

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

**ENGINEERING COMMITTEE  
TELECONFERENCE MEETING**

**TELECONFERENCE PHONE NUMBER: (213) 279-1455  
TELECONFERENCE ID: 784 408 457**

**November 12, 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 **November 12, 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. Operations Report**

**Recommended Action:**

Information Item

**4. San Diego Regional Water Quality Control Board's Biological Quality Objectives**

**Recommended Action:**

Information Item

**5. Capital Improvement Construction Projects Report**

**Recommended Action:**

1. Staff recommends that the Engineering Committee recommend to the PC-2 Board to approve Change Orders 10 through 15 totaling \$187,929; and
2. Staff recommends that the Engineering Committee recommend to the PC-15 Board to approve Change Order 11 totaling \$5,153.

**6. Coastal Treatment Plant Sludge Force Main Replacement Project Update  
[Project Committee 15]**

**Recommended Action:**

Staff recommends that the Engineering Committee recommend to the PC 15 Board to award the time and materials contract to Dudek in the amount of \$769,700 for the services during construction for the CTP Sludge Force Main Project.

**7. Coastal Treatment Plant AWT Upgrade Project Update  
[Project Committee 15]**

**Recommended Action:**

Information Item

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

**Recommended Action:**

Information Item

**9. Knowledge Sharing – Comparison of Polymer Types for the Regional Treatment Plant Dissolved Air Floation Tanks [Project Committee 17]**

**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 5th day of November 2020.



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

# Agenda Item

# 5

**Engineering Committee Meeting**

**Meeting Date:** November 12, 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 are six new change orders for the JBL Package B project and one new change order for the CTP Facility Improvement Project.

As a reminder, change orders within the General Manager's purchasing authority (less than \$50,000) and within the project contingency will be presented in this report and then to the Board of Directors. This is in 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:**

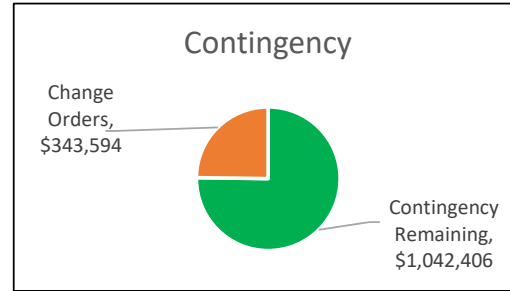
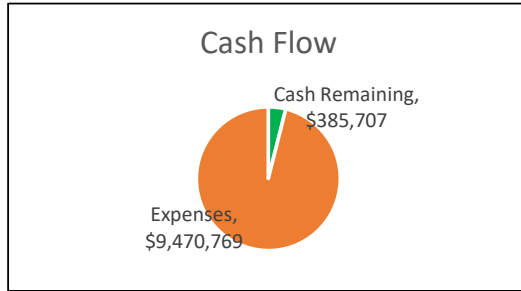
1. Staff recommends that the Engineering Committee recommend to the PC-2 Board to approve Change Orders 10 through 15 totaling \$187,929, and
2. Staff recommends that the Engineering Committee recommend to the PC-15 Board to approve Change Order 11 totaling \$5,153.

**Project Financial Status**

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

**Data Last Updated**

November 4, 2020



**Cash Flow**

Collected	\$9,856,476
Expenses	\$9,470,769

**Project**

**Completion**

Schedule	55%
Budget	43%

**Contracts**

Company	PO No.	Original	Change Orders	Total	Paid
Olsson	13497	\$ 17,325,000	\$ 343,594	\$ 17,668,594	\$7,211,499
Butier	13647	\$ 1,055,325	\$ -	\$ 1,055,325	\$613,388
Carollo	13616	\$ 846,528	\$ -	\$ 846,528	\$568,765
TetraTech	13605	\$ 94,000	\$ -	\$ 94,000	\$81,837
		<b>\$ 19,320,853</b>	<b>\$ 343,594</b>	<b>\$ 19,664,447</b>	<b>\$8,475,490</b>

**Contingency**

Area	Project Code	Amount	Change Orders	Total Remaining	Percent Used
Liquids	3220-000	\$ 616,800	\$ 73,170	\$ 543,630	13.5%
Common	3231-000	\$ 96,800	\$ -	\$ 96,800	0.0%
Solids	3287-000	\$ 672,400	\$ 270,424	\$ 401,976	67.3%
		<b>\$ 1,386,000</b>	<b>\$ 343,594</b>	<b>\$ 1,042,406</b>	<b>33.0%</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)
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

Change Order No.	Vendor Name	Project ID	Description	Status	Status Date	Potential Change Amount	Final Amount
10	Olsson	3287-000	Duct bank J Interferences	Within contingency, to be reviewed by Engineering Committee	11/12/2020		\$ 73,639
11	Olsson	3220-000	Blasting of Existing Influent Pipe Spools	Within contingency, to be reviewed by Engineering Committee	11/12/2020		\$ 20,869
12	Olsson	3220-000	Duct bank K Interferences	Within contingency, to be reviewed by Engineering Committee	11/12/2020		\$ 15,567
13	Olsson	3287-000	Digester 3/4 PLC Relocation	Within contingency, to be reviewed by Engineering Committee	11/12/2020		\$ 41,368
14	Olsson	3287-000	Digester 4 Additional Tank Repair	Within contingency, to be reviewed by Engineering Committee	11/12/2020		\$ 34,800
15	Olsson	3220-000	Duct bank O Interferences	Within contingency, to be reviewed by Engineering Committee	11/12/2020		\$ 1,687

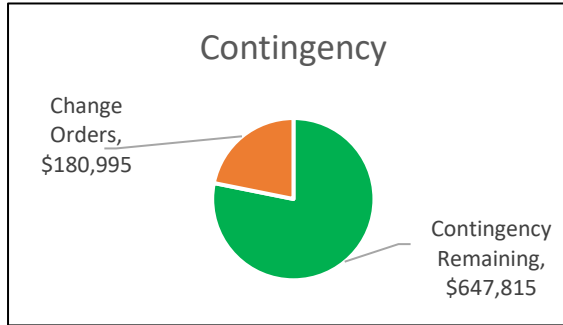
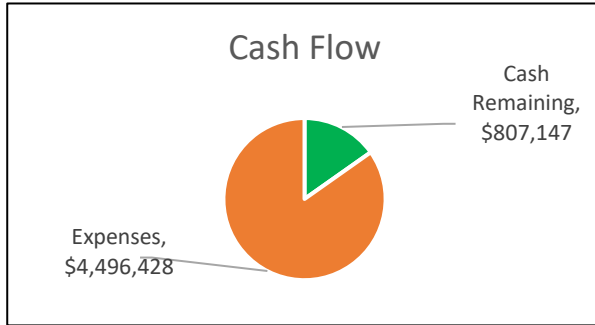
Change Order No.	Vendor Name	Project ID	Description	Status	Status Date	Potential Change Amount	Final Amount
PCO 002	Olsson	3287-000	Digester 4 Rail Coating. The coating is not needed and resulting in a credit but some rehabilitation work will be needed.	Potential Change	(blank)	-\$1,000	
PCO 004	Olsson	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 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	
PCO 018	Olsson	3287-000	Duct bank L Interferences	Potential Change	(blank)	\$5,000	
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 032	Olsson	3287-000	Gas Mixer Conduit Conflict	Potential Change	(blank)	\$12,384	
Grand Total						\$180,448	\$ 343,594



**Data Last Updated**  
November 4, 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	\$5,303,575
Expenses	\$4,496,428

**Project Completion**

Schedule	68%
Budget	40%

**Contracts**

Company	PO No.	Original	Change Orders	Total	Paid
PCL	13751	\$ 9,209,000	\$ 180,995	\$ 9,389,995	\$3,702,072
Butier	13647	\$ 812,288	\$ -	\$ 812,288	\$418,388
Hazen & Sawyer	13648	\$ 490,484	\$ -	\$ 490,484	\$204,834
		<b>\$ 10,511,772</b>	<b>\$ 180,995</b>	<b>\$ 10,692,767</b>	<b>\$4,325,293</b>

**Contingency**

Area	Project Code	Amount	Change Orders	Total Remaining	Percent Used
Liquids	3539-000	\$ 828,810	\$ 180,995	\$ 647,815	27.9%
		<b>\$ 828,810</b>	<b>\$ 180,995</b>	<b>\$ 647,815</b>	<b>27.9%</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
11	PCL	3539-000	<b>Secondary Effluent Channel Improvements</b>	<b>Within contingency, to be reviewed by Engineering Committee</b>	<b>11/12/2020</b>		<b>\$ 5,153</b>

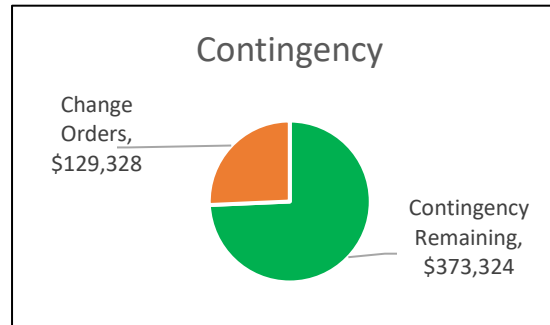
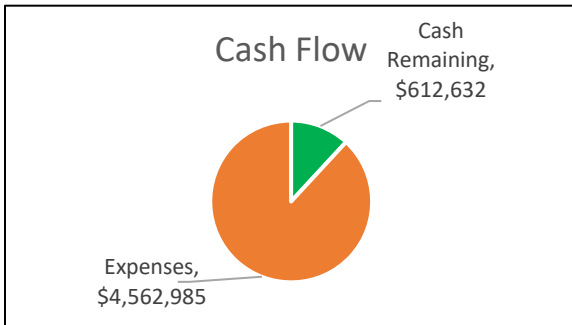
Change Order No.	Vendor Name	Project ID	Description	Status	Status Date	Potential Change Amount	Final Amount
PCO 006	PCL	3539-000	Additional Pothole Paving	Potential Change	(blank)	\$5,000	
PCO 013	PCL	3539-000	Ferric Containment Foundation	Potential Change	(blank)	\$15,000	
PCO 015	PCL	3539-000	RAS Channel Modification Descope	Potential Change	(blank)	-\$2,000	
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 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	\$180,995

**Project Financial Status**

**Data Last Updated**

November 4, 2020

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	\$4,562,985

**Project Completion**

Schedule	84%
Budget	89%

**Contracts**

Company	PO No.	Original	Change Orders	Total	Paid
Filanc	13678	\$ 4,181,205	\$ 129,328	\$ 4,310,533	\$3,806,206
Dudek	14164	\$ 137,625	\$ -	\$ 137,625	\$133,300
Lee & Ro	14006	\$ 123,310	\$ -	\$ 123,310	\$109,110
		<b>\$ 4,442,140</b>	<b>\$ 129,328</b>	<b>\$ 4,571,468</b>	<b>\$4,048,616</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:** November 12, 2020

**TO:** Engineering Committee

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

**SUBJECT:** Coastal Treatment Plant Sludge Force Main Replacement Project Update  
[Project Committee 15]

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## Overview

In mid-October 2020, Dudek completed the final design for the Coastal Treatment Plant Sludge Force Main Replacement Project. The final design was put out for bid on October 29, 2020 with a due date of December 3, 2020. The Engineer's Estimate for construction cost is \$3,705,200.

In addition to the engineering design work, Dudek has also provided the permitting support for the project. Therefore, SOCWA staff requested that Dudek provide costs for both the Engineering Services During Construction and Biological, Archeological and Tribal Monitoring Services. Their proposal is attached as Exhibit A and Table 1 shows a breakdown of the associated costs. The costs are based on time and materials and we have assumed four nesting sites that will require noise monitoring for budgeting purposes.

Table 1 – Dudek Tasks during Construction

<b>Tasks</b>	<b>Total Hours</b>	<b>Costs</b>
Engineering Services During Construction	718	\$ 150,800
Biological Monitoring and Reporting	1,385	\$ 202,350
Archaeological, Paleontological, and Native American Monitoring	4,398	\$ 381,950
Noise Monitoring per Nest Site (4 x \$8,650.00)	44	\$ 34,600
<b>Total</b>	<b>6,545</b>	<b>\$ 769,700</b>

**Cost Allocation**

Table 2 – Cost allocation by member agency

<b>Agency</b>	<b>Dudek Tasks During Construction</b>
	3534-000
CLB	\$291,796.72
EBSD	\$ 22,976.12
MNWD	\$225,165.97
SCWD	\$229,761.19
<b>Total</b>	<b>\$769,700.00</b>

Table 3 – Available budget

<b>3534-000</b>	<b>3541-000</b>	<b>Total</b>
\$699,679	\$4,045,345	\$4,745,024

Project 3534-000 is already funded and approximately \$1.4 million (33% of budget) has already been collected for 3541-000.

Table 4 – Expected Project Costs

<b>Project Element</b>	<b>Cost</b>	<b>Contingency</b>	<b>Total</b>
Construction	\$3,705,200	\$ 296,416	\$4,001,616
EDSC	\$ 150,800		\$ 150,800
Biological Monitoring	\$ 236,950		\$ 236,950
Archaeological Monitoring	\$ 381,950		\$ 381,950
Construction Management	\$ 296,416		\$ 296,416
<b>Total</b>	<b>\$4,771,316</b>	<b>\$ 296,416</b>	<b>\$5,067,732</b>

The projected costs are about \$323,000 more than what is currently budgeted for this project.

**Recommended Action:** Staff recommends that the Engineering Committee recommend to the PC 15 Board to award the time and materials contract to Dudek in the amount of \$769,700 for the services during construction for the CTP Sludge Force Main Project.



October 22, 2020

6731

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

**Subject:** *Coastal Treatment Plant Export Sludge Force Main Replacement Project  
Engineering & Monitoring Services during Construction Scope & Fee*

Dear Mr. Manning:

As the South Orange County Wastewater Authority (SOCWA) is preparing to advertise the referenced project, Dudek is pleased to submit its proposal for requested construction services, including:

- Engineering Services during Construction (ESDC)
- Biological, Archeological and Tribal Monitoring Services

The proposed scopes for the requested services have been defined in Attachment A. The proposed services are provided on a line-item basis to allow SOCWA to adjust the proposed scope to meet its desired level of support. The proposed labor and fee to complete this work is provided in Attachment B.

We are pleased to continue supporting SOCWA with this important project. If you have any questions, or require any additional information, please do not hesitate to call me at 760.479.4111, or email me at [mmetts@dudek.com](mailto:mmetts@dudek.com).

Respectfully Submitted,  
DUDEK



D. Michael Metts, P.E.  
Principal, Engineering Services

# Attachment A

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## Scope of Services

*Engineering Services during Construction (ESDC)  
Construction Monitoring Services*

## Engineering Services during Construction (ESDC)

Following construction award of the subject project, Dudek proposes to provide the following engineering services during construction for SOCWA.

**ESDC-1: Project Management.** This task includes managing our construction efforts, project status tracking, staff scheduling, budget management, client updates, and other general activities related to overall management activities.

**ESDC-2: Pre-Construction Meeting.** The Dudek Project Manager and Lead Project Engineer will attend one (1) pre-construction meeting, which is assumed to occur at the SOCWA office. The meeting is presumed to be conducted by the SOCWA-selected Construction Manager. The meeting is assumed to be a maximum of two hours, not including travel time.

**ESDC-3: RFIs and Design Clarifications.** Dudek will develop responses to Requests for Information (RFI's) and other design clarifications. RFI's from the Contractor will be formally submitted to the SOCWA-selected Construction Manager (CM). Questions requiring responses from the design team will be forwarded to the Dudek Project Manager for distribution and response. For the purposes of this proposal, a total of twenty-five (25) RFIs and other design clarifications are assumed.

**ESDC-4: Shop Drawing and Submittal Reviews.** Dudek will review submittals that are not otherwise addressed by the SOCWA-selected CM. Submittals will be forwarded to the Dudek Project Manager for distribution and review by the appropriate engineer. For the purposes of this proposal, a total of twenty-five (25) shop drawings and/or other submittals are assumed.

**ESDC-5: Project Meetings.** Dudek will attend a total of ten (10) meetings with SOCWA, the CM and Contractor, as requested. The Dudek project manager will attend these meetings with the appropriate team members based on the key issues being discussed. Meetings are assumed to be a maximum of two hours, not including travel time.

**ESDC-6: Change Order Assistance.** Dudek will assist SOCWA with preparation and review of Contractor Change Orders, as requested. It is assumed that the SOCWA-selected CM will prepare and review construction change orders, and Dudek will assist, as necessary and requested. As the extent and nature of potential change orders are undefinable, an allowance is assumed for this contract item. Services will be provided at SOCWA direction within the available allowance.

**ESDC-7: Design Deviations.** Dudek will assist SOCWA with evaluation of Contractor-proposed design deviations and substitutions, as requested to support the activities of the SOCWA-selected CM. Dudek will evaluate the proposed design changes relative to consistency with the original design intention and capability. As the extent and nature of any Contractor-proposed design deviations are undefinable, an allowance is assumed for this contract item. Services will be provided at SOCWA direction within the available allowance.

**ESDC-8: Site Visits.** Dudek will attend site visits at SOCWA request to observe specific conditions or situations for which design engineer input would facilitate developing an appropriate response or solution. We have assumed a total of ten (10) site visits, by one or more members of team.

ESDC-9: Record Drawings. Dudek will prepare record drawings. The original AutoCAD files will be modified to reflect as-constructed conditions per the SOCWA-selected CM and Contractor field-maintained redline markups.

<i>Cost for Engineering Services during Bidding</i> .....	<b>\$150,800.00</b>
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## Construction Monitoring Services

Following construction award of the subject project, Dudek proposes to provide the following biological, archeological and tribal monitoring services, as required by promulgates environmental permits, during the project construction period for SOCWA.

### Task 3 Biological Monitoring and Reporting

The following includes environmental compliance services associated with the biological monitoring program for the subject project. Biological monitoring will be conducted in accordance with the Final Environmental Impact Report (FEIR; Dudek, March 2013) and the regulatory requirements as described in the various agency permitting documents associated with the project, including the following:

- Section 1602 Streambed Alteration Agreement Number 1600-2015-0015-R5 issued by the California Department of Fish and Wildlife Service (CDFW);
- Section 401 Water Quality Certification R9-2015-0033 issued by the Regional Water Quality Control Board (RWQCB);
- Revised Informal Section 7 Consultation Letter for the Coastal Treatment Plant Export Sludge Force Main Replacement Project, Orange County, California (SPL-2015-00128-ERS) issued by the U.S. Fish and Wildlife Service (USFWS); and,
- Provisional Section 404 Nationwide Permit Verification SPL-2015-00128-ERS issued by the U.S. Army Corps of Engineers (USACE).

To provide the required environmental construction monitoring services, Dudek employs methodologies that have proven successful on many similar-sized projects. These methodologies and practices include the following:

- Provide a clear and meaningful environmental contractor education training session;
- Attend a pre-construction kickoff meeting to establish work schedules, identify communication protocols, and communicate team expectations;
- Schedule and perform biological monitoring inspections at least once per week to enforce the environmental requirements specified in the resource agency permits and FEIR;
- Promptly prepare monthly monitoring reports with embedded photos;
- Provide a small, committed team of qualified biologists throughout the course of construction to ensure seamless monitoring and communication;
- Be highly responsive and assist in rapid resolution to any unforeseen complexities; and,
- Provide clear, concise, and objective monitoring reports.

**Schedule Assumptions.** In addition to the assumptions identified below, the following schedule assumptions are also considered in developing this scope of work:

- Construction of the project will require up to 250 working days
- One construction crew will operate at a time (i.e., only one crew will require monitoring)
- Work will occur for 8 hours a day, 5 days a week.

**Task 3.1 - Contractor Education Program.** Within seven (7) days prior to the start of construction, Dudek will conduct a Contractor education program for construction personnel that will include the following: (1) a description of the Federally-listed species that are known to intersect the proposed project and their known habitats; (2) a discussion of the construction limits; (3) a discussion of the mitigation measures that will be implemented in conjunction with project construction; and (4) a discussion of the general provisions of the Endangered Species Act (ESA).

Dudek will conduct up to three (3) in-person, field-based environmental awareness trainings with construction personnel, SOCWA team members and any new construction personnel starting work on the project. The sessions are intended to coincide with three key construction phases that will occur as part of the project: (1) the overall start of construction; (2) the start of the breeding season for the Federally-listed endangered least Bell's vireo (*Vireo bellii pusillus*) and the Federally-listed threatened coastal California gnatcatcher (*Poliophtila californica californica*) (i.e., February 15 to September 15); and (3) the start of construction to install the bank stabilization features in Aliso Creek. Each construction phase has a different set of monitoring requirements; given the length of construction, a 15-minute "tail-gate" training session is recommended for each construction phase to ensure the environmental protection measures and specific project work area requirements are discussed.

**Task 3.2 - Resource Agency Construction Notifications.** On behalf of SOCWA, Dudek will notify the resource agencies five (5) days prior to the commencement of construction. The notifications will be provided digitally in a PDF, "Optical Character Recognition" (OCR) capable format to each resource agency and SOCWA.

**Task 3.3 - Biological Monitor Qualifications.** At least seven (7) days prior to initiating construction activities, Dudek will submit to the USFWS, in writing, the name(s), any recovery permit numbers, and resumes of all proposed biological monitors for the proposed project. Dudek will coordinate with USFWS staff on the approval of the biological monitoring team, which is expected to take 2 to 3 working days.

**Task 3.4 - Biological Construction Monitoring.** Dudek will conduct weekly monitoring inspections of environmental fence installation, clearing and grubbing, and ground-disturbing work associated with the proposed project for the entire 250 working days of construction to ensure the project is being constructed in compliance with current resource agency permit conditions and requirements.

In addition to weekly inspections, full-time, daily monitoring will be required when trenching activities occur in areas within and immediately adjacent to mapped waters of the U.S., including, wetlands and riparian areas, and during installation of the rock slope protection and groins within Aliso Creek. It is noted, as a reminder, that the USFWS has required SOCWA to install the rock slope protection and groins between September 16 and March 14 to avoid the breeding and nesting season for the least Bell's vireo. During construction of these features, Dudek will be present daily, full-time to enforce the terms and conditions of the resource agency permits. We are assuming that it will take fifteen (15) working days (3 weeks) to complete this work.

Starting February 15, 2021, Dudek will conduct weekly "look ahead" nesting bird surveys focusing on the presence of active least Bell's vireo and coastal California gnatcatcher nests within 500 feet of construction activities for the upcoming week. These surveys will also count as the weekly site inspections to review construction progress, environmental fencing, and other required activities.

It is assumed that pipeline installation will consist of excavation and trenching, placement of the pipe bedding and pipe, and backfilling then compacting of the trench. Further, it is assumed that trenching will require operation of

one excavator and one tractor/loader/backhoe for 8 hours per day, 5 days per week (22 days per month) at a rate of 125 to 150 feet of pipeline installation per day. At that rate, it is assumed that up to 750 linear feet of new pipeline installation work will occur per week. Thus, up to 20 acres of habitat will be surveyed at the beginning of each week, within 500 feet from the centerline of the pipeline alignment, during the combined breeding season for least Bell's vireo and coastal California gnatcatcher (February 15 to September 15). For cost development purposes, we have assumed weekly nesting bird surveys for 30 weeks. The surveys must be conducted by Dudek staff holding a current Section 10(a)(1)(A) permit to survey for coastal California gnatcatcher and with at least 40 hours of field observation for least Bell's vireo and documented experience of at least 20 hours of locating and monitoring least Bell's vireo and coastal California gnatcatcher nests.

During general monitoring visits, the biological monitor will inspect the project work areas for compliance with relevant resource agency permit conditions identified for the project and observe work for identification and avoidance of potential environmental conflicts, specifically nesting birds protected by the state and federal Migratory Bird Treaty Act (MBTA). Any serious noncompliance concerns will be raised immediately with the Construction Management (CM) team and discussed with SOCWA environmental personnel via phone conversation. Dudek assumes inspection services will be the responsibility of the SOCWA CM team and their consultants, and that the Dudek environmental team will not be responsible for performing construction inspection of any contract work. The Dudek monitor will record any observations and report them to the CM team.

The Dudek cost estimate for biological monitoring is based on an anticipated start during the week of October 5, 2020 and will last 250 working days, or 50 weeks total. We have assumed full-time monitoring of trenching work within and adjacent to wetlands and riparian areas will be required and conducted for a maximum of 20 total working days throughout the entire 250-day monitoring period. Weekly monitoring will occur for 50 weeks, when full-time monitoring is not being conducted. Dudek assumes most weekly inspections will entail full eight-hour days, plus up to 2 hours of travel time, due to the remote nature of the work area and the linear nature of construction. If additional full-time monitoring or spot-check visits are required beyond the specified number of days, Dudek will notify SOCWA, review budget status, and discuss the potential need for a task order amendment. If ongoing work suggests shorter duration for Dudek monitoring visits or reducing the frequency of monitoring visits, Dudek will reduce our level of effort accordingly. If Dudek believes a reduction in frequency is warranted, Dudek will contact the SOCWA project manager for confirmation of agreement with our revised approach.

**Task 3.5 - Monthly Reporting.** Dudek will provide monthly summary reports of project activities throughout construction, documenting any observations made in the field and enclosing photographs of conditions and construction activities. The monthly progress report will be transmitted to SOCWA and the USFWS as required by the resource agency permits.

Within 60 days of construction completion, Dudek will submit a final report to SOCWA and the resource agencies that includes: a) as-built construction drawings with an overlay of habitat that was impacted and avoided; b) photographs of habitat areas that were to be avoided; and c) a summary documenting that impacts were not exceeded and that compliance with the resource agency permits was achieved.

**Summary of Critical Assumptions:**

- Construction is expected to last 250 working days, or roughly 50 weeks.
- The combined breeding season for least Bell's vireo and coastal California gnatcatcher is February 15 to September 15.

- Approximately 20 weeks of construction will occur outside of the combined breeding season for least Bell’s vireo and coastal California gnatcatcher (October 5, 2020 to February 14, 2021).
- Approximately 30 weeks of construction will occur during the combined breeding season for least Bell’s vireo and coastal California gnatcatcher (February 15, 2021 to September 15, 2021).
- Up to 20 working days of daily, full-time biological monitoring (8 hours/day plus 2 hours of travel) is proposed when work occurs within and/or adjacent to mapped wetlands, riparian areas, and streambeds.
- Up to 15 days (3 weeks) of daily, full-time monitoring (8 hours/day plus 2 hours of travel) is proposed for the rock slope protection and groin work.
- Construction of the rock slope protection and groins must occur between September 16 and March 14.
- One construction crew will operate at a time (i.e., only one crew will require monitoring)

<i>Cost for Biological Monitoring Before February 15</i> .....	<b>\$47,800.00</b>
<i>Cost for Biological Monitoring After February 15</i> .....	<b>\$138,550.00</b>
<i>Cost for Daily Biological Monitoring of Bank Stabilization Work</i> .....	<b>\$16,000.00</b>

#### Task 4 Noise Monitoring per Nest Site (Optional)

We have characterized the noise monitoring task as optional because it is difficult to define a realistic budget at this stage without knowing how many nests may be present and what kind of noise attenuation is most effective to ensure noise levels do not exceed the 60 dB(A) hourly average noise limit mandated by the USFWS. Therefore, the cost provided as part of this optional task is a “broad-brush” conservative cost estimate defining the level of effort it would take to provide noise monitoring for one nest (either least Bell’s vireo or coastal California gnatcatcher).

To ensure nesting least Bell’s vireo and coastal California gnatcatchers within 500 feet of construction activities are not adversely affected by construction-related noise, noise measurements will be conducted by a qualified acoustician at one active nest (either least Bell’s vireo or coastal California gnatcatcher) within 500 feet of construction activities during the breeding season. It is assumed that a qualified acoustician will be on site daily, full time (e.g., 8 hours per day for 5 days/nest) to provide noise monitoring services for one nest. The acoustician will work with the contractor to ensure that noise levels at each nest site do not exceed the 60 dB(A) hourly average noise limit mandated by the USFWS. Each noise measurement will be 60 minutes or more in duration (or as needed to ensure that the noise measurement is representative of typical construction activities).

If the initial implemented noise attenuation methods are found to be inadequate by the acoustician or field biologist during construction, the acoustician and/or biologist will work with the construction supervisor and crew to modify the noise attenuation barriers or to otherwise reduce the received noise level below the 60 dB(A) hourly average noise limit (or existing ambient noise if greater than 60 dB(A)).

**Assumption(s):**

- The cost provided is for one nest (either least Bell’s vireo or coastal California gnatcatcher) within 500 feet of construction activities.



- The nest will be monitored full-time and daily as long as construction activities occur within 500 feet of construction.
- Each monitoring visit requires 2 hours of travel time, up to 8 hours to conduct noise measurements, and 1 hour to complete and submit an observation report
- Noise levels following the initial assessment and implementation of noise attenuation measures will be found in compliance during subsequent monitoring. If noise levels are not in compliance, additional staff time will need to be authorized through an amendment in order to provide additional monitoring and coordination

In addition to the assumptions listed under each task above, the following key assumptions were also considered when developing the above scope of work:

- No weekend or night work will be required.
- Work will follow a north to south sequence beginning at Alicia Parkway and terminating at SOCWA's Coastal Treatment Plant.
- This cost estimate represents a time and materials with a not-to-exceed budget; any funds not used will not be charged.
- Noise monitoring of active least Bell's vireo and coastal California gnatcatcher nests is not provided at this time. The cost provided herein is intended to serve as a guide to how much noise monitoring may cost per nest.
- The hours provided are a projection based off of a typical 250 working day construction period. Should there be delays prompting additional monitoring needs they will be communicated to the client as soon as possible and a change order will be arranged.
- Mileage is calculated from the Dudek Encinitas office to the project site at the 2020 federal mileage rate.
- This scope of work does not include any design work or monitoring associated with the revegetation/mitigation effort. Any design work or monitoring needs associated with the project's proposed revegetation effort shall be included under a separate scope of work.

<b>Cost for Noise Monitoring per Nest Site (OPTIONAL).....</b>	<b>\$8,650.00</b>
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## Task 5 – Archaeological, Paleontological, and Native American Monitoring

The following scope of work includes environmental compliance services associated with the archaeological, paleontological, and Native American monitoring program. The archaeological, paleontological, and Native American monitoring will be conducted in accordance with the FEIR (Dudek, March 2013), as well as the Construction Monitoring Treatment Plan (Treatment Plan; Dudek, October 2017), and regulatory requirements as described in the various agency permitting documents associated with the project.

**Schedule Assumptions.** In addition to the assumptions listed under each task below, the following schedule assumptions are also considered for development of this scope of work:

- Construction of the project will require up to 250 working days
- One construction crew will operate at a time (i.e., only one crew will require monitoring)

- Work will occur for 8 hours a day, 5 days a week.

**Task 5.1 – Development of Worker Environmental Training Program & Attendance at the Pre-Construction Workshop.** In accordance with MM-CUL-1 of the Treatment Plan, a qualified Dudek archaeologist/paleontologist, as well as a member from a local Native American tribe will conduct a pre-construction workshop, to ensure each party involved in construction of the Project understand the cultural resources monitoring program, as well as their roles and responsibilities when implementing the program. It is assumed that construction personnel will attend the workshop, and the following topics will be included via a PowerPoint presentation with voiceover included, developed by Dudek:

- Types of archaeological/paleontological material that could be uncovered during construction
- Examples of common archaeological/paleontological artifacts and other material that could be encountered
- A description of why monitoring is required
- Monitoring procedures and communication protocols
- Reporting responsibilities for the construction team
- An understanding of why it's unauthorized for the construction team to collect any artifacts on their own

#### **Assumptions**

- Up to one (1) round of review will be required by SOCWA
- Dudek will be present at the initial pre-construction workshop to answer questions. However, after the initial workshop, subsequent project personnel shall be trained via the PowerPoint and voiceover, without the need for a Dudek staff member to provide the training (i.e., the Contractor will be able to play the presentation on a video device without a Dudek representative on site to give the training)
- Dudek will not be responsible for documenting the attendees at the pre-construction workshop, or subsequent training efforts.

**Task 5.2 – Archaeological, Paleontological, and Native American Monitoring.** Dudek cultural resources offers highly trained, professional cross-trained archaeological and paleontological monitors who are overseen by Dudek senior archaeologists and paleontologists. Having one monitor conduct the archaeological and paleontological monitoring for the project provides a significant cost savings. Dudek cross-trained monitors, along with a Native American monitor, will be onsite for ground-disturbing or ground-altering activities, as required by MM-CUL-1 and MM-PAL-1 of the FEIR. If isolated archaeological or paleontological resources are observed during monitoring, the find will be secured and the construction crew redirected away from the area while the find is evaluated in the field. Once the find is collected and it is determined to be an isolated find (i.e., not part of a larger site), the construction crew will be allowed to resume work. If items cannot be securely stored on the project site, they may be stored in off-site facilities located in Orange County.

The monitors will immediately contact the Dudek Senior Archeologist or Paleontologist and notify SOCWA, as appropriate. Consultation and coordination with the Native American monitor and the Native American tribe. Should the discovery be determined to be a significant tribal resource or artifact, the protocols and procedures agreed upon in the Treatment Plan will be implemented. If the discovery is determined not to be significant to the tribe, but still considered otherwise archeologically significant, formal protocols/procedures for proceeding with analysis and as-needed protection and treatment of discovered resources will be followed in accordance with the relevant prepared cultural/paleontological pre-construction plans and agreements.

**Assumptions(s):**

- Dudek assumes ground-disturbing activities requiring archaeological and/or paleontological monitoring to last no more than 250 monitoring days, 8-hours per day, with one dual archaeological/paleontological monitor per day, and one Native American monitor per day
- No weekend or night work will be required
- Mileage is calculated from the Dudek San Capistrano office to the project site at the 2020 federal mileage rate.

**Task 5.3 – Inadvertent Discoveries.** If an archaeological or paleontological site (as opposed to a single isolated artifact or resource) is observed, then a no-construction buffer area will be setup around the site and a data recovery program will be initiated. A data recovery program consists of field time by a team of cultural monitors to collect the contents of the site, along with lab work to evaluate the discovery, and reporting time to document the discovery. The cost for a single data recovery program is included in the assumptions section below, and it is assumed that no more than one (3) sites requiring data recovery will be observed during construction.

**Assumptions(s):**

- Up to three (3) significant archaeological or paleontological resources will be discovered during monitoring that will require data recovery (one data recovery program is assumed to include one 8-hour day of field work for three individuals, along with 8 hours of lab work, and 8 hours of documentation).

**Task 5.4 - Post-Construction Reporting.** At the completion of ground disturbing activities, Dudek will prepare a combined paleontological and archaeological post-construction monitoring report summarizing the results of each phase of the archaeological and paleontological monitoring program. The monitoring report and/or evaluation report, if appropriate, will describe the results, analysis and conclusions of the archaeological monitoring program (e.g., data recovery plan) and will be submitted by the Qualified Archaeologist/Paleontologist, along with the Native American monitor’s notes and comments, to SOCWA for approval.

**Task 5.5 – Project Management and Coordination.** The Archaeological, Paleontological, and Native American Monitoring Project Manager (PM) will be available throughout the construction monitoring program period to provide oversight, quality control of deliverables, and schedule coordination, to ensure the construction monitoring and pre-construction activity tasks so smoothly.

<i>Cost for Archaeological, Paleontological and Native American Services.....</i>	<b>\$381,950.00</b>
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# Attachment B

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Labor & Fee Proposal

**SOUTH ORANGE COUNTY WASTEWATER AUTHORITY  
EXPORT SLUDGE FORCE MAIN REPLACEMENT PROJECT  
ENGINEERING SERVICES DURING CONSTRUCTION**

**LABOR & FEE PROPOSAL**

**DUDEK**

October 2020

TASK DESCRIPTION	DUDEK ENGINEERING LABOR							TOTAL HRS	FEE
	PM/QA \$270	SE \$220	PE \$190	CADD \$160	ADMIN \$115	CCC/QA \$180	CCC \$120		
<i>Staff Assignment :</i>									
<i>Direct Labor Rate :</i>									
<b>Engineering Services during Construction [250 working day construction period]</b>									
Task ESDC-1: Project Management . . . . .	60				24			84	\$ 18,960
Task ESDC-2: Pre-Construction Meeting . . . . .	4	4	4					12	\$ 2,720
Task ESDC-3: RFIs and Design Clarifications (assume 25) . . . . .	16	32	60	24				132	\$ 26,600
Task ESDC-4: Shop Drawings and Submittal Reviews (assume 25) . . . . .	16	48	90	8				162	\$ 33,260
Task ESDC-5: Project Meetings (assume 10) . . . . .	20	40	20		16			96	\$ 19,840
Task ESDC-6: Change Order Assistance . . . . .	8	16						24	\$ 5,680
Task ESDC-7: Design Deviations . . . . .	4	16	24	8				52	\$ 10,440
Task ESDC-8: Site Visits (assume 10). . . . .	20	40	20					80	\$ 18,000
Task ESDC-9: Record Drawings . . . . .	4	8	24	40				76	\$ 13,800
TOTAL OTHER DIRECT COSTS (printing, reproduction, delivery, local travel, etc) . . . . .								N/A	\$ 1,500
<b>Total Engineering Services during Construction Effort . . . . .</b>	<b>152</b>	<b>204</b>	<b>242</b>	<b>80</b>	<b>40</b>	<b>0</b>	<b>0</b>	<b>718</b>	<b>\$ 150,800</b>











# Agenda Item

7

Engineering Committee Meeting

Meeting Date: November 12, 2020

**TO:** Engineering Committee

**FROM:** David Baranowski, Senior Engineer

**SUBJECT:** Coastal Treatment Plant AWT Upgrade Project Update [Project Committee 15]

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## Overview

In November 2019 Evoqua, which owns the Hydro-Clear filter technology used for SOCWA's AWTs, recommended improvements to the AWT filters at the Coastal Treatment Plant. The improvements focused on the pilot valves that actuate the 32 valves that control flow for the eight filter cells. The pilot valve controls the air that actuates the filter valves.

Evoqua explained that most Hydro-Clear installations around the country were built with the pilot valves in a panel, including the Regional Treatment Plant AWT. The Coastal Plant AWT has the pilot valves attached directly to the filter valve actuators.

The primary benefit of having the valves in a panel is reducing their environmental exposure. It also reduces the amount of conduit and piping that is run to each filter valve. Plant staff have had issues with the pilot valves sticking, which can cause an entire filter cell to be taken offline. The pilot valve issues were an indication to plant staff and Evoqua that the pilot valves were nearing the end of their expected lives and should be replaced.

Engineering initiated a project in December 2019 to procure two filter control panels from Evoqua with the intent to improve AWT reliability and reduce callouts. Engineering hired Filanc to install the new valve panels and run new air piping to the filter valves. The work was planned so that the filters could remain in operation. Four of the eight filter cells remained in service while the other four were offline for the switchover. Once the work was complete and tested on the first four, then they were placed into service and the last four were taken offline. The work took two weeks to complete. Filanc completed the work on October 30<sup>th</sup> and an Evoqua representative was onsite to startup and test the filters.

Figure 1 shows a pilot valve mounted on the actuator before the project. Figure 2 shows the outside and inside of a new filter control panel. Figure 3 shows the new conduits and air tubing installed to control the filter valves.

Figure 1 – Old Pilot Valve Configuration



Figure 2 – New Valve Control Panel



Figure 3 – New Air Tubing to Filter Valve Actuators



**Recommended Action:** Information Item



# Hazen



## CTP Feasibility Study Update

November 12, 2020  
Agenda Item 8

# Agenda

- Previous Question Review
- Conceptual Layouts Review
- Evaluation and Screening Discussion

# Previous Questions Review

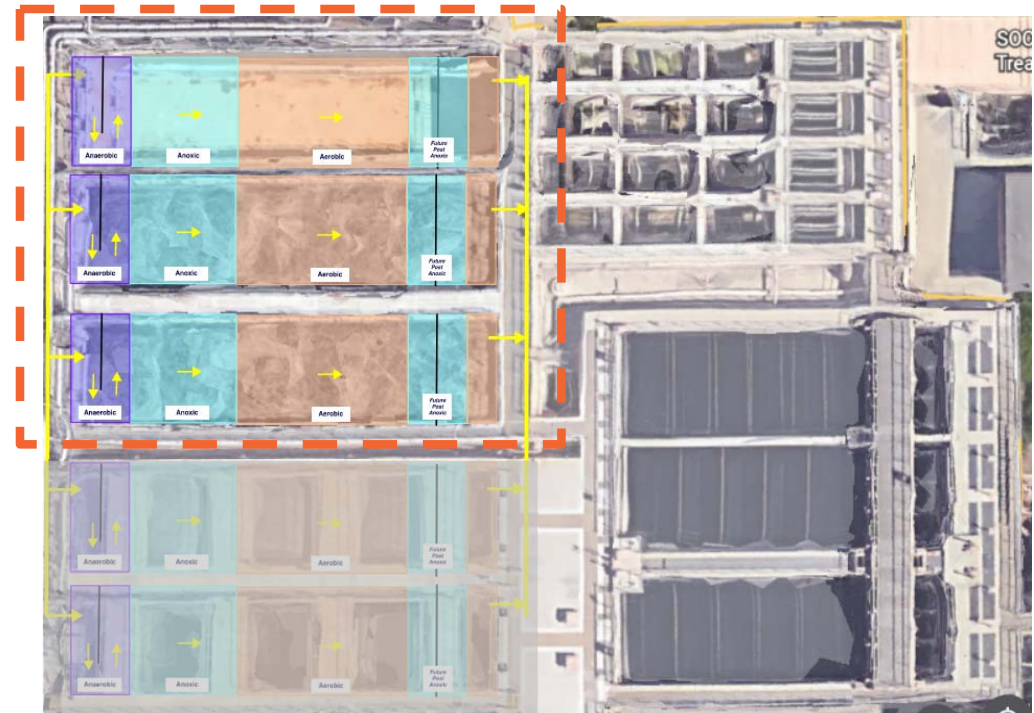
## Questions/Comments

1. How do we address peak flows for the alternatives?
2. Can we determine an ROI for the selected alternatives?
3. Clarification on the Water Quality rankings.
4. Development of life cycle costs.
5. Is it possible to stage work based on required capacity?



# Phasing Example – CAS BNR

- With current CTP effluent limits, the 3 East basins could be modified first
- As nutrient requirements are established the phasing could include modifying the West basins

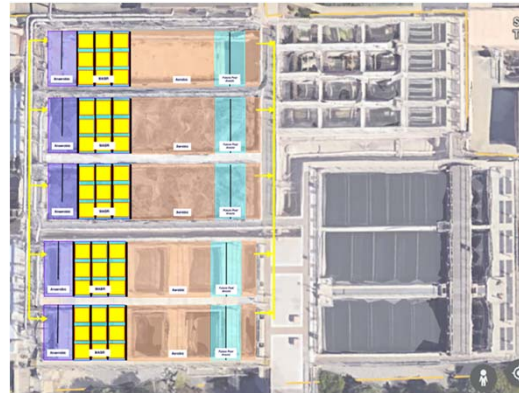


# Conceptual Layouts

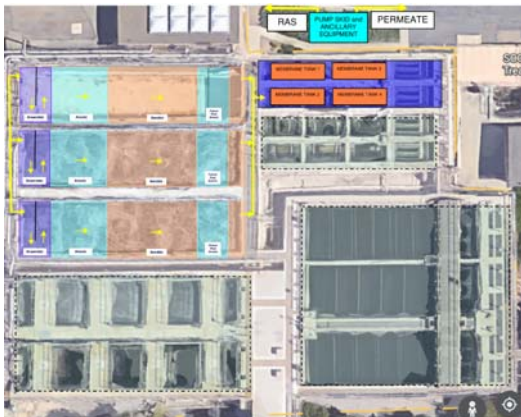
# Facility Comparisons



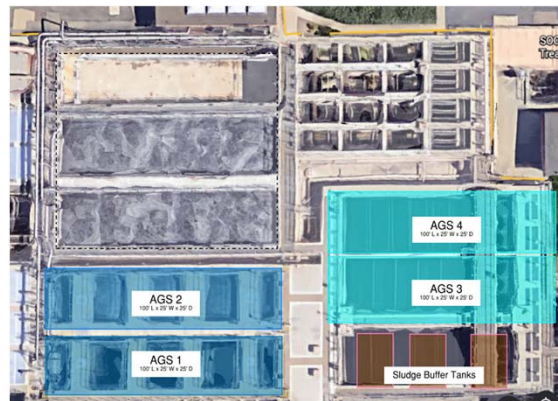
CAS BNR



MABR



MBR








AGS



SBR

## Facility Impacts Summary

Parameter	CAS	MBR	MABR	Aqua Nereda AGS	Aqua 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					

# Evaluation and Screening

# Technology Benefits and Challenges Review

Technology Alternative	CAS	MBR	MABR	AGS	SBR
<b>Benefits</b>	Utilizes existing treatment volume and familiar process	Enhanced effluent quality and no secondary clarifiers required	Reduce aeration energy and potentially increase capacity	Smaller footprint, reduced equipment, and potentially O&M costs, no separate clarifiers and can be installed in the West Basins	Reduced equipment and no separate clarifiers
<b>Challenges</b>	Requires all basins to be modified and operated to meet future potential standards	Requires modifications to the secondary clarifiers and increased operational costs	Emerging technology, only 1 full scale installation in the United States	Existing east basins are too shallow to accommodate technology and proprietary technology	Substantially more basin volume required and limited ability to retrofit existing tankage

## 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

**MABR can be an enhancement in the future to the CAS or MBR alternatives**

	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>





# Knowledge Sharing

Comparison of Polymer Types for RTP DAFT

November 12, 2020

EC Agenda Item 9

# Background

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- RTP DAFT system under construction as part of 2017 Misc. Improvement Project.
- Installed temporary DAFT polymer feed system during construction.
- Temp. system uses different polymer.
- Opportunity to compare polymers.



# Polymers

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## Mannich



- Use = DAFTs
- Cost = Lower
- Active content: 4% - 8%
- Solution, high molecular weight, very viscous.

## Emulsion



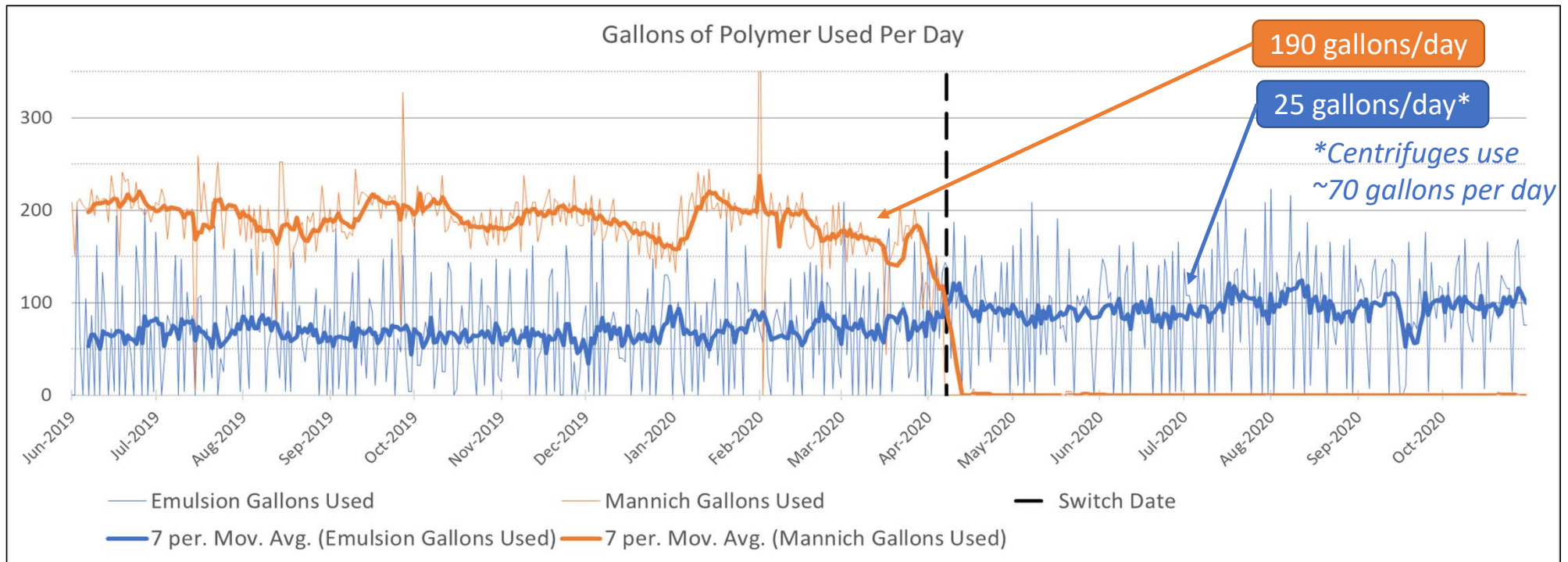
- Use = Centrifuges
- Cost = Higher
- Active content: 20% - 55%
- Hydrolyzed, high molecular weight, very viscous.

Sources:

(1) <https://www.wef.org/globalassets/assets-wef/3---resources/topics/a-n/biosolids/technical-resources/007-polymer.flocculants-101---final.pdf>

(2) <https://ugsichemicalfeed.com/articles/Operator-Fact-Sheet-Polymer-For-Thickening-and-Dewatering.pdf>

# Change in Polymer Use

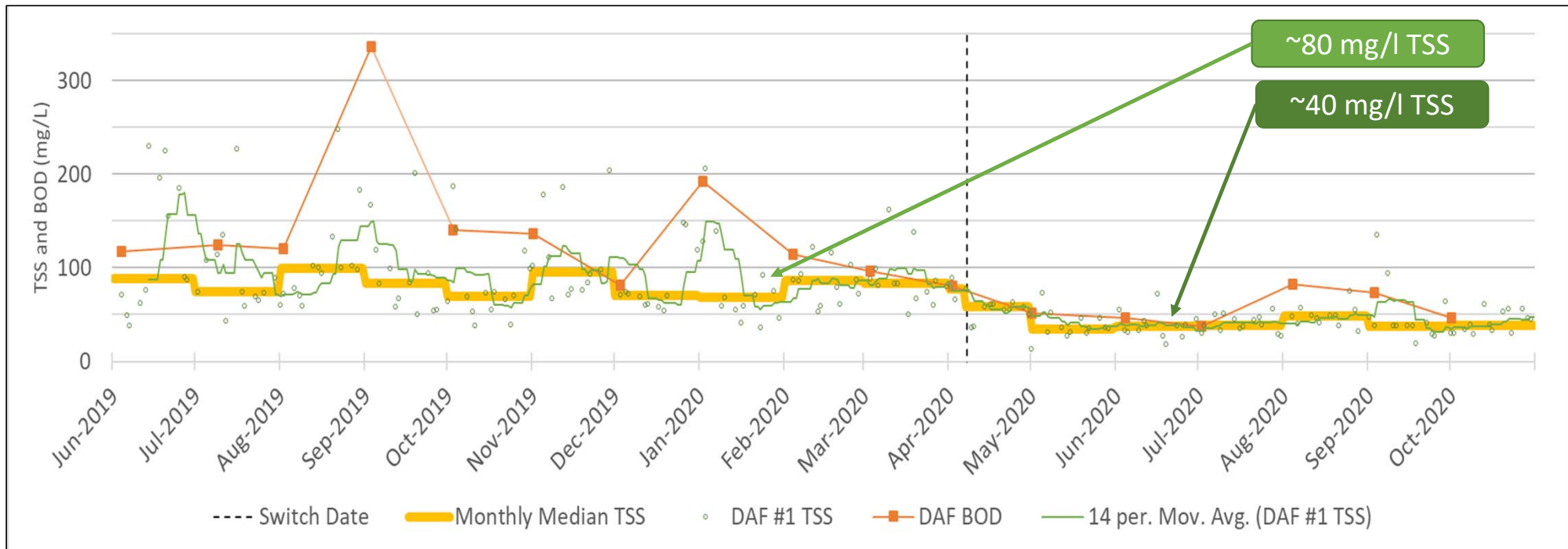


# Cost Impact

	<b>Mannich</b>	<b>Emulsion</b>
<b>Cost per pound of polymer</b>	\$0.126	\$1.15
<b>Polymer Weight (pounds per gallon)</b>	8.5	8.5
<b>Polymer Cost per Gallon</b>	\$1.07	\$9.78
<b>Estimated Daily Use for DAFTs</b>	190 gallons	25 gallons
<b>Daily Polymer Cost for DAFTs</b>	\$203	\$245

- Additional polymer costs of \$42/day = \$15,000/year

# DAFT Effluent Water Quality



# Equipment Differences

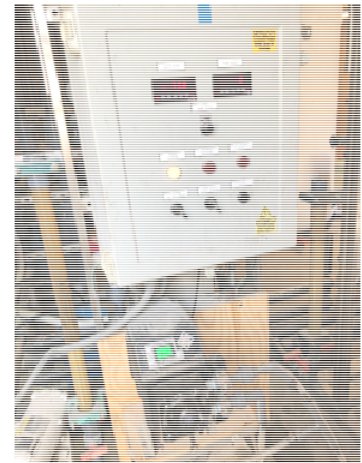
## Mannich System (New)

- 2 FRP mixing tanks
- 2 tank mixers and control valves
- 2 bulk polymer pump (to mixing tanks)
- 2 progressive cavity polymer feed pumps (to DAFTs)
- Crossover piping
- Electrical/control cabinet and VFDs



## Emulsion System (Temp.)

- 1 dynablend unit (mixing tube, peristaltic pump, control panel)



*\*Full system would include 2 units and crossover piping*



# Equipment Costs and Life Cycle Analysis

	<b>Mannich</b>	<b>Emulsion</b>
<b>System Cost</b>	\$600,000 (New)	\$25,000 (Temp)
<b>Useful Life</b>	15 years	10 years
<b>Operating Costs*</b>	TBD <i>(Energy, pump parts, control equipment, mixing water)</i>	TBD <i>(Energy, mixing water, pump hose)</i>
<b>Annualized Equipment Cost</b>	\$40,000	\$2,500
<b>Annual Additional Polymer Cost</b>	\$0	\$15,000

*\*Operating cost data not available. These are what we think would contribute to the operating costs.*



# Main Takeaways

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- Mannich is cheaper and we use more.
- Emulsion is more expensive, we use less, and improves DAFT performance.
- Emulsion feed system includes less equipment. Possible that equipment cost savings could offset polymer cost increase.
- Ongoing effort
  - Still collecting data.
  - Compare performance of new polymer system to temporary and old systems.