
UPDATED SITE COMPARISON REPORT



September 21, 2017

City of Morro Bay Water Reclamation Facility Project Updated Site Comparison Report September 2017

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SECTION 1 INTRODUCTION

1.1 City Council Direction

At its July 11, 2017 meeting, the City Council provided the following direction in an effort to explore ways to reduce potential project costs for a new Water Reclamation Facility (WRF):

- 1) Direct staff to immediately begin discussions with the California Coastal Commission (CCC) and the Regional Water Quality Control Board (RWQCB) to determine the feasibility of constructing a WWTP and WRF west of the highway, at or near the existing WWTP site.
- 2) Staff should begin evaluating costs and feasibility of constructing a WRF including recycling at the Giannini site, the Righetti site, and a site west of Highway 1 at or near the existing WWTP site and bring back the information and costs to City Council within 60 days.
- 3) Direct staff to report on the Request for Proposals (RFP) process for a Design-Build project and discuss the quickest way to get to the RFP process.
- 4) Evaluate all outreach options and prepare for further discussion with the community on the results of the City Council requested items. Return to City Council with a recommended process.

These efforts are intended to help the Council determine whether to continue moving forward with the project at the South Bay Boulevard site, or instead pursue another site based on cost considerations as well as community and regulatory agency input.

As a reminder, the City's adopted goals for this project are as follows:

- *Produce tertiary, disinfected wastewater in accordance with Title 22 requirements for unrestricted urban irrigation*
- *Design to be able to produce reclaimed wastewater for potential users, which could include public and private landscape areas, agriculture, or groundwater recharge. A master reclamation plan should include a construction schedule and a plan for bringing on customers in a cost effective manner.*
- *Allow for onsite composting*
- *Design for energy recovery*
- *Design to treat contaminants of emerging concern in the future*
- *Design to allow for other possible municipal functions*
- *Ensure compatibility with neighboring land uses*

It is recognized that achieving certain goals would result in a potentially higher cost, as recognized in the Peer Review Report of June 2017. For that reason, the City Council has recently been focused on only those goals that are critical to the operation of the WRF itself.

1.2 Report Contents

This report primarily addresses Item 2 from the July 11 Council direction, comparing the various sites in question both from a cost and technical perspective. Cost estimates are based on input gained through the recent June 2017 Peer Review Report, using cost assumptions that have been vetted by local public works officials. From a technical perspective, it draws on past reports related to this project or nearby sites as applicable, including the following:

- Final EIR for the WWTP Upgrade Project (December 2010)
- Rough Screening Report (November 2011)
- Fine Screening Report (November 2011)

- Options Report (December 2013)
- Report on Reclamation and Council Recommended WRF Sites (May 2014)
- Report to City Council on Potential WRF Sites (May 2016)
- Peer Review Report on Cost Assumptions (June 2017)

Finally, this report considers recent input from senior staff at key regulatory agencies, including the California Coastal Commission (CCC) and Regional Water Quality Control Board (RWQCB).

This report concludes with a summary of the cost and non-cost considerations and a brief discussion of the next steps in the process related to site selection, environmental review, and project procurement, and how those steps interrelate.

SECTION 2 SITES UNDER CONSIDERATION

This report compares four possible sites to the South Bay Boulevard site, which had been identified by the City Council for detailed investigation in June 2016, and for which a draft Facilities Master Plan was prepared in December 2016.

In July 2017, the City Council directed staff to evaluate the costs and feasibility of constructing a WRF, including full reclamation, at the Giannini site, the Righetti site, and a site west of Highway 1 at or near the existing WWTP site. These were to be compared to the South Bay Boulevard site, which had been previously selected by the City Council in June 2016 as the basis for a Facility Master Plan. Staff considered several possibilities for sites west of Highway 1, but most included sufficient constraints such that they did not warrant further consideration. This included the existing WWTP site itself, which was considered infeasible because of the need to continue operating the plant while a new plant was being designed and constructed. Staff also eliminated the Lila Keiser Park site, partly because this already includes a developed public facility (a park), and partly because of a series of substantial environmental constraints, including significant flood hazard and a high degree of sensitivity with regard to cultural resources. Ultimately, staff identified two potentially suitable sites west of Highway 1, which are identified in this report as the Hanson/RV Storage site, and the Dynegy Tank Farm site.

Note that some of these sites were already addressed at length in previous reports considered by the City Council. Much of the background and technical information for these sites is drawn from those reports, which are identified in Section 1 of this report. However, the cost information for all five sites is new to this report. Cost assumptions and methodologies for each site are based on input from the June 2017 Peer Review report, and reflect a full recycled water project at each site, something that was not done in previous reports where costs were presented.

The sites examined in this report are summarized in Table 1 and shown in Figure 1. Figures 2 through 6 show the individual sites.

Table 1. Sites Examined in this Report

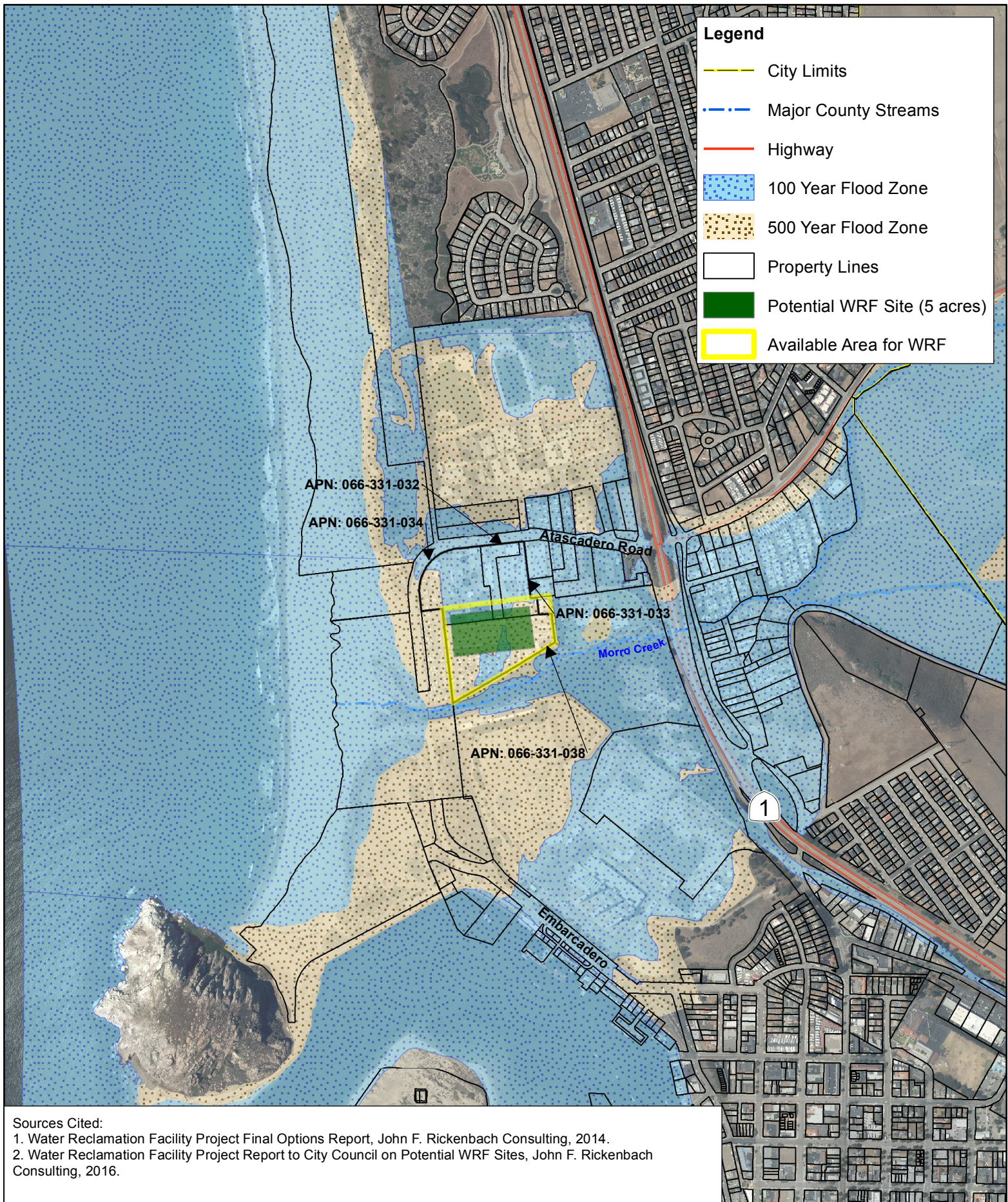
Site	Site Name in this Report	General Location	Parcel Information	Discussion of the Study Site
1	South Bay Boulevard	Chorro Valley near Highway 1/South Bay Boulevard interchange	APN 073-101-017 <u>Ownership:</u> Tri-W Enterprises <u>Jurisdiction:</u> SLO County	The area of focus is a roughly 15-acre area within the County, toward the eastern end of the property. A draft Facility Master Plan was prepared, which included a preliminary cost estimate. There is currently no development at this location. The study site is about 100 to 120 feet above sea level.
2	Hanson/RV Storage	City of Morro Bay, adjacent to existing WWTP	APN 066-331-032, -033 -034, and -038 <u>Ownership:</u> City of Morro Bay/Cayucos SD <u>Jurisdiction:</u> City of Morro Bay	The area of focus is a roughly 12-acre area adjacent to the existing WWTP. There is an existing RV storage facility and concrete manufacturing at this location. The area also covers a portion of the existing WWTP.
3	Dynegy Tank Farm	City of Morro Bay, adjacent to and northwest of power plant; site of a former tank farm	APN 066-331-040 <u>Ownership:</u> Dynegy Morro Bay LLC <u>Jurisdiction:</u> City of Morro Bay	The area of focus is a roughly 9-acre area south of Morro Creek and the existing WWTP site. It is part of the larger Dynegy property, and the site of a former tank farm. This portion of the Dynegy site is currently vacant.
4	Righetti	Morro Valley, adjacent to Highway 41	APN 073-084-013 <u>Ownership:</u> Paul Madonna, et al <u>Jurisdiction:</u> SLO County	The focus area is limited to a roughly 10-15 acre area in the lowest portion of the property, at the location of an existing ranch house. The focus area is about 80 to 100 feet above sea level.
5	Giannini	South edge of the Morro Valley, adjacent to Little Morro Creek Road	APN 068-401-014 <u>Ownership:</u> J. and E. Giannini Properties LLC <u>Jurisdiction:</u> City of Morro Bay	This site sits in an upland area overlooking the Morro Valley south of Little Morro Creek. The most suitable location would be roughly 10 acres at the toe of the slope, adjacent to Little Morro Creek Road.



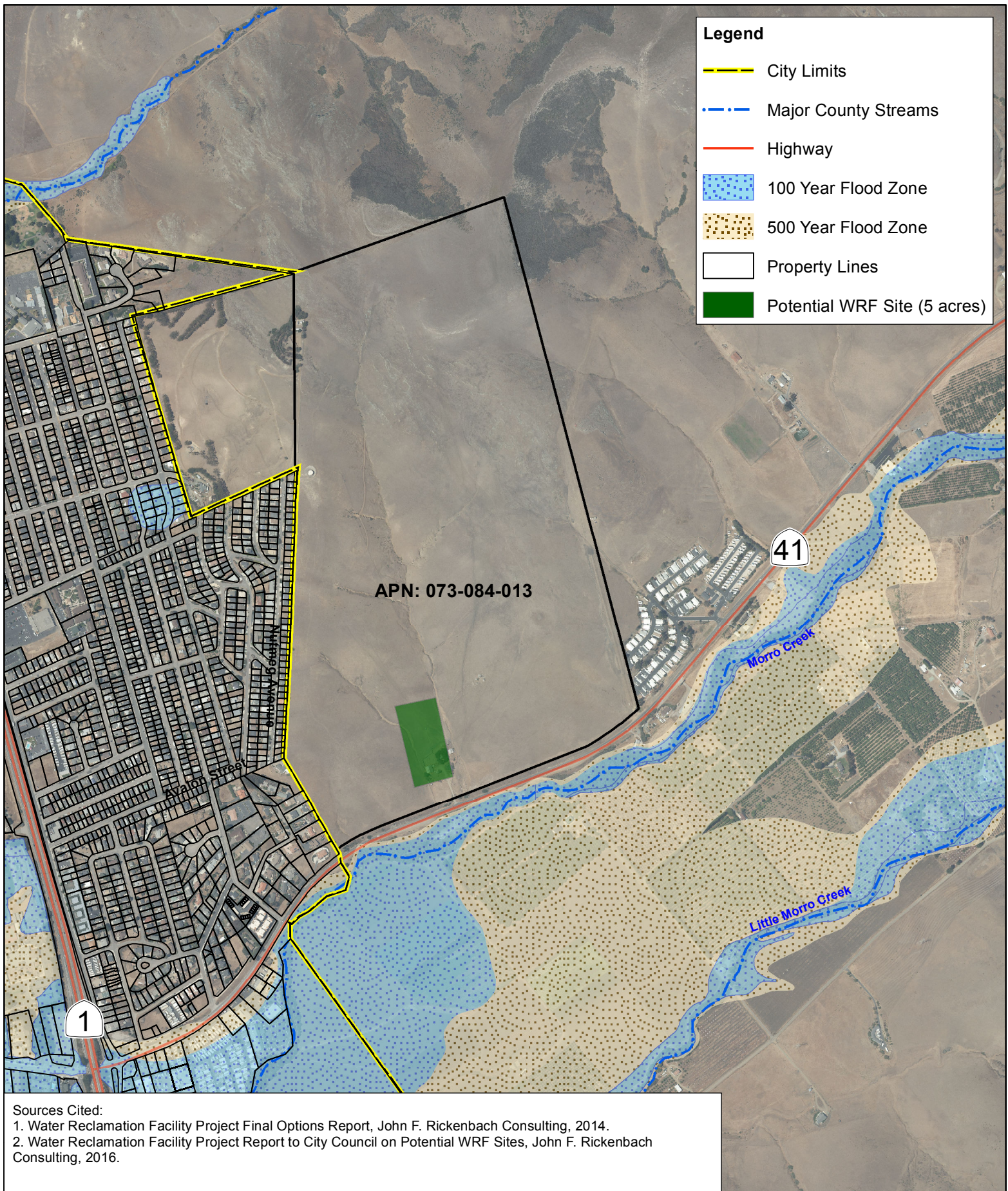
Sources Cited:

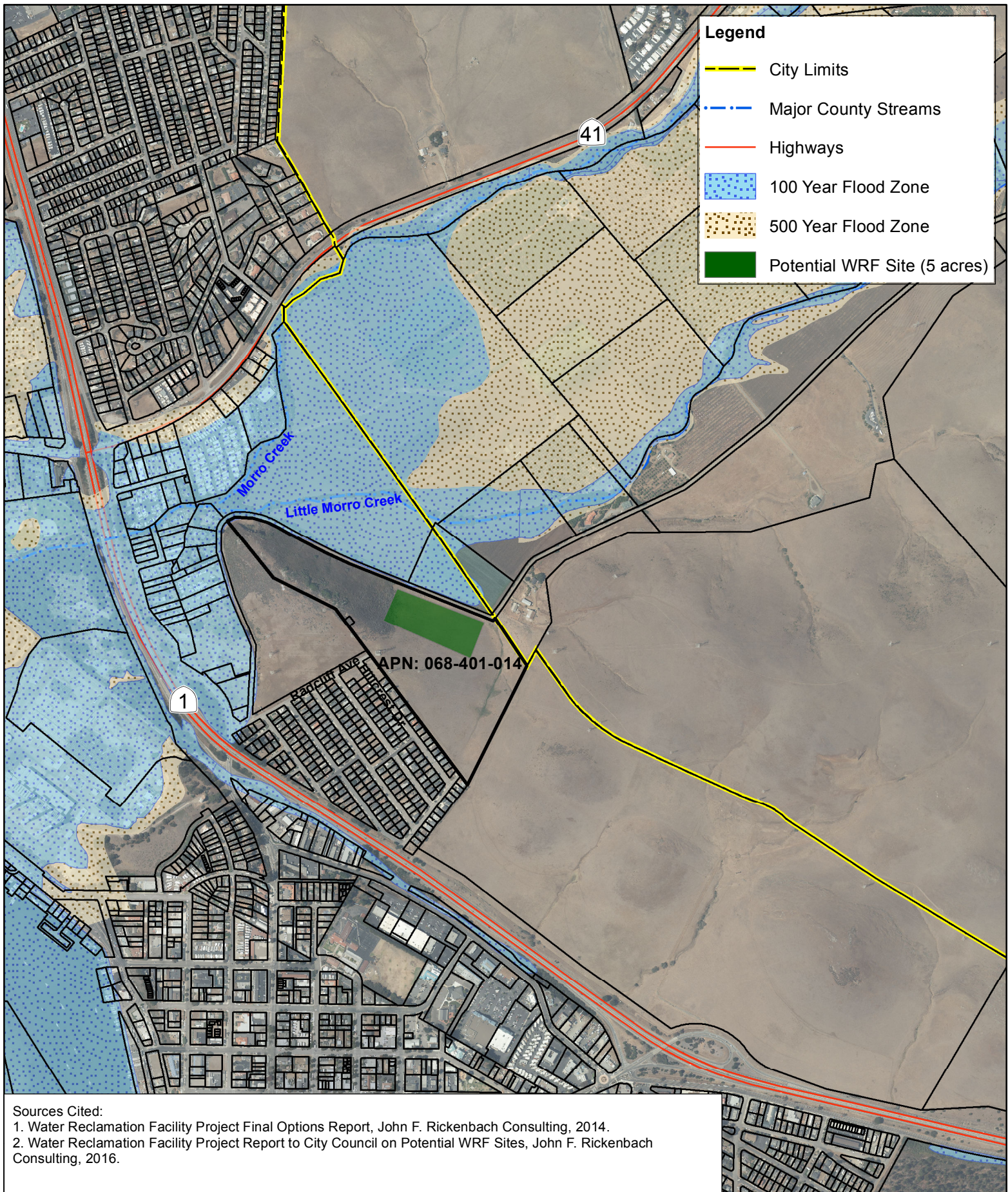
1. Water Reclamation Facility Project Final Options Report, John F. Rickenbach Consulting, 2014.
2. Water Reclamation Facility Project Report to City Council on Potential WRF Sites, John F. Rickenbach Consulting, 2016.











Sources Cited:

1. Water Reclamation Facility Project Final Options Report, John F. Rickenbach Consulting, 2014.
2. Water Reclamation Facility Project Report to City Council on Potential WRF Sites, John F. Rickenbach Consulting, 2016.

SECTION 3 SITE ANALYSIS

This section compares the four sites in question to the South Bay Boulevard site from a cost standpoint and also considers any factors not related to cost but that could affect the timing, permitting, or other logistics involved in implementing the project, including the need to address environmental hazards or sensitive resources. A key consideration in this analysis is the extent to which a project at these locations would be consistent with the direction of the Coastal Commission and Regional Water Quality Control Board, both of which have permitting authority over aspects of the project.

3.1 Cost Comparison

A. Capital Costs

Detailed cost opinions were developed as part of the Draft Facility Master Plan (FMP) and Draft Master Water Reclamation Plan (MWRP) based on the community project goals. In June 2017, these costs were reviewed and refined slightly through the Peer Review Workshop (Report of Public Works Cost Review Workshop, MKN, June 29, 2017). WRF construction costs presented include general conditions, contractor's bonds, general liability insurance, builder's risk insurance, subcontractor markup, subcontractor's bonds, building permits, sales tax, and contractor's overhead and profit. These costs were presented separately from the estimated construction costs in the Draft FMP. The capital cost opinions for WRF and conveyance (lift station, brine discharge pipeline, and raw wastewater pipeline) are included in Table 2. Recycled water project costs are summarized in Table 3, and total program cost opinions are summarized in Table 4.

	Site 1: South Bay Boulevard	Site 2: Hanson/RV	Site 3: Dynegy Tank Farm	Site 4: Righetti	Site 5: Giannini
Sitework	\$ 2,380,000	\$ 2,980,000	\$ 2,980,000	\$ 1,590,000	\$ 1,540,000
Treatment Facilities	\$ 51,460,000	\$ 51,460,000	\$ 51,460,000	\$ 51,460,000	\$ 51,460,000
Odor Control	\$ 2,750,000	\$ 4,750,000	\$ 4,750,000	\$ 4,750,000	\$ 4,750,000
Fire Protection Facility	\$ 500,000	\$ -	\$ -	\$ 500,000	\$ 500,000
Operations/Admin Facilities	\$ 6,330,000	\$ 6,330,000	\$ 6,330,000	\$ 6,330,000	\$ 6,330,000
Access Road and Utilities	\$ 2,250,000	\$ 860,000	\$ 1,040,000	\$ 1,850,000	\$ 2,310,000
Conveyance (Pump Sta. & Offsite Pipelines)	\$ 13,460,000	\$ 1,000,000	\$ 3,030,000	\$ 5,970,000	\$ 8,480,000
WRF Construction Cost Subtotal	\$ 79,130,000	\$ 67,380,000	\$ 69,590,000	\$ 72,450,000	\$ 75,370,000
Soft Costs (1)	\$ 24,412,200	\$ 23,514,000	\$ 24,177,000	\$ 22,375,800	\$ 23,235,400
WRF Capital Cost Subtotal	\$103,500,000	\$ 90,900,000	\$ 93,800,000	\$ 94,800,000	\$ 98,600,000
Construction Contingency (2)	\$ 19,782,500	\$ 13,476,000	\$ 17,397,500	\$ 18,112,500	\$ 18,842,500
WRF Capital Cost Opinion Total (Rounded)	\$123,300,000	\$104,400,000	\$111,200,000	\$112,900,000	\$117,400,000
Notes: See text below for details regarding soft costs (1) and construction contingency (2). Property costs are not included, but would not factor into the selection of one site over another at the range of costs identified. See Appendix B for additional cost assumptions and details.					

Explanation of Differences in Cost Opinions for WRF (Tertiary Treatment System) and Conveyance:

The main differences in the cost opinions for the WRF and conveyance facilities at various sites can be summarized as follows:

- Overall distance from the terminus of the City's existing sewer collection system (the existing WWTP) impacts the length of conveyance piping and size of the influent lift station;
- Relative amount of 'flat' area available on the site impacts the amount of grading and sitework required,
- Proximity to neighbors affects the amount of odor control that would be required; and
- Proximity to established and sufficient roadway impacts the length of access road and utilities required to get to the WRF site.

Notes 1 and 2: The following section describes the assumptions made for the soft costs and the construction contingency.

(1) Soft costs for the WRF project are made up of the following categories. Detailed program costs and descriptions for the soft costs are provided in Appendix B.

- WRF Engineering/Design: 8% of construction costs
- Conveyance Engineering/Design: 10% or 8%, depending on the site
 - The conveyance facilities contract is anticipated to be delivered through a conventional design, bid, build approach (DBB), unless the project is at Site 2 or 3. In these cases, the project would likely be consolidated under one design-build (DB) contract. The engineering and design is estimated at 8% of construction costs for Sites 2 and 3 and 10% for the others.
- Procurement and Preliminary Engineering: 4%
- WRF Project Administration and Construction Management: 10%
- Conveyance Project Administration and Construction Management: 12% or 10%, depending on the site
 - The conveyance facilities contract is anticipated to be delivered through a conventional DBB approach unless the project is at Site 2 or 3. In these cases, the project would likely be consolidated under one DB contract, with administration and construction management estimated at 10%.
- Permitting and Monitoring: 1% or 2%, depending on the site
 - Based on discussions with CCC staff, permitting is anticipated to take longer at Sites 2 or 3, and the costs were estimated at 2% of construction costs at these sites, and 1% of construction costs at the other sites.
- Existing WWTP Demolition: \$3,300,000
- Escalation: 3% per year for 1 year or 2 years, depending on the site
 - Escalation was included at 3% for one year for all but Sites 2 and 3. Based on discussions with CCC staff, permitting is anticipated to take longer at Sites 2 or 3. Two years instead of one year were assumed for these sites.

(2) The construction contingency is recommended at 20% of the construction cost subtotal for Site 2 due to the amount of available information for the area, and 25% for the other sites.

Table 3. Summary of Estimated Recycled Water Capital Costs					
	Site 1: South Bay Boulevard	Site 2: Hanson/RV	Site 3: Dynegy Tank Farm	Site 4: Righetti	Site 5: Giannini
Advanced Treatment	\$8,240,000	\$8,240,000	\$8,240,000	\$8,240,000	\$8,240,000
Recycled Water Pump Station, Tank, & Pipeline	\$7,720,000	\$3,040,000	\$2,800,000	\$3,530,000	\$3,830,000
Injection wells & appurtenances	\$1,120,000	\$1,120,000	\$1,120,000	\$1,120,000	\$1,120,000
Monitoring wells	\$680,000	\$680,000	\$680,000	\$680,000	\$680,000
Recycled Water Construction Cost Subtotal	\$17,760,000	\$13,080,000	\$12,840,000	\$13,570,000	\$13,870,000
Soft Costs (1)	\$4,972,800	\$4,054,800	\$3,980,400	\$3,799,600	\$3,883,600
Recycled Water Capital Cost Subtotal	\$22,700,000	\$17,100,000	\$16,800,000	\$17,400,000	\$17,800,000
Construction Contingency (2)	\$4,440,000	\$3,270,000	\$3,210,000	\$3,392,500	\$3,467,500
Recycled Water Capital Subtotal (Rounded)	\$27,200,000	\$20,400,000	\$20,100,000	\$20,800,000	\$21,300,000
Notes: See text below for details regarding soft costs (1) and construction contingency (2) . Property costs are not included, but would not factor into the selection of one site over another at the range of costs identified. See Appendix B for additional cost assumptions and details.					

Explanation of Differences in Cost Opinions for Recycled Water System:

The main differences in the cost opinions for the recycled water project components are the recycled water pipeline length due to the overall distance from the WRF site to the potential injection well locations in the lower Morro Valley.

Notes 1 and 2: The following section describes the assumptions made for the soft costs and the construction contingency.

(1) Soft costs for the recycled water portions of the project are made up of the following categories:

- Escalation (3% @ 1 yr/2 yrs)
 - The recycled water component of the project may not be constructed concurrent to the new WRF. Escalation was included at 3% for one year for all but Sites 2 and 3. Based on discussions with CCC staff, permitting is anticipated to take longer at Sites 2 or 3. Two years instead of one year were assumed for these sites.
- Engineering, Administration, Legal, and Permitting (25%)

(2) A 25% construction contingency is recommended for the recycled water portions of the project for all of the site options.

Table 4. Summary of Estimated Total Program Capital Costs					
	Site 1: South Bay Boulevard	Site 2: Hanson/RV	Site 3: Dynegy Tank Farm	Site 4: Righetti	Site 5: Giannini
WRF (Tertiary Treatment and Conveyance) Capital Cost Opinion Subtotal	\$103,500,000	\$90,900,000	\$93,800,000	\$94,800,000	\$98,600,000
Recycled Water Capital Cost Opinion Subtotal	\$22,700,000	\$17,100,000	\$16,800,000	\$17,400,000	\$17,800,000
Program Capital Cost Subtotal	\$126,200,000	\$108,000,000	\$110,600,000	\$112,200,000	\$116,400,000
Construction Contingency	\$24,222,500	\$16,746,000	\$20,607,500	\$21,505,000	\$22,310,000
Total Program Capital Cost Opinion (Rounded)	\$150,400,000	\$124,700,000	\$131,200,000	\$133,700,000	\$138,700,000
Notes: See previous text and tables for capital cost opinions and assumptions regarding soft costs and construction contingency. Property costs are not included, but would not significantly affect the selection of one site over another at the range of costs identified. See Appendix B for additional cost assumptions and details.					

In the Peer Review Report published June 29, 2017 (MKN), an estimated cost saving of \$8.6M was projected (Table 5 from the report) due to recommendations that resulted from the peer review workshop. As shown here, the total cost reduction is approximately \$17M from the MWRP recommended project (\$167M). This is a result of more refined cost opinions for the odor control, earthwork, auxiliary facilities, and soft costs that were developed based on the recommendations from the peer review panel.

B. Operating and Maintenance Costs

The main difference in annual operating and maintenance (O&M) costs between the sites the difference in power requirements for pumping. Estimated annual O&M costs for each potential WRF site are summarized in Table 5. The Draft Rate Study includes an estimated O&M cost of \$3,700,000 for the SBB site. For the purposes of this study, this was used as a baseline cost, and adjusted for anticipated differences in pumping costs between the sites. The total annual pumping power cost is estimated to range between \$24,000 and \$64,000 per year (at the Hanson/RV storage site and SBB site, respectively). This considers both raw wastewater pumping and recycled water pumping.

Table 5. Summary of Estimated Annual Operating and Maintenance (O&M) Costs					
	Site 1: South Bay Boulevard	Site 2: Hanson/RV	Site 3: Dynegy Tank Farm	Site 4: Righetti	Site 5: Giannini
Influent Pumping	\$42,000	\$7,000	\$11,000	\$36,000	\$39,000
Tertiary Disinfected WRF O&M (1)	\$2,238,000	\$2,238,000	\$2,238,000	\$2,238,000	\$2,238,000
WRF Staffing	\$720,000	\$720,000	\$720,000	\$720,000	\$720,000
Subtotal WRF + Conveyance O&M	\$3,000,000	\$2,965,000	\$2,969,000	\$2,994,000	\$2,997,000
Advanced Treatment O&M (2)	\$558,000	\$558,000	\$558,000	\$558,000	\$558,000
Recycled Water Staffing	\$120,000	\$120,000	\$120,000	\$120,000	\$120,000
Recycled Water Pumping	\$22,000	\$17,000	\$17,000	\$14,000	\$14,000
Subtotal Recycled Water O&M	\$700,000	\$695,000	\$695,000	\$692,000	\$692,000
Total Estimated Annual O&M Costs (Rounded)	\$3,700,000	\$3,660,000	\$3,664,000	\$3,686,000	\$3,689,000
Notes: (1) Tertiary disinfected WRF O&M includes power, chemical, replacement, biosolids disposal, and monitoring & reporting for the WRF, excluding influent pumping, advanced treatment and recycled water system O&M. (2) Advanced treatment O&M includes power, chemical, replacement, and monitoring & reporting. (3) Two potential areas are under consideration for recycled water injection wells (as described in the Draft MWRP). For each WRF site, recycled water pumping cost estimates assume the alignment with the highest power requirements. (4) Potential cost savings of \$30,000 per year for the Nutmeg Tank lease at the Righetti site are not included.					

3.2 Site Comparison

A. Site 1: South Bay Boulevard

Overview

This site was selected by the City Council in June 2016 as the focus for the project, and a draft Facility Master Plan was prepared in November 2016 that could be used as a basis for design and budgeting for a project at that location. This location was previously considered in some of the WRF-related siting reports, including the following:

- Options Report (December 2013)
- Report on Reclamation and Council Recommended WRF Sites (May 2014)
- Report to City Council on Potential WRF Sites (May 2016)

Notably, the site was not addressed in either the Rough or Fine Screening Reports prepared in 2011, although the adjacent parcel under common ownership within the City closer to Highway 1 was considered in those reports. An overview of the site and potential WRF location is provided in Figure 2.

Recent Regulatory Agency Outreach and Input

California Coastal Commission. CCC staff has been generally supportive of this site. City staff kept CCC staff apprised of progress on the project as the draft FMP was developed during 2016. CCC staff has not raised significant concerns with this location in discussions. With respect to permitting, they have been supportive of the concept of working with San Luis Obispo County on a Coastal Development Permit (CDP) based on the County's LCP, since the site is currently in an unincorporated area. CCC staff confirmed this perspective at a conference call meeting on September 19, 2017.

CCC provided correspondence to the City Council dated July 11, 2017. Although it did not address the South Bay Boulevard location in that letter, CCC staff strongly encouraged the City to continue on the path it has been following to relocate the project away from the existing Wastewater Treatment Plant (WWTP). A new facility at the South Bay Boulevard site would be consistent with recent CCC direction.

City staff met with CCC staff on August 8, 2017 to discuss the WRF project, particularly with regard to CCC staff's concerns expressed in their July 2017 letter to the City Council. The South Bay Boulevard site location was not the focus of that meeting, but CCC staff reiterated the concerns with shifting the focus to a site near the existing WWTP.

San Luis Obispo County. County staff has been supportive and collaborative relative to moving forward at the South Bay Boulevard location. They concur with CCC staff that it would be appropriate for the City to obtain a Coastal Development Permit for a project at this location. County staff does not anticipate substantial concerns with this process.

Regional Water Quality Control Board. Regional Board (RWQCB) staff has not focused on suitable sites as much as achieving their broad overall objectives: 1) to protect water quality; 2) to encourage a strong water reclamation component; and 3) to achieve these goals as quickly as possible. RWQCB Staff has been supportive of the City's efforts at this site, and has coordinated closely with City staff throughout the process.

The RWQCB provided correspondence to the City Council dated July 11, 2017. Although it did not address the South Bay Boulevard location in that letter, RWQCB staff strongly encouraged the City to move forward as quickly as possible, and expressed concern that shifting focus to a new site could result in further delays that would hinder the attainment of their key objectives related to water quality and reclamation. RWQCB staff also provided testimony at the July 11 City Council meeting consistent with their letter of the same date.

Key Opportunities

Potential development on the South Bay Boulevard site presents several key opportunities, many of which are described in detail in the May 2016 *Report on Potential WRF Sites*. Others are drawn from more recent regulatory agency input, public outreach, or from the draft Facilities Master Plan and related technical studies. In summary, these include the following:

- **Facility Master Plan Has Been Prepared.** One important consideration for this site is that a draft Facility Master Plan (FMP) has already been prepared, which takes into account the various physical opportunities and constraints associated with this location. The draft FMP is also based on detailed recent technical studies related to biological resources, cultural resources, and geotechnical issues. From a technical perspective, the FMP has been vetted by the WRFCAC and City Council. With some minor refinement, it can be used as the basis for the Environmental Impact Report (EIR) to further examine potential impacts associated with its implementation. This represents a likely time and cost savings relative to other sites, if only the planning effort is considered.

- ***Far From Existing Residential Uses.*** The City has already conducted extensive outreach related to this site. Development at this location would neither be near nor visible to any offsite residents, and there are no homes on the site itself. The nearest residents live within Casa de Flores, a senior residential complex roughly 1,200 to 1,600 feet to the south, which is visually blocked by intervening topography. Outreach related to this site conducted in 2016 suggests that compared to other locations closer to residential neighborhoods, there would likely be less controversy or opposition as the project moves forward through the design and CEQA process. It could also reduce cost for architectural features and screening since it will be less visible.
- ***A Large Site Providing Design Flexibility.*** As identified in the draft FMP, the most developable area is a gently sloping 15-acre site, sufficiently large to allow some degree of design flexibility, particularly if no corporation yard is to be considered.
- ***Relatively Free of Coastal Commission Resource Concerns.*** The location shown in the draft FMP on the site is relatively free of issues that would be of potential concern to the Coastal Commission. It is not visually prominent from Highway 1, nor does it include prime soils. It may also be possible to avoid onsite drainage features and any potential Environmentally Sensitive Habitat Area (ESHA) associated with them.
- ***Site Acquisition is Straightforward.*** In 2016, the City entered into a Memorandum of Understanding (MOU) to purchase the necessary portion of the site. The MOU does not commit any City financial resources unless it purchases the needed portion of the site.
- ***Potential for Land Conservation.*** Only a portion of the roughly 28 acres addressed in the MOU would be needed for the WRF. The City could explore the potential to work with land trusts to preserve some or all of the remainder of the site that would be purchased in open space, agriculture or some other similar passive use in perpetuity.
- ***Longer Pipeline Route but Fewer Complexities.*** The pipelines are longer than those to the other sites under consideration, but can be generally constructed within City rights-of-way with the exception of the Highway 1 freeway crossing. This requires significantly less coordination with Caltrans than constructing a pipeline along the Highway 41 corridor, particularly with respect to the Righetti site. It also will avoid the cultural resource sites identified along Highway 41 associated with that site. In addition, pipeline construction could be phased with planned repaving of streets or other capital improvements to reduce cost.

Key Constraints

The key constraints facing development at this location include:

- ***Relatively Higher Cost.*** Development of a WRF at this site would be relatively more expensive than any other site now under consideration. Refined cost estimates described earlier in this report suggest that project costs would be 8 to 21% higher than at any of the other locations considered in this report, depending on the location.
- ***Farther from Most Reclamation Opportunities.*** The site would be farther from the most promising reclamation opportunities identified in the draft Master Water Reclamation Plan (MWRP), including groundwater recharge into the Morro Valley aquifer to provide indirect potable reuse. While reclamation can be achieved at this location, the greater distance contributes to the higher cost estimate.

- ***Farther from the City's Existing Wastewater Collection System.*** The site is located about 2.4 miles from the existing treatment plant (the hub of the City's wastewater treatment infrastructure network) and the ocean outfall. This distance is farther from the City's existing wastewater infrastructure than any other site under consideration, which will increase relative potential construction and energy costs for the conveyance of raw wastewater.

B. Site 2: Hanson/RV Storage

Overview

This 11.6-acre site is located adjacent to and just south of the existing Wastewater Treatment Plant site (Figure 3). It covers portions of multiple parcels (APN 066-331-032, -033 -034, and -038), just south of Atascadero Road in the City of Morro Bay, and is jointly owned by the City of Morro Bay and Cayucos Sanitary District. Portions of the site are currently being used as an RV storage facility, with the rest for concrete manufacturing. The site has not been previously studied in the various WRF siting reports, but since it is adjacent to the existing WWTP, there is information in the Rough Screening and Fine Screening Analysis that is likely applicable to the site. The Final EIR for the Morro Bay-Cayucos Wastewater Treatment Plan Upgrade Project (December 2010) also has some relevant information that could apply to the site.

Recent Regulatory Agency Outreach and Input

California Coastal Commission. Until the Peer Review Report was published in June 2017, and the City Council contemplated considering this site, CCC staff had not been aware that a return to a location near the existing WWTP was a possibility. CCC provided correspondence to the City Council dated July 11, 2017, expressing "shock" that the City would consider such a fundamental change in strategy for locating a new facility, which it had been following since the CCC denied a Coastal Development Permit for the WWTP Upgrade project at its current location in January 2013. Until it became aware of this possibility, CCC staff had been highly supportive of locating the project at the South Bay Boulevard site.

City staff met with CCC staff on August 8, 2017 to discuss the WRF project, particularly with regard to CCC staff's concerns expressed in their July 2017 letter to the City Council. It was a productive meeting. CCC staff suggested that pursuing a project at this location would face important challenges to securing needed permitting from the CCC, stemming from the fact that the Commission had previously denied a permit at an adjacent site with similar general characteristics. CCC staff, including District Director Dan Carl, outlined a suggested approach the City would need to pursue in order to gain staff support for such an undertaking, but noted that this would be no guarantee that the Coastal Commission itself would approve the permit.

The following were the key takeaways from CCC staff relative to moving forward at this location:

- Staff is open to discussing possible permitting at a site near existing WWTP, but there are no guarantees of approval;
- Permit approval will be challenging because of previous denial of the upgrade project in 2013;
- The Coastal Commission will need to be convinced that the new project has successfully addressed issues related to previous denial: Therefore, the City will need to show how the new site and project are different than before;
- CCC staff will work iteratively with City staff to address these issues as appropriate, through the permitting and CEQA process;
- The CCC's technical team will need to verify issues related to flooding and sea level rise to ensure impacts are accurately assessed and properly mitigated;
- The permit process will take longer at a site west of Highway 1 because of high level of public scrutiny and previous history in this general location (no specific timeframe was given on August 8,

but in a subsequent conference call meeting on September 19, CCC staff suggested the permitting timeframe could possibly take 18 to 24 months);

- It would need to be demonstrated that coastal access is not impeded by a project at this location;
- Timeframe for permitting at sites outside city (South Bay, Righetti) would be less, primarily because those sites could follow County LCP requirements—though all such sites are subject to Coastal appeal; and
- Will need to coordinate with the City's LCP update process as appropriate.

Director Carl was not particularly optimistic about the City's chances of success at this location, but said those chances would improve if the City can make a strong case that the new project can successfully address the issues that were at the heart of the January 2013 denial of the WWTP Upgrade Project. These issues include, but are not necessarily limited to the following:

- Project is not an allowed use under the existing LCP
- Project would be subject to multiple hazards:
 - Within 100-Year Flood Zone
 - Within Tsunami Inundation Area
 - Subject to Liquefaction
 - Subject to Shoreline Erosion
- Project site is visually sensitive
- Project could frustrate public recreational access and visitor-serving objectives
- Project could impact archaeological resources
- Project insufficiently sized to accommodate future growth in the City and CSD
- Project did not include substantial water reclamation component
- Unclear how the project could affect water quality from the outfall

As the City moves forward to investigate these issues, the intent is to work closely with CCC staff to show how the new project and design could be found to be consistent with Coastal policies. CCC staff noted that ideally, the City's current LCP update would account for a project at this location. Otherwise, a separate LCP amendment would need to be processed for this action. It is unclear to CCC staff what the disposition of the Coastal Commission would be if the City were to approve an LCP update, and then amend shortly thereafter it to include a new WRF at this location.

City and program management staff's initial assessment is that the issues outlined by CCC staff could be successfully addressed through an appropriate project design. The following table summarizes how a project might generally address these concerns, and where additional investigation would be required:

Table 6. How a New WRF Project Could Address Coastal Commission Issues of Concern	
Coastal Commission Concerns (1)	How a New Water Reclamation Facility near the WWTP site could address these issues
Project is not an allowed use under the existing LCP	An LCP amendment would likely be necessary at any site chosen for a new WRF, not just those near the existing WWTP
Project would be subject to multiple hazards:	
- Within 100-Year Flood Zone	Locate outside of 100-year flood zone to the extent feasible, and mitigate by raising site elevation out of 100-year flood zone where required
- Within Tsunami Inundation Area	Raise site elevation to minimize exposure
- Subject to Liquefaction	Address during design through geotechnical and structural engineering
- Subject to Shoreline Erosion	Address during design through geotechnical and structural engineering. Proposed locations would be farther back from coast.
Project site is visually sensitive	Utilize small footprint technologies (such as MBR or SBR) and house processes with architectural treatment
Project could frustrate public recreational access and visitor-serving objectives	Would result in lesser impacts to public recreational access than the previous WWTP upgrade project because of a smaller footprint and greater distance from the coast
Project could impact archaeological resources	The EIR would investigate this issue and likely require appropriate mitigation
Project insufficiently sized to accommodate future growth in the City and CSD	WRF Project will be sized for City buildout in accordance with the existing General Plan and will be coordinated with the ongoing General Plan update
Project did not include substantial water reclamation component	WRF Project will include indirect potable reuse via augmentation of the Morro Valley Groundwater Basin
Unclear how project could affect water quality from the outfall	Water quality would vary from filtered, disinfected wastewater (during startup and high wet weather conditions) to a concentrated brine stream (from reverse osmosis) when producing water for indirect potable reuse
Notes: (1) Coastal Commission Concerns are reasons for possible inconsistency with LCP and related Coastal policies, based on the January 2013 Coastal Development Permit denial for the WWTP Upgrade Project	

At the end of the August 8 meeting, City and CCC staff committed to working together on a program as described above, if the City Council were to select this (or another) site west of Highway 1, near the existing WWTP. If, in the opinion of CCC staff, there was any point in the process that suggested moving forward at this location would be “fatally flawed”, they would inform City staff to allow the City to change direction as appropriate.

The program management team reached out to representatives of those who challenged the permit application for the WWTP upgrade project to determine whether or not they would likely be supportive of a WRF at a site near the existing WWTP location. The clear sense of these discussions was that even if the project is designed to address key coastal issues, the City is likely to face a similar challenge at the Coastal Commission for this project. The outcome of such a challenge is uncertain, but it is a process for which the City would need to be prepared, including its potential effect on CCC's disposition related to issuing required coastal permits for the WRF project.

CCC staff also indicates that based on their recent experience with permitting efforts for other coastal wastewater treatment facilities, it is likely that if the coastal permit is approved, there would be a condition that would require the City to pursue the eventual relocation of the facility to an inland site. The timeframe of such a condition could range from 10 to 30 years, depending on specific circumstances related to the site (Dan Carl, Coastal Commission District Director, September 19, 2017).

Regional Water Quality Control Board. Regional Board (RWQCB) staff has not focused on suitable sites as much as achieving their broad overall objectives: 1) to protect water quality; 2) to encourage a strong water reclamation component; and 3) to achieve these goals as quickly as possible. RWQCB staff had been supportive of the City's efforts at the existing WWTP in 2013.

The RWQCB provided correspondence to the City Council dated July 11, 2017, and provided supporting testimony at the meeting that evening. RWQCB staff indicated that the Regional Board was beginning to lose patience with the City's delays in choosing a site and moving forward. At the same time, Board staff expressed that they would be highly supportive of a project that included a substantial reclamation component, either at the outset of the project, or with a firm timetable related to its implementation. If the project did not have such a component, or if its implementation was time uncertain, the Board would be less supportive, and likely push harder on implementing a strict timetable. Failure to meet such a timetable could involve substantial financial penalties. The RWQCB has considerable latitude regarding the magnitude of such penalties. Staff indicated it would not be in the City's financial interest to pay those penalties as a way of avoiding moving forward with the project.

Cayucos Sanitary District. City staff met with the Cayucos Sanitary District (CSD) staff on August 3, 2017, in order to coordinate on issues of common interest as the two agencies move forward on their separate projects. A key issue is that the two agencies jointly own the Hanson/RV site that is being considered in this report. CSD staff indicates that the City will need to work closely with CSD before the City can effectively move forward with its project at this location. CSD staff did not indicate what CSD's specific concerns might be.

Key Opportunities

Potential development on the Hanson/RV storage site presents the following opportunities:

- ***Lowest Cost Option.*** Of all the sites under consideration, this is the lowest cost option. As discussed previously in this report, a reclamation project at this location would cost an estimated 17% less than development of a similar project at the South Bay Boulevard site. Based on the costing methodology assumptions consistent with Peer Review Panel recommendations, the estimated difference is about \$26 million, when soft costs and a contingency are applied. Most of the difference is due to reduced pipeline and pump station costs.
- ***Close to Existing Wastewater Infrastructure.*** The site is adjacent to the existing WWTP, so very little new pipeline and a much smaller lift station would be needed to connect a new facility to the City's existing wastewater collection system. This factor is important with respect to minimizing both construction and maintenance costs.
- ***Proximity to Reclamation Opportunities.*** The site is relatively close to potential reclamation opportunities, including to where the most promising groundwater injection opportunities are likely to be. This factor is a key reason why potential costs related to reclamation would be lower than for a project at South Bay Boulevard.
- ***The City Already Owns the Site (jointly with CSD).*** The site is already owned in part by the City, although as noted above, it jointly owns the site with the CSD. In order to gain full control of the site and any development on the site, the City would need to work with CSD on a mutually acceptable agreement. It is not certain what the terms of such an agreement might be, so this is a potential constraint as well.

Key Constraints

The key constraints facing development at this location include:

- **Previous CCC Denial of WWTP Upgrade Permit at Adjacent Site.** The site is adjacent to the existing WWTP. The Coastal Commission denied a Coastal Permit at that location in 2013 for a variety of reasons, related to that project's inconsistency with the City's LCP and a variety of Coastal policies. The new project will be challenged to address these issues, which range from a variety of coastal hazards, to other issues related to shoreline access, appropriate coastal development and visual impacts. Some of the key Coastal issues are listed and described in the bullet points that follow.
- ✓ **Tsunami Inundation Zone.** Based on the Tsunami Inundation Map for Emergency Planning (July 2009), the site lies within a tsunami inundation zone. A Shoreline Erosion Study and 100-Year Sea Wave Run-up Analysis was conducted for the adjacent existing WWTP site by Earth Systems Pacific, and concludes the maximum anticipated tidal generated surge that could occur at the property, when considered in conjunction with an eroded or scoured beach, a 100-year storm event, an extreme high tide, and the projected 100-year rise in sea level, would result in a maximum tsunami elevation of 17.2 feet. This elevation is located approximately 220 feet to the west (seaward) of the location of the site. Notably, the 2010 Final EIR for the adjacent WWTP Upgrade Project concluded that potential impacts related to tsunami would be less than significant without mitigation.
- ✓ **Partially within the 100-Year Flood Zone.** Roughly one-third of the 11.6-acre site lies within the 100-year flood plain. Environmental Science Associates (ESA) prepared a site-specific Flood Hazard Analysis (August 2009) for the WWTP upgrade project, the recommendations of which were considered and incorporated into the Final EIR and conditions of approval for that project. These measures could potentially be applied to a new WRF at the Hanson/RV site.
- ✓ **Shoreline Erosion and Sea Level Rise.** The site is potentially subject to the effects of sea level rise. The 2010 Final EIR for the adjacent WWTP Upgrade Project reported the following with respect to the adjacent WWTP site: "In May 2009, the Pacific Institute prepared an evaluation of the population, infrastructure, and property that would be at risk from a projected sea level rise of 1.4 meters (m) in the year 2100 (Pacific Institute, 2009). The study includes a series of maps that indicate changes in coastal base flooding and erosion high hazard zones in 2100 due to a 1.4-m sea level rise. The map for Morro Bay North includes the WWTP site and indicates that by the year 2100, storm surge events could breach the barrier sand dunes and inundate inland areas, including the existing treatment plant and Morro Bay High School. The Morro Dunes RV Park, which is located at a higher elevation, would not be inundated. The map shows that the existing WWTP would remain above the high hazard erosion zone. These long-term projections suggest that the existing plant site may be subject to inundation in the future during a storm surge event." Based on "Draft Sea Level Rise Adaptation Strategy Report" (Moffat and Nichol, August 2017), the Hanson/RV storage site was found to be vulnerable to coastal flooding by the 2100 timeline horizon. An EIR for a new WRF project at the Hanson/RV location would need to critically evaluate this issue with updated information.
- ✓ **Liquefaction.** The potential for liquefaction at the site is moderate to high (San Luis Obispo County PermitView, 2017). Appropriate design mitigation would be needed to address this hazard.
- ✓ **Visual Sensitivity.** The site is near the Pacific Ocean and adjacent to a primary access road to the beach, and thus considered visually sensitive from the perspective of the Coastal Commission. Appropriate design would be required to address this issue. The site would be visible to an adjacent RV park. In addition, although the site (like the existing WWTP) is about 0.5 to 1 mile from the

Nutmeg neighborhood, it is visible to more residents in that neighborhood than the Righetti site is to those residents, because the neighborhood generally slopes west toward the coast, including this site. Appropriate design would be required to address visibility issues.

- ✓ **Cultural Resources.** The site is relatively near identified significant cultural resources, including archaeological sites that include human burials (Final EIR for the WWTP Upgrade Project, 2010). It is also generally sensitive because of its proximity to Morro Creek. This issue would need to be evaluated for a project at this location.
- **Long-Term Possible Relocation Condition from CCC.** CCC staff has indicated that, as a possible condition of approval, the City may be required to provide a timeline for relocating the plant out of an area that could be affected by future sea level rise. On similar projects elsewhere in the state that could be subject to sea level rise or coastal inundation, CCC has sometimes issued temporary permits or permits that require reconsideration from 10 to 30 years after initial authorization. CCC might also include other design-related conditions to address coastal hazards, which could adversely affect project costs.
- **Near Morro Bay High School and Residences.** The site is within 1,000 feet of Morro Bay High School, and within 2,000 feet of an estimated 150 homes east of Highway 1, on either side of Highway 41, generally south and west of Hill Street. Because of this proximity, the WRF would need to be designed to mitigate for possible odor-related impacts.
- **The City Owns the Site Jointly with CSD.** As noted above, the City and the CSD jointly own the site. In order to gain full control of the site and any development on the site, the City would need to work with CSD on a mutually acceptable agreement. It is not certain what the terms of such an agreement might be, so this is a potential constraint.
- **Permit Process Would Take Longer.** Because of the multiple issues described above, and the need to coordinate closely with CCC staff to resolve them, CCC staff believes the permitting process would take longer than at other sites farther from the existing WWTP site. The CCC staff did not put a specific timeframe on how much longer such a process might take, but suggested the process could take 18 to 24 months. This extended timeframe could jeopardize the WIFIA loan.

C. Site 3: Dynegy Tank Farm

Overview

This 9.2-acre site is located adjacent to and just south of the outlet of Morro Creek, across the creek from and south of both the existing Wastewater Treatment Plant and the Hanson/RV site (Figure 4). It is a relatively small portion of the 90-acre Dynegy property (APN 066-331-040), and includes the part of that site that formerly supported a tank farm. This portion of the Dynegy site is currently vacant. Like the Hanson/RV site, this location has not been previously studied in the various WRF siting reports, but since it is near the existing WWTP, there is information in the Rough Screening and Fine Screening Analysis for the existing WWTP site that is likely applicable to the site. The Final EIR for the Morro Bay-Cayucos Wastewater Treatment Plan Upgrade Project (December 2010) also has some relevant information that could apply to the site.

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California Coastal Commission. Preliminary discussions with CCC staff on August 8, 2017, indicated they had similar concerns as related to the Hanson/RV site, in that both sites are near the existing WWTP. However, based on City staff's description of the site, CCC staff also recognized that the Coastal Act issues at this site are not the same as those at Hanson. For example, the site is at a slightly higher elevation, and generally out of the 100-year flood plain. It is also not subject to sea level rise and shoreline erosion to the same extent as the

Hanson site. Finally, it is not as visually sensitive, as the site is generally not visible from publicly-accessible locations near the shoreline, because of berms, fences, and changes in elevation. Public coastal access would not likely be impeded by a WRF at this location, since it is within the boundaries of a privately-owned industrial facility that already has controlled access. However, CCC staff indicated that the Dynegy site may present a unique challenge that was not the case for the Hanson/RV site. At the meeting of August 8, 2017 with City staff, CCC staff suggested there could be permitting limitations on future uses at the Dynegy related to the tank removal and subsequently recommended review with the California Energy Commission. This issue is being pursued with California Energy Commission.

The following were the key takeaways from CCC staff relative to moving forward at this location:

- Staff is open to discussing possible permitting at a site near existing WWTP, but there are no guarantees of approval;
- Permit approval will be challenging because of previous denial of the upgrade project in 2013 – however, the Dynegy site is not located in the floodplain and does not raise the same flood risk concerns as the Hanson site;
- The Coastal Commission will need to be convinced that the new project has successfully addressed issues related to previous denial. The City will need to show how the new site and project are different than before – as mentioned this site does not have the floodplain concerns the old project had;
- CCC staff will work iteratively with City staff to address these issues as appropriate, through the permitting and CEQA process;
- The CCC's technical team will need to verify issues related to flooding and sea level rise to ensure impacts are accurately assessed and properly mitigated if they are significant;
- The permit process will take longer at a site west of Highway 1 because of high level of public scrutiny and previous history in this general location (no specific timeframe was given on August 8, but in a subsequent conference call meeting on September 19, CCC staff suggested the permitting timeframe could possibly take 18 to 24 months);
- It would need to be demonstrated that coastal access is not impeded by a project at this location;
- Timeframe for permitting at sites outside city (South Bay, Righetti) would be less, primarily because those sites could follow County LCP requirements—though all such sites are subject to Coastal appeal; the longer permitting timeframe has potential adverse cost implications; and
- Will need to coordinate with the City's LCP update process as appropriate.

As with the Hanson/RV site, Director Carl was not particularly optimistic about the City's chances of success at this location, but said those chances would improve if the City can make a strong case that the new project can successfully address the issues that were at the heart of the January 2013 denial of the WWTP Upgrade Project. As noted above, several issues of concerns at the Hanson/RV site may be less of an issue at this location, including visual impacts, flooding and sea level rise. Nevertheless, because of the general proximity of the site to the coast and the existing WWTP site, this location will require a detailed technical investigation in the EIR to fully assess these issues in order to determine whether or not they are significant, and if so, the nature of the mitigation that would be required. Table 3 summarizes the key issues of concern to the Coastal Commission that would require investigation at this site.

As the City moves forward to investigate these issues, the intent is to work closely with CCC staff to show how the new project and design could be found to be consistent with Coastal policies. CCC staff noted that ideally, the City's current LCP update would account for a project at this location. Otherwise, a separate LCP amendment would need to be processed for this action. It is unclear to CCC staff what the disposition of the Coastal Commission would be if the City were to approve an LCP update, and then amend shortly thereafter it to include a new WRF at this location.

At the end of the August 8 meeting, City and CCC staff committed to working together on a program as described above, if the City Council were to select this (or another) site west of Highway 1, near the existing WWTP. If, in the opinion of CCC staff, there was any point in the process that suggested moving forward at this location would be “fatally flawed”, they would inform City staff to allow the City to change direction as appropriate.

The program management team reached out to representatives of those who challenged the permit application for the WWTP upgrade project to determine whether or not they would likely be supportive of a WRF at a site near the existing WWTP location. The clear sense of these discussions was that even if the project is designed to address key coastal issues, the City is likely to face a similar challenge at the Coastal Commission for this project. The outcome of such a challenge is uncertain, but it is a process for which the City would need to be prepared, including its potential effect on CCC's disposition related to issuing required coastal permits for the WRF project.

CCC staff also indicates that based on their recent experience with permitting efforts for other coastal wastewater treatment facilities, it is likely that if the coastal permit is approved, there would be a condition that would require the City to pursue the eventual relocation of the facility to an inland site. The timeframe of such a condition could range from 10 to 30 years, depending on specific circumstances related to the site (Dan Carl, Coastal Commission District Director, September 19, 2017).

Regional Water Quality Control Board. Regional Board (RWQCB) staff has not focused on suitable sites as much as achieving their broad overall objectives: 1) to protect water quality; 2) to encourage a strong water reclamation component; and 3) to achieve these goals as quickly as possible. RWQCB staff had been supportive of the City's efforts at the existing WWTP in 2013. As long as these goals are achieved, the RWQCB would likely be supportive of a project at this location.

Key Opportunities

Potential development on the Dynegy site presents the following opportunities:

- **Lower Cost Option.** This is the second lowest cost option. As discussed previously in this report, a reclamation project at this location would cost an estimated 13% less than development of a similar project at the South Bay Boulevard site. Based on the costing methodology assumptions consistent with Peer Review Panel recommendations, the estimated difference is about \$19 million, when soft costs and a contingency are applied. Most of the difference is due to reduced pipeline and pump station costs. It is slightly higher in cost than the Hanson/RV site because of its location on the opposite side of Morro Creek from where the City's existing wastewater collection system terminates.
- **Close to Existing Wastewater Infrastructure.** The site is near the existing WWTP, so very little new pipeline or lift station infrastructure would be needed to connect a new facility to the City's existing wastewater collection system. This factor is important with respect to minimizing both construction and maintenance costs.
- **Proximity to Reclamation Opportunities.** The site is relatively close to potential reclamation opportunities, including to where the most promising groundwater injection opportunities are likely to be. This factor is a key reason why potential costs related to reclamation would be lower than for a project at South Bay Boulevard.
- **Outside of 100-Year Flood Zone.** Unlike the Hanson/RV site, this location is above the 100-year flood zone, which removes one potential constraint that faced the WWTP Upgrade Project when the CCC considered and denied it in 2013.

- **Not Visually Sensitive.** Much of the site is generally not visible from publicly-accessible locations, especially those between the site and the shoreline. Much of the site is screened by landscaping, berming, or fencing. Portions of the site are visible from a residential neighborhood across Highway 1, but future WRF uses would be visually consistent with existing industrial development associated with the Dynegy site.

Key Constraints

The key constraints facing development at this location are similar in some respects to the Hanson/RV site, and include:

- **Previous CCC Denial of Adjacent WWTP Upgrade Permit.** The site is near the existing WWTP site. The Coastal Commission denied a Coastal Permit at that location in 2013 for a variety of reasons, related to that project's inconsistency with the City's LCP and a variety of Coastal policies. The new project will be challenged to address these issues, which range from a variety of coastal hazards, to other issues related to shoreline access, appropriate coastal development and visual impacts. Some of the key Coastal issues that could be factors at this site are listed and described in the bullet points that follow.
- ✓ **Tsunami Inundation Zone.** Per the "Community Baseline Assessment" (Michael Baker International, May 2017), the tsunami inundation zone extends to Highway 1 between Azure Street and Highway 41, to Little Morro Creek Road between Highway 41 and the power plant, and typically to the immediate beach area south of the power plant. This site, being between Highway 41 and the power plant, is within that zone.
- ✓ **Shoreline Erosion and Sea Level Rise.** The site is potentially subject to the effects of sea level rise, though not to the extent of the Hanson/RV site because of its higher elevation. Based on "Draft Sea Level Rise Adaptation Strategy Report" (Moffat and Nichol, August 2017), the Hanson/RV storage site was found to be vulnerable to coastal flooding by the 2100 timeline horizon. The furthest northwest edge of the Dynegy property is within this floodplain, but preliminary potential site layouts do not occupy the affected portions of the site.
- ✓ **Liquefaction.** The potential for liquefaction at the site is moderate (San Luis Obispo County PermitView, 2017). Appropriate design mitigation would be needed to address this hazard.
- ✓ **Cultural Resources.** The area is near the mouth of Morro Creek, and several cultural resources have been identified in this area. Thus, the site may be considered sensitive relative to the potential to uncover unidentified cultural resources. The site would need to be evaluated further to confirm the presence or absence of such resources at this location.
- **Long-Term Possible Relocation Condition from CCC.** CCC staff has indicated that, as a possible condition of approval, the City may be required to provide a timeline for relocating the plant out of an area that could be affected by future sea level rise. On similar projects elsewhere in the state that could be subject to sea level rise or coastal inundation, CCC has sometimes issued temporary permits or permits that require reconsideration from 10 to 30 years after initial authorization. Whether this is an issue in this case would be based to a large extent on a detailed study of sea level rise potential at this location. CCC might also include other design-related conditions to address coastal hazards, which could adversely affect project costs.
- **Near Morro Bay High School and Residences.** The site is within 1,800 feet of Morro Bay High School, and within 2,000 feet of an estimated 100 homes east of Highway 1, on the south side of Highway 41, generally including the mobile home development near Errol Street, but also including the far western corner of the neighborhood at the base of Radcliff Avenue. Because of this proximity, the WRF would

need to be designed to mitigate for possible odor-related impacts.

- **Land Use – Permitting Limitations?** There may be limitations on future land uses at this location from permitting conditions associated with the removal of the tank farm. Project management staff have also reached out to California Energy Commission for input.
- **Permit Process Would Take Longer.** Because of the multiple issues described above, and the need to coordinate closely with CCC staff to resolve them, CCC staff believes the permitting process would take longer than at other sites farther from the existing WWTP site. The CCC staff did not put a specific timeframe on how much longer such a process might take, but suggested the process could take 18 to 24 months. This extended timeframe could jeopardize the WIFIA loan.

D. Site 4: Righetti

Overview

The area commonly known as the Righetti site (APN 073-084-013) is owned by Paul Madonna et al (Figure 5). In 2015, the property was put on the market for sale, and the property owner had indicated a willingness to sell it to the City. The City subsequently entered into an MOU with the property owner that has since expired and has not been renewed. In February 2016, the site had been identified as a preferred option in the Morro Valley to pursue for a new WRF. However, subsequent outreach and community workshops provided important feedback from many residents within the Nutmeg/Ponderosa neighborhood to the west, who were strongly opposed to moving forward at that location. The site was analyzed further in a May 2016 report, comparing it to four other locations, including two others in the Morro Valley as well as the South Bay Boulevard site. That report concluded that the Righetti site was the lowest cost option among these, but presented challenges related to project implementation because of delays and cost escalation related to addressing neighborhood concerns. For that reason, the City Council chose to focus on pursuing a WRF at the South Bay Boulevard site.

This location was previously considered in many of the WRF-related siting reports, including the following:

- Rough Screening Report (2011)
- Fine Screening Report (2011)
- Options Report (December 2013)
- Report on Reclamation and Council Recommended WRF Sites (May 2014)
- Report to City Council on Potential WRF Sites (May 2016)

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California Coastal Commission. As part of the 2011 Fine Screening Report, CCC staff identified the Righetti site as a potentially suitable location at which to pursue a new wastewater facility. CCC staff was generally supportive of this location through the site selection process conducted from 2013-16. There is an ephemeral drainage trending north-south that comes from the higher elevations on the site, and passes directly through the site on its way toward Morro Creek across Highway 41. The drainage is identified by San Luis Obispo County as “Coastal Zone stream”. It is unlikely that development could avoid this typically dry drainage feature, and would most likely need to be elevated to avoid being subject to runoff during heavy rain events. This issue would require further investigation in the design and environmental review processes for a facility at this location. Coastal Commission staff were consulted regarding these drainages, and agreed they will need to be addressed through the permitting process (Dan Carl, CCC staff, April 27, 2016).

Once the South Bay Boulevard site was identified as a preferred option by the City Council in June 2016, CCC staff has not opined further on the Righetti site. However, in a meeting of August 8, 2017, CCC staff suggested to City staff that if the Righetti site is pursued, that the most expeditious permitting process would be to work with San Luis Obispo County, and secure a Coastal Development Permit through their Local Coastal Plan.

San Luis Obispo County. The site is located outside the City, but could potentially be annexed. City staff has not pursued further discussions with San Luis Obispo County staff relative to this location, but it is reasonable to believe they would concur with CCC staff that it would be appropriate for the City to obtain a Coastal Development Permit for a project at this location, similar to the approach that would be applied at the South Bay Boulevard site.

Regional Water Quality Control Board. As noted above, RWQCB staff has not focused on suitable sites as much as achieving their broad overall objectives: 1) to protect water quality; 2) to encourage a strong water reclamation component; and 3) to achieve these goals as quickly as possible. RWQCB Staff has not opined on this site, because it has not been the focus of recent City efforts to construct a WRF.

The RWQCB provided correspondence to the City Council dated July 11, 2017. Although it did not address the this location in that letter, RWQCB staff strongly encouraged the City to move forward as quickly as possible, and expressed concern that shifting focus to a new site could result in further delays that would hinder the attainment of their key objectives related to water quality and reclamation. RWQCB staff also provided testimony at the July 11 City Council meeting consistent with their letter of the same date.

Key Opportunities

Potential development at the Righetti site presents several key opportunities, which include:

- ***Close to Existing Wastewater Infrastructure.*** The site is adjacent to the City, and close to the heart of the City's existing wastewater conveyance system. It is similar in distance compared to Giannini, and closer than South Bay Boulevard. It is farther when compared to the sites west of Highway 1 (Hanson/RV and Dynegey). This factor is important with respect to minimizing both construction and maintenance costs.
- ***The Site is at Lower Elevation than South Bay Boulevard.*** The most developable 10 to 15-acre portion of the site is relatively level and located about 80 to 100 feet above sea level. This is slightly lower than at South Bay Boulevard, which helps to reduce the required size of the new lift station when compared to the South Bay Boulevard site. This is another factor that would help minimize costs to some extent.
- ***Proximity to Reclamation Opportunities.*** Because of its Morro Valley location, the site is relatively close to potential reclamation opportunities, including to where the most promising groundwater injection opportunities are likely to be. This factor is a key reason why potential costs related to reclamation would be lower than for a project at South Bay Boulevard.
- ***Lower Cost Than South Bay Boulevard.*** Development of a WRF at this site would be about 11% less expensive than at South Bay Boulevard, primarily for the reasons cited above related to the proximity to the existing collection system and reclamation opportunities.
- ***Potential for Land Conservation.*** Only a small portion of the 250-acre site would be needed for the WRF. If it acquires the entire site, the City could explore the potential to work with land trusts to preserve the remainder of the site in open space, agriculture or some other similar passive use in perpetuity, including all areas in direct proximity to neighbors in the Nutmeg neighborhood.
- ***City Tank Easement Costs Could be Eliminated.*** The City currently pays approximately \$30,000 per year

to lease the property for the Nutmeg Tank, which provides storage for the City's water distribution system. By purchasing the entire property, this lease cost could be eliminated. This is not reflected in the costs presented in this Report.

Key Constraints

The key constraints facing development at this location include:

- **Neighborhood Proximity.** The site of potential development is as near as 600 feet east of the nearest homes along Nutmeg Avenue and Ponderosa Street, a distance that expands to roughly 2,000 feet for homes at the northernmost end along Nutmeg Avenue. The backyards of some rear-facing windows of some of these homes along the easternmost neighborhood streets have a direct line of sight to the potential WRF location, and are somewhat elevated relative to the site under consideration (from 50 to 250 feet higher, from south to north). In all, 424 homes within this neighborhood are within 2,000 feet of the potential WRF site, with 35 homes within 1,000 feet, although most of these homes are on the opposite side of a ridgeline that separates them from the WRF site.

At a February 25, 2016 community workshop, many residents in this neighborhood voiced strong opposition to locating the WRF on the Righetti site, citing visual, odor, noise, and traffic concerns. Although City staff committed to designing the facility to address these issues, many in this neighborhood remain unconvinced, since they believe the presence of a WRF, no matter how well-designed, could adversely impact their property values.

Many of the same residents expressed similar concerns at several subsequent public workshops and meetings, including at the Citizen Advisory Committee meeting (March 1, 2016), City Council (March 8, 2016), two community workshops (April 7 and 10, 2016), and outreach at local farmers' markets (April 9 and 14, 2016).

The site is also about 1,300 feet west of the nearest homes within the Rancho Colina community. These homes, however, are blocked from a direct line of sight by intervening topography. There is also a ranch home on the south side of Highway 41 about 1,100 feet to the south directly across from the site. Some residents in these areas expressed similar concerns regarding the site, but not to the same extent as those in the Nutmeg/Ponderosa neighborhood.

- **Onsite Drainage Features.** There is an ephemeral drainage trending north-south that comes from the higher elevations on the site, and passes directly through the site on its way toward Morro Creek across Highway 41. The drainage is identified by San Luis Obispo County as "Coastal Zone stream". It is unlikely that development could avoid this typically dry drainage feature, and would most likely need to be elevated to avoid be subject to runoff during heavy rain events. This issue will require further investigation in the design and environmental review processes for a facility at this location. Coastal Commission staff were consulted regarding these drainages, and agreed they will need to be addressed through the permitting process (Dan Carl, CCC staff, April 27, 2016).
- **Property Availability.** The City had entered into an MOU with the existing property owner to purchase and control the site, but that MOU expired in July 2016. Although the property is potentially available, it is not known whether the property owner would willingly work with the City to enter into a new MOU.

E. Site 5: Giannini

Overview

The 35.7-acre Giannini Property (APN 068-401-014) is located in the City limits just south of Highway 41, and east of Highway 1 (Figure 6). The site is located in an upland area overlooking the Morro Valley south of Morro Creek, and is currently undeveloped rangeland within the Coastal Zone. This site is designated as Low Density Residential with a PD (Planned Development) overlay under the City's General Plan and zoned R-A (Suburban Residential).

Little Morro Creek Road provides direct access to the site. Elevations on the site range from about 60 to 200 feet, sloping upward from the north. Approximately 21% of this sloping is a 10 to 15% slope. The remainder is between 15 and 30% slope. The least sloping portions are along the eastern boundary of the property, following a minor drainage that flows northward to Little Morro Creek, which in turn empties into Morro Creek. This is the portion of the site considered the most optimal for potential development of a new WRF, as shown on Figure 6. The site is separated from coastal views by a low ridgeline, such that the property faces northward toward the Morro Valley. A residential subdivision is located immediately southwest of the site, with homes along Hillcrest Drive immediately fronting the site. Several high voltage power lines traverse the site.

This location was previously considered in some of the WRF-related siting reports, including the following:

- Rough Screening Report (2011)
- Options Report (December 2013)

The 2013 Options Report found that in many respects, the Giannini site has some of the advantages of the Righetti site, including proximity to water reclamation opportunities. It also faces similar challenges, notably its proximity to an existing residential neighborhood, and the potential opposition that could arise from that neighborhood if this site were carried further in the process. From a cost perspective, it is likely similar to Righetti, and somewhat less expensive than the South Bay Boulevard site.

Recent Regulatory Agency Outreach and Input

California Coastal Commission. CCC staff has not previously considered this site in detail, since it was originally dismissed in the 2011 Rough Screening Report and was not the recommended site in subsequent reports. However, in a meeting on August 8, 2017, CCC staff suggested that permitting at this location would require an amendment to the City's LCP because the site is already located within the City limits. Permitting through the County's LCP would not be an option.

Regional Water Quality Control Board. As noted above, RWQCB staff has not focused on suitable sites as much as achieving their broad overall objectives: 1) to protect water quality; 2) to encourage a strong water reclamation component; and 3) to achieve these goals as quickly as possible. RWQCB Staff has not opined on this site, because it has not been the focus of recent City efforts to construct a WRF.

The RWQCB provided correspondence to the City Council dated July 11, 2017. Although it did not address the this location in that letter, RWQCB staff strongly encouraged the City to move forward as quickly as possible, and expressed concern that shifting focus to a new site could result in further delays that would hinder the attainment of their key objectives related to water quality and reclamation. RWQCB staff also provided testimony at the July 11 City Council meeting consistent with their letter of the same date.

Key Opportunities

Potential development at the Giannini site presents several key opportunities, which include:

- ***Close to Existing Wastewater Infrastructure.*** The site is adjacent to the City, and close to the heart of the City's existing wastewater conveyance system. It is similar in distance compared to Righetti, and closer than South Bay Boulevard. It is farther when compared to the sites west of Highway 1 (Hanson/RV and Dynegey). This factor is important with respect to minimizing both construction and maintenance costs.
- ***The Site is at Lower Elevation than South Bay Boulevard.*** The most developable 10 to 15-acre portion of the site is gently sloping and located about 70 to 100 feet above sea level. This is slightly lower than at South Bay Boulevard, which helps to reduce the required size of the new lift station when compared to the South Bay Boulevard site. This is another factor that would help minimize costs to some extent.
- ***Proximity to Reclamation Opportunities.*** Because of its Morro Valley location, the site is relatively close to potential reclamation opportunities, and closer than any other Morro Valley site to the City's wells and the lowest part of the valley, where the most promising groundwater injection opportunities are likely to be. This factor is a key reason why potential costs related to reclamation would be lower than for a project at South Bay Boulevard.
- ***Lower Cost Than South Bay Boulevard.*** Development of a WRF at this site would be about 8% less expensive than at South Bay Boulevard, primarily for the reasons cited above related to the proximity to the existing collection system and reclamation opportunities.

Key Constraints

The key constraints facing development at this location include:

- ***Neighborhood Proximity.*** The site of potential development is as near as 600 feet northeast of the nearest homes along Hillcrest Drive, a distance that expands to roughly 1,000 feet for homes at the northernmost end along Nutmeg Avenue. The backyards of some rear-facing windows of some of these homes along Hillcrest Drive have a direct line of sight to the potential WRF location, and are somewhat elevated relative to the site under consideration (from 70 to 100 feet higher). In all, 227 homes within this neighborhood are within 2,000 feet of the possible WRF site, with 85 homes within 1,000 feet, although most of these homes are on the opposite side of a ridgeline that separates them from the WRF site (City Council presentation, March 8, 2016).

In addition, the nearest home on Little Morro Creek Road is just to the east, and potentially within 300 feet of the site. The next home along the roadway is about 1,000 feet further to the northeast. These homes would have a direct line of sight with no visual obstructions.

No community workshops have been held to discuss the Giannini site, because the site was never selected by the City Council for further analysis after the publication of the December 2013 Options Report. However, it is reasonable to expect that there could be substantial neighborhood concerns similar to that experienced relative to the Righetti site if this location is selected. Compared to Righetti, the nearest homes are closer and there are more of them within 1,000 feet. The elevation difference is also less.

- ***Onsite Drainages or Jurisdictional Waters.*** There is an ephemeral drainage trending north-south that comes from the higher elevations on the site, and passes directly through the site on its way toward Little Morro Creek. The drainage is identified by San Luis Obispo County as "Coastal Zone stream". It is

likely that development could avoid this typically dry drainage feature, but this issue will require further investigation in the design and environmental review processes for a facility at this location. The site has not been comprehensively surveyed for biological resources. This site does not contain Environmentally Sensitive Habitat Areas (ESHA) as defined in the City's LCP or shown on its zoning map. Studies included with a previous application for development on the site identified areas on the site supporting Cambria morning glory (a "watch list" species), and the potential for wetlands on portions of the site.

- **Property Availability.** The property is not currently for sale, and it is not known whether the property owner would willingly sell it to the City for this purpose.
- **Cultural Resources.** The site is on a sloping hillside, uphill from the Little Morro Creek drainage. As noted in the 2011 Rough Screening Evaluation, this site included a permanent prehistoric occupation site. However, only a small portion of the property has been surveyed, so the occupation site may be larger than previously recorded. That said, the entire site may be considered highly sensitive because of its general proximity to Morro Creek. Until it is fully surveyed, the possibility of encountering additional sensitive cultural resources on this property cannot be discounted.
- **Little Morro Creek Road Improvements.** Based on past discussions related to development on this site, it is likely that Little Morro Creek Road would require improvements in order to accommodate the construction traffic and, ultimately, City staff vehicles associated with a new WRF at this location. The extent and cost of such improvements has yet to be determined; however, an allowance for road improvement has been included in the capital cost opinion in this report.

SECTION 4 CONCLUSIONS

4.1 Cost Considerations

In general, the two sites nearest the existing WWTP are the lowest cost options, while South Bay Boulevard is the highest. Righetti and Giannini are in the middle of the pack. This is consistent with estimated differences in annual operating and maintenance costs. The lowest cost option is approximately 17% lower than the highest cost option, much of which can be accounted for by the need for lift stations and longer pipeline infrastructure for the sites that are farther either from the City's existing wastewater collection system, or from the preferred well injection field that would be the primary water reclamation opportunity.

All of the sites will be relatively expensive to build a full WRF project. At this stage, cost estimates at the five sites range from approximately \$125 to 150 million, which at this stage include a 20 or 25% contingency, depending on the site, based on recommendations in the Draft FMP and the findings of the Peer Review Panel report. The key drivers of the cost differences include:

- *Proximity to the City's existing wastewater collection network;*
- *Proximity to reclamation opportunities, particularly the City's wells; and*
- *Lift stations and the length of pipelines that would be required to connect to a new WRF.*

It is also noteworthy that a water recycling facility will be needed in order to achieve the full support of both the California Coastal Commission and Regional Water Quality Control Board, based on their recent interactions with the City on this project. In addition, many funding sources, including a low-interest SRF loan and up to a \$73.7 million WIFIA loan (49% of the project cost) the City recently qualified for, will be contingent on the City building a project that includes a full recycled water component.

Another cost consideration is the City's ability to receive permits within a timeline that is acceptable to EPA for funding under the WIFIA program. This funding is critical to implementation of the project, due to the high cost for bond funding and the anticipated short-term shortfall in SRF funding.

4.2 Non-Cost Considerations

In general, the South Bay Boulevard site has the highest degree of certainty and the clearest path to timely project implementation, for several reasons. It has been studied extensively in several recent siting reports from 2013-16, and a draft Facility Master Plan (FMP) has been prepared for the site. The FMP is based in part on very recent technical investigations of the site, including a biological assessment, cultural resources evaluation, and geotechnical analysis. The FMP responded to these studies by including a preliminary design intended to avoid or minimize potential impacts with respect to these issues. There has also been extensive outreach conducted with respect to the site, including from the nearest residential neighbors as well as adjacent property owners. Their concerns have also been considered in the FMP, especially with regard to minimizing visual impacts, odor impacts, and land use compatibility. Crucially, staff from the Coastal Commission, San Luis Obispo County, and the Regional Water Quality Control Board have expressed support for pursuing development at this site. Their support will be necessary for the City to acquire the necessary permits from these agencies to move forward with the project. Finally, there is an existing Memorandum of Understanding with the property owner to acquire the necessary portion of the site to build the project. If the Council chose to move forward at this location, the preparation of an Environmental Impact Report (EIR) could commence immediately. The completion of that EIR is a critical path item for a number of reasons, including the project procurement process and the ability to secure certain grants and loans to help offset project costs.

Thus, if cost were not a consideration, the South Bay Boulevard site would be the clear choice for moving forward with the project.

That said, each of the other sites has its advantages. The Righetti and Giannini sites are each relatively close to the existing wastewater collection system and potential reclaimed water injection sites, which directly relate to reducing potential project costs. The Righetti site in particular has the potential to support an open space or agricultural conservation easement over the remainder of the site, and thus provide a hard urban edge to growth in the City. Additionally, the City owns water tanks on the Righetti property and the \$30,000 annual property lease costs could be avoided if the City purchased the property. But these two sites have some clear disadvantages, notably related to their proximity to residential neighborhoods. In early 2016, the City already explored the potential to locate a WRF at the Righetti site, and many within the adjoining neighborhood demonstrated strong and sustained opposition. It is reasonable to expect that a similar occurrence might occur if the City moved forward at the Giannini site.

The primary advantage of the two sites west of Highway 1 is that they are lower in cost than any other location. If cost were the only consideration, either of these would be an obvious choice. But time is another crucial consideration, both from a funding and permitting perspective. Not only has the RWQCB indicated that the City could face substantial penalties in the event it does not implement a project soon, some of the potential funding for the project may no longer be available if it does not. The City recently was invited to apply for a WIFIA loan to cover up to 49% of the total project cost, but there is a limited window for the City to make an application, which depends to some extent on the completion of an EIR for the project. Finally, a protracted permitting process could result in higher project costs, because project costs tend to escalate over time.

The Coastal Commission has indicated that the permit process for a project at either location west of Highway 1 would likely take considerably longer than for a project located farther from the existing WWTP. To a large extent this is due to the fact the CCC denied a permit to the previous WWTP Upgrade Project in 2013, determining that project was inconsistent with a variety of Coastal Act policies and inconsistent with the City's LCP (Dan Carl, CCC District Director, August 2013). CCC staff have indicated it will take a careful and collaborative effort for the City to demonstrate that a new WRF project near this site can be designed to be consistent with Coastal policies, particularly as they relate to coastal hazards such as sea level rise, flooding, and tsunami inundation. The Dynegey site has fewer constraints related to flooding, so it could have a slight advantage related to the permitting process. Such a project would also need to be designed to be visually compatible and consistent with future coastal development that may occur in the vicinity. And even if these issues are addressed, CCC staff indicates there is some degree of uncertainty that the Commission itself would actually grant the needed permit, regardless of staff's recommendation.

Additionally, CCC staff has indicated the City may be required to provide a timeline for relocating the plant out of an area that could be affected by future sea level rise. This is likely to affect the Hanson site and possibly the Dynegey site. In some cases, CCC has issued temporary permits or permits that require reconsideration from 10 to 30 years after initial authorization.

Thus, if the City Council were to move forward at one of the two sites west of Highway 1, it needs to be prepared for the potential risks related to timing and the possibility that a permit may only be issued with a time limitation or that requires future relocation.

4.3 Summary of Key Findings

The three key factors in developing a successful project are cost, permitting and timing. These factors are highly related.

In order to meet the City's 5-year goal (and Regional Water Quality Control Board's direction to complete the plant construction by December 2021), it is crucial that the City select a site for study in an Environmental Impact Report as soon as possible. The construction cost differences among the sites could be potentially offset to a large extent if one site presents less risk of schedule delays or pauses and can move forward more quickly,

or if timing risks the City's ability to receive funding through the WIFIA program.

A key framing issue with respect to both cost and timing is the City's eligibility to receive a WIFIA loan to pay for up to 49% of the project. The City has a one-year window to apply for this loan from the time it was deemed qualified to apply, after which time an application will not be accepted. That one-year window closes on July 17, 2018. A key consideration in making that application is that the project must be sufficiently defined and vetted to allow the completion of the federal environmental review requirements under the National Environmental Policy Act (NEPA) pursuant to federal standards set forth by the U.S. Environmental Protection Agency (USEPA), the agency administering the loan. Without that loan, it is likely that financing the project will face much higher interest rates, which will drive the project cost upward. Thus, timing and resulting coordination regarding site selection, environmental analysis, and permitting is crucial to the project's success, especially as it relates to minimizing costs.

In addition, it is clear that in order to secure this WIFIA loan, a full reclamation project would be required. Both CCC and RWQCB staff concur that their support also depends on this being a full reclamation project, although both agencies are open to the concept of phasing the reclamation component, if it can be clearly shown when this component will come online.

The following summarizes the key findings of the report relative to the issues of cost, permitting and timing.

Costs

- The cost estimates for a full reclamation project at the five sites range from about \$125M to \$150M, which includes a 25% contingency and soft costs consistent with peer review panel recommendations. The highest cost is at South Bay Boulevard, and the lowest is at the Hanson/RV site. The lowest cost site east of Highway 1 is Righetti (\$133M).
- Without the reclamation component, the cost range at the five sites varies from about \$104M to \$123M.
- The key consideration in the cost variations are the distance of pipeline conveyance and recycled water pump station infrastructure

Permitting

- The most straightforward permitting path is at the South Bay Boulevard site, since that site has been the focus of multiple recent technical reports, is the focus of the existing Facility Master Plan, has CCC staff's support, and is located within the unincorporated County, so that it can be processed through the County's LCP.
- The Righetti site is the next most straightforward, because it is also in the County, and can be permitted through the County's LCP. CCC staff has also expressed support for this site. However, the project would first need to be defined at this location, since it is not the focus of the existing Facility Master Plan. It is also uncertain how previously-expressed neighborhood concerns about the site's location might affect the timing of the permitting process.
- The two sites west of Highway 1 (Hanson/RV and Dynegy) have the most uncertain permitting path. Both would require extensive vetting to address coastal issues, and CCC staff estimates that the permitting process at either location could take 18 to 24 months, with no certainty that a permit at either site would actually be approved. If a permit is delayed or denied, this has potential negative consequences relative to cost, either by jeopardizing the City's ability to secure a WIFIA loan, and/or through the escalation of project costs over time through inflation.
- Permitting at the Hanson/RV storage, Dynegy Tank Farm or Giannini sites would require an amendment

to the City's LCP, since they are all within the City, not the County. CCC staff recommend that this amendment be processed separately from the current LCP amendment process the City is currently undertaking. It has been suggested that since the Dynegy Tank Farm site is already zoned heavy industrial, it may be possible that the LCP amendment process at that location could follow a more simplified approach, but CCC staff could not confirm this at this time.

Timing

- The South Bay Boulevard site presents the fewest regulatory obstacles, and the clearest permitting path. It also has the most technical work completed. For this reason, a project at this site would have the shortest timeframe, and the highest probability of securing a WIFIA loan and needed permitting in a timely manner. The shorter timeframe also would result in the highest probability of minimizing reported project costs.
- The two sites west of Highway 1 (Hanson/RV storage and Dynegy Tank Farm) have the most uncertain permitting path. CCC staff estimates that the permitting process at either location could take 18 to 24 months, with no certainty that a permit at either site would actually be approved. If a permit is delayed or denied, this has potential negative consequences relative to cost, either by jeopardizing the City's ability to secure a WIFIA loan, or through the escalation of project costs over time through inflation.
- Timing at the Righetti site is less certain than at South Bay Boulevard, because of previously expressed neighborhood opposition there, and how this could potentially extend the CEQA process if this is the chosen site. However, from CCC staff's perspective, the permitting process would be similar to the South Bay Boulevard site.
- Timing at Giannini is likely greater than either South Bay Boulevard or Righetti for the following reasons: 1) the need for an amendment to the City's LCP; 2) very little technical work has been done for this site that might help expedite the CEQA and permitting process; and 3) there is the potential for neighborhood opposition because of the proximity of residences to this site.

4.4 Next Steps

The most critical milestone for the City at this time is meeting the July 17, 2018, deadline for submittal of the EPA WIFIA loan application. This loan is critical for funding 49% of the project, but the City will also need to secure the other 51% loan through the State Revolving Fund (SRF) to ensure the project is fully funded. Successfully competing for the WIFIA program is likely to improve the chances of receiving highly competitive SRF loans, since both programs apply similar criteria when evaluating applications. Similarly, receiving WIFIA funding will also position the City for state and federal grants, which are highly competitive. If the City cannot be approved for low-interest federal or state loan programs, financing through bonds will be required which will increase average user costs by \$30 to \$40 per month compared to a project financed through low-interest loans according to the Draft Rate Study (Bartle Wells Associates, April 2017).

It is recommended to complete the applications for SRF and WIFIA funding concurrently to ensure the full project can be funded. If City Council selects a site by November 1st, the Draft EIR can be completed and circulated in time to allow for the preparation of the NEPA document, which is an important component to allow the processing of the WIFIA application. This would also allow the EIR to be certified soon after the application is submitted, which is a critical step for completion of the SRF application. The review and approval process for the SRF application currently requires approximately nine months for completion. The WIFIA application review and processing would proceed concurrently to ensure both programs build compatible terms and conditions into the loan agreements, which is a requirement for jointly-funded projects. If site selection is deferred until after November 1st, the opportunity for low interest project funding would be jeopardized.

As the EIR is prepared, the revised rate study can be recirculated and the hearing for the rate increase can be scheduled. The design-build request for qualifications (RFQ) will also be finalized and released, so contractor teams can be selected and invited to submit final proposals as soon as the EIR is certified. This allows permitting conditions, monitoring, and mitigation requirements to be incorporated into the design-build bids and reduce the potential for cost increases through expensive change orders by selecting a contractor too early.

The contractor will be selected during SWRCB and EPA review of the SRF and WIFIA applications so the contract award occurs before the loan is approved. Initial design efforts can be funded by the City's SRF Planning and Design Loan until the full construction loan is approved.

APPENDIX A COMPARISON OF OPPORTUNITIES AND CONSTRAINTS

Tables A-1 and A-2 summarize the key opportunities and constraints described in the site analysis above. While these are qualitative assessments, and thus somewhat inherently subjective, they are intended to provide the reader a conceptual summary of the magnitude of potential opportunities and constraints.

Table A-1. Comparative Opportunities at Potential WRF Sites

Key Opportunity	Site				
	<i>South Bay Boulevard</i>	<i>Hanson/RV Storage</i>	<i>Dynegy Tank Farm</i>	<i>Righetti</i>	<i>Giannini</i>
	Applicability to the Site				
Relatively Lower Cost	No; highest cost site	Yes; lowest cost site (about 17% less than SBB)	Yes; relatively lower cost site (about 13% less than SBB)	Mid-range cost; (about 11% less than SBB)	Mid-range cost; (about 8% less than SBB)
Facilities Master Plan has been prepared	Yes	No; would need to adapt existing FMP	No; would need to adapt existing FMP	No; would need to adapt existing FMP	No; would need to adapt existing FMP
Far From Existing Residential Uses or Schools	Yes; few neighbors—senior housing is 1,500 feet south, blocked by topography	No; within 1,000 feet of Morro Bay High School; within 2,000 feet of about 150 homes	Relatively far; within 1,800 feet of Morro Bay High School; within 2,000 feet of about 100 homes	No; within 600 feet of nearest homes in adjacent neighborhood; 35 homes within 1,000 feet	No; within 600 feet of nearest homes in adjacent neighborhood; 85 homes within 1,000 feet
Large Site Providing Design Flexibility	Yes; large site with good flexibility	Limited flexibility; smaller site	Limited flexibility; smaller site	Limited flexibility because of terrain	Limited flexibility because of terrain
Relatively Free of Coastal Commission Resource Issues	Yes; far from coast; ESHA is likely avoidable; limited visibility	No; see constraints	Unclear; near coast, but limited visibility, out of 100-year flood; need to investigate sea level rise; see constraints	Generally yes; far from coast; ESHA and drainages could be issues; cultural resources along Hwy 41	Generally yes; far from coast; cultural resource issues may exist
Site Acquisition is Straightforward	Yes; City has existing MOU with property owner	Yes and No, City owns site with CSD; would need to work with CSD	Unclear; subject to negotiation with property owner	Potentially; City had been in MOU; would need to negotiate again	Unclear; subject to negotiation with property owner
Potential for Land Conservation	Yes; large site—could do open space/ag easement	No	No	Yes; large site—could do open space/ag easement	Possibly; most of site is undevelopable as it is
Pipeline Route with Fewer Regulatory Complexities	Yes; longer pipeline, but generally avoids Caltrans ROW and cultural resources	Yes; minimal pipeline needed	Yes; minimal pipeline needed	No; relative shorter pipeline, but Caltrans coordination needed, and cultural resources exist	Yes; likely to mostly avoid Caltrans ROW and cultural resource issues

Table A-1. Comparative Opportunities at Potential WRF Sites					
Key Opportunity	Site				
	<i>South Bay Boulevard</i>	<i>Hanson/RV Storage</i>	<i>Dynegy Tank Farm</i>	<i>Righetti</i>	<i>Giannini</i>
	Applicability to the Site				
Close to Existing Wastewater Collection Infrastructure	No; about 2.4 miles to center of collection system	Yes; about 0.1 mile from current collection point (SR1/SR41)	Yes; about 0.1 mile from current collection point (SR1/SR41)	Yes; about 0.7 miles from current collection point (SR1/SR41)	Yes/No; about 0.7 miles from current collection point, but pipeline route not direct
Close to Reclamation Opportunities	No; about 2.5 miles from possible injection site	Yes; about 0.5 miles from possible injection site	Yes; about 0.5 miles from possible injection site	Yes; about 0.4 miles from possible injection site	Yes; about 0.5 miles from possible injection site
Relatively Lower Elevation (to reduce pumping costs)	Moderate; about 100-150 feet above sea level	Yes, just above sea level	Yes, just above sea level	Moderate; about 80-100 feet above sea level	Moderate; about 70-100 feet above sea level

Table A-2. Comparative Constraints at Potential WRF Sites					
Key Constraint	Site				
	<i>South Bay Boulevard</i>	<i>Hanson/RV Storage</i>	<i>Dynegy Tank Farm</i>	<i>Righetti</i>	<i>Giannini</i>
	Applicability to the Site				
Relatively Higher Cost	Yes; highest cost site (about 21% more than Hanson)	No; lowest cost site	No; relatively lower cost site (about 5% more than Hanson)	Mid-range cost; (about 7% more than Hanson)	Mid-range cost; (about 11% more than Hanson)
Previous CCC Denial of WWTP Permit at Adjacent Site	No	Yes	Yes	No	No
Tsunami Inundation Zone	No	Potentially; will be analyzed in EIR	Potentially; will be analyzed in EIR	No	No
100-Year Flood Zone	No	Partially	No	No	No
Shoreline Erosion and Sea Level Rise	No	Potentially Yes	Potentially Yes; but less likely than Hanson/RV site	No	No
Liquefaction	Variable	Moderate to High	Moderate	Low	Low
Visually Sensitive	No; limited views from Hwy 1	Yes; near coast; also visible to residents east of Hwy 1	No; limited visibility from public locations	Yes; from Hwy 41 and neighborhood	Yes; from Little Morro Creek Road and neighborhood

Table A-2. Comparative Constraints at Potential WRF Sites					
Key Constraint	Site				
	<i>South Bay Boulevard</i>	<i>Hanson/RV Storage</i>	<i>Dynegy Tank Farm</i>	<i>Righetti</i>	<i>Giannini</i>
	Applicability to the Site				
Cultural Resources	Low Potential; site has been surveyed	High Potential based on nearby known resources	High Potential based on nearby known resources	High Potential along pipeline route—known resources	High potential based on past surveys
Close to Residences or Schools	No; few neighbors—senior housing is 1,500 feet south, blocked by topography	Yes; within 1,000 feet of Morro Bay High School; within 2,000 feet of about 150 homes	Relatively far; within 1,800 feet of Morro Bay High School; within 2,000 feet of about 100 homes	Yes; within 600 feet of nearest homes in adjacent neighborhood; 35 homes within 1,000 feet; neighborhood opposition likely	Yes; within 600 feet of nearest homes in adjacent neighborhood; 85 homes within 1,000 feet; neighborhood opposition likely
Site Acquisition is Less Straightforward	City has existing MOU with property owner	Yes and No, City owns site with CSD; would need to work with CSD	Unclear; subject to negotiation with property owner	Potentially; City had been in MOU; would need to negotiate again	Unclear; subject to negotiation with property owner
Potentially Longer Permitting Process	No; process seems straightforward per CCC and County staff	Yes; per CCC staff—timetable uncertain	Yes; per CCC staff—timetable uncertain	No; process seems straightforward per CCC and County staff	No; process seems straightforward, although City LCP may to be amended
Potential Land Use Permitting Limitations	No; would work with County LCP	No, if LCP amended	Yes; possible restrictions related to tank farm removal	No; would work with County LCP	No, if LCP amended
Onsite Drainages or Jurisdictional Waters	Can be largely avoided through setbacks	No	No	Could impact onsite coastal drainage	Can be largely avoided through setbacks
Road Improvements Needed	No, except access road	No; except access road	No; except access road	No	Yes; Little Morro Creek Road would need improvement

Each site is potentially suitable for a WRF. Tables A-1 and A-2 show that each site has relative opportunities and constraints, some of which are shared at more than one site. However, the main constraint for the South Bay Boulevard site is the cost. These are discussed in greater detail in the report conclusions.

APPENDIX B COST ASSUMPTIONS AND DETAILS

Soft costs for the WRF project are made up of the following categories. Detailed costs and descriptions are provided in Appendix B.

- WRF Engineering/Design (8%)
 - Engineering and design costs of the WRF include the range of services from initial geotechnical and survey work at the onset of design, into treatment technology and conveyance design and layout, and through construction where the engineers will provide design clarifications and changes to the contractor as needed.
- Conveyance Engineering/Design (10%/8%)
 - The conveyance facilities contract, which includes the influent pump station and offsite pipelines, is anticipated to be delivered through a conventional design, bid, build approach (DBB), unless the project is at Site 2 or 3. In these cases, the project would likely be consolidated under one design-build (DB) contract. The engineering and design is estimated at 8% of construction costs for Sites 2 and 3, and 10% for the others.
- Procurement and Preliminary Engineering (4%)
 - This category includes all preliminary engineering, such as the Facility Master Plan, surveying and geotechnical evaluation, siting studies, hydrogeology studies, the Master Water Reclamation Plan, and other engineering tasks necessary to support the project through procurement. Procurement was assumed to be a design-build approach. Procurement costs include development of the request for qualifications, request for proposals, development of performance criteria, and stipends for short-listed firms.
- WRF Project Administration and Construction Management (10%)
 - Administration costs include City staff time, outreach efforts, monthly City Council and WRFCAC meetings, value engineering exercises, budget/schedule management, reporting, contract management, document review, and quality assurance/quality control measures. Construction management includes construction observation, change order management, submittal management, special inspections, and quality assurance/quality control measures.
- Conveyance Project Administration and Construction Management (12%/10%)
 - Administration costs include City staff time, outreach efforts, monthly City Council and WRFCAC meetings, value engineering exercises, budget/schedule management, reporting, contract management, document review, and quality assurance/quality control measures. Construction management includes construction observation, change order management, submittal management, special inspections, and quality assurance/quality control measures.
 - The conveyance facilities contract, which includes the influent pump station and offsite pipelines, is anticipated to be delivered through a conventional DBB approach unless the project is at Site 2 or 3. In these cases, the project would likely be consolidated under one DB contract. The administration and construction management is estimated at 10% of construction costs for Sites 2 and 3, and 12% for the others.
- Permitting and Monitoring (1%/2%)
 - Permitting costs include development of an Environmental Impact Report and other special studies needed to meet CEQA requirements. Costs will also include Coastal Development Permit preparation, streambed alteration agreements, mitigation/monitoring, and other general permitting. Based on discussions with CCC staff, permitting is anticipated to take longer at Sites 2 or 3, and the costs were estimated at 2% of construction costs at these sites, and 1% of construction costs at the other sites.
- Existing WWTP Demolition (\$3.3M 2017 Dollars)

- Decommissioning of the existing facility will involve removal of all buried pipe and structures to 5 feet below ground surface, backfill, and top with rock. With a 50% contingency, decommissioning of the existing facility is estimated to cost approximately \$5,000,000. The City is anticipated to pay approximately two-thirds of that cost.
- Escalation (3% @ 1 yr/2 yrs)
 - Escalation was included at 3% per year for one year for all but Sites 2 and 3. Based on discussions with CCC staff, permitting is anticipated to take longer at Sites 2 or 3. Two years instead of one year were assumed for these sites. The Rate Study Update will consider escalation to the midpoint of construction for financing considerations.

The construction contingency for the WRF and conveyance facilities is recommended at 20% of the construction cost subtotal for Site 2 due to the amount of available information for the area, and 25% for the other sites.

Soft costs for the recycled water portions of the project are made up of the following categories:

- Escalation (3% @ 1 yr/2 yrs)
 - The recycled water component of the project may not be constructed concurrent to the new WRF. Escalation was included at 3% for one year for all but Sites 2 and 3. Based on discussions with CCC staff, permitting is anticipated to take longer at Sites 2 or 3. Two years instead of one year were assumed for these sites. The Rate Study Update will consider escalation to the midpoint of construction for financing considerations.
- Engineering, Administration, Legal, and Permitting (25%)
 - At the current level of planning efforts for the recycled water project, 25% was assumed for engineering, administration, permitting, legal, etc. These costs will be refined further along in the design and planning process.

A 25% construction contingency is recommended for the recycled water portion of the project for all of the site alternatives.

Property acquisition costs are unknown and are not included in the project costs herein. The City will only be responsible for paying the appraised value of the property. Appraisals have not yet been obtained, since the property costs are estimated to be a relatively small percentage of the overall costs. Property costs will increase the total program capital cost opinions; and property costs at Site 2, the Hanson/RV storage site, are anticipated to be the least expensive.

Table B-1. WRF Program Capital Cost Opinion					
	Site 1: South Bay Boulevard	Site 2: Hanson/RV Storage	Site 3: Dynegy Tank Farm	Site 4: Righetti	Site 5: Giannini
WRF CAPITAL COSTS					
Sitework	\$ 2,380,000	\$ 2,980,000	\$ 2,980,000	\$ 1,590,000	\$ 1,540,000
Treatment Facilities	\$ 51,460,000	\$ 51,460,000	\$ 51,460,000	\$ 51,460,000	\$ 51,460,000
Odor Control	\$ 2,750,000	\$ 4,750,000	\$ 4,750,000	\$ 4,750,000	\$ 4,750,000
Fire Protection Facilities	\$ 500,000	\$ -	\$ -	\$ 500,000	\$ 500,000
Operations Facilities	\$ 6,330,000	\$ 6,330,000	\$ 6,330,000	\$ 6,330,000	\$ 6,330,000
Access Road and Utilities	\$ 2,250,000	\$ 860,000	\$ 1,040,000	\$ 1,850,000	\$ 2,310,000

Table B-1. WRF Program Capital Cost Opinion					
	Site 1: South Bay Boulevard	Site 2: Hanson/RV Storage	Site 3: Dynegy Tank Farm	Site 4: Righetti	Site 5: Giannini
Conveyance (Influent Pump Sta. & Offsite Pipelines)	\$ 13,460,000	\$ 1,000,000	\$ 3,030,000	\$ 5,970,000	\$ 8,480,000
WRF Construction Subtotal	\$ 79,130,000	\$ 67,380,000	\$ 69,590,000	\$ 72,450,000	\$ 75,370,000
WRF & Ops Facilities Engr/Design (8%)	\$ 5,253,600	\$ 5,310,400	\$ 5,324,800	\$ 5,318,400	\$ 5,351,200
Conveyance Engr/Design (10% / 8%) ¹	\$ 1,346,000	\$ 80,000	\$ 242,400	\$ 597,000	\$ 848,000
Procurement (4%)	\$ 3,165,200	\$ 2,695,200	\$ 2,783,600	\$ 2,898,000	\$ 3,014,800
WRF & Ops Facilities Project Admin & CM (10%)	\$ 6,567,000	\$ 6,638,000	\$ 6,656,000	\$ 6,648,000	\$ 6,689,000
Conveyance Project Admin & CM (12% / 10%) ¹	\$ 1,615,200	\$ 100,000	\$ 303,000	\$ 716,400	\$ 1,017,600
Permitting & Monitoring (1% / 2%) ²	\$ 791,300	\$ 1,347,600	\$ 1,391,800	\$ 724,500	\$ 753,700
Existing WWTP Demolition	\$ 3,300,000	\$ 3,300,000	\$ 3,300,000	\$ 3,300,000	\$ 3,300,000
Escalation (3% @ 1 yr/2 yrs) ³	\$ 2,373,900	\$ 4,042,800	\$ 4,175,400	\$ 2,173,500	\$ 2,261,100
WRF Soft Cost Subtotal	\$ 24,412,200	\$ 23,514,000	\$ 24,177,000	\$ 22,375,800	\$ 23,235,400
WRF Capital Cost Opinion Subtotal	\$103,500,000	\$ 90,900,000	\$ 93,800,000	\$ 94,800,000	\$ 98,600,000
RECYCLED WATER CAPITAL COSTS					
Advanced Treatment	\$ 8,240,000	\$ 8,240,000	\$ 8,240,000	\$ 8,240,000	\$ 8,240,000
Recycled Water Pump Station, Tank, & Pipeline	\$ 7,720,000	\$ 3,040,000	\$ 2,800,000	\$ 3,530,000	\$ 3,830,000
Injection wells & appurtenances	\$ 1,120,000	\$ 1,120,000	\$ 1,120,000	\$ 1,120,000	\$ 1,120,000
Monitoring wells	\$ 680,000	\$ 680,000	\$ 680,000	\$ 680,000	\$ 680,000
Recycled Water Construction Cost Subtotal	\$ 17,760,000	\$ 13,080,000	\$ 12,840,000	\$ 13,570,000	\$ 13,870,000
Escalation (3%)	\$ 532,800	\$ 784,800	\$ 770,400	\$ 407,100	\$ 416,100
Engr/Admin/Legal/Permitting (25%)	\$ 4,440,000	\$ 3,270,000	\$ 3,210,000	\$ 3,392,500	\$ 3,467,500
Recycled Water Soft Costs Subtotal	\$ 4,972,800	\$ 4,054,800	\$ 3,980,400	\$ 3,799,600	\$ 3,883,600
Recycled Water Capital Subtotal	\$ 22,700,000	\$ 17,100,000	\$ 16,800,000	\$ 17,400,000	\$ 17,800,000
PROGRAM COSTS (WRF + RECYCLED WATER)					
Subtotal Program Costs	\$126,200,000	\$108,000,000	\$110,600,000	\$112,200,000	\$116,400,000
Construction Contingency (25% / 20%) ⁴	\$ 24,222,500	\$ 16,746,000	\$ 20,607,500	\$ 21,505,000	\$ 22,310,000
Total Program Capital Cost Opinion	\$150,400,000	\$124,700,000	\$131,200,000	\$133,700,000	\$138,700,000

Notes:

¹ Conveyance facilities contract (influent pump station and offsite pipelines) is anticipated to be delivered through conventional design, bid, build, unless the project is at Site 2 or 3. In this case, the project would likely be consolidated under one design-build contract, with engineering and design is estimated at 8% and Admin/Construction Management is estimated at 10%.

² Permitting and monitoring costs are estimated at 1% of WRF Construction Subtotal for Sites 1, 4 and 5, and 2% for Sites 2 and 3 due to their coastal location and input from the Coastal Commission staff.

³ Escalation is estimated at 3%. One year is included to get through the planning and permitting stage for Sites 1, 4, and 5, and 2 years is included for Sites 2 and 3 due to their coastal location and input from the Coastal Commission staff.

⁴ Construction contingency is applied to construction costs only. The recommended construction contingency is 20% for WRF costs at Site 2 due to the amount of available information for the area, 25% for WRF costs at the other sites, and 25% for all recycled water project costs.

⁵ Property acquisition costs are not included, but would not factor into the selection of one site over another at the range of costs identified.