City of Morro Bay
Water Resources Center
555 South Bay Blvd
Report Date: April 2024

FACILITY SUMMARY REPORT 2023

1.0 Introduction

The Morro Bay Water Resources Center (WRC) is located at 555 South Bay Blvd, Morro Bay, California. An aerial perspective of the WRC is depicted in Figure 1, located in unincorporated San Luis Obispo County north of Highway 1 at the northern terminus of South Bay Boulevard. The WRC is owned and operated by the City of Morro Bay and serves a population of approximately 10,500 people.

Figure 1: Google Map view of WRC location

The Central Coast Regional Water Quality Control Board (RWQCB) issued the Waste Discharge Requirements (WDR) Order Number R3-2022-0029 of the NPDES Discharge Permit Number CA3000002 for the City of Morro Bay WRC on June 16, 2022. The order was effective on August 5, 2022, and expires on August 4, 2027.

On October 4, 2022, the Morro Bay Water WRC initiated its seeding process with activated sludge sourced from the Paso Robles Wastewater Treatment Plant. Subsequently, on October 11, 2022, the WRC commenced receiving sewer flow. However, between October 11th and November 13th, 2022, the WRC experienced only partial flows during the daytime, while nighttime flows were redirected to the city's former Wastewater Treatment Plant on Atascadero Rd. This measure was implemented to facilitate the growth of essential biology within the WRC's seed sludge and to enhance plant operations. As of November 14th, 2022, the WRC has been consistently receiving the entire sewer flow from the city.

2.0 Facility Description

The WRC provides preliminary, secondary, tertiary, and advanced treatment, and produces recycled water meeting In-Direct Potable Reuse (IPR) standards for a groundwater replenishment reuse project using subsurface application, as defined in California Code of Regulations (CCR) Title 22 recycled water requirements. The City of Morro Bay WRC is designed to treat an annual average flow of 0.97 million gallons per day (MGD) of wastewater through full advanced treatment.

The layout of the WRC is depicted on the site map in Figure 2. The map provides an aerial overview of the entire property, identifying each of the process areas. Commencing from the eastern side (right side) of the figure, the preliminary treatment section is situated at the headworks area. This area encompasses processes such as coarse screening, grit removal, and the Stormwater Adaptive Filtration System (SAFE) splitter box. Moving towards the middle portion of the figure, one encounters the secondary treatment facilities comprising biological nutrient removal (BNR) and membrane bioreactor (MBR) units, alongside advanced treatment components such as reverse osmosis (RO) and ultraviolet/advanced oxidation process (UVAOP) systems. Additionally, post-treatment facilities including the calcite contactor, product water storage, and outfall pump station are situated in this section. A comprehensive depiction of the flow through the WRC is illustrated in the overall Process Flow Diagram on Figure 3.

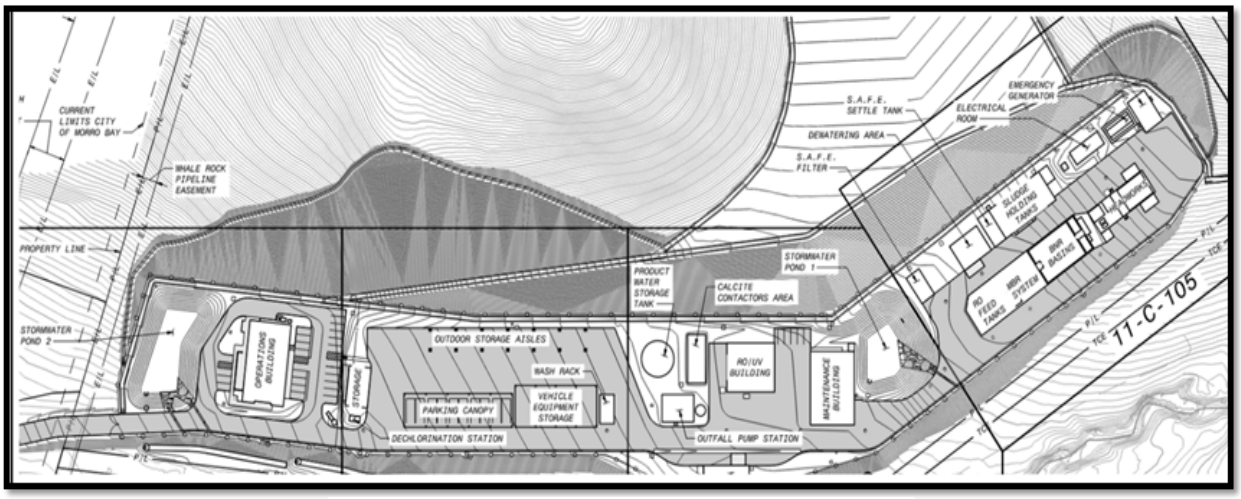


Figure 2: WRC Site Map

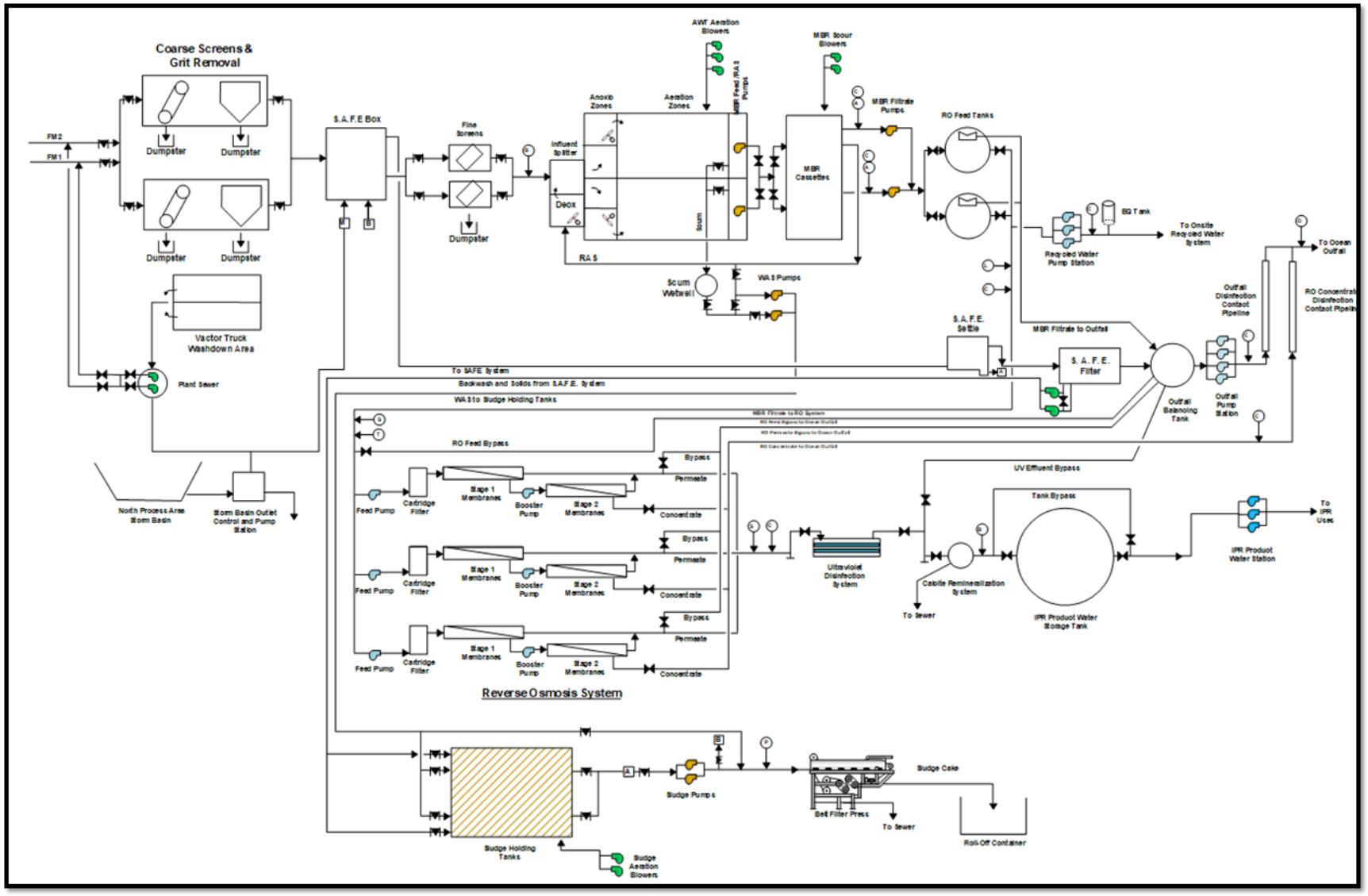


Figure 3: WRC Overall Process Flow Diagram

3.0 Facility Summary for 2023

This report provides a summary of the plant's operations and performance for the calendar year 2023. It contains summaries of monitoring data collected during that period, as well as information on plant compliance, corrective actions taken, wastewater flows, projected increases in flow rates over time, and the overall pretreatment program. All necessary elements specified in Order Number R3-2022-0029 as required per the Monitoring and Reporting Program (MRP) Section 8.4.8., Attachment D – Standard Provisions, are included.

The WRC demonstrated outstanding performance throughout the entirety of its operation in the calendar year 2023. The average influent Biological Oxygen Demand (BOD) was 230 mg/L. The final Effluent BOD averaged <2.0 mg/L and a removal rate of >99.2% of influent BOD loading. The average influent Total Suspended Solids (TSS) was 249 mg/L while the Final effluent TSS averaged <2.5 mg/L and a removal rate of >99.6% of influent TSS loading.

Annual Flows

Year	Influent Total	Influent Max	Influent AVG	Effluent Total	Effluent Max	Effluent Average
2022	62.02 MG	7.09 MGD	0.73 MGD	43.00 MG	7.04 MGD	0.73 MGD
2023	323.48 MG	7.40 MGD	0.89 MGD	316.77 MG	6.86 MGD	0.85 MGD

Average Annual BOD and TSS Results

Year	Influent BOD	Effluent BOD	BOD % Removal	Influent TSS	Effluent TSS	TSS % Removal
2022	263 mg/L	3.4 mg/L	98.7%	280 mg/L	< 2.5 mg/L	100%
2023	230 mg/L	< 2.0 mg/L	99.2%	249 mg/L	< 2.5 mg/L	99.6%

The results for Percent Removal are approximate due to Effluent BOD and TSS exceptionally low levels, rendering it unquantifiable.

Average Annual Effluent Sampling Results

Year	pH	Oil/Grease	Settleable Solids	Turbidity	Temperature	Total Ammonia	Chronic Toxicity
2022	6.7	< 1.4 mg/L	< 0.1 mL/L	0.22 NTU	23 °C		
2023	6.9	4.8 mg/L	< 0.1 mL/L	0.07 NTU	22 °C	0.15 mg/L	13.2 TUc

Chronic Toxicity is sampled once annually.

Median Annual Bacteriological Results

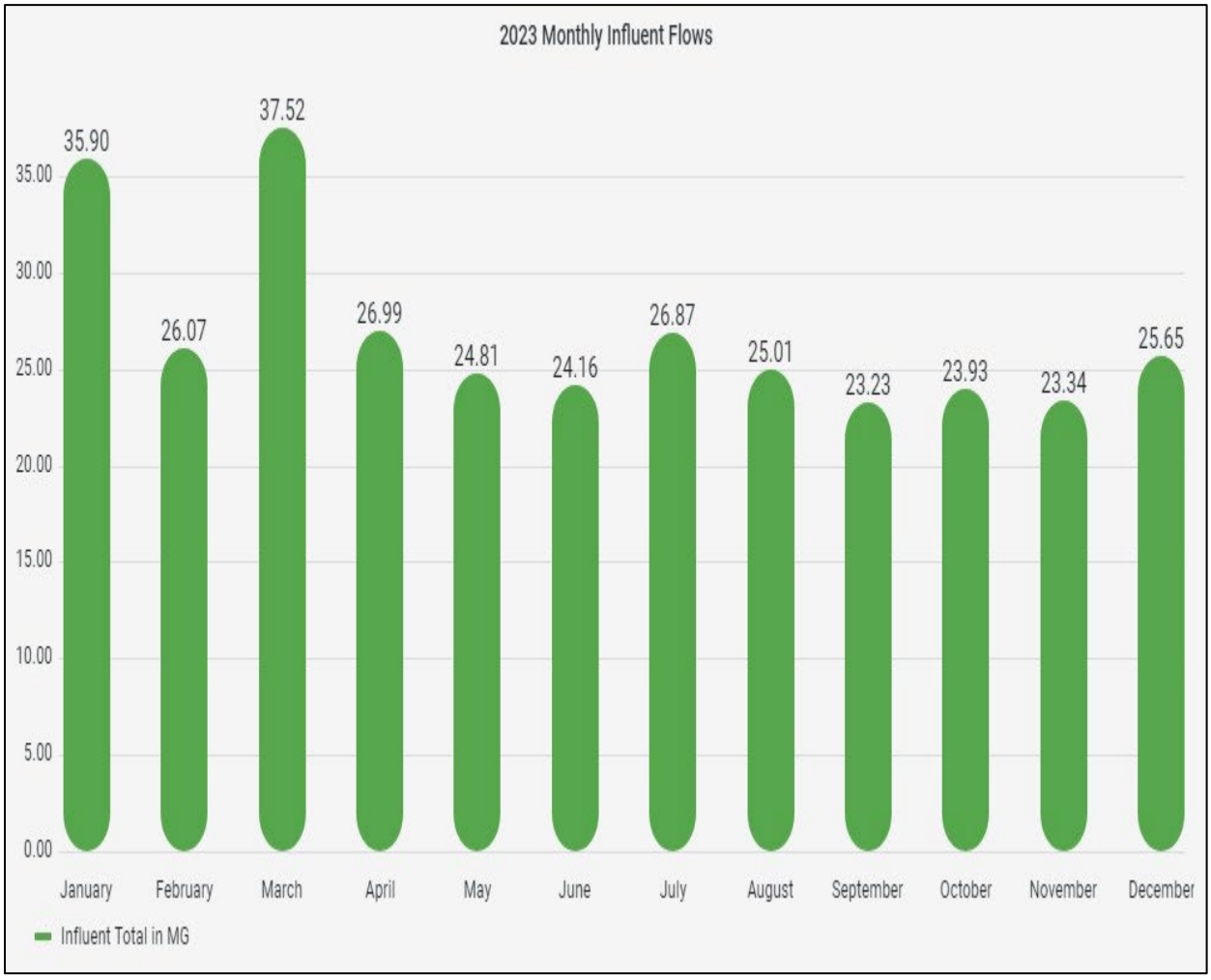
Year	Total Coliform	Fecal Coliform	Enterococcus
2022	< 2.0 MPN/100mL	< 2.0 MPN/100mL	
2023	< 2.0 MPN/100mL	< 2.0 MPN/100mL	< 1.0 MPN/100mL

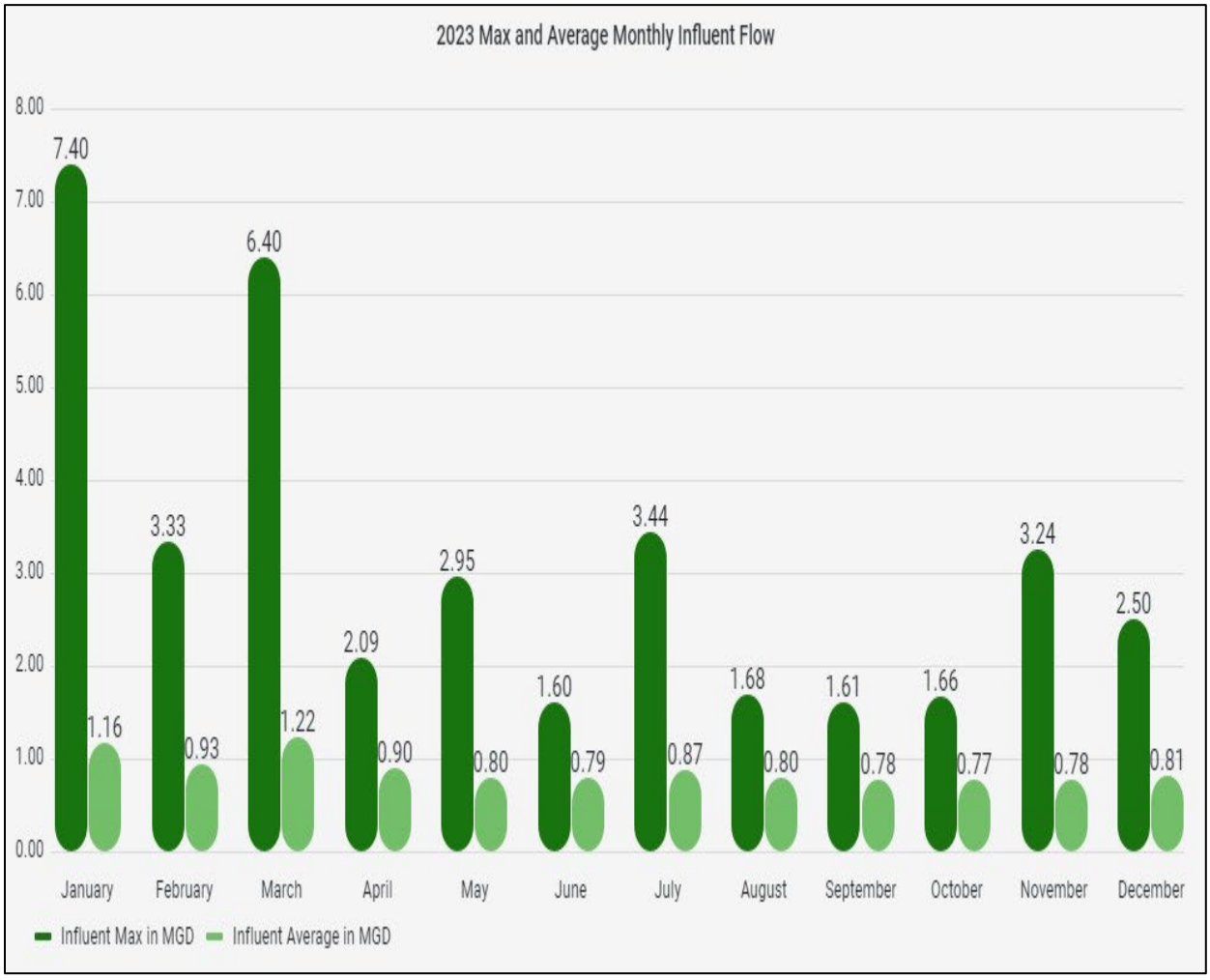
3.1 Influent Quality

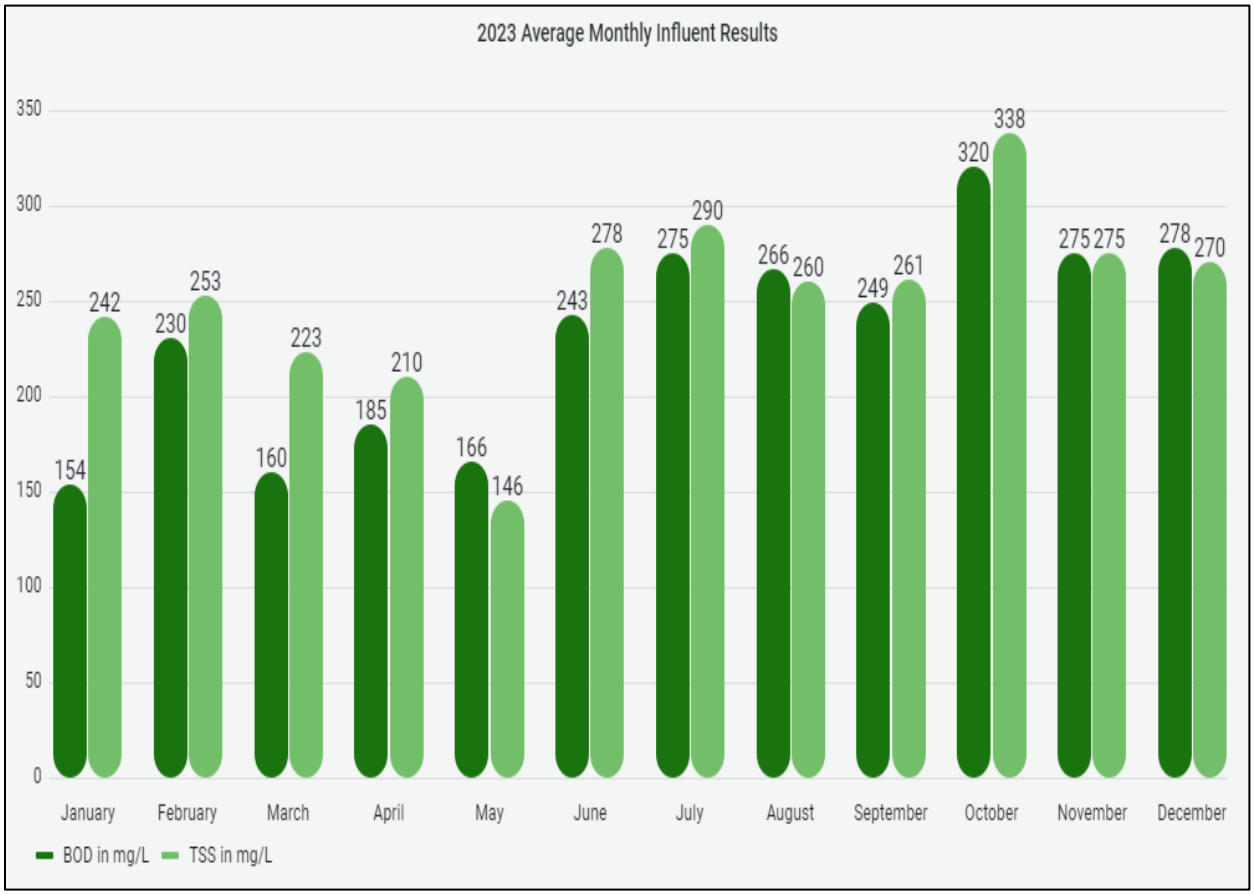
The WRC operated with an average daily influent flow of 1.16 MGD in the calendar year 2023. The maximum daily influent flow was 7.40 MGD and the total annual effluent flow was 323.48 MG. Below is a table summarizing the annual mean and total influent flow, BOD, and TSS for the 2023. Additionally, graphs depicting influent data such as total monthly flows, maximum monthly flows, and average monthly flows are provided below. Monthly graphs of influent BOD and TSS are also included for reference.

2023 Monthly Influent Flows			
Month	Total	Max	Average
January	35.90 MG	7.40 MGD	1.16 MGD
February	26.07 MG	3.33 MGD	0.93 MGD
March	37.52 MG	6.40 MGD	1.22 MGD
April	26.99 MG	2.09 MGD	0.90 MGD
May	24.81 MG	2.95 MGD	0.80 MGD
June	24.16 MG	1.60 MGD	0.79 MGD
July	26.87 MG	3.44 MGD	0.87 MGD
August	25.01 MG	1.68 MGD	0.80 MGD
September	23.23 MG	1.61 MGD	0.78 MGD
October	23.93 MG	1.66 MGD	0.77 MGD
November	23.34 MG	3.24 MGD	0.78 MGD
December	25.65 MG	2.50 MGD	0.81 MGD

2023 Average Monthly Influent Results		
Month	BOD	TSS
January	154 mg/L	242 mg/L
February	230 mg/L	253 mg/L
March	160 mg/L	223 mg/L
April	185 mg/L	210 mg/L
May	166 mg/L	146 mg/L
June	243 mg/L	278 mg/L
July	275 mg/L	290 mg/L
August	266 mg/L	260 mg/L
September	249 mg/L	261 mg/L
October	320 mg/L	338 mg/L
November	275 mg/L	275 mg/L
December	278 mg/L	270 mg/L


2023 Monthly Influent Flows
35.90
26.07
37.52
26.99
24.81
24.16
26.87
25.01
23.23
23.93
23.34
25.65
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
January
February
March
April
May
June
July
August
September
October
November
December
Influent Total in MG


2023 Max and Average Monthly Influent Flow
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
7.40
1.16
3.33
0.93
6.40
1.22
2.09
0.90
2.95
0.80
1.60
0.79
3.44
0.87
1.68
0.80
1.61
0.78
1.66
0.77
3.24
0.78
2.50
0.81
January
February
March
April
May
June
July
August
September
October
November
December
Influent Max in MGD
Influent Average in MGD


2023 Average Monthly Influent Results
350
300
250
200
150
100
50
0
154
242
230
253
160
223
185
210
166
146
243
278
275
290
266
260
249
261
320
338
275
275
278
270
January
February
March
April
May
June
July
August
September
October
November
December
BOD in mg/L
TSS in mg/L

2 Effluent Treatment

3.2.1 Preliminary Treatment

The Preliminary Treatment system includes Coarse Screens, Grit Removal, a Diversion Box leading to the Fine Screens, and Safe System. Figure 4 displays the Process Flow Diagram of the Preliminary Treatment System.

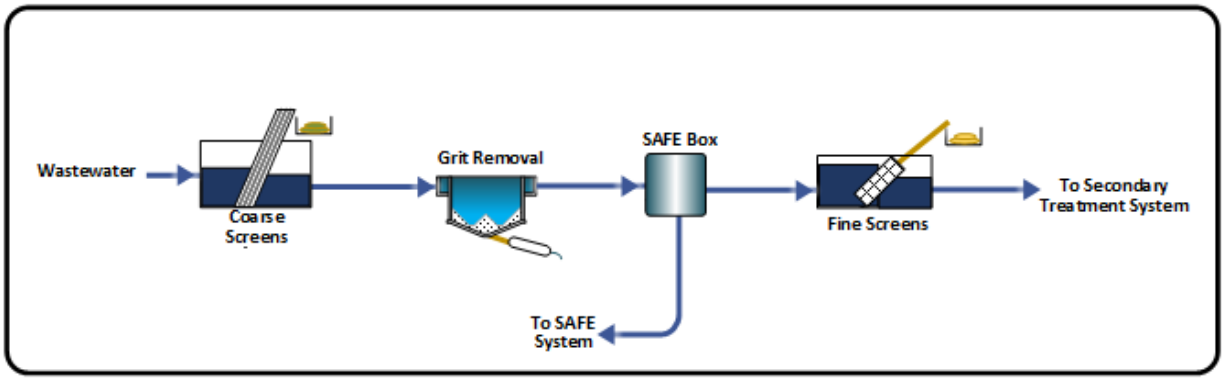


Figure 4: Preliminary Treatment Process Flow Diagram

The Headworks area receives flow from the Morro Bay sanitary sewer collection system, the Plant Sewer Pump Station, and plant return flows. Under normal flows (at or below 1.88 MGD), screened and de-gritted wastewater from the SAFE Box flows to the fine screens. Any excess flow is directed to the SAFE system via gravity. Material removed from the coarse and fine screenings, as well as the grit removal system, is transported off-site. Figure 5 provides a 3D perspective depicting the layout of the Headworks area process.

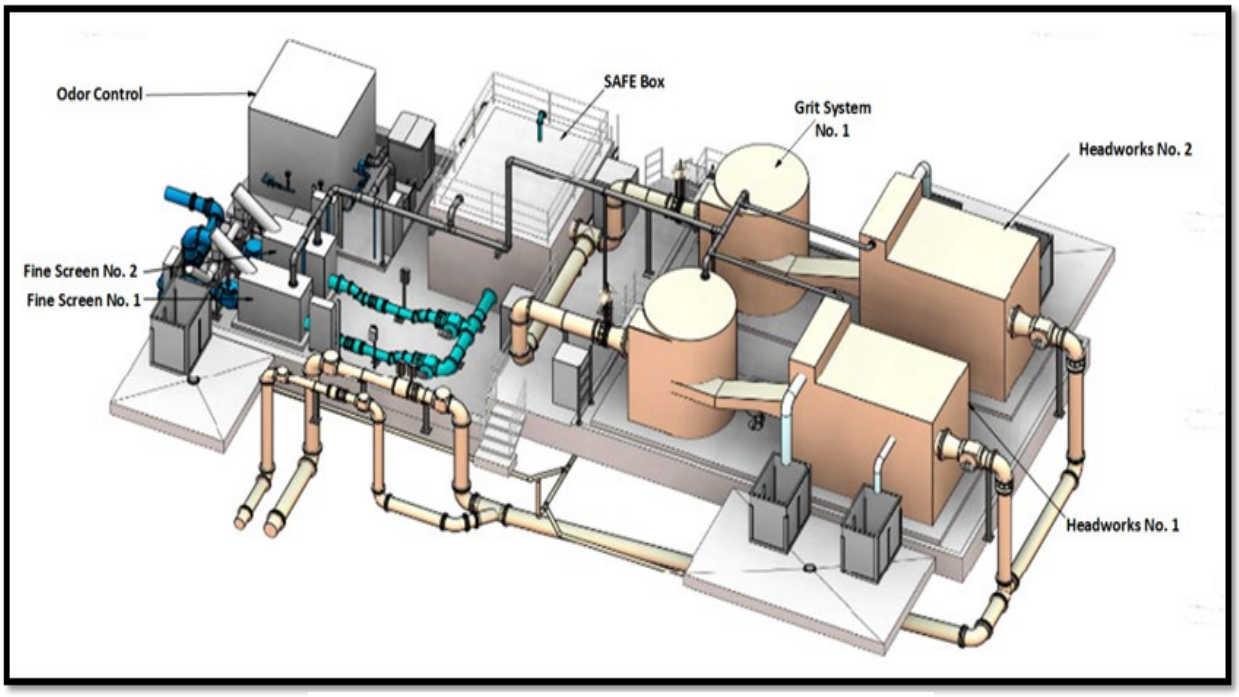


Figure 5: Headworks Diagram

3.2.2 Secondary Treatment

Following Preliminary Treatment, dissolved and colloidal solids undergo removal in the secondary treatment system. This system includes biological treatment and filtration processes. Specifically, the BNR system addresses carbon and nitrogen in the fine screened wastewater through the Ludzak-Ettinger anoxic-aerobic biological process, hereafter referred to as the BNR process.

The Secondary Treatment system comprises BNR basins, MBR tanks, aeration blowers for each, diffusers, mixers, and associated pumps. Mixed liquor from the BNR basins is pumped to the MBR system, where filtration occurs. Figure 6 displays the Process Flow Diagram of the Secondary Treatment System.

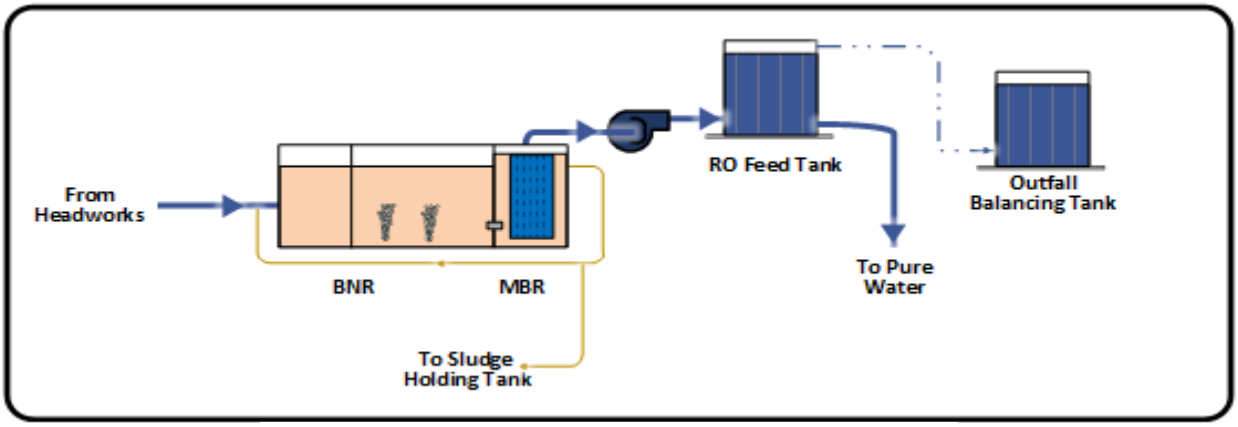


Figure 6 Secondary Treatment Process Flow Diagram

The combined BNR-MBR system produces effluent water supply suitable for feeding the RO Advanced Water System, supplying the Plant Recycled Water System, and discharging into the Ocean Outfall. Excess microorganisms or biomass, and scum are removed from the BNR process to the residuals process via the sludge holding tank (SHT). Both the BNR and MBR systems provide support for one train redundancy, capable of handling flows up to 1.88 MGD each. Figure 7 provides a 3D perspective depicting the layout of the Secondary Treatment System.

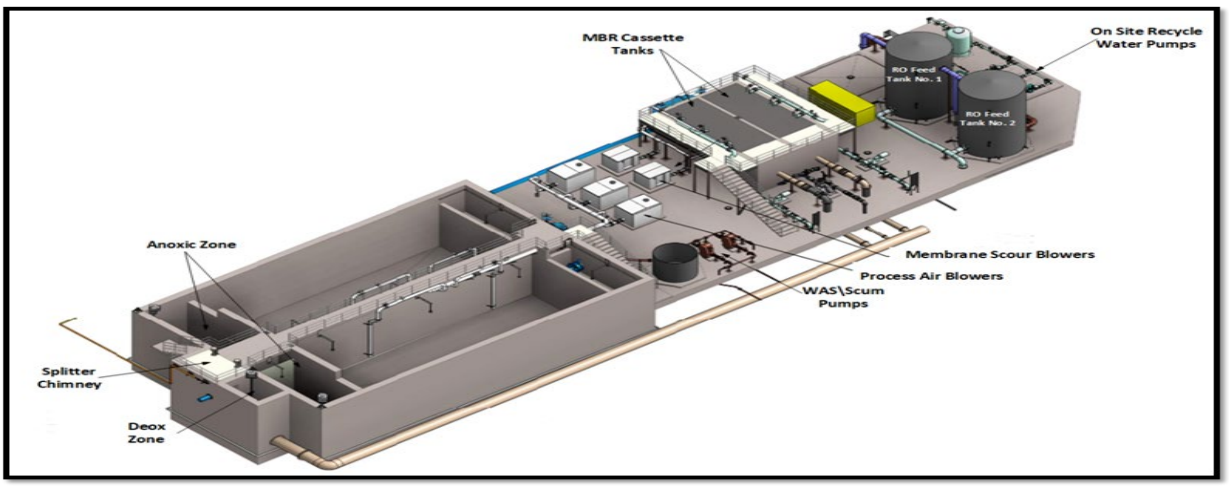


Figure 7 Secondary Treatment Diagram

3.2.4 Secondary Effluent Quality

Water from the Outfall Balancing tank undergoes disinfection in an on-site pipeline contactor and is subsequently dechlorinated at the de-chlorination station before being conveyed through the outfall transmission main to the Ocean Outfall. Sodium hypochlorite is dosed into the discharge from the Ocean Outfall pump station upstream of the outfall disinfection pipeline contactor. The ocean disinfection pipeline contactor is designed to ensure plug-flow contact volume. It is continuously sloped downward in the direction of flow towards a blowoff point at the de-chlorination station. Any settled fines or precipitants can be blown down to the plant sewer using the residual pressure in the system at that location.

The WRC operated with an average daily effluent flow of 1.15 MGD in the calendar year 2023. The maximum daily effluent flow was 6.86 MGD and the total annual effluent flow was 316.77 MG. Below is a table summarizing the annual mean and total effluent flow, BOD, and TSS for the 2023. Additionally, graphs depicting effluent data such as total monthly flows, maximum monthly flows, and average monthly flows are provided below. Monthly graphs of effluent BOD and TSS are also included for reference. The results for Settleable Solids and Bacteriological content in the effluent wasn't graphed due to its exceptionally low levels, rendering it unquantifiable.

2023 Monthly Effluent Flows

Month	Total	Max	Average
January	36.1 MG	6.86 MGD	1.15 MGD
February	23.7 MG	3.50 MGD	0.91 MGD
March	37.2 MG	5.34 MGD	1.08 MGD
April	26.9 MG	1.63 MGD	0.88 MGD
May	24.8 MG	2.29 MGD	0.78 MGD
June	23.6 MG	2.04 MGD	0.72 MGD
July	26.0 MG	2.07 MGD	0.88 MGD
August	23.9 MG	2.19 MGD	0.75 MGD
September	22.8 MG	1.90 MGD	0.73 MGD
October	23.4 MG	2.19 MGD	0.76 MGD
November	23.1 MG	2.05 MGD	0.76 MGD
December	25.4 MG	1.77 MGD	0.78 MGD

2023 Average Monthly Effluent Results

Month	BOD	TSS
January	3.9 mg/L	< 2.5 mg/L
February	2.7 mg/L	< 2.5 mg/L
March	5.1 mg/L	6.8 mg/L
April	2.4 mg/L	< 2.5 mg/L
May	< 2.0 mg/L	< 2.5 mg/L
June	< 2.0 mg/L	< 2.5 mg/L
July	< 2.0 mg/L	< 2.5 mg/L
August	< 2.0 mg/L	< 2.5 mg/L
September	< 2.0 mg/L	< 2.5 mg/L
October	< 2.0 mg/L	< 2.5 mg/L
November	< 2.0 mg/L	< 2.5 mg/L
December	< 2.0 mg/L	< 2.5 mg/L

2023 Average Monthly BOD Removal			
Month	Influent BOD	Effluent BOD	BOD % Removal
January	154 mg/L	3.93 mg/L	97.4%
February	230 mg/L	2.70 mg/L	98.8%
March	160 mg/L	5.07 mg/L	96.8%
April	185 mg/L	2.38 mg/L	98.7%
May	166 mg/L	< 2.0 mg/L	99.0%
June	243 mg/L	< 2.0 mg/L	99.7%
July	275 mg/L	< 2.0 mg/L	99.6%
August	266 mg/L	< 2.0 mg/L	99.6%
September	249 mg/L	< 2.0 mg/L	99.6%
October	320 mg/L	< 2.0 mg/L	100%
November	275 mg/L	< 2.0 mg/L	100%
December	278 mg/L	< 2.0 mg/L	100%

The results for Percent Removal are approximate due to Effluent BOD exceptionally low levels, rendering it unquantifiable.

2023 Average Monthly TSS Removal			
Month	Influent TSS	Effluent TSS	TSS % Removal
January	242 mg/L	< 2.5 mg/L	99.3%
February	253 mg/L	< 2.5 mg/L	100%
March	223 mg/L	6.83 mg/L	96.9%
April	210 mg/L	< 2.5 mg/L	99.4%
May	146 mg/L	< 2.5 mg/L	99.2%
June	278 mg/L	< 2.5 mg/L	100%
July	290 mg/L	< 2.5 mg/L	100%
August	260 mg/L	< 2.5 mg/L	100%
September	261 mg/L	< 2.5 mg/L	100%
October	338 mg/L	< 2.5 mg/L	99.8%
November	275 mg/L	< 2.5 mg/L	100%
December	270 mg/L	< 2.5 mg/L	100%

The results for Percent Removal are approximate due to Effluent TSS exceptionally low levels, rendering it unquantifiable.

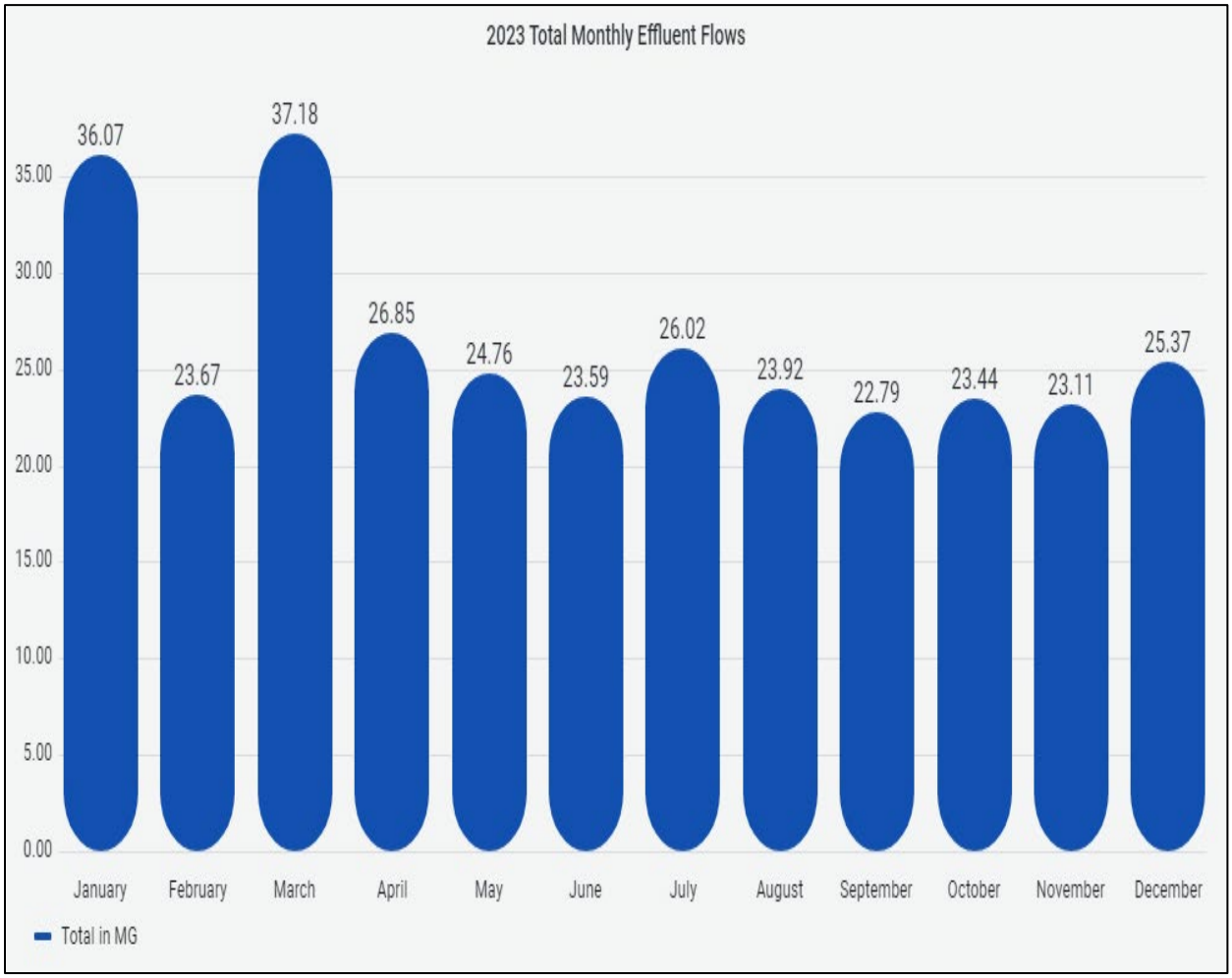
2023 Average Monthly Effluent Results

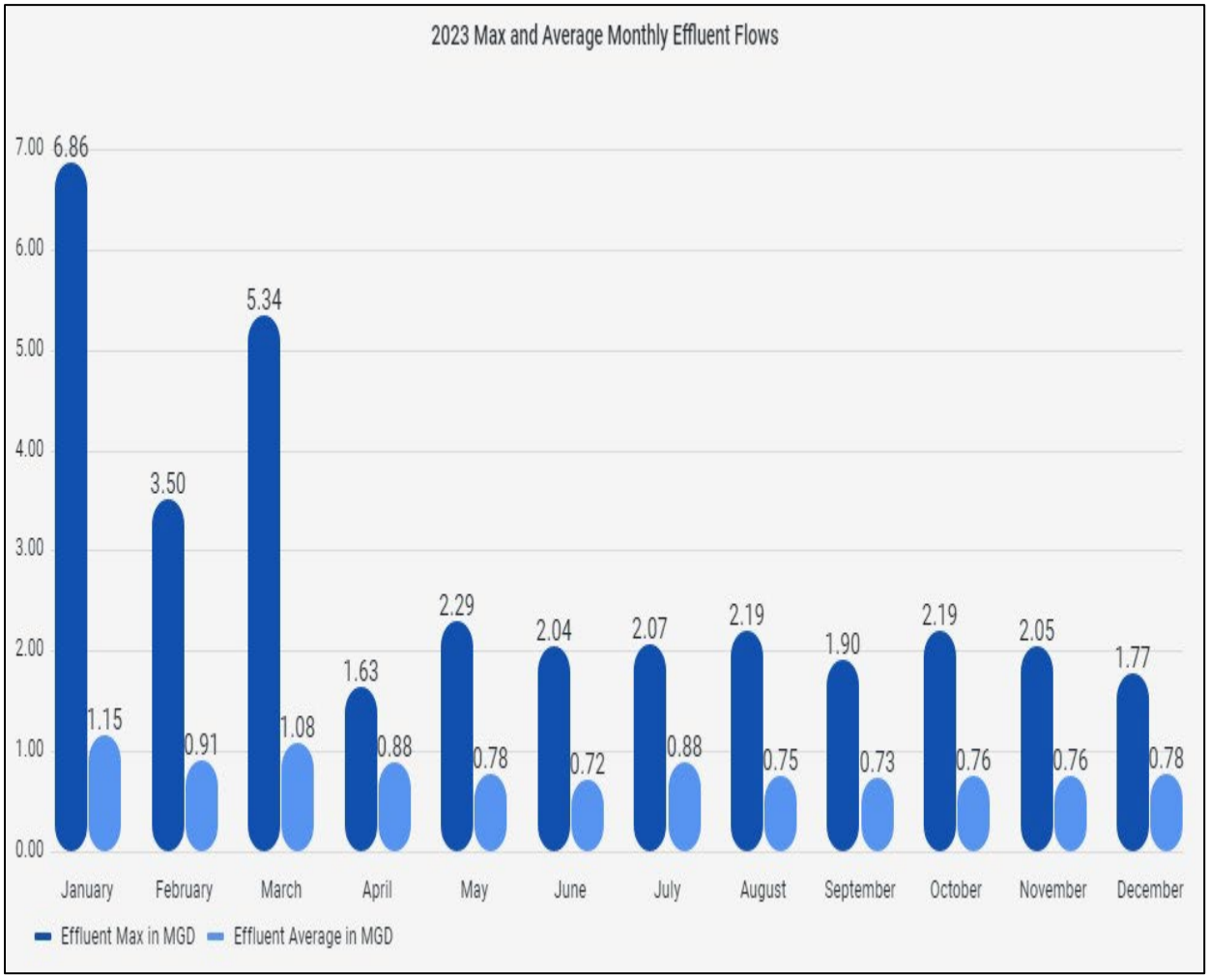
Month	pH	Oil/Grease	Settleable Solids	Turbidity
January	6.9	3.5 mg/L	< 0.1 mL/L	0.05 NTU
February	7.0	7.7 mg/L	< 0.1 mL/L	0.17 NTU
March	7.0	4.6 mg/L	< 0.1 mL/L	0.16 NTU
April	7.0	6.2 mg/L	< 0.1 mL/L	0.06 NTU
May	6.9	4.2 mg/L	< 0.1 mL/L	0.04 NTU
June	7.0	4.4 mg/L	< 0.1 mL/L	0.04 NTU
July	6.9	5.0 mg/L	< 0.1 mL/L	0.04 NTU
August	6.9	7.0 mg/L	< 0.1 mL/L	0.11 NTU
September	7.1	4.5 mg/L	< 0.1 mL/L	0.04 NTU
October	6.9	1.4 mg/L	< 0.1 mL/L	0.04 NTU
November	6.9	3.3 mg/L	< 0.1 mL/L	0.03 NTU
December	6.8	1.8 mg/L	< 0.1 mL/L	0.03 NTU

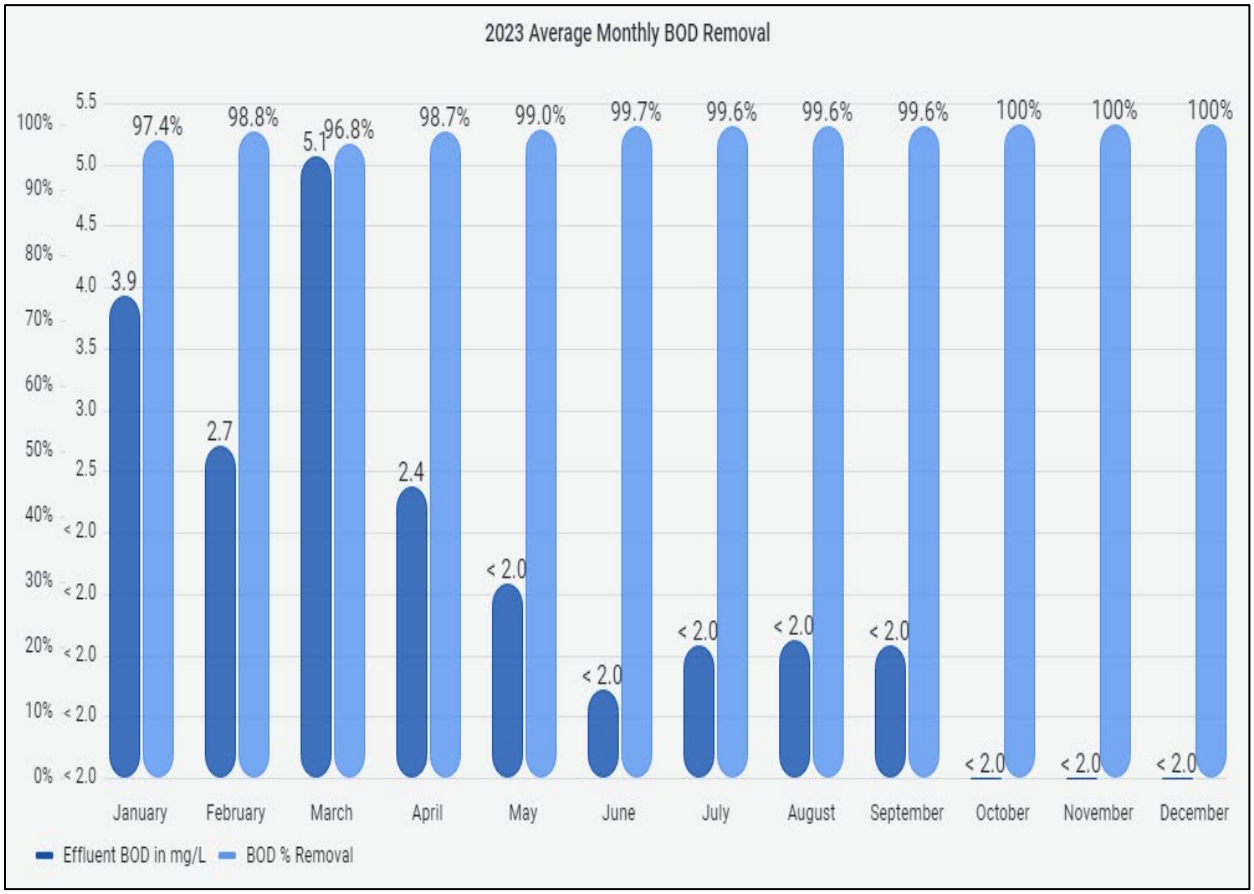
2023 Median Monthly Bacteriological Results			
Month	Total Coliform	Fecal Coliform	Enterococcus
January	< 2 MPN/100mL	< 2 MPN/100mL	< 2 MPN/100mL
February	< 2 MPN/100mL	< 2 MPN/100mL	
March	< 2 MPN/100mL	< 2 MPN/100mL	
April	< 2 MPN/100mL	< 2 MPN/100mL	< 2 MPN/100mL
May	< 2 MPN/100mL	< 2 MPN/100mL	
June	< 2 MPN/100mL	< 2 MPN/100mL	
July	< 2 MPN/100mL	< 2 MPN/100mL	< 2 MPN/100mL
August	< 2 MPN/100mL	< 2 MPN/100mL	
September	< 2 MPN/100mL	< 2 MPN/100mL	
October	< 2 MPN/100mL	< 2 MPN/100mL	< 2 MPN/100mL
November	< 2 MPN/100mL	< 2 MPN/100mL	
December	< 2 MPN/100mL	< 2 MPN/100mL	

2023 Monthly Effluent Results

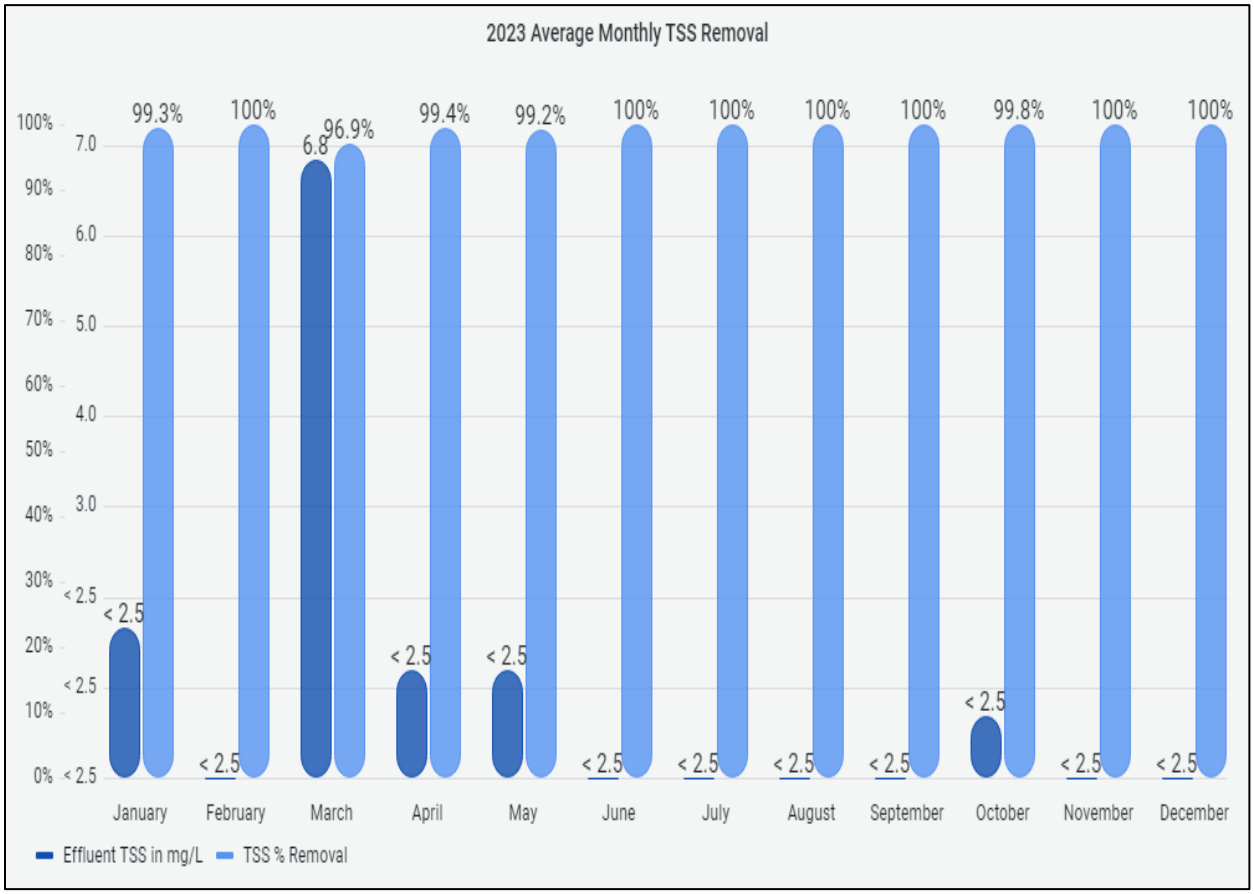
Month	Average Temperature	Average Total Ammonia	Chronic Toxicity
January	19 °C	0.13 mg/L	
February	19 °C	0.26 mg/L	
March	18 °C	0.09 mg/L	
April	20 °C	< 0.07 mg/L	
May	22 °C	< 0.07 mg/L	
June	23 °C	< 0.07 mg/L	
July	24 °C	0.20 mg/L	
August	25 °C	0.14 mg/L	
September	25 °C	0.69 mg/L	13.2 TUc
October	24 °C	0.21 mg/L	
November	22 °C	< 0.07 mg/L	
December	21 °C	0.24 mg/L	


2023 Total Monthly Effluent Flows
36.07
23.67
37.18
26.85
24.76
23.59
26.02
23.92
22.79
23.44
23.11
25.37
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
January
February
March
April
May
June
July
August
September
October
November
December
Total in MG

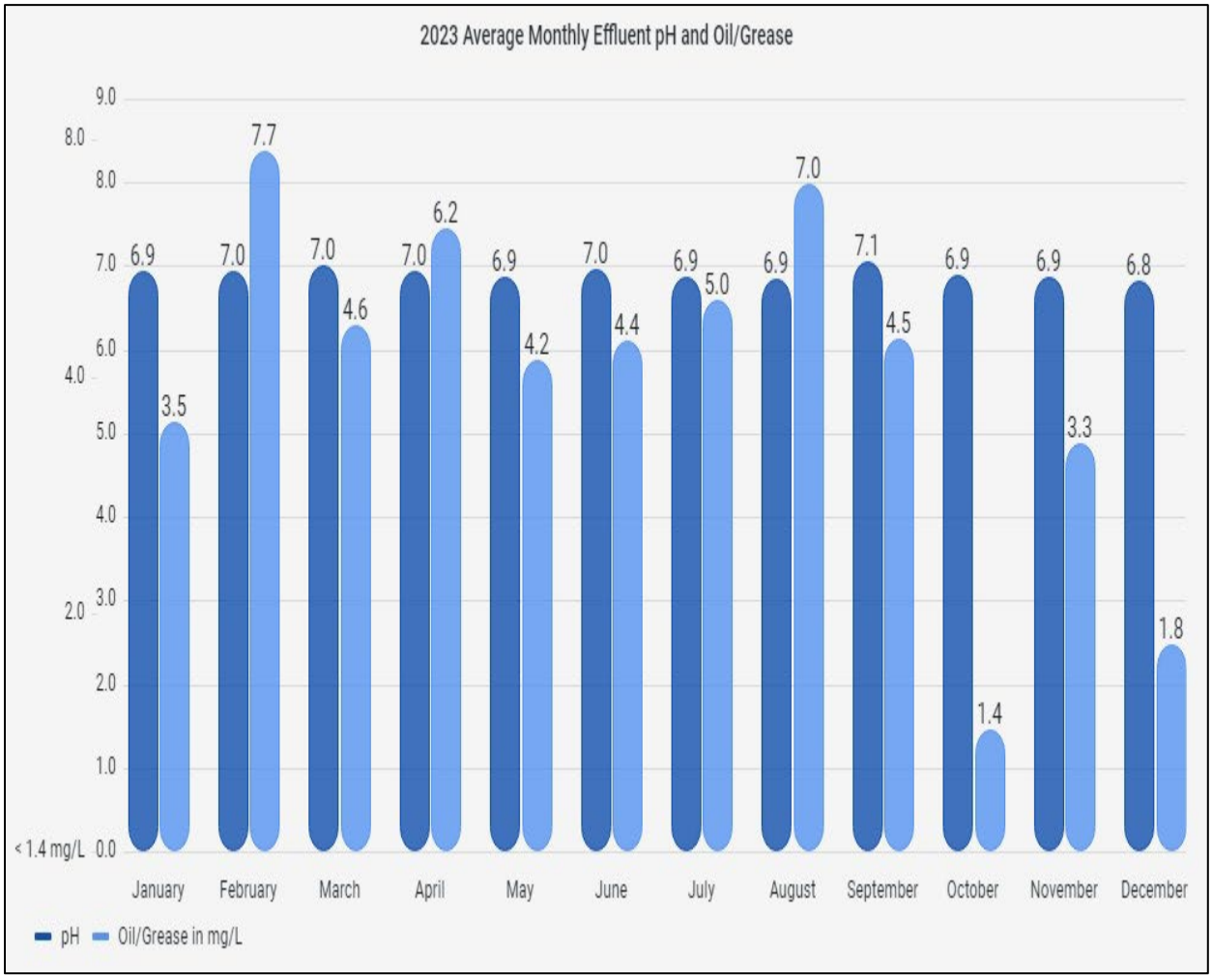

2023 Max and Average Monthly Effluent Flows
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
6.86
1.15
3.50
0.91
5.34
1.08
1.63
0.88
2.29
0.78
2.04
0.72
2.07
0.88
2.19
0.75
1.90
0.73
2.19
0.76
2.05
0.76
1.77
0.78
January
February
March
April
May
June
July
August
September
October
November
December
Effluent Max in MGD
Effluent Average in MGD

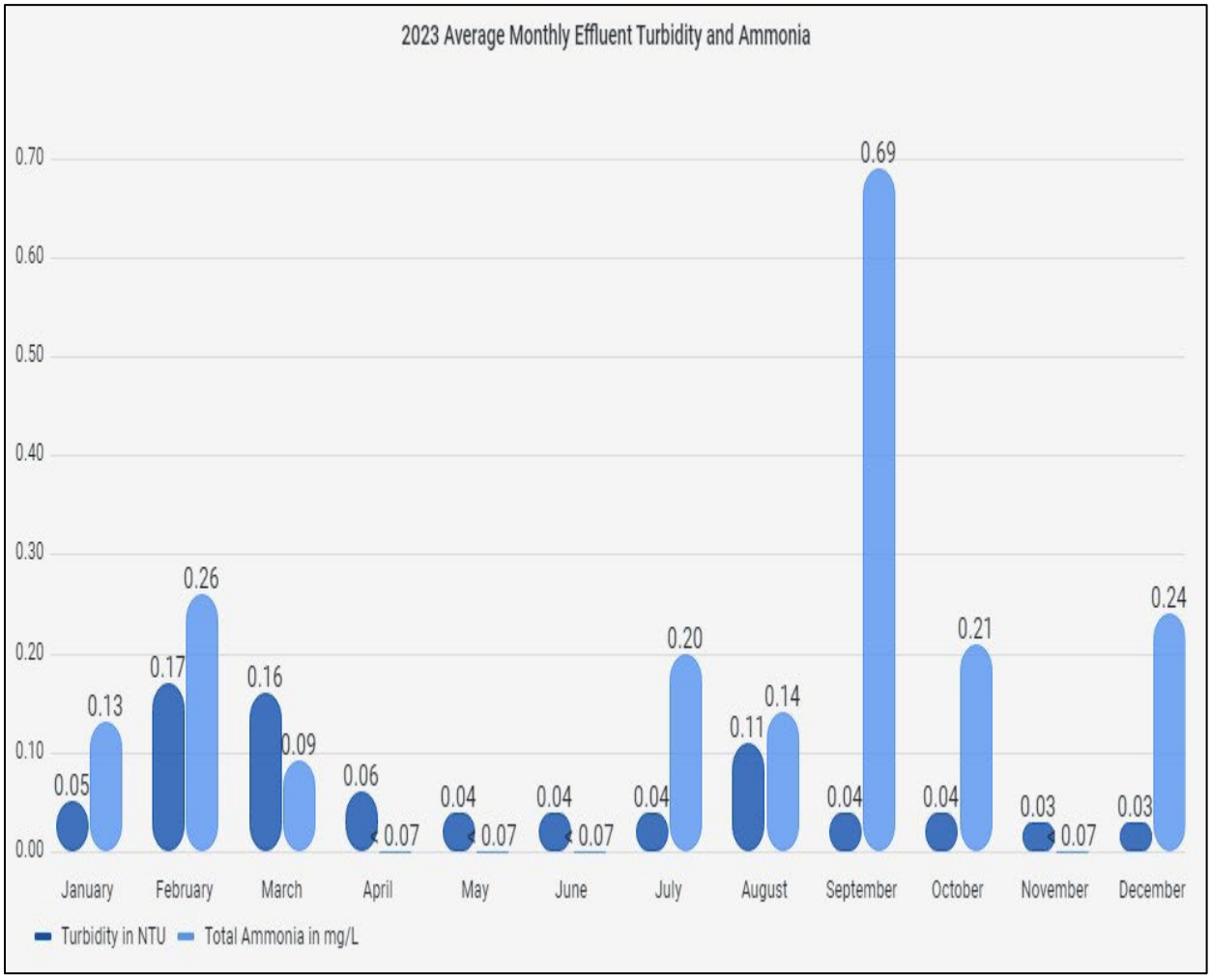


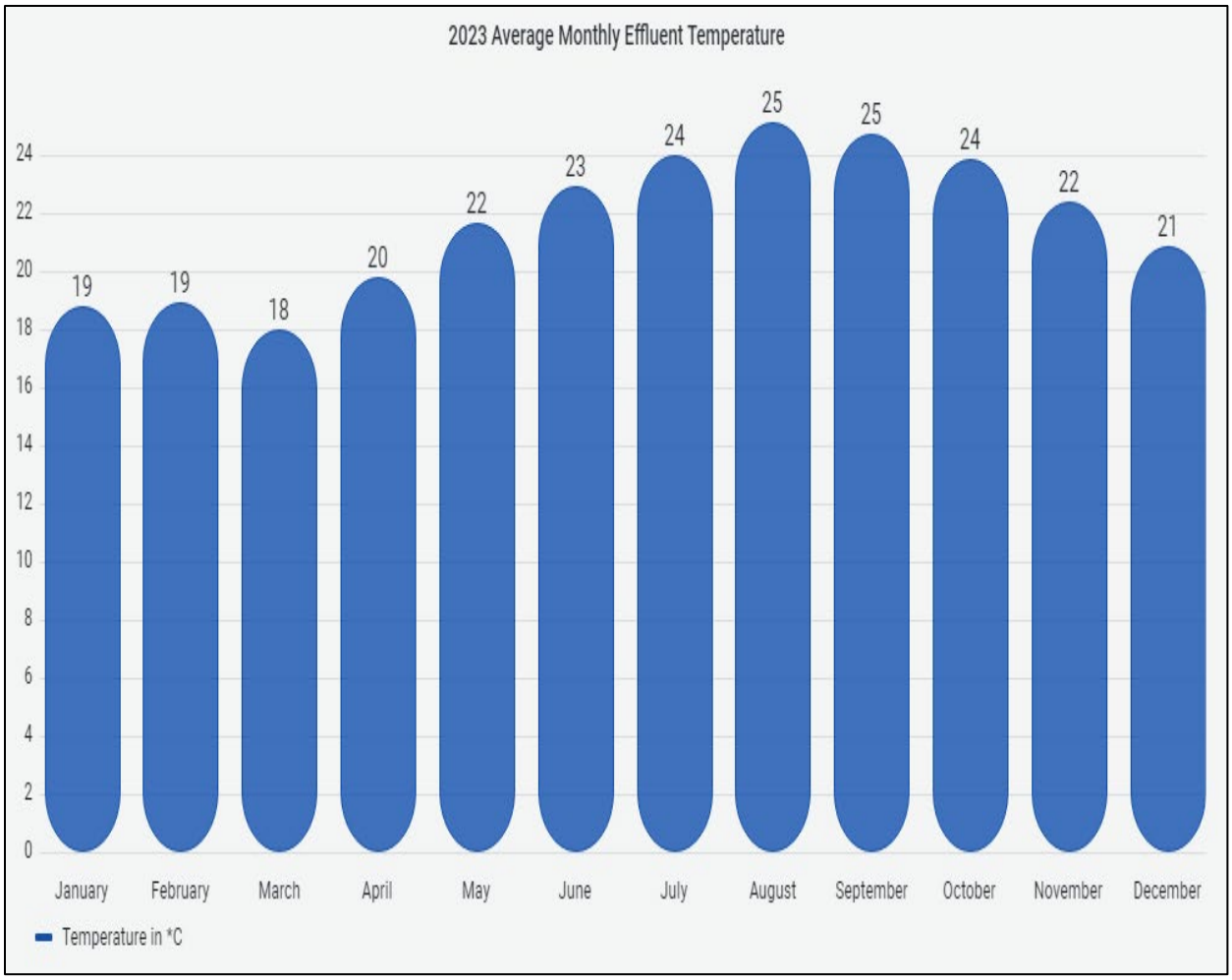
The results for Percent Removal are approximate due to Effluent BOD exceptionally low levels, rendering it unquantifiable.



The results for Percent Removal are approximate due to Effluent TSS exceptionally low levels, rendering it unquantifiable.


2023 Average Monthly Effluent pH and Oil/Grease
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
< 1.4 mg/L
6.9
3.5
7.0
7.7
7.0
4.6
7.0
6.2
6.9
4.2
7.0
4.4
6.9
5.0
6.9
7.0
7.1
4.5
6.9
1.4
6.9
3.3
6.8
1.8
January
February
March
April
May
June
July
August
September
October
November
December
pH
Oil/Grease in mg/L


2023 Average Monthly Effluent Turbidity and Ammonia
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
0.05
0.13
0.17
0.26
0.16
0.09
0.06
< 0.07
0.04
< 0.07
0.04
< 0.07
0.04
0.20
0.11
0.14
0.04
0.69
0.04
0.21
0.03
< 0.07
0.03
0.24
January
February
March
April
May
June
July
August
September
October
November
December
Turbidity in NTU
Total Ammonia in mg/L


2023 Average Monthly Effluent Temperature
0
2
4
6
8
10
12
14
16
18
20
22
24
19
19
18
20
22
23
24
25
25
24
22
21
January
February
March
April
May
June
July
August
September
October
November
December
Temperature in *C

2.3 PURE Water Treatment

The PURE Water process has successfully passed the challenge test and now runs once per week for maintenance purposes. It is presently operating but will not achieve full operational status until the next phase of the groundwater injection system is finalized. The PURE Water process includes the Reverse Osmosis (RO) and the Ultraviolet Advanced Oxidation Process (UVAOP). The RO process receives pumped flow from the RO feed tank and the RO permeate feeds the UVAOP process. The disinfected effluent flows to the Effluent Area product water storage tank via the calcite contactor. Brine from the RO process is sent to the outfall after chlorine addition. Off-spec water or purified water, if the conditions do not allow it to be sent to the product water storage tank, it is sent to the outfall balancing tank for ocean disposal. Figure 8 displays the Process Flow Diagram of the PURE Water Treatment System.

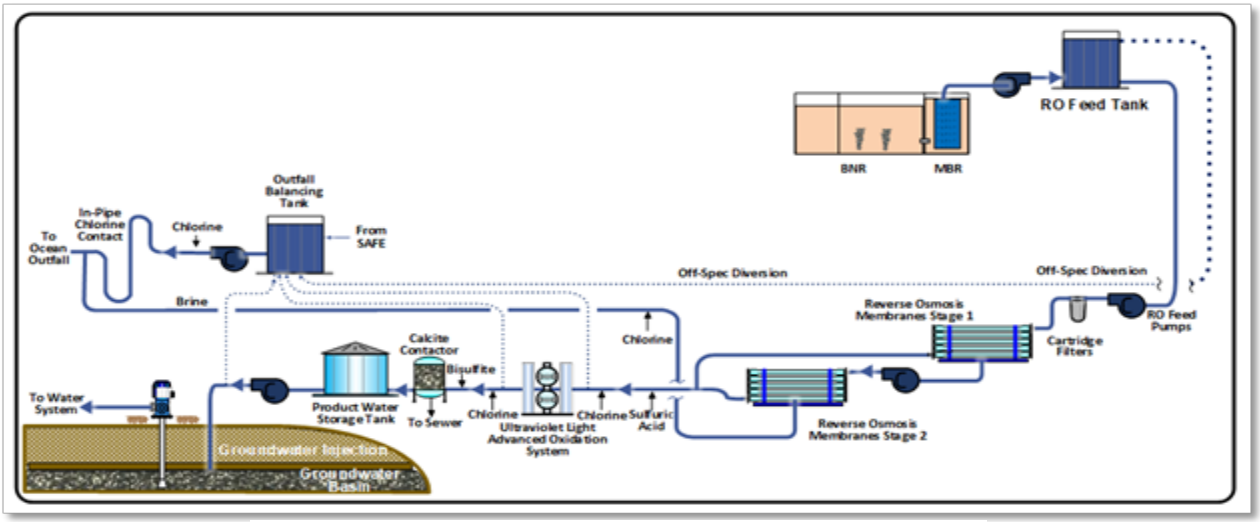


Figure 8 PURE Water Treatment Process Flow Diagram

3.2.4 Residuals Treatment

The residuals handling system removes, stores, and dewaters excess solids from the Morro Bay WRC treatment processes before they are disposed of off-site. Facilities include sludge holding tanks, a sludge dewatering system, and a stormwater adaptive filtration system (SAFE) for settling and filtering. Figure 2 is the process flow diagram of the residuals system. The solids removed by the SAFE filter system and the waste activated sludge (WAS) produced during the biological nutrient removal (BNR) process are temporarily stored in the sludge holding tanks.

The sludge collected from the sludge holding tanks and the SAFE settle tank is pumped to the belt filter press for the dewatering process. Polymer is introduced subsequent to the sludge feed pumps to treat the sludge entering the belt filter press, aiding in the release of free water during the initial dewatering phase. The belt filter press operates by using a series of rollers and belts to squeeze and separate liquids from solids. The dewatered sludge is then transferred by a screw conveyor system to a roll-off container and then transported off-site for disposal. The water extracted from the sludge during dewatering is sent back to the plant sewer for reintegration into the treatment process. Figure 9 displays the Process Flow Diagram of the Residuals Treatment System.

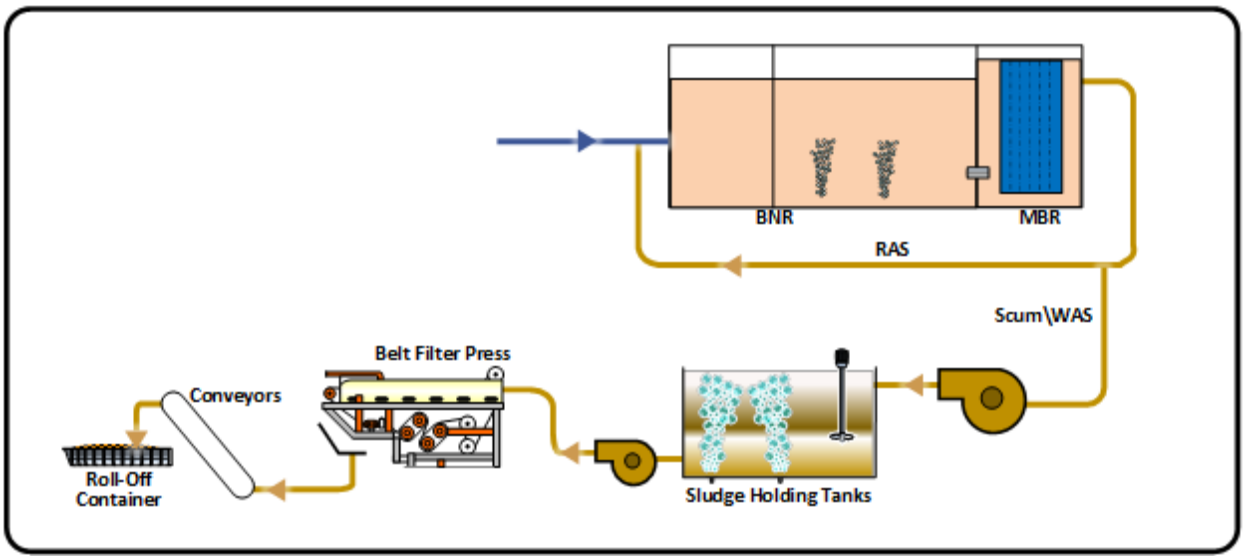


Figure 9 Residuals Treatment Process Flow Diagram

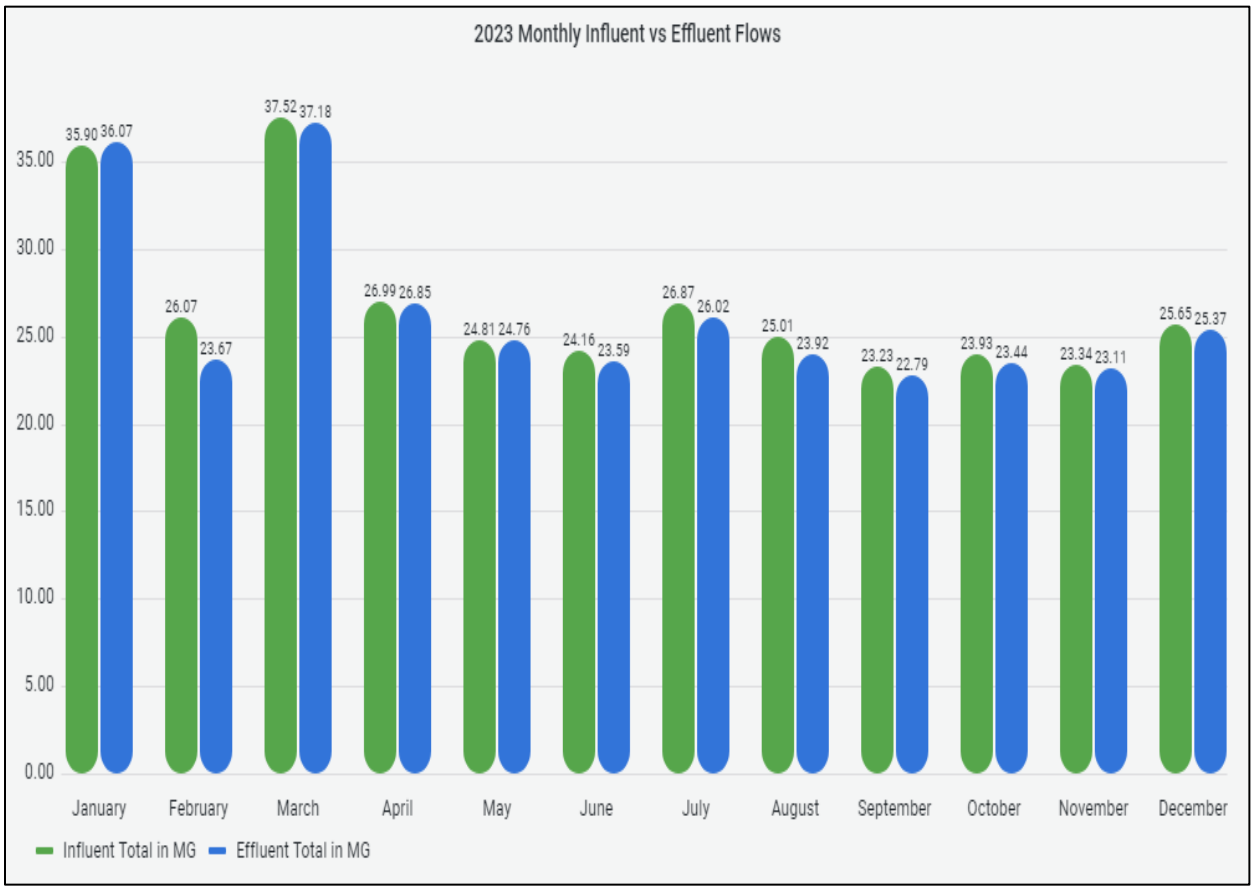
3.2.5 Biosolids Removal

Biosolids undergo dewatering directly into large roll-off containers, a process repeated 3-4 times weekly. They are then transported to the Paso Robles Landfill, typically within the same or following day. In 2023, out of the total annual tonnage of 221.35 dry metric tons of dewatered biosolids, 100 percent were delivered to the Paso Robles Landfill. No biosolids are retained on-site; all are promptly dispatched to the landfill. Biosolids mixed with wood chips are composted at the landfill and subsequently utilized as a soil amendment for covering. For further details concerning biosolids, please refer to the 2023 Annual Biosolids Report.

4. Wastewater Flows and Projected Flows

The Morro Bay WRC began receiving 100% of sewer flows on November 14th, 2022. Consequently, the flows recorded for the calendar year 2023 accurately reflect both current and projected flows. Additional flows may occur due to storm events and anticipated urban development, including the addition of hotels and residential units. As more data becomes available in subsequent years, staff will have a better opportunity to analyze flow trends. The following chart illustrates the influent and effluent flows for 2023.

2023 Monthly Influent vs Effluent Flows		
Month	Influent Total in MG	Effluent Total in MG
January	35.90	36.07
February	26.07	23.67
March	37.52	37.18
April	26.99	26.85
May	24.81	24.76
June	24.16	23.59
July	26.87	26.02
August	25.01	23.92
September	23.23	22.79
October	23.93	23.44
November	23.34	23.11
December	25.65	25.37
Annual Total	323.48	316.77


2023 Monthly Influent vs Effluent Flows
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
35.90
36.07
26.07
23.67
37.52
37.18
26.99
26.85
24.81
24.76
24.16
23.59
26.87
26.02
25.01
23.92
23.23
22.79
23.93
23.44
23.34
23.11
25.65
25.37
January
February
March
April
May
June
July
August
September
October
November
December
Influent Total in MG
Effluent Total in MG

5.0 Plant Operations, Staffing and Training

The Utilities Division oversees Wastewater Treatment, Wastewater Collection Systems, Water Treatment & Distribution, and manages a multi-certification program. The Division had 18 trained personnel operating or facilitating maintenance at the WRC in 2023. Damaris Hanson holds the position of Utility Division Manager, while Michael Wentzel serves as both the Utility Division Supervisor and the WRC's Chief Plant Operator (CPO). The Division's Utility Support Coordinator is often in contact with the public, provides clerical work and maintains records. The Division's Operational Technology Specialist installs, programs, tests, maintains, repairs, and calibrates the City's wastewater and water instrumentation, SCADA, electrical and control systems. The table below lists all operators and maintenance staff with their grades of wastewater certification.

Name	Grade	Certification No.
Alex Tapia	I	43754
Amy Mills	Utility	Support
Chad Rocha	I	43755
Damaris Hanson	Utilities	Manager
Dane Lundy	III	36547
Dylan Pruitt	II	76766
Grant Chase	Operational	Technology
James Peterson	III	38360
Jim Kelley	II	74812
John Gunderlock	V	10500
Kyle Quaglino	III	43869
Michael Wentzel	III	28463
Michael White	II	40899
Paul Valley	III	44863
Richard Fernandez	III	41341
Robert Victor	II	43756
Scott Ender	II	75451

Utilities staff attended workshops, continued education classes, and many vendor training sessions with the new equipment at the WRC. The Utilities Division is now using CJPIA, the City's insurance provider and Ally Safety videos to conduct safety training. A list of safety and technical trainings completed in 2023 are included below:

- Bites and Stings
- Close Calls
- Stop Work Authority
- AHA/PTP Forms and How To Use Them
- Workplace Violence
- Hard Hat Safety

- Back Injury Prevention
- Electrical Safety
- Safety's Hierarchy of Controls
- Falling Object Protection
- Hazard Vs. Risk
- 3 Tips for Working Alone and 811 DigAlert
- How to Evacuate
- Emergency Roles and Responsibilities
- Emergency Action Plans
- Distracted Driving and Fatigue, Road Rage, and Careless Driving
- Improper Driving Speed
- Seatbelts in Accidents
- Mindfulness at Work
- Wildfire Smoke Safety
- Driving for the Road Conditions
- Wonderware SCADA software training
- NexGen CMMS software training
- CWEA Tri-counties Workshop and Training Seminar in Paso Robles, CA
- CWEA Tri-state Seminar in Las Vegas, NV
- Veolia Membrane Users Group Conference in Mesa, AZ

The staff at WRC has organized plant tours for various groups, including the public, elected officials, and local schools such as Cal Poly and Cuesta College's Environmental Engineering classes. Participants gain insights into both the wastewater treatment process and the IPR process during these informative tours.

Due to the WRC being a new facility, the WRC was visited by several regulatory agencies, including but not limited to, RWQCB, San Luis Obispo Environmental Health Services, San Luis Obispo Air Pollution Control District, and Division of Drinking Water. The Utilities Division adheres to the regulations set forth by all of these regulatory agencies.

5.1. Operation and Maintenance

The WRC is a new facility and therefore has a new facility Operations and Maintenance (O&M) manual. The rough draft of the O&M manual was published in 2022 by the plants Design Build team Black and Veatch. The O&M manual was used as a training tool for staff during the commissioning of the new facility. Staff had the opportunity to receive training directly from the equipment vendors during the commissioning of the new facility. This valuable training provided the City staff with knowledge of how the equipment operates and how to properly maintain the equipment. Staff continues to revise the O&M manual in collaboration with design engineers and vendors to update existing procedures and develop new ones. The O&M manual underwent review and received approval on June 15, 2023. The final review took place on January 24, 2024, confirming its validity for the present facility.

The WRC utilizes NexGen, a Computerized Maintenance Management System (CMMS). This software is used to manage assets and streamline maintenance operations, enables the scheduling of preventative maintenance tasks, and facilitates the creation, assignment, and tracking of work orders. This software actively monitors aging equipment and deteriorating infrastructure in real-time, serving as a valuable tool

for budgeting purposes. NexGen further aids in regulatory compliance by managing monitoring data and tracking report due dates.

5.1.1 Safeguards to Ensure Maximum Compliance

The new WRC facility was designed with a Stormwater Adaptive Filtration Equipment (SAFE) system that includes a 100,000-gallon holding tank\equalization tank prior the cloth media filter. The SAFE System uses cloth media filtration to provide side stream treatment of peak flows that is blended with MBR system effluent that is discharged to the ocean outfall. The SAFE Box, located near headworks, receives flow from the grit removal system. Influent flows exceeding the MBR treatment capacity, 1.88 MGD, overflows the box to the SAFE settle tank. The tank is located west of the MBR and on the south end of the solids holding structure. The SAFE settle tank captures and equalizes peak event flows ahead of the SAFE Filter. Smaller peak flow events will not completely fill the tank and therefore would not go to the SAFE filter. Water from these events is pumped back to the headworks for treatment when plant flows have decreased.

The Collection System has two new lift stations that are responsible for directing flow to the WRC. The lift stations were designed and constructed with holding tanks that allow flow to the WRC to be temporarily decreased or stopped if there were a failure at the facility. The holding tank capacity at Pump Station A is approximately 75,000 gallons and the holding tank at Pump Station B is approximately 12,000 gallons.

The WRC is equipped with a stand-by generator that is capable to suppling sufficient power to the treatment plant in the event of a utility power loss to keep it operational. However, the generator is not sized to power the Advanced Water Treatment (AWT) system used for the Indirect Potable Reuse (IPR), it was deemed as non-essential during a power outage. The stand-by generator is controlled by an Automatic Transfer Switch (ATS) that automatically switches the WRC to back-up power during a power outage. The stand-by generator and ATS was fully tested and commissioned by the equipment supplier and is routinely maintained by San Luis Powerhouse.

The City faces a risk of flooding from storms and tsunamis due to its coastal proximity. Consequently, the new WRC facility has been relocated to a site outside the flood plain, aiming to minimize its vulnerability to catastrophic failure resulting from flooding. Additionally, the new stormwater SAFE system has been engineered to redirect heavy stormwater Inflow and Infiltration (I&I) away from the biological treatment process, thus mitigating the risk of overflows and biological washout during stormwater inundation. Furthermore, the treatment plant has been designed with nearly complete equipment redundancy to avert overflows or bypasses stemming from equipment failures.

If the water quality fails to meet groundwater injection standards, the WRC will be capable of discharging effluent to the ocean outfall. The Indirect Potable Reuse (IPR) system incorporates various online equipment and analyzers to monitor water quality, capable of rejecting any non-compliant water. Staff has been collaborating with design engineers and vendors to conducting system testing and developing procedures to guarantee its correct operation. Staff continues to actively engage in this process to ensure the system's effectiveness and reliability.

5.2. Laboratory for monitoring compliance

The laboratory utilized for compliance monitoring is Oilfield Environmental & Compliance (OEC), which holds certification from the state of California Environmental Lab Accreditation Program (ELAP). OEC is identified by an EPA ID #CA01480, ELAP #2438, and NELAP #TNI02666. OEC performs outfall compliance monitoring for the WRC. Should a parameter exceed the reporting limit, OEC promptly notifies the Utilities Division Supervisor via phone and email.

In-house process control lab tests are performed by a licensed operator using standard methods. The test results serve as a basis for process control. Additionally, in-house monitoring equipment is calibrated in accordance with the manufacturer's recommendations. In 2023, the WRC Laboratory achieved 100 percent acceptable results in the ERA's Water Proficiency Study (WP-339) for pH, Total Chlorine Residual, and Turbidity.

6.0 Local Source Control Program

The Utilities Division expanded the City Sewer Use Ordinance in January 2021 creating an industrial pretreatment and pollutant source control program (enhanced source control program). Because the WRC treats less than 1 million gallons per day (MGD) of wastewater and because the City previously had no known Significant Industrial Users (SIUs), the City was not required to have an Industrial Pretreatment Program (IPP) in the past. However, per Title 22, potable water reuse systems regardless of size or number of industries must administer and maintain an Enhanced Source Control Program (ESCP). The primary function of an ESCP is to prevent interference and pass-through of pollutants at the WWTP, thus protecting the effluent, biosolids, and environment; and to protect drinking water quality by controlling the discharge of contaminants of Concern to the wastewater that might impact the production of purified water from an advanced water purification facility.

Developing a formal program with State approval under the National Pretreatment Program would obligate the City to fully establish all six elements and to perform and maintain all activities set up during program development. Submitting the City's IPP for formal approval would obligate the City to meet strict requirements and undergo ongoing oversight by the RWQCB for each of the six program elements. Because implementation of a formal program exceeds what is reasonably needed by the City, the IPP and ESCP were developed. Although developed separately, the IPP and ESCP together constitute a full program that includes all pretreatment program elements to sufficiently protect the WRC and Advanced Water Purification without imposing an unnecessary and substantial burden on the City that would come with a formalized program.

In 2023, the Utilities Division held a combined count of 12 active Class G permits users alongside 2 permits designated for Significant Industrial Users (SIUs). Over the course of the year, Morro Bay city personnel conducted Fats, Oils, and Grease (FOG) inspections at 57 restaurants and 10 industrial users.

Kitzman's Culligan Water's initial Special Industrial User (SIU) permit was issued and effective on February 21, 2023, and is subject to annual review and renewal. Culligan has implemented a Storage Tank system to equalize flow and collect and blend all process water streams generated from the facility (excluding sanitary wastewater). This system ensures that the discharge remains within effluent limitations with a maximum daily waste stream discharge of 2700 gallons to the City's Ocean Outfall line. Monitoring includes a continuous flow meter to measure discharge flow, a turbidity monitor to assess suspended particle levels in the waste stream, and a sampling station equipped with an automatic composite sampler to obtain representative compliance samples from the equalization system.

Mission Linen Supply's initial Special Industrial User (SIU) permit was issued on May 25, 2022, and became effective on May 25, 2023, due to equipment delays. The permit is subject to annual review and renewal. Mission Linen has implemented a Storage Tank system to equalize flow and collect and blend all process water streams generated from the facility (excluding sanitary wastewater). This system allows pretreatment through a Shaker Screen and a clarifier designed for removing Fat, Oils, and Grease (FOG) and aid in lowering the Biological Oxygen Demand of the waste stream discharged to the City's Sanitary Sewer. Monitoring includes a continuous flow meter to measure discharge flow, a pH meter for controlling the acidity or alkalinity of the waste stream prior to discharge, and a sampling station with an automatic composite sampler to obtain representative compliance samples from the pretreatment system.

6.1 Summary of Morro Bay Pretreatment Program Elements

The City of Morro Bay is committed to regulatory compliance, ensuring strict adherence to federal, state, and local regulations pertaining to wastewater pretreatment. The City of Morro Bay's Wastewater Pretreatment Program includes key elements, listed below.

6.1.1 Industrial Waste Survey (IWS)

Undertaking surveys to evaluate the nature and quantity of industrial waste produced within the jurisdiction is instrumental in formulating robust pretreatment strategies and regulatory frameworks. In this regard, an Industrial Waste Survey (IWS) was undertaken to pinpoint and delineate all Industrial Users (IUs) situated within the City's sewer basin, whose wastewater discharge could potentially influence the WRC. As an integral component of the IWS initiative, a comprehensive inventory of industrial sectors and non-domestic commercial establishments was compiled, accompanied by procedural guidelines for the City's ongoing maintenance and updating of this registry.

6.1.2 Sewer Use Ordinance (SUO)

Formulating regulations and protocols to oversee the utilization of the municipal sewer network encompasses directives on specific discharges to be prohibited and prerequisites for pretreatment by industrial entities. The SUO, delineated within Chapter 13.12 of the Morro Bay Municipal Code (MBMC), underwent revisions, and was ratified by the City Council in 2021. This action was taken to bestow legal jurisdiction upon the City to execute, administer, and uphold all aspects of the IPP.

6.1.3 Enforcement Response Plan (ERP)

Developing a structured plan outlining the procedures and actions to be taken in response to violations of pretreatment regulations ensures consistency and fairness in enforcement actions. Therefore, an ERP was devised to furnish guidelines for the investigation and handling of instances where IUs fail to comply with regulations. The ERP serves as a framework for the City to enforce IU compliance in a standardized fashion, drawing upon the City's legal mandates and the requirements set forth in the SUO. It delineates procedures for enforcement actions and outlines a graduated approach to enforcement, contingent upon the severity and nature of the noncompliance. An ERP was developed to provide procedures for investigating and responding to instances of Industrial Users noncompliance. The ERP gives the City a basis for enforcing IU noncompliance in a consistent manner. It is based on the City's legal authorities and IU

requirements established in the SUO. The ERP provides guidelines for enforcement steps and escalating enforcement steps depending on the nature of the noncompliance.

6.1.4 Industrial Discharge Limits

Establishing precise thresholds regarding the concentration or quantity of contaminants that industrial users are authorized to release into the sewer infrastructure is essential to safeguard water purity and uphold the integrity of the treatment procedures. The formulation of industrial discharge limits is aimed at safeguarding Morro Bay's Publicly Owned Treatment Works (POTW) and preserving the potential beneficial applications of the treated water. These limits, incorporated within Section 13.12.200.C of the City's SUO, delineate discharge prerequisites applicable to all industrial entities and non-domestic dischargers within the designated service region. While not formally designated as Local Limits, these restrictions are technically established based on pertinent criteria.

6.1.5 IU Permitting Procedures

Implementing and adhering to protocols for granting permits to industrial users involves delineating the application process, prerequisites, and stipulations for permit approval. The development of permitting procedures for IUs aims to regulate non-domestic discharges originating from enterprises that possess the potential to adversely affect the POTW. These procedures encompass a comprehensive spectrum of activities, including permit application submissions, city assessments, inspections, classification of permit categories, permit formulation, renewal procedures, and the assessment of permit fees.

6.1.6 Industrial Monitoring and Reporting Program

After an IU permit is issued, it's crucial to diligently adhere to the specified routine monitoring and reporting requirements outlined within the permit to assess compliance with pretreatment standards through regular monitoring and reporting of industrial discharges. Varied monitoring requisites are contingent upon the permit classes and types of industrial users. The Industrial Monitoring and Reporting Program encompasses self-monitoring by the IUs themselves as well as oversight by the city to ensure compliance.

6.1.7 Recordkeeping

It is imperative to maintain meticulous records of monitoring, sampling, permitting, enforcement actions, and other pertinent information to ensure regulatory compliance and facilitate program evaluation. The recordkeeping section provides the City with guidance on which records are important to keep and update. It includes a list of documents relevant to the IPP that should be maintained and also includes recordkeeping requirements for IUs.

6.1.8 Fats, Oils, and Grease (FOG) Control Program

Enforcing measures to regulate the release of fats, oils, and grease into the sewer system is essential for safeguarding infrastructure integrity, preventing blockages, and averting Sanitary Sewer Overflows (SSOs). The City's updated FOG Control Program is included in sections 13.12.700 through 13.12.795 of the SUO (Appendix B).

6.1.9 Outreach and Public Participation

An Outreach Program has been developed to communicate with industrial, commercial, and residential dischargers for the purpose of managing and minimizing the discharge of COCs to the POTW including the WRC. The Outreach Program includes various actions that the City may take to educate and inform its stakeholders including keeping the website up to date, providing an informational brochure, and hosting periodic meetings. The Do's & Don'ts section of the City of Morro Bay's website provides current Best Management Practices for Fats, Oils and Grease, Dental floss, Cloth, Baby wipes, Rubber gloves, Medical Wastes, Medications, Cat litter, Photo chemicals, and Solvent disposal and the importance of avoiding its introduction into the collection system https://morrobayca.gov/331/Dos-Donts.

Other public-outreach endeavors by the City of Morro Bay include its involvement in the collection of household hazardous wastes (HHW). Beginning in August 2000, the MBCSD collaborated with the Integrated Waste Management Authority to establish a permanent household hazardous-waste collection facility, situated at the old WWTP, located at 160 Atascadero Road. The collection facility offers free waste disposal to all residents of San Luis Obispo County every Saturday from 11:00 a.m. to 3:00 p.m., except holiday weekends. The facility remains one of the top waste-disposal sites in the county in terms of the volume of material collected.

6.1.10 Program Resources and Funding

Securing financial resources is necessary for program implementation, including operational costs, infrastructure upgrades, and compliance monitoring. The City must have sufficient resources and qualified personnel to carry out its IPP. A Funding and Resources Report was developed to help the City address the financial and staffing needs of the IPP. The report contains a cost estimate which includes required staff hours, equipment, and lab fees, and it considers the number and type of IUs discharging to the POTW.

Signatory and certification requirement

I certify under penalty of that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

_____

Damaris Hanson
Utilities Division Manager
City of Morro Bay