028	326,000	857,000	494,000	1,677,000
2029	326,000	857,000	494,000	1,677,000
2030	326,000	857,000	494,000	1,677,000
2031		987,000	776,000	1,763,000
2032		987,000	776,000	1,763,000
2033		987,000	776,000	1,763,000
2034		987,000	776,000	1,763,000
2035		987,000	776,000	1,763,000
2036		987,000	776,000	1,763,000
2037		987,000	776,000	1,763,000
2038		987,000	776,000	1,763,000
2039		987,000	776,000	1,763,000
2040		987,000	776,000	1,763,000
2041		987,000	776,000	1,763,000
2042		987,000	776,000	1,763,000
2043		987,000	776,000	1,763,000
2044		987,000	776,000	1,763,000
2045		987,000	776,000	1,763,000
2046		987,000	776,000	1,763,000
2047		987,000	776,000	1,763,000
2048		987,000	776,000	1,763,000
2049		987,000	776,000	1,763,000
2050		987,000	776,000	1,763,000
2051		987,000	776,000	1,763,000
2052		987,000	776,000	1,763,000
2053		987,000		987,000
2054		987,000		987,000
2055		987,000		987,000
2056		987,000		987,000
2057		987,000		987,000

Table 11 - City of Morro Bay	Sewer Cash Flow Projections				
	Projected Years 1 - 5				
	2017/18	2018/19	2019/20	2020/21	2021/22
Monthly Single Family Sewer Charge	$70.00	$77.00	$83.00	$83.00	$83.00
Sewer Rate Adjustment %		*10.0%*	*7.8%*	*0.0%*	*0.0%*
Monthly Single Family WRF Surcharge			$25.00	$25.00	$25.00
Beginning Sewer Accounts	5,346	5,351	5,356	5,361	5,366
Growth: Single Family Equivalents	5	5	5	5	5
Growth %	-	0.1%	0.1%	0.1%	0.1%
Sewer Development Impact Fee	$5,445	$5,550	$5,660	$5,770	$5,890
Interest Earnings Rate	1.25%	1.75%	2.0%	2.0%	2.0%
Cost Escalation			4.0%	4.0%	4.0%
Beginning Fund Reserves	$6,402,000	$8,112,000	$8,251,000	$8,274,000	$8,357,000
REVENUES					
Sewer Service Charges	6,100,000	6,716,000	7,246,000	7,253,000	7,260,000
Sewer WRF Facility Surcharges	0	0	2,173,000	2,173,000	2,173,000
Development Impact Fees	30,000	28,000	28,000	29,000	29,000
Interest Earnings	80,000	142,000	165,000	165,000	167,000
Rental Income/Other (Excl Penalties)	25,000	30,000	30,000	30,000	30,000
Subtotal	6,235,000	6,916,000	9,642,000	9,650,000	9,659,000
WRF Debt Financing					
SRF Planning Loan		5,800,000	4,500,000		
WIFIA Loan			31,100,000	29,075,000	
Bond Proceeds				7,400,000	17,300,000
EXPENSES					
Operating & Maintenance	Estimated	Projected			
Sewer Collection	1,100,000	1,480,000	1,539,000	1,601,000	1,665,000
Wastewater Treatment Existing	2,000,000	2,210,000	2,298,000	2,390,000	1,247,000
Wastewater Treatment New WRF	-	-	-	-	1,500,000
Conveyance to New WRF	-	-	-	-	140,000
Less Cayucos SD Reimbursements	*(495,000)*	*(553,000)*	*(575,000)*	*0*	*0*
Subtotal	2,605,000	3,137,000	3,262,000	3,991,000	4,552,000
Debt Service					
SRF Planning Loan: Sewer Share	-	-	-	804,000	804,000
WRF WIFIA Loan: Sewer Share	-	-	-	-	-
WRF Revenue Bonds: Sewer Share	-	-	-	348,000	696,000
Subtotal	0	0	0	1,152,000	1,500,000
Capital Improvements					
Sewer Cash Contribution to WRF	840,000	2,390,000	5,307,000	3,374,000	6,898,000
Sewer System Pay-Go CIP	630,000	1,200,000	1,000,000	1,000,000	1,000,000
Vehicle/Equipment Replacement	450,000	50,000	50,000	50,000	50,000
Subtotal	1,920,000	3,640,000	6,357,000	4,424,000	7,948,000
Total Sewer Expenses	4,525,000	6,777,000	9,619,000	9,567,000	14,000,000
Revenues Less Expenses	1,710,000	139,000	23,000	83,000	(4,341,000)
Ending Fund Reserves	8,112,000	8,251,000	8,274,000	8,357,000	4,016,000
Debt Service Coverage	-	-	-	4.91	3.40

Table 11 - City of Morro Bay	Sewer Cash Flow Projections				
	Projected Years 6 - 10				
	2022/23	2023/24	2024/25	2025/26	2026/27
Monthly Single Family Sewer Charge	$83.00	$85.00	$87.00	$90.00	$92.00
Sewer Rate Adjustment %	*0.0%*	*2.4%*	*2.4%*	*3.4%*	*2.2%*
Monthly Single Family WRF Surcharge	$25.00	$25.00	$25.00	$25.00	$25.00
Beginning Sewer Accounts	5,371	5,376	5,381	5,386	5,391
Growth: Single Family Equivalents	5	5	5	5	5
Growth %	0.1%	0.1%	0.1%	0.1%	0.1%
Sewer Development Impact Fee	$6,010	$6,130	$6,250	$6,380	$6,510
Interest Earnings Rate	2.0%	2.0%	2.0%	2.0%	2.0%
Cost Escalation	4.0%	4.0%	4.0%	4.0%	4.0%
Beginning Fund Reserves	$4,016,000	$4,245,000	$4,445,000	$4,604,000	$4,802,000
REVENUES					
Sewer Service Charges	7,267,000	7,449,000	7,631,000	7,901,000	8,084,000
Sewer WRF Facility Surcharges	2,173,000	2,173,000	2,173,000	2,173,000	2,173,000
Development Impact Fees	30,000	31,000	31,000	32,000	33,000
Interest Earnings	86,000	91,000	95,000	98,000	102,000
Rental Income/Other (Excl Penalties)	30,000	30,000	30,000	30,000	30,000
Subtotal	9,586,000	9,774,000	9,960,000	10,234,000	10,422,000
WRF Debt Financing					
SRF Planning Loan					
WIFIA Loan					
Bond Proceeds					
EXPENSES					
Operating & Maintenance					
Sewer Collection	1,732,000	1,801,000	1,873,000	1,948,000	2,026,000
Wastewater Treatment Existing	0	0	0	0	0
Wastewater Treatment New WRF	2,682,000	2,789,000	2,901,000	3,017,000	3,138,000
Conveyance to New WRF	277,000	288,000	300,000	312,000	324,000
Less Cayucos SD Reimbursements	*0*	*0*	*0*	*0*	*0*
Subtotal	4,691,000	4,878,000	5,074,000	5,277,000	5,488,000
Debt Service					
SRF Planning Loan: Sewer Share	804,000	804,000	804,000	804,000	804,000
WRF WIFIA Loan: Sewer Share	2,116,000	2,116,000	2,116,000	2,116,000	2,116,000
WRF Revenue Bonds: Sewer Share	696,000	696,000	696,000	696,000	696,000
Subtotal	3,616,000	3,616,000	3,616,000	3,616,000	3,616,000
Capital Improvements					
Sewer Cash Contribution to WRF	0	0	0	0	0
Sewer System Pay-Go CIP	1,000,000	1,030,000	1,061,000	1,093,000	1,126,000
Vehicle/Equipment Replacement	50,000	50,000	50,000	50,000	50,000
Subtotal	1,050,000	1,080,000	1,111,000	1,143,000	1,176,000
Total Sewer Expenses	9,357,000	9,574,000	9,801,000	10,036,000	10,280,000
Revenues Less Expenses	229,000	200,000	159,000	198,000	142,000
Ending Fund Reserves	4,245,000	4,445,000	4,604,000	4,802,000	4,944,000
Debt Service Coverage	1.35	1.35	1.35	1.37	1.36

Table 11 - City of Morro Bay	Sewer Cash Flow Projections				
	Projected Years 11 - 15				
	2027/28	2028/29	2029/30	2030/31	2031/32
Monthly Single Family Sewer Charge	$94.76	$97.60	$100.53	$103.55	$106.66
Sewer Rate Adjustment %	*3.0%*	*3.0%*	*3.0%*	*3.0%*	*3.0%*
Monthly Single Family WRF Surcharge	$25.00	$25.00	$25.00	$25.00	$25.00
Beginning Sewer Accounts	5,396	5,401	5,406	5,411	5,416
Growth: Single Family Equivalents	5	5	5	5	5
Growth %	0.1%	0.1%	0.1%	0.1%	0.1%
Sewer Development Impact Fee	$6,640	$6,770	$6,910	$7,050	$7,190
Interest Earnings Rate	2.0%	2.0%	2.0%	2.0%	2.0%
Cost Escalation	4.0%	4.0%	4.0%	4.0%	4.0%
Beginning Fund Reserves	$4,944,000	$5,085,000	$5,224,000	$5,359,000	$5,573,000
REVENUES					
Sewer Service Charges	8,334,000	8,592,000	8,858,000	9,132,000	9,415,000
Sewer WRF Facility Surcharges	2,173,000	2,173,000	2,173,000	2,173,000	2,173,000
Development Impact Fees	33,000	34,000	35,000	35,000	36,000
Interest Earnings	105,000	107,000	110,000	113,000	117,000
Rental Income/Other (Excl Penalties)	30,000	30,000	30,000	30,000	30,000
Subtotal	10,675,000	10,936,000	11,206,000	11,483,000	11,771,000
WRF Debt Financing					
SRF Planning Loan					
WIFIA Loan					
Bond Proceeds					
EXPENSES					
Operating & Maintenance					
Sewer Collection	2,107,000	2,191,000	2,279,000	2,370,000	2,465,000
Wastewater Treatment Existing	0	0	0	0	0
Wastewater Treatment New WRF	3,264,000	3,395,000	3,531,000	3,672,000	3,819,000
Conveyance to New WRF	337,000	350,000	364,000	379,000	394,000
Less Cayucos SD Reimbursements	*0*	*0*	*0*	*0*	*0*
Subtotal	5,708,000	5,936,000	6,174,000	6,421,000	6,678,000
Debt Service					
SRF Planning Loan: Sewer Share	804,000	804,000	804,000	0	0
WRF WIFIA Loan: Sewer Share	2,116,000	2,116,000	2,116,000	2,435,000	2,435,000
WRF Revenue Bonds: Sewer Share	696,000	696,000	696,000	1,095,000	1,095,000
Subtotal	3,616,000	3,616,000	3,616,000	3,530,000	3,530,000
Capital Improvements					
Sewer Cash Contribution to WRF	0	0	0	0	0
Sewer System Pay-Go CIP	1,160,000	1,195,000	1,231,000	1,268,000	1,306,000
Vehicle/Equipment Replacement	50,000	50,000	50,000	50,000	50,000
Subtotal	1,210,000	1,245,000	1,281,000	1,318,000	1,356,000
Total Sewer Expenses	10,534,000	10,797,000	11,071,000	11,269,000	11,564,000
Revenues Less Expenses	141,000	139,000	135,000	214,000	207,000
Ending Fund Reserves	5,085,000	5,224,000	5,359,000	5,573,000	5,780,000
Debt Service Coverage	1.37	1.38	1.39	1.43	1.44

Table 11 - City of Morro Bay	Sewer Cash Flow Projections				
	Projected Years 16 - 20				
	2032/33	2033/34	2034/35	2035/36	2036/37
Monthly Single Family Sewer Charge	$109.86	$113.16	$116.55	$120.05	$123.65
Sewer Rate Adjustment %	*3.0%*	*3.0%*	*3.0%*	*3.0%*	*3.0%*
Monthly Single Family WRF Surcharge	$25.00	$25.00	$25.00	$25.00	$25.00
Beginning Sewer Accounts	5,421	5,426	5,431	5,436	5,441
Growth: Single Family Equivalents	5	5	5	5	5
Growth %	0.1%	0.1%	0.1%	0.1%	0.1%
Sewer Development Impact Fee	$7,330	$7,480	$7,630	$7,780	$7,940
Interest Earnings Rate	2.0%	2.0%	2.0%	2.0%	2.0%
Cost Escalation	4.0%	4.0%	4.0%	4.0%	4.0%
Beginning Fund Reserves	$5,780,000	$5,976,000	$6,158,000	$6,324,000	$6,469,000
REVENUES					
Sewer Service Charges	9,706,000	10,006,000	10,316,000	10,635,000	10,964,000
Sewer WRF Facility Surcharges	2,173,000	2,173,000	2,173,000	2,173,000	2,173,000
Development Impact Fees	37,000	37,000	38,000	39,000	40,000
Interest Earnings	121,000	125,000	129,000	132,000	135,000
Rental Income/Other (Excl Penalties)	30,000	30,000	30,000	30,000	30,000
Subtotal	12,067,000	12,371,000	12,686,000	13,009,000	13,342,000
WRF Debt Financing					
SRF Planning Loan					
WIFIA Loan					
Bond Proceeds					
EXPENSES					
Operating & Maintenance					
Sewer Collection	2,564,000	2,667,000	2,774,000	2,885,000	3,000,000
Wastewater Treatment Existing	0	0	0	0	0
Wastewater Treatment New WRF	3,972,000	4,131,000	4,296,000	4,468,000	4,647,000
Conveyance to New WRF	410,000	426,000	443,000	461,000	479,000
Less Cayucos SD Reimbursements	*0*	*0*	*0*	*0*	*0*
Subtotal	6,946,000	7,224,000	7,513,000	7,814,000	8,126,000
Debt Service					
SRF Planning Loan: Sewer Share	0	0	0	0	0
WRF WIFIA Loan: Sewer Share	2,435,000	2,435,000	2,435,000	2,435,000	2,435,000
WRF Revenue Bonds: Sewer Share	1,095,000	1,095,000	1,095,000	1,095,000	1,095,000
Subtotal	3,530,000	3,530,000	3,530,000	3,530,000	3,530,000
Capital Improvements					
Sewer Cash Contribution to WRF	0	0	0	0	0
Sewer System Pay-Go CIP	1,345,000	1,385,000	1,427,000	1,470,000	1,514,000
Vehicle/Equipment Replacement	50,000	50,000	50,000	50,000	50,000
Subtotal	1,395,000	1,435,000	1,477,000	1,520,000	1,564,000
Total Sewer Expenses	11,871,000	12,189,000	12,520,000	12,864,000	13,220,000
Revenues Less Expenses	196,000	182,000	166,000	145,000	122,000
Ending Fund Reserves	5,976,000	6,158,000	6,324,000	6,469,000	6,591,000
Debt Service Coverage	1.45	1.46	1.47	1.47	1.48

Table 11 - City of Morro Bay	Sewer Cash Flow Projections				
	Projected Years 21 - 25				
	2037/38	2038/39	2039/40	2040/41	2041/42
Monthly Single Family Sewer Charge	$127.85	$132.20	$136.69	$141.34	$146.15
Sewer Rate Adjustment %	*3.4%*	*3.4%*	*3.4%*	*3.4%*	*3.4%*
Monthly Single Family WRF Surcharge	$25.00	$25.00	$25.00	$25.00	$25.00
Beginning Sewer Accounts	5,446	5,451	5,456	5,461	5,466
Growth: Single Family Equivalents	5	5	5	5	5
Growth %	0.1%	0.1%	0.1%	0.1%	0.1%
Sewer Development Impact Fee	$8,100	$8,260	$8,430	$8,600	$8,770
Interest Earnings Rate	2.0%	2.0%	2.0%	2.0%	2.0%
Cost Escalation	4.0%	4.0%	4.0%	4.0%	4.0%
Beginning Fund Reserves	$6,591,000	$6,729,000	$6,882,000	$7,049,000	$7,230,000
REVENUES					
Sewer Service Charges	11,347,000	11,744,000	12,154,000	12,579,000	13,019,000
Sewer WRF Facility Surcharges	2,173,000	2,173,000	2,173,000	2,173,000	2,173,000
Development Impact Fees	41,000	41,000	42,000	43,000	44,000
Interest Earnings	137,000	140,000	143,000	147,000	150,000
Rental Income/Other (Excl Penalties)	30,000	30,000	30,000	30,000	30,000
Subtotal	13,728,000	14,128,000	14,542,000	14,972,000	15,416,000
WRF Debt Financing					
SRF Planning Loan					
WIFIA Loan					
Bond Proceeds					
EXPENSES					
Operating & Maintenance					
Sewer Collection	3,120,000	3,245,000	3,375,000	3,510,000	3,650,000
Wastewater Treatment Existing	0	0	0	0	0
Wastewater Treatment New WRF	4,833,000	5,026,000	5,227,000	5,436,000	5,653,000
Conveyance to New WRF	498,000	518,000	539,000	561,000	583,000
Less Cayucos SD Reimbursements	*0*	*0*	*0*	*0*	*0*
Subtotal	8,451,000	8,789,000	9,141,000	9,507,000	9,886,000
Debt Service					
SRF Planning Loan: Sewer Share	0	0	0	0	0
WRF WIFIA Loan: Sewer Share	2,435,000	2,435,000	2,435,000	2,435,000	2,435,000
WRF Revenue Bonds: Sewer Share	1,095,000	1,095,000	1,095,000	1,095,000	1,095,000
Subtotal	3,530,000	3,530,000	3,530,000	3,530,000	3,530,000
Capital Improvements					
Sewer Cash Contribution to WRF	0	0	0	0	0
Sewer System Pay-Go CIP	1,559,000	1,606,000	1,654,000	1,704,000	1,755,000
Vehicle/Equipment Replacement	50,000	50,000	50,000	50,000	50,000
Subtotal	1,609,000	1,656,000	1,704,000	1,754,000	1,805,000
Total Sewer Expenses	13,590,000	13,975,000	14,375,000	14,791,000	15,221,000
Revenues Less Expenses	138,000	153,000	167,000	181,000	195,000
Ending Fund Reserves	6,729,000	6,882,000	7,049,000	7,230,000	7,425,000
Debt Service Coverage	1.49	1.51	1.53	1.55	1.57

Table 11 - City of Morro Bay	Sewer Cash Flow Projections				
	Projected Years 26 - 30				
	2042/43	2043/44	2044/45	2045/46	2046/47
Monthly Single Family Sewer Charge	$151.12	$156.26	$161.57	$167.06	$172.74
Sewer Rate Adjustment %	*3.4%*	*3.4%*	*3.4%*	*3.4%*	*3.4%*
Monthly Single Family WRF Surcharge	$25.00	$25.00	$25.00	$25.00	$25.00
Beginning Sewer Accounts	5,471	5,476	5,481	5,486	5,491
Growth: Single Family Equivalents	5	5	5	5	5
Growth %	0.1%	0.1%	0.1%	0.1%	0.1%
Sewer Development Impact Fee	$8,950	$9,130	$9,310	$9,500	$9,690
Interest Earnings Rate	2.0%	2.0%	2.0%	2.0%	2.0%
Cost Escalation	4.0%	4.0%	4.0%	4.0%	4.0%
Beginning Fund Reserves	$7,425,000	$7,632,000	$7,850,000	$8,077,000	$8,311,000
REVENUES					
Sewer Service Charges	13,474,000	13,945,000	14,432,000	14,936,000	15,458,000
Sewer WRF Facility Surcharges	2,173,000	2,173,000	2,173,000	2,173,000	2,173,000
Development Impact Fees	45,000	46,000	47,000	48,000	48,000
Interest Earnings	154,000	158,000	163,000	167,000	172,000
Rental Income/Other (Excl Penalties)	30,000	30,000	30,000	30,000	30,000
Subtotal	15,876,000	16,352,000	16,845,000	17,354,000	17,881,000
WRF Debt Financing					
SRF Planning Loan					
WIFIA Loan					
Bond Proceeds					
EXPENSES					
Operating & Maintenance					
Sewer Collection	3,796,000	3,948,000	4,106,000	4,270,000	4,441,000
Wastewater Treatment Existing	0	0	0	0	0
Wastewater Treatment New WRF	5,879,000	6,114,000	6,359,000	6,613,000	6,878,000
Conveyance to New WRF	606,000	630,000	655,000	681,000	708,000
Less Cayucos SD Reimbursements	*0*	*0*	*0*	*0*	*0*
Subtotal	10,281,000	10,692,000	11,120,000	11,564,000	12,027,000
Debt Service					
SRF Planning Loan: Sewer Share	0	0	0	0	0
WRF WIFIA Loan: Sewer Share	2,435,000	2,435,000	2,435,000	2,435,000	2,435,000
WRF Revenue Bonds: Sewer Share	1,095,000	1,095,000	1,095,000	1,095,000	1,095,000
Subtotal	3,530,000	3,530,000	3,530,000	3,530,000	3,530,000
Capital Improvements					
Sewer Cash Contribution to WRF	0	0	0	0	0
Sewer System Pay-Go CIP	1,808,000	1,862,000	1,918,000	1,976,000	2,035,000
Vehicle/Equipment Replacement	50,000	50,000	50,000	50,000	50,000
Subtotal	1,858,000	1,912,000	1,968,000	2,026,000	2,085,000
Total Sewer Expenses	15,669,000	16,134,000	16,618,000	17,120,000	17,642,000
Revenues Less Expenses	207,000	218,000	227,000	234,000	239,000
Ending Fund Reserves	7,632,000	7,850,000	8,077,000	8,311,000	8,550,000
Debt Service Coverage	1.58	1.60	1.62	1.64	1.66

Table 11 - City of Morro Bay	Sewer Cash Flow Projections				
	Projected Years 30 - 35				
	2047/48	2048/49	2049/50	2050/51	2051/52
Monthly Single Family Sewer Charge	$178.61	$184.68	$190.96	$197.45	$204.16
Sewer Rate Adjustment %	*3.4%*	*3.4%*	*3.4%*	*3.4%*	*3.4%*
Monthly Single Family WRF Surcharge	$25.00	$25.00	$25.00	$25.00	$25.00
Beginning Sewer Accounts	5,496	5,501	5,506	5,511	5,516
Growth: Single Family Equivalents	5	5	5	5	5
Growth %	0.1%	0.1%	0.1%	0.1%	0.1%
Sewer Development Impact Fee	$9,880	$10,080	$10,280	$10,490	$10,700
Interest Earnings Rate	2.0%	2.0%	2.0%	2.0%	2.0%
Cost Escalation	4.0%	4.0%	4.0%	4.0%	4.0%
Beginning Fund Reserves	$8,550,000	$8,793,000	$9,037,000	$9,279,000	$9,518,000
REVENUES					
Sewer Service Charges	15,998,000	16,557,000	17,135,000	17,734,000	18,354,000
Sewer WRF Facility Surcharges	2,173,000	2,173,000	2,173,000	2,173,000	2,173,000
Development Impact Fees	49,000	50,000	51,000	52,000	54,000
Interest Earnings	177,000	181,000	186,000	191,000	196,000
Rental Income/Other (Excl Penalties)	30,000	30,000	30,000	30,000	30,000
Subtotal	18,427,000	18,991,000	19,575,000	20,180,000	20,807,000
WRF Debt Financing					
SRF Planning Loan					
WIFIA Loan					
Bond Proceeds					
EXPENSES					
Operating & Maintenance					
Sewer Collection	4,619,000	4,804,000	4,996,000	5,196,000	5,404,000
Wastewater Treatment Existing	0	0	0	0	0
Wastewater Treatment New WRF	7,153,000	7,439,000	7,737,000	8,046,000	8,368,000
Conveyance to New WRF	736,000	765,000	796,000	828,000	861,000
Less Cayucos SD Reimbursements	*0*	*0*	*0*	*0*	*0*
Subtotal	12,508,000	13,008,000	13,529,000	14,070,000	14,633,000
Debt Service					
SRF Planning Loan: Sewer Share	0	0	0	0	0
WRF WIFIA Loan: Sewer Share	2,435,000	2,435,000	2,435,000	2,435,000	2,435,000
WRF Revenue Bonds: Sewer Share	1,095,000	1,095,000	1,095,000	1,095,000	1,095,000
Subtotal	3,530,000	3,530,000	3,530,000	3,530,000	3,530,000
Capital Improvements					
Sewer Cash Contribution to WRF	0	0	0	0	0
Sewer System Pay-Go CIP	2,096,000	2,159,000	2,224,000	2,291,000	2,360,000
Vehicle/Equipment Replacement	50,000	50,000	50,000	50,000	50,000
Subtotal	2,146,000	2,209,000	2,274,000	2,341,000	2,410,000
Total Sewer Expenses	18,184,000	18,747,000	19,333,000	19,941,000	20,573,000
Revenues Less Expenses	243,000	244,000	242,000	239,000	234,000
Ending Fund Reserves	8,793,000	9,037,000	9,279,000	9,518,000	9,752,000
Debt Service Coverage	1.68	1.69	1.71	1.73	1.75

Table 11 - City of Morro Bay	Sewer Cash Flow Projections				
	Projected Years 35 - 40				
	2052/53	2053/54	2054/55	2055/56	2056/57
Monthly Single Family Sewer Charge	$204.16	$206.20	$213.42	$220.89	$228.62
Sewer Rate Adjustment %	*0.0%*	*1.0%*	*3.5%*	*3.5%*	*3.5%*
Monthly Single Family WRF Surcharge	$25.00	$25.00	$25.00	$25.00	$25.00
Beginning Sewer Accounts	5,521	5,526	5,531	5,536	5,541
Growth: Single Family Equivalents	5	5	5	5	5
Growth %	0.1%	0.1%	0.1%	0.1%	0.1%
Sewer Development Impact Fee	$10,910	$11,130	$11,350	$11,580	$11,810
Interest Earnings Rate	2.0%	2.0%	2.0%	2.0%	2.0%
Cost Escalation	4.0%	4.0%	4.0%	4.0%	4.0%
Beginning Fund Reserves	$9,752,000	$10,448,000	$10,677,000	$10,870,000	$11,023,000
REVENUES					
Sewer Service Charges	18,371,000	18,571,000	19,238,000	19,929,000	20,645,000
Sewer WRF Facility Surcharges	2,173,000	2,173,000	2,173,000	2,173,000	2,173,000
Development Impact Fees	55,000	56,000	57,000	58,000	59,000
Interest Earnings	201,000	215,000	219,000	223,000	226,000
Rental Income/Other (Excl Penalties)	30,000	30,000	30,000	30,000	30,000
Subtotal	20,830,000	21,045,000	21,717,000	22,413,000	23,133,000
WRF Debt Financing					
SRF Planning Loan					
WIFIA Loan					
Bond Proceeds					
EXPENSES					
Operating & Maintenance					
Sewer Collection	5,620,000	5,845,000	6,079,000	6,322,000	6,575,000
Wastewater Treatment Existing	0	0	0	0	0
Wastewater Treatment New WRF	8,703,000	9,051,000	9,413,000	9,790,000	10,182,000
Conveyance to New WRF	895,000	931,000	968,000	1,007,000	1,047,000
Less Cayucos SD Reimbursements	*0*	*0*	*0*	*0*	*0*
Subtotal	15,218,000	15,827,000	16,460,000	17,119,000	17,804,000
Debt Service					
SRF Planning Loan: Sewer Share	0	0	0	0	0
WRF WIFIA Loan: Sewer Share	2,435,000	2,435,000	2,435,000	2,435,000	2,435,000
WRF Revenue Bonds: Sewer Share	0	0	0	0	0
Subtotal	2,435,000	2,435,000	2,435,000	2,435,000	2,435,000
Capital Improvements					
Sewer Cash Contribution to WRF	0	0	0	0	0
Sewer System Pay-Go CIP	2,431,000	2,504,000	2,579,000	2,656,000	2,736,000
Vehicle/Equipment Replacement	50,000	50,000	50,000	50,000	50,000
Subtotal	2,481,000	2,554,000	2,629,000	2,706,000	2,786,000
Total Sewer Expenses	20,134,000	20,816,000	21,524,000	22,260,000	23,025,000
Revenues Less Expenses	696,000	229,000	193,000	153,000	108,000
Ending Fund Reserves	10,448,000	10,677,000	10,870,000	11,023,000	11,131,000
Debt Service Coverage	2.30	2.14	2.16	2.17	2.19

Table 12 - City of Morro Bay	Water Cash Flow Projections				
	Projected Years 1 - 5				
	2017/18	2018/19	2019/20	2020/21	2021/22
Fixed Monthly Water Charge	$28.00	$30.00	$32.00	$32.00	$32.00
Water Rate Adjustment %		7.1%	6.7%	0.0%	0.0%
Fixed Monthly Single Family WRF Surcharge	-	-	$16.00	$16.00	$16.00
Beginning Water Accounts	5,440	5,445	5,450	5,455	5,460
Growth: Single Family Equivalents	5	5	5	5	5
Growth %	0.1%	0.1%	0.1%	0.1%	0.1%
Change in Water Sales		0.0%	0.0%	0.0%	0.0%
Water Development Impact Fee	$5,392	$5,500	$5,610	$5,720	$5,830
Interest Earnings Rate	1.25%	1.75%	2.0%	2.0%	2.0%
State Water Project Cost Escalation			4.0%	4.0%	4.0%
Operating Cost Escalation			4.0%	4.0%	4.0%
Beginning Fund Reserves	$3,132,000	$4,456,000	$4,537,000	$4,622,000	$4,687,000
REVENUES	Estimated	Projected			
Water Service Charges	5,280,000	5,700,000	6,086,000	6,092,000	6,098,000
Water WRF Facility Surcharges	0	0	1,654,000	1,654,000	1,654,000
Development Impact Fees	30,000	28,000	28,000	29,000	29,000
Interest Earnings	39,000	78,000	91,000	92,000	94,000
Other (Excludes Penalties)	16,000	20,000	20,000	20,000	20,000
Subtotal	5,365,000	5,826,000	7,879,000	7,887,000	7,895,000
EXPENSES					
Operating & Maintenance	Estimated	Projected			
Water System Operations	1,591,000	2,130,000	2,215,000	2,304,000	2,396,000
State Water Project Payments	1,535,000	1,595,000	1,659,000	1,725,000	1,794,000
Recycled Water Operations	-	-	-	-	110,000
Subtotal	3,126,000	3,725,000	3,874,000	4,029,000	4,300,000
Debt Service					
SRF Planning Loan: Water Share	-	-	-	326,000	326,000
WRF WIFIA Loan: Water Share	-	-	-	-	-
WRF Revenue Bonds: Water Share	-	-	-	247,000	494,000
Share of CCWA 2016 Bonds (Thru Oct-2021)	665,000	670,000	670,000	670,000	670,000
Subtotal	665,000	670,000	670,000	1,243,000	1,490,000
Capital Improvements					
Water System Pay-Go CIP	250,000	1,000,000	1,000,000	1,300,000	1,800,000
Water Cash Contribution to WRF	0	300,000	2,200,000	1,200,000	900,000
Vehicle/Equipment Replacement	0	50,000	50,000	50,000	50,000
Subtotal	250,000	1,350,000	3,250,000	2,550,000	2,750,000
Total Expenses	4,041,000	5,745,000	7,794,000	7,822,000	8,540,000
Revenues Less Expenses	1,324,000	81,000	85,000	65,000	(645,000)
Ending Fund Reserves	4,456,000	4,537,000	4,622,000	4,687,000	4,042,000
CCWA Bond Debt Service Coverage	1.72	1.63	2.43	2.33	2.19
City Debt Service Coverage	3.37	3.14	5.98	3.10	2.41

Table 12 - City of Morro Bay	Water Cash Flow Projections				
	Projected Years 6 - 10				
	2022/23	2023/24	2024/25	2025/26	2026/27
Fixed Monthly Water Charge	$32.00	$32.00	$32.00	$33.00	$34.00
Water Rate Adjustment %	0.0%	0.0%	0.0%	3.1%	3.0%
Fixed Monthly Single Family WRF Surcharge	$16.00	$16.00	$16.00	$16.00	$16.00
Beginning Water Accounts	5,465	5,470	5,475	5,480	5,485
Growth: Single Family Equivalents	5	5	5	5	5
Growth %	0.1%	0.1%	0.1%	0.1%	0.1%
Change in Water Sales	0.0%	0.0%	0.0%	0.0%	0.0%
Water Development Impact Fee	$5,950	$6,070	$6,190	$6,310	$6,440
Interest Earnings Rate	2.0%	2.0%	2.0%	2.0%	2.0%
State Water Project Cost Escalation	4.0%	4.0%	4.0%	4.0%	4.0%
Operating Cost Escalation	4.0%	4.0%	4.0%	4.0%	4.0%
Beginning Fund Reserves	$4,042,000	$4,031,000	$4,442,000	$4,647,000	$4,825,000
REVENUES					
Water Service Charges	6,104,000	6,110,000	6,116,000	6,313,000	6,510,000
Water WRF Facility Surcharges	1,654,000	1,654,000	1,654,000	1,654,000	1,654,000
Development Impact Fees	30,000	30,000	31,000	32,000	32,000
Interest Earnings	86,000	86,000	94,000	99,000	102,000
Other (Excludes Penalties)	20,000	20,000	20,000	20,000	20,000
Subtotal	7,894,000	7,900,000	7,915,000	8,118,000	8,318,000
EXPENSES					
Operating & Maintenance					
Water System Operations	2,492,000	2,592,000	2,696,000	2,804,000	2,916,000
State Water Project Payments	1,866,000	1,941,000	2,019,000	2,100,000	2,184,000
Recycled Water Operations	220,000	229,000	238,000	248,000	258,000
Subtotal	4,578,000	4,762,000	4,953,000	5,152,000	5,358,000
Debt Service					
SRF Planning Loan: Water Share	326,000	326,000	326,000	326,000	326,000
WRF WIFIA Loan: Water Share	857,000	857,000	857,000	857,000	857,000
WRF Revenue Bonds: Water Share	494,000	494,000	494,000	494,000	494,000
Share of CCWA 2016 Bonds (Thru Oct-2021)	0	0	0	0	0
Subtotal	1,677,000	1,677,000	1,677,000	1,677,000	1,677,000
Capital Improvements					
Water System Pay-Go CIP	1,600,000	1,000,000	1,030,000	1,061,000	1,093,000
Water Cash Contribution to WRF	0	0	0	0	0
Vehicle/Equipment Replacement	50,000	50,000	50,000	50,000	50,000
Subtotal	1,650,000	1,050,000	1,080,000	1,111,000	1,143,000
Total Expenses	7,905,000	7,489,000	7,710,000	7,940,000	8,178,000
Revenues Less Expenses	(11,000)	411,000	205,000	178,000	140,000
Ending Fund Reserves	4,031,000	4,442,000	4,647,000	4,825,000	4,965,000
CCWA Bond Debt Service Coverage	-	-	-	-	-
City Debt Service Coverage	1.98	1.87	1.77	1.77	1.77

Table 12 - City of Morro Bay	Water Cash Flow Projections				
	Projected Years 11 - 15				
	2027/28	2028/29	2029/30	2030/31	2031/32
Fixed Monthly Water Charge	$35.19	$36.42	$37.69	$39.01	$40.38
Water Rate Adjustment %	3.5%	3.5%	3.5%	3.5%	3.5%
Fixed Monthly Single Family WRF Surcharge	$16.00	$16.00	$16.00	$16.00	$16.00
Beginning Water Accounts	5,490	5,495	5,500	5,505	5,510
Growth: Single Family Equivalents	5	5	5	5	5
Growth %	0.1%	0.1%	0.1%	0.1%	0.1%
Change in Water Sales	0.0%	0.0%	0.0%	0.0%	0.0%
Water Development Impact Fee	$6,570	$6,700	$6,830	$6,970	$7,110
Interest Earnings Rate	2.0%	2.0%	2.0%	2.0%	2.0%
State Water Project Cost Escalation	4.0%	4.0%	4.0%	4.0%	4.0%
Operating Cost Escalation	4.0%	4.0%	4.0%	4.0%	4.0%
Beginning Fund Reserves	$4,965,000	$5,144,000	$5,315,000	$5,476,000	$5,540,000
REVENUES					
Water Service Charges	6,744,000	6,986,000	7,237,000	7,497,000	7,766,000
Water WRF Facility Surcharges	1,654,000	1,654,000	1,654,000	1,654,000	1,654,000
Development Impact Fees	33,000	34,000	34,000	35,000	36,000
Interest Earnings	105,000	109,000	112,000	115,000	116,000
Other (Excludes Penalties)	20,000	20,000	20,000	20,000	20,000
Subtotal	8,556,000	8,803,000	9,057,000	9,321,000	9,592,000
EXPENSES					
Operating & Maintenance					
Water System Operations	3,033,000	3,154,000	3,280,000	3,411,000	3,547,000
State Water Project Payments	2,271,000	2,362,000	2,456,000	2,554,000	2,656,000
Recycled Water Operations	220,000	229,000	238,000	248,000	258,000
Subtotal	5,524,000	5,745,000	5,974,000	6,213,000	6,461,000
Debt Service					
SRF Planning Loan: Water Share	326,000	326,000	326,000	0	0
WRF WIFIA Loan: Water Share	857,000	857,000	857,000	987,000	987,000
WRF Revenue Bonds: Water Share	494,000	494,000	494,000	776,000	776,000
Share of CCWA 2016 Bonds (Thru Oct-2021)	0	0	0	0	0
Subtotal	1,677,000	1,677,000	1,677,000	1,763,000	1,763,000
Capital Improvements					
Water System Pay-Go CIP	1,126,000	1,160,000	1,195,000	1,231,000	1,268,000
Water Cash Contribution to WRF	0	0	0	0	0
Vehicle/Equipment Replacement	50,000	50,000	50,000	50,000	50,000
Subtotal	1,176,000	1,210,000	1,245,000	1,281,000	1,318,000
Total Expenses	8,377,000	8,632,000	8,896,000	9,257,000	9,542,000
Revenues Less Expenses	179,000	171,000	161,000	64,000	50,000
Ending Fund Reserves	5,144,000	5,315,000	5,476,000	5,540,000	5,590,000
CCWA Bond Debt Service Coverage	-	-	-	-	-
City Debt Service Coverage	1.81	1.82	1.84	1.76	1.78

Table 12 - City of Morro Bay	Water Cash Flow Projections				
	Projected Years 16 - 20				
	2032/33	2033/34	2034/35	2035/36	2036/37
Fixed Monthly Water Charge	$41.79	$43.25	$44.76	$46.33	$47.95
Water Rate Adjustment %	3.5%	3.5%	3.5%	3.5%	3.5%
Fixed Monthly Single Family WRF Surcharge	$16.00	$16.00	$16.00	$16.00	$16.00
Beginning Water Accounts	5,515	5,520	5,525	5,530	5,535
Growth: Single Family Equivalents	5	5	5	5	5
Growth %	0.1%	0.1%	0.1%	0.1%	0.1%
Change in Water Sales	0.0%	0.0%	0.0%	0.0%	0.0%
Water Development Impact Fee	$7,250	$7,400	$7,550	$7,700	$7,850
Interest Earnings Rate	2.0%	2.0%	2.0%	2.0%	2.0%
State Water Project Cost Escalation	4.0%	4.0%	4.0%	4.0%	4.0%
Operating Cost Escalation	4.0%	4.0%	4.0%	4.0%	4.0%
Beginning Fund Reserves	$5,590,000	$5,672,000	$5,740,000	$5,792,000	$5,825,000
REVENUES					
Water Service Charges	8,045,000	8,334,000	8,633,000	8,943,000	9,264,000
Water WRF Facility Surcharges	1,654,000	1,654,000	1,654,000	1,654,000	1,654,000
Development Impact Fees	36,000	37,000	38,000	39,000	39,000
Interest Earnings	117,000	119,000	120,000	121,000	122,000
Other (Excludes Penalties)	20,000	20,000	20,000	20,000	20,000
Subtotal	9,872,000	10,164,000	10,465,000	10,777,000	11,099,000
EXPENSES					
Operating & Maintenance					
Water System Operations	3,689,000	3,837,000	3,990,000	4,150,000	4,316,000
State Water Project Payments	2,762,000	2,872,000	2,987,000	3,106,000	3,230,000
Recycled Water Operations	220,000	229,000	238,000	248,000	258,000
Subtotal	6,671,000	6,938,000	7,215,000	7,504,000	7,804,000
Debt Service					
SRF Planning Loan: Water Share	0	0	0	0	0
WRF WIFIA Loan: Water Share	987,000	987,000	987,000	987,000	987,000
WRF Revenue Bonds: Water Share	776,000	776,000	776,000	776,000	776,000
Share of CCWA 2016 Bonds (Thru Oct-2021)	0	0	0	0	0
Subtotal	1,763,000	1,763,000	1,763,000	1,763,000	1,763,000
Capital Improvements					
Water System Pay-Go CIP	1,306,000	1,345,000	1,385,000	1,427,000	1,470,000
Water Cash Contribution to WRF	0	0	0	0	0
Vehicle/Equipment Replacement	50,000	50,000	50,000	50,000	50,000
Subtotal	1,356,000	1,395,000	1,435,000	1,477,000	1,520,000
Total Expenses	9,790,000	10,096,000	10,413,000	10,744,000	11,087,000
Revenues Less Expenses	82,000	68,000	52,000	33,000	12,000
Ending Fund Reserves	5,672,000	5,740,000	5,792,000	5,825,000	5,837,000
CCWA Bond Debt Service Coverage	-	-	-	-	-
City Debt Service Coverage	1.82	1.83	1.84	1.86	1.87

Table 12 - City of Morro Bay	Water Cash Flow Projections				
	Projected Years 21 - 25				
	2037/38	2038/39	2039/40	2040/41	2041/42
Fixed Monthly Water Charge	$49.72	$51.56	$53.47	$55.45	$57.50
Water Rate Adjustment %	3.7%	3.7%	3.7%	3.7%	3.7%
Fixed Monthly Single Family WRF Surcharge	$16.00	$16.00	$16.00	$16.00	$16.00
Beginning Water Accounts	5,540	5,545	5,550	5,555	5,560
Growth: Single Family Equivalents	5	5	5	5	5
Growth %	0.1%	0.1%	0.1%	0.1%	0.1%
Change in Water Sales	0.0%	0.0%	0.0%	0.0%	0.0%
Water Development Impact Fee	$8,010	$8,170	$8,330	$8,500	$8,670
Interest Earnings Rate	2.0%	2.0%	2.0%	2.0%	2.0%
State Water Project Cost Escalation	4.0%	4.0%	4.0%	4.0%	4.0%
Operating Cost Escalation	4.0%	4.0%	4.0%	4.0%	4.0%
Beginning Fund Reserves	$5,837,000	$5,893,000	$5,948,000	$6,002,000	$6,054,000
REVENUES					
Water Service Charges	9,615,000	9,980,000	10,359,000	10,752,000	11,160,000
Water WRF Facility Surcharges	1,654,000	1,654,000	1,654,000	1,654,000	1,654,000
Development Impact Fees	40,000	41,000	42,000	43,000	43,000
Interest Earnings	122,000	123,000	125,000	126,000	127,000
Other (Excludes Penalties)	20,000	20,000	20,000	20,000	20,000
Subtotal	11,451,000	11,818,000	12,200,000	12,595,000	13,004,000
EXPENSES					
Operating & Maintenance					
Water System Operations	4,489,000	4,669,000	4,856,000	5,050,000	5,252,000
State Water Project Payments	3,359,000	3,493,000	3,633,000	3,778,000	3,929,000
Recycled Water Operations	220,000	229,000	238,000	248,000	258,000
Subtotal	8,068,000	8,391,000	8,727,000	9,076,000	9,439,000
Debt Service					
SRF Planning Loan: Water Share	0	0	0	0	0
WRF WIFIA Loan: Water Share	987,000	987,000	987,000	987,000	987,000
WRF Revenue Bonds: Water Share	776,000	776,000	776,000	776,000	776,000
Share of CCWA 2016 Bonds (Thru Oct-2021)	0	0	0	0	0
Subtotal	1,763,000	1,763,000	1,763,000	1,763,000	1,763,000
Capital Improvements					
Water System Pay-Go CIP	1,514,000	1,559,000	1,606,000	1,654,000	1,704,000
Water Cash Contribution to WRF	0	0	0	0	0
Vehicle/Equipment Replacement	50,000	50,000	50,000	50,000	50,000
Subtotal	1,564,000	1,609,000	1,656,000	1,704,000	1,754,000
Total Expenses	11,395,000	11,763,000	12,146,000	12,543,000	12,956,000
Revenues Less Expenses	56,000	55,000	54,000	52,000	48,000
Ending Fund Reserves	5,893,000	5,948,000	6,002,000	6,054,000	6,102,000
CCWA Bond Debt Service Coverage	-	-	-	-	-
City Debt Service Coverage	1.92	1.94	1.97	2.00	2.02

Table 12 - City of Morro Bay	Water Cash Flow Projections				
	Projected Years 26 - 30				
	2042/43	2043/44	2044/45	2045/46	2046/47
Fixed Monthly Water Charge	$59.63	$61.84	$64.13	$66.50	$68.96
Water Rate Adjustment %	3.7%	3.7%	3.7%	3.7%	3.7%
Fixed Monthly Single Family WRF Surcharge	$16.00	$16.00	$16.00	$16.00	$16.00
Beginning Water Accounts	5,565	5,570	5,575	5,580	5,585
Growth: Single Family Equivalents	5	5	5	5	5
Growth %	0.1%	0.1%	0.1%	0.1%	0.1%
Change in Water Sales	0.0%	0.0%	0.0%	0.0%	0.0%
Water Development Impact Fee	$8,840	$9,020	$9,200	$9,380	$9,570
Interest Earnings Rate	2.0%	2.0%	2.0%	2.0%	2.0%
State Water Project Cost Escalation	4.0%	4.0%	4.0%	4.0%	4.0%
Operating Cost Escalation	4.0%	4.0%	4.0%	4.0%	4.0%
Beginning Fund Reserves	$6,102,000	$6,195,000	$6,287,000	$6,377,000	$6,464,000
REVENUES					
Water Service Charges	11,583,000	12,022,000	12,478,000	12,951,000	13,442,000
Water WRF Facility Surcharges	1,654,000	1,654,000	1,654,000	1,654,000	1,654,000
Development Impact Fees	44,000	45,000	46,000	47,000	48,000
Interest Earnings	128,000	130,000	131,000	133,000	135,000
Other (Excludes Penalties)	20,000	20,000	20,000	20,000	20,000
Subtotal	13,429,000	13,871,000	14,329,000	14,805,000	15,299,000
EXPENSES					
Operating & Maintenance					
Water System Operations	5,462,000	5,680,000	5,907,000	6,143,000	6,389,000
State Water Project Payments	4,086,000	4,249,000	4,419,000	4,596,000	4,780,000
Recycled Water Operations	220,000	229,000	238,000	248,000	258,000
Subtotal	9,768,000	10,158,000	10,564,000	10,987,000	11,427,000
Debt Service					
SRF Planning Loan: Water Share	0	0	0	0	0
WRF WIFIA Loan: Water Share	987,000	987,000	987,000	987,000	987,000
WRF Revenue Bonds: Water Share	776,000	776,000	776,000	776,000	776,000
Share of CCWA 2016 Bonds (Thru Oct-2021)	0	0	0	0	0
Subtotal	1,763,000	1,763,000	1,763,000	1,763,000	1,763,000
Capital Improvements					
Water System Pay-Go CIP	1,755,000	1,808,000	1,862,000	1,918,000	1,976,000
Water Cash Contribution to WRF	0	0	0	0	0
Vehicle/Equipment Replacement	50,000	50,000	50,000	50,000	50,000
Subtotal	1,805,000	1,858,000	1,912,000	1,968,000	2,026,000
Total Expenses	13,336,000	13,779,000	14,239,000	14,718,000	15,216,000
Revenues Less Expenses	93,000	92,000	90,000	87,000	83,000
Ending Fund Reserves	6,195,000	6,287,000	6,377,000	6,464,000	6,547,000
CCWA Bond Debt Service Coverage	-	-	-	-	-
City Debt Service Coverage	2.08	2.11	2.14	2.17	2.20

Table 12 - City of Morro Bay	Water Cash Flow Projections				
	Projected Years 30 - 35				
	2047/48	2048/49	2049/50	2050/51	2051/52
Fixed Monthly Water Charge	$71.51	$74.16	$76.90	$79.75	$82.70
Water Rate Adjustment %	3.7%	3.7%	3.7%	3.7%	3.7%
Fixed Monthly Single Family WRF Surcharge	$16.00	$16.00	$16.00	$16.00	$16.00
Beginning Water Accounts	5,590	5,595	5,600	5,605	5,610
Growth: Single Family Equivalents	5	5	5	5	5
Growth %	0.1%	0.1%	0.1%	0.1%	0.1%
Change in Water Sales	0.0%	0.0%	0.0%	0.0%	0.0%
Water Development Impact Fee	$9,760	$9,960	$10,160	$10,360	$10,570
Interest Earnings Rate	2.0%	2.0%	2.0%	2.0%	2.0%
State Water Project Cost Escalation	4.0%	4.0%	4.0%	4.0%	4.0%
Operating Cost Escalation	4.0%	4.0%	4.0%	4.0%	4.0%
Beginning Fund Reserves	$6,547,000	$6,675,000	$6,800,000	$6,923,000	$7,042,000
REVENUES					
Water Service Charges	13,952,000	14,481,000	15,030,000	15,600,000	16,192,000
Water WRF Facility Surcharges	1,654,000	1,654,000	1,654,000	1,654,000	1,654,000
Development Impact Fees	49,000	50,000	51,000	52,000	53,000
Interest Earnings	137,000	139,000	142,000	144,000	146,000
Other (Excludes Penalties)	20,000	20,000	20,000	20,000	20,000
Subtotal	15,812,000	16,344,000	16,897,000	17,470,000	18,065,000
EXPENSES					
Operating & Maintenance					
Water System Operations	6,645,000	6,911,000	7,187,000	7,474,000	7,773,000
State Water Project Payments	4,971,000	5,170,000	5,377,000	5,592,000	5,816,000
Recycled Water Operations	220,000	229,000	238,000	248,000	258,000
Subtotal	11,836,000	12,310,000	12,802,000	13,314,000	13,847,000
Debt Service					
SRF Planning Loan: Water Share	0	0	0	0	0
WRF WIFIA Loan: Water Share	987,000	987,000	987,000	987,000	987,000
WRF Revenue Bonds: Water Share	776,000	776,000	776,000	776,000	776,000
Share of CCWA 2016 Bonds (Thru Oct-2021)	0	0	0	0	0
Subtotal	1,763,000	1,763,000	1,763,000	1,763,000	1,763,000
Capital Improvements					
Water System Pay-Go CIP	2,035,000	2,096,000	2,159,000	2,224,000	2,291,000
Water Cash Contribution to WRF	0	0	0	0	0
Vehicle/Equipment Replacement	50,000	50,000	50,000	50,000	50,000
Subtotal	2,085,000	2,146,000	2,209,000	2,274,000	2,341,000
Total Expenses	15,684,000	16,219,000	16,774,000	17,351,000	17,951,000
Revenues Less Expenses	128,000	125,000	123,000	119,000	114,000
Ending Fund Reserves	6,675,000	6,800,000	6,923,000	7,042,000	7,156,000
CCWA Bond Debt Service Coverage	-	-	-	-	-
City Debt Service Coverage	2.26	2.29	2.32	2.36	2.39

Table 12 - City of Morro Bay	Water Cash Flow Projections				
	Projected Years 35 - 40				
	2052/53	2053/54	2054/55	2055/56	2056/57
Fixed Monthly Water Charge	$85.59	$88.59	$91.69	$94.90	$98.22
Water Rate Adjustment %	3.5%	3.5%	3.5%	3.5%	3.5%
Fixed Monthly Single Family WRF Surcharge	$10.00	$10.00	$10.00	$10.00	$10.00
Beginning Water Accounts	5,615	5,620	5,625	5,630	5,635
Growth: Single Family Equivalents	5	5	5	5	5
Growth %	0.1%	0.1%	0.1%	0.1%	0.1%
Change in Water Sales	0.0%	0.0%	0.0%	0.0%	0.0%
Water Development Impact Fee	$10,780	$11,000	$11,220	$11,440	$11,670
Interest Earnings Rate	2.0%	2.0%	2.0%	2.0%	2.0%
State Water Project Cost Escalation	4.0%	4.0%	4.0%	4.0%	4.0%
Operating Cost Escalation	4.0%	4.0%	4.0%	4.0%	4.0%
Beginning Fund Reserves	$7,156,000	$7,437,000	$7,682,000	$7,887,000	$8,047,000
REVENUES					
Water Service Charges	16,774,000	17,377,000	18,001,000	18,648,000	19,318,000
Water WRF Facility Surcharges	1,034,000	1,034,000	1,034,000	1,034,000	1,034,000
Development Impact Fees	54,000	55,000	56,000	57,000	58,000
Interest Earnings	149,000	154,000	159,000	163,000	167,000
Other (Excludes Penalties)	20,000	20,000	20,000	20,000	20,000
Subtotal	18,031,000	18,640,000	19,270,000	19,922,000	20,597,000
EXPENSES					
Operating & Maintenance					
Water System Operations	8,084,000	8,407,000	8,743,000	9,093,000	9,457,000
State Water Project Payments	6,049,000	6,291,000	6,543,000	6,805,000	7,077,000
Recycled Water Operations	220,000	229,000	238,000	248,000	258,000
Subtotal	14,353,000	14,927,000	15,524,000	16,146,000	16,792,000
Debt Service					
SRF Planning Loan: Water Share	0	0	0	0	0
WRF WIFIA Loan: Water Share	987,000	987,000	987,000	987,000	987,000
WRF Revenue Bonds: Water Share	0	0	0	0	0
Share of CCWA 2016 Bonds (Thru Oct-2021)	0	0	0	0	0
Subtotal	987,000	987,000	987,000	987,000	987,000
Capital Improvements					
Water System Pay-Go CIP	2,360,000	2,431,000	2,504,000	2,579,000	2,656,000
Water Cash Contribution to WRF	0	0	0	0	0
Vehicle/Equipment Replacement	50,000	50,000	50,000	50,000	50,000
Subtotal	2,410,000	2,481,000	2,554,000	2,629,000	2,706,000
Total Expenses	17,750,000	18,395,000	19,065,000	19,762,000	20,485,000
Revenues Less Expenses	281,000	245,000	205,000	160,000	112,000
Ending Fund Reserves	7,437,000	7,682,000	7,887,000	8,047,000	8,159,000
CCWA Bond Debt Service Coverage	-	-	-	-	-
City Debt Service Coverage	3.73	3.76	3.80	3.83	3.86

EXHIBIT X. SOURCES OF FUNDS

The City of Morro Bay has initiated the application for a Clean Water State Revolving Fund loan with the California State Water Resources Control Board. The City will provide documentation when the loan is approved. If the loan is not approved, the City will pursue bond financing for 49% of the total project cost. A table outlining sources of funds for the Water Reclamation Facility Project is included as part of **Exhibit X**.

Table 4 S
City of Morro Bay
Water Reclamation Facility Projected Funding Sources

	Total	% of Ttl	Water	% of Source	Wastewater	% of Source
WRF Total Project Costs	$122,807,000		$35,412,000	28.8%	87,395,000	71.2%
Projected Funding Sources						
WIFIA Loan	60,175,000	49.0%	17,352,000	28.8%	42,823,000	71.2%
SRF Planning Loan	10,300,000	8.4%	2,970,000	28.8%	7,330,000	71.2%
Revenue Bonds	24,700,000	20.1%	10,246,000	41.5%	14,454,000	58.5%
Sewer New Cash Funding	17,969,000	14.6%	0	0.0%	17,969,000	100.0%
Water New Cash Funding	4,600,000	3.7%	4,600,000	100.0%	0	0.0%
Prior Cash Contributions	5,063,000	4.1%	244,000	4.8%	4,819,000	95.2%
Total	122,807,000	100.0%	35,412,000	28.8%	87,395,000	71.2%

Table 5
City of Morro Bay
WIFIA Financing Sources & Uses

SOURCES OF FUNDS		
WIFIA Loan		$67,800,000
USES OF FUNDS		
WRF Project Funding[1]	49% of total project cost	$60,175,000
Application/Credit Reimbursement Fee	estimated	300,000
Other Issuance Costs (est)	estimated	50,000
Accrued Interest During Construction[2]	estimated	3,911,000
Debt-Funded Reserve Fund	likely	3,360,000
Contingency/Rounding		4,000
Total Uses		67,800,000

1 49% of Total WRF Project Cost
2 Assumes steady gradual drawdown of loan funds over 2 years, plus 1 year add'l accrued interest.

EXHIBIT XI. PROJECTED REVENUES

Projected Revenues for Sewer and Water are included in the Cash Flow Pro Forma and are attached as part of **Exhibit XI.**

Table 11 - City of Morro Bay	Sewer Cash Flow Projections				
	Projected Years 1 - 5				
	2017/18	2018/19	2019/20	2020/21	2021/22
Monthly Single Family Sewer Charge	$70.00	$77.00	$83.00	$83.00	$83.00
Sewer Rate Adjustment %		*10.0%*	*7.8%*	*0.0%*	*0.0%*
Monthly Single Family WRF Surcharge			$25.00	$25.00	$25.00
Beginning Sewer Accounts	5,346	5,351	5,356	5,361	5,366
Growth: Single Family Equivalents	5	5	5	5	5
Growth %	-	0.1%	0.1%	0.1%	0.1%
Sewer Development Impact Fee	$5,445	$5,550	$5,660	$5,770	$5,890
Interest Earnings Rate	1.25%	1.75%	2.0%	2.0%	2.0%
Cost Escalation			4.0%	4.0%	4.0%
Beginning Fund Reserves	$6,402,000	$8,112,000	$8,251,000	$8,274,000	$8,357,000
REVENUES					
Sewer Service Charges	6,100,000	6,716,000	7,246,000	7,253,000	7,260,000
Sewer WRF Facility Surcharges	0	0	2,173,000	2,173,000	2,173,000
Development Impact Fees	30,000	28,000	28,000	29,000	29,000
Interest Earnings	80,000	142,000	165,000	165,000	167,000
Rental Income/Other (Excl Penalties)	25,000	30,000	30,000	30,000	30,000
Subtotal	6,235,000	6,916,000	9,642,000	9,650,000	9,659,000
WRF Debt Financing					
SRF Planning Loan		5,800,000	4,500,000		
WIFIA Loan			31,100,000	29,075,000	
Bond Proceeds				7,400,000	17,300,000
EXPENSES					
Operating & Maintenance	Estimated	Projected			
Sewer Collection	1,100,000	1,480,000	1,539,000	1,601,000	1,665,000
Wastewater Treatment Existing	2,000,000	2,210,000	2,298,000	2,390,000	1,247,000
Wastewater Treatment New WRF	-	-	-	-	1,500,000
Conveyance to New WRF	-	-	-	-	140,000
Less Cayucos SD Reimbursements	*(495,000)*	*(553,000)*	*(575,000)*	*0*	*0*
Subtotal	2,605,000	3,137,000	3,262,000	3,991,000	4,552,000
Debt Service					
SRF Planning Loan: Sewer Share	-	-	-	804,000	804,000
WRF WIFIA Loan: Sewer Share	-	-	-	-	-
WRF Revenue Bonds: Sewer Share	-	-	-	348,000	696,000
Subtotal	0	0	0	1,152,000	1,500,000
Capital Improvements					
Sewer Cash Contribution to WRF	840,000	2,390,000	5,307,000	3,374,000	6,898,000
Sewer System Pay-Go CIP	630,000	1,200,000	1,000,000	1,000,000	1,000,000
Vehicle/Equipment Replacement	450,000	50,000	50,000	50,000	50,000
Subtotal	1,920,000	3,640,000	6,357,000	4,424,000	7,948,000
Total Sewer Expenses	4,525,000	6,777,000	9,619,000	9,567,000	14,000,000
Revenues Less Expenses	1,710,000	139,000	23,000	83,000	(4,341,000)
Ending Fund Reserves	8,112,000	8,251,000	8,274,000	8,357,000	4,016,000
Debt Service Coverage	-	-	-	4.91	3.40

Table 11 - City of Morro Bay	Sewer Cash Flow Projections				
	Projected Years 6 - 10				
	2022/23	2023/24	2024/25	2025/26	2026/27
Monthly Single Family Sewer Charge	$83.00	$85.00	$87.00	$90.00	$92.00
Sewer Rate Adjustment %	*0.0%*	*2.4%*	*2.4%*	*3.4%*	*2.2%*
Monthly Single Family WRF Surcharge	$25.00	$25.00	$25.00	$25.00	$25.00
Beginning Sewer Accounts	5,371	5,376	5,381	5,386	5,391
Growth: Single Family Equivalents	5	5	5	5	5
Growth %	0.1%	0.1%	0.1%	0.1%	0.1%
Sewer Development Impact Fee	$6,010	$6,130	$6,250	$6,380	$6,510
Interest Earnings Rate	2.0%	2.0%	2.0%	2.0%	2.0%
Cost Escalation	4.0%	4.0%	4.0%	4.0%	4.0%
Beginning Fund Reserves	$4,016,000	$4,245,000	$4,445,000	$4,604,000	$4,802,000
REVENUES					
Sewer Service Charges	7,267,000	7,449,000	7,631,000	7,901,000	8,084,000
Sewer WRF Facility Surcharges	2,173,000	2,173,000	2,173,000	2,173,000	2,173,000
Development Impact Fees	30,000	31,000	31,000	32,000	33,000
Interest Earnings	86,000	91,000	95,000	98,000	102,000
Rental Income/Other (Excl Penalties)	30,000	30,000	30,000	30,000	30,000
Subtotal	9,586,000	9,774,000	9,960,000	10,234,000	10,422,000
WRF Debt Financing					
SRF Planning Loan					
WIFIA Loan					
Bond Proceeds					
EXPENSES					
Operating & Maintenance					
Sewer Collection	1,732,000	1,801,000	1,873,000	1,948,000	2,026,000
Wastewater Treatment Existing	0	0	0	0	0
Wastewater Treatment New WRF	2,682,000	2,789,000	2,901,000	3,017,000	3,138,000
Conveyance to New WRF	277,000	288,000	300,000	312,000	324,000
Less Cayucos SD Reimbursements	*0*	*0*	*0*	*0*	*0*
Subtotal	4,691,000	4,878,000	5,074,000	5,277,000	5,488,000
Debt Service					
SRF Planning Loan: Sewer Share	804,000	804,000	804,000	804,000	804,000
WRF WIFIA Loan: Sewer Share	2,116,000	2,116,000	2,116,000	2,116,000	2,116,000
WRF Revenue Bonds: Sewer Share	696,000	696,000	696,000	696,000	696,000
Subtotal	3,616,000	3,616,000	3,616,000	3,616,000	3,616,000
Capital Improvements					
Sewer Cash Contribution to WRF	0	0	0	0	0
Sewer System Pay-Go CIP	1,000,000	1,030,000	1,061,000	1,093,000	1,126,000
Vehicle/Equipment Replacement	50,000	50,000	50,000	50,000	50,000
Subtotal	1,050,000	1,080,000	1,111,000	1,143,000	1,176,000
Total Sewer Expenses	9,357,000	9,574,000	9,801,000	10,036,000	10,280,000
Revenues Less Expenses	229,000	200,000	159,000	198,000	142,000
Ending Fund Reserves	4,245,000	4,445,000	4,604,000	4,802,000	4,944,000
Debt Service Coverage	1.35	1.35	1.35	1.37	1.36

Table 11 - City of Morro Bay	Sewer Cash Flow Projections				
	Projected Years 11 - 15				
	2027/28	2028/29	2029/30	2030/31	2031/32
Monthly Single Family Sewer Charge	$94.76	$97.60	$100.53	$103.55	$106.66
Sewer Rate Adjustment %	*3.0%*	*3.0%*	*3.0%*	*3.0%*	*3.0%*
Monthly Single Family WRF Surcharge	$25.00	$25.00	$25.00	$25.00	$25.00
Beginning Sewer Accounts	5,396	5,401	5,406	5,411	5,416
Growth: Single Family Equivalents	5	5	5	5	5
Growth %	0.1%	0.1%	0.1%	0.1%	0.1%
Sewer Development Impact Fee	$6,640	$6,770	$6,910	$7,050	$7,190
Interest Earnings Rate	2.0%	2.0%	2.0%	2.0%	2.0%
Cost Escalation	4.0%	4.0%	4.0%	4.0%	4.0%
Beginning Fund Reserves	$4,944,000	$5,085,000	$5,224,000	$5,359,000	$5,573,000
REVENUES					
Sewer Service Charges	8,334,000	8,592,000	8,858,000	9,132,000	9,415,000
Sewer WRF Facility Surcharges	2,173,000	2,173,000	2,173,000	2,173,000	2,173,000
Development Impact Fees	33,000	34,000	35,000	35,000	36,000
Interest Earnings	105,000	107,000	110,000	113,000	117,000
Rental Income/Other (Excl Penalties)	30,000	30,000	30,000	30,000	30,000
Subtotal	10,675,000	10,936,000	11,206,000	11,483,000	11,771,000
WRF Debt Financing					
SRF Planning Loan					
WIFIA Loan					
Bond Proceeds					
EXPENSES					
Operating & Maintenance					
Sewer Collection	2,107,000	2,191,000	2,279,000	2,370,000	2,465,000
Wastewater Treatment Existing	0	0	0	0	0
Wastewater Treatment New WRF	3,264,000	3,395,000	3,531,000	3,672,000	3,819,000
Conveyance to New WRF	337,000	350,000	364,000	379,000	394,000
Less Cayucos SD Reimbursements	*0*	*0*	*0*	*0*	*0*
Subtotal	5,708,000	5,936,000	6,174,000	6,421,000	6,678,000
Debt Service					
SRF Planning Loan: Sewer Share	804,000	804,000	804,000	0	0
WRF WIFIA Loan: Sewer Share	2,116,000	2,116,000	2,116,000	2,435,000	2,435,000
WRF Revenue Bonds: Sewer Share	696,000	696,000	696,000	1,095,000	1,095,000
Subtotal	3,616,000	3,616,000	3,616,000	3,530,000	3,530,000
Capital Improvements					
Sewer Cash Contribution to WRF	0	0	0	0	0
Sewer System Pay-Go CIP	1,160,000	1,195,000	1,231,000	1,268,000	1,306,000
Vehicle/Equipment Replacement	50,000	50,000	50,000	50,000	50,000
Subtotal	1,210,000	1,245,000	1,281,000	1,318,000	1,356,000
Total Sewer Expenses	10,534,000	10,797,000	11,071,000	11,269,000	11,564,000
Revenues Less Expenses	141,000	139,000	135,000	214,000	207,000
Ending Fund Reserves	5,085,000	5,224,000	5,359,000	5,573,000	5,780,000
Debt Service Coverage	1.37	1.38	1.39	1.43	1.44

Table 11 - City of Morro Bay	Sewer Cash Flow Projections				
	Projected Years 16 - 20				
	2032/33	2033/34	2034/35	2035/36	2036/37
Monthly Single Family Sewer Charge	$109.86	$113.16	$116.55	$120.05	$123.65
Sewer Rate Adjustment %	*3.0%*	*3.0%*	*3.0%*	*3.0%*	*3.0%*
Monthly Single Family WRF Surcharge	$25.00	$25.00	$25.00	$25.00	$25.00
Beginning Sewer Accounts	5,421	5,426	5,431	5,436	5,441
Growth: Single Family Equivalents	5	5	5	5	5
Growth %	0.1%	0.1%	0.1%	0.1%	0.1%
Sewer Development Impact Fee	$7,330	$7,480	$7,630	$7,780	$7,940
Interest Earnings Rate	2.0%	2.0%	2.0%	2.0%	2.0%
Cost Escalation	4.0%	4.0%	4.0%	4.0%	4.0%
Beginning Fund Reserves	$5,780,000	$5,976,000	$6,158,000	$6,324,000	$6,469,000
REVENUES					
Sewer Service Charges	9,706,000	10,006,000	10,316,000	10,635,000	10,964,000
Sewer WRF Facility Surcharges	2,173,000	2,173,000	2,173,000	2,173,000	2,173,000
Development Impact Fees	37,000	37,000	38,000	39,000	40,000
Interest Earnings	121,000	125,000	129,000	132,000	135,000
Rental Income/Other (Excl Penalties)	30,000	30,000	30,000	30,000	30,000
Subtotal	12,067,000	12,371,000	12,686,000	13,009,000	13,342,000
WRF Debt Financing					
SRF Planning Loan					
WIFIA Loan					
Bond Proceeds					
EXPENSES					
Operating & Maintenance					
Sewer Collection	2,564,000	2,667,000	2,774,000	2,885,000	3,000,000
Wastewater Treatment Existing	0	0	0	0	0
Wastewater Treatment New WRF	3,972,000	4,131,000	4,296,000	4,468,000	4,647,000
Conveyance to New WRF	410,000	426,000	443,000	461,000	479,000
Less Cayucos SD Reimbursements	*0*	*0*	*0*	*0*	*0*
Subtotal	6,946,000	7,224,000	7,513,000	7,814,000	8,126,000
Debt Service					
SRF Planning Loan: Sewer Share	0	0	0	0	0
WRF WIFIA Loan: Sewer Share	2,435,000	2,435,000	2,435,000	2,435,000	2,435,000
WRF Revenue Bonds: Sewer Share	1,095,000	1,095,000	1,095,000	1,095,000	1,095,000
Subtotal	3,530,000	3,530,000	3,530,000	3,530,000	3,530,000
Capital Improvements					
Sewer Cash Contribution to WRF	0	0	0	0	0
Sewer System Pay-Go CIP	1,345,000	1,385,000	1,427,000	1,470,000	1,514,000
Vehicle/Equipment Replacement	50,000	50,000	50,000	50,000	50,000
Subtotal	1,395,000	1,435,000	1,477,000	1,520,000	1,564,000
Total Sewer Expenses	11,871,000	12,189,000	12,520,000	12,864,000	13,220,000
Revenues Less Expenses	196,000	182,000	166,000	145,000	122,000
Ending Fund Reserves	5,976,000	6,158,000	6,324,000	6,469,000	6,591,000
Debt Service Coverage	1.45	1.46	1.47	1.47	1.48

Table 11 - City of Morro Bay	Sewer Cash Flow Projections				
	Projected Years 21 - 25				
	2037/38	2038/39	2039/40	2040/41	2041/42
Monthly Single Family Sewer Charge	$127.85	$132.20	$136.69	$141.34	$146.15
Sewer Rate Adjustment %	*3.4%*	*3.4%*	*3.4%*	*3.4%*	*3.4%*
Monthly Single Family WRF Surcharge	$25.00	$25.00	$25.00	$25.00	$25.00
Beginning Sewer Accounts	5,446	5,451	5,456	5,461	5,466
Growth: Single Family Equivalents	5	5	5	5	5
Growth %	0.1%	0.1%	0.1%	0.1%	0.1%
Sewer Development Impact Fee	$8,100	$8,260	$8,430	$8,600	$8,770
Interest Earnings Rate	2.0%	2.0%	2.0%	2.0%	2.0%
Cost Escalation	4.0%	4.0%	4.0%	4.0%	4.0%
Beginning Fund Reserves	$6,591,000	$6,729,000	$6,882,000	$7,049,000	$7,230,000
REVENUES					
Sewer Service Charges	11,347,000	11,744,000	12,154,000	12,579,000	13,019,000
Sewer WRF Facility Surcharges	2,173,000	2,173,000	2,173,000	2,173,000	2,173,000
Development Impact Fees	41,000	41,000	42,000	43,000	44,000
Interest Earnings	137,000	140,000	143,000	147,000	150,000
Rental Income/Other (Excl Penalties)	30,000	30,000	30,000	30,000	30,000
Subtotal	13,728,000	14,128,000	14,542,000	14,972,000	15,416,000
WRF Debt Financing					
SRF Planning Loan					
WIFIA Loan					
Bond Proceeds					
EXPENSES					
Operating & Maintenance					
Sewer Collection	3,120,000	3,245,000	3,375,000	3,510,000	3,650,000
Wastewater Treatment Existing	0	0	0	0	0
Wastewater Treatment New WRF	4,833,000	5,026,000	5,227,000	5,436,000	5,653,000
Conveyance to New WRF	498,000	518,000	539,000	561,000	583,000
Less Cayucos SD Reimbursements	*0*	*0*	*0*	*0*	*0*
Subtotal	8,451,000	8,789,000	9,141,000	9,507,000	9,886,000
Debt Service					
SRF Planning Loan: Sewer Share	0	0	0	0	0
WRF WIFIA Loan: Sewer Share	2,435,000	2,435,000	2,435,000	2,435,000	2,435,000
WRF Revenue Bonds: Sewer Share	1,095,000	1,095,000	1,095,000	1,095,000	1,095,000
Subtotal	3,530,000	3,530,000	3,530,000	3,530,000	3,530,000
Capital Improvements					
Sewer Cash Contribution to WRF	0	0	0	0	0
Sewer System Pay-Go CIP	1,559,000	1,606,000	1,654,000	1,704,000	1,755,000
Vehicle/Equipment Replacement	50,000	50,000	50,000	50,000	50,000
Subtotal	1,609,000	1,656,000	1,704,000	1,754,000	1,805,000
Total Sewer Expenses	13,590,000	13,975,000	14,375,000	14,791,000	15,221,000
Revenues Less Expenses	138,000	153,000	167,000	181,000	195,000
Ending Fund Reserves	6,729,000	6,882,000	7,049,000	7,230,000	7,425,000
Debt Service Coverage	1.49	1.51	1.53	1.55	1.57

Table 11 - City of Morro Bay	Sewer Cash Flow Projections				
	Projected Years 26 - 30				
	2042/43	2043/44	2044/45	2045/46	2046/47
Monthly Single Family Sewer Charge	$151.12	$156.26	$161.57	$167.06	$172.74
Sewer Rate Adjustment %	*3.4%*	*3.4%*	*3.4%*	*3.4%*	*3.4%*
Monthly Single Family WRF Surcharge	$25.00	$25.00	$25.00	$25.00	$25.00
Beginning Sewer Accounts	5,471	5,476	5,481	5,486	5,491
Growth: Single Family Equivalents	5	5	5	5	5
Growth %	0.1%	0.1%	0.1%	0.1%	0.1%
Sewer Development Impact Fee	$8,950	$9,130	$9,310	$9,500	$9,690
Interest Earnings Rate	2.0%	2.0%	2.0%	2.0%	2.0%
Cost Escalation	4.0%	4.0%	4.0%	4.0%	4.0%
Beginning Fund Reserves	$7,425,000	$7,632,000	$7,850,000	$8,077,000	$8,311,000
REVENUES					
Sewer Service Charges	13,474,000	13,945,000	14,432,000	14,936,000	15,458,000
Sewer WRF Facility Surcharges	2,173,000	2,173,000	2,173,000	2,173,000	2,173,000
Development Impact Fees	45,000	46,000	47,000	48,000	48,000
Interest Earnings	154,000	158,000	163,000	167,000	172,000
Rental Income/Other (Excl Penalties)	30,000	30,000	30,000	30,000	30,000
Subtotal	15,876,000	16,352,000	16,845,000	17,354,000	17,881,000
WRF Debt Financing					
SRF Planning Loan					
WIFIA Loan					
Bond Proceeds					
EXPENSES					
Operating & Maintenance					
Sewer Collection	3,796,000	3,948,000	4,106,000	4,270,000	4,441,000
Wastewater Treatment Existing	0	0	0	0	0
Wastewater Treatment New WRF	5,879,000	6,114,000	6,359,000	6,613,000	6,878,000
Conveyance to New WRF	606,000	630,000	655,000	681,000	708,000
Less Cayucos SD Reimbursements	*0*	*0*	*0*	*0*	*0*
Subtotal	10,281,000	10,692,000	11,120,000	11,564,000	12,027,000
Debt Service					
SRF Planning Loan: Sewer Share	0	0	0	0	0
WRF WIFIA Loan: Sewer Share	2,435,000	2,435,000	2,435,000	2,435,000	2,435,000
WRF Revenue Bonds: Sewer Share	1,095,000	1,095,000	1,095,000	1,095,000	1,095,000
Subtotal	3,530,000	3,530,000	3,530,000	3,530,000	3,530,000
Capital Improvements					
Sewer Cash Contribution to WRF	0	0	0	0	0
Sewer System Pay-Go CIP	1,808,000	1,862,000	1,918,000	1,976,000	2,035,000
Vehicle/Equipment Replacement	50,000	50,000	50,000	50,000	50,000
Subtotal	1,858,000	1,912,000	1,968,000	2,026,000	2,085,000
Total Sewer Expenses	15,669,000	16,134,000	16,618,000	17,120,000	17,642,000
Revenues Less Expenses	207,000	218,000	227,000	234,000	239,000
Ending Fund Reserves	7,632,000	7,850,000	8,077,000	8,311,000	8,550,000
Debt Service Coverage	1.58	1.60	1.62	1.64	1.66

Table 11 - City of Morro Bay	Sewer Cash Flow Projections				
	Projected Years 30 - 35				
	2047/48	2048/49	2049/50	2050/51	2051/52
Monthly Single Family Sewer Charge	$178.61	$184.68	$190.96	$197.45	$204.16
Sewer Rate Adjustment %	*3.4%*	*3.4%*	*3.4%*	*3.4%*	*3.4%*
Monthly Single Family WRF Surcharge	$25.00	$25.00	$25.00	$25.00	$25.00
Beginning Sewer Accounts	5,496	5,501	5,506	5,511	5,516
Growth: Single Family Equivalents	5	5	5	5	5
Growth %	0.1%	0.1%	0.1%	0.1%	0.1%
Sewer Development Impact Fee	$9,880	$10,080	$10,280	$10,490	$10,700
Interest Earnings Rate	2.0%	2.0%	2.0%	2.0%	2.0%
Cost Escalation	4.0%	4.0%	4.0%	4.0%	4.0%
Beginning Fund Reserves	$8,550,000	$8,793,000	$9,037,000	$9,279,000	$9,518,000
REVENUES					
Sewer Service Charges	15,998,000	16,557,000	17,135,000	17,734,000	18,354,000
Sewer WRF Facility Surcharges	2,173,000	2,173,000	2,173,000	2,173,000	2,173,000
Development Impact Fees	49,000	50,000	51,000	52,000	54,000
Interest Earnings	177,000	181,000	186,000	191,000	196,000
Rental Income/Other (Excl Penalties)	30,000	30,000	30,000	30,000	30,000
Subtotal	18,427,000	18,991,000	19,575,000	20,180,000	20,807,000
WRF Debt Financing					
SRF Planning Loan					
WIFIA Loan					
Bond Proceeds					
EXPENSES					
Operating & Maintenance					
Sewer Collection	4,619,000	4,804,000	4,996,000	5,196,000	5,404,000
Wastewater Treatment Existing	0	0	0	0	0
Wastewater Treatment New WRF	7,153,000	7,439,000	7,737,000	8,046,000	8,368,000
Conveyance to New WRF	736,000	765,000	796,000	828,000	861,000
Less Cayucos SD Reimbursements	*0*	*0*	*0*	*0*	*0*
Subtotal	12,508,000	13,008,000	13,529,000	14,070,000	14,633,000
Debt Service					
SRF Planning Loan: Sewer Share	0	0	0	0	0
WRF WIFIA Loan: Sewer Share	2,435,000	2,435,000	2,435,000	2,435,000	2,435,000
WRF Revenue Bonds: Sewer Share	1,095,000	1,095,000	1,095,000	1,095,000	1,095,000
Subtotal	3,530,000	3,530,000	3,530,000	3,530,000	3,530,000
Capital Improvements					
Sewer Cash Contribution to WRF	0	0	0	0	0
Sewer System Pay-Go CIP	2,096,000	2,159,000	2,224,000	2,291,000	2,360,000
Vehicle/Equipment Replacement	50,000	50,000	50,000	50,000	50,000
Subtotal	2,146,000	2,209,000	2,274,000	2,341,000	2,410,000
Total Sewer Expenses	18,184,000	18,747,000	19,333,000	19,941,000	20,573,000
Revenues Less Expenses	243,000	244,000	242,000	239,000	234,000
Ending Fund Reserves	8,793,000	9,037,000	9,279,000	9,518,000	9,752,000
Debt Service Coverage	1.68	1.69	1.71	1.73	1.75

Table 11 - City of Morro Bay	Sewer Cash Flow Projections				
	Projected Years 35 - 40				
	2052/53	2053/54	2054/55	2055/56	2056/57
Monthly Single Family Sewer Charge	$204.16	$206.20	$213.42	$220.89	$228.62
Sewer Rate Adjustment %	*0.0%*	*1.0%*	*3.5%*	*3.5%*	*3.5%*
Monthly Single Family WRF Surcharge	$25.00	$25.00	$25.00	$25.00	$25.00
Beginning Sewer Accounts	5,521	5,526	5,531	5,536	5,541
Growth: Single Family Equivalents	5	5	5	5	5
Growth %	0.1%	0.1%	0.1%	0.1%	0.1%
Sewer Development Impact Fee	$10,910	$11,130	$11,350	$11,580	$11,810
Interest Earnings Rate	2.0%	2.0%	2.0%	2.0%	2.0%
Cost Escalation	4.0%	4.0%	4.0%	4.0%	4.0%
Beginning Fund Reserves	$9,752,000	$10,448,000	$10,677,000	$10,870,000	$11,023,000
REVENUES					
Sewer Service Charges	18,371,000	18,571,000	19,238,000	19,929,000	20,645,000
Sewer WRF Facility Surcharges	2,173,000	2,173,000	2,173,000	2,173,000	2,173,000
Development Impact Fees	55,000	56,000	57,000	58,000	59,000
Interest Earnings	201,000	215,000	219,000	223,000	226,000
Rental Income/Other (Excl Penalties)	30,000	30,000	30,000	30,000	30,000
Subtotal	20,830,000	21,045,000	21,717,000	22,413,000	23,133,000
WRF Debt Financing					
SRF Planning Loan					
WIFIA Loan					
Bond Proceeds					
EXPENSES					
Operating & Maintenance					
Sewer Collection	5,620,000	5,845,000	6,079,000	6,322,000	6,575,000
Wastewater Treatment Existing	0	0	0	0	0
Wastewater Treatment New WRF	8,703,000	9,051,000	9,413,000	9,790,000	10,182,000
Conveyance to New WRF	895,000	931,000	968,000	1,007,000	1,047,000
Less Cayucos SD Reimbursements	*0*	*0*	*0*	*0*	*0*
Subtotal	15,218,000	15,827,000	16,460,000	17,119,000	17,804,000
Debt Service					
SRF Planning Loan: Sewer Share	0	0	0	0	0
WRF WIFIA Loan: Sewer Share	2,435,000	2,435,000	2,435,000	2,435,000	2,435,000
WRF Revenue Bonds: Sewer Share	0	0	0	0	0
Subtotal	2,435,000	2,435,000	2,435,000	2,435,000	2,435,000
Capital Improvements					
Sewer Cash Contribution to WRF	0	0	0	0	0
Sewer System Pay-Go CIP	2,431,000	2,504,000	2,579,000	2,656,000	2,736,000
Vehicle/Equipment Replacement	50,000	50,000	50,000	50,000	50,000
Subtotal	2,481,000	2,554,000	2,629,000	2,706,000	2,786,000
Total Sewer Expenses	20,134,000	20,816,000	21,524,000	22,260,000	23,025,000
Revenues Less Expenses	696,000	229,000	193,000	153,000	108,000
Ending Fund Reserves	10,448,000	10,677,000	10,870,000	11,023,000	11,131,000
Debt Service Coverage	2.30	2.14	2.16	2.17	2.19

Table 12 - City of Morro Bay	Water Cash Flow Projections				
	Projected Years 1 - 5				
	2017/18	2018/19	2019/20	2020/21	2021/22
Fixed Monthly Water Charge	$28.00	$30.00	$32.00	$32.00	$32.00
Water Rate Adjustment %		7.1%	6.7%	0.0%	0.0%
Fixed Monthly Single Family WRF Surcharge	-	-	$16.00	$16.00	$16.00
Beginning Water Accounts	5,440	5,445	5,450	5,455	5,460
Growth: Single Family Equivalents	5	5	5	5	5
Growth %	0.1%	0.1%	0.1%	0.1%	0.1%
Change in Water Sales		0.0%	0.0%	0.0%	0.0%
Water Development Impact Fee	$5,392	$5,500	$5,610	$5,720	$5,830
Interest Earnings Rate	1.25%	1.75%	2.0%	2.0%	2.0%
State Water Project Cost Escalation			4.0%	4.0%	4.0%
Operating Cost Escalation			4.0%	4.0%	4.0%
Beginning Fund Reserves	$3,132,000	$4,456,000	$4,537,000	$4,622,000	$4,687,000
REVENUES	Estimated	Projected			
Water Service Charges	5,280,000	5,700,000	6,086,000	6,092,000	6,098,000
Water WRF Facility Surcharges	0	0	1,654,000	1,654,000	1,654,000
Development Impact Fees	30,000	28,000	28,000	29,000	29,000
Interest Earnings	39,000	78,000	91,000	92,000	94,000
Other (Excludes Penalties)	16,000	20,000	20,000	20,000	20,000
Subtotal	5,365,000	5,826,000	7,879,000	7,887,000	7,895,000
EXPENSES					
Operating & Maintenance	Estimated	Projected			
Water System Operations	1,591,000	2,130,000	2,215,000	2,304,000	2,396,000
State Water Project Payments	1,535,000	1,595,000	1,659,000	1,725,000	1,794,000
Recycled Water Operations	-	-	-	-	110,000
Subtotal	3,126,000	3,725,000	3,874,000	4,029,000	4,300,000
Debt Service					
SRF Planning Loan: Water Share	-	-	-	326,000	326,000
WRF WIFIA Loan: Water Share	-	-	-	-	-
WRF Revenue Bonds: Water Share	-	-	-	247,000	494,000
Share of CCWA 2016 Bonds (Thru Oct-2021)	665,000	670,000	670,000	670,000	670,000
Subtotal	665,000	670,000	670,000	1,243,000	1,490,000
Capital Improvements					
Water System Pay-Go CIP	250,000	1,000,000	1,000,000	1,300,000	1,800,000
Water Cash Contribution to WRF	0	300,000	2,200,000	1,200,000	900,000
Vehicle/Equipment Replacement	0	50,000	50,000	50,000	50,000
Subtotal	250,000	1,350,000	3,250,000	2,550,000	2,750,000
Total Expenses	4,041,000	5,745,000	7,794,000	7,822,000	8,540,000
Revenues Less Expenses	1,324,000	81,000	85,000	65,000	(645,000)
Ending Fund Reserves	4,456,000	4,537,000	4,622,000	4,687,000	4,042,000
CCWA Bond Debt Service Coverage	1.72	1.63	2.43	2.33	2.19
City Debt Service Coverage	3.37	3.14	5.98	3.10	2.41

Table 12 - City of Morro Bay	Water Cash Flow Projections				
	Projected Years 6 - 10				
	2022/23	2023/24	2024/25	2025/26	2026/27
Fixed Monthly Water Charge	$32.00	$32.00	$32.00	$33.00	$34.00
Water Rate Adjustment %	0.0%	0.0%	0.0%	3.1%	3.0%
Fixed Monthly Single Family WRF Surcharge	$16.00	$16.00	$16.00	$16.00	$16.00
Beginning Water Accounts	5,465	5,470	5,475	5,480	5,485
Growth: Single Family Equivalents	5	5	5	5	5
Growth %	0.1%	0.1%	0.1%	0.1%	0.1%
Change in Water Sales	0.0%	0.0%	0.0%	0.0%	0.0%
Water Development Impact Fee	$5,950	$6,070	$6,190	$6,310	$6,440
Interest Earnings Rate	2.0%	2.0%	2.0%	2.0%	2.0%
State Water Project Cost Escalation	4.0%	4.0%	4.0%	4.0%	4.0%
Operating Cost Escalation	4.0%	4.0%	4.0%	4.0%	4.0%
Beginning Fund Reserves	$4,042,000	$4,031,000	$4,442,000	$4,647,000	$4,825,000
REVENUES					
Water Service Charges	6,104,000	6,110,000	6,116,000	6,313,000	6,510,000
Water WRF Facility Surcharges	1,654,000	1,654,000	1,654,000	1,654,000	1,654,000
Development Impact Fees	30,000	30,000	31,000	32,000	32,000
Interest Earnings	86,000	86,000	94,000	99,000	102,000
Other (Excludes Penalties)	20,000	20,000	20,000	20,000	20,000
Subtotal	7,894,000	7,900,000	7,915,000	8,118,000	8,318,000
EXPENSES					
Operating & Maintenance					
Water System Operations	2,492,000	2,592,000	2,696,000	2,804,000	2,916,000
State Water Project Payments	1,866,000	1,941,000	2,019,000	2,100,000	2,184,000
Recycled Water Operations	220,000	229,000	238,000	248,000	258,000
Subtotal	4,578,000	4,762,000	4,953,000	5,152,000	5,358,000
Debt Service					
SRF Planning Loan: Water Share	326,000	326,000	326,000	326,000	326,000
WRF WIFIA Loan: Water Share	857,000	857,000	857,000	857,000	857,000
WRF Revenue Bonds: Water Share	494,000	494,000	494,000	494,000	494,000
Share of CCWA 2016 Bonds (Thru Oct-2021)	0	0	0	0	0
Subtotal	1,677,000	1,677,000	1,677,000	1,677,000	1,677,000
Capital Improvements					
Water System Pay-Go CIP	1,600,000	1,000,000	1,030,000	1,061,000	1,093,000
Water Cash Contribution to WRF	0	0	0	0	0
Vehicle/Equipment Replacement	50,000	50,000	50,000	50,000	50,000
Subtotal	1,650,000	1,050,000	1,080,000	1,111,000	1,143,000
Total Expenses	7,905,000	7,489,000	7,710,000	7,940,000	8,178,000
Revenues Less Expenses	(11,000)	411,000	205,000	178,000	140,000
Ending Fund Reserves	4,031,000	4,442,000	4,647,000	4,825,000	4,965,000
CCWA Bond Debt Service Coverage	-	-	-	-	-
City Debt Service Coverage	1.98	1.87	1.77	1.77	1.77

Table 12 - City of Morro Bay	Water Cash Flow Projections				
	Projected Years 11 - 15				
	2027/28	2028/29	2029/30	2030/31	2031/32
Fixed Monthly Water Charge	$35.19	$36.42	$37.69	$39.01	$40.38
Water Rate Adjustment %	3.5%	3.5%	3.5%	3.5%	3.5%
Fixed Monthly Single Family WRF Surcharge	$16.00	$16.00	$16.00	$16.00	$16.00
Beginning Water Accounts	5,490	5,495	5,500	5,505	5,510
Growth: Single Family Equivalents	5	5	5	5	5
Growth %	0.1%	0.1%	0.1%	0.1%	0.1%
Change in Water Sales	0.0%	0.0%	0.0%	0.0%	0.0%
Water Development Impact Fee	$6,570	$6,700	$6,830	$6,970	$7,110
Interest Earnings Rate	2.0%	2.0%	2.0%	2.0%	2.0%
State Water Project Cost Escalation	4.0%	4.0%	4.0%	4.0%	4.0%
Operating Cost Escalation	4.0%	4.0%	4.0%	4.0%	4.0%
Beginning Fund Reserves	$4,965,000	$5,144,000	$5,315,000	$5,476,000	$5,540,000
REVENUES					
Water Service Charges	6,744,000	6,986,000	7,237,000	7,497,000	7,766,000
Water WRF Facility Surcharges	1,654,000	1,654,000	1,654,000	1,654,000	1,654,000
Development Impact Fees	33,000	34,000	34,000	35,000	36,000
Interest Earnings	105,000	109,000	112,000	115,000	116,000
Other (Excludes Penalties)	20,000	20,000	20,000	20,000	20,000
Subtotal	8,556,000	8,803,000	9,057,000	9,321,000	9,592,000
EXPENSES					
Operating & Maintenance					
Water System Operations	3,033,000	3,154,000	3,280,000	3,411,000	3,547,000
State Water Project Payments	2,271,000	2,362,000	2,456,000	2,554,000	2,656,000
Recycled Water Operations	220,000	229,000	238,000	248,000	258,000
Subtotal	5,524,000	5,745,000	5,974,000	6,213,000	6,461,000
Debt Service					
SRF Planning Loan: Water Share	326,000	326,000	326,000	0	0
WRF WIFIA Loan: Water Share	857,000	857,000	857,000	987,000	987,000
WRF Revenue Bonds: Water Share	494,000	494,000	494,000	776,000	776,000
Share of CCWA 2016 Bonds (Thru Oct-2021)	0	0	0	0	0
Subtotal	1,677,000	1,677,000	1,677,000	1,763,000	1,763,000
Capital Improvements					
Water System Pay-Go CIP	1,126,000	1,160,000	1,195,000	1,231,000	1,268,000
Water Cash Contribution to WRF	0	0	0	0	0
Vehicle/Equipment Replacement	50,000	50,000	50,000	50,000	50,000
Subtotal	1,176,000	1,210,000	1,245,000	1,281,000	1,318,000
Total Expenses	8,377,000	8,632,000	8,896,000	9,257,000	9,542,000
Revenues Less Expenses	179,000	171,000	161,000	64,000	50,000
Ending Fund Reserves	5,144,000	5,315,000	5,476,000	5,540,000	5,590,000
CCWA Bond Debt Service Coverage	-	-	-	-	-
City Debt Service Coverage	1.81	1.82	1.84	1.76	1.78

Table 12 - City of Morro Bay	Water Cash Flow Projections				
	Projected Years 16 - 20				
	2032/33	2033/34	2034/35	2035/36	2036/37
Fixed Monthly Water Charge	$41.79	$43.25	$44.76	$46.33	$47.95
Water Rate Adjustment %	3.5%	3.5%	3.5%	3.5%	3.5%
Fixed Monthly Single Family WRF Surcharge	$16.00	$16.00	$16.00	$16.00	$16.00
Beginning Water Accounts	5,515	5,520	5,525	5,530	5,535
Growth: Single Family Equivalents	5	5	5	5	5
Growth %	0.1%	0.1%	0.1%	0.1%	0.1%
Change in Water Sales	0.0%	0.0%	0.0%	0.0%	0.0%
Water Development Impact Fee	$7,250	$7,400	$7,550	$7,700	$7,850
Interest Earnings Rate	2.0%	2.0%	2.0%	2.0%	2.0%
State Water Project Cost Escalation	4.0%	4.0%	4.0%	4.0%	4.0%
Operating Cost Escalation	4.0%	4.0%	4.0%	4.0%	4.0%
Beginning Fund Reserves	$5,590,000	$5,672,000	$5,740,000	$5,792,000	$5,825,000
REVENUES					
Water Service Charges	8,045,000	8,334,000	8,633,000	8,943,000	9,264,000
Water WRF Facility Surcharges	1,654,000	1,654,000	1,654,000	1,654,000	1,654,000
Development Impact Fees	36,000	37,000	38,000	39,000	39,000
Interest Earnings	117,000	119,000	120,000	121,000	122,000
Other (Excludes Penalties)	20,000	20,000	20,000	20,000	20,000
Subtotal	9,872,000	10,164,000	10,465,000	10,777,000	11,099,000
EXPENSES					
Operating & Maintenance					
Water System Operations	3,689,000	3,837,000	3,990,000	4,150,000	4,316,000
State Water Project Payments	2,762,000	2,872,000	2,987,000	3,106,000	3,230,000
Recycled Water Operations	220,000	229,000	238,000	248,000	258,000
Subtotal	6,671,000	6,938,000	7,215,000	7,504,000	7,804,000
Debt Service					
SRF Planning Loan: Water Share	0	0	0	0	0
WRF WIFIA Loan: Water Share	987,000	987,000	987,000	987,000	987,000
WRF Revenue Bonds: Water Share	776,000	776,000	776,000	776,000	776,000
Share of CCWA 2016 Bonds (Thru Oct-2021)	0	0	0	0	0
Subtotal	1,763,000	1,763,000	1,763,000	1,763,000	1,763,000
Capital Improvements					
Water System Pay-Go CIP	1,306,000	1,345,000	1,385,000	1,427,000	1,470,000
Water Cash Contribution to WRF	0	0	0	0	0
Vehicle/Equipment Replacement	50,000	50,000	50,000	50,000	50,000
Subtotal	1,356,000	1,395,000	1,435,000	1,477,000	1,520,000
Total Expenses	9,790,000	10,096,000	10,413,000	10,744,000	11,087,000
Revenues Less Expenses	82,000	68,000	52,000	33,000	12,000
Ending Fund Reserves	5,672,000	5,740,000	5,792,000	5,825,000	5,837,000
CCWA Bond Debt Service Coverage	-	-	-	-	-
City Debt Service Coverage	1.82	1.83	1.84	1.86	1.87

Table 12 - City of Morro Bay	Water Cash Flow Projections				
	Projected Years 21 - 25				
	2037/38	2038/39	2039/40	2040/41	2041/42
Fixed Monthly Water Charge	$49.72	$51.56	$53.47	$55.45	$57.50
Water Rate Adjustment %	3.7%	3.7%	3.7%	3.7%	3.7%
Fixed Monthly Single Family WRF Surcharge	$16.00	$16.00	$16.00	$16.00	$16.00
Beginning Water Accounts	5,540	5,545	5,550	5,555	5,560
Growth: Single Family Equivalents	5	5	5	5	5
Growth %	0.1%	0.1%	0.1%	0.1%	0.1%
Change in Water Sales	0.0%	0.0%	0.0%	0.0%	0.0%
Water Development Impact Fee	$8,010	$8,170	$8,330	$8,500	$8,670
Interest Earnings Rate	2.0%	2.0%	2.0%	2.0%	2.0%
State Water Project Cost Escalation	4.0%	4.0%	4.0%	4.0%	4.0%
Operating Cost Escalation	4.0%	4.0%	4.0%	4.0%	4.0%
Beginning Fund Reserves	$5,837,000	$5,893,000	$5,948,000	$6,002,000	$6,054,000
REVENUES					
Water Service Charges	9,615,000	9,980,000	10,359,000	10,752,000	11,160,000
Water WRF Facility Surcharges	1,654,000	1,654,000	1,654,000	1,654,000	1,654,000
Development Impact Fees	40,000	41,000	42,000	43,000	43,000
Interest Earnings	122,000	123,000	125,000	126,000	127,000
Other (Excludes Penalties)	20,000	20,000	20,000	20,000	20,000
Subtotal	11,451,000	11,818,000	12,200,000	12,595,000	13,004,000
EXPENSES					
Operating & Maintenance					
Water System Operations	4,489,000	4,669,000	4,856,000	5,050,000	5,252,000
State Water Project Payments	3,359,000	3,493,000	3,633,000	3,778,000	3,929,000
Recycled Water Operations	220,000	229,000	238,000	248,000	258,000
Subtotal	8,068,000	8,391,000	8,727,000	9,076,000	9,439,000
Debt Service					
SRF Planning Loan: Water Share	0	0	0	0	0
WRF WIFIA Loan: Water Share	987,000	987,000	987,000	987,000	987,000
WRF Revenue Bonds: Water Share	776,000	776,000	776,000	776,000	776,000
Share of CCWA 2016 Bonds (Thru Oct-2021)	0	0	0	0	0
Subtotal	1,763,000	1,763,000	1,763,000	1,763,000	1,763,000
Capital Improvements					
Water System Pay-Go CIP	1,514,000	1,559,000	1,606,000	1,654,000	1,704,000
Water Cash Contribution to WRF	0	0	0	0	0
Vehicle/Equipment Replacement	50,000	50,000	50,000	50,000	50,000
Subtotal	1,564,000	1,609,000	1,656,000	1,704,000	1,754,000
Total Expenses	11,395,000	11,763,000	12,146,000	12,543,000	12,956,000
Revenues Less Expenses	56,000	55,000	54,000	52,000	48,000
Ending Fund Reserves	5,893,000	5,948,000	6,002,000	6,054,000	6,102,000
CCWA Bond Debt Service Coverage	-	-	-	-	-
City Debt Service Coverage	1.92	1.94	1.97	2.00	2.02

Table 12 - City of Morro Bay	Water Cash Flow Projections				
	Projected Years 26 - 30				
	2042/43	2043/44	2044/45	2045/46	2046/47
Fixed Monthly Water Charge	$59.63	$61.84	$64.13	$66.50	$68.96
Water Rate Adjustment %	3.7%	3.7%	3.7%	3.7%	3.7%
Fixed Monthly Single Family WRF Surcharge	$16.00	$16.00	$16.00	$16.00	$16.00
Beginning Water Accounts	5,565	5,570	5,575	5,580	5,585
Growth: Single Family Equivalents	5	5	5	5	5
Growth %	0.1%	0.1%	0.1%	0.1%	0.1%
Change in Water Sales	0.0%	0.0%	0.0%	0.0%	0.0%
Water Development Impact Fee	$8,840	$9,020	$9,200	$9,380	$9,570
Interest Earnings Rate	2.0%	2.0%	2.0%	2.0%	2.0%
State Water Project Cost Escalation	4.0%	4.0%	4.0%	4.0%	4.0%
Operating Cost Escalation	4.0%	4.0%	4.0%	4.0%	4.0%
Beginning Fund Reserves	$6,102,000	$6,195,000	$6,287,000	$6,377,000	$6,464,000
REVENUES					
Water Service Charges	11,583,000	12,022,000	12,478,000	12,951,000	13,442,000
Water WRF Facility Surcharges	1,654,000	1,654,000	1,654,000	1,654,000	1,654,000
Development Impact Fees	44,000	45,000	46,000	47,000	48,000
Interest Earnings	128,000	130,000	131,000	133,000	135,000
Other (Excludes Penalties)	20,000	20,000	20,000	20,000	20,000
Subtotal	13,429,000	13,871,000	14,329,000	14,805,000	15,299,000
EXPENSES					
Operating & Maintenance					
Water System Operations	5,462,000	5,680,000	5,907,000	6,143,000	6,389,000
State Water Project Payments	4,086,000	4,249,000	4,419,000	4,596,000	4,780,000
Recycled Water Operations	220,000	229,000	238,000	248,000	258,000
Subtotal	9,768,000	10,158,000	10,564,000	10,987,000	11,427,000
Debt Service					
SRF Planning Loan: Water Share	0	0	0	0	0
WRF WIFIA Loan: Water Share	987,000	987,000	987,000	987,000	987,000
WRF Revenue Bonds: Water Share	776,000	776,000	776,000	776,000	776,000
Share of CCWA 2016 Bonds (Thru Oct-2021)	0	0	0	0	0
Subtotal	1,763,000	1,763,000	1,763,000	1,763,000	1,763,000
Capital Improvements					
Water System Pay-Go CIP	1,755,000	1,808,000	1,862,000	1,918,000	1,976,000
Water Cash Contribution to WRF	0	0	0	0	0
Vehicle/Equipment Replacement	50,000	50,000	50,000	50,000	50,000
Subtotal	1,805,000	1,858,000	1,912,000	1,968,000	2,026,000
Total Expenses	13,336,000	13,779,000	14,239,000	14,718,000	15,216,000
Revenues Less Expenses	93,000	92,000	90,000	87,000	83,000
Ending Fund Reserves	6,195,000	6,287,000	6,377,000	6,464,000	6,547,000
CCWA Bond Debt Service Coverage	-	-	-	-	-
City Debt Service Coverage	2.08	2.11	2.14	2.17	2.20

Table 12 - City of Morro Bay	Water Cash Flow Projections				
	Projected Years 30 - 35				
	2047/48	2048/49	2049/50	2050/51	2051/52
Fixed Monthly Water Charge	$71.51	$74.16	$76.90	$79.75	$82.70
Water Rate Adjustment %	3.7%	3.7%	3.7%	3.7%	3.7%
Fixed Monthly Single Family WRF Surcharge	$16.00	$16.00	$16.00	$16.00	$16.00
Beginning Water Accounts	5,590	5,595	5,600	5,605	5,610
Growth: Single Family Equivalents	5	5	5	5	5
Growth %	0.1%	0.1%	0.1%	0.1%	0.1%
Change in Water Sales	0.0%	0.0%	0.0%	0.0%	0.0%
Water Development Impact Fee	$9,760	$9,960	$10,160	$10,360	$10,570
Interest Earnings Rate	2.0%	2.0%	2.0%	2.0%	2.0%
State Water Project Cost Escalation	4.0%	4.0%	4.0%	4.0%	4.0%
Operating Cost Escalation	4.0%	4.0%	4.0%	4.0%	4.0%
Beginning Fund Reserves	$6,547,000	$6,675,000	$6,800,000	$6,923,000	$7,042,000
REVENUES					
Water Service Charges	13,952,000	14,481,000	15,030,000	15,600,000	16,192,000
Water WRF Facility Surcharges	1,654,000	1,654,000	1,654,000	1,654,000	1,654,000
Development Impact Fees	49,000	50,000	51,000	52,000	53,000
Interest Earnings	137,000	139,000	142,000	144,000	146,000
Other (Excludes Penalties)	20,000	20,000	20,000	20,000	20,000
Subtotal	15,812,000	16,344,000	16,897,000	17,470,000	18,065,000
EXPENSES					
Operating & Maintenance					
Water System Operations	6,645,000	6,911,000	7,187,000	7,474,000	7,773,000
State Water Project Payments	4,971,000	5,170,000	5,377,000	5,592,000	5,816,000
Recycled Water Operations	220,000	229,000	238,000	248,000	258,000
Subtotal	11,836,000	12,310,000	12,802,000	13,314,000	13,847,000
Debt Service					
SRF Planning Loan: Water Share	0	0	0	0	0
WRF WIFIA Loan: Water Share	987,000	987,000	987,000	987,000	987,000
WRF Revenue Bonds: Water Share	776,000	776,000	776,000	776,000	776,000
Share of CCWA 2016 Bonds (Thru Oct-2021)	0	0	0	0	0
Subtotal	1,763,000	1,763,000	1,763,000	1,763,000	1,763,000
Capital Improvements					
Water System Pay-Go CIP	2,035,000	2,096,000	2,159,000	2,224,000	2,291,000
Water Cash Contribution to WRF	0	0	0	0	0
Vehicle/Equipment Replacement	50,000	50,000	50,000	50,000	50,000
Subtotal	2,085,000	2,146,000	2,209,000	2,274,000	2,341,000
Total Expenses	15,684,000	16,219,000	16,774,000	17,351,000	17,951,000
Revenues Less Expenses	128,000	125,000	123,000	119,000	114,000
Ending Fund Reserves	6,675,000	6,800,000	6,923,000	7,042,000	7,156,000
CCWA Bond Debt Service Coverage	-	-	-	-	-
City Debt Service Coverage	2.26	2.29	2.32	2.36	2.39

Table 12 - City of Morro Bay	Water Cash Flow Projections				
	Projected Years 35 - 40				
	2052/53	2053/54	2054/55	2055/56	2056/57
Fixed Monthly Water Charge	$85.59	$88.59	$91.69	$94.90	$98.22
Water Rate Adjustment %	3.5%	3.5%	3.5%	3.5%	3.5%
Fixed Monthly Single Family WRF Surcharge	$10.00	$10.00	$10.00	$10.00	$10.00
Beginning Water Accounts	5,615	5,620	5,625	5,630	5,635
Growth: Single Family Equivalents	5	5	5	5	5
Growth %	0.1%	0.1%	0.1%	0.1%	0.1%
Change in Water Sales	0.0%	0.0%	0.0%	0.0%	0.0%
Water Development Impact Fee	$10,780	$11,000	$11,220	$11,440	$11,670
Interest Earnings Rate	2.0%	2.0%	2.0%	2.0%	2.0%
State Water Project Cost Escalation	4.0%	4.0%	4.0%	4.0%	4.0%
Operating Cost Escalation	4.0%	4.0%	4.0%	4.0%	4.0%
Beginning Fund Reserves	$7,156,000	$7,437,000	$7,682,000	$7,887,000	$8,047,000
REVENUES					
Water Service Charges	16,774,000	17,377,000	18,001,000	18,648,000	19,318,000
Water WRF Facility Surcharges	1,034,000	1,034,000	1,034,000	1,034,000	1,034,000
Development Impact Fees	54,000	55,000	56,000	57,000	58,000
Interest Earnings	149,000	154,000	159,000	163,000	167,000
Other (Excludes Penalties)	20,000	20,000	20,000	20,000	20,000
Subtotal	18,031,000	18,640,000	19,270,000	19,922,000	20,597,000
EXPENSES					
Operating & Maintenance					
Water System Operations	8,084,000	8,407,000	8,743,000	9,093,000	9,457,000
State Water Project Payments	6,049,000	6,291,000	6,543,000	6,805,000	7,077,000
Recycled Water Operations	220,000	229,000	238,000	248,000	258,000
Subtotal	14,353,000	14,927,000	15,524,000	16,146,000	16,792,000
Debt Service					
SRF Planning Loan: Water Share	0	0	0	0	0
WRF WIFIA Loan: Water Share	987,000	987,000	987,000	987,000	987,000
WRF Revenue Bonds: Water Share	0	0	0	0	0
Share of CCWA 2016 Bonds (Thru Oct-2021)	0	0	0	0	0
Subtotal	987,000	987,000	987,000	987,000	987,000
Capital Improvements					
Water System Pay-Go CIP	2,360,000	2,431,000	2,504,000	2,579,000	2,656,000
Water Cash Contribution to WRF	0	0	0	0	0
Vehicle/Equipment Replacement	50,000	50,000	50,000	50,000	50,000
Subtotal	2,410,000	2,481,000	2,554,000	2,629,000	2,706,000
Total Expenses	17,750,000	18,395,000	19,065,000	19,762,000	20,485,000
Revenues Less Expenses	281,000	245,000	205,000	160,000	112,000
Ending Fund Reserves	7,437,000	7,682,000	7,887,000	8,047,000	8,159,000
CCWA Bond Debt Service Coverage	-	-	-	-	-
City Debt Service Coverage	3.73	3.76	3.80	3.83	3.86

EXHIBIT XII. PRELIMINARY RATING LETTER

The City of Morro Bay has prepared information and conducted informational phone calls with Standard & Poor's Global Ratings agency. The preliminary rating letter is attached as **Exhibit XII.**

S&P Global
Ratings

55 Water Street
New York, NY 10041-0003

July 6, 2018

Ms. Jennifer Callaway
Finance Director,
City of Morro Bay
595 Harbor Street
Morro Bay, CA 93442.
(805) 772-6200

Dear Ms. Callaway:

Thank you for requesting that S&P Global Ratings provide you with feedback through its Rating Evaluation Service (RES) on the initial indicative credit rating implications to the City of Morro Bay (the "Issuer" or "you") of implementing the proposed scenario described below. S&P Global Ratings has reviewed the scenario you have provided and the following is a summary analysis reflecting our RES committee response.

Existing Rating

The Issuer currently does not have a rating on any debt obligations related to the proposed scenario.

Scenario Presented

The Issuer presented one scenario to S&P Global Ratings involving the proposed issuance in June 2018 of $60.2 million of the Water Infrastructure Finance and Innovation Act [WIFIA] Loan (the "Proposed Obligations"). The Proposed Obligations would be used to provide funding for a new Water Reclamation Facility (WRF) project being built via a design-build process (the "Proposed Project"). The Proposed Project is one of the 12 water or sewer utilities nationwide selected for the first round of funding under a new EPA loan program (enacted as the WIFIA).

The total project cost for the WRF is estimated at $122.8 million. The Issuer has presented a financing plan with a base case scenario, which assumes the WIFIA loan amount that does not exceed 49% of eligible project costs. The remainder will be funded from other obligations including State Revolving Fund (SRF) loans and available cash funding from rate increases & proposed new WRF Surcharges from the issuer's water and sewer utility revenue funds. The Issuer has previously obtained a $10.3 million SRF Planning Loan.

Based on the WIFIA letter of interest, the Proposed Obligations will be expected to be issued on parity with or senior to any existing and proposed obligations. In a bankruptcy related event, the WIFIA loan will rank pari passu in right of payment and right of security with any proposed

parity-lien obligation. The payments to the Proposed Obligations will be secured by a lien on a new WRF debt repayment fund for the full debt service, with payments to the WRF debt repayment fund secured by net revenues of the water and sewer utility funds, with each covenanting to repay their fund's allocated share of debt service, and covenanting to raise rates and charges as needed to achieve debt service coverage of 1.20x on each utility fund's share of debt repayment. If other legal provisions are identified in the future, it could likely lead to an impact on either our rating or outlook.

Summary of Indicative Rating Conclusion

Scenario
With respect to the Scenario presented, the RES committee has determined that the issuance of the Proposed Obligations would likely result in S&P Global Ratings assigning a 'A' rating to the Proposed Obligations, assuming no other significant rating factor has changed. Additionally, the outlook would likely be stable, but we would note that any further increases in debt obligations would likely have rating implications. The preceding assumes that the scenario is implemented in accordance with information and representations provided by the Issuer to S&P Global Ratings.

S&P Global Ratings current Evaluation of the Issuer:

Based on the financial plan, the WRF project cost estimates reflect a 29% cost allocation to the water utility and a 71% cost allocation to the sewer utility. Each utility is responsible for funding its share of project costs. Because neither system is obligated to cover the other's obligations under the WIFIA loan, deterioration in credit quality of either system would lead to a lowered rating. The rating is based on a weak-link structure, as there is no ability under the proposed agreement to reallocate debt service costs among the enterprise systems. The rating is currently based on the credit quality of the sewer system, which we view as the weaker of the two systems.

The rating reflects, in our opinion, the combination of a strong enterprise and financial risk profiles.

The enterprise risk profile reflects our view of the utility system's:

- Service area participation in the broad and diverse San Luis Obispo-Paso Robles-Arroyo Grande metropolitan area economy, with good median household income indicators;
- Very low industry risk as a monopolistic service provider of an essential public utility;
- Service rates, which we view as moderately elevated, in the context of the service area's income levels and local poverty rate, after including the likely adoption of supplemental WRF Surcharges to support funding for the new wastewater treatment plant; and
- Good operational management practices and policies, with a focus on developing a new WRF with a potential recycled water production & indirect potable reuse via groundwater replenishment.

The financial risk profile reflects our view of the utility system's:

- Good projected all-in debt service coverage (DSC) metrics, with a financial plan that we believe will establish a clear trajectory of future financial performance for both water and sewer systems, but could be pressured if timely rate and surcharges are not implemented;
- Projected strong liquidity position that, according to the financial plan, may be drawn down somewhat, but is anticipated to remain strong and aligned with its reserve policy;
- Manageable capital improvement plans and WRF funding needs that the city plans to finance with a mix of leverage and cash funding;
- Highly leveraged position (as measured by the utility system's pro-forma debt-to-capitalization ratio); and
- Good financial management practices and policies.

General Assumptions (for all scenarios):

Key assumptions you have provided to us include:

- The Proposed Obligations will be issued in the form currently represented and pursuant to the financial plan with the base case scenario of the full WRF Surcharge (starting fiscal year 2020) collected as separate line item on the monthly utility bill; and
- Payments to the WRF debt repayment fund secured by net revenues of the water and sewer funds each covenanting to repay their fund's allocated share of debt service.

S&P Global Ratings' analytical judgements include:

- Continued economic growth in the region driven by the tourism and business service sectors, with a nearly built-out community, and a primarily residential and stable customer base;
- Actual operating results will be reasonably in line with management prepared financial plan provided July 2, 2018. We understand that the projections in the financial plan for both the water and sewer funds were based on the Issuer's planning documents and may be conservative due in part to the assumption that the Issuer does not receive any long-term SRF loan financing (in excess of the $10.3 million SRF Planning Loan already awarded);
- Possible rate increases designed to meet future operating & capital programs and the WRF project debt financing requirements;
- As the Issuer progresses through the WRF project, we note the potential risk of delays in project construction, environmental impacts, and other administrative hurdles. Although the WIFIA loan agreement will likely include project-specific events of default, such as project abandonment and cessation of operations, we consider each of the identified events to be unlikely and remote, given the regulatory driven nature of the project and its strategic importance to the Issuer.

Outlook

The stable outlook reflects our anticipation that the utility systems will maintain a good-to-strong financial position, which is characterized by its projected good all-in coverage and liquidity margins, as it progresses through the funding and construction of a new WRF project. While we understand the utility systems will likely use cash reserves for supplementing the WRF funding needs, we expect that liquidity will dip slightly but at levels we view as at least strong. We anticipate that the Issuer will approve the new rate plan with the supplemental WRF Surcharges providing greater revenue stability in the near future. We could consider changing the rating in the future based on any change in the credit quality of either utility systems.

Upside scenario

We could raise the rating if the utility systems consistently demonstrates a track record of outperforming projections in the financial plan, represented by stronger all-in coverage and liquidity metrics, and if the service area economy materially strengthens.

Downside scenario

If all-in coverage fails to meet management's projections as represented in the financial plan with potential pressures of additional capital needs and leverage that could likely cause a weakening in the financial profile of the utility systems, we could lower the rating. Additionally, if rate affordability pressures constrain management's flexibility to make timely rate adjustments, we could revise the rating downward.

This evaluation is both preliminary and confidential. It is preliminary in that it is based on hypothetical information presented to us by you. You understand that S&P Global Ratings will not review, modify or surveil this evaluation. Subsequent information or changes to the information previously provided could result in final conclusions that differ from the preliminary proposed conclusions. Please note the conclusions provided herein are based on assumptions you and your team have provided to us. To the extent that these assumptions, our criteria or other factors change, the rating implications could also change. You understand and agree that we are not financial advisors to you and that in performing the RES, S&P Global Ratings is providing indicative rating opinions on the scenarios presented; it is not endorsing or advocating any particular course of action. Nothing in this report is intended to create, or should be construed as creating, a fiduciary relationship between you and us and recipients of the indicative rating opinions. We have not consented to and will not consent to being named an "expert" under applicable securities laws. Neither S&P Global Ratings' RES or any indicative rating set out herein is a credit rating, nor is it a recommendation to buy, hold or sell any financial obligation of an issuer. This letter is subject to the Terms and Conditions attached to the Engagement Letter applicable to the RES (the "applicable T&Cs").

Confidential Dissemination of the Evaluation. The evaluation, including this letter, is provided by S&P Global Ratings to you on a confidential basis. You may not disclose the evaluation (or for the avoidance of doubt, any indicative rating set out therein) or this letter, to third parties except: (i) as required by law or regulation, or for regulatory purposes, or (ii) to third parties

that are bound by confidentiality obligations; and in each case, only in accordance with law and in its entirety without any changes (and provided a copy of the applicable T&Cs are attached thereto). If the evaluation is disclosed other than in accordance with the Engagement Letter, including the applicable T&Cs, S&P Global Ratings reserves the right to publicly comment on the evaluation and/or publish this letter.

Should you have questions, please do not hesitate to contact me.

Sincerely,

/s/

S&P Global Ratings, acting through
Standard & Poor's Financial Services LLC

cc:

EXHIBIT XIII. PROPOSED TERMS AND CONDITIONS FOR WIFIA ASSISTANCE

The proposed terms are outlined in a brief statement attached as **Exhibit XIII**.

Exhibit XIII
City of Morro Bay
Proposed WIFIA Financing Terms

Purpose: The City is seeking WIFIA financing to help fund a new Water Reclamation Facility (WRF) Project. The WRF Project includes a new wastewater treatment plant, wastewater pumping facilities and a force main to convey wastewater to the new treatment plant, and recycled water facilities to facilitate potable reuse.

Amount: The City is seeking WIFIA financing for up to 49% of the total WRF Project cost. Based on a total project cost of $126 million, the City is seeking approximately $61,740,000 of project funding. Accounting for accrued interest and issuance-related costs, the amount of WIFIA funding requested totals roughly $69,500,000.

Origination Date: The City anticipates needing WIFIA funding as early as July 1, 2019. The City was previously awarded a $10.3 million SRF Planning Loan that it anticipates using to fund major design costs in fiscal year 2018/19. The WIFIA financing would be needed to help fund construction which is projected to start in fiscal year 2019/20. Note that the City's fiscal year starts July 1 and ends June 30 of each year.

Timing of Disbursements: The City anticipates drawing down the WIFIA financing over 3 years during the construction phase of the project, from fiscal year 2019/20 through fiscal year 2021/22. A rough estimate of potential WIFIA drawdown is as follows:

Fiscal Year	2019/20	2020/21	2021/22
Drawdown	$25,000,000	$25,000,000	$11,740,000

Repayment Term & Final Maturity: 35-year repayment term with the first debt service payment due fiscal year 2022/23 (e.g. February 1, 2023) , the year after the project is complete, and the final debt service payment due fiscal year 2057/58 (e.g. February 1, 2058).

Debt Structure: Roughly level annual debt service with the potential for partially reduced debt payments during the first approximately 8 years if needed to structure around repayment of a 10-year $10.3 million State Revolving Fund (SRF) Planning Loan.

Estimated Interest Rate: Assuming 3.25% (current rate as of 07/05/18 is approximately 2.95%).

Pledged Security: The City anticipates that the WIFIA financing agreement would be directly secured by a senior/parity lien on the revenues of a new WRF Debt Service Fund. Payments to this fund would in turn be secured by the net revenues of the water and sewer funds with each fund covenanting to repay their allocated share of WIFIA debt service. Additionally, the water and sewer utilities would each covenant to raise rates and charges as needed to yield net revenues (generally defined as total revenues less operating and maintenance expenses) that are at least 120% of the annual debt service allocated to each utility each year.

Repayment Sources: The City plans to repay the debt with funds generated from water and sewer rates and the City's proposed water and sewer Water Reclamation Facility rate surcharges. The sewer utility's allocated share of debt service would be repaid by revenues from the City's proposed WRF Sewer Surcharges as well as from the City's regular sewer rate revenues. Likewise, the water utility's allocated share of debt service would be repaid by revenues from the City's proposed WRF Water Surcharges as well as from the City's regular water rate revenues.

Lien Position: Senior lien -- The WIFIA financing agreement would have a senior/parity lien on the revenues of the proposed new WRF Debt Service Fund. In turn, the sewer fund's payments to the WRF Debt Service Fund for the sewer utility's share of debt service would be secured by a senior/parity lien on the net revenues of the sewer enterprise. And similarly, the water fund's payments to the WRF Debt Service Fund for the water utility's share of debt service would be secured by a senior/parity lien on the net revenues of the water enterprise.

Estimated Sources & Uses of Funds & Draft Debt Service Schedule: The following tables show 1) estimated sources and uses of funds assuming WIFIA financing for 49% of a total $126 million project cost, and 2) a draft debt service schedule assuming level annual debt service.

Table 1
City of Morro Bay
Estimated WIFIA Sources & Uses of Funds

Sources		
WIFIA Funding		$69,470,000
Uses		
WRF Project Funding[1]	49% of total $126M project cost	$61,740,000
Application/Credit Reimbursement Fee	estimated	300,000
Other Issuance Costs (est)	estimated	50,000
Accrued Interest During Construction[2]	verify with WIFIA	4,013,000
Debt-Funded Reserve Fund	assumed	3,360,000
Contingency/Rounding		7,000
Total Uses		69,470,000

1 49% of Total WRF Project Cost
2 Assumes steady gradual drawdown of loan funds over 2 years, plus 1 year add'l accrued interest.

Table 2
City of Morro Bay
Draft WIFIA Loan Repayment Schedule

WIFIA Loan Amount	$69,470,000
Repayment Term	35 Years
Interest Rate	3.25%

Payment Number	Fiscal Year Ending	Principal	Interest	Total Debt Service	Principal Balance
1	2023	$1,094,394	$2,257,775	$3,352,169	$68,375,606
2	2024	1,129,962	2,222,207	3,352,169	67,245,644
3	2025	1,166,686	2,185,483	3,352,169	66,078,958
4	2026	1,204,603	2,147,566	3,352,169	64,874,354
5	2027	1,243,753	2,108,417	3,352,169	63,630,602
6	2028	1,284,175	2,067,995	3,352,169	62,346,427
7	2029	1,325,910	2,026,259	3,352,169	61,020,516
8	2030	1,369,003	1,983,167	3,352,169	59,651,514
9	2031	1,413,495	1,938,674	3,352,169	58,238,019
10	2032	1,459,434	1,892,736	3,352,169	56,778,585
11	2033	1,506,865	1,845,304	3,352,169	55,271,720
12	2034	1,555,838	1,796,331	3,352,169	53,715,881
13	2035	1,606,403	1,745,766	3,352,169	52,109,478
14	2036	1,658,611	1,693,558	3,352,169	50,450,867
15	2037	1,712,516	1,639,653	3,352,169	48,738,350
16	2038	1,768,173	1,583,996	3,352,169	46,970,177
17	2039	1,825,639	1,526,531	3,352,169	45,144,539
18	2040	1,884,972	1,467,198	3,352,169	43,259,567
19	2041	1,946,233	1,405,936	3,352,169	41,313,334
20	2042	2,009,486	1,342,683	3,352,169	39,303,848
21	2043	2,074,794	1,277,375	3,352,169	37,229,053
22	2044	2,142,225	1,209,944	3,352,169	35,086,828
23	2045	2,211,847	1,140,322	3,352,169	32,874,981
24	2046	2,283,732	1,068,437	3,352,169	30,591,248
25	2047	2,357,954	994,216	3,352,169	28,233,295
26	2048	2,434,587	917,582	3,352,169	25,798,707
27	2049	2,513,711	838,458	3,352,169	23,284,996
28	2050	2,595,407	756,762	3,352,169	20,689,589
29	2051	2,679,758	672,412	3,352,169	18,009,831
30	2052	2,766,850	585,320	3,352,169	15,242,981
31	2053	2,856,772	495,397	3,352,169	12,386,209
32	2054	2,949,618	402,552	3,352,169	9,436,591
33	2055	3,045,480	306,689	3,352,169	6,391,111
34	2056	3,144,458	207,711	3,352,169	3,246,653
35	2057	3,246,653	105,516	3,352,169	0
Total		69,470,000	47,855,927	117,325,927	1,403,020,058

EXHIBIT XIV. RATE STUDIES AND RATE SCHEDULES

The City of Morro Bay is currently in the process of adopting new water and sewer rates. The City expects the rates to be adopted in late Summer 2018. The final rate studies and schedules will be submitted prior to the obligation of the loan. **Exhibit XIV** includes Resolution No 44-18 to guide the Proposition 218 Process; the 2015 Rate Study; and the Draft 2018 Rate Study.

RESOLUTION NO. 44-18

RESOLUTION OF THE CITY COUNCIL OF THE CITY OF MORRO BAY, CALIFORNIA, APPROVING GUIDELINES FOR THE SUBMISSION AND TABULATION OF PROTESTS IN CONNECTION WITH RATE HEARINGS CONDUCTED PURSUANT TO ARTICLE XIIID, SECTION 6 OF THE CALIFORNIA CONSTITUTION

THE CITY COUNCIL
City of Morro Bay, California

WHEREAS, Article XIIID, Section 6 of the California Constitution requires the City Council to consider written protests to certain proposed increases to rates (fees or charges) for sewer (wastewater), water or refuse collection services; and

WHEREAS, that constitutional provision does not offer specific guidance as to who may submit protests, how written protests are to be submitted, or how the City is to tabulate protests.

WHEREAS, upon adoption of this resolution, any and all resolutions, rules or regulations of the City in conflict with it, shall be rescinded and of no further force or effect. This resolution supersedes all prior resolutions, rules or regulations of the City to the extent any or all of them established guidelines for the submission and tabulation of protests in connection with rate hearings conducted by the City pursuant to Article XIIID, Section 6 of the California Constitution.

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Morro Bay, California, as follows:

SECTION 1: Definitions.

Unless the context plainly indicates another meaning was intended, the following definitions shall apply in construction of these guidelines.

A. "Parcel" means a San Luis Obispo County (County) Assessor's parcel the record owner or occupant of which is subject to the proposed rate that is the subject of the hearing.

B. "Record customer" and "customer of record" mean the person or persons whose name or names appear on the City records as the customer who has contracted for, or is obligated to pay for, wastewater. water or refuse collection services to a particular utility account.

C. "Record owner" or "parcel owner" means the person or persons whose name or names appear on the County Assessor's latest equalized assessment roll as the owner of a parcel.

D. "Rate" means a fee or charge as understood by Article XIIID, Section 6 of the California Constitution.

E. A "rate protest proceeding" is not an election, but the City Clerk will maintain the confidentiality of protests as provided below and will maintain the security and integrity of protests at all times.

SECTION 2: Notice.

Notice of proposed rates and public hearing shall be as follows:

A. Notice Content.

1. Amount of rate proposed to be imposed on each parcel.

2. Basis upon which the amount of the proposed rate was calculated.

3. Reason for the rate.

4. The date, time, and location of a public hearing on the proposed rate.

5. If a combined public hearing is held for more than one proposed rate, then a combined notice for the combined public hearing must indicate an explanation any statement and protest shall clearly indicate which proposed change(s) is/are being protested.

B. Notice Delivery and Posting.

1. The City shall give notice of proposed rates via U.S. mail to all record owners and customers of record served by the City no less than 45 days before the public hearing upon the proposed rate.

2. The City will post the notice of proposed rates and public hearing at its official posting sites no less than 45 days before the public hearing upon the proposed rate.

SECTION 3: Protest Submittal.

A. Any record owner or customer of record who is subject to the proposed utility rate that is the subject of the hearing who wants to protest the rate must submit a written protest to the City Clerk, by:

1. Delivery, to the City Clerk's Office at 595 Harbor Street, Morro Bay, CA 93442, during published business hours,
2. Mail to the City Clerk at 595 Harbor Street, Morro Bay, CA 93442, or
3. Submittal to the City Clerk at the public hearing for the rate increase.

B. If more than one protest is delivered, mailed or submitted in one envelope or at one time, then at least one of the protests contained in that envelope or concurrently delivered, mailed or submitted shall be signed by the person delivering, mailing or submitting those protests.

C. Each protest must be received by the end of the public hearing, including those mailed to the City. No postmarks will be accepted for proof of meeting the submission deadline; therefore, any protest not physically received by the close of the hearing, whether or not mailed prior to the hearing, shall not be counted.

D. Because an original signature is required, emailed, faxed and photocopied protests shall not be counted.

E. Although oral comments at the public hearing will not qualify as a formal protest, unless accompanied by a written protest, the City Council welcomes input from the community during the public hearing on the proposed rate.

SECTION 4: Protest Requirements.

A. A written protest must include all the information described in subparagraphs 1. through 6., below.

1. A statement it is a protest against the proposed rate that is the subject of the hearing. If a combined public hearing is held for more than one proposed change, then the statement and protest must clearly indicate which proposed change is being protested. The combined notice for the combined public hearing must indicate that as well. The protests for more than one proposed change from the same record owner or customer of record may be combined on one protest document,
2. Name of the record owner or customer of record who is submitting the protest,
3. Identification of assessor's parcel number, street address, or utility account number for the parcel with respect to which the protest is made,
4. Original signature of the named record owner or customer of record and date the protest was signed,
5. To be sure all pertinent information is provided and considered prior to a protest being filed, no protest shall be signed before the City has issued the formal notice that commences the 45-day protest period and
6. A certification, by the named record owner or customer of record, as applicable, affirming the contents of the protest are true and correct.

B. A protest shall not be counted if any of the required elements of this Section 4 are omitted.

C. A protest must either be submitted on the ballot included with the notice of the protest period, or a ballot that includes all the information required by this Resolution.

SECTION 5: Protest Withdrawal or Change.

A. Withdrawal of Protest. Any person who submits a protest may withdraw it by submitting to the City Clerk a written request the protest be withdrawn. The withdrawal of a protest shall contain sufficient information to identify the affected parcel and the name of the record owner or customer of record who submitted both the protest and the request it be withdrawn.

B. Change to Protest. Any person who submits a protest may change it by submitting to the City Clerk a written request the protest be changed, and then either request another protest ballot and return the new protest ballot pursuant to the procedures provided herein, or submit a protest ballot that includes all the information required by this Resolution with the changes desired. The changed protest shall contain sufficient information to identify the affected parcel and the name of the record owner or customer of record who submitted both the protest and the request it be changed.

SECTION 6: Multiple Record Owners or Customers of Record.

A. Each record owner or customer of record of a parcel served by the City may submit a protest. That includes when:

1. The fee interest in a parcel is owned by more than one record owner,
2. More than one name appears on the City's records as the customer of record for a parcel,
3. A customer of record is not the record owner,
4. A parcel includes more than one customer of record, or
5. Multiple parcels are served via a single utility account, as master-metered common interest developments.

B. Only one protest will be counted per parcel as provided by Government Code subdivision 53755(b).

SECTION 7: Transparency, Confidentiality, and Disclosure.

A. To ensure transparency and accountability in the fee protest tabulation, while protecting the privacy rights of record owners and customers of record, protests will be maintained in confidence until tabulation begins following the close of the public hearing.

B. Once a protest is opened during the tabulation, it becomes a disclosable public record, as required by state law; and each original protest (or electronic copy) will be maintained in City files for two years.

SECTION 8: City Clerk.

The City Clerk shall not accept as valid any protest if she/he determines any of the following is true:

A. The protest does not conform to any of the requirements of this Resolution or:

1. The protest does not bear original signatures of the named record owner of, or customer of record with respect to, the parcel identified on the protest. Whether a signature is valid shall be entrusted to the reasonable judgment of the City Clerk, who may consult signatures on file with County Officials or other appropriate public agencies,

2. The protest was altered in a way that raises a fair question as to whether the protest actually expresses the intent of a record owner or a customer of record to protest the rates or

3. The protest was not received by the City Clerk before the close of the public hearing on the proposed rates.

B. A request to withdraw or change the protest, pursuant to Section 5, above, was received prior to the close of the public hearing on the proposed rates.

SECTION 9: City Clerk's Decisions Final.

The City Clerk's decision a protest is not valid shall constitute a final action of the City and shall not be subject to any internal appeal.

SECTION 10: Majority Protest.

A. A majority protest exists if written protests that comply with the requirements herein are timely submitted, and not withdrawn or changed, by the record owners of, or by the customers of record with respect to, a majority (50% plus one) of the parcels subject to the proposed charge.

B. While the City may inform the public of the number of parcels and customers of record served by the City when a notice of proposed rates is mailed, the number of parcels with active customer accounts served by the City on the date of the hearing shall control in determining whether a majority protest exists.

SECTION 11: Tabulation of Protests.

At the conclusion of the public hearing, the City Clerk shall tabulate all valid protests received, including those received prior to the conclusion of the public hearing, and shall report the result to the City Council. If the number of protests received is insufficient to constitute a majority protest, then the City Clerk may determine the absence of a majority protest without validating the protests received, but may instead deem them all valid without further examination. Further, if the number of protests received is obviously substantially fewer than the number required to constitute a majority protest, then the City Clerk may determine the absence of a majority protest without opening the envelopes which contain the protests.

SECTION 12: Report of Tabulation.

If, at the conclusion of the public hearing, the City Clerk determines she/he will require additional time to validate and tabulate the protests because she/he has not made the determination described in Section 11, above, then she/he shall so advise the City Council, which may continue the related portion of the meeting to allow the validation and tabulation to be completed on another day or days. If so, then the City Council shall declare the time and place of tabulation, which shall be conducted in a place where interested members of the public may observe the tabulation, and the City Council shall

declare the time at which the meeting shall be continued to receive and act on the tabulation report of the City Clerk.

SECTION 13: This resolution will become effective immediately upon adoption.

PASSED AND ADOPTED by the City Council of the City of Morro Bay at a special meeting thereof held on the 13th day of June, 2018 on the following vote:

AYES: Irons, Davis, Headding, Makowetski, McPherson
NOES: None
ABSENT: None

Jamie L. Irons, Mayor

ATTEST:

Lori M. Kudzma, Deputy City Clerk

2018 WATER AND WASTEWATER PROTEST BALLOT

NAME OF THE PROPERTY OWNER OR CUSTOMER OF RECORD FILING THIS PROTEST (please print):

_____

ASSESSOR PARCEL NUMBER (APN), WATER/WASTEWATER ACCOUNT NUMBER OR STREET ADDRESS OF THE PARCEL FOR WHICH THE PROTEST APPLIES (please print):

_____, Morro Bay CA

Check each box for which you want to lodge a protest

☐ I am protesting the proposed water rate.

☐ I am protesting the proposed wastewater rate.

I certify I have personal knowledge of all the foregoing and it is true and correct.

_____ ***Dated:*** _____, ***2018***

Signature

City of Morro Bay



Water & Sewer Rate Studies

Revised 05/20/15

BARTLE WELLS ASSOCIATES
INDEPENDENT PUBLIC FINANCE ADVISORS

Table of Contents

City of Morro Bay
Water & Sewer Rate Study Key Issues

1. BACKGROUND & OBJECTIVES

Background

The City of Morro Bay is located on the Central California coast in San Luis Obispo County, about 12 miles northwest of the City of San Luis Obispo. The City has a population of approximately 10,300. The City was incorporated in 1964 and is governed by a 5-member City Council. Council Members are elected at-large from the community for 4-year terms on alternating even years.

The City provides water and wastewater services to its residents. Both water and sewer utilities are facing major financial challenges in upcoming years that will require substantial rate increases.

- Water rates have not been increased in almost 20 years and the water utility is operating in deficit mode with an anticipated budget deficit of over $900,000 in the current fiscal year. Additionally, the City needs to fund a number of near-term water system capital improvements to address deficiencies and improve reliability, and faces long-term challenges regarding its water supply.
- The biggest challenge facing the sewer enterprise is the requirement to build a new wastewater treatment plant at an estimated cost of almost $75 million over the next four to five years. Additional funding is needed for repair and rehabilitation of various components of the City's aging sewer collection system.

BWA met with the City's Public Works Advisory Board on January 29, 2015 and February 19, 2015 to present preliminary finding and recommendations and receive input. The draft water and sewer rate recommendations presented in this report incorporate input received from the Public Works Advisory Board. The Public Works Advisory Board opted to make no formal recommendations regarding various other related issues such as an additional surcharge for desalination facility use, emergency water shortage rates, or an automatic pass-through for State Water Contract costs. However, the Public Works Advisory Board expressed support for some form of a low-income discount to help mitigate the impact on economically disadvantaged customers.

Financial Plan & Rate Study Objectives

In 2014, Bartle Wells Associates (BWA) was retained to develop water and sewer rate studies and update various water and sewer charges. Key objectives of the rate studies are to recommend water and sewer service charges that are adequate to fund future operating and capital needs of each utility. Key elements of the rate study include

1. Develop 10-year water and sewer enterprise financial projections to determine annual revenue requirements
2. Incorporate the latest available financial information and estimates of future operating and capital funding needs
3. Evaluate financing alternatives for the City's water and wastewater capital improvement programs including construction of a new Water Reclamation Plant.
4. Develop water and sewer rates that:
    a. Recover the City's costs of providing water and sewer service and support the long-term financial stability of the water and sewer utilities
    b. Provide adequate funding for capital needs including long-term infrastructure repairs and replacements
    c. Are fair, equitable, and politically acceptable
    d. Comply with the legal requirements of Proposition 218
5. Aim for gradual annual rate increases, to the extent possible, to help minimize the annual impact on customers
6. Pursue low-cost financing alternatives for required debt financing
7. Maintain a prudent level of fund reserves

Constitutional Requirements for Water & Sewer Rates

The California Constitution includes two key articles applicable to water and sewer rates: Article 10 and Article 13D. The rates developed in this study were designed to comply with both of these constitutional mandates as well as various provisions of the California Water Code and Government Code that support and add further guidance for implementing these constitutional requirements. In accordance with the constitutional provisions, the proposed rates are designed to a) recover the City's cost of providing service, b) recover revenues in reasonable proportion to the cost for serving each customer, and c) promote conservation and discourage waste.

Article 10, Section 2 – This section was established by voter-approval in 1976 and requires public agencies to maximize the beneficial use of water, prevent waste, and encourage conservation. Section 2 states that:

> *"It is hereby declared that because of the conditions prevailing in this State the general welfare requires that the water resources of the State be put to beneficial use to the fullest extent of which they are capable, and that the waste or unreasonable use or unreasonable method of use of water be prevented, and that the conservation of such waters is to be exercised with a view to the reasonable and beneficial use thereof in the interest of the people and for the public welfare."*

Article 13D, Section 6 - Proposition 218 was adopted by California voters in 1996 and added Articles 13C and 13D to the California Constitution. Article 13D, Section 6 governs property-related charges, which the California Supreme Court subsequently ruled includes ongoing utility service charges such as water, sewer, and garbage rates. This section establishes a) procedural requirements for imposing or increasing property-related charges, and b) substantive requirements for those charges. Article 13D also requires voter approval for new or increased property-related charges but exempts water, sewer, and garbage rates from the voting requirement provided the rates comply with the section's cost of service requirements.

The substantive rate requirements of Article 13D, Section 6 include:

1. Revenues derived from the fee or charge shall not exceed the funds required to provide the property related service.
2. Revenues derived from the fee or charge shall not be used for any purpose other than that for which the fee or charge was imposed.
3. The amount of a fee or charge imposed upon any parcel or person as an incident of property ownership shall not exceed the proportional cost of the service attributable to the parcel.
4. No fee or charge may be imposed for a service unless that service is actually used by, or immediately available to, the owner of the property in question.

A subsequent appellate court decision in 2015 further clarified that agencies must demonstrate, satisfactory to a court's independent judgment, that property-related fees and charges meet the proportionality requirement of Section 6.(3). This rate study provides that justification. The water and sewer rates derived in this report are each based on a cost-of-service methodology that fairly apportions costs to all customers.

2. WATER FINANCIAL PLAN & RATE STUDY

Water Finances & Rates

- The City's water utility is a financially self-supporting enterprise.
  - Water rates are the main source of revenues and currently account for approximately 98% of total revenues.
  - Water rates should be set at levels adequate to fund the cost of providing service, including long-term operating and capital needs, and support the enterprise's long-term financial stability.
- Water rates were last increased in 1995 and have not been adjusted in almost 20 years. Adjusted for inflation, water rates are about 36% lower than they were in 1995. With hypothetical 3% annual rate escalation since 1995, the City's water rates would now be approximately 75% higher than they currently are.
- The water enterprise is now operating in deficit mode with a projected budget deficit of over $900,000 in the current fiscal year.
- The City is out of compliance with debt service coverage covenants related to its share of payments for the Central Coast Water Authority's Series 2006A Revenue Bonds. The City has legally covenanted to raise water rates and charges as needed to generate Net Revenues – revenues remaining after funding the City's water operating expenses -- adequate to fund 125% of the City's total state water contract payments, including the bond payments and other contractual funding requirements payable to the San Luis Obispo County Flood Control and Water Conservation District, the local State Water Contractor.
- The water enterprise had approximately $2.6 million in reserves as of June 30, 2014. However, the City anticipates drawing down fund reserves during the current fiscal year, to levels slightly below prudent minimum targets.
- The monthly water bill for a typical single family home using 6 hundred cubic feet (hcf) of water per month, equal to a little under 150 gallons per day (gpd), is $33.20 or slightly over $1 per day. The City's typical residential water bills are in the lower-middle range compared to other regional agencies and were the fourth lowest of 12 agencies surveyed.
- The City's current water rates include both a fixed monthly charge of $16.43 plus water quantity charges that gradually escalate from $5.56 for the fourth unit of metered water use per month to $13.68. The first three units of water are provided with the fixed charge, at no additional cost. All customer pays according to the same rate schedule.

Financial Challenges

The City's water enterprise faces a number of financial challenges in upcoming years that are putting upward pressure on rates. Key challenges include:

- **Eliminate Budget Deficits and Restore Financial Stability**
  - With almost 20 years of no rate increases, the water enterprise has been slowly starved of funds resulting in current budget deficits. The budget deficit for the current fiscal year is projected at over $900,000. Rate increase are needed to restore financial stability and eliminate annual deficits.
- **Repair & Replacement of Aging Facilities**
  - The City's water system capital improvement program identifies approximately $9 million (current $) of funding needs over the next 10 years, including $6 million (current $) of capital needs over the upcoming five years. Accounting for 3% construction cost inflation, capital improvements are projected to total approximately $10 million over the next decade. Projects include adding storage for fire flow and reliability, repairing and improving the City's water desalination facility, and repairing/replacing aging and substandard water distribution pipelines. Many of the City's pipelines are over 50 years old and are approaching the end of their useful lives.
- **Long-Term Water Supply**
  - A large portion the City's water supply comes from the State Water Project. The City's 2014/15 budget includes a little over $2.2 million for costs related to the State Water Project. This equates to over 55% of annual operating expenses and roughly half of total annual expenditures.
  - State Water Project costs are expected to increase substantially in future years due to implementation of the Bay Delta Conservation Plan, a 50-year plan to restore the Sacramento-San Joaquin Delta ecosystem and secure future water supply through the State Water Project and Central Valley Project. The plan includes construction of roughly 30-miles of water conveyance pipelines to enable source water to circumvent the Delta. Costs are estimated at roughly $25 billion over the next 50 years with costs front-loaded over the next decade.
  - Planned construction of a new "reclamation ready" wastewater treatment plant will enable the City to pursue a future recycled water project that could ultimately support the long-term reliability and sustainability of the City's water supply. Based on very preliminary engineering cost estimates, the recycled water system is projected to cost

roughly $25 million (future $) starting in about six years in 2020/21. When constructed, the City would also need to pay additional operating costs for recycled water operations. However, recycled water may enable the City to reduce reliance the State Water Project and thus replace imported water with a potentially lower-cost local source of supply.

- The City will continue to evaluate water supply alternatives with the goals of securing a reliable and cost-effective source of water supply to meet the City's long-term supply needs.

➢ **Reduced Water Sales**

- Water sales have decreased in recent years. Average annual water sales from the past three fiscal years are about 7% lower than the average from the prior three years. Additional reductions in water sales are anticipated due to customer response to projected substantial rate increases.
- Reduced levels of water use result in a reduction of water sales revenues, which in turn puts upward pressure on water rates. However, customers who conserve will end up purchasing fewer units of water which helps mitigate the impact of higher unit charges.

➢ **Operating Cost Inflation**

- Annual rate increases are needed to keep revenues in line with ongoing operating cost inflation. Cost inflation for water & wastewater utilities (whose costs are largely related to labor and capital) has historically been higher than CPI, which is more of a measure of urban goods and services.

Financial Projections

➢ BWA developed 10-year financial projections to evaluate annual revenue requirements and project water rate increases. The projections were based on reasonable and slightly conservative assumptions including:

  - Operating cost projections are based on the 2014/15 Budget
  - Operating cost inflation is projected at 4% per year for planning purposes
  - The projections assume a relatively low growth scenario of 10 new single family homes or equivalent units per year
  - To account for customer response to rate increases, water sales projections account for elasticity estimated at -0.15; each 10% increase in rates results in a 1.5% decrease in water sales.

- Includes funding for the water system capital improvement program with 3% construction cost inflation. Due to the extent of near-term funding needs, the projections assumes the City issues debt to finance $3.5 million of capital improvement projects in 2015/16. BWA recommends the City pursue a subsidized loan from the California Infrastructure and Economic Development Bank, commonly known as the "I-Bank", for these funding needs.
- Assumes the City funds a future $25 million recycled water project using a Clean Water State Revolving Fund (SRF) loan. The SRF financing program currently offers 20 or 30-year loans with interest rates below 2%. For planning purposes, the projections assume a 30-year SRF loan with a 3% annual interest rate.
- Includes new operating costs for the recycled water system projected at $300,000 (escalated $) starting 2022/23.
- A minimum fund reserve target for planning purposes is recommended at 25% of annual operating expenses, plus $1 million for emergency capital reserves. It is acceptable for reserves to temporarily drop below these levels provided the City has taken action to achieve the targets over the longer run.

Draft Rate Projections

- Cash flow projections indicate the need for substantial water rate increases over the next five years. Due to the level of current budget deficits coupled with near-term financial needs, a larger initial rate increase is needed in 2015/16, with smaller increases in future years.
- Deferring or reducing necessary rate increases in the near-term would result in the need for higher rate increases in future years (and vice versa)
- With the proposed rate increases, the City's water rate are expected to end up in the middle to upper-middle range compared to other regional agencies. A number of other regional agencies are also anticipating water rate increases in upcoming years.
- For a typical single family home using 6 hcf of water per month, the maximum proposed rates for the next five years will equal the City's 1995 rate escalated at the annual rate of approximately 3.5% through 2019/20.
- The financial projections indicate the need for additional gradual rate increases after the next five years to provide adequate repayment capacity for a future SRF loan anticipated for a future recycled water project. Small future annual rate adjustments are recommended keep revenues in line with operating cost inflation and help minimize the potential for future rate spikes.

Water Rate Structure

- All water customers currently pay both a fixed monthly charge of $16.43 plus water quantity charges that gradually escalate from $5.56 starting with the fourth unit of metered water use per month to $13.68. The first three units of water are provided with the fixed charge, at no additional cost. The fixed charge is roughly equal to the City's lowest rate per unit of water applied to the first three units of unbilled water.
- Under the current rate structure, low-use customers and second homes benefit from both a) fixed charges that are disproportionately low compared to fixed expenses, and b) no charges for the first three units of monthly water use. Over 35% of annual bills are for three units of water or less.
- BWA developed updated water rates with the following modifications to the rate structure:
  - Water quantity charges are phased in for the first three units of water.
  - Fixed monthly charges continue to recover approximately one-third of total rate revenues. While the fixed charges are disproportionately low compared to the City's fixed expenses, this level of fixed revenue recovery is in line with industry norms and conservation-oriented rates (e.g. the California Urban Water Conservation Council has historically recommended agencies' fixed charges recover 30% or less of total rate revenues, but also recognizes that some agencies legitimately have a higher percentage of rate revenues recovered from fixed charges to better ensure revenue stability).
  - Proposed water quantity rates transition to a four-tiered inclining rate structure. Under the draft proposed rate structure, customers would first purchase water in the lowest tier before purchasing water in successive higher tiers as use increases. Due to a transition in rate structure, billing impacts will vary based on water use.
- The rate structure modifications represent incremental modifications to the City's existing rate structure, not a complete revision.

Cost Recovery & Rate Derivation

- The California Constitution does not give agencies leeway to arbitrarily set rates purely based on policy preferences. Rather, it provides agencies with flexibility to implement rates within a framework established by Articles 10 and 13D. Together, these Articles establish that rates should both a) discourage waste and encourage conservation of water, and b) not exceed the costs of service attributable to each parcel or customer.
- In reality, many costs can be reasonably attributed to components of an agency's rate structure based on a range of approaches. For example, costs for an agency's conservation

program can reasonably be attributed and recovered via many approaches including from a) both fixed and variable charges, b) 100% from variable charges, c) on a pro-rata basis from all volumetric tiers, or d) from higher volumetric rate tiers. Likewise, costs for salaries, debt service, and capital improvements can reasonably be treated as a) fixed annual costs that should be recovered from fixed charges, b) costs related to providing water supply and system capacity to meet customer demand and therefore costs that should be recovered from variable rates based on each customer's share of actual water use, or c) costs that can be recovered by both fixed and variable rates, a middle-road approach. Furthermore, costs attributable to meeting peak demands can reasonably be allocated a) to all volumetric tiers on a pro-rata basis, or b) more to higher tiers in recognition that higher tier water use accounts for a disproportionately higher share of demand during peak use months and are the underlying driver of the need for sizing facilities to meet peak demands.

- Ultimately, there is no single correct way to allocate or attribute costs; rather there are a range of reasonable approaches. Hence, five similar agencies may have five different rate structures provided each agency establishes a reasonable cost basis for their own particular rate structure within the parameters of meeting the various requirements of the California Constitution.
- While there is no single correct approach for cost attribution and rate-setting, BWA believes that costs should be allocated within a reasonable range that reflects both a) underlying cost causation, to the extent such causation can reasonably be determined or estimated, and b) the policy preferences of the agency within the parameters of having a reasonable cost basis. The rates developed in this report are designed to achieve the City's policy preferences while complying with the requirements of the California Constitution.
- A detailed cost recovery allocation was developed supporting the proposed rates for fiscal year 2019/20. Rates in intervening years are phased in from current levels to the proposed levels calculated for 2019/20, in order to help minimize the annual impact due to rate structure modifications occurring in addition to overall rate increases.
- The proposed rates were developed based on reasonable and equitable allocations for cost recovery from the City's fixed charges and tiered quantity charges. Based on the allocations, fixed monthly service charges will recover approximately 34% of total rate revenues and water quantity charges will recover roughly 66% of total rate revenues.

- The roughly 66% of costs designated for recovery from the City's water quantity charges are further allocated for recovery from each rate tier based on the following assumptions:
  - Costs attributable to all water use are allocated on a pro-rata basis to all water use. This results in each rate tier recovering a pro-rata share of costs based on the percentage of water consumed in each tier.
  - Costs related to meeting peak demands are allocated more toward higher tiers in recognition that higher tier water use accounts for a disproportionately higher share of demand during peak use months and therefore is the underlying driver of the need for sizing facilities to meet peak demands. Costs attributable to peak demand are attributed to 15% of Tier 2 water use, 35% of Tier 3 water use, and 60% of Tier 4 water use. No peak costs are allocated for cost recovery from Tier 1.
  - Many costs – such as costs for operating and maintaining facilities – are incurred providing service to meet both average demands and peak demands. The share of these costs allocated for variable revenue recovery are further allocated two-thirds to all water use and one-third to meeting peak demand
  - In total, costs are recovered as follows:
    - Fixed rate cost recovery: 34%
    - Variable rate cost recovery : 66%, of which costs are recovered
      - Pro-rata allocation to all water use: 47.4%
      - Allocation to peak use: 18.7%

Proposed Water Rates & Impacts

- The following table shows a schedule of proposed water rates for the next 5 years. Charges include both a) a fixed monthly charge billed regardless of water use, and b) water quantity charges billed in 4 inclining tiers with water first purchased in Tier 1 and subsequently higher tiers as water use increases.

Proposed Water Rates

		Current	Projected Water Rates 2015/16	2016/17	2017/18	2018/19	2019/20
Fixed Monthly Charge		$16.43	$23.00	$26.00	$28.00	$30.00	$32.00
Water Quantity Charges ($/hcf)							
Tier 1	0 - 3 hcf	$0.00	$3.00	$4.00	$5.00	$5.50	$6.00
Tier 2	4 - 10 hcf	5.56 - 5.74	6.00	7.00	7.50	8.00	8.50
Tier 3	11- 50 hcf	5.77 - 7.81	9.00	9.50	10.00	10.50	11.00
Tier 4	>50 hcf	7.85 - 13.68	12.00	12.50	13.00	13.50	14.00
1 hcf = one hundred cubic feet = 748 gallons							

- The following table projects monthly water bills at different levels of water use. Due to the phase-in of charges for the first 3 units of water, low-use customers will experience a higher percentage increase but lower dollar increase in their monthly bills. Under the proposed rates, low use customers will still benefit from low fixed monthly charges and water purchases in the lowest rate tiers.

Water Rate Impacts

Monthly	Current	Projected Monthly Bills					5-Year Impact	
Use (hcf)	$/Month	2015/16	2016/17	2017/18	2018/19	2019/20	$/month	$/day
0	$16.43	$23.00	$26.00	$28.00	$30.00	$32.00	$15.57	$0.51
1	16.43	26.00	30.00	33.00	35.50	38.00	21.57	0.71
2	16.43	29.00	34.00	38.00	41.00	44.00	27.57	0.91
3	16.43	32.00	38.00	43.00	46.50	50.00	33.57	1.10
4	21.99	38.00	45.00	50.50	54.50	58.50	36.51	1.20
5	27.58	44.00	52.00	58.00	62.50	67.00	39.42	1.30
6	33.20	50.00	59.00	65.50	70.50	75.50	42.30	1.39
7	38.85	56.00	66.00	73.00	78.50	84.00	45.15	1.48
8	44.53	62.00	73.00	80.50	86.50	92.50	47.97	1.58
9	50.24	68.00	80.00	88.00	94.50	101.00	50.76	1.67
10	55.98	74.00	87.00	95.50	102.50	109.50	53.52	1.76
20	115.04	164.00	182.00	195.50	207.50	219.50	104.47	3.43
30	179.93	254.00	277.00	295.50	312.50	329.50	149.58	4.92
40	251.24	344.00	372.00	395.50	417.50	439.50	188.27	6.19
50	327.37	434.00	467.00	495.50	522.50	549.50	222.14	7.30
75	533.21	734.00	779.50	820.50	860.00	899.50	366.29	12.04
100	755.68	1,034.00	1,092.00	1,145.50	1,197.50	1,249.50	493.82	16.24
200	1,747.86	2,234.00	2,342.00	2,445.50	2,547.50	2,649.50	901.64	29.64

- Under the proposed rates, low use customers will continue to benefit from low fixed charges coupled with water consumption in the lowest quantity rate tiers.
- High-use customers will also continue to benefit from low fixed charges, particularly considering the higher levels of demand these customers place on the water system and associated higher levels of capacity needs in water infrastructure. At the same time, the rate structure balances the low fixed charges for high-use customers with inclining rate tiers that recover a higher share of costs from higher levels of use, similar to the City's historical water rate structure.

Temporary Surcharge for Desalination Facility Use

- The City's desalination plant was originally constructed in 1992 to provide water supply during a drought emergency and was subsequently upgraded in 2009. The plant served as the City's primary source of water supply for a few months of 2010 and is currently used on a very limited basis to treat high-nitrate groundwater to supplement supply from the State Water Project. The plant provides a source of backup and emergency water supply in case of future State Water Project supply reductions or service outages. In future years, the plant may potentially be used as a primary source of supply.
- The plant treats water via reverse osmosis to produce high-quality drinking water. The relatively high operating costs for running the plant during potential future water shortage emergencies are not factored into the proposed water rate increases. As such, BWA recommends adoption of a surcharge to recover the plant's operating costs during periods of use. The surcharge would be billed based on a customer's metered water use and would only be levied for periods when the desalination plant is in operation.
- Because the cost of producing potable water can vary substantially depending on the source and quality of the untreated supply (e.g. seawater, brackish water, high-nitrate well water), BWA recommends the City adopt a maximum allowable surcharge via the Proposition 218 process based on the most expensive cost of water production: untreated seawater. This would give the City authorization and flexibility to levy a surcharge up to the maximum allowable level as needed.
- The proposed maximum surcharge is based on the cost of producing drinking water from seawater. These costs would be partially offset by reduced purchases from the State Water Project. A preliminary draft of the maximum surcharge based on treatment of seawater is as estimated as follows:

- Cost of seawater treatment totals approximately $1,600 per AF or about $3.70 per hcf. This total would be offset by a) roughly $45 per AF in variable State Water Project expenses, and b) $250 per AF of staffing expenses which are not incremental costs, but simply a transfer of existing staffing costs. This results in a total offset of about $0.70 per hcf and a net maximum surcharge of $3.00 per AF.
- For comparison, the total cost of treating brackish water is about $1,000 per AF, approximately $600 per AF lower than seawater treatment. The incremental costs for treating brackish water, less applicable offsets, would result in a net surcharge of about $1.60 per AF.

➢ The Proposition 218 notice and Resolution adopting the surcharges should allow for automatic annual inflationary adjustments to keep the charge in line with future costs of water treatment, which include substantial costs for electricity and chemicals.

Water Shortage Emergency Rates

➢ BWA recommends consideration of Water Shortage Emergency Rates designed to help the water enterprise remain financially stable during periods of emergency water shortages and reduced water sales. Water Shortage Emergency Rates can be phased in by future Council authorization in response to the escalating water shortage stages identified in the Water Shortage Contingency Plan of the 2010 UWMP.

➢ The City is currently in a Stage 3 Water Shortage and has implemented conservation requirements for "Severely Restricted Water Supply Conditions". More severe water shortage stages could require additional cutbacks in customer demand and result in future revenue shortfalls. As such, the City could adopt Water Shortage Emergency Rates that could be triggered with a Stage 4 or 5 Water Shortage.

➢ Water Shortage Emergency Rates can be adopted along with regular water rate increases via the Proposition 218 process in order to give the City authority to implement emergency rates when needed. If adopted, the City can opt to phase in emergency rates as needed provided the rates do not exceed the maximum levels noticed and adopted via the Proposition 218 process.

➢ If ever implemented, Water Shortage Emergency Rates should be gradually phased out as water sales return to normal levels. Emergency Rates should not immediately be rescinded when a water shortage stage is declared over as it typically takes additional time for water sales to return to normal-year levels.

➢ The City has already taken substantial steps to help ensure adequate water supply during periods of drought. According to the 2010 Urban Water Management Plan (UWMP), "it is

not anticipated that the City will face a chronic shortage condition at which the City would need to implement any additional measures to reduce the demand" other than basic conservation measures outlined in the UWMP. The UWMP only foresees the need for more extreme measures, such as water rationing, during catastrophic interruptions that would reduce water supplies by 50% or more.

Automatic Pass-Through for State Water Contract Costs

- State Water Contract costs currently account for roughly half of annual water enterprise expenses. These costs may increase substantially in future years due to implementation of the $25 billion Bay Delta Conservation Plan. The timing of the future expenditures and impacts on the City and other recipient of State Water Project water are not currently known. The financial projections incorporated 5% annual cost escalation for State Water Contract expenses. While substantial cost increases may not impact the City until after the next five years, the City can consider adopting an automatic pass-through to account for unanticipated increases in State Water Contract costs above the modest projected increases incorporated in the draft rate projections.
- California Government Code Section 53756 became effective on January 1, 2009 and authorizes public agencies providing water, sewer, and garbage services to adopt automatic pass-through rate adjustments to account for a) cost inflation, and b) increases in wholesale water charges or wastewater treatment charges. Pass-throughs must be adopted via the Proposition 218 process and can be effective for up to five years without additional Proposition 218 authorization. The Proposition 218 Notice informing ratepayers of the proposed pass-throughs must include a clearly defined formula indicating how any inflationary or wholesale adjustments will be implemented. After adoption of a pass-through formula, agencies do not need to go through the Proposition 218 process to implement a pass-through. However, agencies must send ratepayers a notice informing them of the pass-through not less than 30 days before the effective date of the adjustment. Regardless of the pass-through authorization, rates must continue to comply with the substantive provisions of Proposition 218 including that any inflation adjustment cannot exceed the cost of providing service.

3. SEWER FINANCIAL PLAN & RATE STUDY

Sewer Finances & Rates

- The City's sewer utility is a financially self-supporting enterprise.
  - Sewer rates are the main source of revenues and currently account for approximately 98% of total revenues.
  - Sewer rates should be set at levels adequate to fund the cost of providing service, including long-term operating and capital needs, and support the enterprise's long-term financial stability.
- The City has gradually increased sewer rates every year since at least 1998. Since 2008, the City has adopted 5% annual rate adjustments each year. These rate increases have supported the financial stability of the sewer utility and put the enterprise in decent financial position to address its financial challenges with substantial, but gradual, rate increases.
- The sewer enterprise had approximately $3.1million in reserves as of June 30, 2014. However, the City anticipates drawing down over $1 million of fund reserves during the current fiscal year on preliminary costs related to the new Water Reclamation Facility. The City anticipates that these costs will be reimbursed by future SRF financing.
- The monthly sewer bill for a typical single family home is $45.59 or slightly over $1.50 per day. The City's residential sewer bills are in the middle range compared to other regional agencies.

Financial Challenges

The City's sewer enterprise faces a number of financial challenges in upcoming years that are putting upward pressure on rates. Key challenges include:

- **Funding a New $75 Million Water Reclamation Facility**
  - Based on engineering and financial evaluation of key alternatives, the City anticipates moving forward with design and construction of a new $75 million wastewater treatment plant at the Rancho Colina site. This facility will replace the existing treatment plant jointly owned by the City and Cayucos Sanitary District. The new treatment plant will be a "reclamation ready" facility designed to meet current and future permit requirements.
  - A City anticipates pursuing a design-build process with a) $10 million of design, environmental, and other preliminary costs needed through the end of fiscal year

2016/17, and b) almost $65 million in funding needed during a 2-year construction phase starting 2017/18.

- The City anticipates fully funding the facility with a low-rate Clean Water State Revolving Fund Loan. Annual debt service is projected at a little under $4 million per year starting 2019/20, the year after the project is complete. In order to provide interim funding for design and other preliminary costs leading up to construction, the City should pursue an SRF Planning Loan, which can subsequently be rolled into the long-term construction financing agreement.
- The City anticipates that Cayucos Sanitary District will fund 25% to 30% the costs of the new facility either as a partner or customer. For planning purposes, the financial projections assume Cayucos SD funds 25% of annual debt service for the new facility.

➢ **Repair & Replacement of Aging Facilities**

- The City's sewer system capital improvement program identifies approximately $10 million (current $) of funding needs over the next 10 years, including $7.6 million (current $) of sewer collection system rehabilitation and upgrades over the upcoming five years. Many of the City's sewer pipelines are over 50 years old and are approaching the end of their useful lives. The City anticipates funding these projects on a pay-as-you-go cash basis.
- In anticipation of a new wastewater treatment plant, the City has deferred a number of capital improvements needed at the existing treatment plant. Some of these projects can no longer be deferred and are needed to ensure continued safe and reliable operations and compliance with the City's waste discharge permit. The City anticipates funding about $2.3 million of major maintenance and repair projects at the existing treatment plant over the current and subsequent three fiscal years. The City anticipates funding these projects on a pay-as-you-go cash basis with Cayucos SD contributing 25% of project costs.

➢ **Operating Cost Inflation**

- Annual rate increases are needed to keep revenues in line with ongoing operating cost inflation. Cost inflation for water and wastewater utilities (whose costs are largely related to labor and capital) has historically been higher than CPI, which is more of a measure of urban goods and services.

Financial Projections

- BWA developed 10-year financial projections to evaluate annual revenue requirements and project sewer rate increases. The projections were based on reasonable and slightly conservative assumptions including:
  - Operating cost projections are based on the 2014/15 Budget
  - Operating cost inflation is projected at 4% per year for planning purposes
  - The projections assume a relatively low growth scenario of 10 new single family homes or equivalent units per year
  - Sewer revenue projections account for a small decline in volumetric sewer sales in response to water and sewer rate increases.
  - Assumes the City funds the proposed new $75 million Water Reclamation Facility via a Clean Water State Revolving Fund (SRF) loan. The SRF financing program currently offers 20 or 30-year loans with interest rates below 2%. For planning purposes, the projections assume a 30-year SRF loan with a 3% annual interest rate. The projections assume that Cayucos Sanitary District pays 25% of the debt service.
  - A minimum fund reserve target for planning purposes is recommended at 25% of annual operating expenses, plus $1 million for emergency capital reserves. It is acceptable for reserves to temporarily drop below these levels provided the City has taken action to achieve the targets over the longer run.

Draft Rate Projections

- Cash flow projections indicate the need for substantial sewer rate increases over the next five years. Monthly single family residential sewer charges are projected to steadily increase from the current level of $45.59 to $83.00 over the next five fiscal years.
- Unlike water rates, which require a large up-front increase to restore water system financial stability, sewer rates can be more gradually phased in because a) the sewer enterprise is starting from a stronger financial position, and b) the City anticipates funding the new wastewater treatment plant with SRF loans and projects that debt service for the new plant will not start until 2019/20, one year after construction is complete.
- Deferring or reducing necessary rate increases in the near-term would result in the need for higher rate increases in future years (and vice versa)
- The financial projections indicate the need for small annual rate increases after the next five years. Small future annual rate adjustments are recommended keep revenues in line with operating cost inflation and help minimize the potential for future rate spikes.

Sewer Rate Structure

- The City's current residential sewer rate structure includes a fixed charge of $45.59 per month per account, plus a volumetric charge of $4.07 applied to metered water use over 10 hcf for single family homes and apartments, and use in excess of 3 hcf for condos. Non-residential accounts pay volumetric rates that vary based on customer type subject to a minimum monthly charge of $51.77.
- BWA developed draft rate projections based on a cost-of-service approach.
  - Operating and capital expenses are allocated for cost recovery from the parameters of wastewater flow and strength, as designated by biological oxygen demand (BOD).and suspended solids (SS).
  - The total amount of costs allocated to each parameter is divided by the total amount of estimated loadings for each parameter, resulting in unit costs for flow, BOD and SS.
  - These unit costs are then applied to the wastewater characteristics of each customer class, resulting in rates that are equitably aligned with the wastewater characteristics of each class.
- The draft rate projections include modifications to the existing sewer rate structure including:
  - Residential rates are revised to include fixed monthly charges per dwelling unit only and eliminate the additional volumetric charges levied on water use over the monthly allowance. Only a small amount of revenues are currently generated by the volumetric charges, and they may be recovering charges for outdoor water use that does not get returned to the sewer system.
  - Under the proposed residential rates, multi-family residential units and condominiums would pay reduced charges equal to 80% of the single family charge based on analysis of winter water use data and proposed cost allocations.
  - Although the City's non-residential rates list 18 customer classes, these customers are billed only five different sewer rates. The proposed rates continue to include five rate classes, with each class defined based on wastewater strength (Low, Domestic, Moderate, Mod-High, and High Strength).

- Two commercial customer classes are reclassified based on wastewater strength:
    - Mobile home parks, which currently pay volumetric commercial sewer rates (not residential rates per dwelling unit), are reclassified from Class A – Low Strength to Class B – Domestic Strength.
    - The City's single retirement home with dining is reclassified from Class D – Mod-High Strength to Class C – Moderate Strength.
- New rates were developed based on a cost of service methodology that equitably recovers costs for wastewater flow and strength from each each customer class. Costs were allocated for recovery via the wastewater treatment parameters of flow, Biological Oxygen Demand (BOD), and Suspended Solids (SS). Costs allocated to each parameter were then divided by the total estimated loadings for each parameter, resulting in unit costs for flow ($ per hcf) and strength ($ per pound for BOD and SS). These unit costs were then applied to the wastewater characteristics of each customer class resulting in new rates for each class based on common underlying unit costs.
- Rate adjustments from current rates to proposed maximum rates in 2019/20 were phased in over five years based on the overall level of required rate increases as determined from the financial projections. Under the proposed draft rates, rates for each non-residential customer class increase by roughly a similar dollar amount (not the same percentage amount) over the next five years.
- The minimum charge for non-residential sewer accounts is revised from being higher than the current fixed residential charge, to the reduced flat monthly charge proposed for multi-family residential accounts, equal to 80% of the single family rate.

Proposed Sewer Rates & Impacts

- The following table shows a schedule of proposed sewer rates for the next 5 years. Residential customers pay a fixed monthly charge per dwelling unit with reduced charges for multi-family and condominium dwelling units. Non-residential customers pay a charge based on customer class and metered water consumption, subject to a minimum charge set at the reduced charge per multi-family dwelling unit.

Proposed Sewer Rates & Impacts

	Current	Proposed					5-Year
	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	Impact
RESIDENTIAL							
Charge per residential dwelling unit							
Single Family	$45.59	$55.00	$62.50	$70.00	$77.00	$83.00	$37.41
Multi-Family/Condo	varies	44.00	50.00	56.00	61.60	66.40	varies
% of Single Family		80%	80%	80%	80%	80%	
NON-RESIDENTIAL							
Rate per hcf of metered water use							
Class A - Low Strength	$4.63	$6.50	$7.95	$9.37	$10.57	$11.40	$6.77
Class B - Domestic Strength	5.82	7.98	9.65	11.29	12.67	13.61	7.79
Class C - Moderate Strength	8.03	10.19	11.86	13.50	14.89	15.82	7.79
Class D - Mod-High Strength	10.45	12.55	14.18	15.78	17.13	18.03	7.58
Class E - High Strength	13.38	15.89	17.84	19.75	21.36	22.46	9.08
Minimum Annual Charge	*51.77*	44.00	50.00	56.00	61.60	66.40	*14.63*

Note: 1 hcf = 100 cubic feet = approximately 748 gallons

4. OTHER RECOMMENDATIONS

Debt Financing Recommendations

- BWA strongly recommends the City pursue low-cost, subsidized funding from the Clean Water State Revolving Fund (SRF) Financing Program to finance the new Water Reclamation Facility and subsequent recycled water project.
  - The SRF financing program offers low-rate loans with 20 to 30 year repayment terms and interest rates currently below 2%. Interest rates are based on approximately half the average interest rate of the most recent California state general obligation bond issuance.
  - The SRF financing program will soon be administering disbursement of California Proposition 1 financing, which will provide 1% interest rate loans for recycled water projects as well as some grant funding for economically disadvantaged communities. Due to the 4 to 5 year anticipated timing for planning, designing, and constructing a new wastewater treatment plant, it is unknown if the City's project will be eligible for funding from this upcoming financing program.
  - Debt service on SRF loans is not due until one year following the project's certified completion date.
  - In recent years, the SRF program has been requiring agencies to establish a debt service reserve fund equal to annual debt service.
  - The SRF program also typically requires agencies to maintain annual net revenues (gross revenues less operating expenses) equal to at least 1.10x of annual debt service, although some agencies may be required to maintain a 1.20x debt service coverage ratio.
  - Prior to award of funding, the SRF program requires agencies to adopt rates adequate to support debt repayment and achieve the required debt service coverage ratio.
  - The SRF financing program does not provide a final funding commitment until after the project has been designed and bid out in compliance with SRF specifications. Agencies can subsequently seek reimbursement for preliminary design and other soft costs incurred prior to construction award.
  - Due to the need for approximately $10 million of funding for preliminary engineering, design, and other soft costs leading up to construction of the proposed Water Reclamation Plant, BWA recommends the City pursue an SRF Planning Loan to help fund

these costs. If awarded, repayment of SRF planning loans can be rolled into the long-term SRF project loan.

- During construction, agencies fund ongoing construction invoices and can subsequently seek monthly reimbursement from SRF. However, the City needs to be prepared to fund a few months of project expenditures due to the lag in reimbursements. BWA has assisted agencies in obtaining a competitively-bid line of credit in cases where agencies have not had adequate fund reserves to meet the cash flow needs of their SRF projects.

- BWA also recommends the City submit an inquiry form to the California Financing Coordinating Committee to identify if the City is eligible for subsidized funding from other various state and federal financing programs, such as the California Infrastructure and Economic Development Bank (I-Bank), for its debt financing needs.

Proposition 218 Rate Increase Process

- In order to increase rates, the City must comply with the procedural requirements of Article 13D, Section 6 of the California Constitution, which was established by Proposition 218. These requirement require the City to:

  - Mail a notice of to all affected property-owners informing them of a) the proposed rate increases, b) the basis for increases, and c) the date, time, and location of a Public Hearing at which the proposed rates will be considered for adoption.
    - There are differing legal opinions regarding who agencies must mail the required notice too. Many agencies mail notices to all affected property owners only, some mail to both property owners and tenant ratepayers responsible for paying the bill, and a few agencies only send the notice to ratepayers. However, in case of delinquency, agencies are only allowed to place a lien on the property if the notice was mailed to the property owner.
    - BWA recommends the notice go beyond the minimum legal requirements and present a clear and concise explanation why the proposed rate increases are needed. Ratepayers are more accepting of rate increases when they understand why the increases are needed.
  - Hold a Public Hearing on the proposed rate increases not less than 45 days after the notice is mailed. Most agencies schedule the Public Hearing during a regularly-scheduled meeting of their governing body.

        - BWA recommends that the City establish a clear structure for the Board Meeting and Public Hearing in advance to help ensure the process is understandable to the Board and public and goes as smoothly as possible.
    - At the Public Hearing, the proposed rate increases are subject to "majority protest" and cannot be adopted if written protests are received from more than 50% of affected parcels, with one protest counted per parcel.
        - BWA generally recommends agencies take a lenient approach to counting written protests at the Public Hearing to demonstrate a good-faith effort to count every protest, even if some protests do not include all of the legally-required information.

Low-Income Discount

- The Public Works Advisory Committee generally supported the idea of adopting a low-income discount program in Morro Bay. If the City opts to pursue a low-income discount program, BWA recommends that eligibility be based on economic criteria only.
- Based on BWA's experience with other water and wastewater agencies throughout California, roughly 25% of statewide water and sewer agencies offer some form of a low-income discount. The amount of the discount typically ranges from 10% to 20% of the utility bill, but is occasionally lower or higher. In some cases, the discount is a fixed dollar amount (e.g. $5 per month).
- Eligibility requirements vary from agency to agency. While some agencies independently verify a customer's income, BWA would instead recommend the City piggy-back on some other low-income discount program – such as the PG&E CARE program -- to avoid the administrative effort of having to determine program eligibility. For example, customers who provide proof of eligibility in the CARE program would qualify for the City's low-income discount. Qualification for the discount should be verified annually; the discount should not automatically extend forever.
    - PG&E CARE program eligibility is based on income thresholds per number of people per home. Current maximum income levels for eligibility are as follows:
        - $31,460 for 1 or 2 people
        - $39,580 for 3 people
        - $47,700 for 4 people, etc.

- Other eligibility criteria can include participation in various federal assistance programs (such as AFDC, SSI/SSP, food stamps, and/or other programs) and other utility discount programs such as if offered by the customer's telephone company.

- There are some additional details that would have to be resolved, such as how to provide the discount to a unit in a multi-family or mixed use property with a single master-meter bill.

Water Financial Plan & Rate Study

Tables & Charts

Table 1
City of Morro Bay
Current Monthly Water Rates
Effective Since 07/01/1995

Minimum Monthly Charge $16.43

Water Quantity Charges

Water Use (hcf)*	Cost per Unit ($/hcf)	Change in Cost per Unit	Total Monthly Charge	Water Use (hcf)*	Cost per Unit ($/hcf)	Change in Cost per Unit	Total Monthly Charge
0	-	-	16.43	36	7.15	0.03	222.09
1	-	-	16.43	37	7.22	0.07	229.31
2	-	-	16.43	38	7.27	0.05	236.58
3	-	-	16.43	39	7.30	0.03	243.88
4	5.56	-	21.99	40	7.36	0.06	251.24
5	5.59	0.03	27.58	41	7.43	0.07	258.67
6	5.62	0.03	33.20	42	7.45	0.02	266.12
7	5.65	0.03	38.85	43	7.52	0.07	273.64
8	5.68	0.03	44.53	44	7.54	0.02	281.18
9	5.71	0.03	50.24	45	7.60	0.06	288.78
10	5.74	0.03	55.98	46	7.64	0.04	296.42
11	5.77	0.03	61.75	47	7.66	0.02	304.08
12	5.80	0.03	67.55	48	7.72	0.06	311.80
13	5.83	0.03	73.38	49	7.76	0.04	319.56
14	5.86	0.03	79.24	50	7.81	0.05	327.37
15	5.89	0.03	85.13	51	7.85	0.04	335.22
16	5.93	0.04	91.06	52	7.87	0.02	343.09
17	5.95	0.03	97.01	53	7.91	0.04	351.00
18	5.98	0.03	102.99	54	7.93	0.02	358.93
19	6.01	0.03	109.00	55	7.99	0.06	366.92
20	6.04	0.03	115.04	56	8.03	0.04	374.95
21	6.13	0.09	121.17	57	8.05	0.02	383.00
22	6.22	0.09	127.39	58	8.09	0.04	391.09
23	6.31	0.09	133.70	59	8.11	0.02	399.20
24	6.37	0.06	140.07	60	8.15	0.04	407.35
25	6.47	0.10	146.54	61	8.17	0.02	415.52
26	6.55	0.08	153.09	62	8.21	0.04	423.73
27	6.61	0.06	159.70	63	8.23	0.02	431.96
28	6.67	0.06	166.37	64	8.30	0.07	440.26
29	6.73	0.06	173.10	65	8.32	0.02	448.58
30	6.83	0.10	179.93	66	8.36	0.04	456.94
31	6.88	0.05	186.81	67	8.35	(0.01)	465.29
32	6.94	0.06	193.75	68	8.39	0.04	473.68
33	7.00	0.06	200.75	69	8.41	0.02	482.09
34	7.07	0.07	207.82	70	8.45	0.04	490.54
35	7.12	0.05	214.94	>70	*rates continue escalating to a max of $13.68*		

* 1 hcf = 100 cubic feet = approximately 748 gallons.

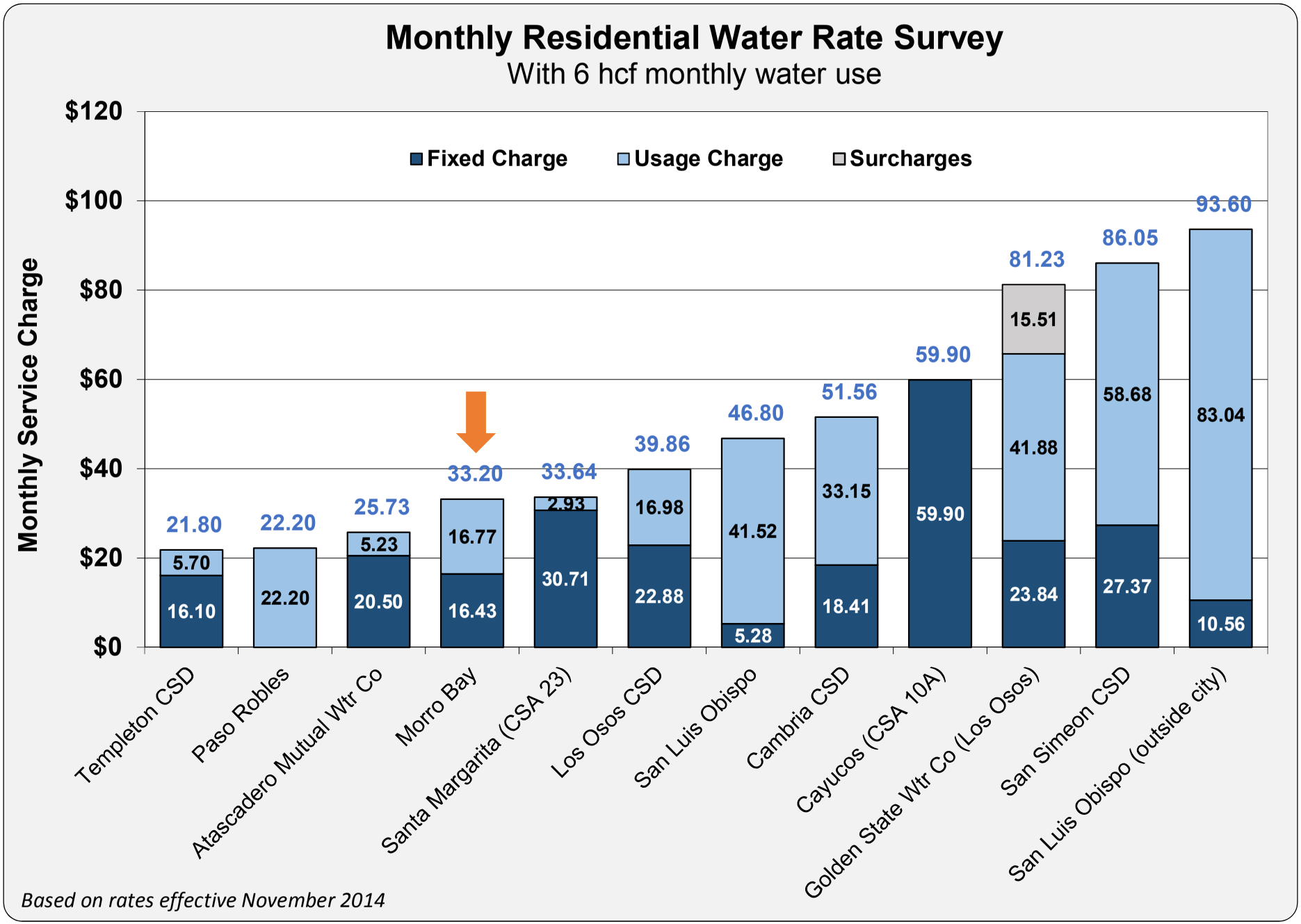

Monthly Residential Water Rate Survey
With 6 hcf monthly water use
Monthly Service Charge
$120
$100
$80
$60
$40
$20
$0
Fixed Charge
Usage Charge
Surcharges
21.80
5.70
16.10
22.20
22.20
25.73
5.23
20.50
33.20
16.77
16.43
33.64
2.93
30.71
39.86
16.98
22.88
46.80
41.52
5.28
51.56
33.15
18.41
59.90
59.90
81.23
15.51
41.88
23.84
86.05
58.68
27.37
93.60
83.04
10.56
Templeton CSD
Paso Robles
Atascadero Mutual Wtr Co
Morro Bay
Santa Margarita (CSA 23)
Los Osos CSD
San Luis Obispo
Cambria CSD
Cayucos (CSA 10A)
Golden State Wtr Co (Los Osos)
San Simeon CSD
San Luis Obispo (outside city)
Based on rates effective November 2014

Table 2
City of Morro Bay
Historical Monthly Water Rates

	07/01/92	07/01/94	07/01/95	07/01/92	07/01/94	07/01/95
Minimum Charge	$2.93	$3.96	$16.43			
Water Quantity Charges						
Water Use (hcf)*	Cost per Unit ($/hcf)			Total Monthly Charges		
0	-	-	-	2.93	3.96	16.43
1	-	-	-	2.93	3.96	16.43
2	2.96	4.00	-	5.89	7.95	16.43
3	2.99	4.04	-	8.88	11.99	16.43
4	3.01	4.06	5.56	11.89	16.05	21.99
5	3.02	4.08	5.59	14.91	20.13	27.58
6	3.04	4.10	5.62	17.95	24.23	33.20
7	3.06	4.13	5.65	21.01	28.36	38.85
8	3.07	4.14	5.68	24.08	32.51	44.53
9	3.09	4.17	5.71	27.17	36.68	50.24
10	3.10	4.19	5.74	30.27	40.86	55.98
11	3.12	4.21	5.77	33.39	45.08	61.75
12	3.14	4.24	5.80	36.53	49.32	67.55
13	3.15	4.25	5.83	39.68	53.57	73.38
14	3.17	4.28	5.86	42.85	57.85	79.24
15	3.19	4.31	5.89	46.04	62.15	85.13
16	3.20	4.32	5.93	49.24	66.47	91.06
17	3.22	4.35	5.95	52.46	70.82	97.01
18	3.23	4.36	5.98	55.69	75.18	102.99
19	3.25	4.39	6.01	58.94	79.57	109.00
20	3.27	4.41	6.04	62.21	83.98	115.04
21	3.32	4.48	6.13	65.53	88.47	121.17
22	3.36	4.54	6.22	68.89	93.00	127.39
23	3.41	4.60	6.31	72.30	97.61	133.70
24	3.45	4.66	6.37	75.75	102.26	140.07
25	3.49	4.71	6.47	79.24	106.97	146.54
26	3.54	4.78	6.55	82.78	111.75	153.09
27	3.58	4.83	6.61	86.36	116.59	159.70
28	3.61	4.87	6.67	89.97	121.46	166.37
29	3.64	4.91	6.73	93.61	126.37	173.10
30	3.69	4.98	6.83	97.30	131.36	179.93
Max Rate	5.44	7.34	13.68			

Note: Total Charges can differ slightly from rate ordinance due to rounding.

Note: Rates continue to escalate per unit for use over 30 hcf.

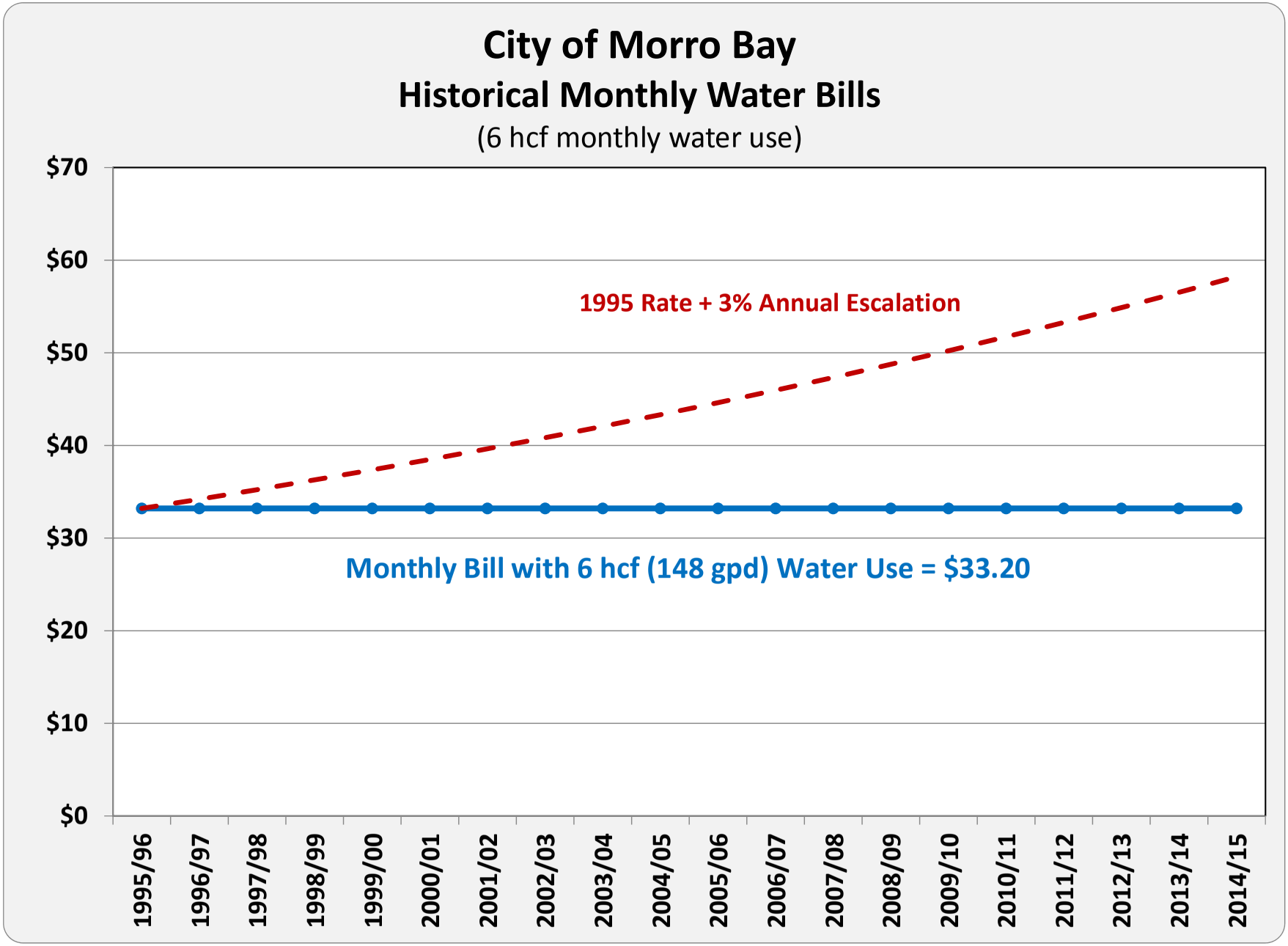

City of Morro Bay
Historical Monthly Water Bills
(6 hcf monthly water use)
$70
$60
$50
$40
$30
$20
$10
$0
1995 Rate + 3% Annual Escalation
Monthly Bill with 6 hcf (148 gpd) Water Use = $33.20
1995/96
1996/97
1997/98
1998/99
1999/00
2000/01
2001/02
2002/03
2003/04
2004/05
2005/06
2006/07
2007/08
2008/09
2009/10
2010/11
2011/12
2012/13
2013/14
2014/15

Table 3
City of Morro Bay
Historical Water Utility Finances & Budget

	Actual 2009/10	Actual 2010/11	Actual 2011/12	Budget 2012/13	Amended Budget 2013/14	Proposed Budget 2014/15
Beginning cash balance						
1. Equipment replacement fund	$279,563	$284,451	$286,451	$288,622	$289,801	$289,801
2. Operation fund	(38,519)	(455,458)	375,192	(114)	(236,113)	0
3. CIP fund	5,166,472	4,994,374	4,852,454	4,360,525	4,135,073	2,290,947
Total	5,407,516	4,823,367	5,514,097	4,649,033	4,188,761	2,580,748
Revenue and reserve transfers						
1. Equipment replacement fund:						
Interest/other income	5,050	2,448	2,171	1,179	0	0
Subtotal	5,050	2,448	2,171	1,179	0	0
2. Operation fund:						
Water sales	3,451,279	3,323,916	3,325,454	3,273,369	3,400,000	3,230,000
Service fees	111,950	103,643	100,040	105,628	65,000	62,750
Other revenues	791	5,135	1,552	1,371	0	500
Transfer from reserve fund	0	222,327	622,808	147,350	775,136	595,341
Other transfers	54,612	342	14,408	0	0	0
Subtotal	3,618,632	3,655,363	4,064,262	3,527,718	4,240,136	3,888,591
3. CIP fund:						
Impact fees	10,315	16,566	6,920	42,408	30,000	25,000
Interest income	85,426	44,964	40,977	18,669	10,000	5,000
Other income	534	546	218	0	0	0
Transfers in	0	0	135,864	191,829	0	0
Subtotal	96,275	62,076	183,979	252,906	40,000	30,000
Total Revenues	3,665,345	3,497,218	3,477,332	3,442,624	3,505,000	3,323,250
Total Transfers In	54,612	222,669	773,080	339,179	775,136	595,341
Total	3,719,957	3,719,887	4,250,412	3,781,803	4,280,136	3,918,591
Expenses						
1. Equipment replacement fund:						
Equipment/Vehicles						
Subtotal	0	0	0	0	0	0
2. Operation fund:						
Personnel	(728,891)	(755,617)	(782,729)	(767,758)	(917,839)	(740,637)
Supplies	(255,591)	(228,166)	(182,847)	174,552	(126,750)	(136,050)
Services	(2,533,363)	(1,467,021)	(3,208,479)	(2,480,107)	(2,683,073)	(2,732,800)
Other (no depreciation)	(299,612)	(105,934)	(34,325)	(24,400)	0	0
Payment to General Fund for cost allocation	0	(267,975)	(271,188)	(271,188)	(276,341)	(279,104)
Transfer to Capital Improvement Fund	(218,114)	0	0	0	0	0
Transfer to Reserve fund	0	0	0	(45,732)	0	0
Subtotal	(4,035,571)	(2,824,713)	(4,479,568)	(3,414,633)	(4,004,003)	(3,888,591)
3. CIP fund:						
Capital Improvements	(278,151)	0	0	(331,008)	(1,108,990)	(1,660,000)
Transfer to Operation Fund	0	(203,996)	(675,908)	(147,350)	(775,136)	(595,341)
Subtotal	(278,151)	(203,996)	(675,908)	(478,358)	(1,884,126)	(2,255,341)
Total Expenses	(4,095,608)	(2,824,713)	(4,479,568)	(3,699,909)	(5,112,993)	(5,548,591)
Total Transfers Out (excl Gen Fund pymt)	(218,114)	(203,996)	(675,908)	(193,082)	(775,136)	(595,341)
Total	(4,313,722)	(3,028,709)	(5,155,476)	(3,892,991)	(5,888,129)	(6,143,932)
Revenues Less Expenses	(593,765)	691,178	(905,064)	(111,188)	(1,607,993)	(2,225,341)
Ending Cash Balance						
1. Equipment replacement fund	252,986	286,451	288,622	289,801	289,801	289,801
2. Operation fund	(455,458)	375,192	(114)	(236,133)	0	0
3. CIP fund	4,984,596	4,852,454	4,360,525	4,135,073	2,290,947	65,606
Total	4,782,124	5,514,097	4,649,033	4,188,741	2,580,748	355,407

Table 4
City of Morro Bay
Water Capital Improvement Program

		2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	Total
UNESCALATED CAPITAL EXPENSES												
Vehicles												
2004 Chevrolet Silverado Pickup	*05/20/04*		35,000									35,000
2005 Chevrolet Silverado Pickup	*05/21/04*			35,000								35,000
Capital Improvements												
Nutmeg Tank construction			2,000,000									2,000,000
Chorro Valley Stream gauges			250,000									250,000
Desalination plant decanting facilities			500,000									500,000
Desalination plant capacity improvements			250,000									250,000
Desalination plant structural improvements			100,000									100,000
Various master plan improvements		350,000	350,000	350,000	350,000	350,000						1,750,000
Convert meter reading to AMR			150,000	200,000	250,000							600,000
Additional 750k gal storage tank at Kings						500,000	500,000					1,000,000
Placeholder for Future Water System Improvements							500,000	500,000	500,000	500,000	500,000	2,500,000
Recycled Water System, Phase 2 (escalated cost)								12,500,000	12,500,000			25,000,000
Total Unescalated		**350,000**	**3,635,000**	**585,000**	**600,000**	**850,000**	**1,000,000**	**13,000,000**	**13,000,000**	**500,000**	**500,000**	**34,020,000**
CAPITAL EXPENSES WITH COST ESCALATION												
Annual Cost Escalation			3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	
Cost Escalator		1.000	1.030	1.061	1.093	1.126	1.159	1.194	1.230	1.267	1.305	
Subtotal Water Capital Projects		350,000	3,744,000	621,000	656,000	957,000	1,159,000	597,000	615,000	633,000	652,000	9,984,000
Recycled Water System, Phase 2		0	0	0	0	0	0	12,500,000	12,500,000	0	0	25,000,000
Total with Cost Escalation		**350,000**	**3,744,000**	**621,000**	**656,000**	**957,000**	**1,159,000**	**13,097,000**	**13,115,000**	**633,000**	**652,000**	**34,984,000**

Table 5
City of Morro Bay
SRF Loan Debt Service Estimates

	Phase 2 Recycled Water System
Funding Target	$25,000,000
SRF Loan Amount	
Eligible Project Costs[1]	25,000,000
Accrued Interest During Construction[2]	625,000
Total Loan Amount	25,625,000
Loan Terms	
Term (years)	30
Interest Rate[3]	3.00%
Annual Loan Payment[4]	1,307,000
Total Payments Over Loan Term	39,210,000
Reserve Fund Requirement[5]	1,307,000

1 Some costs may not be eligible for SRF Loan funding & would require another funding source
2 Assumes steady gradual drawdown of loan funds over two years.
3 Total net interest rate estimated for financial planning purposes; actual rate may vary.
4 First debt service payment due one year following completion of project.
5 Agencies must set aside funds to meet the SRF Reserve Requirement at least 90 days prior to project completion date.

Table 6
City of Morro Bay
Bank Loan & I-Bank Debt Estimates

	Bank Loan/Private Placement Estimates			I-Bank Loan Estimates		
	10-Year	15-Year	20-Year	20-Year	25-Year	30-Year
Draft Project Funding Target	$3,500,000	$3,500,000	$3,500,000	$3,500,000	$3,500,000	$3,500,000
Loan Amount						
Project Funding	$3,500,000	$3,500,000	$3,500,000	$3,500,000	$3,500,000	$3,500,000
Reserve Fund	tbd	tbd	tbd	tbd	tbd	tbd
Issuance Costs (est. for planning purposes)	75,000	75,000	75,000	75,000	75,000	75,000
Total Loan Amount	3,575,000	3,575,000	3,575,000	3,575,000	3,575,000	3,575,000
Loan Terms						
Term (years)	10	15	20	20	25	30
Interest Rate (estimated)	3.00%	3.75%	4.00%	3.25%	3.50%	3.75%
Annual Debt Service	$419,000	$316,000	$263,000	$246,000	$217,000	$201,000
Debt Service per $1 Million of Project Funding	**$119,714**	**$90,286**	**$75,143**	**$70,286**	**$62,000**	**$57,429**
Total Payments Over Term of Loan	$4,190,000	$4,740,000	$5,260,000	$4,920,000	$5,425,000	$6,030,000
Present Value of Payments Discounted at 3%	3,574,000	3,772,000	3,913,000	3,660,000	3,779,000	3,940,000

Note: Bank Loans and I-Bank ISRF Loans may require the District to set aside funds for a debt service reserve fund equal to annual debt service.

Table 7 Morro Bay - Water Cash Flow Projections					Years 1-5
	Budget	Projected			
	2014/15	2015/16	2016/17	2017/18	2018/19
Effective Date of Rate Adjustment	07/01/14	07/01/15	07/01/16	07/01/17	07/01/18
Fixed Monthly Service Charge	$16.43	$23.00	$26.00	$28.00	$30.00
Fixed Rate Recovery Net of Delinquencies	98%	98%	98%	98%	98%
Beginning Accounts	5,424	5,424	5,434	5,444	5,454
Growth:Single Family Homes or Equivalents	-	10	10	10	10
Future Water Sales Elasticity	-	(0.15)	(0.15)	(0.15)	(0.15)
Change in Annual Water Consumption		-7.5%	-2.0%	-1.2%	-1.1%
Water Development Impact Fee	$2,900	$2,960	$3,020	$3,080	$3,140
Debt Svc per $1M of Funding (15Yr, 4%)	-	$92,000	$92,000	$92,000	$92,000
Interest Earnings Rate	0.25%	0.25%	0.50%	1.0%	1.0%
State Water Project Cost Escalation	-	3.0%	5.0%	5.0%	5.0%
Operating Cost Escalation	-	4.0%	4.0%	4.0%	4.0%
Beginning Fund Reserves	$2,580,000	$1,644,000	$1,836,000	$1,873,000	$2,082,000
REVENUES					
Fixed Service Charges	1,048,000	1,468,000	1,663,000	1,794,000	1,926,000
Water Consumption Charges	2,182,000	3,028,000	3,356,000	3,572,000	3,786,000
Subtotal Water Rate Revenues	*3,230,000*	*4,496,000*	*5,019,000*	*5,366,000*	*5,712,000*
Service Fees/Other	63,000	64,000	65,000	66,000	67,000
Development Impact Fees	0	30,000	30,000	31,000	31,000
Interest Earnings	6,000	4,000	9,000	19,000	21,000
Subtotal	3,299,000	4,594,000	5,123,000	5,482,000	5,831,000
Debt Proceeds: City CIP Projects	0	3,500,000	0	0	0
SRF Loan: Recycled Water, WRP Phase 2	0	0	0	0	0
EXPENSES					
Operating & Maintenance					
Water System Personnel	741,000	771,000	802,000	834,000	867,000
Supplies & Services	648,000	674,000	701,000	729,000	758,000
State Water Project Payments	1,473,000	1,517,000	1,593,000	1,673,000	1,757,000
Share of CCWA 2006 Bonds (Thru Oct-2021)	744,000	745,000	745,000	745,000	745,000
General Fund Cost Allocation	279,000	290,000	302,000	314,000	327,000
Recycled Water Operations	0	0	0	0	0
Subtotal	3,885,000	3,997,000	4,143,000	4,295,000	4,454,000
City Debt Service					
Projected Loan for City CIP Projects	0	161,000	322,000	322,000	322,000
SRF Loan for Recycled Water Phase 2	0	0	0	0	0
Subtotal	0	161,000	322,000	322,000	322,000
Capital Improvements					
Water CIP Projects: Cash Funded	350,000	244,000	621,000	656,000	957,000
Water CIP Projects: Debt Financed	0	3,500,000	0	0	0
Recycled Water System Phase 2 Est.	0	0	0	0	0
Subtotal	350,000	3,744,000	621,000	656,000	957,000
Total Expenses	4,235,000	7,902,000	5,086,000	5,273,000	5,733,000
Revenues Less Expenses	(936,000)	192,000	37,000	209,000	98,000
Transfer for SRF Reserve Requirement	-	-	-	-	-
Ending Fund Reserves	1,644,000	1,836,000	1,873,000	2,082,000	2,180,000
Min Fund Rsrv Target (25% O&M + $1M)	1,971,000	1,999,000	2,036,000	2,074,000	2,114,000
Debt Service Coverage on City Debt	-	3.71	3.04	3.69	4.28
Coverage on Contract Pymts (Min ≥1.25)	0.74	1.26	1.42	1.49	1.55

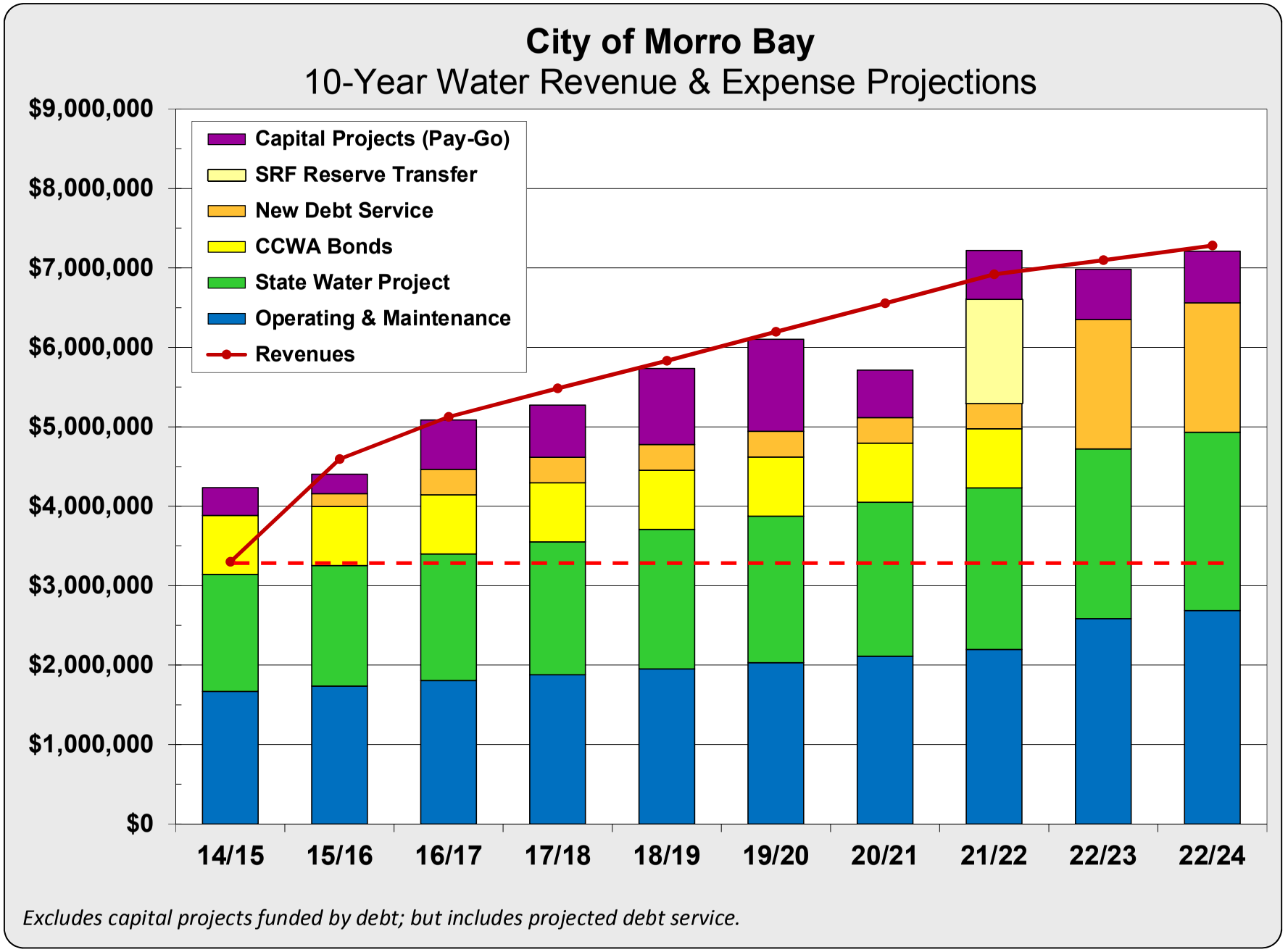
Table 7 Morro Bay - Water Cash Flow Projections — Years 6-10

	Projected					Esc
	2019/20	2020/21	2021/22	2022/23	2023/24	Factor
Effective Date of Rate Adjustment	07/01/19	07/01/20	07/01/21	07/01/22	07/01/23	
Fixed Monthly Service Charge	$32.00	$34.00	$36.00	$37.00	$38.00	
Fixed Rate Recovery Net of Delinquencies	98%	98%	98%	98%	98%	
Beginning Accounts	5,464	5,474	5,484	5,494	5,504	
Growth:Single Family Homes or Equivalents	10	10	10	10	10	
Future Water Sales Elasticity	(0.10)	(0.10)	(0.10)	(0.10)	(0.10)	
Change in Annual Water Consumption	-0.7%	-0.6%	-0.6%	-0.3%	-0.3%	
Water Service Connection Fee	$3,200	$3,260	$3,330	$3,400	$3,470	2.0%
Debt Svc per $1M of CIP Project Funding	$92,000	$92,000	$92,000	$92,000	$92,000	
Interest Rate	1.0%	1.0%	1.0%	1.0%	1.0%	
State Water Project Cost Escalation	5.0%	5.0%	5.0%	5.0%	5.0%	
Operating Cost Escalation	4.0%	4.0%	4.0%	4.0%	4.0%	
Beginning Fund Reserves	$2,180,000	$2,273,000	$3,114,000	$2,813,000	$2,928,000	
REVENUES						
Fixed Service Charges	2,058,000	2,191,000	2,324,000	2,393,000	2,462,000	
Water Consumption Charges	4,011,000	4,235,000	4,458,000	4,569,000	4,680,000	
Subtotal Water Rate Revenues	*6,069,000*	*6,426,000*	*6,782,000*	*6,962,000*	7,142,000	
Service Fees/Other	68,000	69,000	70,000	71,000	72,000	2.0%
Development Impact Fees	32,000	33,000	33,000	34,000	35,000	
Interest Earnings	25,000	26,000	34,000	31,000	32,000	
Subtotal	6,194,000	6,554,000	6,919,000	7,098,000	7,281,000	
Debt Proceeds: City CIP Projects	0	0	0	0	0	
SRF Loan: Recycled Water, WRP Phase 2	0	12,500,000	12,500,000	0	0	
EXPENSES						
Operating & Maintenance						
Water System Personnel	902,000	938,000	976,000	1,015,000	1,056,000	
Supplies & Services	788,000	820,000	853,000	887,000	922,000	
State Water Project Payments	1,845,000	1,937,000	2,034,000	2,136,000	2,243,000	
Share of CCWA 2006 Bonds (Thru Oct-2021)	745,000	745,000	745,000	0	0	
General Fund Cost Allocation	340,000	354,000	368,000	383,000	398,000	
Recycled Water Operations	0	0	0	300,000	312,000	
Subtotal	4,620,000	4,794,000	4,976,000	4,721,000	4,931,000	
Debt Service						
Projected Loan for City CIP Projects	322,000	322,000	322,000	322,000	322,000	
SRF Loan for Recycled Water Phase 2	0	0	0	1,307,000	1,307,000	
Subtotal	322,000	322,000	322,000	1,629,000	1,629,000	
Capital Improvements						
Water CIP Projects: Cash Funded	1,159,000	597,000	615,000	633,000	652,000	
Water CIP Projects: Debt Financed	0	0	0	0	0	
Recycled Water System Phase 2 Est.	0	12,500,000	12,500,000	0	0	
Subtotal	1,159,000	13,097,000	13,115,000	633,000	652,000	
Total Expenses	6,101,000	18,213,000	18,413,000	6,983,000	7,212,000	
Revenues Less Expenses	93,000	841,000	1,006,000	115,000	69,000	
Transfer for SRF Reserve Requirement	-	-	(1,307,000)	-	-	
Ending Fund Reserves	2,273,000	3,114,000	2,813,000	2,928,000	2,997,000	
Min Fund Rsrv Target (25% O&M + $1M)	2,155,000	2,199,000	2,244,000	2,180,000	2,233,000	
Debt Service Coverage on City Debt	4.89	5.47	6.03	1.46	1.44	
Debt Coverage on Contract Pymts (≥1.25)	1.61	1.66	1.70	2.11	2.05	

City of Morro Bay

Summary of Water Cash Flow Projections ($ millions)

Fiscal Year	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24
Rate Increase Target Effective July 1	-	40%	13%	7.7%	7.1%	7%	6%	6%	3%	3%
Beginning Fund Reserves	$2.6	$1.6	$1.8	$1.9	$2.1	$2.2	$2.3	$3.1	$2.8	$2.9
REVENUES										
Water Rate Revenues	3.2	4.5	5.0	5.4	5.7	6.1	6.4	6.8	7.0	7.1
Other Revenues	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Debt Proceeds	-	3.5	-	-	-	-	12.5	12.5	-	-
Total	**3.3**	**8.1**	**5.1**	**5.5**	**5.8**	**6.2**	**19.1**	**19.4**	**7.1**	**7.3**
EXPENSES										
Operating Expenses	3.9	4.0	4.1	4.3	4.5	4.6	4.8	5.0	4.7	4.9
Debt Service	0.0	0.2	0.3	0.3	0.3	0.3	0.3	0.3	1.6	1.6
Capital Expenditures	0.4	3.7	0.6	0.7	1.0	1.2	13.1	13.1	0.6	0.7
Total	**4.2**	**7.9**	**5.1**	**5.3**	**5.7**	**6.1**	**18.2**	**18.4**	**7.0**	**7.2**
Revenues Less Expenses	**(0.9)**	**0.2**	**0.0**	**0.2**	**0.1**	**0.1**	**0.8**	**1.0**	**0.1**	**0.1**
Transfer to SRF Rsrv	0.0	0.0	0.0	0.0	0.0	0.0	0.0	(1.3)	0.0	0.0
Ending Fund Reserves	**1.6**	**1.8**	**1.9**	**2.1**	**2.2**	**2.3**	**3.1**	**2.8**	**2.9**	**3.0**
Min Fund Reserve Target	2.0	2.0	2.0	2.1	2.1	2.2	2.2	2.2	2.2	2.2
Debt Service Coverage	-	3.71	3.04	3.69	4.28	4.89	5.47	6.03	1.46	1.44
CCWA Contract Coverage	0.74	1.26	1.42	1.49	1.55	1.61	1.66	1.70	2.11	2.05



Excludes capital projects funded by debt; but includes projected debt service.

Table 8
City of Morro Bay
Estimated Water Use by Tier

		Water Sales 2012/13	Water Sales 2013/14	2-Year Average	2014/15 Use % of 2-Yr Avg	Water Sales 2014/15 Est	% of Total
Projected Water Sales by Tier					Estimated		
Tier 1	0 - 3 hcf	162,551	163,765	163,158	98%	159,895	31.8%
Tier 2	4 - 10 hcf	162,836	164,020	163,428	98%	160,159	31.8%
Tier 3	11- 50 hcf	95,039	96,696	95,868	98%	93,950	18.7%
Tier 4	>50 hcf	85,687	97,113	91,400	98%	89,572	17.8%
Total		506,113	521,594	513,854		503,576	100.0%

Table 9
City of Morro Bay
Water Sales by Tier

Water Sales by Tier			
	Bi-Monthly Use	Projected Water User in Tier 2014/15	% of Total
Tier 1	0 - 3 hcf	159,895	31.8%
Tier 2	4 - 10 hcf	160,159	31.8%
Tier 3	11- 50 hcf	93,950	18.7%
Tier 4	>50 hcf	89,572	17.8%

Note: Based on billing data from FY 2012/13 with adjustments.

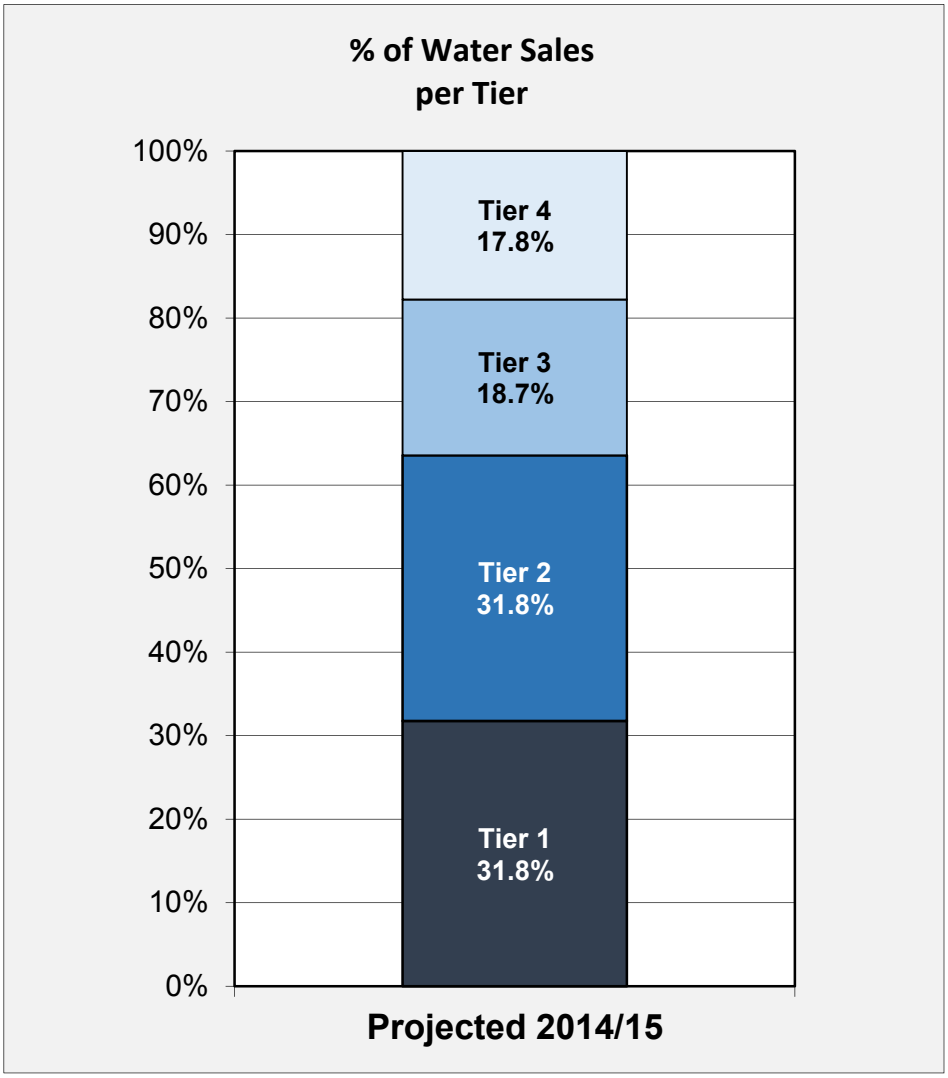


Table 10
City of Morro Bay
Projected Water Use by Tier

		Tier Adjustment Factor*	Projected Water Sales by Tier 2014/15	2015/16	2016/17	2017/18	2018/19	2019/20
Projected Change in Demand				-7.50%	-1.96%	-1.15%	-1.07%	-0.67%
Projected Change in Sales by Tier								
Tier 1	0 - 3 hcf	60%		-4.50%	-1.17%	-0.69%	-0.64%	-0.40%
Tier 2	4 - 10 hcf	100%		-7.50%	-1.96%	-1.15%	-1.07%	-0.67%
Tier 3	11- 50 hcf	125%		-9.38%	-2.45%	-1.44%	-1.34%	-0.83%
Tier 4	>50 hcf	150%		-11.25%	-2.93%	-1.73%	-1.61%	-1.00%
Total				-7.56%	-1.96%	-1.15%	-1.07%	-0.66%
Projected Water Sales by Tier								
Tier 1	0 - 3 hcf		159,895	152,700	150,907	149,862	148,899	148,303
Tier 2	4 - 10 hcf		160,159	148,147	145,248	143,572	142,034	141,087
Tier 3	11- 50 hcf		93,950	85,142	83,060	81,862	80,766	80,093
Tier 4	>50 hcf		89,572	79,495	77,162	75,827	74,608	73,862
Total			503,576	465,484	456,377	451,123	446,307	443,345
% of Water Use by Tier								
Tier 1	0 - 3 hcf		31.75%	32.80%	33.07%	33.22%	33.36%	33.45%
Tier 2	4 - 10 hcf		31.80%	31.83%	31.83%	31.83%	31.82%	31.82%
Tier 3	11- 50 hcf		18.66%	18.29%	18.20%	18.15%	18.10%	18.07%
Tier 4	>50 hcf		17.79%	17.08%	16.91%	16.81%	16.72%	16.66%
Total			100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

* Represents the percentage of the total overall projected change in demand applied to each tier; assumes a lower % reduction in lower tier water use and a higher % reduction in higher tier water use.

Table 11
City of Morro Bay
5-Year Capital Improvement Program Cost Allocation

	CIP Expenditures by Year (Current $)							Cost Allocation %		Cost Allocation $	
	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	Total	All Use	Peak Use	All Use	Peak Use
UNESCALATED CAPITAL EXPENSES											
Vehicles											
2004 Chevrolet Silverado Pickup *05/20/04*		35,000					35,000	100%	0%	35,000	0
2005 Chevrolet Silverado Pickup *05/21/04*			35,000				35,000	100%	0%	35,000	0
Capital Improvements											
Nutmeg Tank construction		2,000,000					2,000,000	90%	10%	1,800,000	200,000
Chorro Valley Stream gauges		250,000					250,000	100%	0%	250,000	0
Desalination plant decanting facilities		500,000					500,000	0%	100%	0	500,000
Desalination plant capacity improvements		250,000					250,000	0%	100%	0	250,000
Desalination plant structural improvements		100,000					100,000	0%	100%	0	100,000
Various master plan improvements	350,000	350,000	350,000	350,000	350,000		1,750,000	75%	25%	1,312,500	437,500
Convert meter reading to AMR		150,000	200,000	250,000			600,000	75%	25%	450,000	150,000
Additional 750k gal storage tank at Kings					500,000	500,000	1,000,000	90%	10%	900,000	100,000
Placeholder for future CIP projects						500,000	500,000	70%	30%	350,000	150,000
Total Unescalated	**350,000**	**3,635,000**	**585,000**	**600,000**	**850,000**		**7,020,000**	**73%**	**27%**	**5,132,500**	**1,887,500**

Table 12
City of Morro Bay
Peak Demand vs. Average Monthly Use

Calendar Year	Peak Monthly Use (hcf)[1]	Avg Monthly Use (hcf)	Peak / Avg Ratio	Peak % Over Avg
2004	56,877	45,723	1.244	24.4%
2005	53,459	44,080	1.213	21.3%
2006	55,160	44,250	1.247	24.7%
2007	58,018	46,302	1.253	25.3%
2008	58,149	46,567	1.249	24.9%
2009	53,063	45,477	1.167	16.7%
2010	54,353	45,562	1.193	19.3%
2011	51,310	42,396	1.210	21.0%
2012	50,046	42,225	1.185	18.5%
2013	52,528	43,054	1.220	22.0%
10-Year Avg	54,296	44,564	1.218	21.8%
5-Year Avg	52,260	43,743	1.195	19.5%

1 Based on average of 2 highest use months per year.

Table 13
City of Morro Bay
Cost Allocation & Rate Derivation

		Tier 1	Tier 2	Tier 3	Tier 4	Subtotal
VARIABLE COST RECOVERY ALLOCATION						
Note: Overall Cost Recovery is approx. 34% Fixed & 66% Variable						
Projected Water Use per Tier (hcf)		148,303	141,087	80,093	73,862	443,345
A) Pro-Rata % of Water Use per Tier	A	33.5%	31.8%	18.1%	16.7%	100.0%
B) Peak Weighting Allocation %	B	0.0%	15.0%	35.0%	60.0%	
C) Pro-Rata % x Peak Weighting % (A x B)	C	0.0%	4.8%	6.3%	10.0%	21.1%
D) % of Total Pro-Rata % x Peak Weighting % (% of Total C)	D	0.0%	22.6%	30.0%	47.4%	100.0%
E) Blended Cost Recovery: 2/3 Pro-Rata & 1/3 Peak Allocation	E	22.3%	28.8%	22.0%	26.9%	100.0%

Cost Recovery Allocation/Attribution Summary	
Fixed Charges	34.0%
Variable Quantity Charges	
Pro-Rata Allocation to All Use	47.4%
Allocation to Peak Use[1,2]	18.7%
Subtotal	66.0%

1 Peak use allocation applies to 15% of Tier 2, 35% of Tier 3, 60% of Tier 4 use
2 Net allocation to peak use is in line with peak demand as a percentage of average monthly demand based on analysis of historical water use.

	2019/20 Expenses	Cost Recovery Fixed %	Cost Recovery Var. %	Var Cost Recovery	Variable % x Variable Cost Recovery Allocation Tier 1	Tier 2	Tier 3	Tier 4	Subtotal	Cost Recovery Allcation $ Fixed	Tier 1	Tier 2	Tier 3	Tier 4	Total
TOTAL COST RECOVERY ALLOCATION															
Operating & Maintenance															
Water System Personnel	$902,000	20%	80%	E	17.8%	23.0%	17.6%	21.5%	80.0%	$180,400	$160,921	$207,527	$159,013	$194,139	$902,000
Supplies & Services	788,000	20%	80%	E	17.8%	23.0%	17.6%	21.5%	80.0%	157,600	140,583	181,298	138,916	169,603	788,000
State Water Project Payments	1,845,000	50%	50%	A	16.7%	15.9%	9.0%	8.3%	50.0%	922,500	308,585	293,570	166,655	153,690	1,845,000
Share of CCWA 2006 Bonds	745,000	20%	80%	E	17.8%	23.0%	17.6%	21.5%	80.0%	149,000	132,912	171,405	131,335	160,348	745,000
General Fund Cost Allocation	340,000	20%	80%	E	17.8%	23.0%	17.6%	21.5%	80.0%	68,000	60,658	78,225	59,938	73,179	340,000
Subtotal	4,620,000									1,477,500	803,658	932,025	655,858	750,958	4,620,000
Non-Operating															
Loan for CIP Projects: 73% All Use	235,060	55%	45%	A	15.1%	14.3%	8.1%	7.5%	45.0%	129,283	35,383	33,662	19,109	17,623	235,060
Loan for CIP Projects: 27% Peak Use	86,940	0%	100%	D	0.0%	22.6%	30.0%	47.4%	100.0%	0	0	19,676	26,062	41,202	86,940
CIP Projects Cash Funded: 73% All Use	846,070	55%	45%	A	15.1%	14.3%	8.1%	7.5%	45.0%	465,339	127,358	121,161	68,781	63,430	846,070
CIP Projects Cash Funded: 27% Peak Use	312,930	0%	100%	D	0.0%	22.6%	30.0%	47.4%	100.0%	0	0	70,820	93,808	148,302	312,930
Subtotal	1,481,000									594,622	162,742	245,318	207,761	270,558	1,481,000
Contribution Toward Fund Reserves	93,000	34%	66%	weighted avg	15.8%	19.3%	14.2%	16.7%	66.0%	31,586	14,731	17,947	13,164	15,571	93,000
Total Recoverable Costs	6,194,000	34%	66%		15.8%	19.3%	14.2%	16.7%	66.0%	$2,103,708	$981,131	$1,195,291	$876,783	$1,037,087	$6,194,000
RATE DERIVATION (Year 5)															
Recoverable Costs										$2,103,708	$981,131	$1,195,291	$876,783	$1,037,087	
Billing Units										5,469 Accounts	148,303 hcf	141,087 hcf	80,093 hcf	73,862 hcf	
Charge per Unit 2019/20										**$32.06** per Acct	**$6.62** per hcf	**$8.47** per hcf	**$10.95** per hcf	**$14.04** per hcf	
Rounded/Adjusted										**$32.00** per Acct	**$6.00** per hcf	**$8.50** per hcf	**$11.00** per hcf	**$14.00** per hcf	
Difference Between Proposed & Derived Rates										*-0.2%*	*-9.3%*	*0.3%*	*0.5%*	*-0.3%*	

Table 14
City of Morro Bay
Water Rate Derivation

		Projected Water Rates (with 5-Year Phase-In)				
		07/01/15	**07/01/16**	**07/01/17**	**07/01/18**	**07/01/19**
FIXED MONTHLY SERVICE CHARGES						
Fixed Monthly Service Charge		$23.00	$26.00	$28.00	$30.00	$32.00
Accounts Billed		5,429	5,439	5,449	5,459	5,469
Total Fixed Charges		$1,498,404	$1,696,968	$1,830,864	$1,965,240	$2,100,096
Collection Rate		98%	98%	98%	98%	98%
Estimated Revenues		**$1,468,436**	**$1,663,029**	**$1,794,247**	**$1,925,935**	**$2,058,094**
WATER QUANTITY CHARGES						
Projected Revenue Target		**$3,028,000**	**$3,356,000**	**$3,572,000**	**$3,786,000**	**$4,011,000**
Water Sales per Tier (hcf)						
Tier 1	0 - 3 hcf	152,700	150,907	149,862	148,899	148,303
Tier 2	4 - 10 hcf	148,147	145,248	143,572	142,034	141,087
Tier 3	11- 50 hcf	85,142	83,060	81,862	80,766	80,093
Tier 4	>50 hcf	79,495	77,162	75,827	74,608	73,862
Total (hcf)		465,484	456,377	451,123	446,307	443,345
Water Quantity Charges ($/hcf)						
Tier 1	0 - 3 hcf	$3.00	$4.00	$5.00	$5.50	$6.00
Tier 2	4 - 10 hcf	6.00	$7.00	$7.50	$8.00	$8.50
Tier 3	11- 50 hcf	9.00	$9.50	$10.00	$10.50	$11.00
Tier 4	>50 hcf	12.00	$12.50	$13.00	$13.50	$14.00
Revenues by Tier						
Tier 1	0 - 3 hcf	$458,100	$603,628	$749,310	$818,945	$889,818
Tier 2	4 - 10 hcf	888,882	1,016,736	1,076,790	1,136,272	1,199,240
Tier 3	11- 50 hcf	766,278	789,070	818,620	848,043	881,023
Tier 4	>50 hcf	953,940	964,525	985,751	1,007,208	1,034,068
Total		3,067,200	3,373,959	3,630,471	3,810,468	4,004,149
Difference $ (Rev Est - Target)		39,200	17,959	58,471	24,468	(6,852)
Difference % of Target		1.3%	0.5%	1.6%	0.6%	-0.2%

Table 15
City of Morro Bay
Projected Water Rates

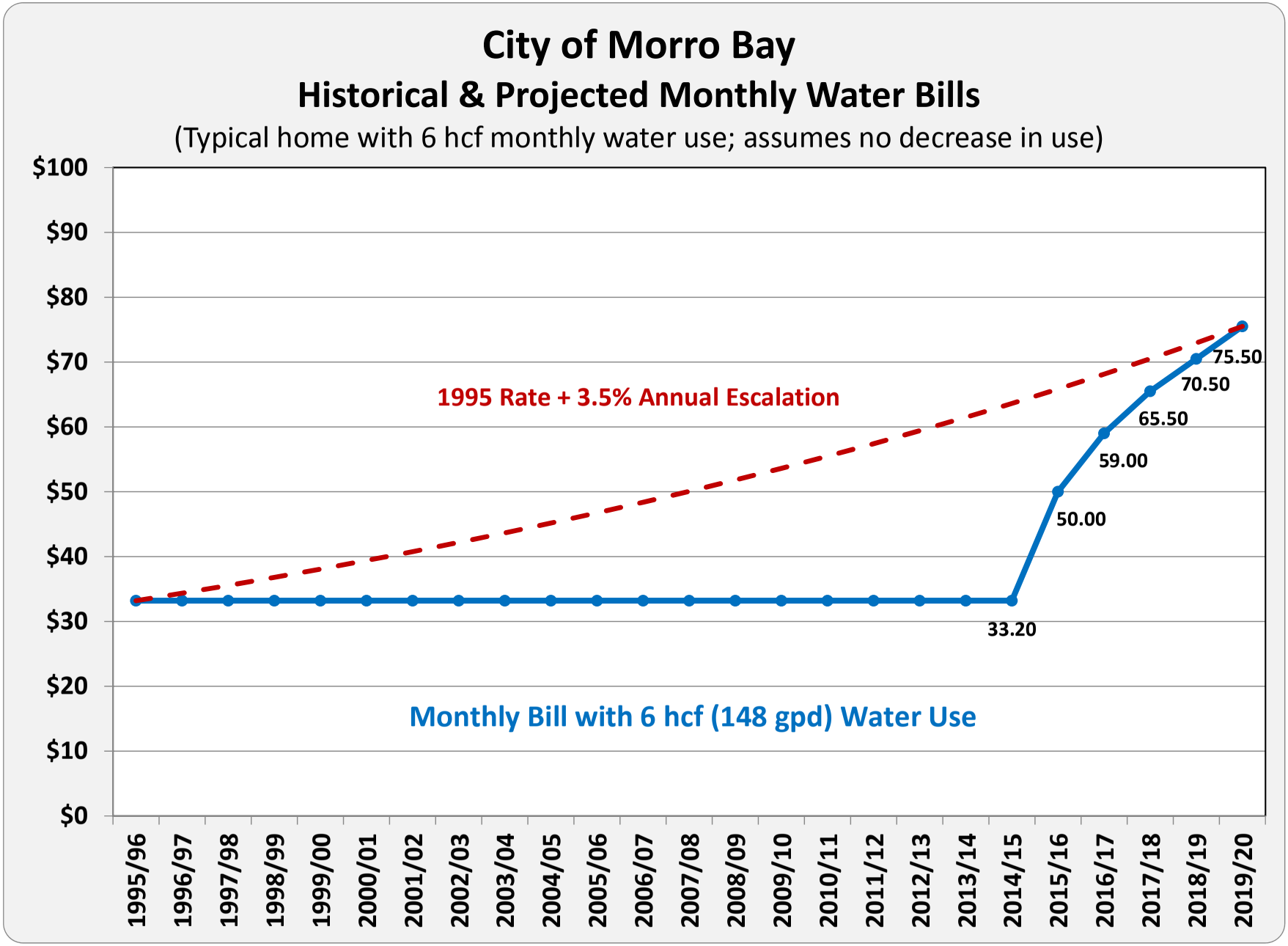
		Current	Projected Water Rates 07/01/15	07/01/16	07/01/17	07/01/18	07/01/19
Fixed Monthly Service Charge		$16.43	$23.00	$26.00	$28.00	$30.00	$32.00
Water Quantity Charges ($/hcf)							
Tier 1	0 - 3 hcf	$0.00	$3.00	$4.00	$5.00	$5.50	$6.00
Tier 2	4 - 10 hcf	5.56 - 5.74	6.00	7.00	7.50	8.00	8.50
Tier 3	11- 50 hcf	5.77 - 7.81	9.00	9.50	10.00	10.50	11.00
Tier 4	>50 hcf	7.85 - 13.68	12.00	12.50	13.00	13.50	14.00

1 hcf = one hundred cubic feet = 748 gallons

Water Quantity Charges ($ per 100 gallons)							*For informational purposes only*
Tier 1	0 - 3 hcf	$0.00	$0.40	$0.53	$0.67	$0.74	$0.80
Tier 2	4 - 10 hcf	0.74 - 0.77	0.80	0.94	1.00	1.07	1.14
Tier 3	11- 50 hcf	0.77 - 1.04	1.20	1.27	1.34	1.40	1.47
Tier 4	>50 hcf	1.05 - 1.83	1.60	1.67	1.74	1.80	1.87

Table 16
City of Morro Bay
Projected Monthly Water Bill Impacts

Monthly	Current	Projected Monthly Bills					5-Year Impact	
Use (hcf)	$/Month	2015/16	2016/17	2017/18	2018/19	2019/20	$/month	$/day
0	$16.43	$23.00	$26.00	$28.00	$30.00	$32.00	$15.57	$0.51
1	16.43	26.00	30.00	33.00	35.50	38.00	21.57	0.71
2	16.43	29.00	34.00	38.00	41.00	44.00	27.57	0.91
3	16.43	32.00	38.00	43.00	46.50	50.00	33.57	1.10
4	21.99	38.00	45.00	50.50	54.50	58.50	36.51	1.20
5	27.58	44.00	52.00	58.00	62.50	67.00	39.42	1.30
6	33.20	50.00	59.00	65.50	70.50	75.50	42.30	1.39
7	38.85	56.00	66.00	73.00	78.50	84.00	45.15	1.48
8	44.53	62.00	73.00	80.50	86.50	92.50	47.97	1.58
9	50.24	68.00	80.00	88.00	94.50	101.00	50.76	1.67
10	55.98	74.00	87.00	95.50	102.50	109.50	53.52	1.76
11	61.75	83.00	96.50	105.50	113.00	120.50	58.75	1.93
12	67.55	92.00	106.00	115.50	123.50	131.50	63.95	2.10
13	73.38	101.00	115.50	125.50	134.00	142.50	69.12	2.27
14	79.24	110.00	125.00	135.50	144.50	153.50	74.26	2.44
15	85.13	119.00	134.50	145.50	155.00	164.50	79.37	2.61
16	91.06	128.00	144.00	155.50	165.50	175.50	84.45	2.78
17	97.01	137.00	153.50	165.50	176.00	186.50	89.50	2.94
18	102.99	146.00	163.00	175.50	186.50	197.50	94.52	3.11
19	109.00	155.00	172.50	185.50	197.00	208.50	99.51	3.27
20	115.04	164.00	182.00	195.50	207.50	219.50	104.47	3.43
21	121.17	173.00	191.50	205.50	218.00	230.50	109.34	3.59
22	127.39	182.00	201.00	215.50	228.50	241.50	114.12	3.75
23	133.70	191.00	210.50	225.50	239.00	252.50	118.81	3.91
24	140.07	200.00	220.00	235.50	249.50	263.50	123.44	4.06
25	146.54	209.00	229.50	245.50	260.00	274.50	127.97	4.21
26	153.09	218.00	239.00	255.50	270.50	285.50	132.42	4.35
27	159.70	227.00	248.50	265.50	281.00	296.50	136.81	4.50
28	166.37	236.00	258.00	275.50	291.50	307.50	141.14	4.64
29	173.10	245.00	267.50	285.50	302.00	318.50	145.41	4.78
30	179.93	254.00	277.00	295.50	312.50	329.50	149.58	4.92
31	186.81	263.00	286.50	305.50	323.00	340.50	153.70	5.05
32	193.75	272.00	296.00	315.50	333.50	351.50	157.76	5.19
33	200.75	281.00	305.50	325.50	344.00	362.50	161.76	5.32
34	207.82	290.00	315.00	335.50	354.50	373.50	165.69	5.45
35	214.94	299.00	324.50	345.50	365.00	384.50	169.57	5.57
36	222.09	308.00	334.00	355.50	375.50	395.50	173.42	5.70
37	229.31	317.00	343.50	365.50	386.00	406.50	177.20	5.83
38	236.58	326.00	353.00	375.50	396.50	417.50	180.93	5.95
39	243.88	335.00	362.50	385.50	407.00	428.50	184.63	6.07
40	251.24	344.00	372.00	395.50	417.50	439.50	188.27	6.19
50	327.37	434.00	467.00	495.50	522.50	549.50	222.14	7.30
75	533.21	734.00	779.50	820.50	860.00	899.50	366.29	12.04
100	755.68	1,034.00	1,092.00	1,145.50	1,197.50	1,249.50	493.82	16.24
200	1,747.86	2,234.00	2,342.00	2,445.50	2,547.50	2,649.50	901.64	29.64


City of Morro Bay
Historical & Projected Monthly Water Bills
(Typical home with 6 hcf monthly water use; assumes no decrease in use)
$100
$90
$80
$70
$60
$50
$40
$30
$20
$10
$0
1995 Rate + 3.5% Annual Escalation
Monthly Bill with 6 hcf (148 gpd) Water Use
33.20
50.00
59.00
65.50
70.50
75.50
1995/96
1996/97
1997/98
1998/99
1999/00
2000/01
2001/02
2002/03
2003/04
2004/05
2005/06
2006/07
2007/08
2008/09
2009/10
2010/11
2011/12
2012/13
2013/14
2014/15
2015/16
2016/17
2017/18
2018/19
2019/20

Sewer Financial Plan & Rate Study

Tables & Charts

Table 1
City of Morro Bay
Historical Monthly Sewer Rates

		07/01/10	07/01/11	07/01/12	07/01/13	07/01/14
RESIDENTIAL						
Fixed Charge per Dwelling Unit	Allowance					
Single Family Residential	10 ccf	$37.51	$39.38	$41.35	$43.42	$45.59
Single Family Condos	3 ccf	37.51	39.38	41.35	43.42	45.59
Multiple Family Residential	10 ccf	37.51	39.38	41.35	43.42	45.59
Charge per hcf in Excess of Allowance		3.35	3.52	3.69	3.88	4.07
NON-RESIDENTIAL						
Charge per hcf of Metered Water Use						
Mobile Home Parks		3.50	3.75	4.02	4.31	4.63
Laundromat		3.50	3.75	4.02	4.31	4.63
Car Wash		3.50	3.75	4.02	4.31	4.63
Water Softners		3.50	3.75	4.02	4.31	4.63
Schools		3.50	3.75	4.02	4.31	4.63
Other Public Facilities		3.50	3.75	4.02	4.31	4.63
City Facilities/on Sewer		3.50	3.75	4.02	4.31	4.63
Commercial/Domestic Strength		4.40	4.72	5.06	5.43	5.82
Commercial Laundry		4.40	4.72	5.06	5.43	5.82
Condo - Common Area (with sewer)		4.40	4.72	5.06	5.43	5.82
Motels		6.07	6.51	6.98	7.49	8.03
Mortuaries		6.59	7.07	7.59	8.14	8.73
Retirement Home/Hospital		7.90	8.47	9.09	9.74	10.45
Hotels with Dining Room		7.90	8.47	9.09	9.74	10.45
Restaurants		10.11	10.84	11.63	12.47	13.38
Bakeries		10.11	10.84	11.63	12.47	13.38
Seafood Processors		10.11	10.84	11.63	12.47	13.38
Power Plant		449.76	482.37	517.34	554.85	595.07
Minimum Charge		*39.13*	*41.97*	*45.01*	*48.27*	*51.77*

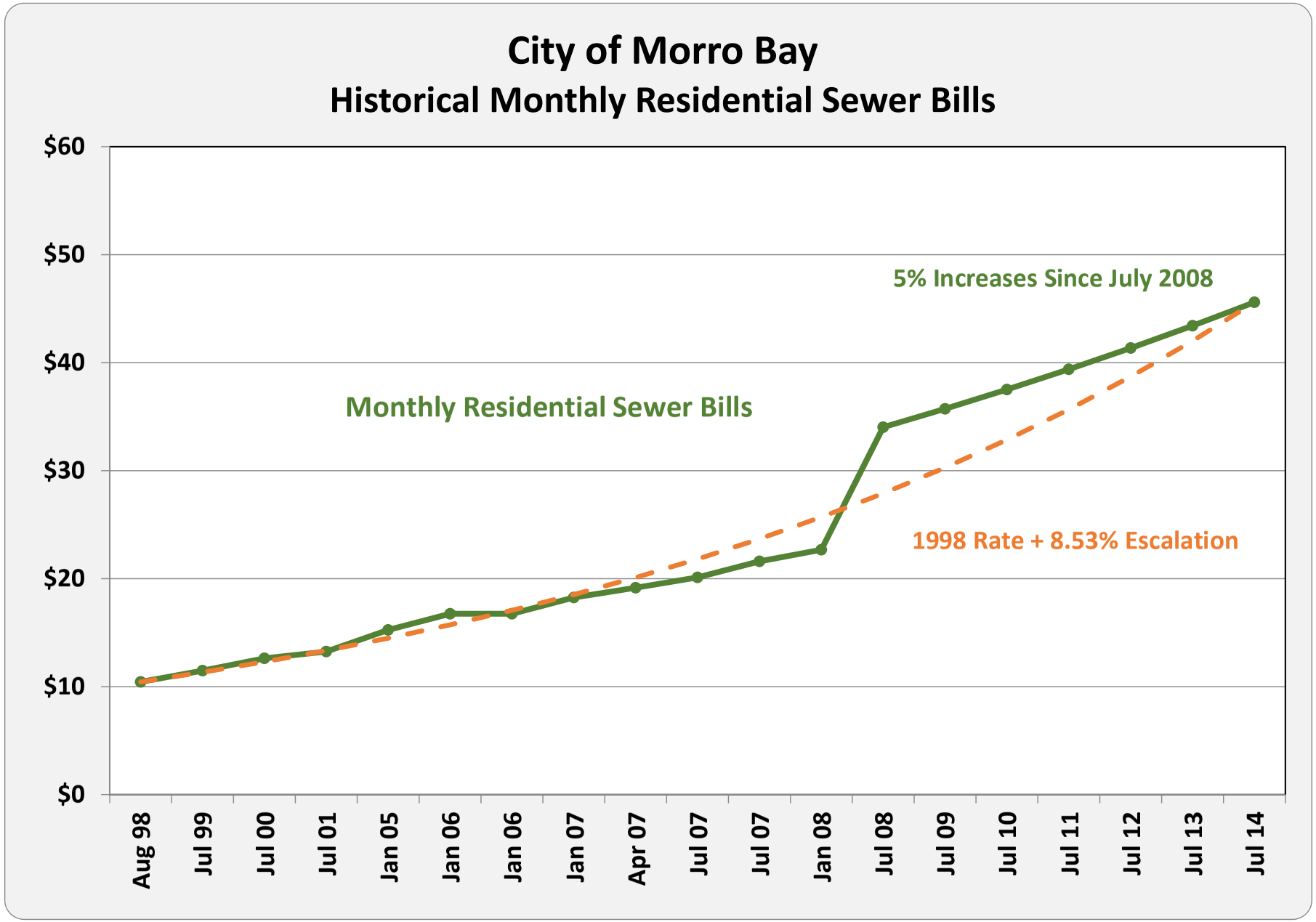

City of Morro Bay
Historical Monthly Residential Sewer Bills
$60
$50
$40
$30
$20
$10
$0
5% Increases Since July 2008
Monthly Residential Sewer Bills
1998 Rate + 8.53% Escalation
Aug 98
Jul 99
Jul 00
Jul 01
Jan 05
Jan 06
Jan 06
Jan 07
Apr 07
Jul 07
Jul 07
Jan 08
Jul 08
Jul 09
Jul 10
Jul 11
Jul 12
Jul 13
Jul 14

Table 2
City of Morro Bay
Historical Sewer Utility Finances & Budget

	Actual 2009/10	Actual 2010/11	Actual 2011/12	Budget 2012/13	Amended Budget 2013/14	Proposed Budget 2014/15
BEGINNING CASH BALANCES						
1. Equipment replacement fund	$76,564	$77,621	$78,340	$79,017	$124,532	$239,532
2. Operation fund	590,827	1,320,424	2,096,060	100	0	0
3. CIP fund	2,658,118	2,952,936	2,972,051	3,844,505	3,689,625	2,898,812
Total	**3,325,509**	**4,350,981**	**5,146,451**	**3,923,622**	**3,814,157**	**3,138,344**
REVENUES & RESERVE TRANSFERS						
1. Equipment replacement fund:						
Interest/other income	1,429	719	677	515	0	0
Transfers in	0	0	0	45,000	115,000	115,000
Subtotal	1,429	719	677	45,515	115,000	115,000
2. Operation fund:						
Sewer user fees	3,296,452	3,445,189	3,610,534	3,767,815	3,675,000	3,428,067
Intergovernmental	143,193	214,930	24,688	42,534	0	0
Rental income	19,582	19,582	19,665	20,078	19,000	20,000
Other revenues	2,528	30,283	29,931	25,368	25,000	25,000
Transfer from Reserve fund	58,348	54,321	1,170,112	0	595,813	2,191,358
Other	0	7	0	0	0	0
Subtotal	3,520,103	3,764,312	4,854,930	3,855,795	4,314,813	5,664,425
3. CIP fund:						
Impact fees	21,197	32,563	12,703	66,533	0	0
Interest income	66,248	40,305	33,523	16,851	20,000	0
Transfer from Capital Improvement Fund	389,349	630	0	0	0	0
Transfer from Revenue Fund	0	0	2,027,213	1,818,651	0	0
Subtotal	476,794	73,498	2,073,439	1,902,035	20,000	0
Total revenues & transfers in	**3,998,326**	**3,838,529**	**6,929,046**	**5,803,345**	**4,449,813**	**5,779,425**
EXPENSES						
1. Equipment replacement fund:						
Equipment/Vehicles						(70,000)
Subtotal						(70,000)
2. Operation fund:						
Personnel	(452,449)	(515,655)	(527,364)	(507,484)	(748,307)	(686,097)
Supplies	(103,511)	(60,457)	(54,824)	(112,000)	(91,500)	(155,500)
Services	(288,626)	(307,088)	(188,275)	(210,312)	(446,855)	(425,155)
Other (no depreciation)	(271,073)	(21,004)	(91,448)	(15,746)	0	0
MB/CSD wastewater treatment plant	(1,568,081)	(1,924,757)	(1,853,768)	1,611,817	(2,863,450)	(4,231,325)
General fund cost allocation	(147,434)	(159,715)	(161,630)	(161,630)	(164,701)	(166,348)
Transfer to Reserve Fund	0	0	(4,073,581)	(1,236,542)	0	0
Subtotal	(2,831,174)	(2,988,676)	(6,950,890)	(631,897)	(4,314,813)	(5,664,425)
3. CIP fund:						
Capital Improvements	(156,707)	0	(1,200,895)	(2,031,915)	(100,000)	(482,994)
Transfer to Sewer Equipment Repl Fund	0	(53,708)	0	(25,000)	(115,000)	(115,000)
Transfer to Sewer Revenue Fund	0	(675)	0	0	0	0
Subtotal	(156,707)	(54,383)	(1,200,895)	(2,056,915)	(215,000)	(597,994)
Total expenses & transfers out	**(2,987,881)**	**(3,043,059)**	**(8,151,785)**	**(2,688,812)**	**(4,529,813)**	**(6,332,419)**
NET REVENUES	**1,010,445**	**795,470**	**(1,222,739)**	**3,114,533**	**(80,000)**	**(552,994)**
ENDING CASH BALANCES						
1. Equipment replacement fund	77,993	78,340	79,017	124,532	239,532	284,532
2. Operation fund	1,279,756	2,096,060	100	0	0	0
3. CIP fund	2,978,205	2,972,051	3,844,505	3,689,625	2,898,812	109,460
Total	**4,335,954**	**5,146,451**	**3,923,622**	**3,814,157**	**3,138,344**	**393,992**

Table 3
City of Morro Bay
Sewer Capital Improvement Program

		2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	Total
SEWER COLLECTION SYSTEM CIP												
Vehicles & Equipment												
GMC 1500 pickup truck	*01/01/00*				70,000							70,000
GMC 2500 service truck	*01/01/00*	70,000										70,000
Sterling 17501 Vac-con truck	*01/01/01*			350,000								350,000
Holcomb Portable generator	*01/01/91*			35,000								35,000
Capital Improvements/Buildings/Infrastructure												
Lift station #1		200,000										200,000
Section 3 rehabilitation		150,000										150,000
Section 4 rehabilitation			400,000									400,000
Section 5 rehabilitation			200,000									200,000
Section 7 rehabilitation				200,000								200,000
Section 8 rehabilitation				200,000								200,000
Section 9 rehabilitation					200,000							200,000
Section 2 rehabilitation				750,000								750,000
Main Street rehabilitation					3,500,000							3,500,000
Embarcadero rehabilitation			500,000									500,000
Laurel Easement rehabilitation			200,000									200,000
SCADA system						300,000						300,000
782 manholes		60,000	60,000	60,000	60,000	60,000						300,000
Placeholder for Future Sewer System Improvements							500,000	500,000	500,000	500,000	500,000	2,500,000
Subtotal		**480,000**	**1,360,000**	**1,595,000**	**3,830,000**	**360,000**	**500,000**	**500,000**	**500,000**	**500,000**	**500,000**	**10,125,000**
WASTEWATER TREATMENT PLANT MMRP		**1,220,000**	**750,000**	**250,000**	**100,000**							2,320,000
Morro Bay	72%	878,000	540,000	180,000	72,000							1,670,000
Cayucos	28%	342,000	210,000	70,000	28,000							650,000
CAPITAL EXPENSES WITH COST ESCALATION												
Annual Cost Escalation			3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	
Cost Escalator		1.000	1.030	1.061	1.093	1.126	1.159	1.194	1.230	1.267	1.305	
Sewer Collection System CIP		480,000	1,401,000	1,692,000	4,185,000	405,000	580,000	597,000	615,000	633,000	652,000	11,240,000
Wastewater Treatment Plant MMRP		1,220,000	750,000	250,000	100,000	0	0	0	0	0	0	2,320,000
Not Escalated												
Morro Bay	72%	878,000	540,000	180,000	72,000	0	0	0	0	0	0	1,670,000
Cayucos	28%	342,000	210,000	70,000	28,000	0	0	0	0	0	0	650,000

Table 4
City of Morro Bay
Water Reclamation Plant Cost Projections

With Cost Escalation to Construction Mid-Point

	2014/15	2015/16	2016/17	2017/18	2018/19	Total
Phase 1: Water Reclamation Facility & Conveyance Facilities						
Property Acquisition (placeholder estimate)				500,000		500,000
Construction				19,000,000	11,800,000	30,800,000
Contingency 30%				5,700,000	3,500,000	9,200,000
Contractor Overhead/Profit/Risk 18%				4,400,000	2,800,000	7,200,000
Cost Escalation to Construction Mid-Point				3,600,000	2,300,000	5,900,000
Engineering/Legal/Admin/Tax	1,000,000	3,000,000	6,000,000	6,800,000	4,300,000	21,100,000
Subtotal	1,000,000	3,000,000	6,000,000	40,000,000	24,700,000	74,700,000
Estimated Cost Share						
Morro Bay 75%	750,000	2,250,000	4,500,000	30,000,000	18,525,000	56,025,000
Cayucos 25%	250,000	750,000	1,500,000	10,000,000	6,175,000	18,675,000

Source: Based on cost estimates for Rancho Colina Option A from Table 6 of the New Water Reclamation Facility Project Comparative Site Analysis; December 9, 2014, by John F. Rickenbach Consulting in association with Michael K. Nunley & Associates.

Table 5
City of Morro Bay
SRF Loan Debt Service Estimates

		SRF Loan for Phase 1 Water Reclamation Plant
Funding Target		$74,700,000
Water Reclamation Plant Phase 1		
SRF Loan Amount		
Eligible Project Costs[1]		74,700,000
Accrued Interest During Construction[2]		2,770,000
Total Loan Amount		77,470,000
Loan Terms		
Term (years)		30
Interest Rate[3]		3.00%
Annual Loan Payment[4]		3,952,000
Morro Bay	75%	2,964,000
Cayucos	25%	988,000
Total Payments over Loan Term		118,560,000
Reserve Fund Requirement[5]		3,952,000
Morro Bay	75%	2,964,000
Cayucos	25%	988,000

1 Some costs may not be eligible for SRF Loan funding & would require another funding source.
2 Assumes steady gradual drawdown of loan funds over two years.
3 Total net interest rate estimated for financial planning purposes; actual rate may vary.
4 First debt service payment due one year following completion of project.
5 Agencies must set aside funds to meet the SRF Reserve Requirement at least 90 days prior to project completion date.

Table 6 For Comparison with SRF
City of Morro Bay
Bond Debt Service Estimates

Assumptions		30-Year Bonds
Funding Target		$74,700,000
Water Reclamation Plant Phase 1		
Total Debt Issue		$81,600,000
Proceeds		$74,699,500
Issuance Costs & Reserve Requirement		
Underwriter Discount	0.70%	$571,200
Issuance Costs		200,000
Debt Service Reserve Fund		5,615,000
Bond Insurance	tbd	500,000
Reserve Surety Bond	tbd	0
Contingency/Rounding		14,300
Total		6,900,500
Financing Terms		
Term (Years)		30
Est. Future Interest Rate		5.50%
Debt Service		
Annual Debt Service		5,615,000
Less Interest on Reserve Fund	2.50%	(140,000)
Net Annual Debt Service		5,475,000
Total Payments over Bond Term		162,835,000

Table 7 Morro Bay - Sewer Cash Flow Projections — Years 1-5

Years 1 - 5	Budget 2014/15	Projected 2015/16	2016/17	2017/18	2018/19
Effective Date of Rate Adjustment	07/01/14	07/01/15	07/01/16	07/01/17	07/01/18
Base Monthly Residential Sewer Charge	$45.59	$55.00	$62.50	$70.00	$77.00
Beginning Sewer Accounts	5,346	5,346	5,356	5,366	5,376
Growth:Single Family Homes or Equivalents	-	10	10	10	10
Change in Billed Sewer Use (-0.15x27%xinc)	-	-2.0%	-0.6%	-0.5%	-0.4%
Sewer Development Impact Fee	$4,570	$4,660	$4,750	$4,850	$4,950
Interest Earnings Rate	0.25%	0.25%	0.50%	1.0%	1.0%
Annual Cost Escalator	-	4.0%	4.0%	4.0%	4.0%
Beginning Fund Reserves	$3,138,000	$1,902,000	$2,782,000	$3,269,000	$1,902,000
REVENUES					
Sewer Service Charges	4,164,000	4,921,000	5,561,000	6,198,000	6,790,000
Service Fees/Other	45,000	46,000	47,000	48,000	49,000
Development Impact Fees	0	47,000	48,000	49,000	50,000
Interest Earnings	4,000	5,000	14,000	33,000	19,000
Subtotal	4,213,000	5,019,000	5,670,000	6,328,000	6,908,000
SRF Financing: WRP Phase 1		4,000,000	6,000,000	40,000,000	24,700,000
Other Debt Financing: Wastewater CIP Projects				0	
EXPENSES					
Operating & Maintenance					
Sewer Personnel	686,000	713,000	742,000	772,000	803,000
Supplies & Services	559,000	581,000	604,000	628,000	653,000
General Fund Cost Allocation	167,000	174,000	181,000	188,000	196,000
Wastewater Treatment Personnel	840,000	874,000	909,000	945,000	983,000
Wastewater Treatment Operations	1,350,000	1,404,000	1,460,000	1,518,000	1,579,000
Less Cayucos SD Share (Est. 25%)	*(548,000)*	*(570,000)*	*(592,000)*	*(616,000)*	*(641,000)*
Subtotal	3,054,000	3,176,000	3,304,000	3,435,000	3,573,000
Debt Service					
SRF Financing: WRP Phase 1	0	0	0	0	0
Less Cayucos SD Share (Est. 25%)	0	0	0	0	0
Debt Financing: Wastewater CIP Projects	0	0	0	0	0
Subtotal	0	0	0	0	0
Capital Improvements					
Sewer CIP Projects: Cash Funded	480,000	1,401,000	1,692,000	4,185,000	405,000
Sewer CIP Projects: Debt Financed	0	0	0	0	0
Wastewater Treatment Plant MMRP	1,220,000	750,000	250,000	100,000	0
Less Cayucos SD Share (Est. 25%)	*(305,000)*	*(188,000)*	*(63,000)*	*(25,000)*	*0*
New Water Reclamation Plant Phase 1	1,000,000	3,000,000	6,000,000	40,000,000	24,700,000
Subtotal	2,395,000	4,963,000	7,879,000	44,260,000	25,105,000
Total Expenses	5,449,000	8,139,000	11,183,000	47,695,000	28,678,000
Revenues Less Expenses	(1,236,000)	880,000	487,000	(1,367,000)	2,930,000
Transfer for SRF Rsrv Req't, MB Share	-	-	-	-	(2,964,000)
Ending Fund Reserves	1,902,000	2,782,000	3,269,000	1,902,000	1,868,000
Ending SRF Reserve Requirement	-	-	-	-	2,964,000
Min Fund Rsrv Target (25% O&M + $1M)	1,764,000	1,794,000	1,826,000	1,859,000	1,893,000
Debt Service Coverage (on MB Share)	-	-	-	-	-

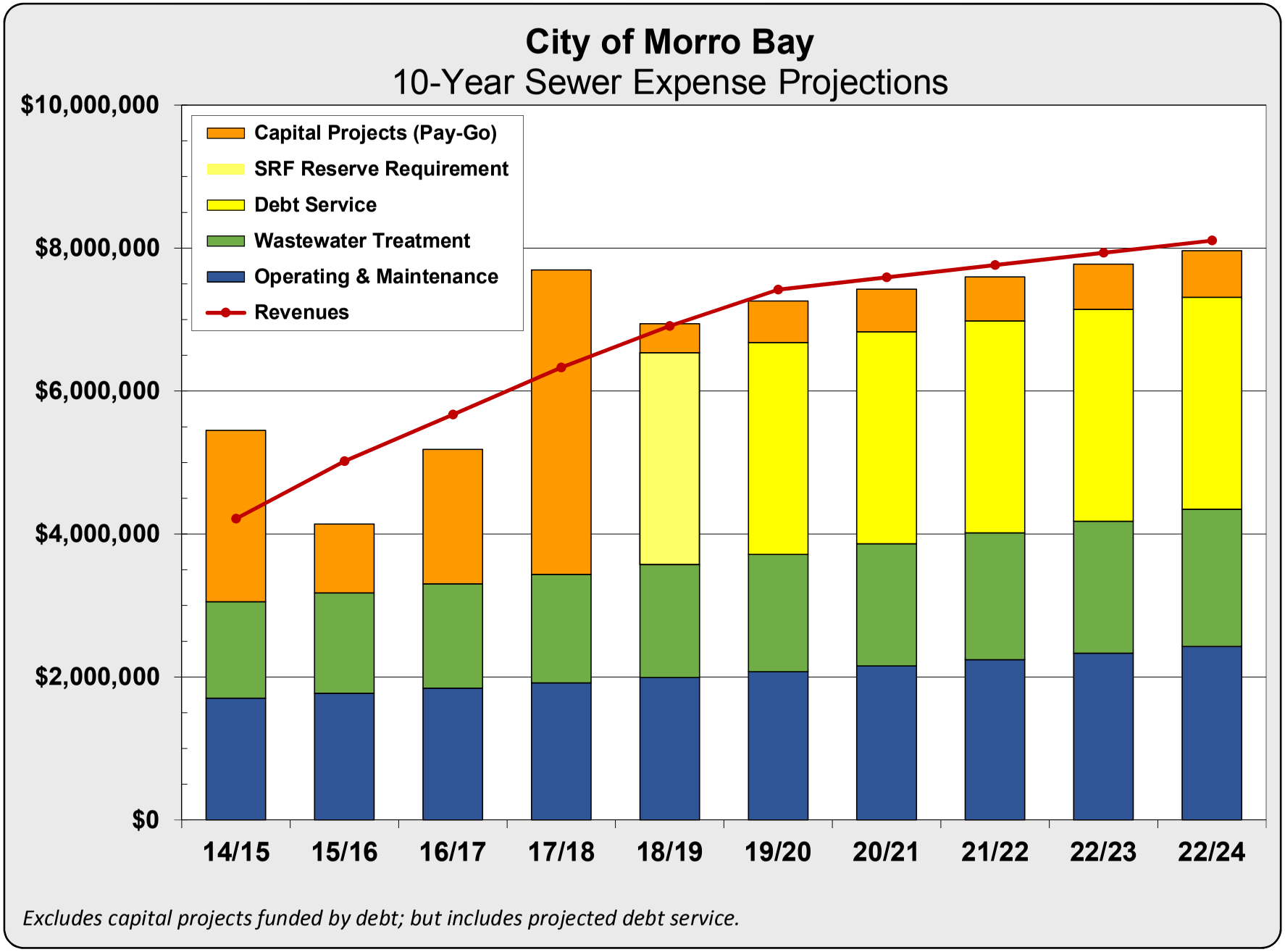
Table 7 Morro Bay - Sewer Cash Flow Projections Years 6-10

Years 6 - 10	Projected 2019/20	2020/21	2021/22	2022/23	2023/24	Esc Factor
Effective Date of Rate Adjustment	07/01/19	07/01/20	07/01/21	07/01/22	07/01/23	
Base Monthly Residential Charge	$83.00	$85.00	$87.00	$89.00	$91.00	
Beginning Accounts	5,386	5,396	5,406	5,416	5,426	
Growth:Single Family Homes or Equivalents	10	10	10	10	10	
Change in Billed Sewer Use	-0.3%	-0.1%	-0.1%	-0.1%	-0.1%	
Water Service Connection Fee	$5,050	$5,150	$5,250	$5,360	$5,470	2.0%
Interest Rate	1.0%	1.0%	1.0%	1.0%	1.0%	
Annual Cost Escalator	4.0%	4.0%	4.0%	4.0%	4.0%	
Beginning Fund Reserves	$1,868,000	$2,026,000	$2,191,000	$2,356,000	$2,513,000	
REVENUES						
Sewer Service Charges	7,296,000	7,464,000	7,632,000	7,800,000	7,968,000	
Service Fees/Other	50,000	51,000	52,000	53,000	54,000	2.0%
Development Impact Fees	51,000	52,000	53,000	54,000	55,000	
Interest Earnings	21,000	23,000	25,000	26,000	28,000	
Subtotal	7,418,000	7,590,000	7,762,000	7,933,000	8,105,000	
SRF Financing: WRP Phase 1						
Debt Financing: Wastewater CIP Projects						
EXPENSES						
Operating & Maintenance						
Sewer Personnel	835,000	868,000	903,000	939,000	977,000	
Supplies & Services	679,000	706,000	734,000	763,000	794,000	
General Fund Cost Allocation	204,000	212,000	220,000	229,000	238,000	
Wastewater Treatment Personnel	1,022,000	1,063,000	1,106,000	1,150,000	1,196,000	
Wastewater Treatment Operations	1,642,000	1,708,000	1,776,000	1,847,000	1,921,000	
Less Cayucos SD Share (Est. 25%)	*(666,000)*	*(693,000)*	*(721,000)*	*(749,000)*	*(779,000)*	
Subtotal	3,716,000	3,864,000	4,018,000	4,179,000	4,347,000	
Debt Service						
SRF Financing: WRP Phase 1	$3,952,000	3,952,000	3,952,000	3,952,000	3,952,000	
Less Cayucos SD Share (Est. 25%)	*(988,000)*	*(988,000)*	*(988,000)*	*(988,000)*	*(988,000)*	
Debt Financing: Wastewater CIP Projects	0	0	0	0	0	
Subtotal	2,964,000	2,964,000	2,964,000	2,964,000	2,964,000	
Capital Improvements						
Sewer CIP Projects: Cash Funded	580,000	597,000	615,000	633,000	652,000	
Sewer CIP Projects: Debt Financed	0	0	0	0	0	
Wastewater Treatment Plant MMRP	0	0	0	0	0	
Less Cayucos SD Share (Est. 25%)	0	0	0	0	0	
New Water Reclamation Plant Phase 1	0	0	0	0	0	
Subtotal	580,000	597,000	615,000	633,000	652,000	
Total Expenses	7,260,000	7,425,000	7,597,000	7,776,000	7,963,000	
Revenues Less Expenses	158,000	165,000	165,000	157,000	142,000	
Transfer for SRF Reserve Requirement	-	-	-	-	-	
Ending Fund Reserves	2,026,000	2,191,000	2,356,000	2,513,000	2,655,000	
Ending SRF Reserve Requirement	2,964,000	2,964,000	2,964,000	2,964,000	2,964,000	
Min Fund Rsrv Target (25% O&M + $1M)	1,929,000	1,966,000	2,005,000	2,045,000	2,087,000	
Debt Service Coverage (on MB Share)	1.25	1.26	1.26	1.27	1.27	

City of Morro Bay

Summary of Sewer Cash Flow Projections ($ millions)

Fiscal Year	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24
Rate Increase Target Effective July 1	**5.5%**	**21%**	**14%**	**12.0%**	**10.0%**	**8%**	**2%**	**2%**	**2%**	**2%**
Beginning Fund Reserves	**$3.1**	**$1.9**	**$2.8**	**$3.3**	**$1.9**	**$1.9**	**$2.0**	**$2.2**	**$2.4**	**$2.5**
REVENUES										
Water Rate Revenues	4.2	4.9	5.6	6.2	6.8	7.3	7.5	7.6	7.8	8.0
Other Revenues	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Debt Proceeds	-	4.0	6.0	40.0	24.7	-	-	-	-	-
Total	**4.2**	**9.0**	**11.7**	**46.3**	**31.6**	**7.4**	**7.6**	**7.8**	**7.9**	**8.1**
EXPENSES										
Operating Expenses	3.1	3.2	3.3	3.4	3.6	3.7	3.9	4.0	4.2	4.3
Debt Service	0.0	0.0	0.0	0.0	0.0	3.0	3.0	3.0	3.0	3.0
Capital Expenditures	2.4	5.0	7.9	44.3	25.1	0.6	0.6	0.6	0.6	0.7
Total	**5.4**	**8.1**	**11.2**	**47.7**	**28.7**	**7.3**	**7.4**	**7.6**	**7.8**	**8.0**
Revenues Less Expenses	**(1.2)**	**0.9**	**0.5**	**(1.4)**	**2.9**	**0.2**	**0.2**	**0.2**	**0.2**	**0.1**
Transfer to SRF Reserve	-	-	-	-	(3.0)	-	-	-	-	-
Ending Fund Reserves	**1.9**	**2.8**	**3.3**	**1.9**	**1.9**	**2.0**	**2.2**	**2.4**	**2.5**	**2.7**
Min Fund Reserve Target	1.8	1.8	1.8	1.9	1.9	1.9	2.0	2.0	2.0	2.1
Debt Service Coverage	-	-	-	-	-	1.25	1.26	1.26	1.27	1.27



Excludes capital projects funded by debt; but includes projected debt service.

Table 8
City of Morro Bay
Cost Recovery Allocation

	Expenses 2019/20	Allocation %			Allocation $		
		Flow	BOD	SS	Flow	BOD	SS
Operating & Maintenance							
City Operating Expenses	1,718,000	100%	0%	0%	1,718,000	0	0
WWTP Operating Expenses (net)	1,998,000	60%	20%	20%	1,198,800	399,600	399,600
Subtotal	3,716,000	78.5%	10.8%	10.8%	2,916,800	399,600	399,600
Debt Service							
SRF Financing: WRP Phase 1 (net)	2,964,000	60%	20%	20%	1,778,400	592,800	592,800
Debt Financing: Sewer CIP Projects	0	100%	0%	0%	0	0	0
Subtotal	2,964,000	60.0%	20.0%	20.0%	1,778,400	592,800	592,800
Capital & Other Non-Operating							
City Capital Projects, Cash-Funded	580,000	100%	0%	0%	580,000	0	0
WWTP MMRP Projects, Cash-Funded	0	60%	20%	20%	0	0	0
Subtotal	580,000	100.0%	0.0%	0.0%	580,000	0	0
Total	7,260,000	72.7%	13.7%	13.7%	5,275,200	992,400	992,400

Table 9
City of Morro Bay
Non-Residential Metered Water Use by Customer Class

	Accounts	Historical Water Use (hcf) 2011	2012	2013	3-Yr Avg	2-Yr Avg	Lowest Avg	Projected Water Use (hcf) 2015/16	2016/17	2017/18	2018/19	2019/20
Annual Change in Billed Non-Residential Water Use								-7.5%	-2.0%	-1.2%	-1.1%	-0.7%
Non-Residential Metered Water Use (hcf)												
Class A - Low Strength												
Laundromat	0	0	0	0	0	0	0	0	0	0	0	0
Car Wash	0	0	0	0	0	0	0	0	0	0	0	0
Water Softeners	1	1,972	2,289	2,075	2,112	2,182	2,112	1,954	1,916	1,894	1,874	1,862
Schools	7	22,906	19,251	20,167	20,775	19,709	19,709	18,231	17,874	17,668	17,479	17,362
Other Public Facilities	13	8,956	5,460	6,137	6,851	5,799	5,799	5,364	5,259	5,198	5,142	5,108
City Facilities on Sewer	35	5,859	5,565	5,358	5,594	5,462	5,462	5,052	4,953	4,896	4,844	4,812
Subtotal Class A	56	39,693	32,565	33,737	35,332	33,151	33,081	30,601	30,002	29,656	29,339	29,144
Class B - Domestic Strength												
Commercial/Domestic Strength	321	41,966	41,331	44,754	42,684	43,043	42,684	39,482	38,710	38,263	37,853	37,601
Commercial Laundry	0	0	0	0	0	0	0	0	0	0	0	0
Condo - Common Area (with sewer)	0	0	0	0	0	0	0	0	0	0	0	0
Mobile Home Parks[1]	22	19,911	20,702	20,961	20,525	20,832	20,525	18,985	18,614	18,399	18,202	18,081
Subtotal Class B	343	61,877	62,033	65,715	63,208	63,874	63,208	58,467	57,324	56,662	56,055	55,682
Class C - Moderate Strength												
Motels	43	33,474	33,528	34,780	33,927	34,154	33,927	31,383	30,769	30,414	30,088	29,887
Retirement Home with Dining[2]	1	9,160	9,136	9,191	9,162	9,164	9,162	8,475	8,309	8,213	8,125	8,071
Mortuaries	1	174	78	47	100	63	63	58	57	56	55	55
Subtotal Class C	45	42,808	42,742	44,018	43,189	43,380	43,152	39,916	39,135	38,683	38,268	38,013
Class D - Mod-High Strength												
Hotels with Dining Room	1	7,061	4,801	4,946	5,603	4,874	4,874	4,508	4,420	4,369	4,322	4,293
Subtotal Class D	1	7,061	4,801	4,946	5,603	4,874	4,874	4,508	4,420	4,369	4,322	4,293
Class E - High Strength												
Restaurants	45	16,765	16,859	16,165	16,596	16,512	16,512	15,274	14,975	14,802	14,643	14,545
Bakeries	2	315	293	323	310	308	308	285	279	276	273	271
Seafood Processors	2	1,416	1,711	1,015	1,381	1,363	1,363	1,261	1,236	1,222	1,209	1,201
Subtotal Class E	49	18,496	18,863	17,503	18,287	18,183	18,183	16,820	16,490	16,300	16,125	16,017
Total	493	169,935	161,004	165,919	165,619	163,462	162,498	150,312	147,371	145,670	144,109	143,149

1 Reclassified from Class A to Class B based on wastewater strength.

2 Reclassified from Class D to Class C based on wastewater strength.

Table 10
City of Morro Bay
Wastewater Loadings for Cost Recovery

	Accounts	Dwelling Units		Estimated Wastewater Flow				Strength (mg/l)		Loadings (lbs)	
					hcf	mg	gpd	BOD	SS	BOD	SS
RESIDENTIAL		Est.		Sewer hcf Per Unit							
Single Family	4,200	4,200		5.0	252,000	188.51	516,462	200	200	314,432	314,432
Condos	308	308		4.0	14,784	11.06	30,299	200	200	18,447	18,447
Multi-Family	345	960		4.0	46,080	34.47	94,439	200	200	57,496	57,496
NON-RESIDENTIAL			2019/20 Wtr Use	Sewer %							
Class A - Low Strength	56		29,144	85%	24,772	18.53	50,770	100	100	15,455	15,455
Class B - Domestic Strength	343		55,682	85%	47,330	35.40	97,000	200	200	59,056	59,056
Class C - Moderate Strength	45		38,013	85%	32,311	24.17	66,220	300	300	60,474	60,474
Class D - Mod-High Strength	1		4,293	85%	3,649	2.73	7,479	400	400	9,106	9,106
Class E - High Strength	49		16,017	85%	13,614	10.18	27,902	600	600	50,962	50,962
TOTAL	**5,346**				**434,541**	**325.06**	**890,570**	**216**	**216**	**585,428**	**585,428**

Table 11
City of Morro Bay
Wastewater Loadings for Cost Recovery

	Flow	BOD	SS
2019/20 Sewer Rate Revenue Target			$7,296,000
Less estimated additional revenues from minimum charge			0
Net Revenue Requirement from Sewer Loadings			7,296,000
Excludes Revenues from Cayucos Sanitary District			
SEWER RATE RECOVERY			
Cost Allocation %	72.7%	13.7%	13.7%
Cost Allocation $	$5,301,358	$997,321	$997,321
Total Loadings	434,541 hcf	585,428 lbs	585,428 lbs
Unit Rate	$12.200 per hcf	$1.704 per lb	$1.704 per lb

Table 12
City of Morro Bay
Sewer Rate Calculations

	Wastewater Flow				Wastewater Strength (mg/l)		Unit Costs			Total
			hcf	mg	BOD	SS	Flow $12.200	BOD $1.704	SS $1.704	Sewer Charge
RESIDENTIAL										Per Dwelling Unit
Charge per residential dwelling unit										
Single Family			5.0	0.003740	200	200	61.00	10.63	10.63	82.26
Multi-Family/Condo			4.0	0.002992	200	200	48.80	8.50	8.50	65.80
NON-RESIDENTIAL										Per hcf of Water Use
Rate per hcf of metered water use	Wtr Use	Sewer %	Swr Flow							
Class A - Low Strength	1.0	85%	0.85	0.000636	100	100	10.37	0.90	0.90	12.18
Class B - Domestic Strength	1.0	85%	0.85	0.000636	200	200	10.37	1.81	1.81	13.98
Class C - Moderate Strength	1.0	85%	0.85	0.000636	300	300	10.37	2.71	2.71	15.79
Class D - Mod-High Strength	1.0	85%	0.85	0.000636	400	400	10.37	3.61	3.61	17.60
Class E - High Strength	1.0	85%	0.85	0.000636	600	600	10.37	5.42	5.42	21.21

Table 13
City of Morro Bay
Proposed Sewer Rates

	Current	Proposed					5-Year
	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	Impact
PROJECTED SEWER RATES							
RESIDENTIAL							
Charge per residential dwelling unit							
Single Family	$45.59	$55.00	$62.50	$70.00	$77.00	$83.00	$37.41
Multi-Family/Condo	varies	44.00	50.00	56.00	61.60	66.40	varies
% of Single Family		80%	80%	80%	80%	80%	
NON-RESIDENTIAL							
Rate per hcf of metered water use							
Class A - Low Strength	$4.63	$6.72	$8.34	$9.93	$11.27	$12.18	$7.55
Class B - Domestic Strength	5.82	8.08	9.83	11.55	13.00	13.98	8.16
Class C - Moderate Strength	8.03	10.18	11.84	13.47	14.85	15.79	7.76
Class D - Mod-High Strength	10.45	12.43	13.96	15.46	16.73	17.60	7.15
Class E - High Strength	13.38	15.55	17.23	18.88	20.27	21.21	7.83
Minimum Annual Charge	*51.77*	44.00	50.00	56.00	61.60	66.40	*14.63*
SEWER ACCOUNTS & USE							
RESIDENTIAL							
Number of Dwelling Units							
Projected Growth		10	10	10	10	10	
Single Family	4,200	4,210	4,220	4,230	4,240	4,250	
Multi-Family/Condo	1,268	1,268	1,268	1,268	1,268	1,268	
NON-RESIDENTIAL							
Metered Water Use							
Class A - Low Strength	33,081	30,601	30,002	29,656	29,339	29,144	
Class B - Domestic Strength	63,208	58,467	57,324	56,662	56,055	55,682	
Class C - Moderate Strength	43,152	39,916	39,135	38,683	38,268	38,013	
Class D - Mod-High Strength	4,874	4,508	4,420	4,369	4,322	4,293	
Class E - High Strength	18,183	16,820	16,490	16,300	16,125	16,017	
SEWER RATE REVENUES							
RESIDENTIAL							
Single Family	2,315,000	2,778,600	3,165,000	3,553,200	3,917,760	4,233,000	
Multi-Family/Condo	700,000	669,504	760,800	852,096	937,306	1,010,342	
Subtotal	3,015,000	3,448,104	3,925,800	4,405,296	4,855,066	5,243,342	
NON-RESIDENTIAL							
Class A - Low Strength	153,165	205,639	250,217	294,484	330,651	354,878	
Class B - Domestic Strength	367,873	472,413	563,495	654,446	728,715	778,629	
Class C - Moderate Strength	346,512	406,345	463,358	521,060	568,280	600,236	
Class D - Mod-High Strength	50,928	56,034	61,703	67,545	72,307	75,544	
Class E - High Strength	243,289	261,551	284,123	307,744	326,854	339,731	
Subtotal	1,161,766	1,401,982	1,622,896	1,845,279	2,026,806	2,149,019	
Total	4,176,766	4,850,086	5,548,696	6,250,575	6,881,872	7,392,361	
Target from Cash Flow Projections	4,164,000	4,921,000	5,561,000	6,198,000	6,790,000	7,296,000	
Difference $	12,766	(70,914)	(12,304)	52,575	91,872	96,361	
Difference %	0.3%	-1.4%	-0.2%	0.8%	1.4%	1.3%	

Appendix C

Additional Utility Billing & Usage Analysis

Table C-1
City of Morro Bay
Consumption Block Analysis FY2014
All Consumption

Average Use	8.0
Average Use (excluding zeros)	8.6
Median Use	5.0

Monthly	Number of Bills				Water Use (hcf)		Use Through Break	
Use (hcf)	In Block	% of Total	Cumulative	Cumulative %	In Block	% of Ttl	Use (hcf)	% of Ttl
0	4,459	6.8%	4,459	6.8%	0	0.0%	0	0.0%
1	5,830	8.9%	10,289	15.8%	5,830	1.1%	60,738	11.6%
2	6,789	10.4%	17,078	26.2%	13,578	2.6%	115,646	22.2%
3	7,333	11.2%	24,411	37.4%	21,999	4.2%	163,765	31.4%
4	7,315	11.2%	31,726	48.7%	29,260	5.6%	204,551	39.2%
5	6,474	9.9%	38,200	58.6%	32,370	6.2%	238,022	45.6%
6	5,647	8.7%	43,847	67.3%	33,882	6.5%	265,019	50.8%
7	4,413	6.8%	48,260	74.0%	30,891	5.9%	286,369	54.9%
8	3,378	5.2%	51,638	79.2%	27,024	5.2%	303,306	58.1%
9	2,639	4.0%	54,277	83.3%	23,751	4.6%	316,865	60.7%
10	1,982	3.0%	56,259	86.3%	19,820	3.8%	327,785	62.8%
11	1,508	2.3%	57,767	88.6%	16,588	3.2%	336,723	64.6%
12	1,201	1.8%	58,968	90.4%	14,412	2.8%	344,153	66.0%
13	907	1.4%	59,875	91.8%	11,791	2.3%	350,382	67.2%
14	665	1.0%	60,540	92.9%	9,310	1.8%	355,704	68.2%
15	515	0.8%	61,055	93.6%	7,725	1.5%	360,361	69.1%
16	426	0.7%	61,481	94.3%	6,816	1.3%	364,503	69.9%
17	350	0.5%	61,831	94.8%	5,950	1.1%	368,219	70.6%
18	300	0.5%	62,131	95.3%	5,400	1.0%	371,585	71.2%
19	224	0.3%	62,355	95.6%	4,256	0.8%	374,651	71.8%
20	173	0.3%	62,528	95.9%	3,460	0.7%	377,493	72.4%
21	150	0.2%	62,678	96.1%	3,150	0.6%	380,162	72.9%
22	166	0.3%	62,844	96.4%	3,652	0.7%	382,681	73.4%
23	133	0.2%	62,977	96.6%	3,059	0.6%	385,034	73.8%
24	112	0.2%	63,089	96.8%	2,688	0.5%	387,254	74.2%
25	96	0.1%	63,185	96.9%	2,400	0.5%	389,362	74.6%
26	78	0.1%	63,263	97.0%	2,028	0.4%	391,374	75.0%
27	72	0.1%	63,335	97.1%	1,944	0.4%	393,308	75.4%
28	75	0.1%	63,410	97.3%	2,100	0.4%	395,170	75.8%
29	54	0.1%	63,464	97.3%	1,566	0.3%	396,957	76.1%
30	70	0.1%	63,534	97.4%	2,100	0.4%	398,690	76.4%
31	54	0.1%	63,588	97.5%	1,674	0.3%	400,353	76.8%
32	50	0.1%	63,638	97.6%	1,600	0.3%	401,962	77.1%
33	42	0.1%	63,680	97.7%	1,386	0.3%	403,521	77.4%
34	39	0.1%	63,719	97.7%	1,326	0.3%	405,038	77.7%
35	33	0.1%	63,752	97.8%	1,155	0.2%	406,516	77.9%
36	48	0.1%	63,800	97.9%	1,728	0.3%	407,961	78.2%
37	39	0.1%	63,839	97.9%	1,443	0.3%	409,358	78.5%
38	40	0.1%	63,879	98.0%	1,520	0.3%	410,716	78.7%
39	39	0.1%	63,918	98.0%	1,521	0.3%	412,034	79.0%
40	38	0.1%	63,956	98.1%	1,520	0.3%	413,313	79.2%
41	37	0.1%	63,993	98.2%	1,517	0.3%	414,554	79.5%
42	32	0.0%	64,025	98.2%	1,344	0.3%	415,758	79.7%
43	26	0.0%	64,051	98.2%	1,118	0.2%	416,930	79.9%
44	23	0.0%	64,074	98.3%	1,012	0.2%	418,076	80.2%
45	17	0.0%	64,091	98.3%	765	0.1%	419,199	80.4%
46	23	0.0%	64,114	98.3%	1,058	0.2%	420,305	80.6%
47	30	0.0%	64,144	98.4%	1,410	0.3%	421,388	80.8%
48	19	0.0%	64,163	98.4%	912	0.2%	422,441	81.0%
49	28	0.0%	64,191	98.5%	1,372	0.3%	423,475	81.2%
50	38	0.1%	64,229	98.5%	1,900	0.4%	424,481	81.4%
51-75	295	0.5%	64,524	99.0%	18,095	3.5%	444,651	85.2%
76-100	202	0.3%	64,726	99.3%	17,370	3.3%	458,646	87.9%
101-200	317	0.5%	65,043	99.8%	43,214	8.3%	485,560	93.1%
201+	154	0.2%	65,197	100.0%	66,834	12.8%	521,594	100.0%
Total	65,197	100.0%			521,594	100.0%		

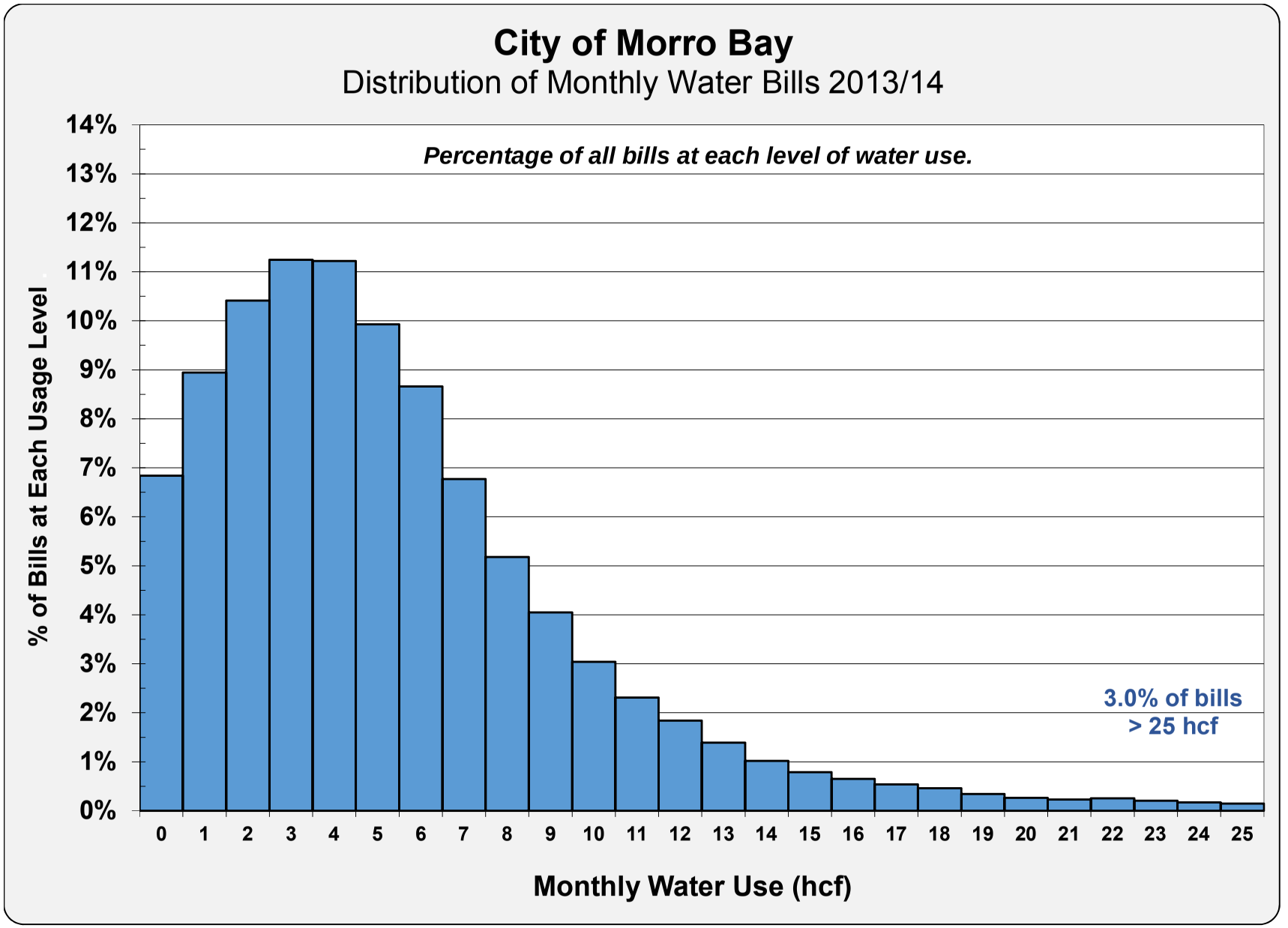

City of Morro Bay
Distribution of Monthly Water Bills 2013/14
Percentage of all bills at each level of water use.
% of Bills at Each Usage Level
14%
13%
12%
11%
10%
9%
8%
7%
6%
5%
4%
3%
2%
1%
0%
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25
Monthly Water Use (hcf)
3.0% of bills
> 25 hcf

Table C-2
City of Morro Bay
Consumption Block Analysis FY2014
All Consumption

Average Use	7.8
Average Use (excluding zeros)	8.4
Median Use	5.0

Monthly	Number of Bills				Water Use (hcf)		Use Through Break	
Use (hcf)	In Block	% of Total	Cumulative	Cumulative %	In Block	% of Ttl	Use (hcf)	% of Ttl
0	4,738	7.3%	4,738	7.3%	0	0.0%	0	0.0%
1	5,904	9.1%	10,642	16.3%	5,904	1.2%	60,356	11.9%
2	6,709	10.3%	17,351	26.7%	13,418	2.7%	114,808	22.7%
3	7,305	11.2%	24,656	37.9%	21,915	4.3%	162,551	32.1%
4	7,162	11.0%	31,818	48.9%	28,648	5.7%	202,989	40.1%
5	6,553	10.1%	38,371	58.9%	32,765	6.5%	236,265	46.7%
6	5,534	8.5%	43,905	67.4%	33,204	6.6%	262,988	52.0%
7	4,325	6.6%	48,230	74.1%	30,275	6.0%	284,177	56.1%
8	3,386	5.2%	51,616	79.3%	27,088	5.4%	301,041	59.5%
9	2,610	4.0%	54,226	83.3%	23,490	4.6%	314,519	62.1%
10	2,016	3.1%	56,242	86.4%	20,160	4.0%	325,387	64.3%
11	1,520	2.3%	57,762	88.7%	16,720	3.3%	334,239	66.0%
12	1,150	1.8%	58,912	90.5%	13,800	2.7%	341,571	67.5%
13	851	1.3%	59,763	91.8%	11,063	2.2%	347,753	68.7%
14	662	1.0%	60,425	92.8%	9,268	1.8%	353,084	69.8%
15	532	0.8%	60,957	93.6%	7,980	1.6%	357,753	70.7%
16	439	0.7%	61,396	94.3%	7,024	1.4%	361,890	71.5%
17	319	0.5%	61,715	94.8%	5,423	1.1%	365,588	72.2%
18	296	0.5%	62,011	95.3%	5,328	1.1%	368,967	72.9%
19	238	0.4%	62,249	95.6%	4,522	0.9%	372,050	73.5%
20	199	0.3%	62,448	95.9%	3,980	0.8%	374,895	74.1%
21	162	0.2%	62,610	96.2%	3,402	0.7%	377,541	74.6%
22	176	0.3%	62,786	96.5%	3,872	0.8%	380,025	75.1%
23	121	0.2%	62,907	96.6%	2,783	0.5%	382,333	75.5%
24	118	0.2%	63,025	96.8%	2,832	0.6%	384,520	76.0%
25	89	0.1%	63,114	97.0%	2,225	0.4%	386,589	76.4%
26	84	0.1%	63,198	97.1%	2,184	0.4%	388,569	76.8%
27	84	0.1%	63,282	97.2%	2,268	0.4%	390,465	77.1%
28	73	0.1%	63,355	97.3%	2,044	0.4%	392,277	77.5%
29	73	0.1%	63,428	97.4%	2,117	0.4%	394,016	77.9%
30	65	0.1%	63,493	97.5%	1,950	0.4%	395,682	78.2%
31	52	0.1%	63,545	97.6%	1,612	0.3%	397,283	78.5%
32	38	0.1%	63,583	97.7%	1,216	0.2%	398,832	78.8%
33	54	0.1%	63,637	97.8%	1,782	0.4%	400,343	79.1%
34	48	0.1%	63,685	97.8%	1,632	0.3%	401,800	79.4%
35	33	0.1%	63,718	97.9%	1,155	0.2%	403,209	79.7%
36	31	0.0%	63,749	97.9%	1,116	0.2%	404,585	79.9%
37	40	0.1%	63,789	98.0%	1,480	0.3%	405,930	80.2%
38	33	0.1%	63,822	98.0%	1,254	0.2%	407,235	80.5%
39	46	0.1%	63,868	98.1%	1,794	0.4%	408,507	80.7%
40	30	0.0%	63,898	98.2%	1,200	0.2%	409,733	81.0%
41	33	0.1%	63,931	98.2%	1,353	0.3%	410,929	81.2%
42	37	0.1%	63,968	98.3%	1,554	0.3%	412,092	81.4%
43	23	0.0%	63,991	98.3%	989	0.2%	413,218	81.6%
44	26	0.0%	64,017	98.3%	1,144	0.2%	414,321	81.9%
45	24	0.0%	64,041	98.4%	1,080	0.2%	415,398	82.1%
46	17	0.0%	64,058	98.4%	782	0.2%	416,451	82.3%
47	33	0.1%	64,091	98.5%	1,551	0.3%	417,487	82.5%
48	22	0.0%	64,113	98.5%	1,056	0.2%	418,490	82.7%
49	26	0.0%	64,139	98.5%	1,274	0.3%	419,471	82.9%
50	19	0.0%	64,158	98.6%	950	0.2%	420,426	83.1%
51-75	316	0.5%	64,474	99.0%	19,523	3.9%	439,649	86.9%
76-100	181	0.3%	64,655	99.3%	15,947	3.2%	452,996	89.5%
101-200	305	0.5%	64,960	99.8%	40,622	8.0%	476,518	94.2%
201+	134	0.2%	65,094	100.0%	56,395	11.1%	506,113	100.0%
Total	65,094	100.0%			506,113	100.0%		

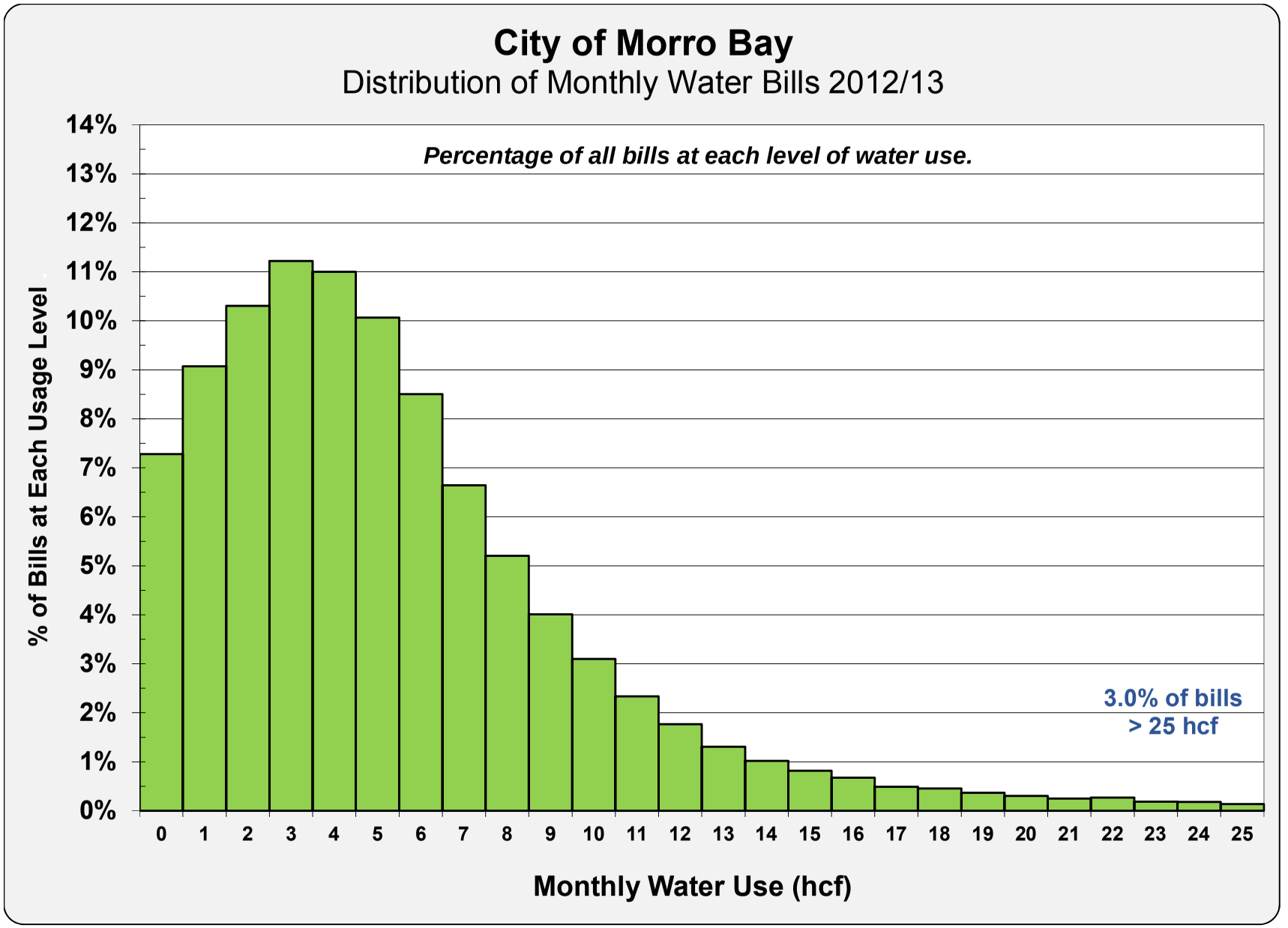

City of Morro Bay
Distribution of Monthly Water Bills 2012/13
Percentage of all bills at each level of water use.
% of Bills at Each Usage Level
14%
13%
12%
11%
10%
9%
8%
7%
6%
5%
4%
3%
2%
1%
0%
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25
Monthly Water Use (hcf)
3.0% of bills
> 25 hcf

Table C-3
City of Morro Bay
Consumption Block Analysis FY2014
Residential Bills Only (Single Family & Condos)

Average Use	5.2
Average Use (excluding zeros)	5.6
Median Use	4.0

Monthly	Number of Bills				Water Use (hcf)		Use Through Break	
Use (hcf)	In Block	% of Total	Cumulative	Cumulative %	In Block	% of Ttl	Use (hcf)	% of Ttl
0	3,401	6.3%	3,401	6.3%	0	0.0%	0	0.0%
1	4,873	9.0%	8,274	15.4%	4,873	1.7%	50,452	18.0%
2	6,077	11.3%	14,351	26.6%	12,154	4.3%	96,031	34.2%
3	6,589	12.2%	20,940	38.9%	19,767	7.0%	135,533	48.2%
4	6,657	12.4%	27,597	51.2%	26,628	9.5%	168,446	60.0%
5	5,820	10.8%	33,417	62.1%	29,100	10.4%	194,702	69.3%
6	5,035	9.3%	38,452	71.4%	30,210	10.8%	215,138	76.6%
7	3,840	7.1%	42,292	78.5%	26,880	9.6%	230,539	82.1%
8	2,873	5.3%	45,165	83.9%	22,984	8.2%	242,100	86.2%
9	2,180	4.0%	47,345	87.9%	19,620	7.0%	250,788	89.3%
10	1,605	3.0%	48,950	90.9%	16,050	5.7%	257,296	91.6%
11	1,185	2.2%	50,135	93.1%	13,035	4.6%	262,199	93.3%
12	916	1.7%	51,051	94.8%	10,992	3.9%	265,917	94.7%
13	672	1.2%	51,723	96.0%	8,736	3.1%	268,719	95.7%
14	493	0.9%	52,216	97.0%	6,902	2.5%	270,849	96.4%
15	350	0.6%	52,566	97.6%	5,250	1.9%	272,486	97.0%
16	267	0.5%	52,833	98.1%	4,272	1.5%	273,773	97.4%
17	211	0.4%	53,044	98.5%	3,587	1.3%	274,793	97.8%
18	172	0.3%	53,216	98.8%	3,096	1.1%	275,602	98.1%
19	115	0.2%	53,331	99.0%	2,185	0.8%	276,239	98.3%
20	80	0.1%	53,411	99.2%	1,600	0.6%	276,761	98.5%
21	59	0.1%	53,470	99.3%	1,239	0.4%	277,203	98.7%
22	68	0.1%	53,538	99.4%	1,496	0.5%	277,586	98.8%
23	55	0.1%	53,593	99.5%	1,265	0.5%	277,901	98.9%
24	46	0.1%	53,639	99.6%	1,104	0.4%	278,161	99.0%
25	33	0.1%	53,672	99.7%	825	0.3%	278,375	99.1%
26	20	0.0%	53,692	99.7%	520	0.2%	278,556	99.2%
27	20	0.0%	53,712	99.7%	540	0.2%	278,717	99.2%
28	18	0.0%	53,730	99.8%	504	0.2%	278,858	99.3%
29	12	0.0%	53,742	99.8%	348	0.1%	278,981	99.3%
30	10	0.0%	53,752	99.8%	300	0.1%	279,092	99.3%
31	13	0.0%	53,765	99.8%	403	0.1%	279,193	99.4%
32	12	0.0%	53,777	99.9%	384	0.1%	279,281	99.4%
33	6	0.0%	53,783	99.9%	198	0.1%	279,357	99.4%
34	10	0.0%	53,793	99.9%	340	0.1%	279,427	99.5%
35	1	0.0%	53,794	99.9%	35	0.0%	279,487	99.5%
36	6	0.0%	53,800	99.9%	216	0.1%	279,546	99.5%
37	4	0.0%	53,804	99.9%	148	0.1%	279,599	99.5%
38	6	0.0%	53,810	99.9%	228	0.1%	279,648	99.5%
39	2	0.0%	53,812	99.9%	78	0.0%	279,691	99.6%
40	1	0.0%	53,813	99.9%	40	0.0%	279,732	99.6%
41	2	0.0%	53,815	99.9%	82	0.0%	279,772	99.6%
42	1	0.0%	53,816	99.9%	42	0.0%	279,810	99.6%
43	2	0.0%	53,818	99.9%	86	0.0%	279,847	99.6%
44	2	0.0%	53,820	99.9%	88	0.0%	279,882	99.6%
45	2	0.0%	53,822	99.9%	90	0.0%	279,915	99.6%
46	0	0.0%	53,822	99.9%	0	0.0%	279,946	99.6%
47	1	0.0%	53,823	99.9%	47	0.0%	279,977	99.7%
48	2	0.0%	53,825	99.9%	96	0.0%	280,007	99.7%
49	1	0.0%	53,826	99.9%	49	0.0%	280,035	99.7%
50	1	0.0%	53,827	100.0%	50	0.0%	280,062	99.7%
51-75	15	0.0%	53,842	100.0%	889	0.3%	280,476	99.8%
76-100	6	0.0%	53,848	100.0%	511	0.2%	280,662	99.9%
101-200	4	0.0%	53,852	100.0%	574	0.2%	280,936	100.0%
201+	1	0.0%	53,853	100.0%	203	0.1%	280,939	100.0%
Total	53,853	100.0%			280,939	100.0%		

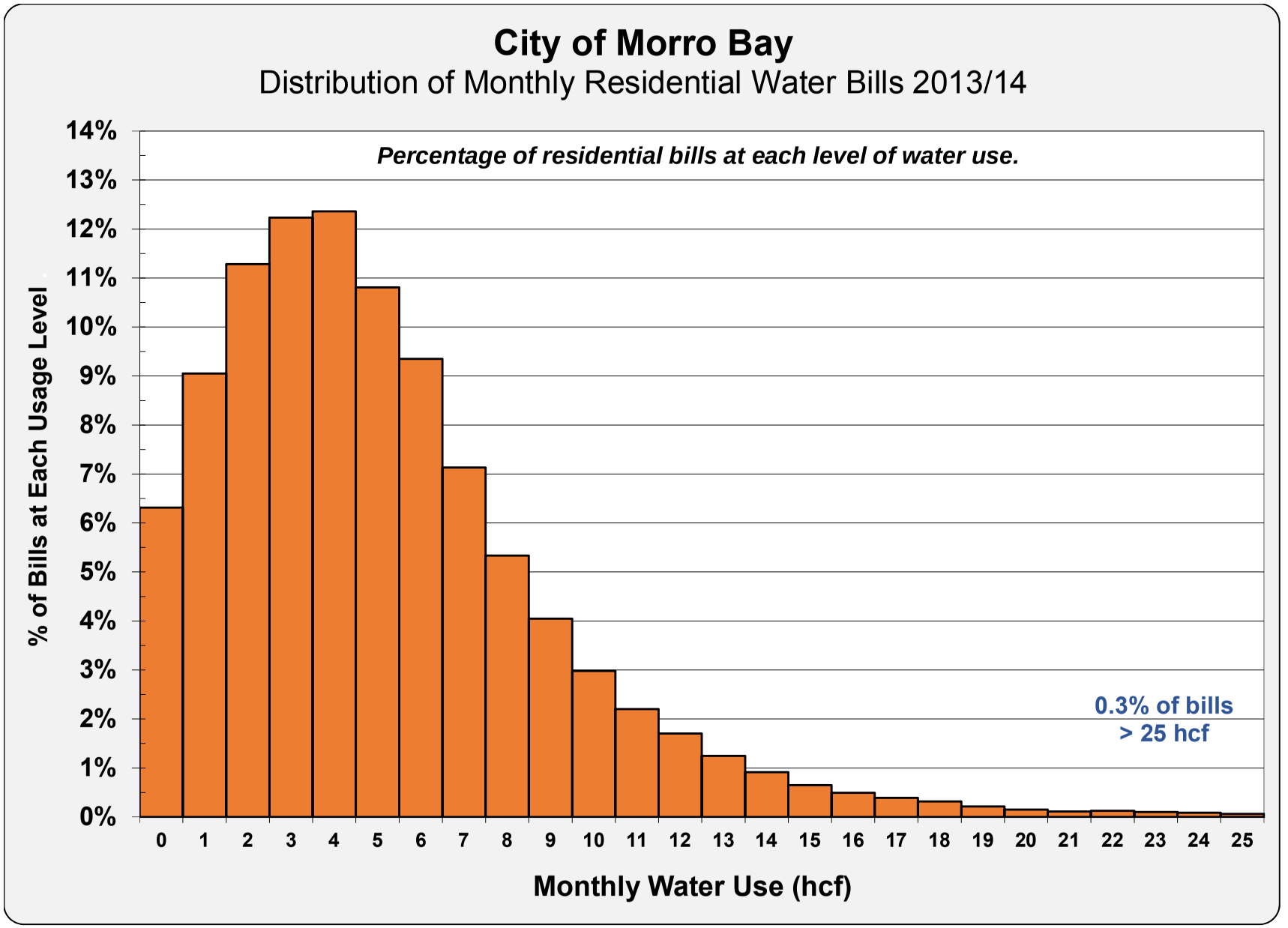

City of Morro Bay
Distribution of Monthly Residential Water Bills 2013/14
Percentage of residential bills at each level of water use.
% of Bills at Each Usage Level
14%
13%
12%
11%
10%
9%
8%
7%
6%
5%
4%
3%
2%
1%
0%
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25
Monthly Water Use (hcf)
0.3% of bills
> 25 hcf

Table C-4
City of Morro Bay
Consumption Block Analysis FY2013
Residential Bills Only (Single Family & Condos)

Average Use	5.2
Average Use (excluding zeros)	5.6
Median Use	4.0

Monthly	Number of Bills				Water Use (hcf)		Use Through Break	
Use (hcf)	In Block	% of Total	Cumulative	Cumulative %	In Block	% of Ttl	Use (hcf)	% of Ttl
0	3,624	6.7%	3,624	6.7%	0	0.0%	0	0.0%
1	4,883	9.1%	8,507	15.8%	4,883	1.7%	50,109	17.9%
2	6,000	11.2%	14,507	27.0%	12,000	4.3%	95,335	34.1%
3	6,620	12.3%	21,127	39.3%	19,860	7.1%	134,561	48.2%
4	6,462	12.0%	27,589	51.3%	25,848	9.3%	167,167	59.9%
5	5,847	10.9%	33,436	62.2%	29,235	10.5%	193,311	69.2%
6	4,924	9.2%	38,360	71.4%	29,544	10.6%	213,608	76.5%
7	3,807	7.1%	42,167	78.5%	26,649	9.5%	228,981	82.0%
8	2,878	5.4%	45,045	83.8%	23,024	8.2%	240,547	86.1%
9	2,186	4.1%	47,231	87.9%	19,674	7.0%	249,235	89.3%
10	1,639	3.1%	48,870	90.9%	16,390	5.9%	255,737	91.6%
11	1,203	2.2%	50,073	93.2%	13,233	4.7%	260,600	93.3%
12	918	1.7%	50,991	94.9%	11,016	3.9%	264,260	94.6%
13	634	1.2%	51,625	96.1%	8,242	3.0%	267,002	95.6%
14	466	0.9%	52,091	96.9%	6,524	2.3%	269,110	96.4%
15	341	0.6%	52,432	97.6%	5,115	1.8%	270,752	97.0%
16	267	0.5%	52,699	98.1%	4,272	1.5%	272,053	97.4%
17	203	0.4%	52,902	98.5%	3,451	1.2%	273,087	97.8%
18	155	0.3%	53,057	98.7%	2,790	1.0%	273,918	98.1%
19	128	0.2%	53,185	99.0%	2,432	0.9%	274,594	98.3%
20	96	0.2%	53,281	99.2%	1,920	0.7%	275,142	98.5%
21	74	0.1%	53,355	99.3%	1,554	0.6%	275,594	98.7%
22	75	0.1%	53,430	99.4%	1,650	0.6%	275,972	98.8%
23	49	0.1%	53,479	99.5%	1,127	0.4%	276,275	98.9%
24	36	0.1%	53,515	99.6%	864	0.3%	276,529	99.0%
25	31	0.1%	53,546	99.7%	775	0.3%	276,747	99.1%
26	32	0.1%	53,578	99.7%	832	0.3%	276,934	99.2%
27	23	0.0%	53,601	99.8%	621	0.2%	277,089	99.2%
28	15	0.0%	53,616	99.8%	420	0.2%	277,221	99.3%
29	15	0.0%	53,631	99.8%	435	0.2%	277,338	99.3%
30	18	0.0%	53,649	99.8%	540	0.2%	277,440	99.4%
31	7	0.0%	53,656	99.9%	217	0.1%	277,524	99.4%
32	4	0.0%	53,660	99.9%	128	0.0%	277,601	99.4%
33	8	0.0%	53,668	99.9%	264	0.1%	277,674	99.4%
34	4	0.0%	53,672	99.9%	136	0.0%	277,739	99.5%
35	3	0.0%	53,675	99.9%	105	0.0%	277,800	99.5%
36	2	0.0%	53,677	99.9%	72	0.0%	277,858	99.5%
37	6	0.0%	53,683	99.9%	222	0.1%	277,914	99.5%
38	1	0.0%	53,684	99.9%	38	0.0%	277,964	99.5%
39	7	0.0%	53,691	99.9%	273	0.1%	278,013	99.6%
40	2	0.0%	53,693	99.9%	80	0.0%	278,055	99.6%
41	4	0.0%	53,697	99.9%	164	0.1%	278,095	99.6%
42	3	0.0%	53,700	99.9%	126	0.0%	278,131	99.6%
43	1	0.0%	53,701	99.9%	43	0.0%	278,164	99.6%
44	0	0.0%	53,701	99.9%	0	0.0%	278,196	99.6%
45	2	0.0%	53,703	99.9%	90	0.0%	278,228	99.6%
46	0	0.0%	53,703	99.9%	0	0.0%	278,258	99.7%
47	1	0.0%	53,704	99.9%	47	0.0%	278,288	99.7%
48	0	0.0%	53,704	99.9%	0	0.0%	278,317	99.7%
49	2	0.0%	53,706	99.9%	98	0.0%	278,346	99.7%
50	3	0.0%	53,709	100.0%	150	0.1%	278,373	99.7%
51-75	16	0.0%	53,725	100.0%	939	0.3%	278,712	99.8%
76-100	3	0.0%	53,728	100.0%	260	0.1%	278,872	99.9%
101-200	3	0.0%	53,731	100.0%	429	0.2%	279,201	100.0%
201+	2	0.0%	53,733	100.0%	434	0.2%	279,235	100.0%
Total	53,733	100.0%			279,235	100.0%		

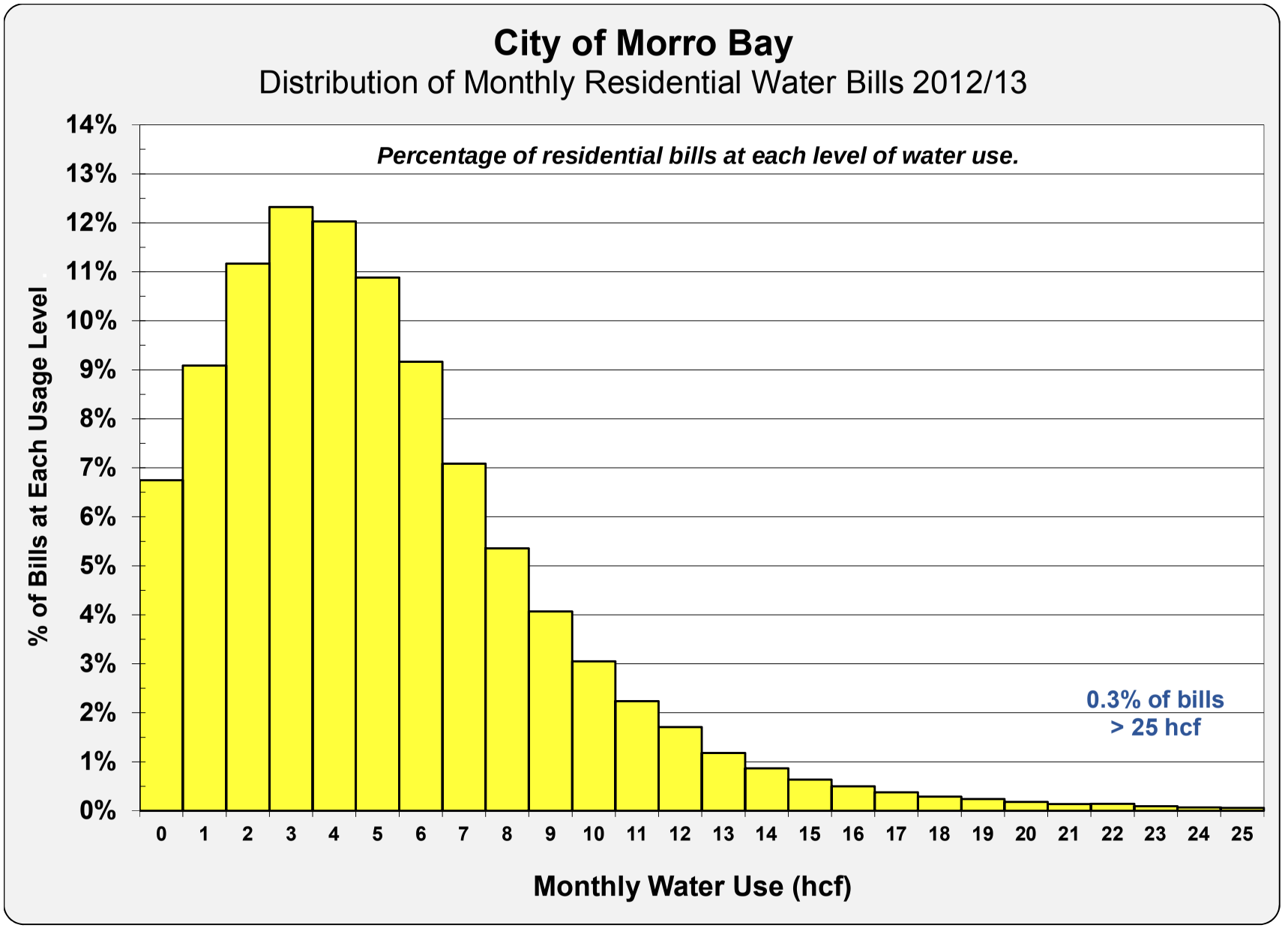

City of Morro Bay
Distribution of Monthly Residential Water Bills 2012/13
Percentage of residential bills at each level of water use.
% of Bills at Each Usage Level
14%
13%
12%
11%
10%
9%
8%
7%
6%
5%
4%
3%
2%
1%
0%
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25
Monthly Water Use (hcf)
0.3% of bills
> 25 hcf

Table C-5
City of Morro Bay
Historical Accounts

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
RESIDENTIAL																				
Average Annual Accounts																				
Single Family Residential	3,613	3,627	3,682	3,738	3,802	3,883	3,960	4,013	4,051	4,125	4,171	4,198	4,237	4,242	4,118	4,155	4,168	4,170	4,180	4,191
Single Family Condo	288	287	290	290	291	293	293	293	292	292	289	296	297	296	290	305	305	305	306	308
Multi - Family Residential	343	339	336	334	331	329	331	329	331	331	330	339	337	363	359	355	350	350	348	341
Single Family - Outside City	5	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	8	9	9
Subtotal	4,249	4,258	4,314	4,368	4,430	4,511	4,590	4,641	4,679	4,753	4,795	4,839	4,877	4,907	4,773	4,821	4,828	4,832	4,842	4,848
Annual Change		9	56	54	62	81	79	51	38	74	42	43	38	30	-134	48	7	5	10	6
NON-RESIDENTIAL																				
Average Annual Accounts																				
Yard Meter	37	40	46	51	52	54	53	53	57	52	51	53	51	51	47	47	47	47	50	52
Vacant Land	8	7	10	10	10	10	10	10	9	11	9	9	9	9	4	4	4	4	2	2
Mobile Home Parks	25	25	26	25	25	25	25	25	24	23	24	24	24	25	22	22	22	22	22	22
Commercial/Domestic Strength	303	298	321	324	323	323	323	322	324	326	328	329	331	335	318	317	315	316	322	321
Restaurants	41	40	41	42	42	43	43	43	43	42	44	46	46	47	44	44	44	45	45	45
Bakeries	1	1	1	1	1	2	2	2	2	3	3	3	3	3	3	2	2	2	2	2
Retirement Home/Hospital	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1
Motels	47	46	49	50	50	50	50	49	50	50	50	51	50	50	44	43	43	43	43	43
Mortuaries	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Hotels with Dining	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Seafood Processors	5	4	5	5	5	5	5	5	5	5	5	5	4	4	3	3	3	3	2	2
Water Softeners	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Schools	5	6	6	6	6	6	6	6	6	6	6	7	8	8	7	7	7	7	7	7
Other Public Facilities	12	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
City Facilities on Sewer	31	32	32	33	34	34	34	34	35	37	36	35	37	38	34	33	33	33	35	35
City Facilities Not on Sewer	20	21	23	24	24	26	25	24	22	30	33	33	34	34	31	31	32	30	29	29
Power Plant	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal	539	539	578	589	590	596	594	590	595	603	607	612	614	622	575	570	569	568	575	575
Annual Change		-1	39	11	2	5	-2	-4	5	8	4	5	2	7	-47	-6	-1	0	7	0
TOTAL	4,788	4,797	4,892	4,957	5,020	5,106	5,184	5,231	5,275	5,356	5,403	5,451	5,491	5,529	5,348	5,390	5,396	5,401	5,417	5,424
Annual Change		8	95	65	63	86	77	47	44	82	46	48	40	38	-180	42	6	4	17	6

Table C-6
City of Morro Bay
Historical Water Use

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
RESIDENTIAL																				Jan-Aug
Annual Water Use (hcf)																				only
Single Family Residential	241,983	246,276	264,445	247,987	257,248	263,947	272,819	282,173	287,449	285,703	275,676	279,339	289,765	290,839	268,232	254,008	262,949	268,056	272,106	178,597
Single Family Condo	10,715	10,366	10,448	10,258	9,875	9,664	10,067	9,604	9,467	9,712	8,934	9,402	9,563	9,480	8,590	9,507	9,837	9,954	9,956	6,309
Multi - Family Residential	56,570	51,842	55,955	51,024	49,743	47,674	48,400	47,532	46,434	45,719	45,837	45,415	45,411	47,025	45,419	43,271	43,763	44,836	44,287	28,870
Single Family - Outside City	406	653	806	542	329	501	296	306	356	277	278	376	417	430	326	262	176	731	645	376
Subtotal	309,674	309,137	331,654	309,811	317,195	321,786	331,582	339,615	343,706	341,411	330,725	334,532	345,156	347,774	322,567	307,048	316,725	323,577	326,994	214,152
% of Total	*60.6%*	*61.7%*	*61.0%*	*62.9%*	*61.5%*	*60.9%*	*60.9%*	*61.6%*	*62.3%*	*62.2%*	*62.5%*	*63.0%*	*62.1%*	*62.2%*	*59.1%*	*56.2%*	*62.3%*	*63.9%*	*63.3%*	*62.7%*
NON-RESIDENTIAL																				
Annual Water Use (hcf)																				
Yard Meter	5,804	5,339	8,282	8,735	10,012	11,228	11,025	11,313	11,292	8,865	8,379	9,036	9,186	7,954	7,127	5,993	6,335	7,250	9,017	5,156
Vacant Land	27	32	37	37	35	44	75	122	77	91	59	54	48	24	7	5	7	21	18	5
Mobile Home Parks	23,676	22,943	26,819	22,346	23,984	23,820	24,877	26,054	25,619	22,747	22,487	21,339	21,997	22,471	22,749	20,678	19,911	20,702	20,961	14,582
Comm'l/Domestic Strength	41,895	40,159	46,777	43,556	44,229	44,812	43,941	43,836	44,398	44,995	45,946	45,781	45,091	45,818	43,837	41,537	41,966	41,331	44,754	29,920
Restaurants	18,623	16,608	18,582	18,920	19,271	19,525	21,903	20,480	19,216	18,226	17,707	18,457	17,355	18,172	16,872	15,981	16,765	16,859	16,165	10,878
Bakeries	78	108	135	119	100	145	141	112	160	178	240	293	358	364	336	289	315	293	323	218
Retirement Home/Hospital	12,120	9,155	10,401	9,098	11,075	10,826	8,360	10,563	10,179	10,258	10,275	9,792	9,410	10,654	10,486	9,835	9,160	9,136	9,191	6,323
Motels	33,538	31,612	34,059	32,029	34,657	36,677	36,447	34,145	35,421	34,431	32,494	32,784	33,780	32,265	32,450	31,589	33,474	33,528	34,780	24,032
Mortuaries	49	123	81	62	53	47	47	33	32	80	75	64	70	143	60	81	174	78	47	27
Hotels with Dining	7,290	6,346	7,065	4,954	6,594	9,748	9,637	9,368	9,602	9,869	10,202	10,139	9,747	7,472	8,088	7,554	7,061	4,801	4,946	3,000
Seafood Processors	2,478	1,239	1,357	1,432	1,242	1,286	1,011	1,009	1,069	954	1,018	1,039	929	1,115	1,333	1,358	1,416	1,711	1,015	668
Water Softeners	3,149	3,745	1,431	1,307	1,622	1,437	1,554	1,416	1,394	1,625	1,785	1,801	2,078	2,256	4,248	2,184	1,972	2,289	2,075	1,670
Schools	20,687	21,033	19,557	15,090	20,615	22,123	25,341	25,383	25,237	25,867	22,545	21,168	29,961	29,200	46,938	74,645	22,906	19,251	20,167	14,562
Other Public Facilities	8,010	7,025	7,356	5,944	6,618	7,434	9,063	9,282	6,682	6,443	5,887	5,325	5,459	6,274	5,092	11,580	8,956	5,460	6,137	3,583
City Facilities on Sewer	10,874	9,499	8,797	8,422	7,171	7,712	8,137	8,158	8,551	5,112	4,757	5,173	5,639	5,043	4,932	5,069	5,859	5,565	5,358	2,945
City Facilities Not on Sewer	13,027	16,957	20,923	10,879	11,563	9,870	11,185	10,647	9,037	17,526	14,381	14,225	19,361	21,807	18,603	11,321	15,745	14,851	14,700	9,613
Power Plant	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal	201,325	191,923	211,659	182,930	198,841	206,734	212,744	211,921	207,966	207,267	198,237	196,470	210,469	211,032	223,158	239,699	192,022	183,126	189,654	127,182
% of Total	*39.4%*	*38.3%*	*39.0%*	*37.1%*	*38.5%*	*39.1%*	*39.1%*	*38.4%*	*37.7%*	*37.8%*	*37.5%*	*37.0%*	*37.9%*	*37.8%*	*40.9%*	*43.8%*	*37.7%*	*36.1%*	*36.7%*	*37.3%*
TOTAL	510,999	501,060	543,313	492,741	516,036	528,520	544,326	551,536	551,672	548,678	528,962	531,002	555,625	558,806	545,725	546,747	508,747	506,703	516,648	341,334

Table C-7
City of Morro Bay
Average Monthly Water Use (hcf)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
RESIDENTIAL																				Jan-Aug
Average Monthly Use per Account (hcf)																				only
Single Family Residential	5.6	5.7	6.0	5.5	5.6	5.7	5.7	5.9	5.9	5.8	5.5	5.5	5.7	5.7	5.4	5.1	5.3	5.4	5.4	5.3
Single Family Condo	3.1	3.0	3.0	2.9	2.8	2.7	2.9	2.7	2.7	2.8	2.6	2.6	2.7	2.7	2.5	2.6	2.7	2.7	2.7	2.6
Multi - Family Residential	13.8	12.7	13.9	12.7	12.5	12.1	12.2	12.0	11.7	11.5	11.6	11.2	11.2	10.8	10.6	10.2	10.4	10.7	10.6	10.6
Single Family - Outside City	6.5	9.3	11.2	7.5	4.5	7.0	4.2	4.2	5.2	3.8	3.9	5.2	5.7	6.0	4.7	3.9	2.9	7.3	5.9	5.2
Subtotal	6.1	6.0	6.4	5.9	6.0	5.9	6.0	6.1	6.1	6.0	5.7	5.8	5.9	5.9	5.6	5.3	5.5	5.6	5.6	5.5
Rolling 3-Year Average			*6.2*	*6.1*	*6.1*	*5.9*	*6.0*	*6.0*	*6.1*	*6.1*	*6.0*	*5.8*	*5.8*	*5.9*	*5.8*	*5.6*	*5.5*	*5.5*	*5.6*	*5.6*
NON-RESIDENTIAL ACCOUNTS																				
Average Monthly Use per Account (hcf)																				
Yard Meter	13.0	11.1	14.9	14.3	16.0	17.4	17.3	17.7	16.5	14.2	13.8	14.2	15.0	13.0	12.5	10.6	11.3	12.9	15.1	12.5
Vacant Land	0.3	0.4	0.3	0.3	0.3	0.4	0.6	1.0	0.7	0.7	0.5	0.5	0.4	0.2	0.1	0.1	0.1	0.5	0.8	0.3
Mobile Home Parks	78.9	76.2	87.6	74.5	79.9	79.4	82.9	87.1	87.4	81.8	78.1	74.1	76.4	76.4	84.6	78.3	75.4	78.4	78.8	82.9
Commercial/Domestic Strength	11.5	11.2	12.1	11.2	11.4	11.6	11.3	11.4	11.4	11.5	11.7	11.6	11.4	11.4	11.5	10.9	11.1	10.9	11.6	11.7
Restaurants	38.3	34.6	37.5	37.5	37.9	37.8	42.4	39.8	37.7	35.8	33.9	33.4	31.3	32.4	31.9	30.4	31.6	31.3	30.2	30.5
Bakeries	6.0	9.0	11.3	9.9	8.3	6.0	6.1	4.7	6.7	5.2	6.7	8.9	9.9	10.1	9.3	10.7	13.1	12.2	13.5	13.6
Retirement Home/Hospital	505.0	381.5	433.4	379.1	461.5	451.1	348.3	440.1	424.1	427.4	428.1	408.0	392.1	443.9	806.6	819.6	763.3	761.3	765.9	790.4
Motels	59.9	57.1	58.1	53.8	57.8	61.0	61.2	58.2	59.4	57.2	53.9	53.7	56.9	53.8	61.6	61.3	65.0	65.4	67.5	70.5
Mortuaries	4.1	10.3	6.8	5.2	4.4	3.9	3.9	2.8	2.7	6.7	6.3	5.3	5.8	11.9	5.0	6.8	14.5	6.5	3.9	3.4
Hotels with Dining	607.5	528.8	588.8	412.8	549.5	812.3	803.1	780.7	800.2	822.4	850.2	844.9	812.3	622.7	674.0	686.7	588.4	400.1	412.2	375.0
Seafood Processors	41.3	24.3	21.9	23.9	20.7	21.4	16.9	17.1	17.8	15.9	16.4	17.6	19.4	23.2	36.0	37.7	39.3	47.5	42.3	41.8
Water Softeners	262.4	249.7	119.3	108.9	135.2	119.8	129.5	118.0	116.2	135.4	127.5	150.1	122.2	188.0	354.0	182.0	164.3	190.8	172.9	208.8
Schools	339.1	292.1	271.6	209.6	286.3	307.3	352.0	352.5	350.5	359.3	317.5	264.6	312.1	304.2	558.8	888.6	276.0	229.2	240.1	260.0
Other Public Facilities	55.6	45.6	47.2	38.1	42.4	47.7	58.1	59.5	42.0	41.3	38.0	34.6	35.2	40.2	32.6	74.2	57.4	35.0	39.3	34.5
City Facilities on Sewer	29.0	24.7	22.8	21.3	17.7	18.9	19.9	20.2	20.6	11.4	10.9	12.2	12.8	11.1	12.2	12.8	14.8	14.1	12.8	10.6
City Facilities Not on Sewer	55.7	67.3	76.9	37.8	40.1	31.9	36.8	37.0	33.7	48.8	36.7	36.1	47.7	53.4	49.9	30.5	41.7	40.8	42.2	41.4
Power Plant	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal	31.1	29.7	30.5	25.9	28.1	28.9	29.9	29.9	29.1	28.6	27.2	26.7	28.5	28.3	32.3	35.1	28.1	26.8	27.5	27.6
Rolling 3-Year Average			*30.5*	*28.7*	*28.2*	*27.6*	*28.9*	*29.6*	*29.6*	*29.2*	*28.3*	*27.5*	*27.5*	*27.9*	*29.7*	*31.9*	*31.8*	*30.0*	*27.5*	*27.3*
TOTAL	8.9	8.7	9.3	8.3	8.6	8.6	8.8	8.8	8.7	8.5	8.2	8.1	8.4	8.4	8.5	8.5	7.9	7.8	7.9	7.9

Table C-8
City of Morro Bay
Water Revenues

	2010	2011	2012	2013	2014
RESIDENTIAL					Jan-Aug only
Annual Water Revenues					
Single Family Residential	$1,589,220	$1,590,605	$1,493,657	$1,619,651	$1,056,777
Single Family Condo	78,356	80,002	72,792	78,880	50,633
Multi - Family Residential	256,672	259,192	247,299	262,196	168,389
Single Family - Outside City	2,306	1,845	4,038	4,152	2,465
Subtotal	1,926,554	1,931,644	1,817,785	1,964,879	1,278,263
% of Total	*56.8%*	*57.9%*	*59.7%*	*59.1%*	*59.0%*
NON-RESIDENTIAL					
Annual Water Revenues					
Yard Meter	40,848	43,748	46,837	68,665	33,867
Vacant Land	789	789	724	403	263
Mobile Home Parks	160,961	152,311	149,519	158,080	112,266
Comm'l/Domestic Strength	319,648	320,767	291,500	343,304	228,793
Restaurants	108,111	103,246	105,132	103,858	70,081
Bakeries	1,843	1,799	1,537	1,879	1,246
Retirement Home/Hospital	98,865	91,077	84,090	92,575	62,584
Motels	232,036	248,057	234,401	255,786	178,183
Mortuaries	518	1,224	442	284	159
Hotels with Dining	83,939	76,940	45,384	49,265	28,285
Seafood Processors	9,607	10,196	11,106	7,052	4,654
Water Softeners	18,846	16,566	18,537	17,890	14,504
Schools	134,816	72,754	73,955	75,520	42,626
Other Public Facilities	124,258	89,924	43,752	48,108	29,448
City Facilities on Sewer	33,229	38,812	35,257	37,308	18,897
City Facilities Not on Sewer	96,194	135,778	86,195	100,004	64,166
Power Plant	0	0	0	0	0
Subtotal	1,464,508	1,403,988	1,228,367	1,359,977	890,022
% of Total	*43.2%*	*42.1%*	*40.3%*	*40.9%*	*41.0%*
TOTAL	3,391,062	3,335,632	3,046,152	3,324,856	2,168,285

Table C-9
City of Morro Bay
Average Monthly Water Revenues per Account

	2010	2011	2012	2013	2014
RESIDENTIAL					Jan-Aug only
Average Monthly Water Revenues per Account					
Single Family Residential	$31.87	$31.80	$29.85	$32.29	$31.52
Single Family Condo	21.39	21.89	19.91	21.49	20.58
Multi - Family Residential	60.31	61.68	58.91	62.83	61.70
Single Family - Outside City	34.42	30.75	40.38	38.09	34.23
NON-RESIDENTIAL					
Average Monthly Water Revenues per Account					
Yard Meter	72.42	77.70	83.19	115.02	82.20
Vacant Land	16.43	16.43	16.45	16.78	16.43
Mobile Home Parks	609.70	576.94	566.36	594.28	637.87
Comm'l/Domestic Strength	84.07	84.75	76.89	88.94	89.20
Restaurants	205.92	194.80	195.41	193.76	196.31
Bakeries	68.27	74.97	64.02	78.28	77.90
Retirement Home/Hospital	8,238.71	7,589.75	7,007.49	7,714.56	7,822.94
Motels	450.56	481.66	456.92	496.67	522.53
Mortuaries	43.17	102.04	36.82	23.64	19.93
Hotels with Dining	7,630.83	6,411.64	3,781.97	4,105.38	3,535.68
Seafood Processors	266.86	283.23	308.50	293.83	290.87
Water Softeners	1,570.54	1,380.46	1,544.71	1,490.83	1,813.04
Schools	1,604.95	876.56	880.42	899.04	761.17
Other Public Facilities	796.53	576.43	280.46	308.38	283.15
City Facilities on Sewer	84.12	98.01	89.03	89.25	67.73
City Facilities Not on Sewer	259.28	359.20	236.80	287.37	276.58
Power Plant	-	-	-	-	-

Table C-10
City of Morro Bay
Water Revenues by Fiscal Year

	2010/11	2011/12	2012/13	2013/14
RESIDENTIAL				
Jul-Dec	1,018,057	1,022,212	1,042,638	1,018,891
Jan-Jun	907,587	934,194	941,837	930,071
Subtotal	1,925,645	1,956,406	1,984,475	1,948,962
% of Total	*57.4%*	*58.0%*	*60.3%*	*58.9%*
NON-RESIDENTIAL				
Jul-Dec	859,944	836,872	759,128	743,861
Jan-Jun	567,116	579,916	547,049	617,469
Subtotal	1,427,061	1,416,788	1,306,177	1,361,330
% of Total	*42.6%*	*42.0%*	*39.7%*	*41.1%*
TOTAL				
Jul-Dec	1,878,001	1,859,084	1,801,765	1,762,752
Jan-Jun	1,474,704	1,514,110	1,488,886	1,547,541
Total	3,352,705	3,373,194	3,290,651	3,310,292

Table C-11
City of Morro Bay
Sewer Revenues

	2010	2011	2012	2013	2014
RESIDENTIAL					Jan-Aug
Annual Sewer Revenues					only
Single Family Residential	$1,878,423	$1,976,545	$2,078,450	$2,204,573	$1,521,445
Single Family Condo	143,124	150,699	158,283	167,511	114,657
Multi - Family Residential	437,105	454,896	479,749	499,861	337,165
Single Family - Outside City	0	0	0	0	0
Subtotal	2,458,653	2,582,139	2,716,483	2,871,946	1,973,267
% of Total	*74.1%*	*74.1%*	*74.1%*	*73.4%*	*73.1%*
NON-RESIDENTIAL					
Annual Sewer Revenues					
Yard Meter	2,782	2,587	2,551	0	210
Vacant Land	0	0	0	0	0
Mobile Home Parks	70,091	72,405	75,232	87,937	63,161
Comm'l/Domestic Strength	247,895	265,823	260,389	325,052	224,473
Restaurants	158,540	162,141	159,492	191,919	133,832
Bakeries	1,975	2,035	1,857	2,365	1,684
Retirement Home/Hospital	41,071	41,005	40,633	48,034	34,033
Motels	185,543	210,554	210,959	253,426	181,493
Mortuaries	729	1,388	660	650	402
Hotels with Dining	57,424	57,461	38,016	45,520	28,597
Seafood Processors	13,046	14,555	17,672	12,351	8,386
Water Softeners	7,363	7,094	8,207	8,660	7,249
Schools	9,772	8,563	6,620	7,831	8,903
Other Public Facilities	37,334	31,911	18,819	25,361	15,177
City Facilities on Sewer	24,246	26,742	26,726	31,625	19,408
City Facilities Not on Sewer	0	0	0	0	0
Power Plant	0	0	0	0	0
Comml Adjust for Dec 2012	-	-	81,541	-	-
Subtotal	857,811	904,261	949,373	1,040,730	727,008
% of Total	*25.9%*	*25.9%*	*25.9%*	*26.6%*	*26.9%*
TOTAL	3,316,463	3,486,400	3,665,855	3,912,676	2,700,275

Includes estimated revenues from Dec-2012 since data was missing.

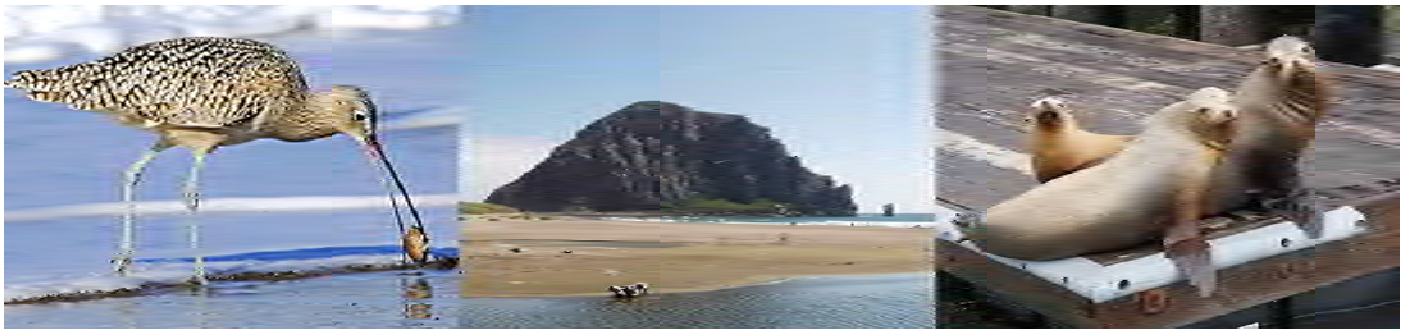
Table C-12
City of Morro Bay
Average Monthly Sewer Revenues per Account

	2010	2011	2012	2013	2014
RESIDENTIAL					Jan-Aug
Average Monthly Sewer Revenues per Account					only
Single Family Residential	$37.67	$39.52	$41.54	$43.95	$45.38
Single Family Condo	39.06	41.24	43.29	45.64	46.61
Multi - Family Residential	102.70	108.26	114.28	119.78	123.55
Single Family - Outside City	0	0	0	0	0
NON-RESIDENTIAL					
Average Monthly Sewer Revenues per Account					
Yard Meter	4.93	4.59	4.53	0.00	0.51
Vacant Land	-	-	-	-	-
Mobile Home Parks	265.50	274.26	284.97	330.59	358.87
Comm'l/Domestic Strength	65.20	70.23	68.69	84.21	87.51
Restaurants	301.98	305.93	296.45	358.06	374.88
Bakeries	73.14	84.78	77.36	98.52	105.28
Retirement Home/Hospital	3,422.61	3,417.11	3,386.10	4,002.87	4,254.10
Motels	360.28	408.84	411.23	492.09	532.24
Mortuaries	60.72	115.65	55.03	54.13	50.23
Hotels with Dining	5,220.39	4,788.38	3,167.99	3,793.31	3,574.61
Seafood Processors	362.39	404.30	490.90	514.61	524.15
Water Softeners	613.58	591.17	683.88	721.64	906.18
Schools	116.33	103.16	78.81	93.23	158.98
Other Public Facilities	239.32	204.56	120.64	162.57	145.93
City Facilities on Sewer	61.38	67.53	67.49	75.66	69.56
City Facilities Not on Sewer	-	-	-	-	-
Power Plant	-	-	-	-	-

Table C-13
City of Morro Bay
Sewer Revenues by Fiscal Year

	2010/11	2011/12	2012/13	2013/14
RESIDENTIAL				
Jul-Dec	1,264,793	1,325,860	1,395,696	1,477,025
Jan-Jun	1,256,279	1,323,804	1,394,921	1,456,702
Subtotal	2,521,072	2,649,664	2,790,618	2,933,727
% of Total	*73.9%*	*74.0%*	*73.7%*	*72.8%*
NON-RESIDENTIAL				
Jul-Dec	492,038	512,027	538,391	591,024
Jan-Jun	397,794	418,949	456,139	502,776
Subtotal	889,832	930,976	994,530	1,093,799
% of Total	*26.1%*	*26.0%*	*26.3%*	*27.2%*
TOTAL				
Jul-Dec	1,756,831	1,837,887	1,934,088	2,068,048
Jan-Jun	1,654,073	1,742,752	1,851,060	1,959,477
Total	3,410,905	3,580,640	3,785,148	4,027,526

City of Morro Bay



Financial Plan & Rate Analysis for a New Water Reclamation Facility

Draft 06/26/18

BARTLE WELLS ASSOCIATES
INDEPENDENT PUBLIC FINANCE ADVISORS

Table of Contents

City of Morro Bay
Financial Plan & Rate Analysis for a
New Water Reclamation Facility

1. Background

The City of Morro Bay is located on the Central California coast in San Luis Obispo County, about 12 miles northwest of the City of San Luis Obispo. The City has a population of approximately 10,500. The City provides water and wastewater service to residents and businesses within the City.

The City's existing wastewater treatment plant has reached the end of its useful life and needs to be rebuilt due to a number of factors including age and condition, as well as capacity and regulatory deficiencies. The existing plant was originally built in 1953 and last underwent major upgrades in 1984. The existing plant does not meet current wastewater discharge permit requirements and needs to be rebuilt to comply with the City's new Waste Discharge Permit requirement within a maximum of five years, as required by the Central Coast Regional Water Quality Control Board (RWQCB). Failure to meet the RWQCB's permit requirements can result in substantial fines.

Adding to the City's challenges, the wastewater treatment plant cannot be rebuilt at its current location. The existing plant is located on the coast in a flood plain and tsunami inundation zone. In 2013, the California Coastal Commission denied the City's development permit to build a new treatment plant near the existing site. In 2015 the Commission issued Sea Level Rise Policy Guidance that strongly discourages siting facilities in areas where they could be adversely affected by the impacts of sea level rise over the full life of the structure. The current location is also inconsistent with other provisions of the Coastal Act and Local Coastal Program.

Based on evaluation of a wide range of project and site alternatives, the City is now moving forward with a new Water Reclamation Facility (WRF) at a proposed site near the intersection of South Bay Boulevard and Highway 1, approximately 1 mile east of downtown Morro Bay. In June 2018, pursuant to a competitive proposal process, the City selected a team to construct the new WRF via a design-build process. The City is currently undergoing negotiations with the selected design-build team.

The full WRF project includes a new wastewater treatment plant, pumping facilities, a pipeline to convey wastewater to the new WRF, and water recycling facilities for potable reuse. Water recycling facilities are included in the WRF project for a number of reasons including:

- The City predominantly relies on imported water from the State Water Project for the

community's water supply. Recycled water provides the City with a relatively drought-proof local supply that improves water supply security and reliability.

- While water recycling infrastructure adds significant cost to the WRF project, it also helps make the WRF project eligible and competitive for grants and low-interest-rate loans. Financial analysis indicates that the impact of the added costs of the recycled water facilities would be largely offset by the financial benefits of subsidized financing available with recycling.
- Water recycling was identified as a community goal for the new WRF.

2. Study Overview

Bartle Wells Associates (BWA) was retained to develop a financial plan and rate recommendations to support funding for the new WRF as well ongoing operating and capital improvement needs. This report presents findings and rate recommendations developed under a few financial scenarios. The proposed WRF Facility Surcharges were developed with input from City staff, Carollo Engineers, and the City's Blue Ribbon Commission -- a group of Morro Bay residents with substantial financial and business experience that was established to provide independent review and help evaluate the costs and potential rate increases needed to support the new WRF.

The City's water and sewer utilities are financially self-supporting enterprises funded primarily from monthly service charges. *In order to secure financing for the WRF, the City will need to first adopt utility rates adequate to repay debt service for the new WRF.*

BWA developed financial projections and rate recommendations under four alternative scenarios.

A. **Base Case Scenario**: This scenario assumes the WRF project is funded by a combination of WIFIA financing, revenue bonds, and pay-as-you go cash funding from rates and fund reserves. Under this scenario, the City would levy the full WRF Facility Surcharges beginning fiscal year 2019/20.

B. **Phase-In Scenario**: This scenario is similar to the Base Case Scenario, but assumes the WRF Facility Surcharges would be phased in from fiscal year 2019/20 through 2021/22.

C. **SRF Financing Scenario:** This scenario assumes the City obtains low-rate SRF financing, instead of bonds, to supplement the anticipated WIFIA loan and cash funding.

D. **No Water Recycling Scenario:** This scenario eliminates the water recycling facilities resulting in a reduced-cost, wastewater-only WRF project, and also assumes no WIFIA financing with all project funding from bonds and pay-as-you-go cash contributions.

3. Prior Rate Increases & Need for WRF Surcharges

In 2015, the City adopted 5-years of water and sewer rate increases. The adopted rates were designed to phase in funding to support the cost of providing utility service and help provide funding for capital improvements to aging infrastructure. As of July 1, 2018, the City will have implemented 4 of the 5 years of adopted rate increases. Prior to these rate increases, the City had not adopted any water rate increases in 20 years but had periodically adopted some sewer rate adjustments.

The previously-adopted sewer rates were also designed to help support funding for a new wastewater treatment plant assuming Morro Bay would need to fund approximately $56 million of project costs, equal to 75% of an estimated $75 million wastewater treatment plant that would be jointly owned with Cayucos funding the remaining 25%. The $75 million preliminary cost estimate from 2015 was based on a conceptual design and parametric estimates.

In addition, the adopted rates were not designed to fund recycled water facilities, which were previously expected to be a future phase of the project. The adopted sewer rates also assumed the City would be able to obtain low-rate financing from the State Revolving Fund (SRF) for all debt financing needs of the new treatment plant. SRF financing was previously fairly easy to obtain but is now substantially more difficult to secure.

The adopted rates substantially strengthened the financial condition of the City's water and sewer utilities but do not provide adequate funding to support each utility's share of costs for the new WRF. Additional water and sewer charges are needed to provide adequate funding for each utility's share of debt service for the WRF project.

BWA recommends the City adopt new water and sewer WRF Facility Surcharges to supplement the previously-adopted rates in order to provide adequate funding for WRF-related debt repayment. These would be separate surcharges levied in addition to the City's adopted utility rates.

4. Summary of Proposed WRF Facility Surcharges

Table 1 shows proposed WRF Facility Surcharges for single family residential customers under the four financial scenarios. Note that the surcharges shown under the Phase-In Scenario are maximum surcharges with full phase-in starting 2022/23. Surcharges for residential customers are structured as fixed monthly charges. Surcharges for all customer classes are detailed later in this report.

Table 1 – Summary of Maximum Single Family Residential WRF Facility Surcharges

	Base Case	Phase-In	WIFIA & SRF	No Recycling*
	WRF+Recycling WIFIA+Bonds	Base Case with Rate Phase In	WRF+Recycling WIFIA+SRF	No Recycling All Bonds
WRF Facility Surcharges				
Sewer WRF Facility Surcharge	$25.00	$27.00	$20.00	$44.00
Water WRF Facility Surcharge	16.00	17.00	14.00	-
Total	**41.00**	**44.00**	**34.00**	**44.00***

* Under the No Recycling Scenario, the fifth and final year of the previously-adopted water rate increases would not need to be implemented, resulting in a $4.50 reduction in the monthly water bill for a typical single family home using 5 units of water per month compared to other scenarios. This results in a net reduction of $1.50 per month compared to the Base Case Scenario.

5. Key Alternative for Implementing & Billing WRF Facility Surcharges

The City has options for implementing and billing the proposed WRF Facility Surcharge as discussed below.

Timing of Surcharge Implementation

At this stage, the City is considering two approaches regarding the timing of implementing the WRF Facility Surcharges, including:

- **Front-Load** - Levy the full WRF Facility Surcharges starting fiscal year 2019/20 (Base Case Scenario)
- **Phase-In** - Phase-in the WRF Facility Surcharges in upcoming years (Phase-In Scenario)

The Phase-In Scenario results in a lower level of surcharge revenues than the front-loaded Base Case Scenario until the surcharges are fully phased-in. The Phase-In Scenario results in approximately $4.3 million less of pay-as-you-go cash funding which results in the need for a corresponding increase in debt financing, higher annual debt service, and ultimately a higher surcharge.

Method of Bill Collection

The City currently bills customers monthly via a combined utility bill for water and sewer service. The City is considering two methods of bill collection for recovering the WRF Facility Surcharges, including:

- **Monthly Billing** - Add the WRF Facility Surcharges as a new line-item in the monthly bills.
- **Property Tax Rolls** - Recover the proposed WRF Facility Surcharges on the property tax rolls.

The WRF Facility Surcharges would be the same under both billing alternatives and in many cases would be paid by the same people; only the method of billing and collection would vary. Additional information regarding potential billing on the property tax rolls is included later in this report.

Community & Advisory Board/Committee Input Received

The City conducted a community workshop to discuss the WRF project and proposed rate surcharges on Saturday, June 23, 2018. During the workshop, community members were requested to provide their preferences regarding: a) either phasing in or front-loading the WRF Facility Surcharges, and b) billing the WRF Facility Surcharges as a separate line-item on the monthly utilities bill vs. submitting the surcharges for recovery via the property tax rolls. Community members who participated at the workshop were fairly evenly split regarding their preferences on both the potential phase-in and method of bill collection.

The same feedback was sought from members of the Public Works Advisory Board (PWAB), Water Reclamation Facility Citizens Advisory Committee (WRFCAC), and Citizens Finance Advisory Committee (CFAC) during a joint meeting between these three committees held on June 25, 2018. Advisory board and committee members slightly favored phasing in the surcharges and strongly favored including the surcharges on the monthly utilities bill, not on the property tax rolls.

6. Total Monthly Water & Sewer Charges with WRF Facility Surcharges

Tables 2A and 2B show the total combined monthly water and sewer charges – *including water and sewer service charges and the proposed WRF Facility Surcharges* – for a typical single family home using 5 units (hcf) of water use per month under the Base Case and Phase-In Scenarios. Under the Phase-In Scenario, pay-as-you-go cash funding for the WRF Project generated by the Surcharges would be reduced by approximately $4.3 million compared to the Base Case Scenario. This results in the need for a corresponding amount of additional debt financing which results in slightly higher debt service and a higher maximum surcharge.

Note that monthly single family residential use has averaged about 4.6 units (hcf) over the past year. BWA estimates that roughly 2/3rds of single family residential bills are at or below 5 hcf.

Table 2A – Base Case Scenario: Total Monthly Charges with WRF Surcharges

Typical Single Family Home with 5 Units (hcf) Monthly Water Use

	2018/19	2019/20	2020/21	2021/22	2022/23
Monthly Utility Bill					
Sewer Monthly Charge	$77.00	$83.00	$83.00	$83.00	$83.00
Water Monthly Charge	62.50	67.00	67.00	67.00	67.00
Subtotal Monthly Bill	139.50	150.00	150.00	150.00	150.00
WRF Facility Surcharges					
Sewer WRF Facility Surcharge	-	25.00	25.00	25.00	25.00
Water WRF Facility Surcharge	-	16.00	16.00	16.00	16.00
Subtotal Monthly Bill		41.00	41.00	41.00	41.00
Total Monthly Charges	**139.50**	**191.00**	**191.00**	**191.00**	**191.00**

Table 2B – Phase-In Scenario: Total Monthly Charges with WRF Surcharges

Typical Single Family Home with 5 Units (hcf) Monthly Water Use

	2018/19	2019/20	2020/21	2021/22	2022/23
Monthly Utility Bill					
Sewer Monthly Charge	$77.00	$83.00	$83.00	$83.00	$83.00
Water Monthly Charge	62.50	67.00	67.00	67.00	67.00
Subtotal Monthly Bill	139.50	150.00	150.00	150.00	150.00
WRF Facility Surcharges					
Sewer WRF Facility Surcharge	-	9.00	18.00	27.00	27.00
Water WRF Facility Surcharge	-	8.00	12.00	17.00	17.00
Subtotal Monthly Bill		17.00	30.00	44.00	44.00
Total Monthly Charges	**139.50**	**167.00**	**180.00**	**194.00**	**194.00**

7. WRF Project Costs & Timing

Table 3 shows projected WRF project capital and operating costs based on the winning design-build proposal received by the City (which is subject to final negotiation) and engineering cost estimates provided by Carollo Engineers. The WRF project is currently estimated to cost a total of $122.8 million including all expenses incurred to date.

Table 3 – WRF Project Cost Estimates

	Construction Costs[1]	Soft Costs	Project Reserves[2]	Total Cost
Projected Capital Costs				
Includes permitting, design, procurement, construction, and management.				
Water Reclamation Facility	$62,616,000	$8,489,000	$3,131,000	$74,236,000
Conveyance Facilities	21,086,000	2,820,000	2,343,000	26,249,000
Offsite Recycled Water Facilities[3]	8,592,000	2,648,000	859,000	12,099,000
General Program Implementation	0	5,160,000	0	5,160,000
Subtotal	92,294,000	19,117,000	6,333,000	117,744,000
Prior Project Expenditures	0	5,063,000		5,063,000
Total	92,294,000	24,180,000		122,807,000
Annual Operating & Maintenance Expenses				
Projected online starting January 1, 2022.		2018 Estimate	Cost Inflation	2022 Projection
WRF Wastewater Operations		$2,383,000	$299,000	$2,682,000
Conveyance to WRF		246,000	31,000	277,000
Recycled Water Operations		193,000	24,000	217,000

Source: Carollo Engineers, WRF Program Revised Cost Estimates as of 6/20/18.

1 Construction costs Include estimated cost inflation to construction mid-point where applicable.

2 Project Reserves are placeholder estimates for additional project funding requirements (e.g. outside project scope) with funding subject to City control.

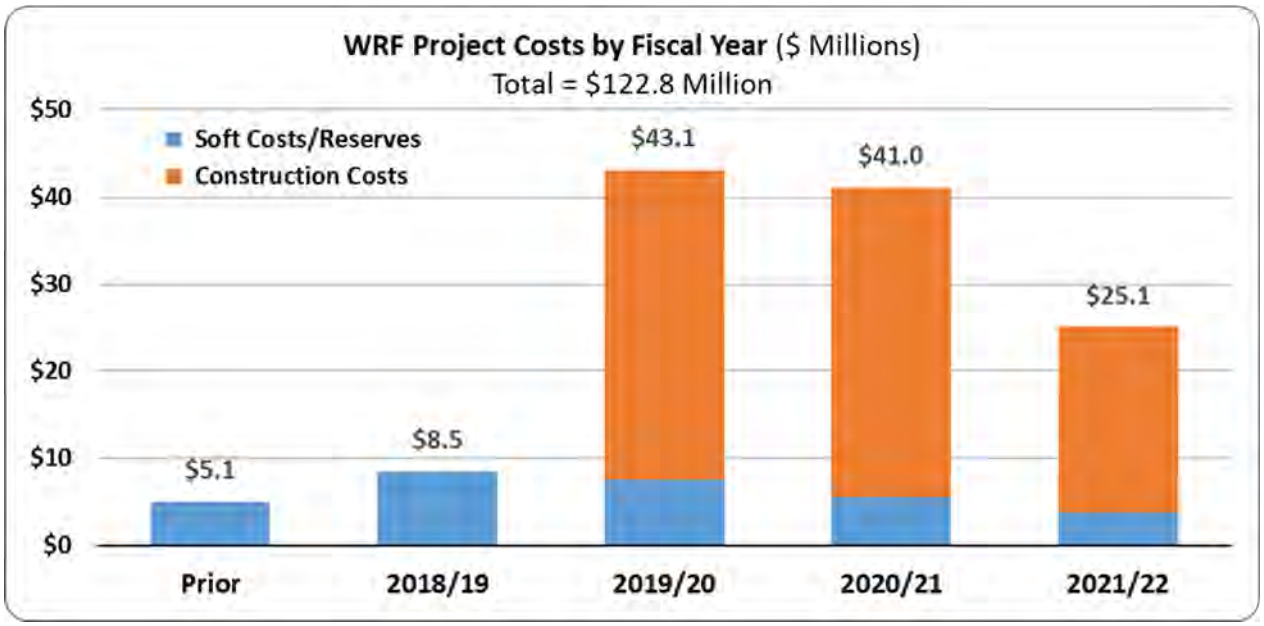
3 Offsite Recycled Water Facilities assume West alternative and include property acquisition estimate.

Without recycled water infrastructure, the total cost of project is reduced by approximately $20 million to an estimated total of $102.2 million. The reduction includes elimination of $12 million of Offsite Recycled Water Facilities, and an $8 million reduction in costs for the wastewater treatment plant. Tables detailing financial projections for a No Water Recycling Scenario are included in the appendix.

Table 4 shows projected WRF costs by fiscal year. The City estimates that a little over $5 million will have been spent by the end of fiscal year 2017/18, with future costs totaling about $117.7 million including estimated cost inflation to the projected mid-point of construction for each project component. The City anticipates incurring costs primarily for design in 2018/19, with construction occurring during the subsequent 3 fiscal years. The new wastewater treatment facility is targeted for completion by October 2021 with operations targeted to start January 2022.

Table 4 – Projected WRF Costs by Fiscal Year

	Prior Costs			Projected Costs			
	Prior	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
Soft Costs	2,800,000	1,423,000	840,000	8,490,000	5,218,000	3,160,000	2,248,000
Construction					35,512,000	35,512,000	21,271,000
Project Reserves					2,377,000	2,377,000	1,579,000
Annual Total	2,800,000	1,423,000	840,000	8,490,000	43,107,000	41,049,000	25,098,000
Subtotal			*5,063,000*				*117,744,000*
Total							*122,807,000*



8. Water vs. Wastewater Cost Allocation

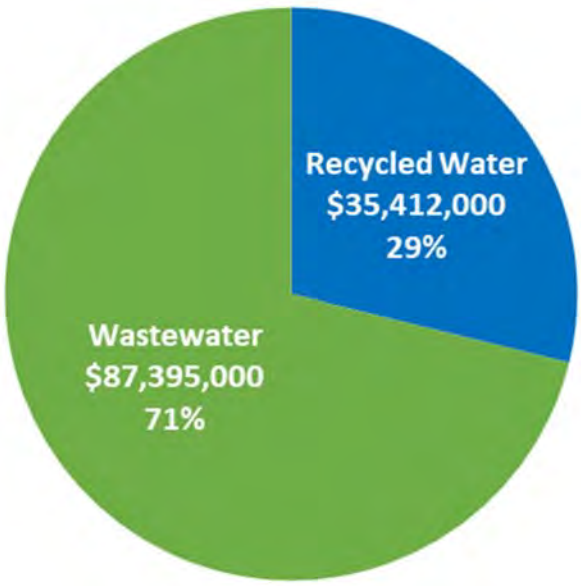
Tables 5 shows an allocation of WRF project costs to water vs. wastewater based on analysis developed by Carollo Engineers. Costs allocated to the water utility include all facility costs related to recycled water production that are in excess of the costs that would be incurred for constructing a new WRF for wastewater only. Each utility is responsible for funding its share of project costs.

Table 5 – WRF Project Cost Allocation to Water vs. Wastewater

Project Component	Total Cost	Water		Wastewater	
Water Reclamation Facility	$74,236,000	$21,528,000	29.0%	$52,708,000	71.0%
Conveyance Facilities	26,249,000	0	0.0%	26,249,000	100.0%
Offsite Recycled Wtr Facilities	12,099,000	12,099,000	100.0%	0	0.0%
General Program Implementation*	5,160,000	1,541,000	29.9%	3,619,000	70.1%
Prior Project Expenditures	5,063,000	244,000	4.8%	4,819,000	95.2%
Total	122,807,000	35,412,000	28.8%	87,395,000	71.2%

* Allocated based on proportionate share of total future facility costs.

Wastewater vs. Recycled Water Costs



9. WRF Project Funding Sources

The City anticipates funding the WRF project via a combination of long-term debt and pay-as-you-go cash funding provided by utility rates and available fund reserves. The Base Case Scenario assumes the City secures WIFIA funding for the maximum allowable 49% of the WRF project cost, with remaining funding provided by cash funding and revenue bonds. Table 6 and the chart below show a breakdown of anticipated funding sources for the WRF project under the Base Case Scenario. For comparison, the Phase-In Scenario results in $4.3 million of reduced cash funding for the WRF and a corresponding $4.3 million increase in Revenue Bond financing.

Table 6A – Base Case: WRF Project Funding Sources

	Total	% of Ttl	Water	% of Source	Wastewater	% of Source
WRF Total Project Costs	$122,807,000		$35,412,000	28.8%	87,395,000	71.2%
Projected Funding Sources						
WIFIA Loan	60,175,000	49.0%	17,352,000	28.8%	42,823,000	71.2%
SRF Planning Loan	10,300,000	8.4%	2,970,000	28.8%	7,330,000	71.2%
Revenue Bonds	24,700,000	20.1%	10,246,000	41.5%	14,454,000	58.5%
Sewer New Cash Funding	17,969,000	14.6%	0	0.0%	17,969,000	100.0%
Water New Cash Funding	4,600,000	3.7%	4,600,000	100.0%	0	0.0%
Prior Cash Contributions	5,063,000	4.1%	244,000	4.8%	4,819,000	95.2%
Total	122,807,000	100.0%	35,412,000	28.8%	87,395,000	71.2%

Base Case: WRF Project Funding Sources

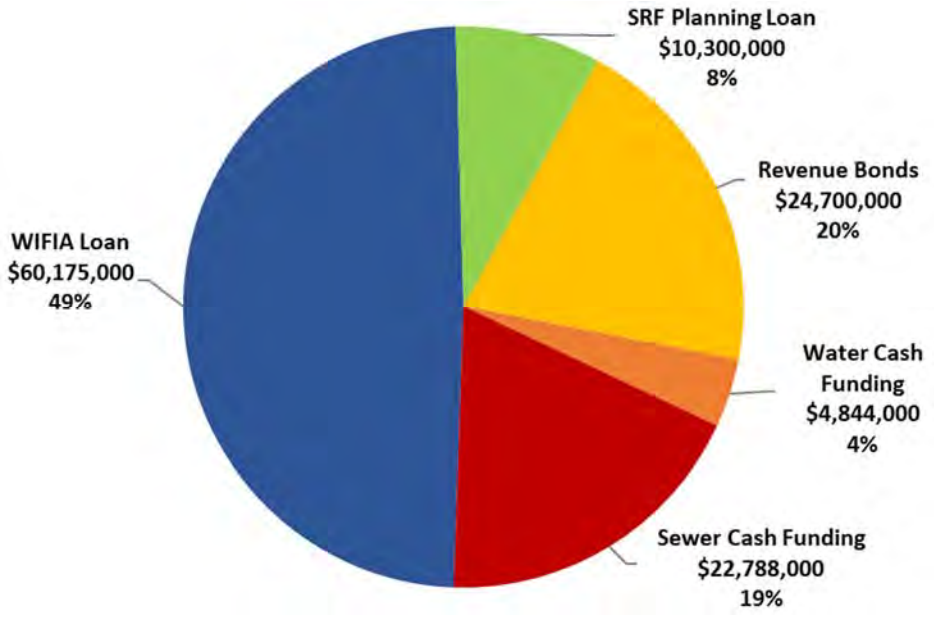


Table 7 shows a breakdown of anticipated funding sources for the WRF Project by fiscal year under the Base Case Scenario.

Table 7 – Base Case: WRF Funding Sources by Year

	Prior	2018/19	2019/20	2020/21	2021/22
WRF Project Costs	$5,063,000	$8,490,000	$43,107,000	$41,049,000	$25,098,000
WRF Funding Sources					
SRF Planning Loan		5,800,000	4,500,000		
WIFIA Loan			31,100,000	29,075,000	
Revenue Bonds				7,400,000	17,300,000
Sewer Cash Contribution	4,819,000	2,390,000	5,307,000	3,374,000	6,898,000
Water Cash Contribution	244,000	300,000	2,200,000	1,200,000	900,000
Total	5,063,000	8,490,000	43,107,000	41,049,000	25,098,000

The City has been pursuing state and federal grants and low-interest-rate loans to help finance the WRF project. The City has been successful in obtaining commitments for a substantial amount of low-interest-rate financing to date and continues to seek additional financial assistance. The City has retained Kestrel Consulting, a grant specialist, to assist in identifying and applying for grants and subsidized financing programs.

- The City was awarded a $10.3 million Planning Loan from California's Clean Water State Revolving Fund (SRF) Financing Program with a subsidized interest rate of 1.7%.
- Morro Bay was as one of 12 communities nationwide invited to apply for low-interest-rate financing from the Water Infrastructure and Financing Innovation Act (WIFIA) funding program administered by the United State Environmental Protection Agency (EPA). WIFIA financing can be used to fund up to 49% of the WRF project cost and has favorable repayment terms including low interest rates. The rate for a long-term WIFIA loan is currently in the 3% range but would not be formally set until final approval is obtained.
- The City was previously awarded a small Recycled Water Planning Feasibility Study Grant.
- The City is pursuing additional financing from Clean Water SRF Financing Program, which offers low-interest-rate loans – currently below 2% -- and repayment terms up to 30 years.
- The City has been pursuing grant financing from the United States Bureau of Reclamation.

Any additional grant or subsidized loan financing received would result in lower future debt service and could reduce annual funding needs from future water and sewer charges.

10.Debt Service Estimates

Tables 8A and 8B show debt service estimates under the Base Case and Phase-In Scenarios. Debt service is partially structured around the 10-year repayment term of the SRF Planning Loan to result in level annual future debt service. The debt service estimates for the anticipated WIFIA Loan and projected Revenue Bonds are based on slightly conservative assumptions of interest rates. Interest rates are currently lower but would be established when the WIFIA financing agreement is finalized and when Revenue Bonds are issued.

Table 8A – Base Case: Debt Service Estimates

	SRF Planning Loan	WIFIA Loan	Revenue Bonds	Total
Project Funding	$10,300,000	$60,175,000	$24,700,000	$95,175,000
Term	10 Years	35 Years	30 Years	All-In TIC
Avg Interest Rate	1.70%	3.25%	4.70%	3.48%
Debt Service				
Through 2029/30	$1,130,000	$2,973,000	$1,190,000	$5,293,000
After 2029/30	-	$3,422,000	$1,871,000	$5,293,000

The Phase-In Scenario generates less cash funding for the WRF Project which results in a corresponding increase in debt financing needs from revenue bonds and a resulting increase in debt financing and debt service.

Table 8B – Phase-In: Debt Service Estimates

	SRF Planning Loan	WIFIA Loan	Revenue Bonds	Total
Project Funding	$10,300,000	$60,175,000	$29,000,000	$99,475,000
Term	10 Years	35 Years	30 Years	All-In TIC
Avg Interest Rate	1.70%	3.25%	4.70%	3.51%
Debt Service				
Through 2029/30	$1,130,000	$3,051,000	$1,396,000	$5,577,000
After 2029/30	-	$3,383,000	$2,194,000	$5,577,000

11.Capital Improvement Plans

The City recently collaborated with Carollo Engineers to evaluate and prioritize capital improvement needs to the City's aging water and sewer infrastructure resulting in the development of updated Capital Improvement Plans (CIPs) for the water and sewer utilities. The CIP projects include replacement and rehabilitation of old water and sewer pipelines, water pump stations, sewer lift stations, and water storage tanks. The CIPs are designed to address the highest priority needs the soonest. The City plans to continue evaluating its capital improvement needs and may re-prioritize projects in future years.

Tables 9 and 10 summarize annual water and sewer CIP funding needs. The City plans to fund these improvements on a pay-as-you-go basis with no additional debt. A detailed list of CIP projects and costs is included in the appendix to this report. Note that costs are shown in current dollars.

Table 9 – Water Capital Improvement Plan Summary

	Near-Term Years 1 - 5	Mid-Term Years 6 - 10	Long-Term Through 2040
CIP Cost Estimates	$6,788,000	$4,977,000	$11,586,000
Average Annual Cost	1,357,600	995,400	965,500

Table 10 – Sewer Capital Improvement Plan Summary

	Near-Term Years 1 - 5	Mid-Term Years 6 - 10	Long-Term Through 2040
CIP Cost Estimates	$5,096,000	$5,726,000	$7,349,000
Average Annual Cost	1,019,200	1,145,200	612,417

12. Financial Projections

BWA developed 10-year water and sewer utility financial projections to evaluate annual revenue requirements and project rate increases under each of the four financial scenarios. The projections are based on reasonable and slightly conservative assumptions including:

- Operating expenses are based on the 2018/19 preliminary budget.
- Operating costs escalate at the annual rate of 4% per year for planning purposes.
- Future costs for a) wastewater treatment at the new WRF and b) wastewater conveyance to the new WRF, and c) recycled water operations are based on engineering estimates developed by Carollo Engineers and account for future cost inflation.
- The projections assume a low-growth scenario of 5 new single family homes or equivalents per year.
- Water and sewer service charge revenues assume monthly water use remains constant based on usage over the past fiscal year. Note that residential sewer rates and all WRF Facility Surcharges are fixed monthly charges that do not vary with changes in water use.
- Sewer financial projections assume that Cayucos Sanitary District funds 25% of the operating costs of the existing wastewater treatment plant for two more fiscal years – through 2019/20 – after which Cayucos anticipates transitioning to its own planned treatment facility. *Note: The reduction in wastewater flow from Cayucos SD is not projected to result in a significant decrease in operating costs. Most of the wastewater treatment plant's operating and maintenance costs are fixed costs (e.g. staffing) that do not vary with changes in wastewater flow.*
- The sewer cash flow projections show how the entire WRF Project is funded and include the full debt service payments which are offset by the debt service paid by the water utility.
- Water and sewer capital improvement plans are funded entirely on a pay-as-you-go basis from revenues generated each year by water and sewer service charges.
- The City has accrued some fund reserves that can eventually be applied toward the WRF Project and anticipates generating additional cash contributions for the project from future rates and WRF Facility Surcharges. BWA recommends the City maintain its water and sewer fund reserves while the WRF Project is being built. The City can draw down a portion of its water and sewer fund reserves during fiscal year 2021/11, the final year of construction. Over the longer-term, the cash flow projections assume the City would maintain at least $4 million in fund reserves for each utility.

Tables 11A and 12A show 10-year sewer cash flow projections and water cash flow projections under the Base Case Scenario. Tables 11B and 12B show financial projections under the Phase-In Scenario.

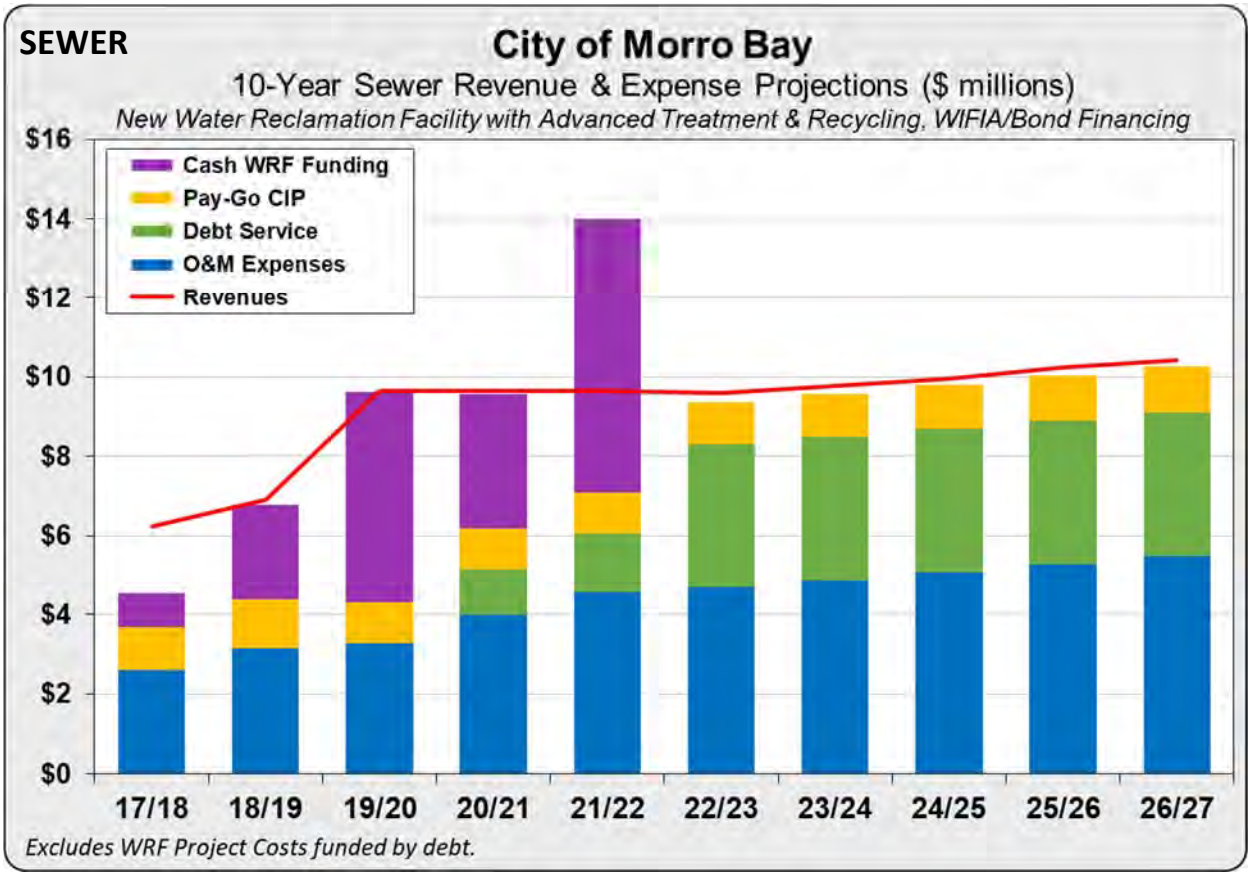
Table 11A - City of Morro Bay - Sewer Cash Flow Projections					Base Case Scenario
	Projected				
Years 1 - 5	2017/18	2018/19	2019/20	2020/21	2021/22
Monthly Single Family Sewer Charge	$70.00	$77.00	$83.00	$83.00	$83.00
Monthly Single Family Surcharge			$25.00	$25.00	$25.00
Beginning Sewer Accounts	5,346	5,351	5,356	5,361	5,366
Growth: Single Family Equivalents	5	5	5	5	5
Growth %	-	0.1%	0.1%	0.1%	0.1%
Sewer Development Impact Fee	$5,445	$5,550	$5,660	$5,770	$5,890
Interest Earnings Rate	1.25%	1.75%	2.0%	2.0%	2.0%
Cost Escalation			4.0%	4.0%	4.0%
Beginning Fund Reserves	$6,402,000	$8,112,000	$8,251,000	$8,274,000	$8,357,000
REVENUES					
Sewer Service Charges	6,100,000	6,716,000	7,246,000	7,253,000	7,260,000
Sewer WRF Facility Surcharges	0	0	2,173,000	2,173,000	2,173,000
Development Impact Fees	30,000	28,000	28,000	29,000	29,000
Interest Earnings	80,000	142,000	165,000	165,000	167,000
Rental Income/Other (Excl Penalties)	25,000	30,000	30,000	30,000	30,000
Subtotal	6,235,000	6,916,000	9,642,000	9,650,000	9,659,000
WRF Debt Financing					
SRF Planning Loan		5,800,000	4,500,000		
WIFIA Loan			31,100,000	29,075,000	
Bond Proceeds				7,400,000	17,300,000
EXPENSES					
Operating & Maintenance	Estimated	Projected			
Sewer Collection	1,100,000	1,480,000	1,539,000	1,601,000	1,665,000
Wastewater Treatment Existing	2,000,000	2,210,000	2,298,000	2,390,000	1,247,000
Wastewater Treatment New WRF	-	-	-	-	1,500,000
Conveyance to New WRF	-	-	-	-	140,000
Less Cayucos SD Reimbursements	*(495,000)*	*(553,000)*	*(575,000)*	*0*	*0*
Subtotal	2,605,000	3,137,000	3,262,000	3,991,000	4,552,000
Debt Service					
SRF Planning Loan	-	-	-	1,130,000	1,130,000
WIFIA Loan	-	-	-	-	-
Revenue Bonds (structured around SRF)	-	-	-	595,000	1,190,000
Less Water Share of WRF Debt	-	-	-	(573,000)	(820,000)
Subtotal	0	0	0	1,152,000	1,500,000
Capital Improvements					
Sewer Cash Contribution to WRF	840,000	2,390,000	5,307,000	3,374,000	6,898,000
Sewer System Pay-Go CIP	630,000	1,200,000	1,000,000	1,000,000	1,000,000
Vehicle/Equipment Replacement	450,000	50,000	50,000	50,000	50,000
Subtotal	1,920,000	3,640,000	6,357,000	4,424,000	7,948,000
Total Sewer Expenses	4,525,000	6,777,000	9,619,000	9,567,000	14,000,000
Revenues Less Expenses	1,710,000	139,000	23,000	83,000	(4,341,000)
Ending Fund Reserves	8,112,000	8,251,000	8,274,000	8,357,000	4,016,000
Debt Service Coverage	-	-	-	4.91	3.40

Table 11A - City of Morro Bay - Sewer Cash Flow Projections					Base Case Scenario
	Projected				
Years 6 - 10	2022/23	2023/24	2024/25	2025/26	2026/27
Monthly Residential Sewer Charge	$83.00	$85.00	$87.00	$90.00	$92.00
Monthly Single Family WRF Surcharge	$25.00	$25.00	$25.00	$25.00	$25.00
Beginning Sewer Accounts	5,371	5,376	5,381	5,386	5,391
Growth: Single Family Equivalents	5	5	5	5	5
Growth %	0.1%	0.1%	0.1%	0.1%	0.1%
Sewer Development Impact Fee	$6,010	$6,130	$6,250	$6,380	$6,510
Interest Earnings Rate	2.0%	2.0%	2.0%	2.0%	2.0%
Cost Escalation	4.0%	4.0%	4.0%	4.0%	4.0%
Beginning Fund Reserves	$4,016,000	$4,245,000	$4,445,000	$4,604,000	$4,802,000
REVENUES					
Sewer Service Charges	7,267,000	7,449,000	7,631,000	7,901,000	8,084,000
Sewer WRF Facility Surcharges	2,173,000	2,173,000	2,173,000	2,173,000	2,173,000
Development Impact Fees	30,000	31,000	31,000	32,000	33,000
Interest Earnings	86,000	91,000	95,000	98,000	102,000
Rental Income/Penalties/Other	30,000	30,000	30,000	30,000	30,000
Subtotal	9,586,000	9,774,000	9,960,000	10,234,000	10,422,000
WRF Debt Financing					
SRF Planning Loan					
WIFIA Financing					
Bond Financing					
EXPENSES					
Operating & Maintenance					
Sewer Collection	1,732,000	1,801,000	1,873,000	1,948,000	2,026,000
Wastewater Treatment Existing	0	0	0	0	0
Wastewater Treatment New WRF	2,682,000	2,789,000	2,901,000	3,017,000	3,138,000
Conveyance to New WRF	277,000	288,000	300,000	312,000	324,000
Less Cayucos SD Reimbursements	*0*	*0*	*0*	*0*	*0*
Subtotal	4,691,000	4,878,000	5,074,000	5,277,000	5,488,000
Debt Service					
SRF Planning Loan	1,130,000	1,130,000	1,130,000	1,130,000	1,130,000
WIFIA Financing	2,973,000	2,973,000	2,973,000	2,973,000	2,973,000
Revenue Bonds (structured around SRF)	1,190,000	1,190,000	1,190,000	1,190,000	1,190,000
Less Water Share of WRF Debt	(1,677,000)	(1,677,000)	(1,677,000)	(1,677,000)	(1,677,000)
Subtotal	3,616,000	3,616,000	3,616,000	3,616,000	3,616,000
Capital Improvements					
Sewer Cash Contribution to WRF	0	0	0	0	0
Sewer System Pay-Go CIP	1,000,000	1,030,000	1,061,000	1,093,000	1,126,000
Vehicle/Equipment Replacement	50,000	50,000	50,000	50,000	50,000
Subtotal	1,050,000	1,080,000	1,111,000	1,143,000	1,176,000
Total Expenses	9,357,000	9,574,000	9,801,000	10,036,000	10,280,000
Revenues Less Expenses	229,000	200,000	159,000	198,000	142,000
Ending Fund Reserves	4,245,000	4,445,000	4,604,000	4,802,000	4,944,000
Debt Service Coverage	1.35	1.35	1.35	1.37	1.36

Table 12A - City of Morro Bay - Water Cash Flow Projections					Base Case Scenario
	Projected				
Years 1 - 5	2017/18	2018/19	2019/20	2020/21	2021/22
Fixed Monthly Water Charge	$28.00	$30.00	$32.00	$32.00	$32.00
Fixed Monthly Single Family WRF Surcharge			$16.00	$16.00	$16.00
Water Rate Adjustment %		7.1%	6.7%	0.0%	0.0%
Growth: Single Family Equivalents	5	5	5	5	5
Growth %	0.1%	0.1%	0.1%	0.1%	0.1%
Change in Water Sales		0.0%	0.0%	0.0%	0.0%
Water Development Impact Fee	$5,392	$5,500	$5,610	$5,720	$5,830
Interest Earnings Rate	1.25%	1.75%	2.0%	2.0%	2.0%
State Water Project Cost Escalation			4.0%	4.0%	4.0%
Operating Cost Escalation			4.0%	4.0%	4.0%
Beginning Fund Reserves	$3,132,000	$4,456,000	$4,537,000	$4,622,000	$4,687,000
REVENUES	Estimated	Projected			
Water Service Charges	5,280,000	5,700,000	6,086,000	6,092,000	6,098,000
Water WRF Facility Surcharges	0	0	1,654,000	1,654,000	1,654,000
Development Impact Fees	30,000	28,000	28,000	29,000	29,000
Interest Earnings	39,000	78,000	91,000	92,000	94,000
Other (Excludes Penalties)	16,000	20,000	20,000	20,000	20,000
Subtotal	5,365,000	5,826,000	7,879,000	7,887,000	7,895,000
EXPENSES					
Operating & Maintenance	Estimated	Projected			
Water System Operations	1,591,000	2,130,000	2,215,000	2,304,000	2,396,000
State Water Project Payments	1,535,000	1,595,000	1,659,000	1,725,000	1,794,000
Share of CCWA 2016 Bonds (Thru Oct-2021)	665,000	670,000	670,000	670,000	670,000
Recycled Water Operations	-	-	-	-	110,000
Subtotal	3,791,000	4,395,000	4,544,000	4,699,000	4,970,000
Debt Service					
SRF Planning Loan: Water Share	-	-	-	326,000	326,000
WRF WIFIA Loan: Water Share	-	-	-	-	-
WRF Revenue Bonds: Water Share	-	-	-	247,000	494,000
Subtotal	0	0	0	573,000	820,000
Capital Improvements					
Water System Pay-Go CIP	250,000	1,000,000	1,000,000	1,300,000	1,800,000
Water Cash Contribution to WRF	0	300,000	2,200,000	1,200,000	900,000
Vehicle/Equipment Replacement	0	50,000	50,000	50,000	50,000
Subtotal	250,000	1,350,000	3,250,000	2,550,000	2,750,000
Total Expenses	4,041,000	5,745,000	7,794,000	7,822,000	8,540,000
Revenues Less Expenses	1,324,000	81,000	85,000	65,000	(645,000)
Ending Fund Reserves	4,456,000	4,537,000	4,622,000	4,687,000	4,042,000
CCWA Bond Debt Service Coverage	1.72	1.63	2.43	2.33	2.19
City Debt Service Coverage	-	-	-	5.56	3.57

Table 12A - City of Morro Bay - Water Cash Flow Projections					Base Case Scenario
	Projected				
Years 6 - 10	2022/23	2023/24	2024/25	2025/26	2026/27
Fixed Monthly Residential Water Charge	$32.00	$32.00	$32.00	$33.00	$34.00
Fixed Monthly Single Family WRF Surchar	$16.00	$16.00	$16.00	$16.00	$16.00
Water Rate Adjustment %	0.0%	0.0%	0.0%	3.1%	3.0%
Growth: Single Family Equivalents	5	5	5	5	5
Growth %	0.1%	0.1%	0.1%	0.1%	0.1%
Change in Water Sales	0.0%	0.0%	0.0%	0.0%	0.0%
Water Development Impact Fee	$5,950	$6,070	$6,190	$6,310	$6,440
Interest Earnings Rate	2.0%	2.0%	2.0%	2.0%	2.0%
State Water Project Cost Escalation	4.0%	4.0%	4.0%	4.0%	4.0%
Operating Cost Escalation	4.0%	4.0%	4.0%	4.0%	4.0%
Beginning Fund Reserves	$4,042,000	$4,031,000	$4,442,000	$4,647,000	$4,825,000
REVENUES					
Water Service Charges	6,104,000	6,110,000	6,116,000	6,313,000	6,510,000
Water WRF Facility Surcharges	1,654,000	1,654,000	1,654,000	1,654,000	1,654,000
Development Impact Fees	30,000	30,000	31,000	32,000	32,000
Interest Earnings	86,000	86,000	94,000	99,000	102,000
Other (Excludes Penalties)	20,000	20,000	20,000	20,000	20,000
Subtotal	7,894,000	7,900,000	7,915,000	8,118,000	8,318,000
EXPENSES					
Operating & Maintenance					
Water System Personnel	2,492,000	2,592,000	2,696,000	2,804,000	2,916,000
State Water Project Payments	1,866,000	1,941,000	2,019,000	2,100,000	2,184,000
Share of CCWA 2016 Bonds (Thru Oct-2021)	0	0	0	0	0
Recycled Water Operations	220,000	229,000	238,000	248,000	258,000
Subtotal	4,578,000	4,762,000	4,953,000	5,152,000	5,358,000
Debt Service					
SRF Planning Loan: Water Share	326,000	326,000	326,000	326,000	326,000
WRF WIFIA Loan: Water Share	857,000	857,000	857,000	857,000	857,000
WRF Revenue Bonds: Water Share	494,000	494,000	494,000	494,000	494,000
Subtotal	1,677,000	1,677,000	1,677,000	1,677,000	1,677,000
Capital Improvements					
Water System Pay-Go CIP	1,600,000	1,000,000	1,030,000	1,061,000	1,093,000
Water Cash Contribution to WRF	0	0	0	0	0
Vehicle/Equipment Replacement	50,000	50,000	50,000	50,000	50,000
Subtotal	1,650,000	1,050,000	1,080,000	1,111,000	1,143,000
Total Expenses	7,905,000	7,489,000	7,710,000	7,940,000	8,178,000
Revenues Less Expenses	(11,000)	411,000	205,000	178,000	140,000
Ending Fund Reserves	4,031,000	4,442,000	4,647,000	4,825,000	4,965,000
CCWA Bond Debt Service Coverage	-	-	-	-	-
Debt Service Coverage	1.98	1.87	1.77	1.77	1.77

Base Case Scenario



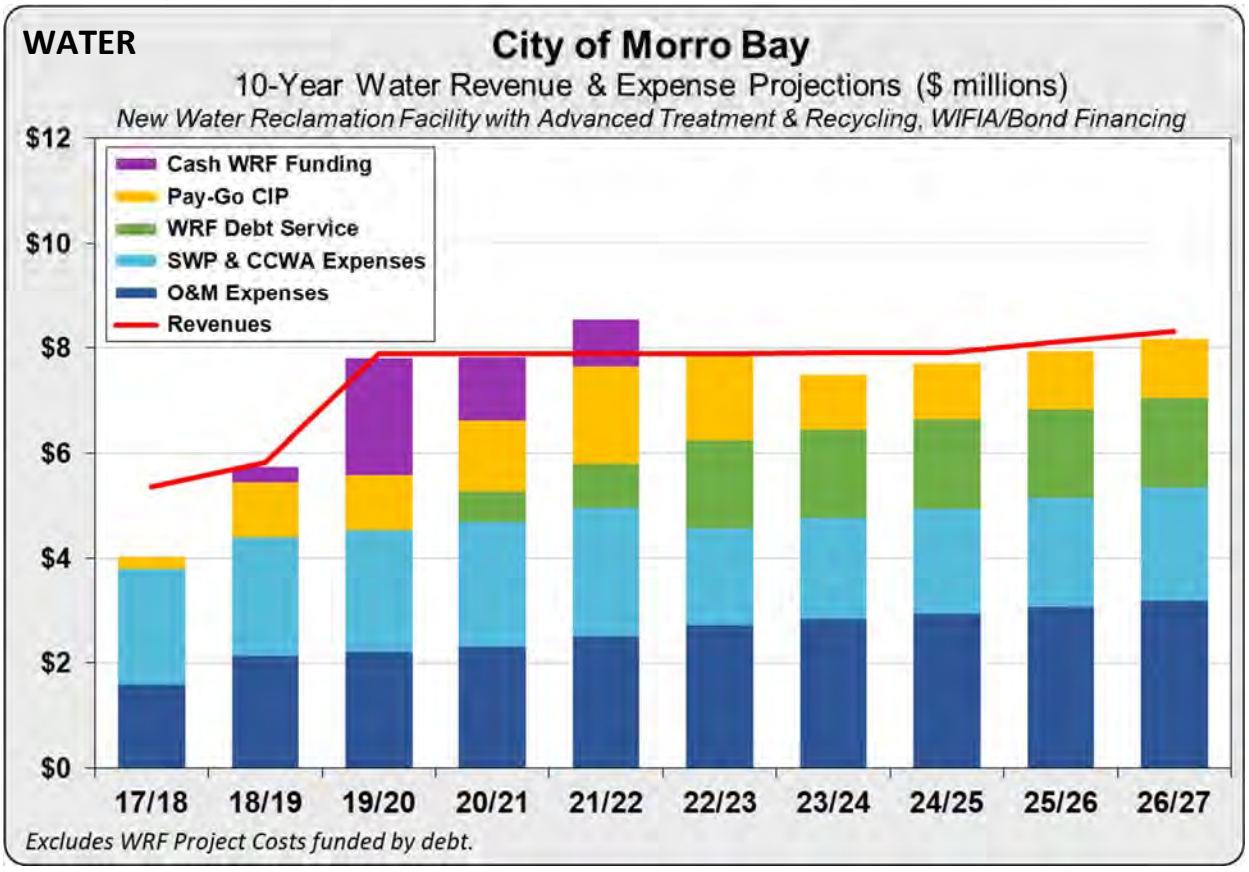


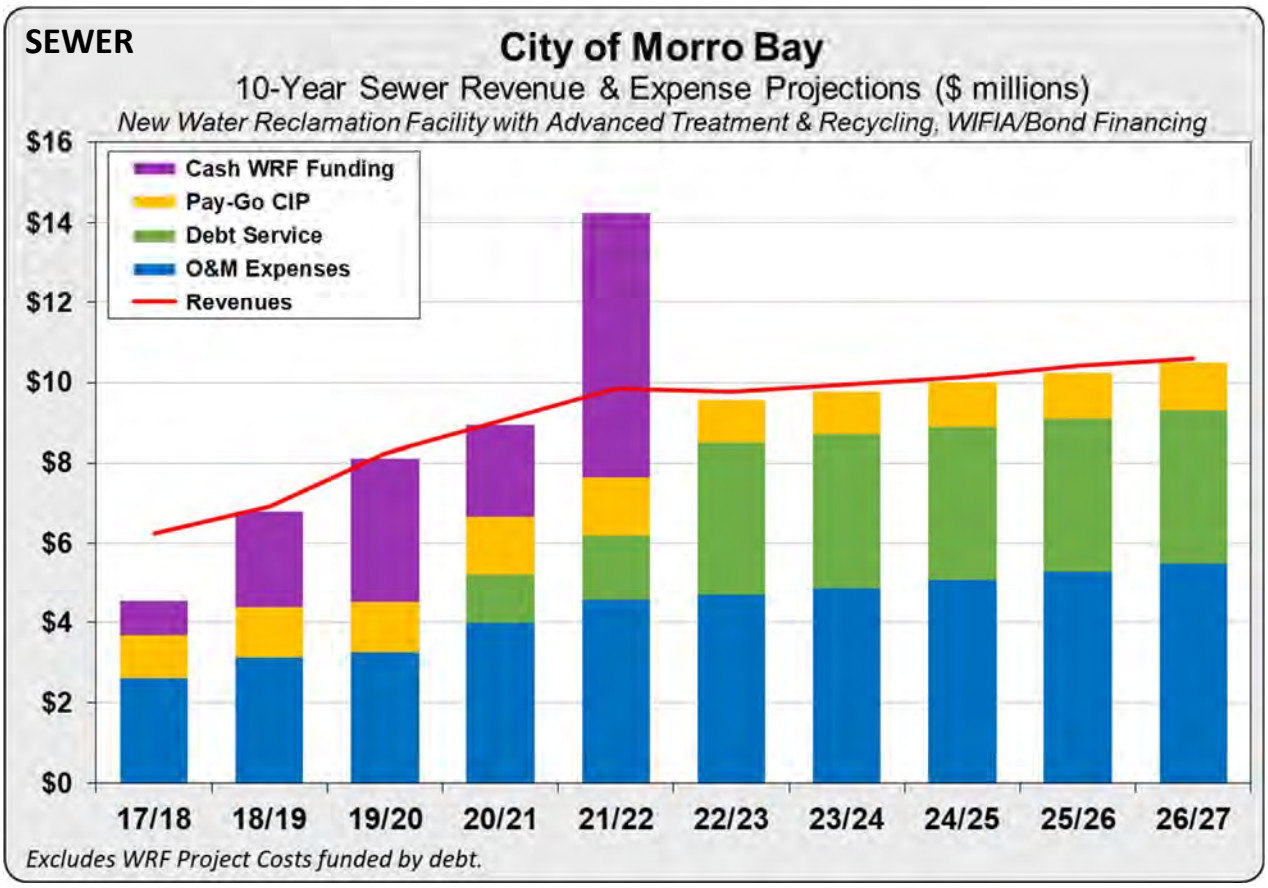
Table 11B - City of Morro Bay - Sewer Cash Flow Projections					Phase-In Scenario
	Projected				
Years 1 - 5	2017/18	2018/19	2019/20	2020/21	2021/22
Monthly Single Family Sewer Charge	$70.00	$77.00	$83.00	$83.00	$83.00
Monthly Single Family Surcharge			$9.00	$18.00	$27.00
Beginning Sewer Accounts	5,346	5,351	5,356	5,361	5,366
Growth: Single Family Equivalents	5	5	5	5	5
Growth %	-	0.1%	0.1%	0.1%	0.1%
Sewer Development Impact Fee	$5,445	$5,550	$5,660	$5,770	$5,890
Interest Earnings Rate	1.25%	1.75%	2.0%	2.0%	2.0%
Cost Escalation			4.0%	4.0%	4.0%
Beginning Fund Reserves	$6,402,000	$8,112,000	$8,251,000	$8,379,000	$8,480,000
REVENUES					
Sewer Service Charges	6,100,000	6,716,000	7,246,000	7,253,000	7,260,000
Sewer WRF Facility Surcharges	0	0	778,000	1,563,000	2,347,000
Development Impact Fees	30,000	28,000	28,000	29,000	29,000
Interest Earnings	80,000	142,000	165,000	168,000	170,000
Rental Income/Other (Excl Penalties)	25,000	30,000	30,000	30,000	30,000
Subtotal	6,235,000	6,916,000	8,247,000	9,043,000	9,836,000
WRF Debt Financing					
SRF Planning Loan		5,900,000	4,400,000		
WIFIA Loan			33,800,000	26,375,000	
Bond Proceeds				11,700,000	17,300,000
EXPENSES					
Operating & Maintenance	Estimated	Projected			
Sewer Collection	1,100,000	1,480,000	1,539,000	1,601,000	1,665,000
Wastewater Treatment Existing	2,000,000	2,210,000	2,298,000	2,390,000	1,247,000
Wastewater Treatment New WRF	-	-	-	-	1,500,000
Conveyance to New WRF	-	-	-	-	140,000
Less Cayucos SD Reimbursements	*(495,000)*	*(553,000)*	*(575,000)*	*0*	*0*
Subtotal	2,605,000	3,137,000	3,262,000	3,991,000	4,552,000
Debt Service					
SRF Planning Loan	-	-	-	1,130,000	1,130,000
WIFIA Loan	-	-	-	-	-
Revenue Bonds (structured around SRF)	-	-	-	698,000	1,396,000
Less Water Share of WRF Debt	-	-	-	(601,000)	(877,000)
Subtotal	0	0	0	1,227,000	1,649,000
Capital Improvements					
Sewer Cash Contribution to WRF	840,000	2,390,000	3,607,000	2,274,000	6,598,000
Sewer System Pay-Go CIP	630,000	1,200,000	1,200,000	1,400,000	1,400,000
Vehicle/Equipment Replacement	450,000	50,000	50,000	50,000	50,000
Subtotal	1,920,000	3,640,000	4,857,000	3,724,000	8,048,000
Total Sewer Expenses	4,525,000	6,777,000	8,119,000	8,942,000	14,249,000
Revenues Less Expenses	1,710,000	139,000	128,000	101,000	(4,413,000)
Ending Fund Reserves	8,112,000	8,251,000	8,379,000	8,480,000	4,067,000
Debt Service Coverage	-	-	-	4.12	3.20

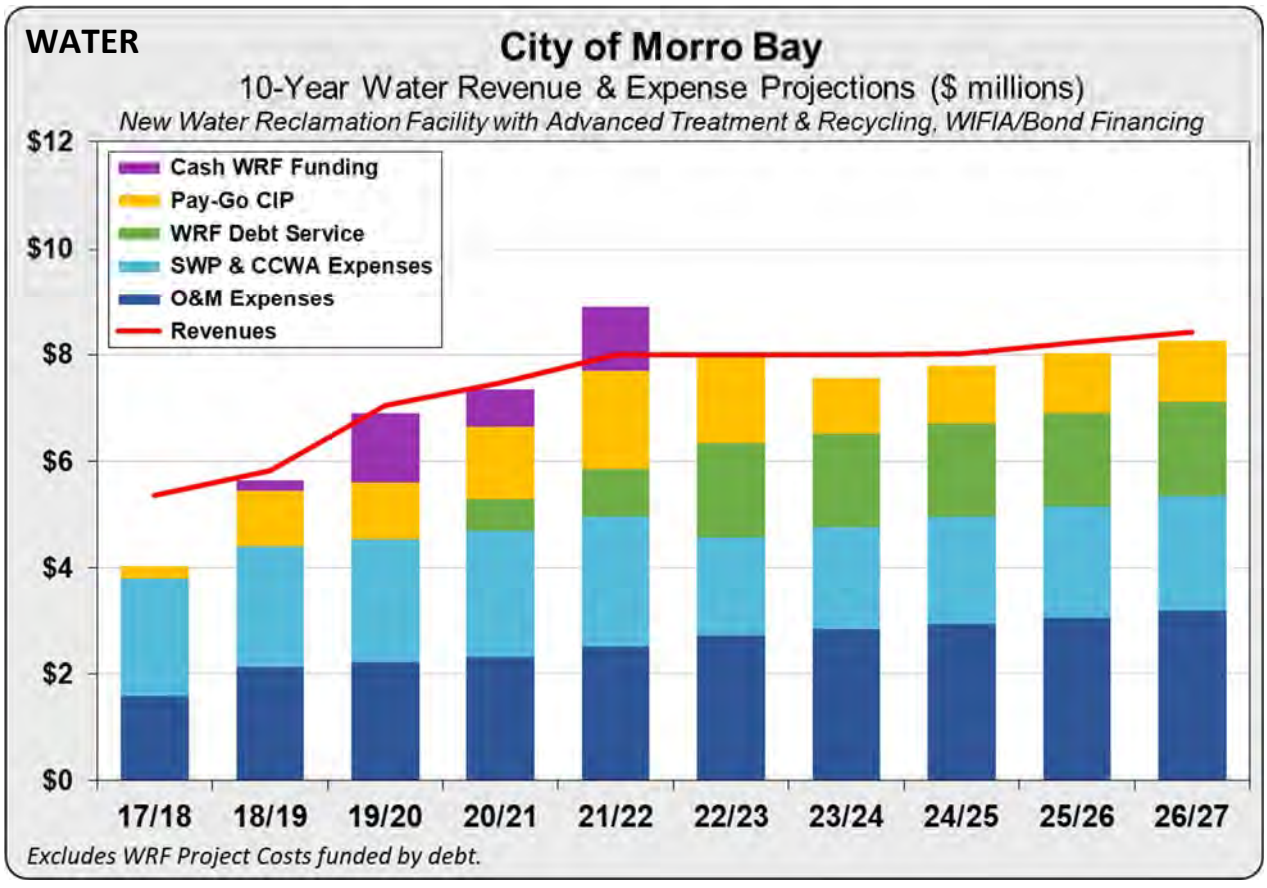
Table 11B - City of Morro Bay - Sewer Cash Flow Projections					Phase-In Scenario
	Projected				
Years 6 - 10	2022/23	2023/24	2024/25	2025/26	2026/27
Monthly Residential Sewer Charge	$83.00	$85.00	$87.00	$90.00	$92.00
Monthly Single Family WRF Surcharge	$27.00	$27.00	$27.00	$27.00	$27.00
Beginning Sewer Accounts	5,371	5,376	5,381	5,386	5,391
Growth: Single Family Equivalents	5	5	5	5	5
Growth %	0.1%	0.1%	0.1%	0.1%	0.1%
Sewer Development Impact Fee	$6,010	$6,130	$6,250	$6,380	$6,510
Interest Earnings Rate	2.0%	2.0%	2.0%	2.0%	2.0%
Cost Escalation	4.0%	4.0%	4.0%	4.0%	4.0%
Beginning Fund Reserves	$4,067,000	$4,267,000	$4,437,000	$4,565,000	$4,732,000
REVENUES					
Sewer Service Charges	7,267,000	7,449,000	7,631,000	7,901,000	8,084,000
Sewer WRF Facility Surcharges	2,347,000	2,347,000	2,347,000	2,347,000	2,347,000
Development Impact Fees	30,000	31,000	31,000	32,000	33,000
Interest Earnings	87,000	91,000	94,000	97,000	100,000
Rental Income/Penalties/Other	30,000	30,000	30,000	30,000	30,000
Subtotal	9,761,000	9,948,000	10,133,000	10,407,000	10,594,000
WRF Debt Financing					
SRF Planning Loan					
WIFIA Financing					
Bond Financing					
EXPENSES					
Operating & Maintenance					
Sewer Collection	1,732,000	1,801,000	1,873,000	1,948,000	2,026,000
Wastewater Treatment Existing	0	0	0	0	0
Wastewater Treatment New WRF	2,682,000	2,789,000	2,901,000	3,017,000	3,138,000
Conveyance to New WRF	277,000	288,000	300,000	312,000	324,000
Less Cayucos SD Reimbursements	*0*	*0*	*0*	*0*	*0*
Subtotal	4,691,000	4,878,000	5,074,000	5,277,000	5,488,000
Debt Service					
SRF Planning Loan	1,130,000	1,130,000	1,130,000	1,130,000	1,130,000
WIFIA Financing	3,051,000	3,051,000	3,051,000	3,051,000	3,051,000
Revenue Bonds (structured around SRF)	1,396,000	1,396,000	1,396,000	1,396,000	1,396,000
Less Water Share of WRF Debt	(1,757,000)	(1,757,000)	(1,757,000)	(1,757,000)	(1,757,000)
Subtotal	3,820,000	3,820,000	3,820,000	3,820,000	3,820,000
Capital Improvements					
Sewer Cash Contribution to WRF	0	0	0	0	0
Sewer System Pay-Go CIP	1,000,000	1,030,000	1,061,000	1,093,000	1,126,000
Vehicle/Equipment Replacement	50,000	50,000	50,000	50,000	50,000
Subtotal	1,050,000	1,080,000	1,111,000	1,143,000	1,176,000
Total Expenses	9,561,000	9,778,000	10,005,000	10,240,000	10,484,000
Revenues Less Expenses	200,000	170,000	128,000	167,000	110,000
Ending Fund Reserves	4,267,000	4,437,000	4,565,000	4,732,000	4,842,000
Debt Service Coverage	1.33	1.33	1.32	1.34	1.34

Table 12B - City of Morro Bay - Water Cash Flow Projections					Phase-In Scenario
	Projected				
Years 1 - 5	2017/18	2018/19	2019/20	2020/21	2021/22
Fixed Monthly Water Charge	$28.00	$30.00	$32.00	$32.00	$32.00
Fixed Monthly Single Family WRF Surcharge			$8.00	$12.00	$17.00
Water Rate Adjustment %		7.1%	6.7%	0.0%	0.0%
Growth: Single Family Equivalents	5	5	5	5	5
Growth %	0.1%	0.1%	0.1%	0.1%	0.1%
Change in Water Sales		0.0%	0.0%	0.0%	0.0%
Water Development Impact Fee	$5,392	$5,500	$5,610	$5,720	$5,830
Interest Earnings Rate	1.25%	1.75%	2.0%	2.0%	2.0%
State Water Project Cost Escalation			4.0%	4.0%	4.0%
Operating Cost Escalation			4.0%	4.0%	4.0%
Beginning Fund Reserves	$3,132,000	$4,456,000	$4,637,000	$4,797,000	$4,924,000
REVENUES	Estimated	Projected			
Water Service Charges	5,280,000	5,700,000	6,086,000	6,092,000	6,098,000
Water WRF Facility Surcharges	0	0	827,000	1,240,000	1,757,000
Development Impact Fees	30,000	28,000	28,000	29,000	29,000
Interest Earnings	39,000	78,000	93,000	96,000	98,000
Other (Excludes Penalties)	16,000	20,000	20,000	20,000	20,000
Subtotal	5,365,000	5,826,000	7,054,000	7,477,000	8,002,000
EXPENSES					
Operating & Maintenance	Estimated	Projected			
Water System Operations	1,591,000	2,130,000	2,215,000	2,304,000	2,396,000
State Water Project Payments	1,535,000	1,595,000	1,659,000	1,725,000	1,794,000
Share of CCWA 2016 Bonds (Thru Oct-2021)	665,000	670,000	670,000	670,000	670,000
Recycled Water Operations	-	-	-	-	110,000
Subtotal	3,791,000	4,395,000	4,544,000	4,699,000	4,970,000
Debt Service					
SRF Planning Loan: Water Share	-	-	-	326,000	326,000
WRF WIFIA Loan: Water Share	-	-	-	-	-
WRF Revenue Bonds: Water Share	-	-	-	275,000	551,000
Subtotal	0	0	0	601,000	877,000
Capital Improvements					
Water System Pay-Go CIP	250,000	1,000,000	1,000,000	1,300,000	1,800,000
Water Cash Contribution to WRF	0	200,000	1,300,000	700,000	1,200,000
Vehicle/Equipment Replacement	0	50,000	50,000	50,000	50,000
Subtotal	250,000	1,250,000	2,350,000	2,050,000	3,050,000
Total Expenses	4,041,000	5,645,000	6,894,000	7,350,000	8,897,000
Revenues Less Expenses	1,324,000	181,000	160,000	127,000	(895,000)
Ending Fund Reserves	4,456,000	4,637,000	4,797,000	4,924,000	4,029,000
CCWA Bond Debt Service Coverage	1.72	1.63	2.08	2.16	2.23
City Debt Service Coverage	-	-	-	4.62	3.46

Table 12B - City of Morro Bay - Water Cash Flow Projections					Phase-In Scenario
	Projected				
Years 6 - 10	2022/23	2023/24	2024/25	2025/26	2026/27
Fixed Monthly Residential Water Charge	$32.00	$32.00	$32.00	$33.00	$34.00
Fixed Monthly Single Family WRF Surchar	$17.00	$17.00	$17.00	$17.00	$17.00
Water Rate Adjustment %	0.0%	0.0%	0.0%	3.1%	3.0%
Growth: Single Family Equivalents	5	5	5	5	5
Growth %	0.1%	0.1%	0.1%	0.1%	0.1%
Change in Water Sales	0.0%	0.0%	0.0%	0.0%	0.0%
Water Development Impact Fee	$5,950	$6,070	$6,190	$6,310	$6,440
Interest Earnings Rate	2.0%	2.0%	2.0%	2.0%	2.0%
State Water Project Cost Escalation	4.0%	4.0%	4.0%	4.0%	4.0%
Operating Cost Escalation	4.0%	4.0%	4.0%	4.0%	4.0%
Beginning Fund Reserves	$4,029,000	$4,041,000	$4,475,000	$4,704,000	$4,906,000
REVENUES					
Water Service Charges	6,104,000	6,110,000	6,116,000	6,313,000	6,510,000
Water WRF Facility Surcharges	1,757,000	1,757,000	1,757,000	1,757,000	1,757,000
Development Impact Fees	30,000	30,000	31,000	32,000	32,000
Interest Earnings	86,000	86,000	95,000	100,000	104,000
Other (Excludes Penalties)	20,000	20,000	20,000	20,000	20,000
Subtotal	7,997,000	8,003,000	8,019,000	8,222,000	8,423,000
EXPENSES					
Operating & Maintenance					
Water System Personnel	2,492,000	2,592,000	2,696,000	2,804,000	2,916,000
State Water Project Payments	1,866,000	1,941,000	2,019,000	2,100,000	2,184,000
Share of CCWA 2016 Bonds (Thru Oct-2021)	0	0	0	0	0
Recycled Water Operations	220,000	229,000	238,000	248,000	258,000
Subtotal	4,578,000	4,762,000	4,953,000	5,152,000	5,358,000
Debt Service					
SRF Planning Loan: Water Share	326,000	326,000	326,000	326,000	326,000
WRF WIFIA Loan: Water Share	880,000	880,000	880,000	880,000	880,000
WRF Revenue Bonds: Water Share	551,000	551,000	551,000	551,000	551,000
Subtotal	1,757,000	1,757,000	1,757,000	1,757,000	1,757,000
Capital Improvements					
Water System Pay-Go CIP	1,600,000	1,000,000	1,030,000	1,061,000	1,093,000
Water Cash Contribution to WRF	0	0	0	0	0
Vehicle/Equipment Replacement	50,000	50,000	50,000	50,000	50,000
Subtotal	1,650,000	1,050,000	1,080,000	1,111,000	1,143,000
Total Expenses	7,985,000	7,569,000	7,790,000	8,020,000	8,258,000
Revenues Less Expenses	12,000	434,000	229,000	202,000	165,000
Ending Fund Reserves	4,041,000	4,475,000	4,704,000	4,906,000	5,071,000
CCWA Bond Debt Service Coverage	-	-	-	-	-
Debt Service Coverage	1.95	1.84	1.75	1.75	1.74

Phase-In Scenario





13. Debt Service Coverage

Tables 13A and 13B show projected debt service coverage independently for the sewer and water utilities as well as combined coverage for both utilities under the Base Case and Phase-In Scenarios. Debt service coverage is calculated based on Net Revenues – defined as total revenues less operating and maintenance expenses – divided by annual debt service. Additional funding generated after paying debt service is available to help fund the City's water and sewer CIP projects.

Table 13A – Base Case: Debt Service Coverage

	2022/23	2023/24	2024/25	2025/26	2026/27
SEWER					
Net Revenues	$4,895,000	$4,896,000	$4,886,000	$4,957,000	$4,934,000
Debt Service	3,616,000	3,616,000	3,616,000	3,616,000	3,616,000
Debt Service Coverage	1.35	1.35	1.35	1.37	1.36
Add'l Funding Generated	1,279,000	1,280,000	1,270,000	1,341,000	1,318,000
WATER					
Net Revenues	$3,316,000	$3,138,000	$2,962,000	$2,966,000	$2,960,000
Debt Service	1,677,000	1,677,000	1,677,000	1,677,000	1,677,000
Debt Service Coverage	1.98	1.87	1.77	1.77	1.77
Add'l Funding Generated	1,639,000	1,461,000	1,285,000	1,289,000	1,283,000
COMBINED					
Net Revenues	$8,211,000	$8,034,000	$7,848,000	$7,923,000	$7,894,000
Debt Service	5,293,000	5,293,000	5,293,000	5,293,000	5,293,000
Debt Service Coverage	1.55	1.52	1.48	1.50	1.49
Add'l Funding Generated	2,918,000	2,741,000	2,555,000	2,630,000	2,601,000

Table 13B – Phase-In: Debt Service Coverage

	2022/23	2023/24	2024/25	2025/26	2026/27
SEWER					
Net Revenues	$5,070,000	$5,070,000	$5,059,000	$5,130,000	$5,106,000
Debt Service	3,820,000	3,820,000	3,820,000	3,820,000	3,820,000
Debt Service Coverage	1.33	1.33	1.32	1.34	1.34
Add'l Funding Generated	1,250,000	1,250,000	1,239,000	1,310,000	1,286,000
WATER					
Net Revenues	$3,419,000	$3,241,000	$3,066,000	$3,070,000	$3,065,000
Debt Service	1,757,000	1,757,000	1,757,000	1,757,000	1,757,000
Debt Service Coverage	1.95	1.84	1.75	1.75	1.74
Add'l Funding Generated	1,662,000	1,484,000	1,309,000	1,313,000	1,308,000
COMBINED					
Net Revenues	$8,489,000	$8,311,000	$8,125,000	$8,200,000	$8,171,000
Debt Service	5,577,000	5,577,000	5,577,000	5,577,000	5,577,000
Debt Service Coverage	1.52	1.49	1.46	1.47	1.47
Add'l Funding Generated	2,912,000	2,734,000	2,548,000	2,623,000	2,594,000

14. Sewer WRF Facility Surcharges

Tables 14A and 14B show proposed sewer WRF Facility Surcharges under the Base Case and Phase-In Scenarios. These surcharges would be levied as separate surcharges in addition to the City's previously-adopted sewer rates. The surcharges maintain the same rate structure as the City's existing sewer rates. Residential surcharges are fixed monthly surcharges and Non-Residential surcharges are volumetric rates applied to monthly water use – with higher charges for customer classes with higher wastewater strength -- subject to a minimum charge as shown.

Table 14A – Base Case: Proposed Monthly Sewer WRF Facility Surcharges

	2018/19	2019/20	2020/21	2021/22	2022/23
RESIDENTIAL					
Charge per residential dwelling unit					
Single Family		$25.00	$25.00	$25.00	$25.00
Multi-Family/Condo		20.00	20.00	20.00	20.00
NON-RESIDENTIAL					
Rate per hcf of metered water use					
Class A - Low Strength		$3.43	$3.43	$3.43	$3.43
Class B - Domestic Strength		4.10	4.10	4.10	4.10
Class C - Moderate Strength		4.77	4.77	4.77	4.77
Class D - Mod-High Strength		5.43	5.43	5.43	5.43
Class E - High Strength		6.77	6.77	6.77	6.77
Minimum Monthly Charge		20.00	20.00	20.00	20.00

Table 14B – Phase-In: Proposed Monthly Sewer WRF Facility Surcharges

	2018/19	2019/20	2020/21	2021/22	2022/23
RESIDENTIAL					
Charge per residential dwelling unit					
Single Family		$9.00	$18.00	$27.00	$27.00
Multi-Family/Condo		7.20	14.40	21.60	21.60
NON-RESIDENTIAL					
Rate per hcf of metered water use					
Class A - Low Strength		$1.24	$2.47	$3.71	$3.71
Class B - Domestic Strength		1.48	2.95	4.43	4.43
Class C - Moderate Strength		1.72	3.43	5.15	5.15
Class D - Mod-High Strength		1.96	3.91	5.87	5.87
Class E - High Strength		2.44	4.87	7.31	7.31
Minimum Monthly Charge		7.20	14.40	21.60	21.60

15. Water WRF Facility Surcharges

Tables 15A and 15B show proposed water WRF Facility Surcharges under the Base Case and Phase-In Scenarios. Again, these surcharges would be levied in addition to the City's previously-adopted water rates. Residential surcharges are fixed monthly surcharges and Non-Residential surcharges are volumetric rates applied to monthly water use, subject to a minimum charge as shown.

Table 15A – Base Case: Proposed Monthly Water WRF Facility Surcharges

	2018/19	2019/20	2020/21	2021/22	2022/23
RESIDENTIAL					
Charge per residential dwelling unit					
Single Family		$16.00	$16.00	$16.00	$16.00
Multi-Family/Condo		12.80	12.80	12.80	12.80
NON-RESIDENTIAL					
Rate per hcf of metered water use					
Surcharge on all water use		$3.64	$3.64	$3.64	$3.64

Table 15B – Phase-In: Proposed Monthly Water WRF Facility Surcharges

	2018/19	2019/20	2020/21	2021/22	2022/23
RESIDENTIAL					
Charge per residential dwelling unit					
Single Family		$8.00	$12.00	$17.00	$17.00
Multi-Family/Condo		6.40	9.60	13.60	13.60
NON-RESIDENTIAL					
Rate per hcf of metered water use					
Surcharge on all water use		$1.82	$2.73	$3.87	$3.87

16. Previously-Adopted Water & Sewer Rates

As of July 1, 2018, the City will have implemented 4 of the 5 years of previously-adopted rate increases. The final rate increase – scheduled to become effective July 1, 2019 – equates to a roughly 7.5% increase for a typical single family home with 5 hcf monthly water use. The adopted rates were originally designed to generate some funding for the WRF Project. Funding from the City's regular water and sewer rates will supplement the WRF Facility Surcharges, which will recover most of the costs for WRF-related debt service. Based on the financial projections, if the WRF Facility Surcharges are adopted, then no additional water or sewer rate increases – above those previously adopted – would likely need to be implemented over at least the next 5 years. However, the City should periodically evaluate its utility rates in future years to ensure future rates continue to recover the cost of providing service and each utility continues to meet its future financial obligations.

Table 16 – Adopted Monthly Water Rates

		2018/19	2019/20	2020/21	2021/22	2022/23
		Adopted	Adopted	No Change Projected		
Fixed Monthly Charge		$30.00	$32.00	$32.00	$32.00	$32.00
Water Quantity Charges						
Billed per 100 cubic feet of metered water use ($/hcf)						
Tier	Use in Tier					
Tier 1	0 - 3 hcf	$5.50	$6.00	$6.00	$6.00	$6.00
Tier 2	4 - 10 hcf	8.00	8.50	8.50	8.50	8.50
Tier 3	11- 50 hcf	10.50	11.00	11.00	11.00	11.00
Tier 4	>50 hcf	13.50	14.00	14.00	14.00	14.00

Table 17 – Adopted Monthly Sewer Rates

	2018/19	2019/20	2020/21	2021/22	2022/23
	Adopted	Adopted	No Change Projected		
RESIDENTIAL					
Charge per residential dwelling unit					
Single Family	$77.00	$83.00	$83.00	$83.00	$83.00
Multi-Family/Condo	61.60	66.40	66.40	66.40	66.40
NON-RESIDENTIAL					
Rate per hcf of metered water use					
Class A - Low Strength	$10.57	$11.40	$11.40	$11.40	$11.40
Class B - Domestic Strength	12.67	13.61	13.61	13.61	13.61
Class C - Moderate Strength	14.89	15.82	15.82	15.82	15.82
Class D - Mod-High Strength	17.13	18.03	18.03	18.03	18.03
Class E - High Strength	21.36	22.46	22.46	22.46	22.46
Minimum Monthly Charge	61.60	66.40	66.40	66.40	66.40

17. Bill Impacts

The following charts and tables show the total combined billing impacts – with full implementation of previously-adopted water and sewer rates and the proposed WRF Surcharges – on single family homes at different levels of monthly water use under the Base Case Scenario. Impacts on a range of other customer classes under the Base Case Scenario are included in the appendix.

Base Case Scenario

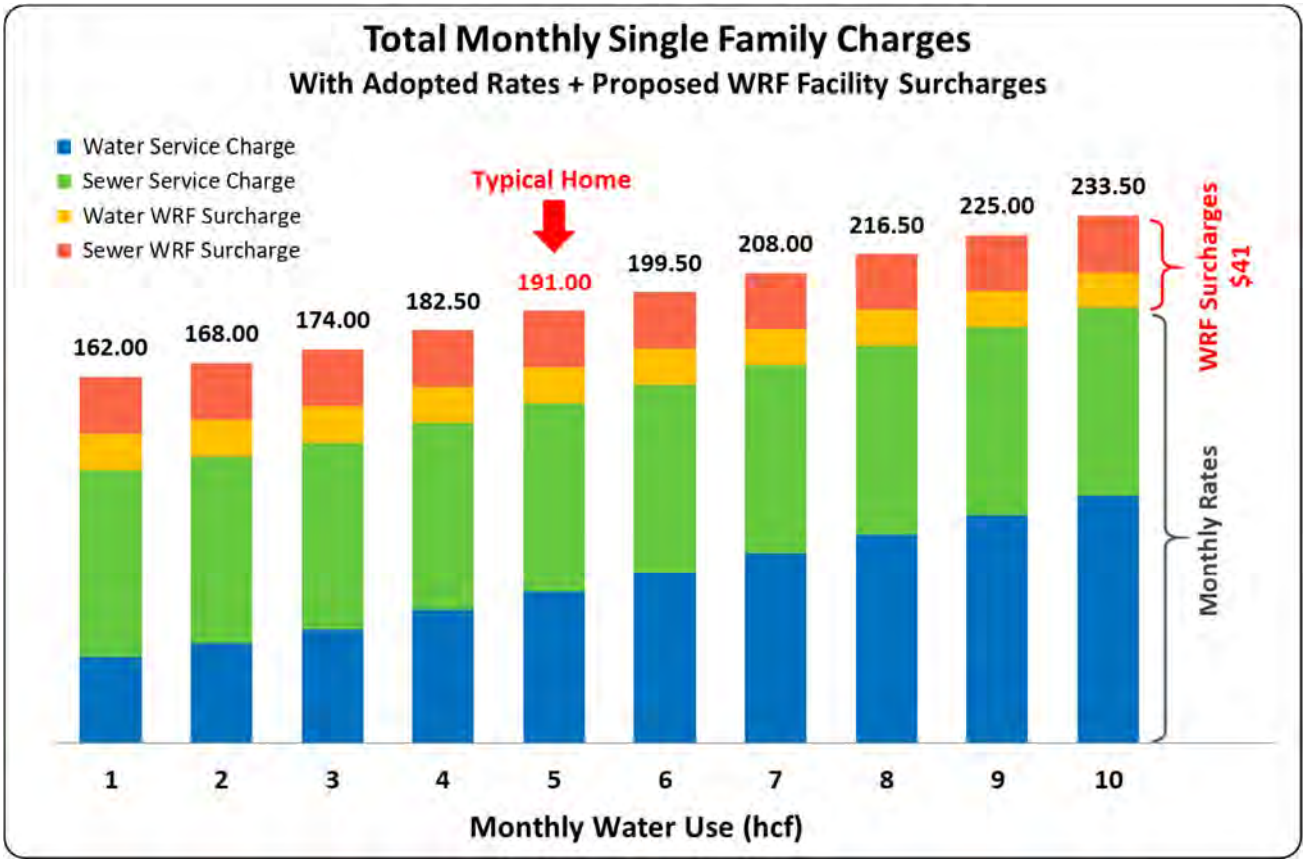


Table 18A – Base Case: Total Combined Bill with Adopted Rates + Proposed WRF Surcharges

Single Family Home at Different Levels of Use

	Monthly Water Use (hcf)									
	1	2	3	4	5	6	7	8	9	10
Water Service Charge	$38.00	$44.00	$50.00	$58.50	$67.00	$75.50	$84.00	$92.50	$101.00	$109.50
Sewer Service Charge	83.00	83.00	83.00	83.00	83.00	83.00	83.00	83.00	83.00	83.00
Subtotal	121.00	127.00	133.00	141.50	150.00	158.50	167.00	175.50	184.00	192.50
Water WRF Surcharge	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00
Sewer WRF Surcharge	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Subtotal	41.00	41.00	41.00	41.00	41.00	41.00	41.00	41.00	41.00	41.00
Combined Total	**162.00**	**168.00**	**174.00**	**182.50**	**191.00**	**199.50**	**208.00**	**216.50**	**225.00**	**233.50**

The following charts and tables show the total combined billing impacts – with full implementation of previously-adopted water and sewer rates and the proposed WRF Facility Surcharges – on single family homes at different levels of monthly water use under the Phase-In Scenario. Impacts on a range of other customer classes under the Phase-In Scenario are included in the appendix.

Phase-In Scenario

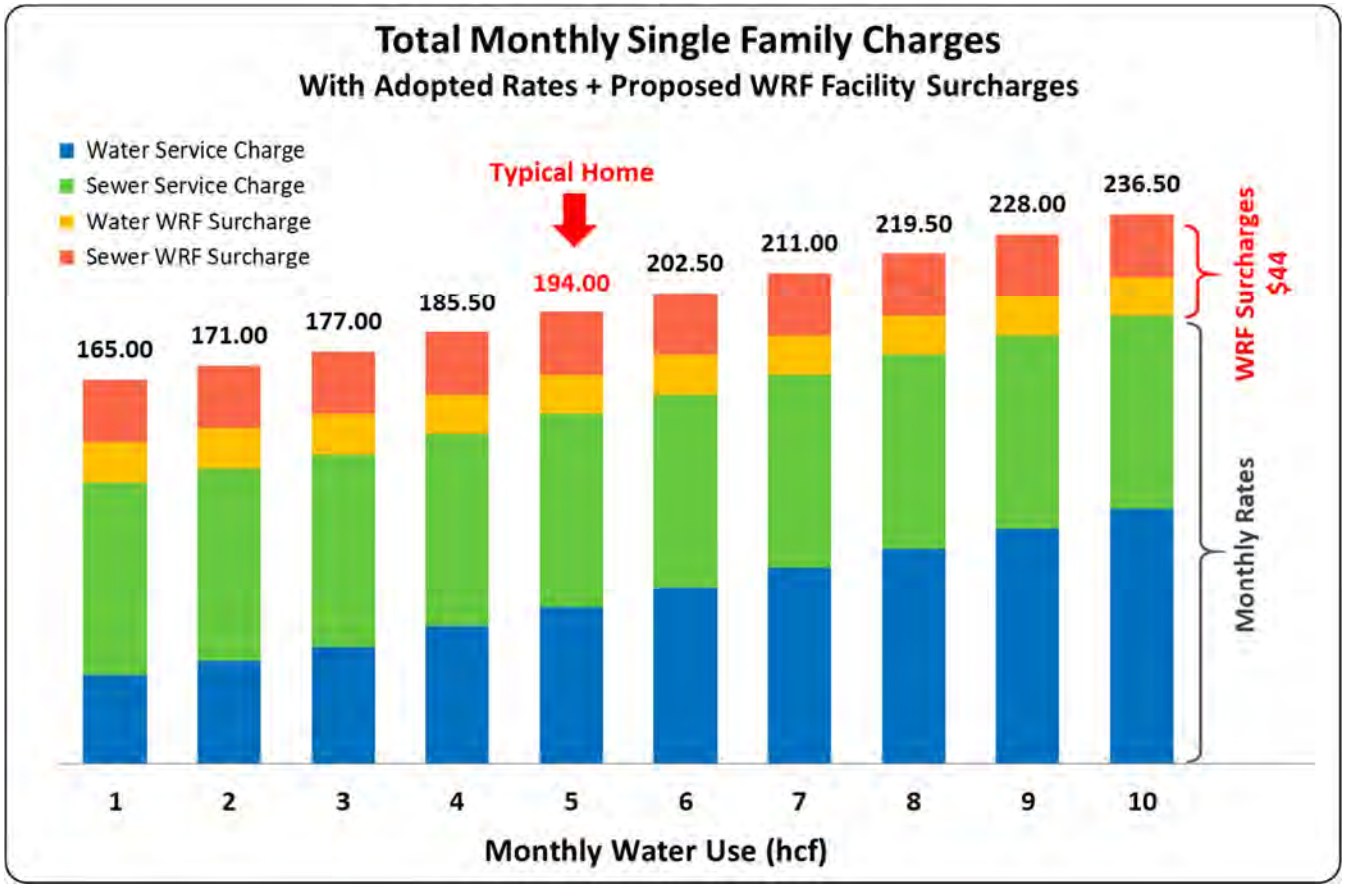


Table 18B – Phase In: Total Combined Bill with Adopted Rates + Proposed WRF Surcharges

Single Family Home at Different Levels of Use

	Monthly Water Use (hcf)									
	1	2	3	4	5	6	7	8	9	10
Water Service Charge	$38.00	$44.00	$50.00	$58.50	$67.00	$75.50	$84.00	$92.50	$101.00	$109.50
Sewer Service Charge	83.00	83.00	83.00	83.00	83.00	83.00	83.00	83.00	83.00	83.00
Subtotal	121.00	127.00	133.00	141.50	150.00	158.50	167.00	175.50	184.00	192.50
Water WRF Surcharge	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00
Sewer WRF Surcharge	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Subtotal	41.00	41.00	41.00	41.00	41.00	41.00	41.00	41.00	41.00	41.00
Combined Total	**162.00**	**168.00**	**174.00**	**182.50**	**191.00**	**199.50**	**208.00**	**216.50**	**225.00**	**233.50**

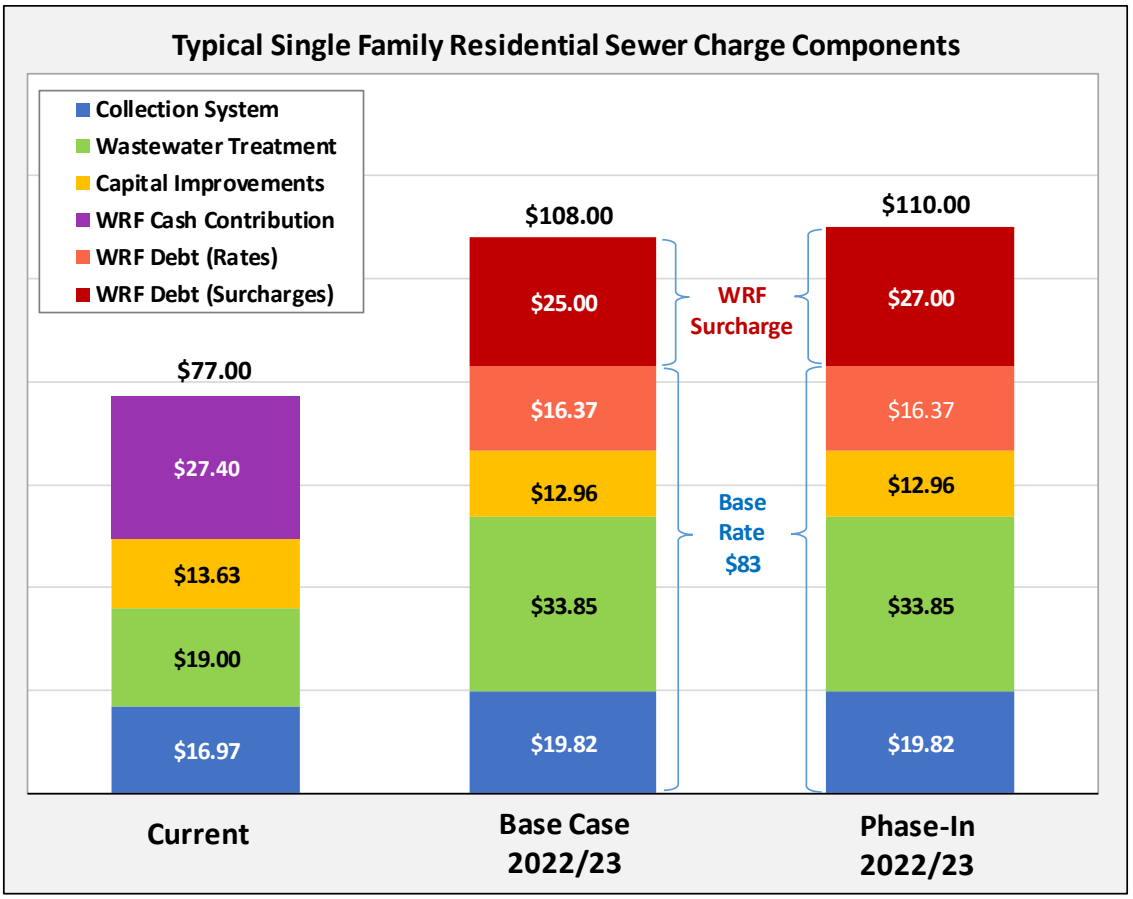
18. Sewer Rate & WRF Surcharge Cost Recovery

Table 19 shows and estimated breakdown of the cost components of monthly sewer charges for a typical single family home with 5 units (hcf) monthly water use. The table compares current charges vs. charges in 2022/23 with full implementation of adopted rates and the WRF Facility Surcharge.

Table 19 – Sewer Rate Components

	Current 2018/19	Base Case 2022/23	Phase-In 2022/23
Base Monthly Sewer Rate			
Sewer Collection System O&M	$16.97	$19.82	$19.82
Wastewater Treatment O&M*	19.00	33.85	33.85
WRF Debt Service: Sewer Rates	0.00	16.37	16.37
Sewer CIP/Equipment/Other	13.63	12.96	12.96
WRF Cash Contribution	27.40	0.00	0.00
Subotal Base Sewer Rate	77.00	83.00	83.00
WRF Surcharge (for WRF Debt Service)	0.00	25.00	27.00
Total	**77.00**	**83.00**	**83.00**

** Current year wastewater treatment O&M is net of 25% cost-sharing by Cayucos SD*



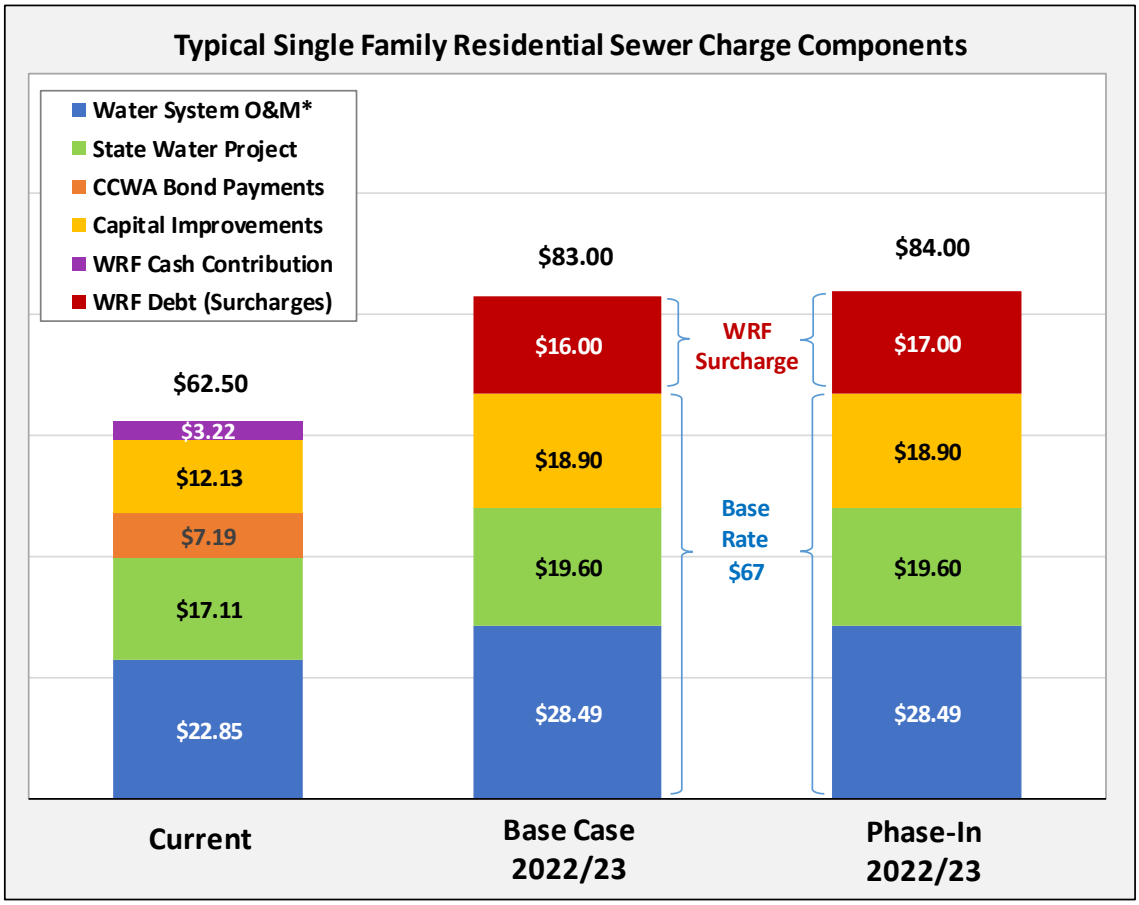
19. Water Rate & WRF Surcharge Cost Recovery

Table 20 shows and estimated breakdown of the cost components of monthly water charges for a typical single family home with 5 units (hcf) monthly water use. The table compares current charges vs. charges in 2022/23 with full implementation of adopted rates and the WRF Facility Surcharge.

Table 20 – Water Rate Components

	Current 2018/19	Base Case 2022/23	Phase-In 2022/23
Base Monthly Water Rate			
Water System O&M*	$22.85	$28.49	$28.49
State Water Project Expenses	17.11	19.60	19.60
CCWA Bond Payments	7.19	0.00	0.00
Water CIP/Equipment/Other	12.13	18.90	18.90
WRF Cash Contribution	3.22	0.00	0.00
Subtotal Water Rate	62.50	67.00	67.00
WRF Surcharge (for WRF Debt Service)	0.00	16.00	17.00
Total	**62.50**	**83.00**	**84.00**

** Water System O&M in 2022/23 includes recycled water operating expenses of $220,000.*



20. Billing Options for WRF Facility Surcharges

The City currently bills customers monthly via a combined utility bill for water and sewer service. The City is considering two methods of bill collection for recovering the WRF Facility Surcharges, including:

- **Monthly Billing** - Add the WRF Facility Surcharges as a new line-item in the monthly bills.
- **Property Tax Rolls** - Recover the proposed WRF Facility Surcharges on the property tax rolls.

The WRF Facility Surcharges would be the same under both alternatives; only the method of billing and collection would vary. For a single family home, adding the surcharges to the property tax rolls, would result in two payments of roughly $250 that would be added to the semi-annual property tax assessments. Table 20 shows the timing of payments for WRF Facility Surcharges under the Base Case and Phase-In Scenarios with full implementation of the surcharges. Non-residential customers could be billed on the property tax rolls based on usage from the immediately-prior 12-month period.

Table 20 – Example of Single Family WRF Surcharges Collected with Property Taxes

	Annual Total	December Installment 1	April Installment 2
WRF Facility Surcharges			
Base Case Scenario	$492.00	$246.00	$246.00
Phase-In Scenario	528.00	264.00	264.00

While there are some administrative differences for billing and collecting the WRF Facility Surcharges under the two billing options, the main difference is who will bear the financial burden of paying the surcharges: ratepayers or property owners. Note than many ratepayers are also property owners and would be the same people paying the same surcharges regardless of billing method. However, the City does serve a number of tenants who currently pay utility bills for their rental units.

Some potential pros, cons, and issues related to collecting the WRF Facility Surcharges on the property tax rolls include:

- In many (but not all) cases, property owners own substantial equity in their homes, whereas many renters do not have such equity and/or may not be able to afford to purchase a home. Hence billing the WRF Facility Surcharges via the property tax rolls would put the burden on a group that generally has more financial asset than renters. At the same time, there are number of homeowners who – although they may have substantial equity in their home – are also living on fixed incomes.

- The new WRF facility benefits homeowners by preserving property value with access to safe and reliable wastewater service.
- Adding the WRF Facility Surcharges to the combined monthly water and sewer bill could potentially result in an uptick in delinquencies. However, delinquencies can be ultimately recovered by placing a lien on the property, which results in the charge being put back on the property tax rolls in case of extreme delinquency.
- San Luis Obispo County is on the Teeter Plan and pays agencies for 100% of assessments or charges placed on the property tax rolls for collection, regardless of actual delinquencies. The County has indicated that if delinquencies exceed 3%, then the County retains the authority to end the Teeter Plan practice and instead provide only actual amounts collected. However, the County has never done this in the past.
- The cost of placing the surcharges on the property tax rolls currently costs $2 per parcel and is roughly estimated to cost a total of about $11,000 per year.
- Placing the surcharges on the tax roll would require the City Council to pass a Resolution adopting a schedule of charges to be levied on all affected properties by Assessor's Parcel Number (APN) each year. If the Resolution was not adopted, the charges could not be assessed on the property tax rolls. However, this does not mean that the City could not recover the charge, it would simply change the method of collection and would require the City to add the surcharges to the monthly bills instead.
- Regardless of the billing approach, the City would be under legal covenant to adopt rates and charges as needed to repay debt service, meet debt service coverage requirements, and meet other legal obligations.
- Collecting sewer charges on the property tax rolls would also result in a change in timing of receiving revenues. The County generally sends agencies payments twice per year (in December and April) based on actual tax collections. Subsequently, at the end of the fiscal year, the County does a true-up and would send the City the remainder of amounts billed on the tax rolls regardless of delinquencies. The County subsequently deals with the delinquencies and keeps any funds recovered from the delinquent properties including any penalties.
- If the City opted to collected the WRF Facility Surcharges on the property tax rolls, due to the change in timing of revenues, the City may need to strategically determine the payment dates for future debt service payments to ensure the debt payments are due after the City receives payment from the County in December and April.

In order to recover the WRF Facility Surcharges via the property tax rolls, the City would need to follow the process identified in the California Health and Safety Code Section 5470 – 5474, attached as an appendix to this report. The process is similar to the Proposition 218 process required for increasing utility rates and could be done concurrently when the City goes through the Proposition 218 rate increase process for potential water and sewer rate increases.

OTHER. NON-REFUNDABLE APPLICATION FEE

The City of Morro Bay has paid the $25,000 application fee required for projects serving small communities with a population of not more than 25,000 people. The City mailed a check for $25,000 on July 5, 2018 to the US EPA Las Vegas Finance Center. It was received on July 9, 2018. This exhibit includes documentation of payment.