

**NOTICE OF REGULAR MEETING  
OF THE  
SOUTH ORANGE COUNTY WASTEWATER AUTHORITY**

**ENGINEERING COMMITTEE  
TELECONFERENCE MEETING**

**TELECONFERENCE PHONE NUMBER: (213) 279-1455  
TELECONFERENCE ID: 392 391 900**

**October 8, 2020**

**8:30 a.m.**

NOTICE IS HEREBY GIVEN that a Regular Meeting of the South Orange County Wastewater Authority (SOCWA) Engineering Committee was called to be held by Teleconference on **October 8, 2020 at 8:30 a.m.** SOCWA staff will be present and conducting the call at the SOCWA Administrative Office located at 34156 Del Obispo Street, Dana Point, California. This meeting is being conducted via Teleconference pursuant to the California Governor Executive Order N-29-20.

*MEMBERS OF THE PUBLIC ARE INVITED TO PARTICIPATE IN THIS TELECONFERENCE MEETING AND MAY JOIN THE MEETING VIA THE TELECONFERENCE PHONE NUMBER AND ENTER THE ID CODE. THIS IS A PHONE CALL MEETING AND NOT A WEB-CAST MEETING SO PLEASE REFER TO AGENDA MATERIALS AS POSTED WITH THE AGENDA THE WEB-SITE [WWW.SOCWA.COM](http://WWW.SOCWA.COM). ON YOUR REQUEST, EVERY EFFORT WILL BE MADE TO ACCOMMODATE PARTICIPATION. IF YOU REQUIRE ANY SPECIAL DISABILITY RELATED ACCOMMODATIONS, PLEASE CONTACT THE SOUTH ORANGE COUNTY WASTEWATER AUTHORITY SECRETARY'S OFFICE AT (949) 234-5452 AT LEAST SEVENTY-TWO (72) HOURS PRIOR TO THE SCHEDULED MEETING TO REQUEST DISABILITY RELATED ACCOMMODATIONS. THIS AGENDA CAN BE OBTAINED IN ALTERNATE FORMAT UPON REQUEST TO THE SOUTH ORANGE COUNTY WASTEWATER AUTHORITY'S SECRETARY AT LEAST SEVENTY-TWO (72) HOURS PRIOR TO THE SCHEDULED MEETING.*

*AGENDA EXHIBITS AND OTHER WRITINGS THAT ARE DISCLOSABLE PUBLIC RECORDS DISTRIBUTED TO ALL, OR A MAJORITY OF, THE MEMBERS OF THE SOUTH ORANGE COUNTY WASTEWATER AUTHORITY ENGINEERING COMMITTEE IN CONNECTION WITH A MATTER SUBJECT FOR DISCUSSION OR CONSIDERATION AT AN OPEN MEETING OF THE ENGINEERING COMMITTEE ARE AVAILABLE BY PHONE REQUEST MADE TO THE AUTHORITY ADMINISTRATIVE OFFICE AT 949-234-5452. THE AUTHORITY ADMINISTRATIVE OFFICES ARE LOCATED AT 34156 DEL OBISPO STREET, DANA POINT, CA ("AUTHORITY OFFICE"). IF SUCH WRITINGS ARE DISTRIBUTED TO MEMBERS OF THE ENGINEERING COMMITTEE LESS THAN SEVENTY-TWO (72) HOURS PRIOR TO THE MEETING, THEY WILL BE SENT TO PARTICIPANTS REQUESTING VIA EMAIL DELIVERY. IF SUCH WRITINGS ARE DISTRIBUTED IMMEDIATELY PRIOR TO, OR DURING, THE MEETING, THEY WILL BE AVAILABLE IMMEDIATELY ON VERBAL REQUEST TO BE DELIVERED VIA EMAIL TO REQUESTING PARTIES.*

**AGENDA**

- 1. Call Meeting to Order**
- 2. Public Comments**

*THOSE WISHING TO ADDRESS THE ENGINEERING COMMITTEE ON ANY ITEM LISTED ON THE AGENDA WILL BE REQUESTED TO IDENTIFY AT THE OPENING OF THE MEETING AND PRIOR TO THE CLOSE OF THE MEETING. THE AUTHORITY REQUESTS THAT YOU STATE YOUR NAME*

*WHEN MAKING THE REQUEST IN ORDER THAT YOUR NAME MAY BE CALLED TO SPEAK ON THE ITEM OF INTEREST. THE CHAIR OF THE MEETING WILL RECOGNIZE SPEAKERS FOR COMMENT AND GENERAL MEETING DECORUM SHOULD BE OBSERVED IN ORDER THAT SPEAKERS ARE NOT TALKING OVER EACH OTHER DURING THE CALL.*

**3. Approval of Minutes**

- Engineering Committee Meeting of August 13, 2020

**Recommended Action:**

Staff recommends the Engineering Committee to approve Minutes of August 13, 2020 as submitted

**4. Operations Report**

**Recommended Action:**

Information Item

**5. Capital Improvement Construction Projects Report**

**Recommended Action:**

Information Item

**6. San Juan Creek Ocean Outfall Junction Structure Rehabilitation Update [Project Committee 5]**

**Recommended Action:**

Staff requests that the Engineering Committee recommend to the PC-5 Board to award the amendment to Filanc contract in the amount of \$916,164 for the Phase II construction work for a total contract amount of \$1,041,572.

**7. Regional Treatment Plant Cogeneration System Update [Project Committee 17]**

**Recommended Action:**

Information Item

**8. Aliso Creek Air Valve Replacement Update [Project Committee 21]**

**Recommended Action:**

Staff recommends the Engineering Committee recommend to the PC 21 Board to approve the Aliso Creek Effluent Transmission Main Design Project to Tetra Tech for \$79,800.

**9. Coastal Treatment Plant Reconfiguration Feasibility Study Update [Project Committee 15]**

**Recommended Action:**

Information Item

**Adjournment**

I hereby certify that the foregoing Notice was personally emailed or mailed to each member of the SOCWA Engineering Committee at least 72 hours prior to the scheduled time of the Regular Meeting referred to above.

I hereby certify that the foregoing Notice was posted at least 72 hours prior to the time of the above-referenced Engineering Committee meeting at the usual agenda posting location of the South Orange County Wastewater Authority and at [www.socwa.com](http://www.socwa.com).

Dated this 2<sup>nd</sup> day of October 2020.



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Betty Burnett, General Manager/Secretary  
SOUTH ORANGE COUNTY WASTEWATER AUTHORITY

**MINUTES OF REGULAR MEETING  
OF THE  
SOUTH ORANGE COUNTY WASTEWATER AUTHORITY  
Engineering Committee**

**DRAFT**

**August 13, 2020**

The Regular Meeting of the South Orange County Wastewater Authority (SOCWA) Engineering Committee Meeting was held on August 13, 2020, at 8:30 a.m. at their Administrative Offices located at 34156 Del Obispo Street, Dana Point, California. The following members of the Engineering Committee were present:

MARC SERNA	South Coast Water District
DON BUNTS	Santa Margarita Water District
MIKE MARQUIS	City of San Juan Capistrano
BOBBY YOUNG	El Toro Water District
MIKE DUNBAR	Emerald Bay Service District [exited 9:11 a.m.]
ROD WOODS	Moulton Niguel Water District
HANNAH JOHNSON	City of Laguna Beach
KEVIN BURTON	Irvine Ranch Water District
LORRIE LAUSTEN	Trabuco Canyon Water District
DAVE REBENS DORF	City of San Clemente

**Staff Present:**

JASON MANNING	Director of Engineering
DAVID BARANOWSKI	Senior Engineer
RONI YOUNG	Associate Engineer
AMBER BAYLOR	Director of Environmental Compliance
JIM BURROR	Director of Operations [arrived 8:43 am.]
JEANETTE COTINOLA	Contracts/Procurement Administrator
DANITA HIRSH	Executive Assistant

**Also Present:**

DENNIS ERDMAN	South Coast Water District
TARYN KJOSLING	South Coast Water District
JOE McDIVITT	South Coast Water District
DENNIS CAFFERTY	El Toro Water District
NEELY SHAHBAKHTI	El Toro Water District
MATT COLLINGS	Moulton Niguel Water District
JESUS GARIBAY	Moulton Niguel Water District

**1. Call Meeting to Order**

Mr. Manning, Director of Engineering called the meeting to order at 8:30 a.m.

**2. Public Comments**

None

**3. Operations Status Report**

Mr. Burror reported that SOCWA staff is meeting with Moulton Niguel Water District (MNWD) next week to discuss the AWT improvements needed due to the delay of the AWT No. 2 Rehabilitation Project. He noted the estimated costs are \$200k to \$300k, and that the pond

valves and gates are also in need of overhaul. He stated they were not shown in the drawings for the AWT No. 2 Rehabilitation Project, and that he would be getting prices for overhaul of the valves and gates for the upcoming AWT meeting with MNWD.

This was an Information item; no action was taken.

**4. Use Audit Flow and Solids Methodology - Annual Update FY 19-20**

Ms. Baylor reported that SOCWA was in its third year of transparency of the Use Audit Methodology. She stated several comments were received from Moulton Niguel and South Coast Water District as detailed in the emailed responses to member agencies. She stated that the primary focus of actions related to PC12 are efficiencies related to compliance with the permit and quality control associated with the review of data and reporting to the SDRWQCB as the best measure for PC-12 for the fiscal year. An open discussion ensued.

**ACTION TAKEN**

The Engineering Committee recommended to the Board of Directors to approve the staff recommendations in the Use Audit staff report.

**5. Capital Improvement Construction Projects Report**

Mr. Manning reported the design of the PC-15 Sludge Force Main should be completed by the end of the month, and then will go out to bid. He stated the Coastal Development Permit (CDP) hearing for the application extension that was schedule for August go pushed out to September, and that once the extension is approved the permit would be issued.

Mr. Manning reviewed the change order reports with the committee and noted there was one change order on the CTP Facility Improvements project for PC-15. Noting that due to the change in the SCE's standards on the type of Transformer Slab Box that could be installed having a cost impact of \$4,378. An open discussion ensued.

**ACTION TAKEN**

The PC-15 members concurred in support for change order 8 totaling \$4,378 and recommendation to the Board of Directors for ratification.  
The Moulton Niguel Water District representative abstained.

**6. Innovative Biosolids Update (Project Committee's 2 & 17)**

Mr. Manning reported that there were three responses resulting from the Request For Proposals sent to five potential vendors. The responders were sent a list of additional questions, but unfortunately the process was slowed down due to the economic circumstances of the Coronavirus. He stated that, when the group last met, there was a recommendation to hold separate PC-2 and PC-17 meetings to discuss further details, and asked the Committee members to opine as to whether that was still direction the members would like to take. An open discussion ensued.

**ACTION TAKEN**

The PC-2 and PC-17 members concurred to scheduling a separate meeting to discuss in detail the moving the Innovative Biosolids project forward with PC 2 and PC 17.

PC-2	PC-17
Mike Marquis (CSJC)	Bobby Young (ETWD)
Marc Serna (SCWD)	Mike Dunbar (EBSD)
Rod Woods (MNWD)	Hannah Johnson (CLB)
Don Bunts (SMWD)	Rod Woods (MNWD)
	Marc Serna (SCWD)

7. **San Juan Creek Ocean Outfall Junction Structure Rehabilitation (Project Committee 5) Update**

Mr. Manning gave a presentation detailing the status and historical data of the San Juan Creek Ocean Outfall Junction Structure Rehabilitation Project. The presentation is pages 13 through 22 of the agenda packet. An open discussion ensued.

This was an Information item; no action was taken.

There being no further business, Mr. Manning adjourned the meeting at 9:44 a.m.

I HEREBY CERTIFY that the foregoing Minutes are a true and accurate copy of the Minutes of the Regular Meeting of the South Orange County Wastewater Authority Engineering Committee of August 13, 2020, and approved by the Engineering Committee and received and filed by the Board of Directors of the South Orange County Wastewater Authority.

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Betty Burnett, General Manager/Secretary  
SOUTH ORANGE COUNTY WASTEWATER AUTHORITY

# Agenda Item

5

**Engineering Committee Meeting**

**Meeting Date:** October 8, 2020

**TO:** Engineering Committee  
**FROM:** Jason Manning, Director of Engineering  
**SUBJECT:** Capital Improvement Construction Projects Report

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## **Overview**

### *Active Construction Project Updates:*

Attached are the updated CIP reports. Please note that there no new change orders to present this month.

As a reminder, Change Orders within the project contingency for open construction contracts are presented in this report and then to the Board of Directors. This is an accordance with the current purchasing policy, the change order procedure update provided to Engineering Committee in November 2019 and the contingencies approved by the Board in December 2019.

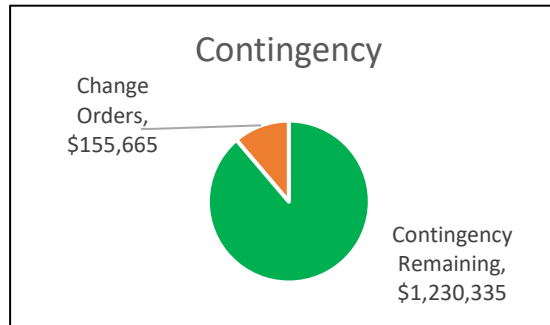
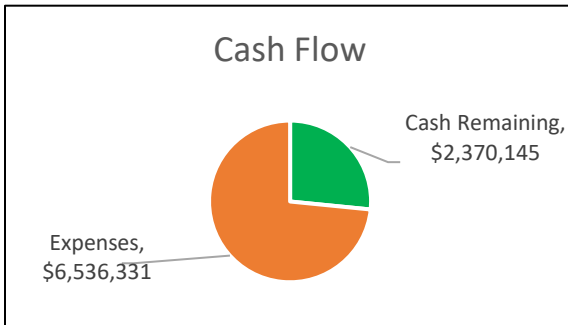
**Recommended Action:** Informational only.

**Project Financial Status**

**Data Last Updated**

October 1, 2020

Project Committee	2
Project Name	Package B
Project Description	Plant 1 basin repairs, DAF rehabilitation, Energy Building seismic retrofit and minor rehabilitation, Digester 4 rehabilitation



**Cash Flow**

Collected	\$8,906,476
Expenses	\$6,536,331

**Project Completion**

Schedule	51%
Budget	28%

**Contracts**

Company	PO No.	Original	Change Orders	Total	Paid
Olsson	13497	\$ 17,325,000	\$ 155,665	\$ 17,480,665	\$4,255,989
Butier	13647	\$ 1,055,325	\$ -	\$ 1,055,325	\$584,168
Carollo	13616	\$ 846,528	\$ -	\$ 846,528	\$538,823
TetraTech	13605	\$ 94,000	\$ -	\$ 94,000	\$81,837
		<b>\$ 19,320,853</b>	<b>\$ 155,665</b>	<b>\$ 19,476,518</b>	<b>\$5,460,816</b>

**Contingency**

Area	Project Code	Amount	Change Orders	Total Remaining	Percent Used
Liquids	3220-000	\$ 616,800	\$ 35,048	\$ 581,752	6.0%
Common	3231-000	\$ 96,800	\$ -	\$ 96,800	0.0%
Solids	3287-000	\$ 672,400	\$ 120,617	\$ 551,783	21.9%
		<b>\$ 1,386,000</b>	<b>\$ 155,665</b>	<b>\$ 1,230,335</b>	<b>12.7%</b>



**Change Orders**

Change Order No.	Vendor Name	Project ID	Description	Status	Status Date	Potential Change Amount	Final Amount
1	Olsson	3287-000	Addition of Loop Piping to the Existing Hot Water Lines Adjacent to Digester 3	Approved by Board of Directors	12/12/2019		\$ 4,725
2	Olsson	3287-000	Asbestos Gaskets in Boiler hazardous disposal	Approved by Board of Directors	6/4/2020		\$ 6,343
3	Olsson	3287-000	Add Analog Infrastructure and Cabling	Approved by Board of Directors	6/4/2020		\$ 37,970
4	Olsson	3287-000	Digester 4 Coating Additional Sealant	Approved by Board of Directors	6/4/2020		\$ 24,002
5	Olsson	3220-000	Valve Handwheel Ergonomic extension	Approved by Board of Directors	8/6/2020		\$ 16,370
6	Olsson	3287-000	Change to DeZurik Plug Valves to match existing	Approved by Board of Directors	8/6/2020		\$ 41,994
7	Olsson	3287-000	Digester 4 Additional Concrete Repair	Approved by Board of Directors	8/6/2020		\$ 7,413
8	Olsson	3287-000	Repair Existing Damaged Electrical Box	Approved by Board of Directors	8/6/2020		\$ (1,829)

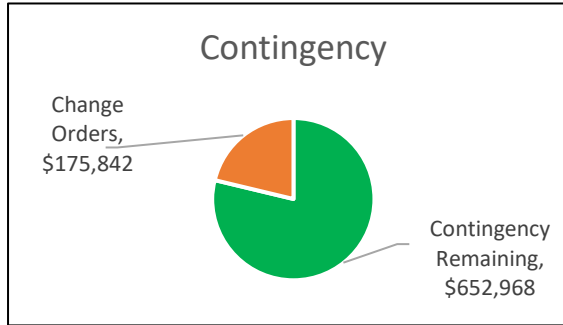
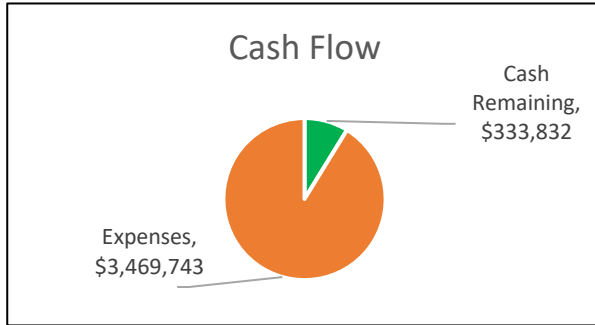
Change Order No.	Vendor Name	Project ID	Description	Status	Status Date	Potential Change Amount	Final Amount
9	Olsson	3220-000	Change the Telescoping Valve Boxes and Piping from Carbon Steel to Stainless Steel	Approved by Board of Directors	8/6/2020		\$ 18,678
PCO 002	Olsson	3287-000	Digester 4 Rail Coating. The coating is not needed and resulting in a credit but some rehabilitation work will be needed.	Potential Change	(blank)	-\$1,000	
PCO 004	Olsson	3287-000	Digester 4 Control Narrative needed	Potential Change	(blank)	\$5,000	
PCO 005	Olsson	3287-000	TWAS Slab Modifications	Potential Change	(blank)	\$50,000	
PCO 006	Olsson	3287-000	Digester 4 Tank Repair	Potential Change	(blank)	\$34,800	
PCO 007	Olsson	3287-000	Relocation of MCC-F1	Potential Change	(blank)	\$40,000	
PCO 008	Olsson	3287-000	Conduit Routing Conflict from MCC-F1	Potential Change	(blank)	\$15,000	
PCO 009	Olsson	3287-000	PLC East Headworks Integration	Potential Change	(blank)	\$5,000	
PCO 012	Olsson	3287-000	PCL-CG Integration	Potential Change	(blank)	\$5,000	
PCO 014	Olsson	3287-000	Digester 4 Compressor Supply Line	Potential Change	(blank)	\$18,146	

Change Order No.	Vendor Name	Project ID	Description	Status	Status Date	Potential Change Amount	Final Amount
PCO 018	Olsson	3287-000	Duct bank L Interferences	Potential Change	(blank)	\$5,000	
PCO 019	Olsson	3287-000	Duct bank O Interferences	Potential Change	(blank)	\$1,687	
PCO 021	Olsson	3287-000	Duct bank J Interferences	Potential Change	(blank)	\$20,000	
PCO 026	Olsson	3287-000	Gas Hatch Lids Mating Connection	Potential Change	(blank)	\$7,771	
PCO 028	Olsson	3287-000	4" Gas Line Routing Modifications	Potential Change	(blank)	\$18,147	
PCO 029	Olsson	3287-000	Digester 3/4 PLC Relocation	Potential Change	(blank)	\$41,368	
PCO 032	Olsson	3287-000	Gas Mixer Conduit Conflict	Potential Change	(blank)	\$12,384	
PCO 035	Olsson	3220-000	Duct bank K Interferences	Potential Change	(blank)	\$15,568	
Grand Total						\$293,871	\$ 155,665

**Data Last Updated**  
October 1, 2020

**Project Financial Status**

Project Committee	15
Project Name	Facility Improvements
Project Description	New ferric chloride system, new collection equipment in East Sedimentation basins, concrete repair, structural improvements, new switchgear and numerous electrical upgrades



**Cash Flow**

Collected	\$3,803,575
Expenses	\$3,469,743

**Project Completion**

Schedule	63%
Budget	31%

**Contracts**

Company	PO No.	Original	Change Orders	Total	Paid
PCL	13751	\$ 9,209,000	\$ 175,842	\$ 9,384,842	\$2,733,473
Butier	13647	\$ 812,288	\$ -	\$ 812,288	\$386,958
Hazen & Sawyer	13648	\$ 490,484	\$ -	\$ 490,484	\$194,521
		<b>\$ 10,511,772</b>	<b>\$ 175,842</b>	<b>\$ 10,687,614</b>	<b>\$3,314,951</b>

**Contingency**

Area	Project Code	Amount	Change Orders	Total Remaining	Percent Used
Liquids	3539-000	\$ 828,810	\$ 175,842	\$ 652,968	26.9%
		<b>\$ 828,810</b>	<b>\$ 175,842</b>	<b>\$ 652,968</b>	<b>26.9%</b>

**Change Orders**

Change Order No.	Vendor Name	Project ID	Description	Status	Status Date	Potential Change Amount	Final Amount
1	PCL	3539-000	Additional Potholing	Approved by Board of Directors	8/6/2020		\$ 22,936
2	PCL	3539-000	Gas Line Replacement	Approved by Board of Directors	8/6/2020		\$ 41,006
3	PCL	3539-000	Main Switchgear Building Underground Conflicts	Approved by Board of Directors	8/6/2020		\$ 8,683
4	PCL	3539-000	Mud Valve Bolt Removal	Approved by Board of Directors	8/6/2020		\$ 6,577
5	PCL	3539-000	Additional Anchor Bolt Removal	Approved by Board of Directors	8/6/2020		\$ 15,271
6	PCL	3539-000	Slide Gate Concrete Repair	Approved by Board of Directors	8/6/2020		\$ 3,396
7	PCL	3539-000	Sludge Collector Wear Strips	Approved by Board of Directors	8/6/2020		\$ 5,304
8	PCL	3539-000	SCE Transformer Slab Box	Approved by Board of Directors	9/3/2020		\$ 4,378
9	PCL	3539-000	Duct Bank 5 Buried Utility Conflicts	Approved by Board of Directors	10/1/2020		\$ 32,224
10	PCL	3539-000	Telescoping Valve Modifications	Approved by Board of Directors	10/1/2020		\$ 36,067
PCO 006	PCL	3539-000	Additional Pothole Paving	Potential Change	(blank)	\$5,000	
PCO 013	PCL	3539-000	Ferric Containment Foundation	Potential Change	(blank)	\$15,000	
PCO 015	PCL	3539-000	RAS Channel Modification Descope	Potential Change	(blank)	-\$2,000	

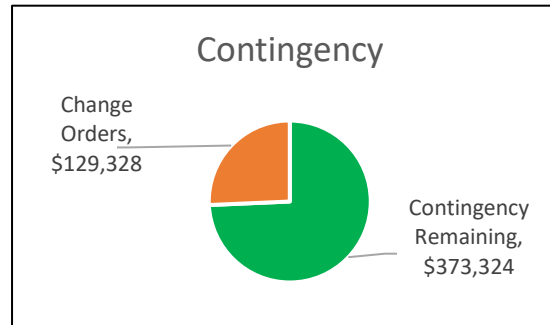
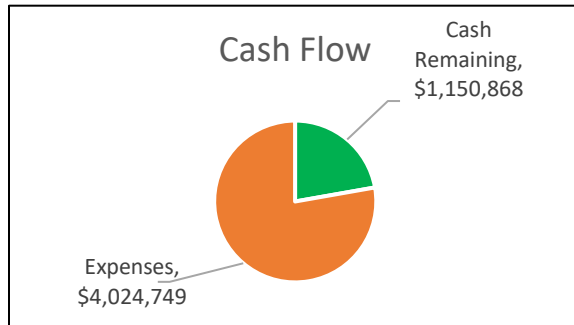
Change Order No.	Vendor Name	Project ID	Description	Status	Status Date	Potential Change Amount	Final Amount
PCO 016	PCL	3539-000	Spray Water Piping Replacement	Potential Change	(blank)	\$1,500	
PCO 019	PCL	3539-000	Switchgear Building Concrete Repair	Potential Change	(blank)	\$30,000	
PCO 024	PCL	3539-000	Drainage Pump Station Descope	Potential Change	(blank)	-\$400,000	
PCO 025	PCL	3539-000	Sludge Collector Mounting Plate Replacement	Potential Change	(blank)	\$13,815	
PCO 028	PCL	3539-000	Ops Building Gas Line Relocation	Potential Change	(blank)	\$5,000	
PCO 029	PCL	3539-000	Building 15 Concrete Restoration	Potential Change	(blank)	\$20,000	
PCO 030	PCL	3539-000	Basin Leaking Crack Repair	Potential Change	(blank)	\$5,000	
PCO 031	PCL	3539-000	Roll Up Door Fascia	Potential Change	(blank)	\$3,000	
PCO 033	PCL	3539-000	Secondary Effluent Channel Improvements	Potential Change	(blank)		
PCO 034	PCL	3539-000	Scum Spray Water Pipe Replacement	Potential Change	(blank)	\$5,000	
PCO 035	PCL	3539-000	Grit Chamber Conflicts	Potential Change	(blank)	\$20,000	
Grand Total						-\$278,685	\$175,842

**Data Last Updated**

October 1, 2020

**Project Financial Status**

Project Committee	17
Project Name	Miscellaneous Improvements 2018
Project Description	Secondary electrical upgrades and Primary Gallery rehabilitation, installation of access walkway and Energy Building roof



**Cash Flow**

Collected	\$5,175,617
Expenses	\$4,024,749

**Project Completion**

Schedule	78%
Budget	77%

**Contracts**

Company	PO No.	Original	Change Orders	Total	Paid
Filanc	13678	\$ 4,181,205	\$ 129,328	\$ 4,310,533	\$3,288,076
Dudek	14164	\$ 137,625	\$ -	\$ 137,625	\$117,403
Lee & Ro	14006	\$ 123,310	\$ -	\$ 123,310	\$106,313
		<b>\$ 4,442,140</b>	<b>\$ 129,328</b>	<b>\$ 4,571,468</b>	<b>\$3,511,791</b>

**Contingency**

Area	Project Code	Amount	Change Orders	Total Remaining	Percent Used
Liquids	3701-000	\$ 343,593	\$ 111,670	\$ 231,923	48.1%
Common	3769-000	\$ 4,545	\$ -	\$ 4,545	0.0%
Solids	3751-000	\$ 154,514	\$ 17,658	\$ 136,856	12.9%
		<b>\$ 502,652</b>	<b>\$ 129,328</b>	<b>\$ 373,324</b>	<b>34.6%</b>

**Change Orders**

Change Order No.	Vendor Name	Project ID	Description	Status	Status Date	Potential Change Amount	Final Amount
1	Filanc	3701-000	Additional Conduit Support around Admin Building	Approved by Board of Directors	8/6/2020		\$32,929.28
2	Filanc	3701-000	Primary Deck Conduit Supports	Approved by Board of Directors	8/6/2020		\$ 9,611.12
3	Filanc	3701-000	Electrical Manhole 2 collar concrete/pavement repair	Approved by Board of Directors	8/6/2020		\$ 2,986.60
4	Filanc	3701-000	Primary Gallery Concrete Deck Repair	Approved by Board of Directors	8/6/2020		\$ 6,363.00
5	Filanc	3701-000	VFD Cabinet change from 316 to 304 Stainless Steel	Approved by Board of Directors	8/6/2020		\$ (2,100.00)
6	Filanc	3701-000	Duct bank Vault size change to accommodate existing utilities and sump	Approved by Board of Directors	8/6/2020		\$ 37,690
7	Filanc	3751-000	Energy Building Roof Steel Beam Anchor Embedment	Approved by Board of Directors	8/6/2020		\$10,280.90
8	Filanc	3701-000	Polymer VFD Improvements	Approved by Board of Directors	10/1/2020		\$ 15,549
9	Filanc	3751-000	Repair/improve floor grating in equipment to meet safety standards	Approved by Board of Directors	10/1/2020		\$ 1,843



Change Order No.	Vendor Name	Project ID	Description	Status	Status Date	Potential Change Amount	Final Amount
10	Filanc	3751-000	Additional roofing materials required to level surface	Approved by Board of Directors	10/1/2020		\$ 4,465
11	Filanc	3701-000	Additional backfill material for MH-1	Approved by Board of Directors	10/1/2020		\$ 2,939
12	Filanc	3701-000	Admin Bldg. roof drain rerouting	Approved by Board of Directors	10/1/2020		\$ 966
13	Filanc	3751-000	Additional angle steel needed to support new roof	Approved by Board of Directors	10/1/2020		\$ 1,069
14	Filanc	3701-000	Rebate work on Primary Gallery Deck to resolve potential safety issue	Approved by Board of Directors	10/1/2020		\$ 4,736
<b>Grand Total</b>							<b>\$ 129,328</b>

# Agenda Item

# 6

**Engineering Committee Meeting**

**Meeting Date:** October 8, 2020

**TO:** Engineering Committee

**FROM:** Jason Manning, Director of Engineering

**SUBJECT:** San Juan Creek Ocean Outfall Junction Structure Rehabilitation Project

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## Overview

On July 16, 2020, the Project Committee 5 Board of Directors awarded the San Juan Creek Ocean Outfall Junction Structure Rehabilitation Constructability Review to Filanc in the amount of \$125,408. In addition to the constructability review Filanc was also to complete the following tasks:

1. Remotely Operated Vehicle (ROV) Inspection of the Junction Structure
2. Cost estimate and repair of some items in the Metering Structure
3. Cost estimate for the Junction Structure Reinforcement (Phase II) Construction

As presented in the September Engineering Committee Meeting, Filanc has completed the first item, the ROV inspection, and has provided their initial cost estimates for the Junction Structure Rehabilitation.

Their updated estimate for the Phase I Metering Structure repairs falls within their initial contract amount and they will not use any of the previously approved contingency of \$12,500.

The current estimated cost for Filanc Phase II construction is \$916,164. This is a lump-sum, not-to-exceed price. Black and Veatch has conducted an initial review of the costs and generally agrees with the costs submitted. However, in the coming weeks, they will provide a more detailed review using their design-build cost estimators. This review may result in an adjustment to the Filanc construction costs for the Phase II work.

Table 1 – Available Remaining Budgets

Project	Phase	Budget
3605-000 Junction Structure Reinforcement Permitting and Final Design	Phase I	\$71,549
3650-000 Junction Structure Reinforcement Construction	Phase II	\$984,643
Total		\$1,056,192

Table 2 – Estimated costs for Construction (Phase II)

Task	Estimated Fee
Construction (Phase II)	\$916,164
Engineering Services During Construction	\$30,000
Construction Management	\$40,000
Biological Monitoring/CDP Compliance	\$50,000
Total	\$1,036,164

NOTE: Costs for Construction Management and Biological Monitoring are placeholder estimates

Currently, it is estimated that the project will not require approval of an additional funds and will have a budget surplus of approximately \$20,028. This does not include any contingencies.

Table 3 – Cost Breakdown by Agency for Filanc Phase II Costs

Agency	Filanc Phase II Cost
CSC	\$152,266
CSJC	\$101,511
MNWD	\$142,097
SCWD	\$114,246
SMWD	\$406,044
Total	\$916,164

Once the cost estimate has been fully reviewed, the Engineering Committee will be notified of any adjustments prior to presentation to the Board of Directors in November.

**Recommended Action:** Staff requests that the Engineering Committee recommend to the PC-5 Board to award the amendment to Filanc contract in the amount of \$916,164 for the Phase II construction work for a total contract amount of \$1,041,572.

October 2, 2020

Jason Manning  
SOCWA

Project: San Juan Creek Ocean Outfall Junction Structure Rehab  
Dear Mr. Manning,

J.R. Filanc Construction Company is pleased to submit our phase II cost estimate for the San Juan Creek Ocean Outfall Junction Structure Rehab. You will find a detailed cost summary on the attached pages. The proposal is based on the scope of work through 60% design. The most critical activities affecting the costs are the fabricated duplex stainless insert pipe and the diving work to install it. These totals currently represent 45% of our total cost, and are most subject to change based on the results of the RO scan and the final design.

**PHASE 2 ESTIMATED LUMP SUM COST - \$916,164**

This proposal is firm for 30 days. Please contact me at 626-391-1484 if necessary.

Sincerely,  
Luis Reyes  
J.R. Filanc Construction

Bid Item 1	Activity	Description	Notes	Takeoff Quantity	Labor Cost/Unit	Labor Amount	Material Amount	Sub Amount	Equip Price	Equip Amount	Grand Total Unit Price	Grand Total
<b>001</b>		<b>Rehab of Outfall Junction Structure</b>										
		<b>Equipment</b>										
	<b>002.02</b>	<b>Project Equipment</b>										
		Crane 60 Ton		22.00 day	-	-	-	-	1,400.00 /day	30,800	1,400.00 /day	30,800
		Cat 320 Excavator		15.00 day	-	-	-	-	925.00 /day	13,875	925.00 /day	13,875
		10000lb Boom Forklift		40.00 day	-	-	-	-	375.00 /day	15,000	375.00 /day	15,000
		Front End Loader 3cy		10.00 day	-	-	-	-	845.00 /day	8,450	845.00 /day	8,450
		Dozer		5.00 day	-	-	-	-	600.00 /day	3,000	600.00 /day	3,000
		Project Manager Pickup		20.00 day	-	-	-	-	115.00 /day	2,300	115.00 /day	2,300
		Foreman Pickup Truck		40.00 day	-	-	-	-	115.00 /day	4,600	115.00 /day	4,600
		Project Engineer Pickup		20.00 day	-	-	-	-	115.00 /day	2,300	115.00 /day	2,300
		Concrete Pump		2.00 ls	-	-	-	-	2,000.00 /ls	4,000	2,000.00 /ls	4,000
		Sound Fence		175.00 lf	-	-	0	-	100.00 /lf	17,500	100.00 /lf	17,500
		Slide Rail Shoring		4.00 mn	-	-	-	-	8,000.00 /mn	32,000	8,000.00 /mn	32,000
		Dewatering - (3) Trash Pumps		40.00 day	-	-	-	-	690.00 /day	27,600	690.00 /day	27,600
		Dewatering - Generator		40.00 day	-	-	-	-	255.00 /day	10,200	255.00 /day	10,200
		Dewatering - Misc Discharge Pipe		40.00 day	-	-	-	-	25.00 /day	1,000	25.00 /day	1,000
		<b>002.02 Project Equipment</b>			/ls					<b>172,625</b>	/ls	<b>172,625</b>
		<b>Equipment</b>								<b>172,625</b>		<b>172,625</b>
		<b>Subs</b>										
	<b>002.03</b>	<b>Purchased Materials and Subcontracts</b>										
		Diving Subcontractor		12.00 ls	-	-	-	<b>102,648</b>	-	-	8,554.00 /ls	102,648
		Concrete Core & Demo Subcontractor		1.00 ls	-	-	-	<b>18,000</b>	-	-	18,000.00 /ls	18,000
		<b>002.03 Purchased Materials and Subcontracts</b>			/ls			<b>120,648</b>			/ls	<b>120,648</b>
		<b>Subs</b>						<b>120,648</b>				<b>120,648</b>
		<b>Materials</b>										
	<b>002.03</b>	<b>Purchased Materials and Subcontracts</b>										
		Fabricated Steel Access Cover + Air Vac/Release		1.00 ls	-	-	<b>75,000</b>	-	-	-	75,000.00 /ls	75,000
		Stainless Anchors and Epoxy		1.00 ls	-	-	<b>1,080</b>	-	-	-	1,080.00 /ls	1,080
		Misc Matl		1.00 ls	-	-	<b>1,000</b>	-	-	-	1,000.00 /ls	1,000
		Consumable Materials		1.00 ls	-	-	<b>2,000</b>	-	-	-	2,000.00 /ls	2,000
		Site Dumpsters/ Material Haul Off & Disposal		1.00 ls	-	-	<b>2,000</b>	-	-	-	2,000.00 /ls	2,000
		Super Sacks		360.00 ea	-	-	<b>7,200</b>	-	-	-	20.00 /ea	7,200
		Cellular Concrete Material		44.00 yd	-	-	<b>5,940</b>	-	-	-	135.00 /yd	5,940
		Structural Concrete		3.00 cy	-	-	<b>600</b>	-	-	-	200.00 /cy	600
		Formwork and Hardware Budget		1.00 ls	-	-	<b>2,000</b>	-	-	-	2,000.00 /ls	2,000
		Rebar Matl Budget		1.00 ls	-	-	<b>1,500</b>	-	-	-	1,500.00 /ls	1,500
		Link Seals		1.00 ls	-	-	<b>3,240</b>	-	-	-	3,240.00 /ls	3,240
		Duplex Steel Fab Pipe		1.00 ls	-	-	<b>216,000</b>	-	-	-	216,000.00 /ls	216,000
		<b>002.03 Purchased Materials and Subcontracts</b>			/ls		<b>317,560</b>				/ls	<b>317,560</b>
		<b>Materials</b>					<b>317,560</b>					<b>317,560</b>
		<b>General Conditions and Labor</b>										
	<b>002.00</b>	<b>Bonds, Permits, Insurance</b>										
		Bonds		1.00 ls	-	-	<b>9,500</b>	-	-	-	9,500.00 /ls	9,500
		Insurance		1.00 ls	-	-	<b>3,800</b>	-	-	-	3,800.00 /ls	3,800
		<b>002.00 Bonds, Permits, Insurance</b>			/ls		<b>13,300</b>				/ls	<b>13,300</b>
	<b>002.01</b>	<b>Project Management and Office Overhead</b>										
		Project Manager		20.00 day	1,000.00 /day	20,000	-	-	-	-	1,000.00 /day	20,000
		Project Engineer		20.00 day	760.00 /day	15,200	-	-	-	-	760.00 /day	15,200
		Filanc Accounting		1.00 ls	1,200.00 /ls	<b>1,200</b>	-	-	-	-	1,200.00 /ls	1,200
		Filanc Purchasing		1.00 ls	800.00 /ls	<b>800</b>	-	-	-	-	800.00 /ls	800
		<b>002.01 Project Management and Office Overhead</b>			/ls	<b>37,200</b>					/ls	<b>37,200</b>
	<b>002.04</b>	<b>Mobilization</b>										
		Project Photos by Sub		1.00 ls	-	-	-	<b>800</b>	-	-	800.00 /ls	800
		Project Signs 4x8		8.00 ea	80.00 /ea	640	<b>2,000</b>	-	-	-	330.00 /ea	2,640
		Temporary Fences		1.00 ls	-	-	-	-	2,000.00 /ls	<b>2,000</b>	2,000.00 /ls	2,000
		Traffic Control		1.00 ls	-	-	-	-	2,500.00 /ls	<b>2,500</b>	2,500.00 /ls	2,500
		Millwright Foreman		1.00 day	743.90 /day	744	-	-	-	-	743.90 /day	744
		Laborer #1		1.00 day	647.04 /day	647	-	-	-	-	647.04 /day	647
		Laborer #2		1.00 day	647.04 /day	647	-	-	-	-	647.04 /day	647
		Laborer #3		1.00 day	647.04 /day	647	-	-	-	-	647.04 /day	647
		Storage Container Mob/Demob		1.00 ea	-	-	-	-	600.00 /ea	600	600.00 /ea	600
		Storage Container		4.00 mn	-	-	-	-	330.00 /mn	1,320	330.00 /mn	1,320
		Construction Trailer Mob/Demob		1.00 ea	-	-	-	-	600.00 /ea	600	600.00 /ea	600
		Construction Trailer #1		4.00 mn	-	-	-	-	1,870.00 /mn	7,480	1,870.00 /mn	7,480
		Toilet #1		4.00 mn	-	-	-	-	250.00 /mn	1,000	250.00 /mn	1,000
		<b>002.04 Mobilization</b>			/day	<b>3,325</b>	<b>2,000</b>	<b>800</b>		<b>15,500</b>	/day	<b>21,625</b>
	<b>002.05</b>	<b>Set up restricted section of beach for 2wk period</b>										
		Millwright Foreman		1.00 day	743.90 /day	744	-	-	-	-	743.90 /day	744
		Laborer #1		1.00 day	647.04 /day	647	-	-	-	-	647.04 /day	647
		Laborer #2		1.00 day	647.04 /day	647	-	-	-	-	647.04 /day	647
		Laborer #3		1.00 day	647.04 /day	647	-	-	-	-	647.04 /day	647

Bid Item 1	Activity	Description	Notes	Takeoff Quantity	Labor Cost/Unit	Labor Amount	Material Amount	Sub Amount	Equip Price	Equip Amount	Grand Total Unit Price	Grand Total
		002.05 Set up restricted section of beach for 2wk period			/day	2,685					/day	2,685
	002.06	Potholing										
		Laborer #1		1.00 day	647.04 /day	647	-	-	-	-	647.04 /day	647
		Laborer #2		1.00 day	647.04 /day	647	-	-	-	-	647.04 /day	647
		Operating Engineer		1.00 day	879.47 /day	879	-	-	-	-	879.47 /day	879
		002.06 Potholing			/day	2,174					/day	2,174
	002.08	Fill supersacks and install perimeter barrier island										
		Laborer #1		5.00 day	647.04 /day	3,235	-	-	-	-	647.04 /day	3,235
		Laborer #2		5.00 day	647.04 /day	3,235	-	-	-	-	647.04 /day	3,235
		Operating Engineer		5.00 day	879.44 /day	4,397	-	-	-	-	879.44 /day	4,397
		002.08 Fill supersacks and install perimeter barrier island			/day	10,868					/day	10,868
	002.10	Excavate interior and install slide rail system										
		Laborer #1		4.00 day	647.04 /day	2,588	-	-	-	-	647.04 /day	2,588
		Laborer #2		4.00 day	647.04 /day	2,588	-	-	-	-	647.04 /day	2,588
		Operating Engineer		4.00 day	879.45 /day	3,518	-	-	-	-	879.45 /day	3,518
		002.10 Excavate interior and install slide rail system			/day	8,694					/day	8,694
	002.14	Install and maintain sound barrier										
		Millwright Foreman		2.00 day	743.90 /day	1,488	-	-	-	-	743.90 /day	1,488
		Laborer #1		3.00 day	647.04 /day	1,941	-	-	-	-	647.04 /day	1,941
		Laborer #2		3.00 day	647.04 /day	1,941	-	-	-	-	647.04 /day	1,941
		Operating Engineer		2.00 day	879.45 /day	1,759	-	-	-	-	879.45 /day	1,759
		002.14 Install and maintain sound barrier			/day	7,129					/day	7,129
	002.16	Install fabricated temporary access cover										
		Millwright Foreman		3.00 day	743.90 /day	2,232	-	-	-	-	743.90 /day	2,232
		Laborer #1		3.00 day	647.04 /day	1,941	-	-	-	-	647.04 /day	1,941
		Laborer #2		3.00 day	647.04 /day	1,941	-	-	-	-	647.04 /day	1,941
		Operating Engineer		3.00 day	879.44 /day	2,638	-	-	-	-	879.44 /day	2,638
		002.16 Install fabricated temporary access cover			/day	8,752					/day	8,752
	002.18	Demolish and remove concrete deck										
		Millwright Foreman		2.00 day	743.90 /day	1,488	-	-	-	-	743.90 /day	1,488
		Laborer #1		2.00 day	647.04 /day	1,294	-	-	-	-	647.04 /day	1,294
		Laborer #1		2.00 day	647.04 /day	1,294	-	-	-	-	647.04 /day	1,294
		Operating Engineer		2.00 day	879.45 /day	1,759	-	-	-	-	879.45 /day	1,759
		002.18 Demolish and remove concrete deck			/day	5,835					/day	5,835
	002.20	Support underwater construction/ install of fab pipe										
		Millwright Foreman		12.00 day	743.90 /day	8,927	-	-	-	-	743.90 /day	8,927
		Laborer #1		12.00 day	647.04 /day	7,764	-	-	-	-	647.04 /day	7,764
		Operating Engineer		12.00 day	879.45 /day	10,553	-	-	-	-	879.45 /day	10,553
		002.20 Support underwater construction/ install of fab pipe			/day	27,245					/day	27,245
	002.24	Install cellular concrete fill										
		Millwright Foreman		2.00 day	743.90 /day	1,488	-	-	-	-	743.90 /day	1,488
		Laborer #1		2.00 day	647.04 /day	1,294	-	-	-	-	647.04 /day	1,294
		Laborer #2		2.00 day	647.04 /day	1,294	-	-	-	-	647.04 /day	1,294
		Laborer #3		2.00 day	647.04 /day	1,294	-	-	-	-	647.04 /day	1,294
		002.24 Install cellular concrete fill			/day	5,370					/day	5,370
	002.26	Excavate and expose lower surge tower walls										
		Millwright Foreman		1.00 day	743.90 /day	744	-	-	-	-	743.90 /day	744
		Laborer #1		1.00 day	647.04 /day	647	-	-	-	-	647.04 /day	647
		Laborer #2		1.00 day	647.04 /day	647	-	-	-	-	647.04 /day	647
		Operating Engineer		1.00 day	879.44 /day	879	-	-	-	-	879.44 /day	879
		002.26 Excavate and expose lower surge tower walls			/day	2,917					/day	2,917
	002.28	Demo/dispose of surge tower side walls to new depth										
		Millwright Foreman		4.00 day	743.90 /day	2,976	-	-	-	-	743.90 /day	2,976
		Laborer #1		4.00 day	647.04 /day	2,588	-	-	-	-	647.04 /day	2,588
		Operating Engineer		4.00 day	879.45 /day	3,518	-	-	-	-	879.45 /day	3,518
		002.28 Demo/dispose of surge tower side walls to new depth			/day	9,082					/day	9,082
	002.29	Install dowels and formwork for new concrete cap										
		Carpenter Foreman		2.00 day	668.40 /day	1,337	-	-	-	-	668.40 /day	1,337
		Laborer #1		2.00 day	647.04 /day	1,294	-	-	-	-	647.04 /day	1,294
		Laborer #2		2.00 day	647.04 /day	1,294	-	-	-	-	647.04 /day	1,294
		Operating Engineer		2.00 day	879.45 /day	1,759	-	-	-	-	879.45 /day	1,759
		002.29 Install dowels and formwork for new concrete cap			/day	5,684					/day	5,684
	002.30	Place new concrete cap										
		Millwright Foreman		1.00 day	743.90 /day	744	-	-	-	-	743.90 /day	744
		Laborer #1		1.00 day	647.04 /day	647	-	-	-	-	647.04 /day	647
		Laborer #2		1.00 day	647.04 /day	647	-	-	-	-	647.04 /day	647
		Laborer #2		1.00 day	647.04 /day	647	-	-	-	-	647.04 /day	647
		002.30 Place new concrete cap			/day	2,685					/day	2,685
	002.31	Backfill structure, pull shoring										
		Millwright Foreman		1.00 day	743.90 /day	744	-	-	-	-	743.90 /day	744
		Laborer #1		1.00 day	647.04 /day	647	-	-	-	-	647.04 /day	647
		Laborer #2		1.00 day	647.04 /day	647	-	-	-	-	647.04 /day	647
		Operating Engineer (crane) #1		1.00 day	879.44 /day	879	-	-	-	-	879.44 /day	879
		002.31 Backfill structure, pull shoring			/day	2,917					/day	2,917
	002.32	Cut sandbags, spread sand										
		Millwright Foreman		2.00 day	743.90 /day	1,488	-	-	-	-	743.90 /day	1,488
		Laborer #1		2.00 day	647.04 /day	1,294	-	-	-	-	647.04 /day	1,294

Bid Item 1	Activity	Description	Notes	Takeoff Quantity	Labor Cost/Unit	Labor Amount	Material Amount	Sub Amount	Equip Price	Equip Amount	Grand Total Unit Price	Grand Total
	002.32	Cut sandbags, spread sand										
		Laborer #2		2.00 day	647.04 /day	1,294	-	-	-	-	647.04 /day	1,294
		Operating Engineer		2.00 day	879.45 /day	1,759	-	-	-	-	879.45 /day	1,759
		002.32 Cut sandbags, spread sand			/day	5,835					/day	5,835
	002.34	Cleanup and demob site										
		Millwright Foreman		2.00 day	743.90 /day	1,488	-	-	-	-	743.90 /day	1,488
		Laborer #1		2.00 day	647.04 /day	1,294	-	-	-	-	647.04 /day	1,294
		Laborer #2		2.00 day	647.04 /day	1,294	-	-	-	-	647.04 /day	1,294
		Operating Engineer		2.00 day	879.45 /day	1,759	-	-	-	-	879.45 /day	1,759
		002.34 Cleanup and demob site			/day	5,835					/day	5,835
		General Conditions and Labor				154,231	15,300	800		15,500		185,831
		<b>001 Rehab of Outfall Junction Structure</b>		<b>1.00 ls</b>	<b>154,231.02 /ls</b>	<b>154,231</b>	<b>332,860</b>	<b>121,448</b>		<b>188,125</b>	<b>796,664.02 /ls</b>	<b>796,664</b>

Estimate Totals

Description	Amount	Totals	Hours
Labor	154,231		1,832.287 hrs
Material	332,860		
Subcontract	121,448		
Equipment	188,125		2,336.000 hrs
Other			
	<b>796,664</b>	<b>796,664</b>	
		<b>796,664</b>	
Markup - 15%	119,500		
<b>Total</b>		<b>916,164</b>	



# Agenda Item

# 8

**Engineering Committee Meeting**

**Meeting Date:** October 8, 2020

**TO:** Engineering Committee

**FROM:** Jason Manning, Director of Engineering

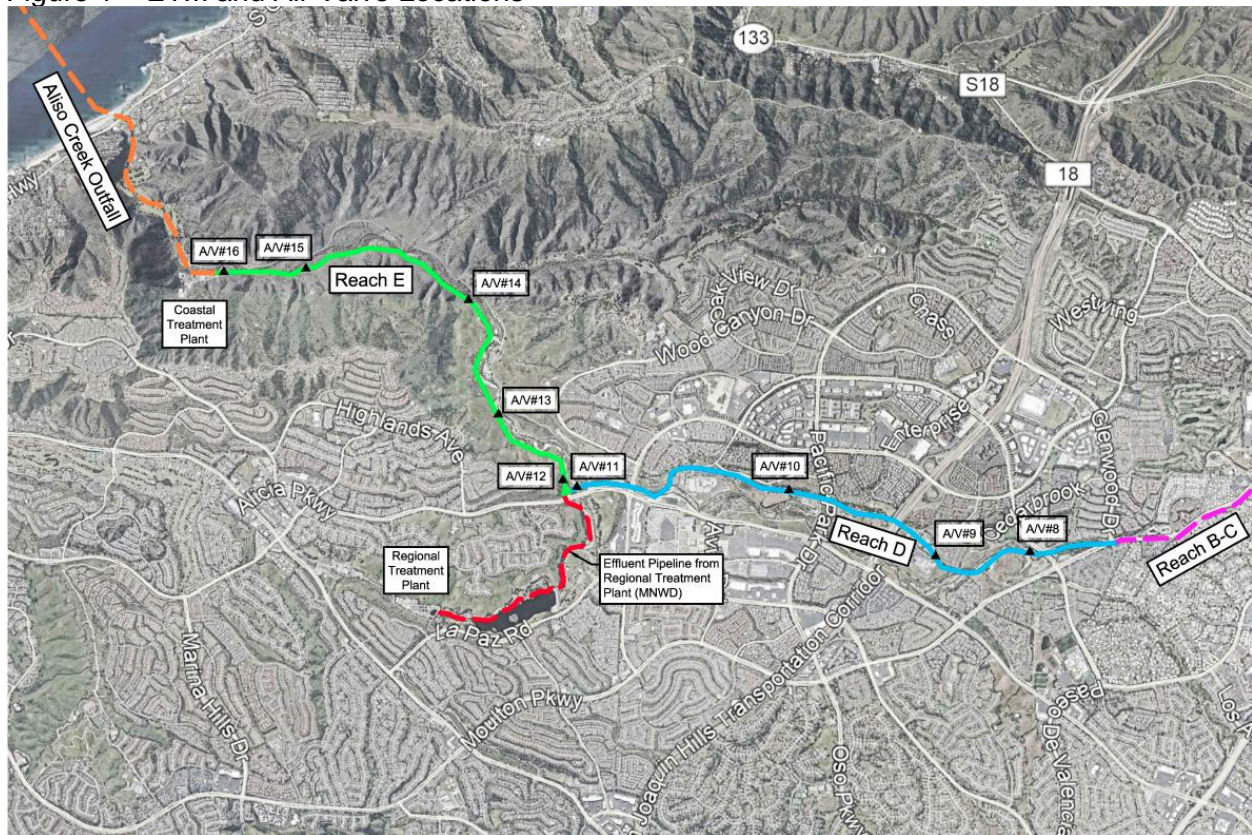
**SUBJECT:** Aliso Creek Air Valve Replacement Update (Project Committee 21)

## Overview

In June 2018, Tetra Tech provided a Technical Memorandum on the Aliso Creek Effluent Transmission Main (ETM) Air Valve condition for Reaches D and E after conducting two field inspections and reviewing the initial design drawings. See Figure 1 below for a map of the lower reaches of the ETM and the air valve locations.

Please note that although there are air valves on the Techite portion of the ETM (Reaches B and C), those are maintained by the El Toro Water District. We also have a design project slated for later this fiscal year to start the design work on replacing Reaches B and C.

Figure 1 – ETM and Air Valve Locations



Tetra Tech noted that the air valves are consistent with the type and model that was installed in 1979 and although routine annual maintenance is performed on each air valve along with monthly inspections, they appear to be the originally installed air valves.

Each air valve is connected to the ETM with a 4-inch pipe and butterfly valve for isolating each air valve. Only two of the nine butterfly valve cans were located during the Tetra Tech field inspections. It is expected that these butterfly valves are in very poor condition.

**Proposals**

Based on the 2018 Tetra Tech memo, both Dudek and Tetra Tech were asked to submit a cost to provide a final design and specifications to take to bid for construction. Given the smaller scope of this project, we did not request a full, typical request for proposal.

Both proposals exclude permitting costs as that will need to be determined when the design is near finished.

Table 1 – Proposal Summary

<b>Firm</b>	<b>Dudek</b>	<b>Tetra Tech</b>
<b>Project Manager</b>	Mike Metts	Neha Gajjar
<b>Project Engineer</b>	Not Identified	Jaden Miller
<b>Principal</b>	Bob Ohlund	Tom Epperson
<b>Total Labor Hours</b>	263 (6 sheets)	548 (16 sheets)
<b>Total Cost</b>	\$54,110	\$79,800

**Cost Allocation**

There are four valves on Reach D and five valves on Reach E. The cost for the design has therefore been allocated at 4/9<sup>ths</sup> for Reach D and 5/9<sup>ths</sup> for Reach E.

Table 2 – Cost allocation by member agency using the most expensive proposal

	Reach D	Reach E	Total
	3105-000	3106-000	
ETWD	\$17,733.33	\$10,325.23	\$28,058.56
IRWD	\$17,733.34	\$10,325.23	\$28,058.57
MNWD	\$ -	\$23,682.87	\$23,682.87
Total	\$35,466.67	\$44,333.33	\$79,800.00

Table 3 – Available budget

3105-000 (Reach D)	3106-000 (Reach E)	Total
\$64,006	\$103,674	\$167,680

Both projects are already funded, and no additional cash would need to be collected for the design phase of this work.

**Recommended Action:** Staff recommends the Engineering Committee recommend to the PC 21 Board to approve the Aliso Creek Effluent Transmission Main Design Project to Tetra Tech for \$79,800.



September 14, 2020

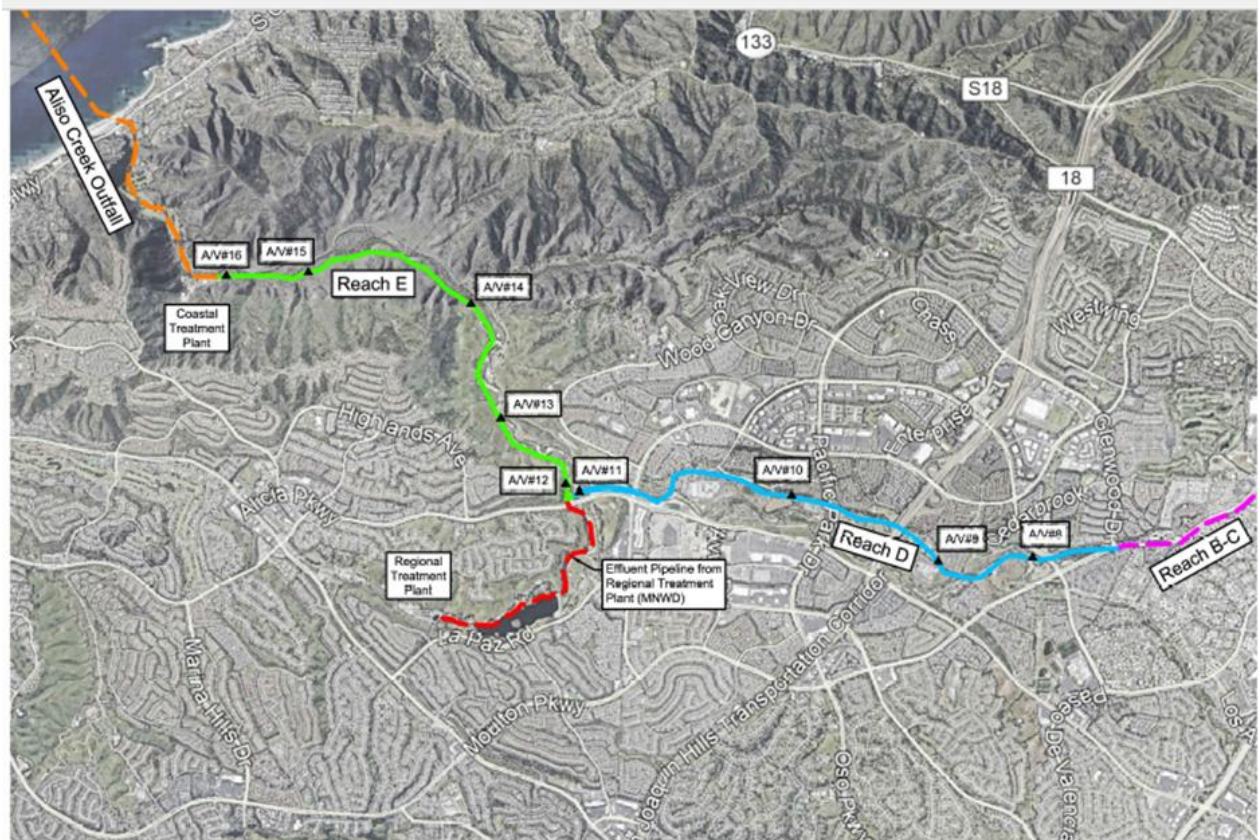
Jason Manning, PE  
Director of Engineering  
South Orange County Wastewater Authority  
34156 Del Obispo Street  
Dana Point, CA 92629

**Subject:** *Proposal for Aliso Creek Ocean Outfall (ACOO) Effluent Transmission Main (ETM) Reach D & E Air Release Valve Replacement Design*

Dear Mr. Manning:

Dudek is pleased to submit this proposal to South Orange County Wastewater Authority (SOCWA) for design of the ACOO ETM Air Release Valves Replacements on Reach D & E.

A study was performed recommending replacement of nine (9) Air Releases on Reach D & E, five (5) of which are in Aliso Canyon (Reach E). Air release valves for Reach A, B and C will be replaced with the Techite Pipe Replacement Project (under separate contract). The following figure illustrates the general location of the proposed project sites on Reach D (blue) and E (green).



by:  
IA TECH



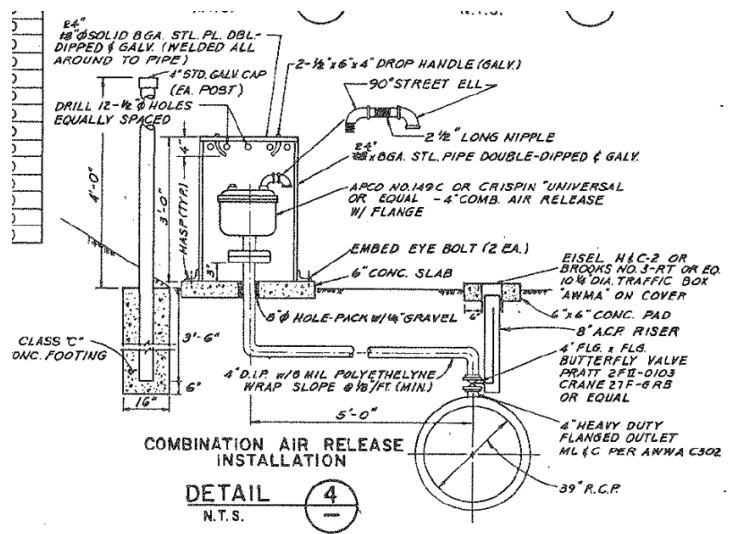
Figure L.2  
ETM Air Valve Locations  
Reach D and E

# 1 Approach

Our proposed approach consists of preparation of plans, specifications and cost opinions, addressing the design elements in the following manner:

- A/R Valve Replacement Detail:** A standard detail for the A/R valve and lateral replacement will be prepared, similar to the original design (see figure left). It is anticipated that connection to the A/R lateral, from the ETM, will be located and exposed, condition of existing outlet flange connection determined and, if exiting outlet flange is in acceptable condition, a new isolation valve installed. Lateral will then be extended to new air release valve.

As an alternative, in the case the existing outlet flange is not in acceptable condition, an alternative detail will be provided to cut off the remaining, deficient outlet and install a new saddle flange connection over the existing opening.



- Plan view drawings of A/R valves and ETM:** A plan view will be prepared showing location of existing air release valve in relationship to existing ETM and outlet isolation valve. This information will be provided from record drawings and/or field visit data (i.e. GPS coordinates where practical). The plan view intent is to illustrate existing location and proposed location of air release valve replacement in same location or immediately adjacent.

Plan views will identify replacement of air release valve, lateral, isolation valve and, optionally, replacement of flanged connection. Where needed, bollards, concrete pads, replaced road sections, short retaining walls and/or screen walls will be identified.

- Locate Isolation valve on ETM outlet:** Not all isolation valves are currently visible. These valves will be located by the Contractor during construction, or SOCWA may have their crews locate during design.
- Investigate existing outlets on ETM:** Dudek will coordinate with SOCWA to investigate available information, including but not limited to shop drawings and field information. We will discuss with SOCWA to perhaps have SOCWA crew expose one or two flanged outlet connections on the ETM to observe condition.
- Coordination with Operations:** We will solicit input from Operations regarding construction sequencing and times to replace valves to minimize impact of construction on operation of the ETM.
- Permitting and Environmental Compliance:** The scope and impact of construction work being unknown at this time, permitting and environmental compliance is not included as part of this scope of work and will

be completed under a future contract. We anticipate that the construction will present a likelihood of minimal permitting work, where replacement work is required as opposed to new construction. However, California Coastal Commission, Orange County Regional Parks, and City of Laguna Niguel may require specific permitting. As a part of this scope, Dudek will provide a recommendation with regard to permitting requirements.

## 2 Scope of Work

The follow tasks define the proposed scope of services for this ETM Air Release Valve Replacement project. It is noted that permitting, environmental, survey and geotechnical services are not included in this scope of work.

**Task 1 Data Collection, Site Visits & Utility Research.** We will collect available information pertinent to the project. Prior to commencement of the design effort, field visits of the project alignment will be conducted by the Dudek project team to view field conditions.

**Task 2 Design Plans.** Design plans to the 50%, 90% and 100% completion level will be provided for SOCWA review. Our proposal is based on preparing the following design sheets (work product delivered: digital files, no hardcopies) consistent with our discussion in the Approach for replacement of nine (9) air release valves:

1. Title Sheet
2. General notes
3. Plan View (3 sites per sheet)
4. Plan View (3 sites per sheet)
5. Plan View (3 sites per sheet)
6. Detail Sheet

**Task 3 Prepare Project Specifications/Assemble Contract Documents.** Technical specifications, Special Provisions and bid items will be prepared and assembled with the SOCWA provided front-end documents. Work product delivered: digital files; no hard copies.

**Task 4 Project Meetings & Coordination.** Coordination meetings will be conducted to communicate project details, identify design requirements, and receive comments from SOCWA staff. We have included a total of four meetings throughout completion of design. Dudek will prepare meeting agenda and meeting summaries for each meeting in accordance with established SOCWA standards.

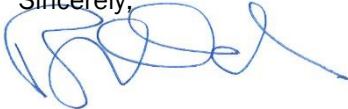
**Task 5 Quality Assurance.** The Dudek team will conduct independent project reviews checking project calculation reviews, cost opinions, deliverable review and responses to SOCWA comments.

**Task 6 Opinion of Construction Cost / Schedule.** We will update the construction cost estimate presented in the preliminary study and develop an Advertise/Bid/Construction schedule.

### 3 Fee

Dudek proposes a fixed fee of \$54,110 for the scope of work outlined above. The estimated breakdown of hours is included in Attachment A for reference. We appreciate the opportunity to provide this proposal for your consideration. If you have any questions, please do not hesitate to contact me (bohlund@dudek.com; 760.632.1767).

Sincerely,



Bob Ohlund, PE  
Vice President

*Attachment A - Fee Estimate*

# Attachment A

## Fixed Fee Breakdown Estimate

South Orange County Wastewater Authority  
**ACOO ETM Air Release Valve Replacements - Reaches D & E**  
 DUDEK ESTIMATED FIXED FEE BREAKDOWN  
 9/14/2020

	<i>Project Team Role: Team Member:</i>	Labor Hours and Rates				TOTAL HOURS	DUDEK LABOR COST	TOTAL FEE
		Principal-in-Charge B. Ohlund	Project Manager M. Metts	Project Engineer	CADD Designer			
<b>Scope of Work</b>								
1	Data Collection and Review, Site Visit	8	8	8		24	\$ 6,120	\$ 6,120
2	Design Plans						\$ -	\$ -
	Sht 1 - Title Sheet		2	8	8	18	\$ 3,420	\$ 3,420
	Sht 2 - General notes		2	8	8	18	\$ 3,420	\$ 3,420
	Sht 3 - Plan sheet		6	12	20	38	\$ 7,180	\$ 7,180
	Sht 4 - Plan sheet		6	12	20	38	\$ 7,180	\$ 7,180
	Sht 5 - Plan sheet		6	12	20	38	\$ 7,180	\$ 7,180
	Sht 6 - Details		6	12	20	38	\$ 7,180	\$ 7,180
3	Project Specifications/Contract Doc's		6	16		22	\$ 4,900	\$ 4,900
4	Project meetings (Three[3])/Coordination	3	6			9	\$ 2,490	\$ 2,490
5	Quality Assurance	8				8	\$ 2,320	\$ 2,320
6	Opinion of Construction Cost / Schedule		4	8		12	\$ 2,720	\$ 2,720
<b>Total Hours and Fee</b>		<b>19</b>	<b>52</b>	<b>96</b>	<b>96</b>	<b>263</b>	<b>\$ 54,110</b>	<b>\$ 54,110</b>







September 21, 2020

*Transmitted via E-mail: [jmanning@socwa.com](mailto:jmanning@socwa.com)*

Mr. Jason Manning, P.E., Director of Engineering  
South Orange County Wastewater Authority  
34156 Del Obispo Street  
Dana Point, CA 92629

**Reference: ETM Reaches D & E Air Valve Replacement Design Proposal**

Dear Mr. Manning:

Tetra Tech previously prepared a Technical Memorandum for the Effluent Transmission Main (ETM) Reach D & Reach E Air Valve Condition Assessment, dated June 8, 2018. SOCWA has asked Tetra Tech to prepare a proposal for the design of the air valve replacement project based on the recommendations of the Technical Memorandum. For this proposal, Tetra Tech has assumed that the air valve and air service piping between the ETM and air valve will be replaced including the isolation valve located at the top of the ETM.

## **BACKGROUND**

The air valves and air service piping between the ETM and air valve are original to the ETM facility. Given their age, Tetra Tech recommends replacing the air valve service line and isolation valve located at the top of the ETM pipe per typical air valve detail. The main advantage of this replacement alternative is that the buried butterfly valve will be replaced and the air valve could once again be used for isolation during the annual air valve maintenance cycle.

The exact condition, alignment, and depth of these existing buried air valve service lines from the ETM to each air valve is not known. The replacement work shall occur during ETM low flows to avoid the need for flow bypass or effluent storage costs at each source treatment plant.

## **SCOPE OF WORK**

The following is our proposed scope and fee for the work effort.

### **1.0 Project Management**

#### **1.1 General Administration and Meetings**

- A. At the commencement of the project Tetra Tech will hold a telephone “kick-off” meeting with SOCWA to discuss the scope and parameters of the project. Tetra Tech recommends having an additional four (4) phone conference calls with SOCWA staff. The following is a summary of these additional meetings: 50% Submittal (plan only); 90% Submittal (plan with details and technical specifications); 100% Submittal (plan, profile, details and specifications); and Final Submittal.
- B. Tetra Tech will conduct project management activities to ensure adherence to schedule, budget, communication between Tetra Tech and SOCWA.

## 2.0 Data Gathering, Utility Research and Base Map

### 2.1 Data Gathering and Background Research

- A. Tetra Tech will review the background information provided by SOCWA and obtain corresponding street plans or improvements plans as appropriate for each of the locations of the air valves.
- B. Tetra Tech will obtain and review any Assessor Maps as is required to show appropriate right-of-way and easement properties.

### 2.2 Utility Research

- A. Tetra Tech recommends that utility research (contacting USA and sending preliminary notice to each utility company within the project area) be performed for the below ground construction of the new air service lines and connection to the ETM. The utility information takes between six to eight weeks to get responses.
- B. Tetra Tech will perform a field walk of all of the air valve locations to obtain all visible traces of existing utilities and their alignments. Included in the field walk will be the identification of all street pavement cuts which may indicate recent utility improvements.
- C. No potholing will be performed.

### 2.3 Base Map

- A. Tetra Tech will not perform any design survey work and will use Google Earth to prepare the base maps for the locations of each of the air valves.
- B. To estimate the location of the connection to the ETM, Tetra Tech will identify the above ground manholes on Google and then use as-built information to best guess the alignment of the ETM and the station location of the connection of the air valve to the ETM. This will only be approximate but should be a check to the reasonableness of the air service line being shown on the construction drawings.

## 3.0 Preliminary Design

- A. **Air Valve Sizing:** Tetra Tech will request detailed ETM flow data and/or ETM inflows from source treatment plants. Based on this data, Tetra Tech will prepare calculations to determine the water surface level and the HGL level for the low flow, average flow and high flow scenarios. Based on these calculations, Tetra Tech will confirm the sizing of the air valves and the recommended replacement valve for each of the individual location.
- B. **Typical Air Valve Replacement Detail:** Tetra Tech will prepare a typical air valve replacement detail and submit to SOCWA for review and approval. For this proposal, we have assumed that SOCWA will want to replace the air valves with similar combination air valves and will not be concerned with the spitting of the valves upon initial open/close of the valves, similar to recycled water air valves. Tetra Tech does recommend soft seating materials be specified for the replacement air valves. Tetra Tech will suggest several sizes and materials for the air enclosure for various sizes of the air valve replacements. In addition, Tetra Tech will work with SOCWA to determine the acceptable air valve manufacturers and model numbers to be included within the specifications.
- C. **Air Service Pipe Material:** The replacement air service piping will be recommended to be 4-inch in size and most likely PVC pipe. Due to limited pressure, thrust blocks most likely will not be necessary if there is sufficient restrained lengths of pipe. For this proposal, we have assumed that butterfly valves will be installed as replacement for the existing air service line valves.
- D. **Construction Sequencing and Conceptual Traffic Control:** Tetra Tech will prepare a preliminary construction sequencing plan for each of the air valve replacements.

In addition, Tetra Tech will provide a traffic control conceptual plan to address how the proposed improvements will be constructed and its impact on the traffic where located adjacent to or within public streets.

- E. *Geotechnical Investigation:*** Tetra Tech will not be performing any geotechnical investigation work.
- F. *50% Submittal:*** Tetra Tech will prepare a brief preliminary design memorandum summarizing the findings and recommendations of the above key issues. In addition, Tetra Tech will prepare 50% plans showing the location of each of the air valves and general site improvements required for the replacement of the air valve. Tetra Tech will submit a PDF of the DRAFT memorandum and 50% plans for review and comments from SOCWA.
- G. *CEQA Work:*** Tetra Tech will not be performing any CEQA work or documentation.

#### 4.0 Final Design

- A. Tetra Tech envisions the following construction plan sheets:
  - Title Sheet
  - General Sheet (sheet index, legends, abbreviations, etc.)
  - ETM Air Valve Location Overview Map
  - ETM Profile Overview of Reach D & E
  - Air Valve #08 Site Plan including replacement of retaining wall, curb and concrete road
  - Air Valve #09 Site Plan including showing existing easement limits and access plan
  - Air Valve #10 Site Plan including access and grass restoration plan
  - Air Valve #11 Site Plan including pavement and sidewalk replacement.
  - Air Valve #12 Site Plan and Air Valve #13 Site Plan including wall to protect from dirt
  - Air Valve #14 Site Plan including slope repair and retaining wall
  - Air Valve #15 Site Plan including surrounding wall and Air Valve #16 Site Plan
  - Trenching and Pavement Replacements Details; Valve Supports, Concrete Encasement Details
  - Air Valve Replacement Detail (assume two details required) and Air Service Line Details
  - Piping, Valves, and Miscellaneous Site Restoration Details
  - Typical Retaining Wall Detail and Miscellaneous Site Details
  - Traffic Control Concept for work on Air Valve #11 on Alicia Parkway; Site Access Details
- B. Tetra Tech will prepare the following specifications: bid schedule; bid schedule description; and Technical Specifications. SOCWA will provide Tetra Tech with the listing of standard specifications Divisions 0 and 1 to be used for the project after the 50% submittal review. Tetra Tech will prepare Section 01010, Summary of Work and Section 01014, Work Restrictions and Sequence as well as the necessary Technical Specifications.
- C. Tetra Tech will prepare probable cost of construction and the anticipated construction schedule for the proposed work.
- D. Tetra Tech will submit permit applications to the City of Aliso Viejo and the City of Laguna Niguel. Traffic control plans are not included in our proposal and have assumed the Contractor will submit any required traffic control plans as part of his work. Traffic control Concepts will be provided in the plans.

- E. Design Submittals: Tetra Tech will submit 50%, 90%, 100% and final design submittals to SOCWA. Tetra Tech will submit two (2) sets of the plans on 24" x 36" bond paper, one (1) set of plans on 11"x17" paper and one (1) set of plans in PDF format for each of the submittals. The specifications and cost estimates will be provided in PDF format.

**SCHEDULE**

Tetra Tech's Project Team is ready to start the work immediately. The following is our tentative schedule.

<u>Task Item</u>	<u>Milestone Date</u>
NTP	October 5 <sup>th</sup> , 2020
Kick-off Meeting	Week of October 12 <sup>th</sup> , 2020
Utility Research	October 5 to November 27, 2020
Draft Preliminary Memo and 50% Submittal	November 18 <sup>th</sup> , 2020
SOCWA Review and Provide Comments	November 19 <sup>th</sup> to December 3, 2020
90% Design Submittal	January 27 <sup>th</sup> , 2021
SOCWA Review and Provide Comments	January 28 <sup>th</sup> to February 18 <sup>th</sup> , 2021
100% Design Submittal	March 17 <sup>th</sup> , 2021

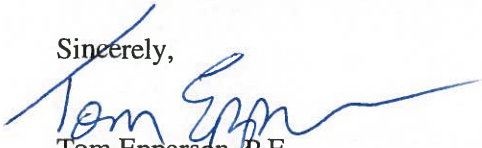
**FEE**

Tetra Tech is pleased to submit this proposal to provide the above scope of services for the following not-to-exceed amount.

Task No.	Description of Task	Budget Fee
1.0	Project Management	\$ 3,300
2.0	Data Gathering, Utility Research and Design Survey	\$ 10,400
3.0	Preliminary Design	\$ 16,300
4.0	Final Design	\$ 49,800
<b>Total Not-to-Exceed Fee</b>		<b>\$ 79,800</b>

We have also included the estimated person-hours and corresponding fee breakdown per subtask. Attached is our hourly rate schedule. If you have any questions or require additional information, please do not hesitate to call.

Sincerely,



Tom Epperson, P.E.  
 Vice President

TLE/te  
 Attachment

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2020

**HOURLY CHARGE RATE AND EXPENSE REIMBURSEMENT SCHEDULE**

**Project Management**

Project Manager 1	\$220.00
Project Manager 2	\$260.00
Sr Project Manager	\$305.00
Program Manager	\$330.00
Principal in Charge	\$330.00

**Engineers**

Engineering Technician	\$37.00
Engineer 1	\$96.00
Engineer 2	\$115.00
Engineer 3	\$130.00
Project Engineer 1	\$150.00
Project Engineer 2	\$165.00
Sr Engineer 1	\$175.00
Sr Engineer 2	\$185.00
Sr Engineer 3	\$210.00
Principal Engineer	\$300.00

**Planners**

Planner 1	\$104.00
Planner 2	\$115.00
Sr Planner 1	\$125.00
Sr Planner 2	\$151.00
Sr Planner 3	\$175.00

**Designers & Technicians**

CAD Technician 1	\$65.00
CAD Technician 2	\$75.00
CAD Technician 3	\$90.00
CAD Designer	\$100.00
Sr CAD Designer 1	\$125.00
Sr CAD Designer 2	\$145.00
CAD Director	\$150.00
Survey Tech 1	\$50.00

**Health & Safety**

H&S Administrator	\$95.00
Sr H&S Administrator	\$115.00
H&S Manager	\$145.00

**Construction**

Construction Project Rep 1	\$78.00
Construction Project Rep 2	\$85.00
Sr Constr Project Rep 1	\$100.00
Sr Constr Project Rep 2	\$115.00
Construction Manager 1	\$165.00
Construction Manager 2	\$185.00
Construction Director	\$233.00

**General & Administrative**

Project Assistant 1	\$67.00
Project Assistant 2	\$75.00
Project Administrator	\$95.00
Sr Project Administrator	\$110.00
Sr Graphic Artist	\$150.00
Technical Writer 1	\$97.00
Technical Writer 2	\$124.00
Sr Technical Writer	\$155.00

**Information Technology**

Systems Analyst / Programmer 1	\$77.00
Systems Analyst / Programmer 2	\$115.00
Sr Sys Analyst / Programmer 1	\$130.00
Sr Systems Analyst / Programmer 2	\$196.00

**Project Accounting**

Project Analyst 1	\$90.00
Project Analyst 2	\$114.00
Sr Project Analyst	\$155.00

**Reimbursable In-House Costs:**

Photo Copies (B&W 8.5"x11")	\$ 0.15/Each
Photo Copies (B&W 11"x17")	\$ 0.40/Each
Color Copies (up to 8.5"x11")	\$ 2.00/Each
Color Copies (to 11"x17")	\$ 3.00/Each
Compact Discs	\$10/each
Large format copies	\$0.40 S.F.

Mileage-Company Vehicle	\$0.80/mile
Mileage-POV	\$0.55/mile*

\*current GSA POV mileage rate subject to change

All other direct costs, such as production, special photography, delivery services, overnight mail, printing will be billed at cost and any other services performed by subconsultant will be billed at cost plus 15%.

# Price Proposal

## SOCWA Air Valve Design Proposal

Submitted to: SOCWA (Attn: Jason Manning)

Contract Type: T&M

Price Summary / Totals							Labor Plan						Task Pricing Totals						
							6 Resource						Task Pricing Totals						
													Specify Add'l Fees on Setup						
													Technology Use Fee						
													<b>Total Price</b>						
													<b>79,800</b>						
Pricing by Resource							Task Pricing Totals												
Project Phases / Tasks	Schedule			Work Days Off	Work Days	Total Labor Hrs	Project Manager (Tom Epperson)	Assistant Project Manager (Neha Gajjar)	Project Coordinator (Cory Heggveit)	Design Engineer (Jaden Miller)	Eng 1 / Cadd (Kathryn Lundgren)	Sr Project Administrator (Deana Escamilla)	Labor Rate Esc.	Labor	Subs	Travel	Mat'ls & Equip	ODCs	Task Pricing Totals
	From	Thru	Months																
<b>1.0 Project Management</b>					<b>12</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>-</b>	<b>-</b>	<b>-</b>		<b>3,240</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>60</b>	<b>3,300</b>	
General Administration (6 months)					6	2	4						1,700				60	1,760	
Phone Conference Calls (5)					6	2		4					1,540					1,540	
<b>2.0 Data Gathering, Utility and Base Map</b>					<b>84</b>	<b>-</b>	<b>-</b>	<b>4</b>	<b>26</b>	<b>52</b>	<b>2</b>		<b>10,070</b>	<b>-</b>	<b>80</b>	<b>-</b>	<b>250</b>	<b>10,400</b>	
Data Gathering and Background Research					6			2	4				900					900	
Utility Research					4				2		2		450				250	700	
Field Walk					24				12	12			2,760		80			2,840	
Base Map (9 sites)					50			2	8	40			5,960					5,960	
<b>3.0 Preliminary Design</b>					<b>106</b>	<b>4</b>	<b>6</b>	<b>22</b>	<b>44</b>	<b>28</b>	<b>2</b>		<b>16,220</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>80</b>	<b>16,300</b>	
Air Valve Sizing					20		2	6	12				3,220					3,220	
Typical Air Valve Replacement Detail					17	1		4	4	8			2,590					2,590	
Contact Manufacturers					6			2	4				900					900	
Air Service Pipe Material					6			2	4				900					900	
Construction Sequencing and Concept TC					7	1		2	4				1,230					1,230	
Geotechnical Investigation					-													-	
Preliminary Design Memorandum					23	1	4	4	8	4	2		3,850				80	3,930	
50% Plans					27	1		2	8	16			3,530					3,530	
<b>4.0 Final Design</b>					<b>346</b>	<b>8</b>	<b>20</b>	<b>50</b>	<b>90</b>	<b>170</b>	<b>8</b>		<b>49,620</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>180</b>	<b>49,800</b>	
Title Sheet/General Sheet (2 shts)					22			2	4	16			2,740					2,740	
ETM Location Map/Profile Overview (2 shts)					24			2	6	16			2,970					2,970	
Air Valve Site Plans (9 sites/7 sheets)					109	1	4	8	24	72			14,170					14,170	
Trenching/Pavement Details					18			2	6	10			2,280					2,280	
Air Valve Replacement Detail					31	1	2	4	8	16			4,490					4,490	
Piping, Valves, Misc Site Restoration Details					20			2	6	12			2,510					2,510	
Typical Retaining Wall and Site Details					24			4	8	12			3,180					3,180	
Traffic Control and Site Access					18			2	6	10			2,280					2,280	
Specifications					28	4	8	10			6		6,260					6,260	
Construction Cost Estimate and Schedule					20	2	4	6	8				3,940					3,940	
Permits: Aliso Viejo and Laguna Niguel					15		2	4	8		1		2,430					2,430	
Design Submittals (90%, 100% and Final)					17			4	6	6	1		2,370				180	2,550	
<b>Totals</b>					<b>548</b>	<b>16</b>	<b>30</b>	<b>80</b>	<b>160</b>	<b>250</b>	<b>12</b>	<b>0.00%</b>	<b>79,150</b>	<b>-</b>	<b>80</b>	<b>-</b>	<b>570</b>	<b>79,800</b>	





**CTP Feasibility Study Update**  
**October 1, 2020**

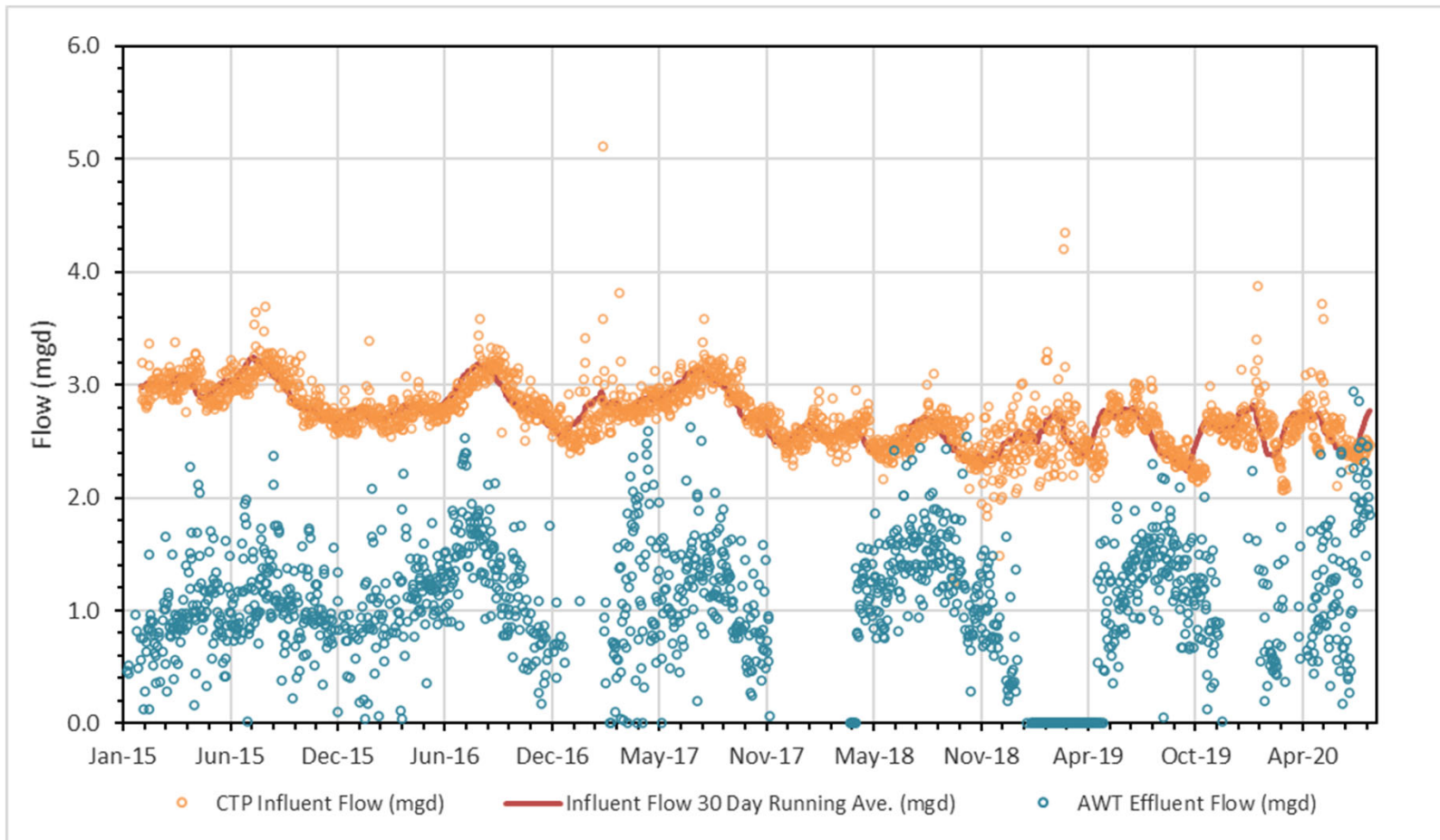


# Agenda

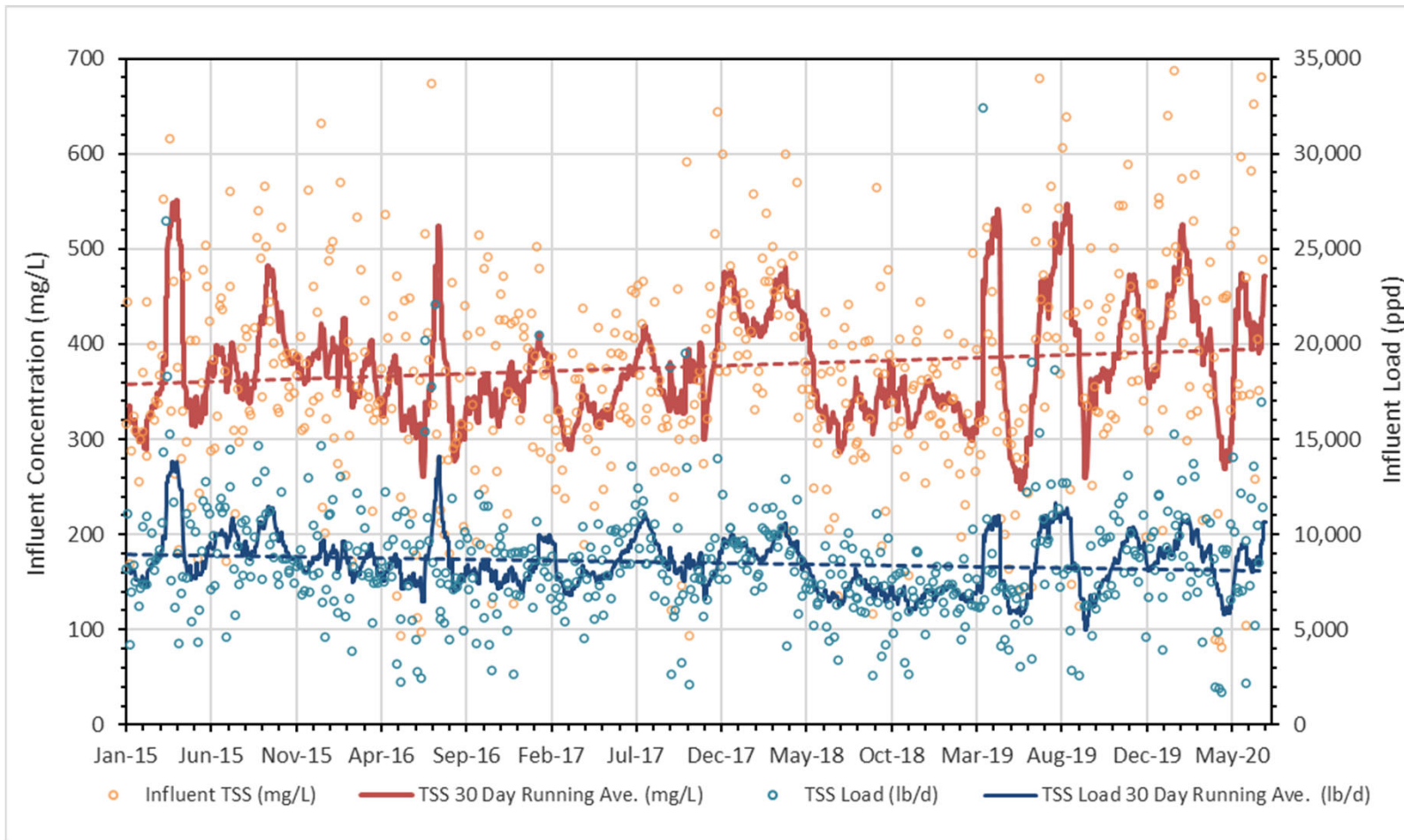
- Data Review Update
- Conceptual Design Basis
- Evaluation Approach
- Conceptual Layouts
- Preliminary Evaluation and Screening
- Next Steps

# Data Review Update

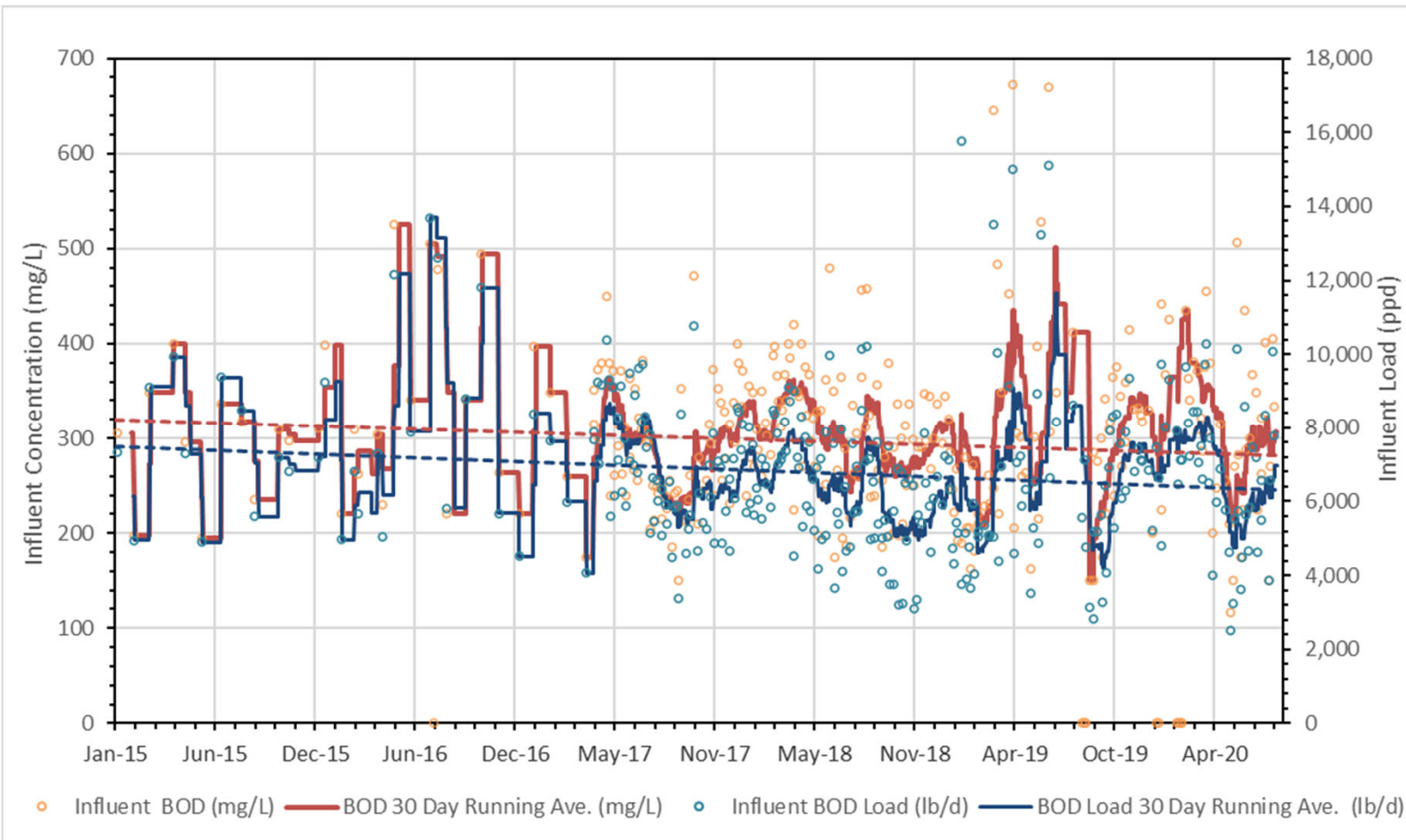
# Influent Flow



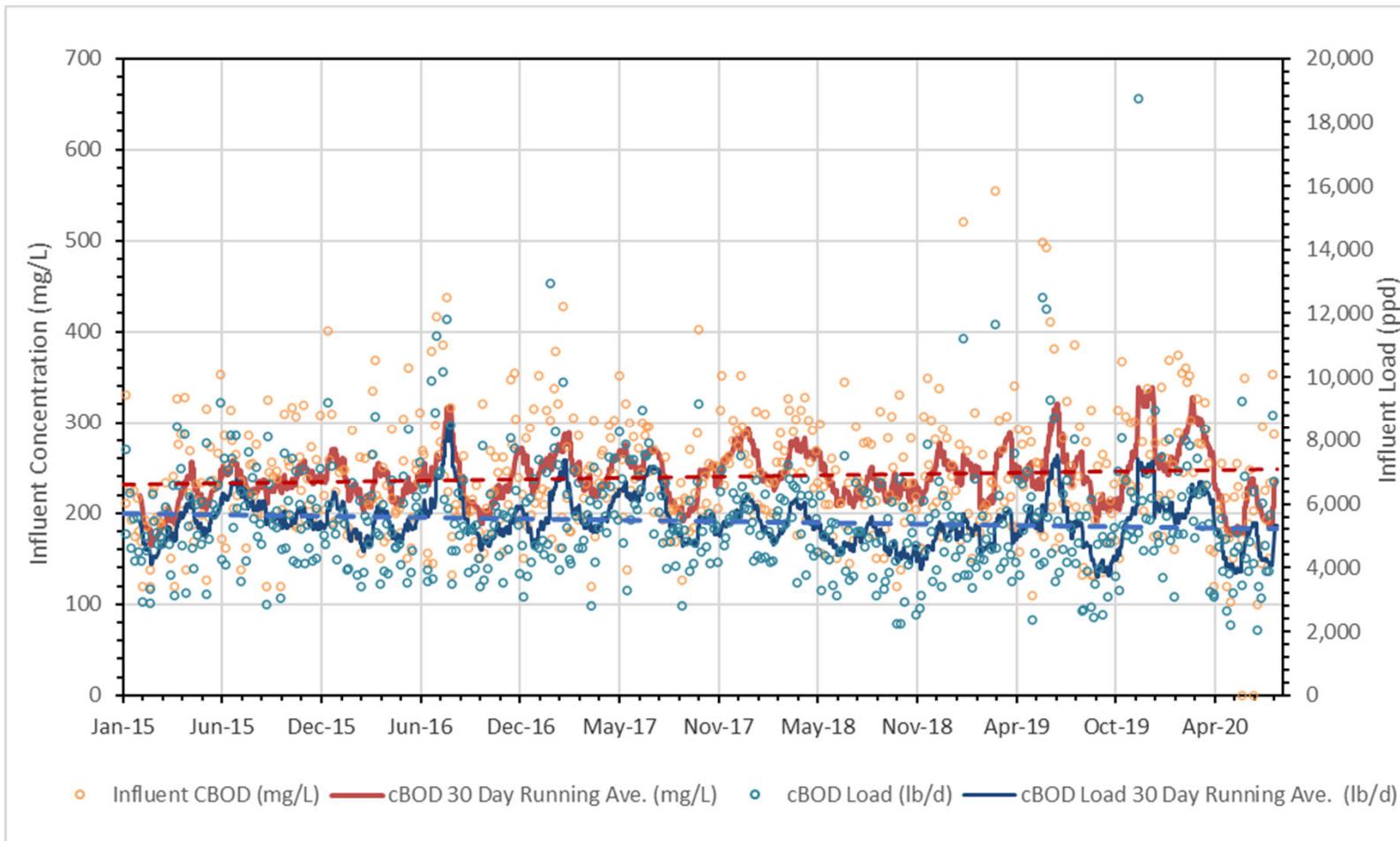
# Influent TSS



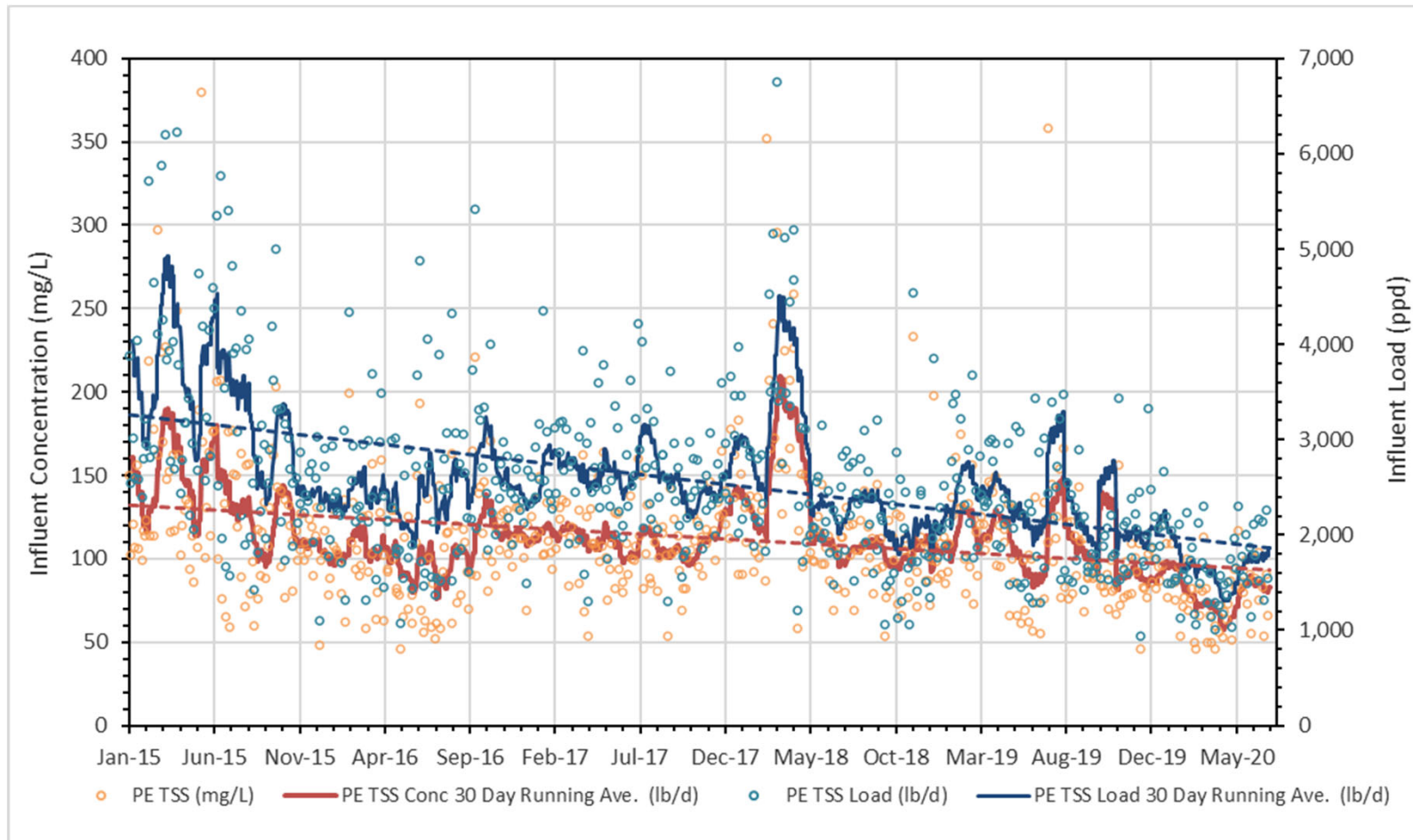
# Influent BOD



# Influent cBOD

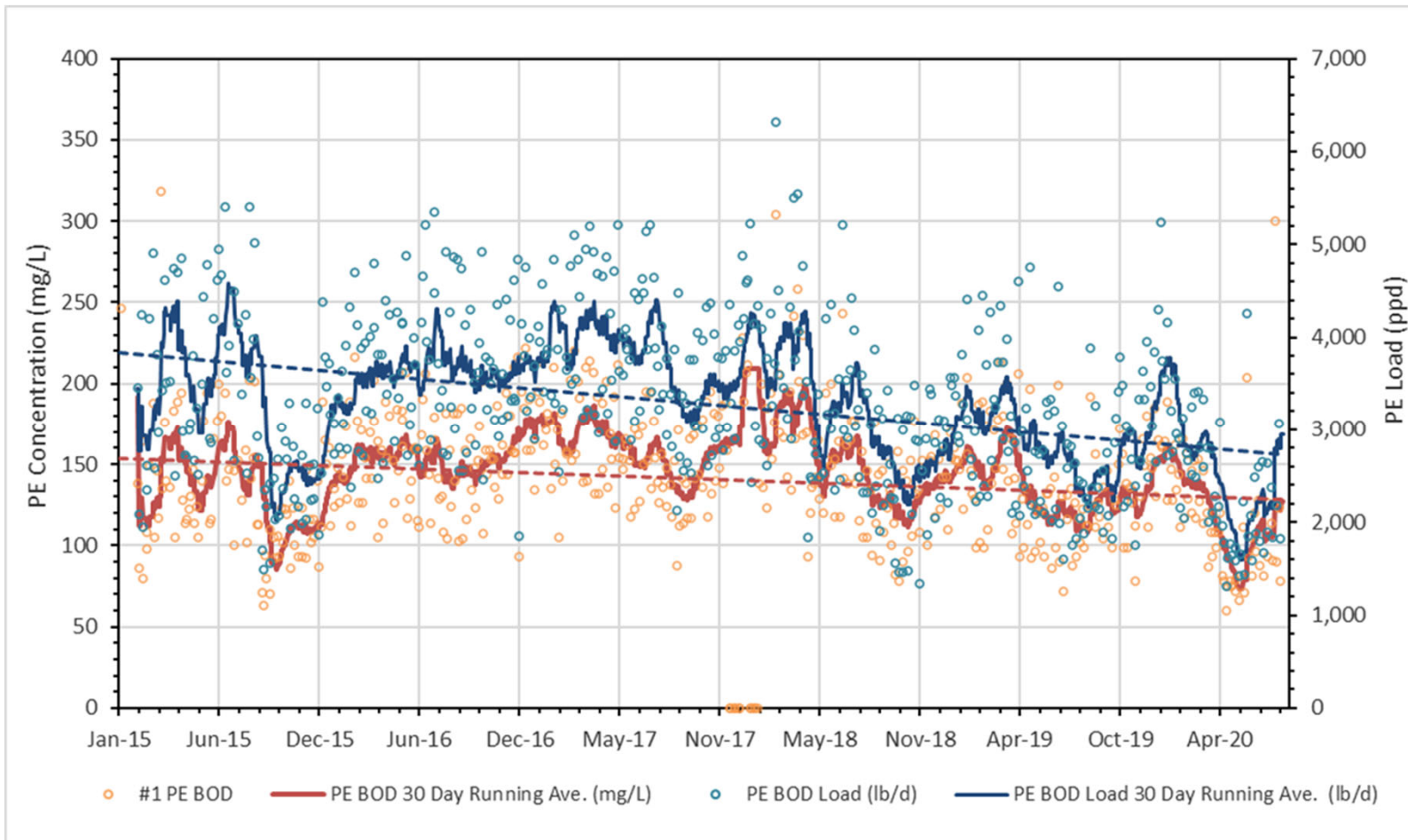


# PE TSS



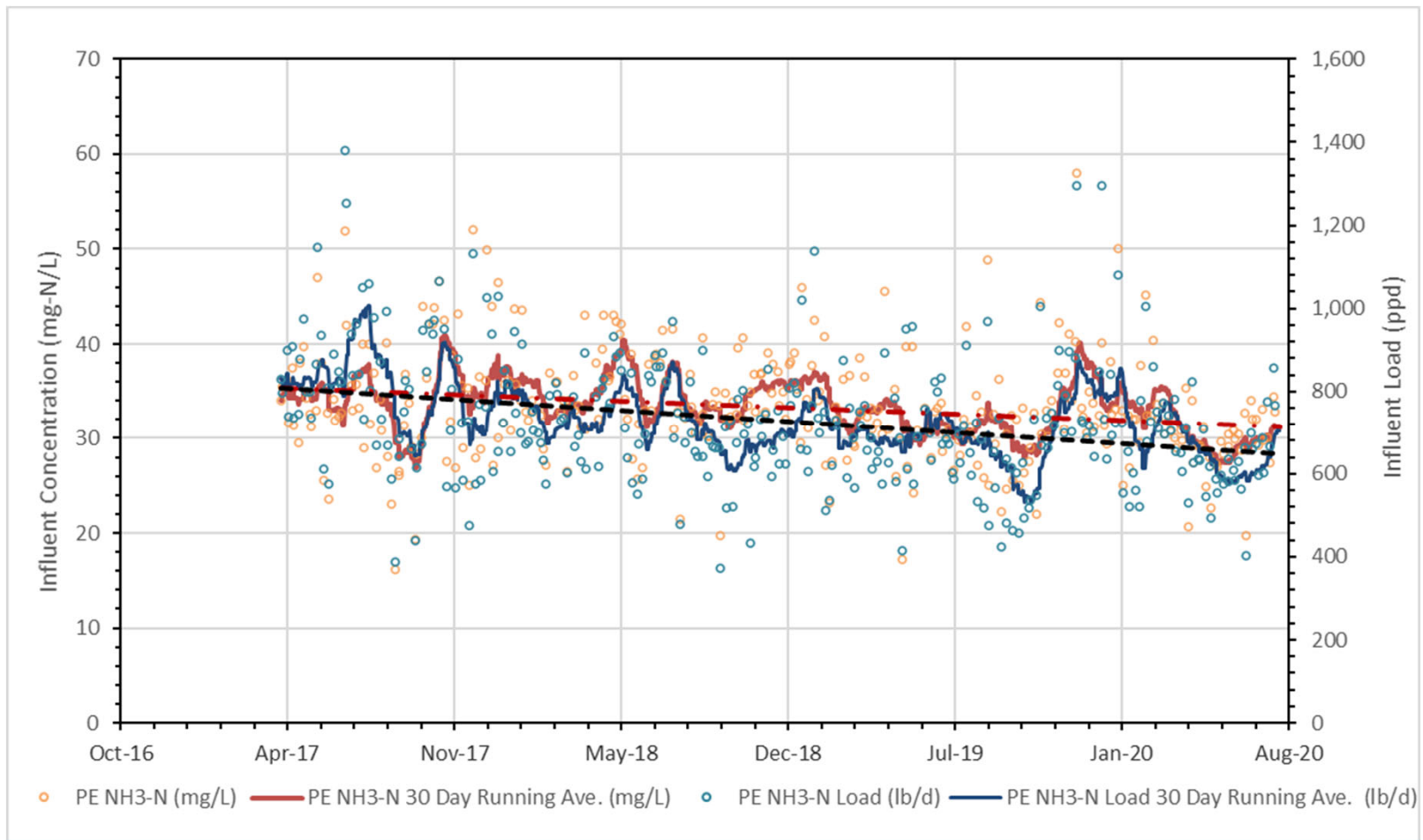


# PE BOD





# PE NH3



# Conceptual Design Basis

## Influent Characteristics

Parameters	Units	Current		Future	
		Average Annual	Maximum 30-Day	Average Annual	Maximum 30-Day
Flow	MGD	2.68	2.93	4.00	4.39
BOD <sub>5</sub>	mg/L	292	350	292	350
	lbs/d	6,600	8,600	9,800	12,900
TSS	mg/L	364	461	364	461
	lbs/d	8,100	11,300	12,200	16,900
VSS	mg/L	325	398	325	398
	lbs/d	7,300	9,700	10,900	14,600
NH <sub>3</sub> -N	mg/L	32	37	32	37
	lbs/d	730	900	1,100	1,400

*Historical data based on plant operations data: Jan 2016 to July 2020*

## Primary Effluent

Criteria		BOD <sub>5</sub>	NH <sub>3</sub> -N
Current Annual Average 2.7 mgd	mg/L	145	32.3
	lb/d	3,300	730
Design Annual Average 4.0 mgd	mg/L	145	32
	lb/d	4,900	1,080
Design Maximum 30-Day 4.4 mgd	mg/L	187	39
	lb/d	6,900	1,440
Design Maximum 7-Day 4.7 mgd	mg/L	213	46
	lb/d	8,500	1,830
Design Maximum Day 5.9 mgd	mg/L	257	52
	lb/d	12,800	2,600

# Evaluation Approach

## Task 1 - Develop and Analyze Alternatives to Upgrade Treatment but De-rate the Plant Capacity to 4.0 mgd

High-level evaluation and screening to shortlist to 2 potential implementable solutions:

*(will be a relative comparison (scoring 1 through 5, from lowest to highest) of the alternatives using the following criteria)*

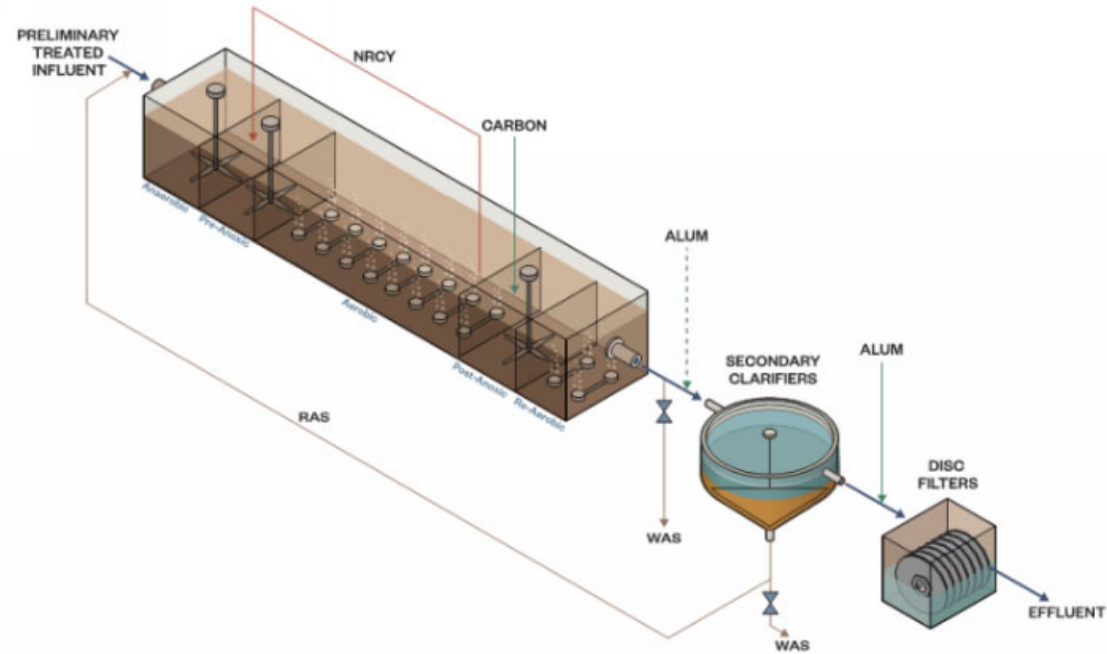
- Relative capital cost
- Relative estimated energy and chemical requirements
- Compatibility with water quality goals for recycled water and flexibility in accommodating potential future discharge limits
- Compatibility of selected process to be incorporated into existing infrastructure while maintaining operations

## Future Alternatives For Consideration

- Conventional Activated Sludge (**CAS**) (selector/nutrient removal)
- Membrane Bioreactor (**MBR**)
- Membrane Aerated Biofilm Reactors (**MABR**)
- Aerobic Granular Sludge (**AGS**)
- Sequencing Batch Reactors (**SBR**)

# Conventional Activated Sludge Biological Nutrient Removal (BNR)

- What?
  - Biological N and P removal through zone design to select specific organisms
- Why?
  - Proven approach with decades of implementation
  - Consistent effluent quality
  - Improved settling

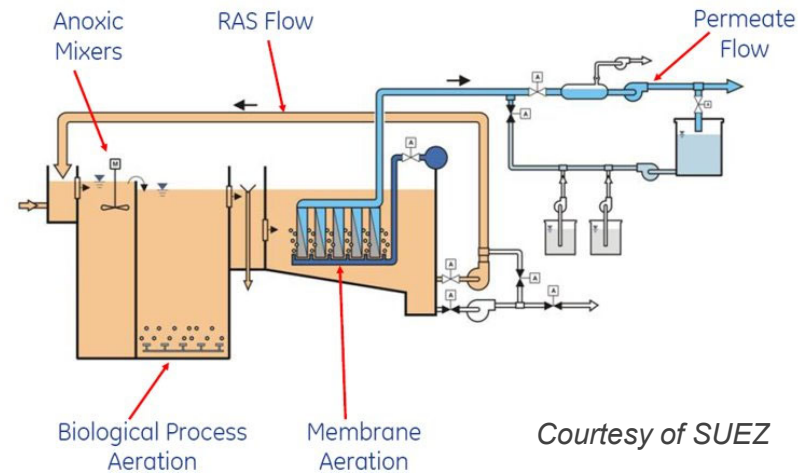


Parameter	Typical Effluent Range
TN (mg/L)	3 – 6
TP (mg/L)	0.5 – 2



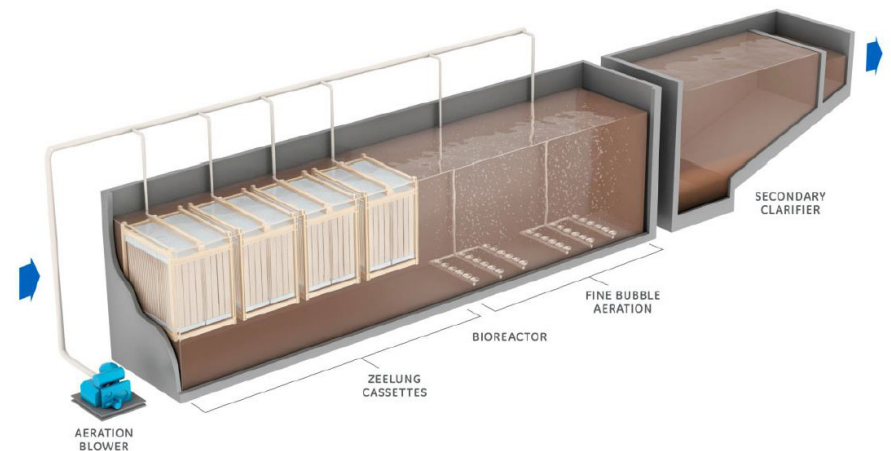
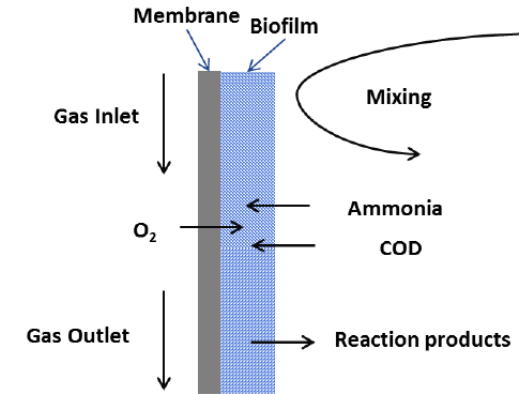
# Membrane Bioreactor (MBR)

- What?
  - Secondary clarifiers replaced with membranes
  - Pump or gravity flow MLSS from aeration basins to membrane tank
  - Dedicated membrane tankage preferable for flexibility
  - Typical BNR configurations can be used
- Why?
  - Smaller footprint versus clarifier based secondary process
  - Enhanced effluent quality for reuse



# Membrane Aerated Biofilm Reactor (MABR)

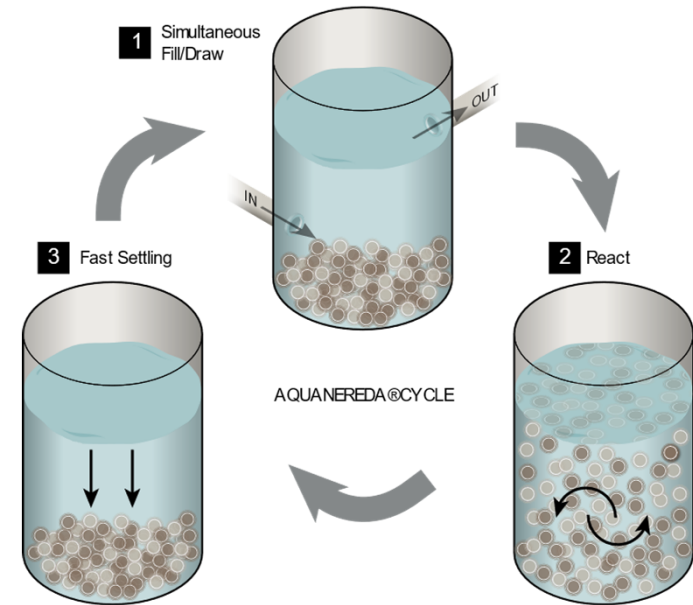
- What?
  - Uses gas-permeable membrane for biofilm growth
  - $O_2$  transfer directly to nitrifying biofilm
- Why?
  - Increased capacity due to fixed film growth
  - Reduced  $O_2$  requirements
  - Nitrification and denitrification in the same volume



*Courtesy of GE ZeeLung System*

# Aerobic Granular Sludge (AGS)

- What?
  - Simultaneous biological N and P removal through formation of granules typically in SBRs
- Why?
  - Smaller footprint, higher loading rates
  - Reduced energy
  - Good settling
  - Alternative to membrane bioreactors



## Characteristics

The development of granules for use in WRRFs for facilitating intensified organic and nutrient removal is being studied since granular sludge has several advantages over conventional activated sludge.

**Dense compact biofilm** allows for multiple redox conditions to exist.

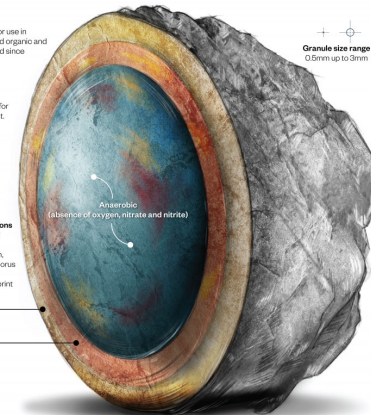
**High mechanical strength** promotes resistance to shear.

**High settling velocity** results in very low sludge volume index (SVI).

**Combination of fast settling sludge, multiple redox conditions and differential penetration of substrates** allow for multiple microbial processes (nitrification, denitrification, biological phosphorus removal, anaerobic ammonia oxidation) to occur in small footprint.

**Aerobic** (presence of oxygen)

**Anoxic** (presence of nitrate/nitrite)

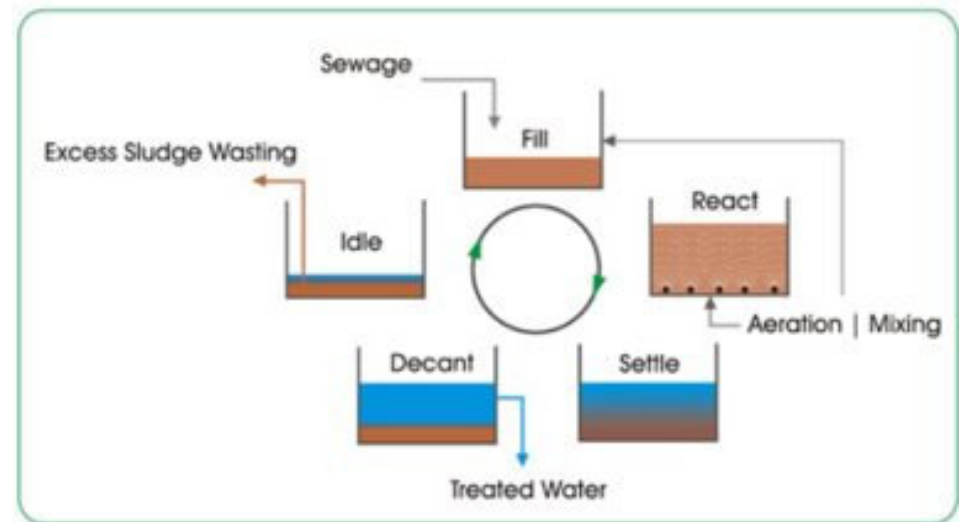


## Stages of Granulation

1. Bacteria convert soluble substrates to internal storage products.
2. Bacteria use internal storage products to facilitate granule formation and to power nutrient removal and recovery.
3. Fast settling bacteria are retained and flocs are converted to granules.

# Sequencing Batch Reactor

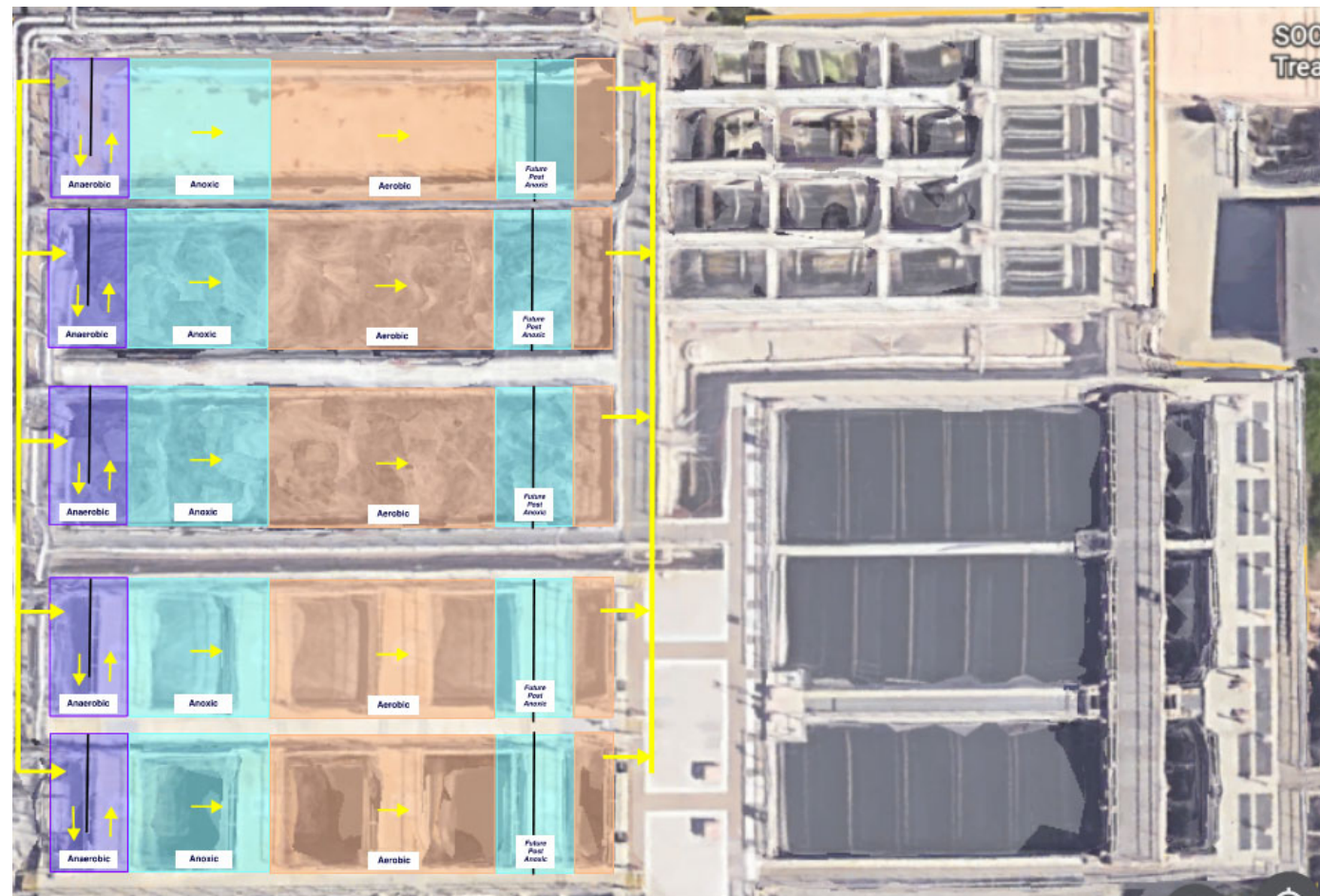
- What?
  - Biological N and P removal through sequenced operation
- Why?
  - Reduced complexity
  - Settling in tank eliminates need for clarifiers



# Conceptual Layouts

# CAS Layout

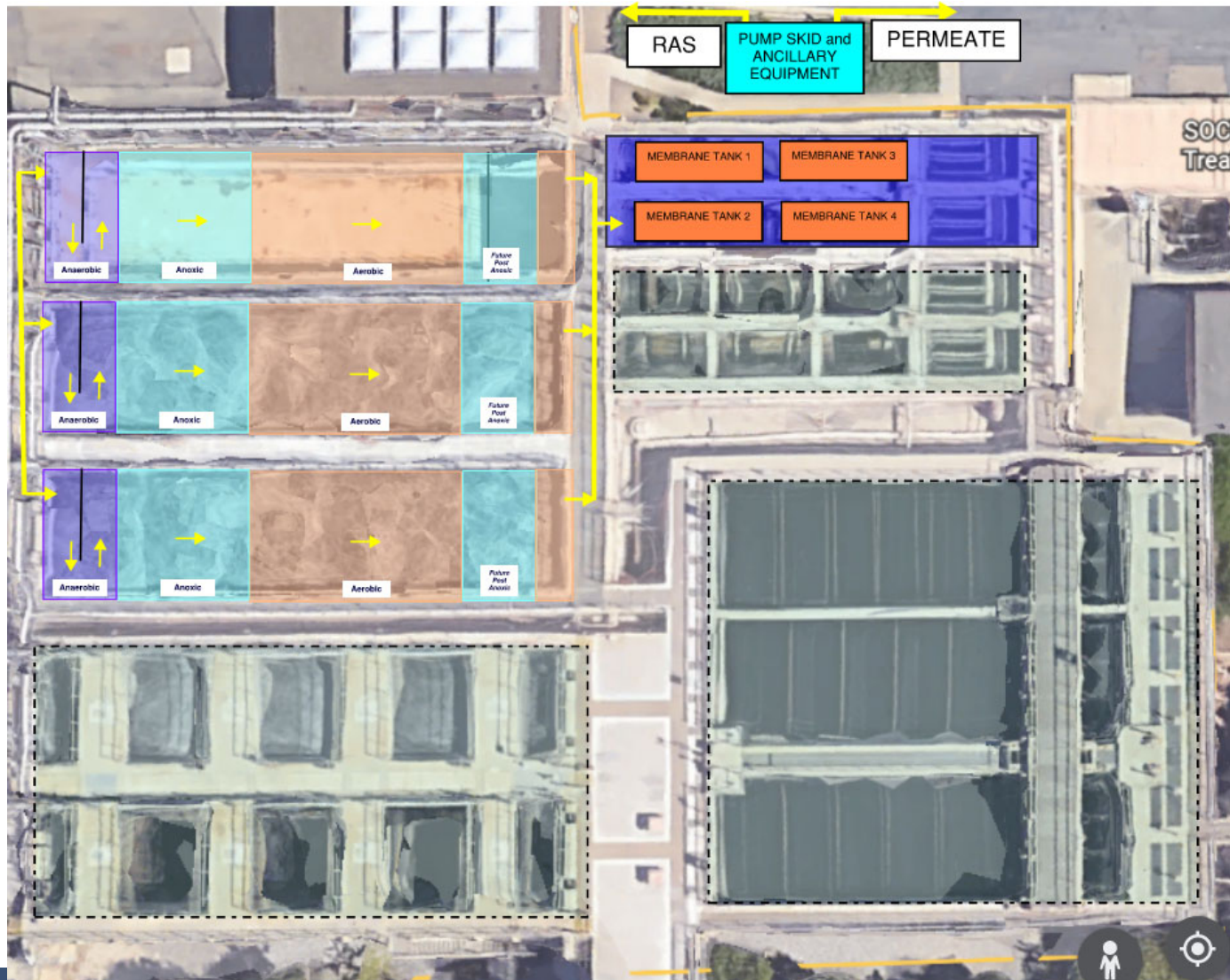
- Utilizes the East and West Aeration Basins
- Secondary clarifiers remain





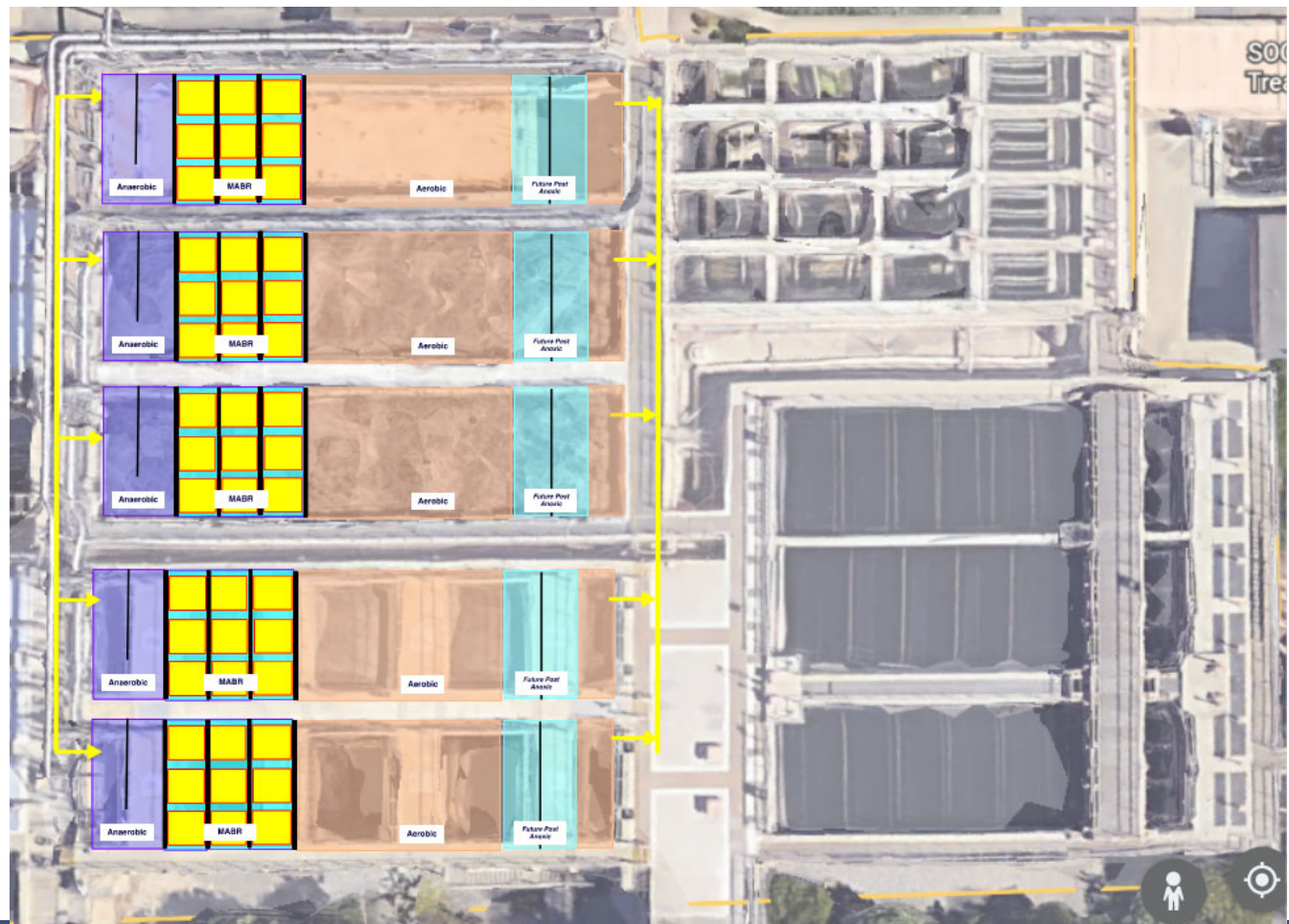
# MBR Layout

- Utilizes the East Aeration Basins
- Reduced volume compared to other alternatives
- West basins could be utilized for equalization volume



# Membrane Aerated Biofilm Reactors

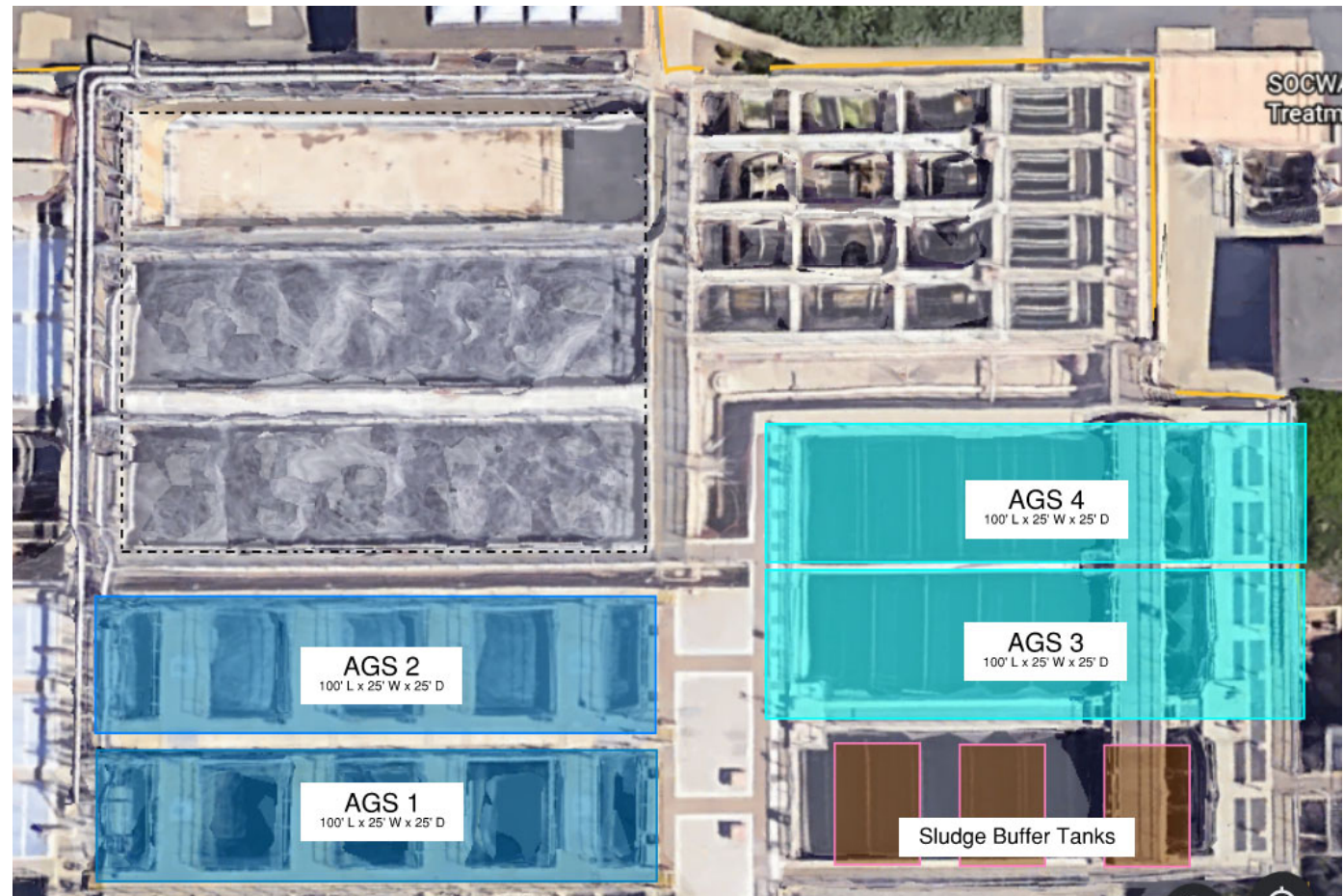
- Similar to conventional layout
- MABR cassettes located in the anoxic zone to improve total nitrogen removal and reduce energy





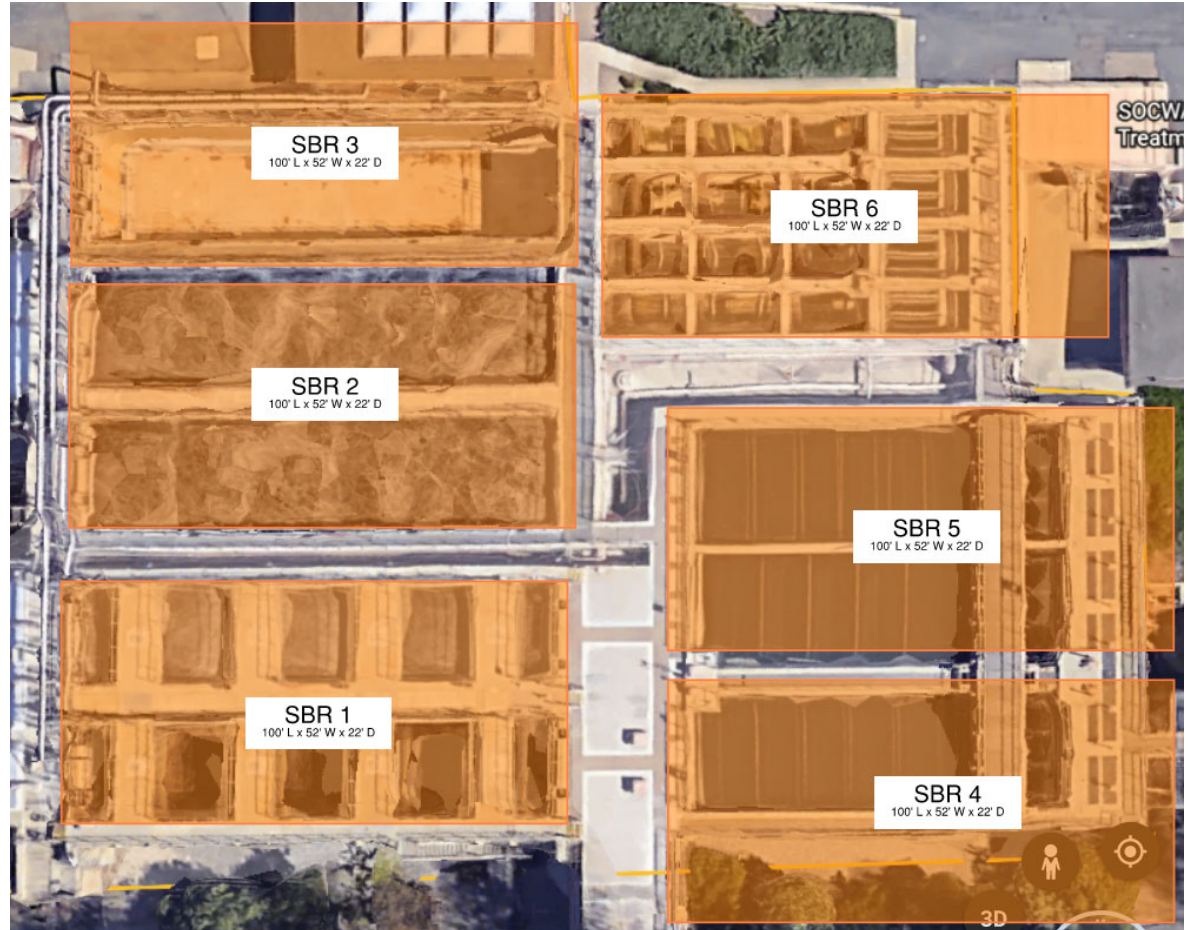
# AquaNereda Aerobic Granular Sludge

- Requires deep tanks (>18ft)
- Sludge buffer tanks located in existing West clarifier



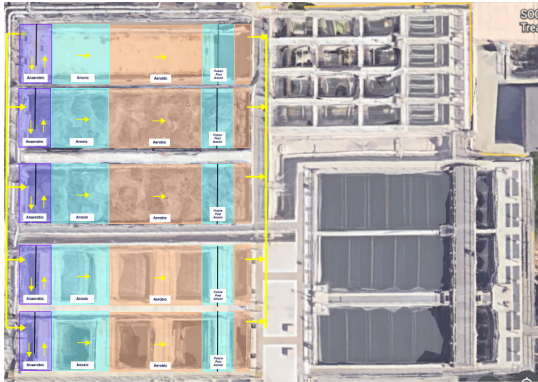
# AquaSBR Sequencing Batch Reactor

- Requires the footprint of the existing aeration basins and secondary clarifiers

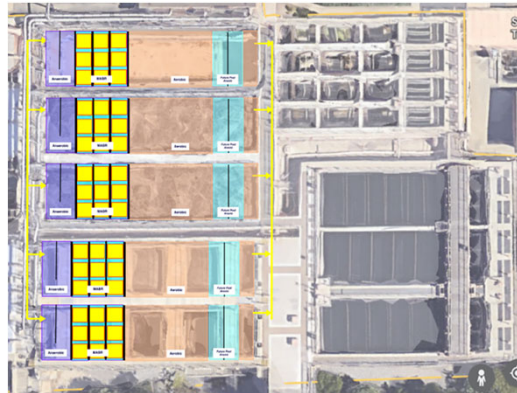




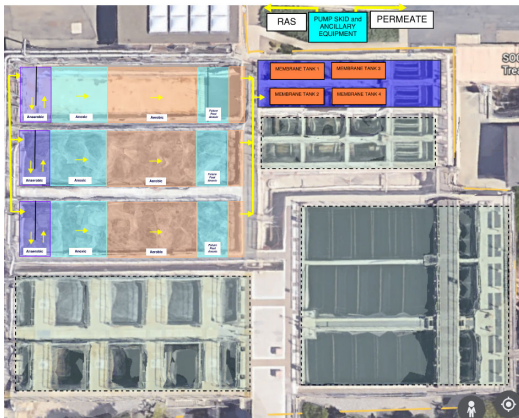
# Facility Comparisons



**CAS BNR**



**MABR**



**MBR**



**AGS**








**SBR**

## Summary

Parameter	CAS	MBR	MABR	Aqua Nereda AGS	Aqua Nereda SBR
Existing Basin Volumes, MG	2.0	1.1	2.0	0.93	-
New Basin Volume, MG	-	-	-	<b>0.935</b>	<b>5.0</b>
Total Process Volume, MG	2.0	1.1	2.0	1.9	5.0
SRT	6-8 (Aer)	7.5 (Aer)	6.0	8.2	11.6
MLSS	3,000	<8,000 mg/L	2,800	8,000	4,500
Effluent Total Nitrogen	<10	<10	<10	<10	<10
Effluent NH <sub>3</sub>	<1.0	<1.0	<1.0	<1.0	<1.0

## Facility Impacts Summary

Parameter	CAS	MBR	MABR	Aqua Nereda AGS	Aqua Nereda SBR
CTP Primary Clarifiers	+	+	+	?	?
Repurpose CTP Aeration Basins	+	+	+	+/-	-
Require Tertiary Facilities	Y	N	Y	Y	Y
Sludge Export PS Compatibility	Y	Y	Y	Y	Y
RTP Gas Generation					

# Preliminary Evaluation and Screening

## Screening Evaluation Insights

	CAS	MBR	MABR	AGS	SBR
Relative Capital Cost	\$\$	\$\$	\$\$\$	\$\$\$	\$\$\$
Relative Energy and Chemical Costs	\$\$	\$\$\$	\$	\$	\$\$
Compatibility with WQ Objectives	++	+++	++	++	++
Compatibility with Existing Infrastructure	+++	++	+++	+	-

## Preliminary Scoring

	CAS	MBR	MABR	AGS	SBR
Relative Capital Cost	5	4	3	2	1
Relative Energy and Chemical Costs	3	2	4	4	3
Compatibility with WQ Objectives	3	5	3	3	3
Compatibility with Existing Infrastructure	5	3	4	2	1
<b>Total Score</b>	<b>16</b>	<b>14</b>	<b>14</b>	<b>11</b>	<b>8</b>



# Next Steps

## **Task 1 - Develop and Analyze Alternatives to Upgrade Treatment but De-rate the Plant Capacity to 4.0 mgd**

- Progress the two (2) leading potential alternatives through:
  - Preliminary sizing and conceptual layout
  - Comparative advantages and disadvantages
  - Relative complexity
  - Conceptual level costs (Task 2)

## Task 2 - Develop Cost Estimates

Hazen will develop estimated capital and operation and maintenance (O&M) costs for the two (2) screened alternatives evaluated in Task 1.

- The capital cost estimates will be Class 5 Level
- Hazen will develop the estimated capital costs with O&M costs (chemical, energy and sludge disposal).

## Task 3 – Presentation and Findings

Hazen will prepare a table summarizing estimated costs and other non-economic factors considered in the comparative evaluation of the alternatives analyzed in Task 1. The presentation will include the following:

- Table comparing alternatives
- Brief discussion of other alternatives not analyzed including abandoning the CTP (conveying wastewater to the Regional Treatment Plant or JB Latham Treatment Plant) and maintaining the CTP at its current 6.7 mgd capacity.
- Estimate of the overall time frame to implement the alternatives
- Regulatory and permitting issues to be considered
- Future potential trends and concerns for potential potable reuse.

## Project Schedule and Deliverables

- Project will be substantially completed 6 months from NTP
- (July 2020 – December 2020)
  
- Deliverables:
  - Draft and final TM summarizing the evaluation
  - Presentation of the work to SOCWA