ENGINEERING/OPERATIONAL COMMITTEE MEETING AGENDA
TRABUCO CANYON WATER DISTRICT
ADMINISTRATION FACILITY
32003 DOVE CANYON DRIVE, TRABUCO CANYON, CA
AUGUST 7, 2024 AT 7:00 AM

COMMITTEE MEMBERS
Michael Safranski, Committee Chair
Stephen Dopudja, Committee Member
Don Chadd, Committee Member Alternate

DISTRICT STAFF
Fernando Paludi, General Manager
Michael Perea, District Secretary
Lorrie Lausten, District Engineer
Gary Kessler, Water System Superintendent
Oscar Ulloa, Wastewater Superintendent
Jason Stroud, Maintenance Superintendent

AGENDA NOTE:
Trabuco Canyon Water District (District) will make this Engineering/Operational Committee Meeting available by telephone audio as follows:

Telephone Audio: *1 (669) 900-6833* ***Access Code:*** 973-7562-7682

*Persons desiring to monitor the Committee meeting agenda items may download the agenda and documents on the internet at **www.tcwd.ca.gov**. You may submit public comments by email to the Committee at **mperea@tcwd.ca.gov**. In order to be part of the record, emailed comments on meeting agenda items must be received by the District at the referenced e-mail address not later than 7:00 a.m. (PDT) on the day of the meeting.*

CALL MEETING TO ORDER

VISITOR PARTICIPATION
*Members of the public wishing to address the Committee regarding a particular item on the agenda are requested to submit public comments by email to the Committee at **mperea@tcwd.ca.gov**. The Committee Chair will call on the visitor following the Committee's discussion about the matter. Committees do not constitute a quorum of the Board of Directors and Committee Members cannot make decisions on matters. The Committee makes recommendations only to the Board of Directors. Members of the public will be given the opportunity to speak to the Committee prior to making a recommendation on the matter. For persons desiring to make verbal comments and utilizing a translator to present their comments into English reasonable time accommodations, consistent with State law, shall be provided. Please limit comments to three minutes.*

ORAL COMMUNICATION
*Members of the public who wish to make comment on matters not appearing on the agenda are requested to submit oral communication by email to the Committee at **mperea@tcwd.ca.gov**. Under the requirements of State Law, Directors cannot take action on items not identified on the agenda and will not make decisions on such matters. The Board President may direct District Staff to follow up on issues as may be deemed appropriate. For persons desiring to make verbal comments and utilizing a translator to present their comments into English reasonable time accommodations, consistent with State law, shall be provided. Please limit comments to three minutes.*

COMMITTEE MEMBER COMMENTS

REPORT FROM THE GENERAL MANAGER

ENGINEERING MATTERS

PRESENTER(S): FERNANDO PALUDI, GENERAL MANAGER
MICHAEL PEREA, ASSISTANT GENERAL MANAGER
LORRIE LAUSTEN, DISTRICT ENGINEER

ITEM 1: ENGINEERING/OPERATIONAL COMMITTEE MEETING RECAP

RECOMMENDED ACTION:
Approve the following Engineering/Operational Committee Meeting Recap(s) and recommend that the Board receive and file same (Consent Calendar).
1. July 3, 2024 Committee Meeting

ITEM 2: DOVE RECYCLED WATER PUMP STATION IMPROVEMENTS – RFP ISSUED

RECOMMENDED ACTION:
Committee to receive project status updates at the time of the Committee Meeting.

ITEM 3: ROBINSON RANCH WASTEWATER TREATMENT PLANT (RRWWTP) BLOWER ROOM RE-DESIGN

RECOMMENDED ACTION:
Recommend the Board of Directors authorize the General Manager to Amendment No. 1 to JIG Consultants for the Blower Room Improvements in the not-to exceed amount of $81,985 (Action Calendar).

ITEM 4: DIMENSION WATER TREATMENT PLANT (DWTP) OFFICE TRAILER REHAB PROJECT COMPLETION REPORT

RECOMMENDED ACTION:
Committee to receive project status updates at the time of the Committee Meeting.

ITEM 5: THE OAKS AT TRABUCO DEVELOPMENT UPDATE

RECOMMENDED ACTION:
Committee to receive project status updates at the time of the Committee Meeting.

ITEM 6: LEAD AND COPPER RULE REVISIONS (LCRR) SERVICE LINE INVENTORIES PROJECT

RECOMMENDED ACTION:
Committee to receive project status updates at the time of the Committee Meeting.

ITEM 7: BELL CANYON AND BARNBURG SEWER LIFT STATION EASEMENT

RECOMMENDED ACTION:
Recommend that the Board of Directors receive the Grants of Easement to the Trabuco Canyon Water District by Dove Canyon Master Association for the Bell Canyon and Barnburg Sewer Lift Stations and authorize the District Secretary to execute said Grants of Easement (Action Calendar).

ITEM 8: TCWD BUSINESS SYSTEM SERVER REPLACEMENT PROJECT – PHASE ONE

RECOMMENDED ACTION:
Recommend the Board of Directors authorize the General Manager to approve the Server Replacement Project Quote No. TCWD24-0726A from Highroad IT in the amount of $99,648 (Action Calendar).

ITEM 9: OTHER ENGINEERING AND OPERATIONS PROJECT UPDATES

1. Santa Margarita Parkway Force Main Repair Completion
2. Live Oak Pipeline Design – PDR Received

RECOMMENDED ACTION:
Committee to receive project status updates at the time of the Committee Meeting.

OPERATIONAL MATTERS

PRESENTER(S): GARY KESSLER, WATER SYSTEM SUPERINTENDENT
OSCAR ULLOA, WASTEWATER OPERATIONS SUPERINTENDENT
JASON STROUD, MAINTENANCE DEPARTMENT SUPERINTENDENT

ITEM 10: WATER SYSTEM UPDATES

RECOMMENDED ACTION:
Committee to receive system status updates. No action required.

ITEM 11: WASTEWATER SYSTEM UPDATES

RECOMMENDED ACTION:
Committee to receive system status updates. No action required.

ITEM 12: MAINTENANCE DEPARTMENT UPDATES

RECOMMENDED ACTION:
Committee to receive system status updates. No action required.

REGULATORY AND OTHER MATTERS

ITEM 13: OTHER MATTERS/REPORTS

RECOMMENDED ACTION:
Hear Other Matters/Reports that may have arisen after the posting of the agenda.

ADJOURNMENT

AVAILABILITY OF AGENDA MATERIALS
Agenda exhibits and other writings that are disclosable public records distributed to all or a majority of the members of the Trabuco Canyon Water District Board of Directors in connection with a matter subject to discussion or consideration at an open meeting of the Board of Directors are available for public inspection at the Trabuco Canyon Water District Administrative Facility, 32003 Dove Canyon Drive, Trabuco Canyon, California (District Administrative Facility) or will be posted online on the

District's website located at www.tcwd.ca.gov. If such writings are distributed to members of the Board less than 72 hours prior to the meeting, they will be available online at www.tcwd.ca.gov at the same time as they are distributed to the Board Members, except that, if such writings are distributed immediately prior to or during the meeting, they will be posted online on the District's website located at www.tcwd.ca.gov.

COMPLIANCE WITH THE REQUIREMENTS OF CALIFORNIA GOVERNMENT CODE SECTION 54954.2

In compliance with California law and the Americans with Disabilities Act, if you need special disability-related modifications or accommodations, including auxiliary aids or services in order to participate in the meeting, or if you need the agenda provided in an alternative format, please contact the District Secretary at (949) 858-0277, at least 48 hours in advance of the scheduled Board meeting. Notification at least 48 hours prior to the meeting will assist the District in making reasonable arrangements to accommodate your request. The Board Meeting Room is wheelchair accessible.

TRABUCO CANYON WATER DISTRICT
ENGINEERING/OPERATIONAL COMMITTEE MEETING | AUGUST 7, 2024

ADMINISTRATIVE MATTERS
ITEM 1: ENGINEERING/OPERATIONAL COMMITTEE MEETING RECAP

RECOMMENDED ACTION:
Approve the following Engineering/Operational Committee Meeting Recap(s) and recommend that the Board receive and file same (Consent Calendar):

1. *July 3, 2024 Committee Meeting*

CONTACTS (staff responsible): PALUDI/PEREA

TRABUCO CANYON WATER DISTRICT
ENGINEERING/OPERATIONAL COMMITTEE MEETING RECAP | JULY 3, 2024

DIRECTORS PRESENT
Mike Safranski, Committee Chair
Stephen Dopudja, Committee Member

STAFF PRESENT
Michael Perea, Assistant General Manager
Gary Kessler, Water Superintendent
Oscar Ulloa, Wastewater Superintendent
Jason Stroud, Maintenance Superintendent
Phil Serpas, CMMS/SCADA Administrator
Roseann Lejsek, Administrative Assistant
Lorrie Lausten, District Engineer - Virtually

STAFF ABSENT
Fernando Paludi, General Manager

PUBLIC PRESENT
None

CALL MEETING TO ORDER
Director Safranski called the July 3, 2024 Engineering/Operational Committee Meeting to order at 7:00 a.m.

VISITOR PARTICIPATION
No comments were received.

ORAL COMMUNICATION
No comments were received.

COMMITTEE MEMBER COMMENTS
None

REPORT FROM THE GENERAL MANAGER
Mr. Perea reported that the General Manager was currently at the Municipal Water District of Orange County (MWDOC) participating in a panel discussion regarding the Metropolitan Water District of Southern California's (MET) business model.

ITEM 1: ENGINEERING/OPERATIONAL COMMITTEE MEETING RECAP
Mr. Perea presented the Engineering/Operational Committee Meeting Recap for Committee review in accordance with the agenda.

MOTION: Approve the Engineering/Operational Committee Meeting Recap and recommend that the Board receive and file the same (Consent Calendar) – Director Dopudja
SECOND: Director Safranski

AYES: Directors Dopudja & Safranski
NOES: None
ABSTAIN: None
MOTION PASSED/FAILED: Passed 2 – 0

ITEM 2: PROFESSIONAL SERVICES AGREEMENT WITH W.M. LYLES CO. TO PERFORM SCADA INTEGRATION SERVICES FOR A TOTAL NOT-TO-EXCEED AMOUNT OF $239,657

Mr. Perea presented this matter for Committee consideration, and he reported that this matter was discussed with the Executive Committee. Mr. Perea provided a background on this project relating to the performance issues with the project's original contractor, TESCO Controls (TESCO). Mr. Perea stated that the District terminated the contract with TESCO, and brought W.M. Lyles on board to immediately assist the District with correcting certain programming issues. Mr. Perea stated that the District is looking to contract with W.M. Lyles to complete the SCADA integration project. Mr. Perea thanked Mr. Serpas for working on putting together the close out costs with TESCO. Discussion occurred regarding the current budget, and Mr. Perea stated that this phase of the project will be slightly over-budget by $30,000. Discussion also occurred regarding the negotiation of close out costs with TESCO and assessed damages to the District. Mr. Perea indicated the agendized recommended action was for the Committee to approve the professional services agreement with Board ratification: the Committee deferred approval of the agreement and recommended bringing this matter as an action item to the full Board of Directors for approval.

MOTION: Recommend the Board of Directors approve a professional services agreement with W.M. Lyles Company to perform SCADA integration services in the amount of $217,870 plus a 10% contingency of $21,787, for a not to exceed amount of $239,657 (Action Calendar).

ITEM 3: OTHER ENGINEERING AND OPERATIONS PROJECT UPDATES

1. **Golf Club Sewer Lift Station Construction Update**
   Ms. Lausten provided an update on this matter, and she reported that the project has experienced delays due to rain. Ms. Lausten stated that the project's contractor, Pacific Hydrotech has committed to having the project completed in mid-September. Mr. Ulloa noted that the secondary bypass pump has higher electrical demands, and that diesel driven pumps will be used. Mr. Ulloa added that sound panels have been factored into the project's budget for this project.

2. **Dove Dam Improvements Next Step: Preliminary Design Report RFP**
   Ms. Lausten provided an update on this matter, and she reported that the District has requested to change the Dam's rating from fair to poor, in order to take advantage of available State design and grant funding for repairs. Ms. Lausten stated that the District has received a letter from the Department of Water Resources (DWR) with a deadline of December 31, 2024 for submitting a plan and schedule for the Dam's repair, to be completed no later than December 31, 2026. Ms. Lausten stated that the District is working to secure grant funding to pay for this project.

3. **WWTP Blower Replacement Project Status Update**
   Ms. Lausten provided an update on this matter, and she reported that Operations and Engineering have been working on a re-design of the layout after discussions with the Engineering Committee and Board of Directors and that the re-design is ongoing. Mr. Perea provided a brief overview of the preliminary re-design layout. Ms. Lausten stated that staff has received a preliminary estimate for the project and she noted that the estimate is being fine-tuned. A brief discussion occurred regarding the budget for this project and Ms. Lausten stated that the budget was $550,000.

4. **El Toro Force Main Leak Update and Implications**
   Mr. Perea provided an update on this matter, and he reported that this matter was reviewed with the Executive Committee. Mr. Perea provided an overview of the emergency repair of the initial leak and line break approximately two months prior. Discussion occurred regarding potential issues in the future as well as possible options for repair.

5. **Other Projects**
   Live Oak Pipeline - Mr. Perea reported that the upgrade design will be starting in a few weeks.

   Saddle Crest Reservoir and Pump Station – Mr. Perea reported that this item has been agendized as a closed session item at July's Regular Board Meeting.

ITEM 4: WATER SYSTEM UPDATES

Mr. Kessler reviewed the projects and repairs for the prior month, and he reported that Water Operations staff had completed the following tasks:

1. Replaced 1 curb stop in Saddle Crest Development.
2. Repaired service line leak on Live Oak Canyon.
3. Pulled new chemical feed lines at DWTP.
4. Replaced clarifier screens on filter #3 at DWTP.
5. Moved into new office after remodel.
6. Conducted weed abatement at DWTP and GWTF.
7. Worked with Engineering to clean out meter boxes for Lead/Copper assessment.

Mr. Kessler presented the Water System Summary for Committee review, and he reported that the District is meeting the majority of potable demands utilizing the groundwater treatment facility. Mr. Kessler stated that the District will start utilizing Irvine Lake water via Baker Treatment facility and monitor the distribution system water quality with the introduction of the source water. Discussion occurred regarding ongoing conversations with Irvine Ranch Water District and lake water quality.

MOTION: None – Informational item only.

ITEM 5: WASTEWATER SYSTEM UPDATES

Mr. Ulloa reviewed the projects and repairs for the prior month, and he reported that Wastewater Operations staff had completed the following tasks:

1. Replaced a 4-inch check valve for the WAS pump at the Robinson Ranch Wastewater Treatment Plant (WWTP).
2. Repaired a Solar Bee mixer at Dove Lake to ensure water quality.
3. Added additional storage capacity for chlorine at WWTP for emergencies.
4. Worked on by-pass and assisted in the repair of the force main line break at El Toro Lift Station.

Mr. Ulloa presented the Recycled Water System Summary for Committee review, and he reported that the recycled water reservoir and Dove Lake are at full capacity and that recycled water was sold to Santa Margarita Water District in the amount of 5-acre feet. Mr. Ulloa reported that Dove Lake experienced a naturally occurring algae bloom approximately 2-3 weeks prior due to increased warm weather and the failure of a Solar Bee mixer; Mr. Ulloa reported that the mixer was repaired and that the water quality has improved.

MOTION: None – Informational item only.

ITEM 6: MAINTENANCE DEPARTMENT UPDATES

Mr. Stroud reviewed the projects and repairs for the prior month, and he reported that Maintenance staff completed the following tasks:

Projects and Repairs

Maintenance staff performed and/or completed the following tasks and projects:

Water Operations

1. Worked with Hydrotech Electric to install new LED lighting at DWTP.

Wastewater Operations

1. Completed weed abatement at Reservoir One
2. Worked with Hydrotech Electric to complete dialer upgrades at Plano Lift Station and Heritage Lift Station
3. Installed new motor and re-packed the Robinson Ranch recycled water booster pump
4. Worked with operations and Ferreira Construction to complete sewer force main repairs at El Toro Lift Station
5. Worked with operations and Ferreira Construction to repair a sewer air vac on the Heritage force main located on the WWTP access road
6. Worked with Duthie Power to perform emergency generator repairs at Plano Sewer Lift Station

District Fleet Upgrades & Other Projects

1. Attended the second round of ARC Flash Prevention Training
2. Vactor repairs at Haaker (vacuum equipment inspection and repairs)
3. Vactor repairs at Fleet Services (cab and chassis inspection and repairs including DOT inspection)
4. Completed preventative maintenance on the CAT backhoe

MOTION: None – Informational item only.

ITEM 7: OTHER MATTERS/REPORTS

Mr. Perea wished all in a happy and safe Independence Day.

MOTION: None

ADJOURNMENT

Director Safranski adjourned the July 3, 2024 Engineering/Operational Committee Meeting at 7:38 a.m.

TRABUCO CANYON WATER DISTRICT
ENGINEERING/OPERATIONAL COMMITTEE MEETING | AUGUST 7, 2024

ENGINEERING MATTERS
ITEM 2: DOVE RECYCLED WATER PUMP STATION IMPROVEMENTS – RFP ISSUED

The Dove and Robinson Ranch Recycled Water Pump Stations (DCRRPS) provide treated effluent from the Robinson Ranch Wastewater Treatment Plant Reclaimed Water Reservoir to the Dove Canyon, Robinson Ranch, and Trabuco Highlands communities. These areas are isolated pressure zones from each other. The Dove Pump Station is inside a brick-and-mortar building, while the Robinson Ranch Pump Station is adjacent to the building but located outside. Both pump stations are critical to the delivery of non-domestic water, and the planned upgrades to the stations are necessary to continue to provide efficient services to the District customers.

Improvements to the pump station are being implemented in two phases. In Fiscal Year (FY) 2019-20, Phase 1 improvements were made at the station including relocation of the Motor Control Center to the outside of the station, replacement of the exterior suction and discharge piping, installation of one pump and installation of VFD's. The design of Phase 2 improvements will occur in FY 2024-25, with construction scheduled for FY 2025-26 and FY 2026-27, if necessary. Staff has issued a request for proposal (Exhibit 1) for the design of the Phase 2 improvements, which include the following:

- Replacement of the header piping and all valves
- Replacement of the Filters
- Installation of 3-100 HP pump on concrete pads
- Installation of a chemical metering pump
- Installation of a flow meter

FUNDING SOURCE:
Capital Improvement Program

FISCAL IMPACT (PROJECT BUDGET):
Updated total project budget estimate for Phase 2, including construction, is $1,400,000. The previous estimate of $1,000,000 has been revised to account for cost escalation since the estimate was first developed in 2022. Phase 1 improvements were completed in August 2020 for approximately $712,000.

ENVIRONMENTAL COMPLIANCE:
Notice of Exemption

RECOMMENDED ACTION:
Committee to receive project status updates at the time of the Committee Meeting.

EXHIBIT(S):
1. Request For Proposal

CONTACTS (staff responsible): PALUDI/LAUSTEN

REQUEST FOR PROPOSAL

FOR

Dove Canyon Recycled Water Booster Pump Station Improvements - Engineering Design

Contract No. 2324-103

Issue Date: July 30, 2024

Proposals Due: August 26, 2024 at 10:00 a.m.

Trabuco Canyon Water District
Engineering Department
32003 Dove Canyon Dr.
Trabuco Canyon, CA 92679
(949) 858-0277

TABLE OF CONTENTS

ATTACHMENTS

REQUEST FOR PROPOSALS
FOR
Dove Canyon Recycled Water Booster Pump Station Improvements - Engineering Design

1. INTRODUCTION

1.1. Purpose

The Trabuco Canyon Water District is seeking proposals from qualified Firms capable of preparing Construction Documents for the rehabilitation of the Dove Canyon Recycled Water Booster Pump Station in Trabuco Canyon. This Request for Proposal (RFP) describes the required Scope of Services (**Attachment A**), the minimum information that must be included in the proposal, and the Consultant evaluation and selection process. Failure to submit information in accordance with this RFP's requirements and procedures may be cause for disqualification. For purposes of the RFP the terms Consultant, Firm, and Proposer are interchangeable.

1.2. Due Date and Delivery

Proposals must be received on or before:

Time:	10:00 AM
Date:	August 26, 2024
Location:	TCWD Administration Building
	32003 Dove Canyon Drive
	Trabuco Canyon, CA 92679
Attention:	Dave Rodriguez, MS, PE, CCM
	Senior Project Manager

Proposals received after this time or at any other location will not be accepted.

* Cost proposals should be submitted separately from project proposal.

1.3. Questions Concerning Proposals

All respondents may submit questions related to this RFP to Lorrie Lausten, PE, District Engineer via email, drodriguez@tcwd.ca.gov. ***Question submittal deadline is 10:00 a.m. Thursday, August 15, 2024***.

1.4. Pre-Proposal Meeting:

A non-mandatory pre-proposal meeting will be held August 6, 2024, at 1:00 p.m. and will take place at the TCWD Administration Building located at **32003 Dove Canyon Dr., Trabuco Canyon, CA 92679.**

1.5. Project Schedule

The solicitation, receipt and evaluation of proposals, selection of the provider of Professional Services and project schedule will correspond to the following:

▪ RFP Issued	7/30/2024	
▪ Pre-Proposal Meeting	8/6/2024 @ 1:00 PM	
▪ Proposals Due	8/26/2024 @ 10:00 AM	
▪ Board Award	9/19/2024	
▪ Project Kick-off Meeting	9/30/2024	
▪ Preliminary Design Submittal	11/4/2024	(6 weeks)
▪ Return of Districts Comments	11/25/2024	(3 weeks)
▪ 60% Design Submittal	12/23/2024	(4 weeks)
▪ Return of District Comments	1/6/2025	(2 weeks)
▪ 90% Design Submittal	1/20/2025	(3 weeks)
▪ Return of District Comments	2/13/2025	(2 weeks)
▪ Final Design Submittal	2/18/2025	(2 weeks)
▪ Plans Approved	2/25/2025	
▪ Bid Opening	3/26/2025	
▪ Construction Award	4/17/2025	

The Consultant should review the schedule in detail and propose an alternate schedule if desired.

(Note: dates are subject to change)

2. BACKGROUND

Trabuco Canyon Water District (The District) is a Special District Government Agency in southern Orange County. The District provides potable water service to approximately 4,100 customers in the Cities of Rancho Santa Margarita, Lake Forest, Mission Viejo, and the unincorporated canyon areas of the County of Orange. Specifically, the District's service area includes the communities of Dove Canyon, Rancho Cielo, Robinson Ranch, Santiago Estates, Trabuco Highlands, Walden, Fieldstone, a section of Portola Hills, and Trabuco Canyon. The geography of the service area features a variety of terrain, ranging from mountainous foothills, valleys, canyons, and a regional watershed.

The District's facilities include a potable water filtration plant (Dimension Water Treatment Facility), a groundwater filtration plant (Trabuco Creek Wells Facility), a wastewater treatment plant (Robinson Ranch Wastewater Treatment Facility), 8 domestic booster pump stations, 2 recycled booster pump stations, 8 sewer lift stations and 8 domestic reservoirs.

3. PROJECT DESCRIPTION

The Trabuco Canyon Water District (TCWD or District) is seeking services of a consultant to prepare bid documents and construction services for the rehabilitation of the Dove Canyon Recycled Water Booster Pump Station which includes design, demolition of existing equipment and ancillary equipment, interior modifications, and construction.

4. MINIMUM CONSULTANT QUALIFICATIONS

The assigned Project Manager must have at least ten years' experience performing similar design projects and experience working with at least five other clients performing like services as described herein.

All Consultant's team members must be listed in the proposal including tiered consultants who will provide special professional services. Their experience and qualifications must be comparable to that of the Consultant.

5. SCOPE OF WORK

The Scope of Work shall include all items set forth in (**Attachment A**).

6. CONFLICT OF INTEREST

Consultant must submit a disclaimer statement disclosing interest, ownership, or remuneration of any type that has been received or is anticipated from any manufacturer, supplier, or distributor which may be recommended on the Project. This disclaimer must be included in the Proposal Letter required in Section 8.3.

7. ACKNOWLEDGEMENT OF CONTRACT AGREEMENT

The Consultant shall enter into a contract with TCWD by signing the District's Professional Design Services Agreement. A sample copy of the Agreement is included as (**Attachment C**). Consultant shall acknowledge acceptance of the terms and conditions described in the sample copy of the Agreement. If there are any exceptions to the terms and conditions include those exceptions in the Proposal Letter described in Section 8.3.1 below.

Please be aware that the District does not negotiate its insurance and indemnification clauses.

8. PROPOSAL FORMAT

8.1 Respondents shall submit a proposal that is clear, concise, complete, and demonstrates the qualifications and experience applicable to the Scope of Work.

- Proposal shall have a cover page with the Project Title, Project Number, proposal due date, name, address, and telephone number of Firm submitting the proposal.

- Proposal shall include a table of contents with a clear listing of headings and pages.

- Proposal shall use a 10-point font, at a minimum, and shall be a maximum of 15 pages excluding the fee proposal and resumes of key personnel. The purpose of these restrictions is to minimize costs of proposal preparation and to ensure the response is fully relevant to the Project.

- Three copies of your technical proposal and fee proposal are requested, in addition to an electronic copy. Fee proposal shall be separated from technical proposal in separate sealed envelope. Fee proposal shall follow the Scope of Work tasks and be in excel & PDF format.

- Proposals shall follow the order listed in 8.3.

8.2 Failure to submit information in accordance with the RFP's requirements and procedures may be cause for disqualification.

8.3 Proposal Inclusions and Order

8.3.1 Proposal Letter: Proposal letter must be completed and executed by an authorized representative of the Proposer. Letter should include: the legal name of business; form of business (corporation, partnership, or other); location and address; telephone and fax numbers, e-mail address and name of contact person for District's correspondence; acknowledgement of any addenda to RFP; any Proposer exceptions to RFP and/or Consulting Agreement, if any; and disclaimer of conflict of interest as required in Section 6, above.

8.3.2 Executive Summary: A concise executive summary (limited to 2 pages) of the Proposal identifying the Firm/team being presented for consideration. The summary should include a brief history, background and relevant experience of the entity/team.

8.3.3 Project Approach/Scope of Services

1. Proposer shall clearly describe its proposed technical approach and work plan for addressing the Scope of Work, outlining the activities and team members necessary for completing the various tasks. Approach shall establish the

Proposer's understanding of the Scope of Work, and its ability to meet District objectives and work requirements.

2. Proposer should address any elements of the Scope of Work it believes are not addressed in (**Attachment A**) but are necessary to complete the work. Proposer should include a listing and description of all deliverables.

3. Identify any special issues or problems that are likely to be encountered and how your team will address them. Proposer may also suggest technical or procedural innovations that have been used successfully on other projects.

4. Management Plan. Proposer should identify the methods used to ensure quality, budget, and schedule control. Discuss how Project Manager plans to manage the project such as key staff roles and responsibilities, commitment of staff, coordination between disciplines, coordination between other projects, schedule and budget control, communication plan, document control plan, modifications to scope, etc.

8.3.4 Qualifications of Key Personnel (team):

Proposer must demonstrate that that the Principal in Charge and the Project Manager meet or exceed the Minimum Consultant Qualifications set forth in Section 4, above.

Provide the names, titles, office locations, and resumes of key personnel proposed for the Project team including any subconsultant(s). Identify specific staff responsible for project management, interfacing with the District, and direct supervision of the Project team.

Include a description of the work each team member would perform, his or her level of responsibility, education, active licenses, work experience in years, and special skills or expertise as it relates to the Scope of Services.

Consultant's evaluation will consider its entire team, therefore no changes in team composition will be allowed without prior written approval of the District.

8.3.5 Relevant Firm Experience:

Proposer must clearly demonstrate that it meets or exceeds the requirements set forth in Section 4.

1. Describe your Firm's experience in completing relevant, similar projects.

2 Provide a matrix summary of current and past relevant projects that proposed team members have performed within the past five (5) years:

- Identify how each referenced project relates to the Scope of Work for this Project.

- Include the project name, contact name and phone number, dates of contract performance, summary of services provided, and value of the contract (including any amendments) for each project. References must be project or task managers who have knowledge of day to day activities

- Projects listed should be those that key personnel named for this Project participated in.

- The listed reference contacts must be project or task managers who have knowledge of day to day activities.

District reserves the right to check other references. Recent prior experience with District may be used as a reference check. References must verify Proposer's representation.

Note any current or past projects on which your Firm worked with the proposed subconsultant(s).

8.3.6 Organizational Structure: Provide Organization Chart of proposed team.

8.3.7 Level of Effort: Show the proposed total level of effort for the team, in hours, required to complete each task identified in the Scope of Work. **This document is separate from the Proposal Cost prepared below in 8.3.9 and should be included with Proposal.**

8.3.8 Project Schedule: The Scope of Work described herein is expected to take approximately 5 months to complete (**Attachment A**). Proposer shall include a detailed schedule in bar chart format for completion of tasks, subtasks, and phases associated with the Scope of Work. Include any key assumptions used in preparing the timetable and identify any critical tasks and/or events that could impact the overall schedule including review periods.

8.3.9 Cost Proposal: **Proposer shall include cost in a separate envelope**. Costs shall indicate the proposed not-to-exceed cost for completing the tasks identified and presented by the Consultant in the Scope of Work. Cost is to include a man-hour estimate per task, hourly billing rates of personnel to be utilized on the project and other associated costs. The total not-to-exceed shall include the cost of all personnel, subconsultants, administration, overhead, meeting attendance, research, travel, postage, reproduction, and all other related costs, both direct and indirect, necessary to complete the Project.

8.4 Additional Inclusions: No supplemental information will be accepted.

8.5 Addenda: The Proposer shall confirm the receipt of all addenda issued under this RFP in the Proposer Letter. Proposer is not required to include copies of the addenda with the Proposal.

8.6 Signature: All documents requiring signature shall be signed by an individual or individuals authorized to execute legal documents of behalf of the party(ies) represented.

9. EVALUATION CRITERIA

EVALUATION CRITERIA	PERCENTAGE OF SCORE
Project Approach/Scope of Services	**25%**
Qualifications and experience of the Proposer related to the services described in this RFP.	**20%**
Proposer's understanding of the project and subject matter expertise	**20%**
Proposer's ability and available resources to perform the requested services	**10%**
Proposed project cost	**15%**
Proposed schedule and ability to meet deadlines	**10%**

10. PUBLIC DISCLOSURE

Under the California Public Records Act (California Government Code Section 6250 et seq.) records in the custody of a public entity generally have to be disclosed unless the information being sought falls into one or more of the exemptions to disclosure set out in the code (Government Code Sections 6254 through 6255.) Any information you deem proprietary or confidential should be labeled as such on the proposal. You may not label the entire proposal as proprietary or confidential. In addition, the Letter of Interest should contain a paragraph that states that your proposal (does contain/does not contain) information that falls into one of the exemptions of Government Code Sections 6254 through 6255 and that you (assert/do not assert) a privilege of nondisclosure. In the absence of a declaration, the District will be obligated to disclose your proposal to any party that requests it. Documents marked proprietary or confidential information will be returned to proposers not selected to contract with the District.

11. TERMS AND CONDITIONS

11.1 This RFP does not commit District to award a contract, to defray any costs incurred in the preparation of a response to this request, or to procure or contract for services. District may investigate the qualifications of any Proposer under consideration, require

confirmation of information furnished by Proposer or require additional evidence or qualifications to perform the services described under the RFP.

11.2 District reserves the right to revise the RFP prior to the date the proposals are due. Revisions to the RFP shall be mailed via Addendum to all RFP holders of record.

11.3 District reserves the right to extend the date by which the proposals are due.

11.4 District reserves the right to cancel, in part or in its entirety, this RFP including but not limited to: selection schedule, proposal due date, and proposal requirements. If District cancels or revises the RFP, all Proposers of record will be notified in writing by District.

11.5 District reserves the right to reject all proposals. Selection is dependent upon the negotiation of a mutually acceptable Agreement with the successful Proposer. District reserves the right to negotiate with any, all, or none of the Proposers and award any agreement or portion of the work to one or more Proposers.

11.6 All proposals become the property of District and public records, and as such may be subject to public review.

11.7 District reserves the right to request additional information and/or clarifications from any or all respondents to this RFP.

11.8 District reserves the right to approve or disapprove the use of a particular subconsultant.

11.9 Proposer may withdraw its proposal before the proposal submission date by submitting a written request to District's Contracts Officer.

... End of Request for Proposal ...

Attachment A

EXHIBIT A

SCOPE OF WORK

For

Dove Canyon Recycled Water Booster Pump Station Improvements

EXHIBIT A

SCOPE OF WORK
Dove Canyon Recycled Water Booster Pump Station Improvements

1. BACKGROUND

Trabuco Canyon Water District (District) recently completed a Condition Assessment and Master Plan Update which provides a comprehensive documentation, analysis and recommendations for the water system, non-domestic water system and sewer system.

The Update recommends rehabilitation of the existing Dove Canyon Recycled Water Booster Pump Station (DCRPS) which was constructed in the early 1960's and there have been numerous modifications made to this booster pump station over the years. Based on engineering consultants field investigations the recommendation is to rehabilitate this facility. (See Attachment B – Location Map).

2. PROJECT DESCRIPTION

This Scope of Work (SOW) defines the requirements for the Work at existing DCRRPS that includes the engineering design for the demolition of three centrifugal pumps and motors, piping, valves, steel pump skid, and water filter system. The design and installation of a new three new centrifugal pumps and water filter system, three new pump concrete pads, including associated piping, valves, instruments, magnetic flow meter, and appurtenances. Also included are requirements for testing, placement into operation, commissioning, and training.

The following tasks are included in the Work: 1) preparing and processing submittals and RFIs; 2) engineering design designing of the work as listed above; 3) review of pump factory testing; 4) pump field testing and commissioning of the complete system; 5) participate in training of the District's staff on system operation and maintenance; and 6) completing other tasks specified.

Provide bypass pumping with back up redundancy and temporary water filter system to match the booster pump station flow rates.

Tasks

The Scope of Work for this project consists of the following tasks:

Task 1 Project Management

Task 2 Preliminary Design Phase

Task 3 Construction Documents

Task 4 Construction Bidding Assistance

Task 5 Engineering Services During Construction

Task 6 Additional Engineering Services

For each element of the project, work to be completed under each task is described as follows.

Task 1 Project Management – Manage and administer the project to successful completion

1.1. Schedule: Consultant shall prepare and submit an initial schedule with the critical milestones for the major tasks. Consultant shall monitor adherence to the accepted schedule and advise

District of any anticipated deviations or needed changes. The schedule shall include review times for submittals in the schedule.

1.2. Budget: Consultant shall manage the project budget. Consultant shall submit detailed monthly invoices and reconcile budget to schedule and completed tasks.

1.3. Manage sub-consultants: Schedule Subs as needed. Review subconsultant invoices and reconcile with the schedule, work completed, and the effort. Review the work product of subs and incorporate into the contract documents.

1.4. Meetings and Workshops:
- 1.4.1. General: Consultant shall prepare agendas for meetings and staff workshops as needed to progress the work. Consultant shall serve as meeting moderator, prepare meeting minutes, list action items, keep a log of design decisions, and follow up as needed.
- 1.4.2. Kickoff: Consultant shall prepare and attend a project kick-off meeting. The purpose of the meeting will be to review project scope, budget and schedule. The meeting will also be to introduce consultant and staff and establish lines of communication.
- 1.4.3. Staff Progress: Consultant shall plan for two or three semi-formal meetings or workshops with staff to discuss and present the design progress and to discuss any comments on submittals. Generally, these meetings will be held in conjunction with the Preliminary Design Submittal, the 60 percent design submittal, and the 90 percent design submittal.
- 1.4.4. Utility: Consultant shall meet with utility companies as needed and prepare documentation of the meetings.

1.5. Communication:
- 1.5.1. Consultant shall communicate with District through phone calls, emails, or texting to discuss progress and design issues at least weekly. Any concerns or questions shall be presented as they occur.
- 1.5.2. Consultant shall submit a monthly progress report with their invoice. The report shall address project status, schedule, budget, issues, concerns, and anticipated work.

1.6. Safety: Consultant is responsible for their own safety. Consultant and Consultant's subs shall have a safety plan for working in the field while gathering information, surveying, and performing geotechnical work. Upon request, these plans shall be submitted for record only.

1.7. Consultant shall be responsible for printing and distributing meeting and review documents during the design. Consultant shall also be responsible for other direct costs such as travel.

1.8. QA/QC: Consultant shall administer a program of Quality Assurance/Quality Control (QA/QC) procedures for producing quality work and shall effectively manage and control the work. Specific procedures shall include but shall not be limited to planning, coordination, cost control, checking, reviewing and scheduling the work. The QA/QC program shall include procedures for checking the work and documenting the checking.
- 1.8.1. Generally, the Consultant shall assign personnel that are not associated with the design to review documents before they are being submitted.
- 1.8.2. The QA/QC shall result in technical accuracy. The submittals shall be neat, well organized, grammatically correct, and checked. The person or persons performing the QA/QC checks shall be identified.
- 1.8.3. For submittals, Consultant shall include a certification that the work has been reviewed for accuracy.
- 1.8.4. Consultant shall file all environmental documents, Notice of Exception, etc.

Task 2 Preliminary Design Phase Elements

2.1 Preliminary Design Drawing Elements

2.1.1 The Consultant shall develop plans, specifications, and cost estimates (PS&E) for the proposed improvements as outlined. The improvements on the preliminary plans and technical specifications shall consist of:

2.1.2 Bypass pumping which shall include redundant bypass pumps.

2.1.3 A temporary water filtration system will also need to be installed during all phases of demolition and construction.

2.1.4 Replace three (3) new 100 Hp centrifugal pumps with valves, suction and discharge piping

2.1.5 New discharge pipe header

2.1.6 New Water filtration system and associated piping and valves.

2.1.7 One (1) new magnetic flow meter

2.1.8 Replace the existing interior water filter backwash system plumbing and run new piping to outside of pump station.

2.1.9 New skid mounted chemical pumps for chemical injection and chemical analyzer

2.1.10 Replace one (1) existing sump pump

2.1.11 Fill-in existing sump pump pit and construct new sump pump pit close to existing wall electrical outlet.

2.1.12 Replace pilot-operated control Cla-Val and install new Cla-Val in the horizontal position on the piping.

2.1.13 Replace existing air and vacuum valves for water service

2.1.14 Instrumentation and Control for Process Systems such as programming of PLC and associated field instruments to be programmed by the District's in house system integrator.

2.1.15 Two new pressure transmitters to be installed inside of pump station.

2.1.16 One new digital pressure gauge for recycled water application.

2.1.17 All existing pumps, steel pump skid, and water filter system shall be demoed and hauled off from project site.

2.1.18 Salvage one 100 HP motor at pump station for the District. (TCWD staff to field mark the one motor to be salvaged.)

2.1.19 Salvage all existing pressure transmitters located inside of the pump station. Contactor to remove and secure all pressure transmitters and secure them to be recalibrated and reinstalled.

2.1.20 Design bypass pumping with back up redundancy and temporary water filter system to match the booster pump station flow rates.

Task 3 Construction Documents: Consultant shall prepare construction documents including contract requirements, plans, and technical specifications. The documents shall be submitted for review and comment at the preliminary design, 60% and 90% stage. Final documents shall be submitted for construction bidding purposes.

3.1 General: The Construction Documents shall be a complete and complementary set. The specifications and plans shall not contradict each other and shall build on each other. Contract provisions shall not be modified unless approved by the District. Technical provisions shall be modified as needed. References may be used only if they are applicable and readily available to the Contractor and District.

3.1.1 Specifications shall set forth the technical provisions for materials and construction requirements. Specifications shall provide for quality standards, testing, and acceptance. Disinfection requirements, environmental constraints (site maintenance, noise restrictions, dust restrictions, and Storm Water Pollution Prevent Plan (Best Management Practices) requirements shall be included.

3.1.2 Plans shall adequately detail the work needed and accurately show locations.

3.2 Format: All submittals shall include four (4) hard and one electronic copies; MS Word for the specifications and contract terms and pdfs for the plans. Except for the Final Submittal, submittals shall be marked as to the percentage complete and shall include a water mark or stamp stating they are NOT FOR CONSTRUCTION. Printed copies shall be submitted as described herein. All submittals shall include a response to previous District Comments. Consultant may elect to present and review the submittals in a workshop or to provide submittals ahead of a progress meeting to review them.

3.2.1 District generally utilizes a CSI format for Contract provisions and technical specifications. Specifications and Contract provisions are to be prepared in MS Word.

3.2.2 Plans shall include a standard District title block and follow District CAD Standards. The plans shall be prepared in AutoCAD format. Standard industry plan and profile conventions shall be utilized.

3.3 District Standards: Consultant shall utilize District's standard Contract Documents, technical specifications, and Standard Plans as a basis for the work. Consultant shall adapt, modify, revise, or develop additional materials as needed for the project. Non-applicable materials shall not be utilized. Consultant shall not use District materials without reviewing them.

3.3.1 Consultant may revise and adapt technical specifications and standard plans as needed; however, District shall be made aware of the changes. Consultant may utilize "track changes" or other means to identify the changes.

3.3.2 Contract provisions generally may not be altered except for specific environmental requirements such as noise control and City permit requirements. Consultant shall review the contract provisions and comment on their applicability.

3.4 All drawings shall be complete, suitable for bidding and construction, and satisfactory to District. In their final format, the construction drawings include, but are not limited to, the following:

- Title sheet
- Location Map, Drawing index, construction notes, abbreviations
- All drawing legends assembled
- General Site Overview Drawing
- Civil drawings
- Mechanical Drawings
- Electrical Drawings
- Instrumentation and Control Drawings
- Proposed bypass flow handling during construction drawings
- Construction phasing

3.5 Submittal at 60-Percent: Upon agreement of the pump station layout (preliminary design phase) the District, the Consultant shall begin the 60% submittal. The specifications shall, as a minimum, consist of an outline of standards and potential changes or additions to the standards. Any completed portions shall be submitted. Specific contract provisions that will be added should be noted.

3.5.1 Consultant shall submit a cost estimate: The cost estimate shall include a statement regarding potential cost variance range, and it shall note the ENR Cost Index. It shall also note the basis for prices any materials quotations, estimating books or programs, previous bid prices, or other references. It shall include a date and the name of the estimator.

3.5.2 The documents shall also be submitted in electronic format (plans pdf, words – contract terms MS Word).

3.6 Constructability Review: Consultant shall perform a constructability review of the plans and specifications, at Consultant's option, either between submittal of the 60% and 90% plans or after submittal of the 90% plans. The Constructability review shall be done by someone with construction experience.

3.6.1 The review shall consider the impacts on the work by physical constraints and contract terms.

3.6.2 The review shall determine the reasonableness of the contract duration considering the time impacts of mobilization, material procurement, permit acquisition, limits on work hours. Consultant shall evaluate the economics of the work.

3.6.3 The District may provide a representative to walk the site with Consultant.

3.6.4 Consultant shall submit a brief letter report documenting the Constructability Review.

3.7 Submittal at 90-Percent: The 90% submittal package shall be a near complete set of construction documents consisting of contract provisions, technical specifications, and plans. The submittal shall only need minor additions or alterations. Consultant shall include a written response to the 60% comments with the 90% submittal.

3.7.1 Consultant shall submit a cost estimate that meets AACE requirements for a Class 4 or 5 estimate (ASPE Class 2 or 1). The cost estimate shall include a statement regarding potential cost variance and shall note the ENR Cost Index. Unit prices for estimating the costs shall be researched using actual data such as recent costs of similar unit items in similar projects, published cost estimating data bases (such as Means), estimating programs, and/or written quotes from vendors and installers. Consultant shall indicate the primary source of unit prices and shall retain copies of the background information used in the estimate. The estimate shall include a date and the name of the estimator.

3.7.2 The documents shall also be submitted in electronic format (plans in pdf format, contract terms and technical specifications in MS Word).

3.8 Final bid package: The final bid package submittal shall be complete, correct, and ready for posting for bid solicitation. Any deficiencies noted by District shall be corrected by Consultant immediately and without any cost to District. The final opinion of cost and the response to comments on the 90% submittal shall be included with the final bid package.

3.8.1 The final bid package shall be submitted in pdf format that is suitable for uploading to PlanetBids. The electronic copy of plans shall be signed and sealed by the design engineer. In addition to the electronic copies, Consultant shall provide four full size sets of the plans and four bound copies of the contract documents and specifications for District use. One set of loose originals of the contract documents and technical specifications and one loose reproducible set of the plans shall be provided.

Task 4 Construction Bidding Assistance: Consultant shall assist District during the bidding period as follows:

4.1 Prebid meeting: Consultant shall prepare the agenda for the pre-bid meeting. Consultant shall attend the pre-bid meeting and be prepared to respond to questions regarding design intent.

4.2 RFIs: Consultant shall assist District in providing responses to Requests for Information and comments. Consultant shall assist District in providing clarifications and preparing written addenda. Consultant shall assume three addenda will be needed for the proposal.

4.3 Bid Review: Consultant shall assist the District in analyzing the bid prices for reasonableness and comparison to the Cost Opinion. Consultant shall assist in reviewing bidder responsiveness and making the recommendation for award.

4.4 Conformed Documents: Consultant shall prepare conformed contract documents that incorporate addenda and clarifications into the construction documents.

Task 5 Engineering Services During Construction: Consultant shall work with District, District's Construction Manager, and District's Contractor to ensure the work meets the design intent and the project performs as intended.

5.1 Omissions and Errors: Should omissions be found in the Documents; Consultant shall not charge for correcting them unless they can demonstrate that the engineer would have incurred the costs separately from other work if the work had not been omitted. District reserves the right to charge extra administrative costs due to omission. Consultant is responsible for the costs incurred as a result of errors as well as reasonable extra costs incurred by District, District's Construction Manager, and District's Contractor.

5.2 Clarifications: Consultant shall assist District and District's construction manager in responding to Requests for Information and providing clarifications of the design intent. This assistance may include modifications to the drawings, sketches, and written descriptions.

5.3 Change Order Review: Upon request, Consultant shall assist in review of change order entitlement and costs.

5.4 Request for Information (RFIs): Consultant shall review all RFIs and prepare detailed responses to RFIs.

5.5 Review of Submittals: Consultant shall review and determine acceptability of shop drawings and material submittals for conformance with the contract and design intent. Normally, submittals shall be reviewed and returned within 7 working days. Consultant shall log all reviews and coordinate the log with District and District's Construction Manager. Consultant shall prepare a list of expected submittals and compare it to the Contractor's list.

5.5.1 Upon request, Consultant shall review test results and construction submittals.
5.5.2 Consultant shall carefully review any requests for substitutions.

5.6 Change Order Documents: Upon request, Consultant shall assist in the preparation of change order documents. The preparation may include plans, exhibits, clarifications, specifications, and cost estimates.

5.7 Meetings: Consultant shall attend the pre-construction meeting and the Construction kick-off meeting. The consultant shall be prepared to answer questions regarding the design and intent

at these meetings. Consultant shall attend construction progress meetings, upon request (assume 2 for proposal purposes).

5.8 Record Documents: Upon completion of the project, Consultant shall prepare the project record drawings. The drawings shall be based upon information provided by the Construction Manager and Contractor. Consultant shall provide an electronic copy of the plans. The electronic copy shall be provided in both AutoCAD and pdf format.

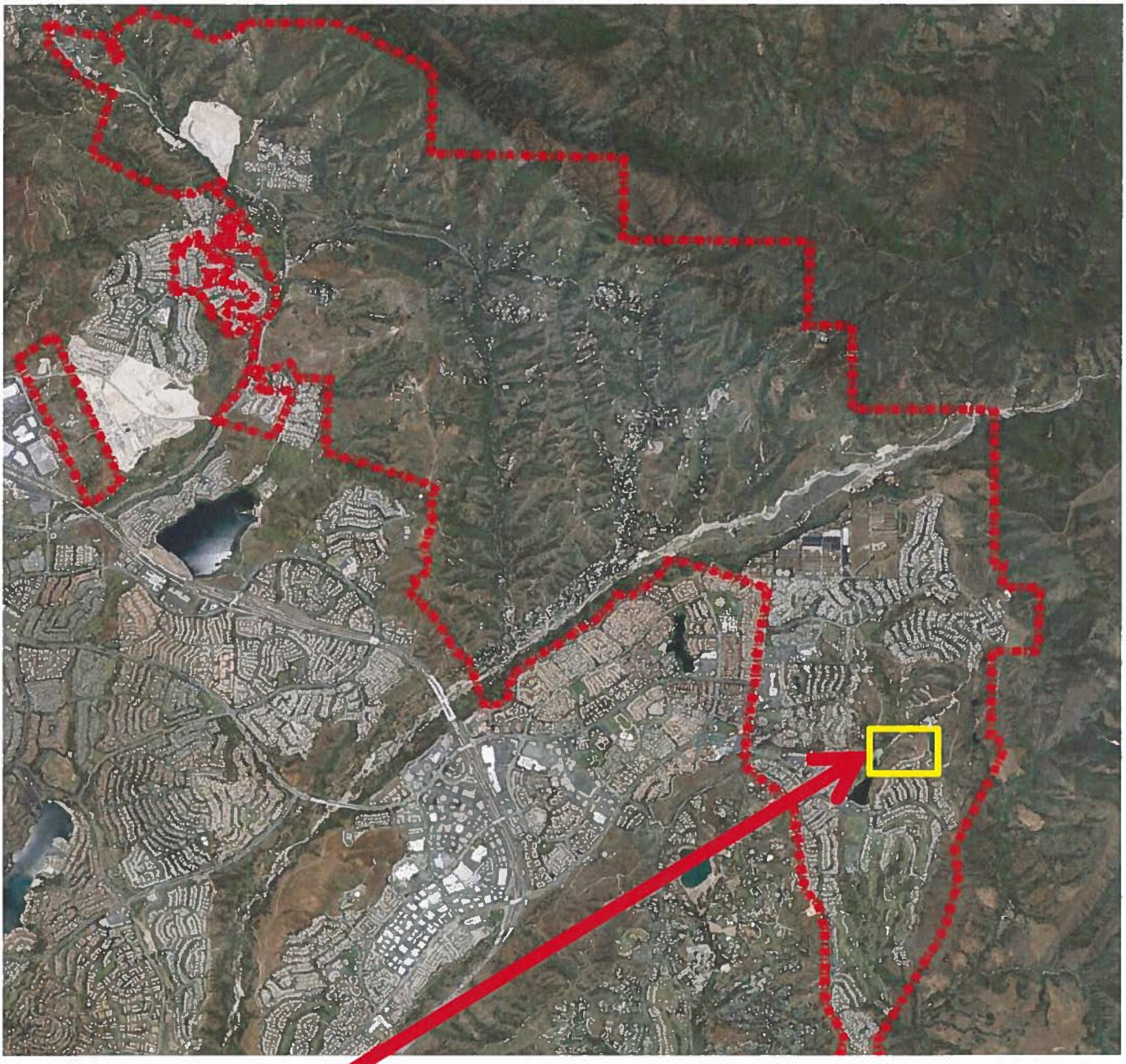
5.8.1 Consultant shall work with the Construction Manager to provide an index of the final submittals and a copy of the submittals electronically in pdf format.

5.8.2 Consultant shall submit the final project document files, including meeting minutes, correspondence, reports, emails, Change Orders, etc. The submittal shall be an electronic file in pdf format.

Task 6 Additional Engineering Services

If requested by the District, **CONSULTANT** shall provide additional services by addendum to the above Scope of Work.

Attachment B



TRABUCO CANYON WATER DISTRICT

Project Location Map

Area of Work

Trabuco Canyon Water District Dove Canyon Recycled Water Booster Pump Station Improvments Project

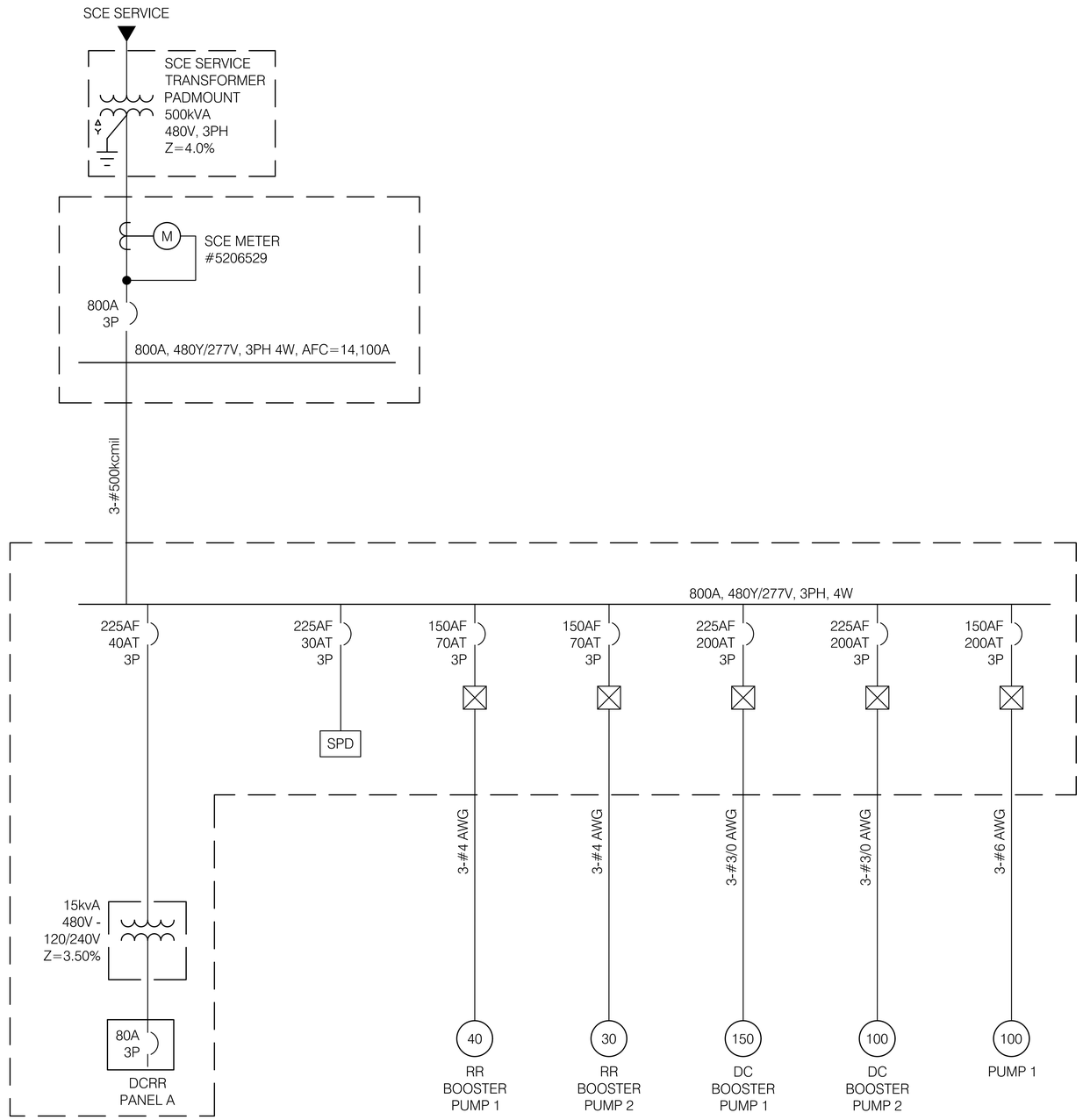
Address: 32003 Dove Canyon Drive
Trabuco Canyon, CA 92679

Attachment - B

Attachment C

GENERAL NOTES

1. ALL FEEDER AND BREAKER SIZES ARE BASED ON FIELD OBSERVATIONS.



P2S ENG

Long Beach // Irvine // Los Angeles
San Diego // San Jose // Seattle

p2sinc.com

TCWD SYSTEM WIDE ARC FLASH STUDY

Trabuco Canyon Water District
Trabuco Canyon, CA 92679

Revisions

Number	Description	Date

Designed	GH
Drawn	BR
Checked	MP
Approved	DE
Date	03/07/2024
Submittal	Record Drawings
Scale	No Scale

Sheet Title

Electrical One-line Diagram
Dove Canyon
Roberson Ranch PS
32532 Dove Canyon Dr.
Trabuco Canyon, CA

Sheet Number

E-001

P2S No. 23-0999

Attachment D

PROFESSIONAL SERVICES CONTRACT
[INSERT PROJECT NAME] PROJECT

THIS PROFESSIONAL SERVICES AGREEMENT ("**Agreement**") is effective [Enter Date] and is between **Trabuco Canyon Water District**, a county water district organized and existing under the County Water District Law ("**TCWD**"), and _____ ("**Consultant**"), each a "**Party**" and together the "**Parties**."

A. TCWD issued a [Identify RFP], attached as Exhibit A, for _____services **(the "Project").**

B. Consultant has furnished TCWD with a proposal to perform the Project as set forth in detail in Exhibit B, subject to the terms and conditions of this Agreement.

C. The Parties intend by this Agreement to establish the terms and conditions for Consultant to provide the **Services** (defined below) to TCWD.

The Parties therefore agree as follows:

1. Services.

1.1 Scope of Work. The scope of the Consultant's services will consist of services set forth in Exhibit A and Exhibit B (collectively referred to as the "Services"). If any conflict or other discrepancy arises or appears between the body of this Agreement and the exhibits to this Agreement, the body of the Agreement takes precedence over the exhibits, and Exhibit A takes precedence over Exhibit B.

1.2 Changes and/or Extra Work.

1.2.1 TCWD may, at any time, by written order, make changes within the Scope of Work described in this Agreement. If those changes cause an increase in the budgeted cost or the time required for the performance of the Services, then upon the submission of sufficient support by Consultant for compensation for a change to either the amount of Consultant's compensation and/or the schedule for performance of the Services, TCWD will approve such change request. If Consultant encounters any unanticipated conditions or contingencies that may affect the Scope of Services and result in an adjustment in the amount of compensation or time required for performance of the Services, Consultant must so advise TCWD immediately upon notice of such condition or contingency. The written notice must explain the circumstances giving rise to the unforeseen condition or contingency and must set forth the proposed adjustment in compensation and/or schedule resulting therefrom. Consultant shall give such notice to TCWD before Consultant performs work related to the proposed adjustment in compensation. Any and all pertinent changes must be expressed in a written supplement or amendment to this Agreement before Consultant implements the changes.

1.2.2 Only TCWD's Board of Directors or General Manager or his or her designee may authorize changed or extra work, modification of the time of completion of the Services, or

additional compensation for the tasks to be performed by Consultant. Consultant recognizes that other TCWD personnel do not have authorization to order changed or extra work or to obligate TCWD to the payment of additional compensation. The failure of Consultant to secure the prior written authorization for any changed or extra work will constitute a waiver of any and all right to adjustment in the contract price due to the unauthorized work, and Consultant will not be entitled to any compensation whatsoever for the performance of that changed or extra work. If Consultant and TCWD agree that changed or extra work is required, a change order by supplemental agreement or amendment to this Agreement will be required.

1.3 TCWD's Duties Regarding Data and Property Access. TCWD shall furnish Consultant available studies, reports, and other data pertinent to the Services. Consultant may use and rely upon all the information provided by TCWD in performing the Services. TCWD shall arrange for the Consultant to access and make all provisions for Consultant to enter upon public and private property as may be reasonably necessary for Consultant to perform the Services.

2. Time of Completion.

Consultant shall begin performing the Services promptly upon the date included on TCWD's notice to proceed ("Notice to Proceed"), and shall complete the Services no later than ___ days after that date. The schedule for completion of the work shall be as shown upon _____. Consultant shall complete the Services in accordance with the schedule for completion shown in _____.

3. Compensation.

3.1 Not to Exceed Price. If the Consultant performs the Services to the satisfaction of TCWD, then TCWD shall pay the Consultant an all-inclusive compensation not to exceed $_____ ("Contract Price"). Further detail regarding the Contract Price is set forth in [Appendix or Exhibit] The Contract Price will fully compensate Consultant for all indirect and direct personnel, materials, supplies, equipment and services costs incurred by the Consultant and used in carrying out or completing the Services. Any Services requiring additional compensation must be authorized in advance by a written supplement or amendment to this Agreement pursuant to Section 1.2.

3.2 Invoice. Consultant shall invoice TCWD no more than once each month for the Services performed during the preceding month. All invoices shall be submitted to TCWD's Project Manager, with a copy to TCWD's purchasing department by email to purchasing@tcwd.ca.gov. The invoice shall itemize all charges in the detail generally required by TCWD, including at a minimum:

3.2.1 the date of performance of each of the Services,

3.2.2 identification of the person who performed the Services,

3.2.3 a detailed description of the Services performed on each date,

3.2.4 if applicable, the hourly rate at which the Services on each date are charged,

3.2.5 an itemization of all costs incurred and

3.2.6 the total charges for the Services for the month invoiced.

Each invoice shall contain the following affidavit signed by a principal of the firm of Consultant:

> "I hereby certify as principal of the firm of _____ that the charge of $_____ as summarized above and shown in detail on the attachments is fair and reasonable, is in accordance with the terms of the Agreement dated _____, and has not been previously paid."

3.3 Audit; Timeliness. Consultant shall provide, upon TCWD's request, documentation substantiating charges billed to TCWD pursuant to this Agreement. TCWD may perform an audit of the Consultant's relevant records pertaining to the charges. Any Services performed more than 60 days prior to the date upon which they are invoiced to TCWD will not be compensable.

3.4 Payment. TCWD shall endeavor to pay Consultant no later than 30 days after approval of an invoice by TCWD's staff. If TCWD objects to any invoice submitted by Consultant, TCWD will advise the Consultant in writing giving reasons for its objection. If any invoice submitted by the Consultant is disputed by TCWD, only the disputed portion will be withheld from payment and the Consultant must continue to perform diligently during the pendency of any dispute resolution process that may ensue.

4. Personnel; Professional Ability; Standard of Quality; Financial Stability

4.1 Personnel. Consultant shall be responsible for the supervision and direction of the Services by Consultant employees and provide consulting to District employees working on this project. It is understood and agreed by the Parties that at all times during the term of this Agreement that _____ will serve as the designated representative of the Consultant to undertake, render and oversee all of the services under this Agreement (the "Consultant's Representative"). The Consultant may not reassign the Consultant's Representative or assign another person as Consultant's Representative until and unless TCWD, in its reasonable discretion, approves a replacement in writing. TCWD reserves the right to direct the removal of any personnel, including but not limited to Consultant's Representative, when in District's opinion the individual's performance violates District policy or applicable law. Replacement of personnel will not excuse the Consultant from compliance with all of the requirements of this Agreement. Consultant may not employ subcontractors, other than those specified in the RFP, without prior approval by TCWD.

4.2 Professional Ability and Standard of Quality. TCWD has relied upon the Consultant's representations regarding its professional training and ability to perform the Services as a material inducement to enter into this Agreement. Consultant shall therefore provide properly skilled professional and technical personnel to perform all Services .under this Agreement. All Services under this Agreement must be performed in a skillful, professional manner in accordance with applicable legal requirements and must meet the standard of quality ordinarily to be expected of competent professionals in Consultant's field of expertise.

4.3 Financial and Regulatory Stability. TCWD has also relied upon the financial capability and status of Consultant as substantial inducements for TCWD to enter into this Agreement. Therefore, Consultant shall, and hereby specifically acknowledges its duty to do so, notify TCWD of any significant financial change, or significant change in status of Consultant no later than seven days after any significant financial change or significant change in status. "Significant financial change" or "significant change in status" shall mean the following:

4.3.1 Any action(s) by which Consultant consolidates with, merges, or is converted into another partnership or corporation;

4.3.2 Any filing of bankruptcy by the Consultant (or any of its partners);

4.3.3 Loss of Consultant's professional qualifications; and

4.3.4 The fact that Consultant is no longer in compliance with federal or state equal opportunity laws.

5. Safety.

5.1 Consultant's Responsibility for Work Conditions. If Consultant will be present on any jobsite, then the Consultant shall be solely and completely responsible for conditions of its work on the jobsite, including safety of all persons and property regarding the performance of the Services. This requirement will apply continuously and not be limited to normal working hours. The Consultant shall promptly and fully comply with and carry out safety requirements as prescribed by federal, state, or local laws or regulations and industry standards. The Consultant shall take such measures as may be necessary or required to assure that the safety and health of its employees and of the public at or near the jobsite will be safeguarded.

5.2 Subcontractor Compliance. The Contractor shall assure that its subcontractors of all tiers shall, without expense to TCWD, comply with this Section 5. Consultant shall comply with all applicable TCWD ordinances, policies and procedures, including but not limited to those pertaining to safety in the workplace. The Consultant shall assure that its subcontractors promptly and fully comply with and carry out safety requirements as prescribed by federal, state, or local laws or regulations and industry standards.

6. Termination of Services.

6.1 Termination Without Cause. TCWD may at any time, at its sole discretion, terminate all or any portion of the Services and this Agreement upon written notice to Consultant. Upon receipt of notice of termination, Consultant shall stop performance of the Services at the stage directed by TCWD. Consultant will be entitled to payment within 30 days for Services performed up to the date of receipt of the written notice of termination. Consultant will not be entitled to payment for any Services performed after the receipt of the notice of termination unless TCWD authorizes that payment in advance in writing.

6.2 Termination for Cause. If Consultant fails to perform any of the obligations required of Consultant within the time and in the manner provided for under the terms of this Agreement, or if Consultant violates any of the terms and conditions of this Agreement, TCWD may terminate this Agreement by providing Consultant with written notice. The Consultant will be compensated for all Services performed prior to the date of receipt of the notice of termination. However, TCWD may deduct from the compensation owed to Consultant the amount of damage sustained or estimated by TCWD resulting from Consultant's breach of this Agreement. In the event of termination, the TCWD will not in any manner be liable for the Consultant's actual or projected lost profits had the Consultant completed the services required by this Agreement.

6.3 Survival. Consultant's obligations pursuant to Section 8 (Indemnification) and Section 9 (Insurance) will survive termination and continue in effect for as long as necessary to fulfill the purposes of those sections.

7. Suspension of Services.

7.1 Suspension by TCWD. TCWD may, at any time and without cause, suspend all or a portion of the services of Consultant for a period of not more than 90 days by notice in writing to Consultant. Consultant shall resume the service on receipt from TCWD of a notice of resumption of services. Any change to the Agreement, price, or time of completion sought by Consultant as a result of suspension hereunder, shall be processed as a change order under the provisions of Section 1.2 of this Agreement.

7.2 Suspension Upon Consultant's Request. Upon written request by Consultant, TCWD may suspend, in writing, all or any portion of the Services if unforeseen circumstances beyond the control of TCWD or Consultant make normal progress of the Services impossible, impractical or infeasible. Upon TCWD's written determination to suspend performance of the Services, the time for completion of the Services will be extended by the number of days that performance of the Services is suspended.

8. Indemnification.

Consultant shall hold harmless and indemnify, including without limitation the duty and cost to defend, TCWD, as well as TCWD's directors, officers, officials, employees, and authorized volunteers from and against all liability and all claims, demands, damages, losses, expenses, or costs, subject to the limitations set forth by law, including attorney's fees and litigation costs, (a) arising out of or related to the Services, or (b) arising out of any allegation that materials or services provided by Consultant infringe or violate any copyright, trademark, patent, trade secret, or any other intellectual property or proprietary right of any third party. In no event will the cost to defend exceed the Consultant's proportionate percentage of fault, provided, however, that this limitation is subject to the meet-and-confer requirements of California Civil Code Section 2782.8, as amended from time-to-time. The obligations under this Section shall exclude Liabilities that (i) arise from TCWD's sole negligence and willful acts, or (ii) with respect to design professionals, arise from either the active negligence of TCWD, or any passive negligence of TCWD not caused at least in part by Consultant. Consultant's

obligation to indemnify shall not be restricted to insurance proceeds, if any, received by TCWD or its directors, officers, officials, employees, and authorized volunteers.

9. Insurance.

Consultant shall procure and maintain for the duration of the contract insurance against claims for injuries or death to persons or damages to property which may arise from or in connection with the performance of the work hereunder and the results of that work by the Consultant, his agents, representatives, employees, sub-contractors, or sub-consultants. Such insurance shall comply with the requirements set forth in this Section 9.

9.1 Coverage. Coverage shall be at least as broad as the following:

9.1.1 *Commercial General Liability (CGL).* Insurance Services Office (ISO) Commercial General Liability Coverage (Occurrence Form CG 00 01) including products and completed operations, property damage, bodily injury, personal and advertising injury with limit of at least two million dollars ($2,000,000) per occurrence or the full per occurrence limits of the policies available, whichever is greater. If a general aggregate limit applies, either the general aggregate limit shall apply separately to this project/location (coverage as broad as the ISO CG 25 03, or ISO CG 25 04 endorsement provided to TCWD) or the general aggregate limit shall be twice the required occurrence limit.

9.1.2 *Automobile Liability (if necessary).* Insurance Services Office (ISO) Business Auto Coverage (Form CA 00 01), covering Symbol 1 (any auto) or if Consultant has no owned autos, Symbol 8 (hired) and 9 (non-owned) with limit of one million dollars ($1,000,000) for bodily injury and property damage each accident.

9.1.3 *Workers' Compensation Insurance.* Must be provided as required by the State of California, with Statutory Limits, and Employer's Liability Insurance with limit of no less than $1,000,000 per accident for bodily injury or disease. **Waiver of Subrogation:** Consultant hereby agrees, and the insurer providing such coverage shall agree, to waive all rights of subrogation against TCWD, its elected or appointed officers, officials, agents, authorized volunteers and employees for losses paid under the terms of this policy which arise from work performed by the Named Insured for the Agency; but this provision applies regardless of whether or not TCWD has received a waiver of subrogation from the insurer.

9.1.4 *Professional Liability or Cyber Liability Insurance*

(i) Professional Liability Insurance. Consultant must provide Insurance appropriate to the Consultant's profession, with limits no less than $1,000,000 per occurrence or claim, and $2,000,000 policy aggregate; or

(ii) Cyber Liability Insurance (Technology Professional Liability – Errors and Omissions). To the extent Consultant will be providing technology related services, Cyber Liability Insurance (Technology Professional Liability), with limits not less than $2,000,000 per occurrence or claim, and $2,000,000 aggregate or the full per occurrence limits of the policies

available, whichever is greater. Coverage must be sufficiently broad to respond to the duties and obligations as is undertaken by Consultant in this Agreement and shall include, but not be limited to, claims involving infringement of intellectual property, including but not limited to infringement of copyright, trademark, trade dress, invasion of privacy violations, information theft, damage to or destruction of electronic information, release of private information, alteration of electronic information, extortion and network security. The policy must provide coverage for breach response costs as well as regulatory fines and penalties as well as credit monitoring expenses with limits sufficient to respond to these obligations.

(iii) If the policy provided is a claims-made policy:

(1) The Retroactive Date must be shown and must be before the date of the contract or the beginning of contract work.

(2) Insurance must be maintained and evidence of insurance must be provided for at least five years after the completion of the Services.

(3) If coverage is canceled or not renewed, and not replaced with another claims-made policy form with a Retroactive Date prior to the contract effective date, the Consultant must purchase "extended reporting" coverage for a minimum of five years after the completion of the Services.

If the Consultant maintains broader coverage and/or higher limits than the minimums shown in this Section 9, the Consultant shall provide the broader coverage and/or higher limits maintained by the Consultant. Any available insurance proceeds in excess of the specified minimum limits of insurance and coverage must be available to TCWD.

9.2 Other Required Provisions.

9.2.1 *General Liability.* The general liability policy must contain, or be endorsed to contain, the following provisions:

(i) Additional Insured Status. TCWD, its directors, officers, employees, and authorized volunteers must be given insured status (at least as broad as ISO Form CG 20 10 10 01), with respect to liability arising out of work or operations performed by or on behalf of the Consultant including materials, parts, or equipment furnished in connection with such work or operations.

(ii) Primary Coverage. For any claims related to this project, the Consultant's insurance coverage shall be primary at least as broad as ISO CG 20 01 04 13 as respects to TCWD, its directors, officers, employees and authorized volunteers. Any insurance or self-insurance maintained by TCWD its directors, officers, employees and authorized volunteers shall be excess of the Consultant's insurance and shall not contribute with it.

9.2.2 *Notice of Cancellation.* Each insurance policy required by this Section 9 must provide that coverage shall not be canceled, except with notice to TCWD.

9.2.3 *Self-Insured Retentions.* Self-insured retentions must be declared to and approved by TCWD. TCWD may require the Consultant to provide proof of ability to pay losses and related investigations, claim administration, and defense expenses within the retention. The policy language must provide, or be endorsed to provide, that the self-insured retention may be satisfied by either the named insured or TCWD.

9.2.4 *Acceptability of Insurers.* Consultant must place insurance with insurers having a current A.M. Best rating of no less than A: VII or as otherwise approved by TCWD.

9.2.5 *Verification of Coverage.* Consultant shall furnish TCWD with certificates and amendatory endorsements or copies of the applicable policy language effecting coverage required by this Section 9. All certificates and endorsements must be received and approved by TCWD before Consultant begins performing the Services. However, the Consultant's failure to obtain the required documents prior to beginning its performance of the Services will not waive the Consultant's obligation to provide them. TCWD reserves the right to require complete, certified copies of all required insurance policies, including policy Declaration pages and Endorsement pages.

9.2.6 *Renewal of Coverage*. Consultant shall provide proof to TCWD that policies of insurance required by this Agreement that expire during the term of this Agreement have been renewed or replaced with other policies providing at least the same coverage. Consultant shall submit to TCWD proof that such coverage has been ordered prior to expiration. A coverage binder or letter from Consultant's insurance agent to this effect is acceptable. A certificate of insurance and/or additional insured endorsement as required in these specifications applicable to the renewing or new coverage must be provided to TCWD no later than five days prior to the expiration of the coverages.

9.2.7 *Subcontractors/Subconsultants.* Consultant shall require and verify that all subcontractors maintain insurance meeting all the requirements stated in this Agreement, and Consultant shall ensure that TCWD its directors, officers, employees, and authorized volunteers are an additional insured are additional insureds for Commercial General Liability Coverage.

10. Ownership of Work.

10.1 No later than 30 days after the Consultant substantially completes performance of the Services, or no later than 30 days after the termination of this Agreement, the Consultant shall deliver to TCWD all files, records, materials, and documents drafted or prepared by Consultant in the performance of the Services ("Deliverables") but excluding any Consultant Property, as described in Section 10.2. All Deliverables are the property of TCWD and not the property of the Consultant, and TCWD retains the right to use the Deliverables in any way it sees fit. All finished and unfinished reports, plans, studies, documents and other writings prepared by and for Consultant, its officers, employees and agents in the course of performing the Services become the sole property of TCWD upon payment to Consultant for the Services, and TCWD will have the exclusive right to use those materials in its sole discretion without further compensation to Consultant or to any other person or entity. Consultant shall, at Consultant's expense, provide such Deliverables to TCWD or any person or entity TCWD may designate, upon written request. Consultant may keep file copies of all documents prepared for TCWD for use in its general business activities, unless otherwise specified by TCWD.

Use of any such documents by TCWD for projects that are not the subject of this Agreement or for purposes beyond the scope of the Services will be at TCWD's sole risk without legal liability or expense to Consultant.

10.2 TCWD hereby acknowledges and agrees that, as between the Parties, Consultant will remain the exclusive owner of Consultant Property. "Consultant's Property" means Background IP, reports, books and records, plans, designs, software, information technology systems and tools; processes, procedures and methodologies or other information and all Intellectual Property rights in any of the foregoing that is, in each case, generated, developed, created by or licensed to Consultant whether prior to or after the Effective Date, that are (i) furnished to or made available by Consultant in connection with the Services, and (ii) not unique to, or custom made for, District or any Project. Consultant hereby grants District a non-exclusive, nontransferable, perpetual, royalty free license to use any Intellectual Property included within Consultant Property incorporated in any deliverables, reports, work product or other items provided by Consultant to District as part of the Services.

11. Subcontracts.

Consultant shall not subcontract any portion of the Services without the written authorization of TCWD. If TCWD consents to a subcontract, Consultant shall be fully responsible to TCWD and third parties for all acts or omissions of the subcontractor to which the Services or any portion thereof are subcontracted. Nothing in this Agreement creates any contractual relationship between TCWD and any subcontractor or any obligation on the part of TCWD to pay or cause the payment of any monies due to any subcontractor except as otherwise is required by law.

12. Assignment.

Consultant shall not assign any right or obligation under this Agreement without TCWD's prior written consent. Any attempted assignment of any right or obligation under this Agreement without TCWD's prior written consent will be void.

13. Entire Agreement.

This Agreement represents the entire understanding of TCWD and Consultant as to the Services. No prior oral or written understanding will be of any force or effect with respect to the Services. This Agreement may not be modified or altered except in writing signed by both Parties.

14. Severability.

The provisions of this Agreement are severable. If any portion of this Agreement is held invalid by a court of competent jurisdiction, the remainder of the Agreement will remain in full force and effect unless amended by the mutual written consent of the Parties.

15. Jurisdiction.

This Agreement will be administered and interpreted under the laws of the State of California. Venue for any litigation arising from this Agreement will be the Superior Court of the State of California in Orange County.

16. Compliance with Federal, State and Local Laws.

Consultant shall comply with all applicable federal, state and local laws, statutes, ordinances, rules and regulations affecting the Services, including without limitation laws requiring licensing and prohibiting discrimination in employment because of race, creed, color, sex, age, marital status, physical or mental disability, national origin or other protected bases. TCWD will not be responsible or liable for Consultant's failure to comply with applicable laws, statutes, ordinances, rules or regulations.

17. Retention of Records.

Consultant and any subcontractors authorized by this Agreement shall keep and maintain full and complete documentation and accounting records, employees' time sheets, and correspondence pertaining to the Services, and Consultant shall make such documents available for review and/or audit by TCWD and TCWD's representatives at all reasonable times during performance of the Services and for at least four years after completion of the Services and/or termination of this Agreement.

18. Alternative Dispute Resolution.

Before resorting to mediation or other legal process, the primary contacts of the Parties shall meet and confer and attempt to amicably resolve any dispute arising from or relating to this Agreement subject to the following provisions. Any Party desiring to meet and confer shall so advise the other Party pursuant to a written notice. Within 15 days after a Party provides that written notice, the primary contacts for each Party shall meet and attempt to amicably resolve their dispute. Each primary contact, or the person acting in their absence with full authority to resolve the dispute, shall attend the meeting and shall be prepared to devote an entire day thereto. This Section survives the termination or expiration of this Agreement.

19. Written Notification.

Except as otherwise specified in this Agreement, any notice, request, demand, consent or approval, or other communication that either Party seeks or is required to give to the other Party must be in writing and either served personally or sent by first class mail, postage prepaid and addressed as follows. Either Party may change its address by notifying the other party in writing of the change of address. Notice will be deemed given two business days after mailing if mailed within the State of California as provided in this Section.

To TCWD:

Trabuco Canyon Water District
Attention: General Manager
32003 Dove Canyon Dr.
Trabuco Canyon, CA 92679

To Consultant: _____

Attention: _____

_____

_____

20. Successors.

This Agreement will be binding on and inure to the benefit of the Parties and TCWD's successors or assigns, except to the extent of any contrary provision in this Agreement.

21. Third Parties

The Services are intended solely for the benefit of TCWD. No other person or entity may rely on the Consultant's performance of the Services, and no right to assert a claim against Consultant by assignment of indemnity rights or otherwise shall accrue to a third party as a result of this Agreement or Consultant's performance of the Services.

22. Execution

This Agreement may be executed in counterparts. Electronic signatures are valid as original signatures. The signatories to this Agreement warrant that they are appropriately authorized to execute this Agreement on behalf of the party for which they signed.

CONSULTANT		**TRABUCO CANYON WATER DISTRICT**	
By:	_____	By:	_____ Fernando Paludi, General Manager
Title:	_____		
Dated:	_____	Dated:	_____

Approved as to Form:
Hanson Bridgett, LLP

General Legal Counsel:

By: _____

TRABUCO CANYON WATER DISTRICT
ENGINEERING/OPERATIONAL COMMITTEE MEETING | AUGUST 7, 2024

ENGINEERING MATTERS
ITEM 3: ROBINSON RANCH WASTEWATER TREATMENT PLANT (RRWWTP) BLOWER ROOM RE-DESIGN

The District's Robinson Ranch Wastewater Treatment Plant operates a blower-aeration system consisting of four (4) blower-motor configutrations. The existing Sutorbilt positive displacement blowers lack the needed capacity to effectively overcome pressure changes as a result of varying elevation within the sequencing batch reactors (SBR). Staff will be transitioning to multistage centrifugal air blowers, matching the existing Hoffman configuation, which will provide increased efficiency and redundancy.

The replacement of the two positive displacement blowers was originally bugeted in FY23-24. Staff worked with JIG consultants who prepared bid documents which replaced the two blowers inside the building, with plans to move the Motor Control Center (MCC) to the outside of the building. In March 2024, staff solicited bids and the low bid was $874,400.

The original budget was $400,000, which was based on equipment quotes in March 2023. JIG Consultants engineer's estimate was $547,000. The majority of the bid cost above the engineer's estimate was related to installation of the blower assemblies because the existing trolley system is inefficient and does not allow removal and installation of the new equipment. Also, the District's requirement of maintaining one blower in service at all times during construction is additional work/phasing for the contractor.

To reduce costs, Staff has pre-purchased the two blowers which avoids the contractor's markup. The estimate for the delivery of the blowers is December 2024, which provides time for the re-design and bidding of the new project. The new design places the equipment outside of the building, which will improve access for maintenance of the blowers (Exhibit 1). The next phase of the project, replacing the MCC, will be constructed inside the building.

Below is a summary of total project budget and construction estimates:

BLOWER REPLACEMENT PROJECT		
ITEM	**TASK DESCRIPTION**	**BUDGET**
Blower Design		
1	Original Design	$44,540
2	Re-Design	$81,985
3	Blower Purchase (2)	$209,050
4	Construction/CM (budgetary estimate)*	$650,000
	Total:	**$985,575**
MCC Replacement		
1	MCC Electrical Design	$49,210
2	Survey and Utility Investigation	$40,000
3	Construction/CM (budgetary estimate)*	$1,000,000
	Total:	**$1,089,210**
	Grand Total:	**$2,074,785**

**The Engineer will prepare a construction estimate when design is completed*

FUNDING SOURCE:
Capital Improvement Program

FISCAL IMPACT (PROJECT BUDGET):
$1,100,000 for Blower Re-Design/Construction & MCC Design – FY 2024-25 CIP Budget

TRABUCO CANYON WATER DISTRICT
ENGINEERING/OPERATIONAL COMMITTEE MEETING | AUGUST 7, 2024

ENVIRONMENTAL COMPLIANCE:
Notice of Exemption

RECOMMENDED ACTION:
Recommend the Board of Directors authorize the General Manager to Amendment No. 1 to JIG Consultants for the Blower Room Improvements in the not-to exceed amount of $81,985 (Action Calendar).

EXHIBIT(S):
1. Conceptual Blower Layout
2. JIG Amendment No. 1 Proposal

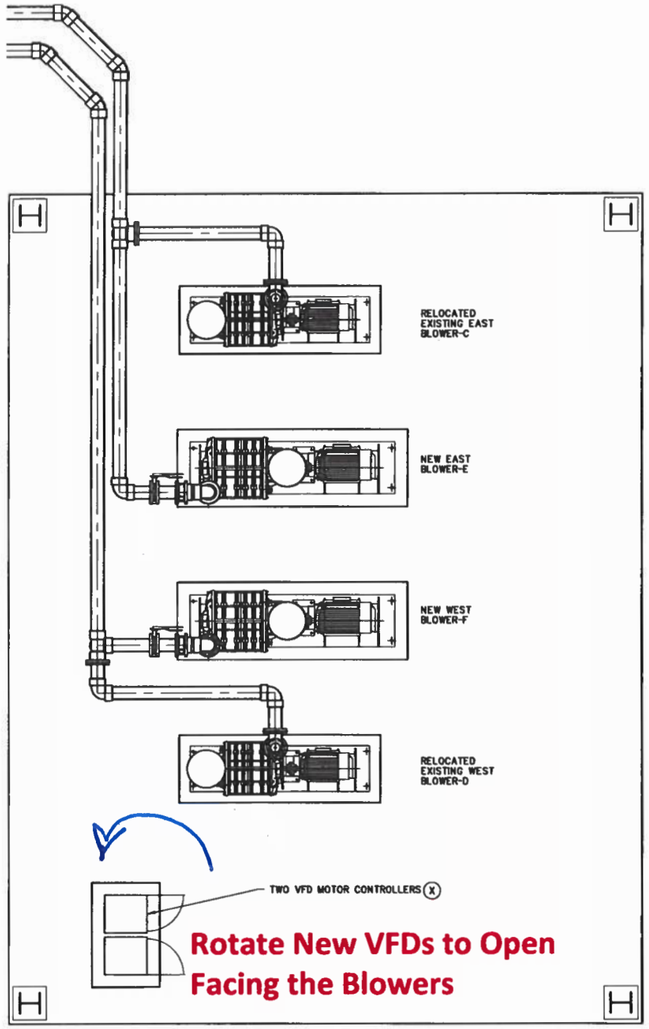
CONTACTS (staff responsible): PALUDI/LAUSTEN

DEMOLITION NOTES

- (P) PROTECT IN PLACE
- (D1) REMOVE EXISTING BLOWER ASSEMBLIES AND RETURN TO OWNER (1) (2) (3) (4) (5)
- (D2) DEMOLISH AND DISPOSE OF ABOVE GRADE ELECTRICAL, AND SIGNAL CONDUITS PER (1) (2) (4) (5)
- (D3) REMOVE AND DISPOSE OF EXISTING VALVES, PIPING, FITTINGS AND ACCESSORIES (1) (2) (3) (4)

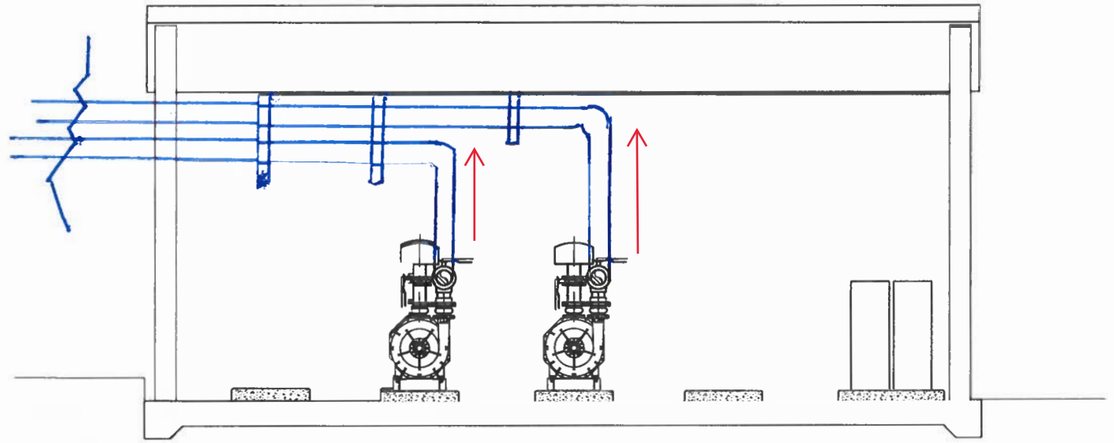
LEGEND

- REMOVE EXISTING BLOWER ASSEMBLIES AND RETURN TO OWNER
- DEMOLISH AND DISPOSE OF EXISTING PIPING, AND APPURTENANCES
- PROTECT IN PLACE EXISTING ELECTRICAL MCC, VFDS, CONTROL PANELS, JUNCTION BOX AND CONDUITS, FLANGE STUB OUT, AND BLOWERS



Location of Existing Blower Building

SITE PLAN
SCALE: 3/8"= 1'-0"



SECTION A
SCALE: 3/8"= 1'-0"

DIGALERT CALL TOLL FREE 811 TWO WORKING DAYS BEFORE YOU DIG Underground Service Alert

CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT A MINIMUM OF 48 HOURS PRIOR TO BEGINNING ANY CONSTRUCTION WORK. SEE GENERAL NOTES FOR FURTHER INFORMATION.

JIG CONSULTANTS
318 W KATELLA AVE, SUITE A
ORANGE, CA 92867
(714) 978-4407
www.jigconsultants.com

REGISTERED PROFESSIONAL ENGINEER JOSEPH I. GUTIERREZ No. C 55604 Exp. 12/31/24 CIVIL STATE OF CALIFORNIA

NO.	DATE	REVISIONS
1	3/18/24	ADDENDUM NO. 1

DESIGN: RO
DRAWN: RO
CHECKED: JG

TRABUCO CANYON WATER DISTRICT

LORRAINE S. LAUSTEN RCE 67027 DISTRICT ENGINEER DATE

JOSEPH I. GUTIERREZ RCE 55604 ENGINEER

TRABUCO CANYON WATER DISTRICT
ROBINSON RANCH WASTEWATER TREATMENT PLANT
BLOWER MODIFICATIONS
PROJECT NO. 2223-105

PHASE 2 MECHANICAL IMPROVEMENT
PLAN AND SECTIONS

M-05
SHEET 7 OF 14

July 23, 2024

David Rodriguez, PE
Trabuco Canyon Water District
32003 Dove Canyon Drive
Rancho Santa Margarita, CA 92679

Subject: **Proposal for Amendment No. 1- Robinson Ranch Wastewater Treatment Plant Blower Equipment Station and Blower Relocation (Re-Design)**

Dear David:

JIG Consultants (JIG) is submitting this letter proposal for engineering design services for the Robinsons Ranch Wastewater Treatment Plant Blower Equipment Station and Blower Relocation. Our staff visited the project site on several occasions, discussed the project with TCWD operations staff, and received information on the Owner purchased Lonestar Blower units.

1. The Robinsons Ranch Wastewater Treatment Plant (WWTP) was constructed in 1984. The WWTP is a tertiary treatment sequential batch reactor which treats wastewater into recycled water discharged to the Robinsons Ranch Reservoir. The 1984 WWTP included construction of the pump station building with the blower equipment located in the top floor. The blowers introduce low pressure air into the aerated sludge tank. The blowers received power from an undersized 1200-amp MCC also located inside the same building.
2. As of today, there are four blowers on the top floor of the pump station building. Two 30-horsepower Sutorbilt blowers are in the center of the building set at a 45-degree configuration. Two 60-horsepower Hoffman blowers are along the south wall of the building.
3. A single sludge tank is aerated using one Sutorbilt blower and one Hoffman blower. With two sludge tanks, all four existing blowers are needed for daily operations.

TCWD preordered two Lonestar Series MC5-10 blowers along with VFD controllers. The lead time for ordering, manufacturing, and shipment of the equipment is 22 weeks. The intent of this project is to design the Blower Equipment Station while the Lonestar blowers are in production.

This project is for re-design of a Blower Equipment Station which will be constructed outside and south of the pump station building. The Blower Equipment Station will be approximately 33 feet x 25 feet in plan dimension, with a concrete slab and equipment pads for the blower assemblies, a housekeeping pad for the two VFD controllers, and an overhead metal canopy. The station will house the two preordered 60-horsepower Lonestar blowers with space for the relocation of the two existing 60-horesepower Hoffman blowers. The VFD for the Lonestar blowers will be set on its housekeeping pad in the northwest corner of the station.

According to TCWD operations staff, there is a minimum amount of air volume required to operate the treatment plant. The minimum air volume is supplied by the two existing Sutorbuilt blowers and the two existing Hoffman blowers. During construction, the Contractor will be required to construct and test the two new Lonestar blowers before removing and relocating the two Hoffman blowers.

The maximum allowable duration to relocate each of the Hoffman blowers will be limited to 16 continuous hours. This constraint is driven by the amount of air that is required for the aerated sludge tanks. The 16 continuous hours will be planned for disconnection of the existing discharge and suction pipes, disconnection of motor electrical leads, removal and salvage of one existing Hoffman blower, setting the salvaged blower on the new concrete pad, constructing discharge and suction piping, and connecting to the new motor electrical

318 W. Katella Avenue, Suite A
Orange, CA 92867
Office (714) 978.4407
Fax (714) 908.4654
www.jigconsultants.com

leads. The Contractor will be allowed 24-hours to run the relocated Hoffman blower for functional testing. Once the first Hoffman blower is accepted, the Contractor will proceed with the removal and relocation of the second Hoffman blower, also limited to 16 continuous hours.

SCOPE OF WORK

JIG will perform the following as the project Scope of Work.

Task 1 – Project Management and Meetings

1. JIG will provide project management throughout the engineering design of the Robinson Ranch Wastewater Treatment Plant Blower Equipment Station and Blower Relocation. The Project Manager will attend a kick-off meeting which will be followed by a site visit. The Project Manager will also attend one submittal review meeting.

Task 2 – Collect Information and Prepare Project Base Map

1. Collect and review available record drawings of the WWTP, the proposed blower equipment including power requirements and dimensional data, the operating information available for all equipment, and all other information available from TCWD.
2. Prepare a base map of the area immediately south of the pump station building using field measurements and record drawings. Populate the base map with known aboveground and underground facilities. Surveying is not included in this proposal.

Task 3 – Preliminary Layout Review of Blower Equipment

1. Prepare a preliminary mechanical layout of the Blower Equipment Station showing plan view, section view, and dimensions of proposed blowers, discharge piping, and VFD equipment.
2. Submit preliminary mechanical layout to TCWD for review. Obtain comments and update the layout based on directives from operations staff.

Task 4 – Coordinate, Reivew and Support Structural Design of the Overhead Metal Canopy Structure

1. Contract with EC Steel for structural design and layout of the overhead metal canopy structure. EC Steel will prepare preliminary engineering, structural member layout and detailing, and calculations for the structure. EC Steel will prepare 11x17 layout drawings wet stamped by a Structural Engineer in the State of California.
2. Review all design load criteria including live loads, wind loads, collateral loads, dead loads, roof loads, seismic loads, zoning, and other relevant information to verify that such criteria meet or exceed the building code requirements for the State of California.
3. Perform structural design for miscellaneous site improvements to support the structure including foundation, anchor bolt locations and sizing, frame structural calculations, and reaction force diagrams.
4. Structural drawings prepared by EC Steel will be included as an appendix in the technical specifications and referenced in the construction plans.

Task 5 – Prepare Construction Plans, Specifications and Cost Estimate (PSE)

1. Prepare construction drawings with sufficient details to construct the Robinson Ranch Wastewater Treatment Plant Blower Equipment Station. The construction drawings will include the following sheets:

Sheet No.	Dwg. No.	Sheet Description
1	G-01	Title Sheet
2	G-02	Location and Vicinity Map, General Notes, Sheet Index
3	D-01	Site Demolition Plan and Details
4	D-02	Mechanical Demolition Plan inside Blower Building
5	M-01	Mechanical Plan

6	M-02	Mechanical Sections
7	M-03	Mechanical Details
8	E-01	Electrical General Sheets and Symbols
9	E-02	Electrical Site Plan
10	E-03	Electrical Power Plan
11	E-04	Electrical Single Line Diagram and Details

2. Prepare technical specifications to supplement the construction drawings. The technical specifications will include front-end documents which will be supplied by TCWD.
3. Prepare construction cost estimates for the work.
4. Submit the PSE for Draft Submittal to TCWD. Draft submittal will include one full size copy of the plans, three 11 x 17 copies of the plans, and one bound copy of the specifications.
5. Receive comments and revise the PSE for final. Final submittal will include one full size copy of the plans, three 11 x 17 copies of the plans, and one bound copy of the specifications. Final submittal will also include a USB drive with pdf and AutoCAD files of the construction plans and Microsoft Word documents for the technical specifications.

Task 6 – Assistance with Bid Phase Services

1. Perform administration support for bid phase services including answering Contractor questions, attending the pre-bid meeting, and preparing one project addenda.
2. Prepare conformed plans and specifications and submit to TCWD.

FEE SUMMARY

JIG will complete the above Scope of Work for a total fee of **$81,985**. A breakdown of the fee is presented in the attached Fee Proposal.

We appreciate this opportunity to work with TCWD. If you have questions regarding this proposal, please do not hesitate to contact our office.

Sincerely,

JIG CONSULTANTS

Joseph Gutierrez, PE, PMP
President / Project Manager

Enc.

TRABUCO CANYON WATER DISTRICT

Amendment No. 1-Proposal for Engineering Design Services of RRWWTP Blower Equipment Station and Blower Relocation

Fee Proposal

		Project Mgr.		Project Engineer		Sr. Civil Designer		Admin		Subtotal	Subconsultant		Direct Costs	Total Fee
		Hrly Rate	$200	Hrly Rate	$185	Hrly Rate	$150	Hrly Rate	$90		Elect.	Struct.		
Task	Description	Hours	Fee	Hours	Fee	Hours	Fee	Hours	Fee					
1	Project Management and Meetings	20	$4,000	0	$0	0	$0	0	$0	$4,000	$0	$0	$100	$4,100
2	Collect Information and Prepare Project Base Map	0	$0	2	$370	12	$1,800	0	$0	$2,170	$0	$0	$0	$2,170
3	Preliminary Layout and Review of Blower Equipment	1	$200	2	$370	12	$1,800	0	$0	$2,370	$0	$0	$0	$2,370
4	Coordinate, Review, and Support Strucutral Design	1	$200	0	$0	0	$0	0	$0	$200	$0	$15,000	$0	$15,200
5	Prepare Construction Plans, Specifications, and Estimates	15	$3,000	81	$14,985	128	$19,200	8	$720	$37,905	$17,600	$0	$250	$55,755
6	Assistance with Bid Phase Services	2	$400	4	$740	8	$1,200	0	$0	$2,340	$0	$0	$50	$2,390
TOTAL (TASKS 1 to 6)		**39**	**$7,800**	**89**	**$16,465**	**160**	**$24,000**	**8**	**$720**	**$48,985**	**$17,600**	**$15,000**	**$400**	**$81,985**

TRABUCO CANYON WATER DISTRICT
ENGINEERING/OPERATIONAL COMMITTEE MEETING | AUGUST 7, 2024

ENGINEERING MATTERS

ITEM 4: DIMENSION WATER TREATMENT PLANT (DWTP) OFFICE TRAILER REHAB PROJECT COMPLETION REPORT

Trabuco Canyon Water District (District) owns, operates, and maintains the Dimension Water Treatment Plant (WTP) in the City of Lake Forest. Water Operations Staff has been working out of the 12'x 30' office trailer since approximately 2006. The office was in poor condition and $400,000 was originally budgeted for its replacement in Fiscal Year 2022-23. Staff contracted with JIG Consultants and worked through the E/O Committee to explore various options for office space improvements, including a permanent building and modular spaces. Ultimately, bid documents were developed separately for both a larger modular office and one similar in size to the existing office. However, based on bids received for new modular offices, no award was made. In lieu of new construction or purchase, staff pursued a more cost-effective approach of completely refurbishing the existing office trailer, including replacement of all failing structural components; installation of new bathroom fixtures, flooring, and ceiling tiles; replacement of the stairs; upgrading network wiring; and painting the exterior/interior.

In June 2024, new Dimension completed the rehabilitation of the office trailer at total cost of $57,701. Below is a summary of total project expenditures:

DIMENSION WATER TRATMENT PLANT OFFICE REHABILITATION		
ITEM	**TASK DESCRIPTION**	**BUDGET**
1	Alternatives, Design, Bid Preparations	**$68,020**
2	New Dimension Contract	**$57,701**
3	Highroad IT/Electrical	**$3,489**
4	Furniture	**$8,681**
	Total:	**$137,891**

FUNDING SOURCE:
Capital Improvement Program

FISCAL IMPACT (PROJECT BUDGET):
$137,891 Total Project (Complete)

ENVIRONMENTAL COMPLIANCE:
Notice of Exemption was filed with the County of Orange on February 24, 2022

RECOMMENDED ACTION:
Committee to receive project status updates at the time of the Committee Meeting.

EXHIBIT(S):
1. Project Photos

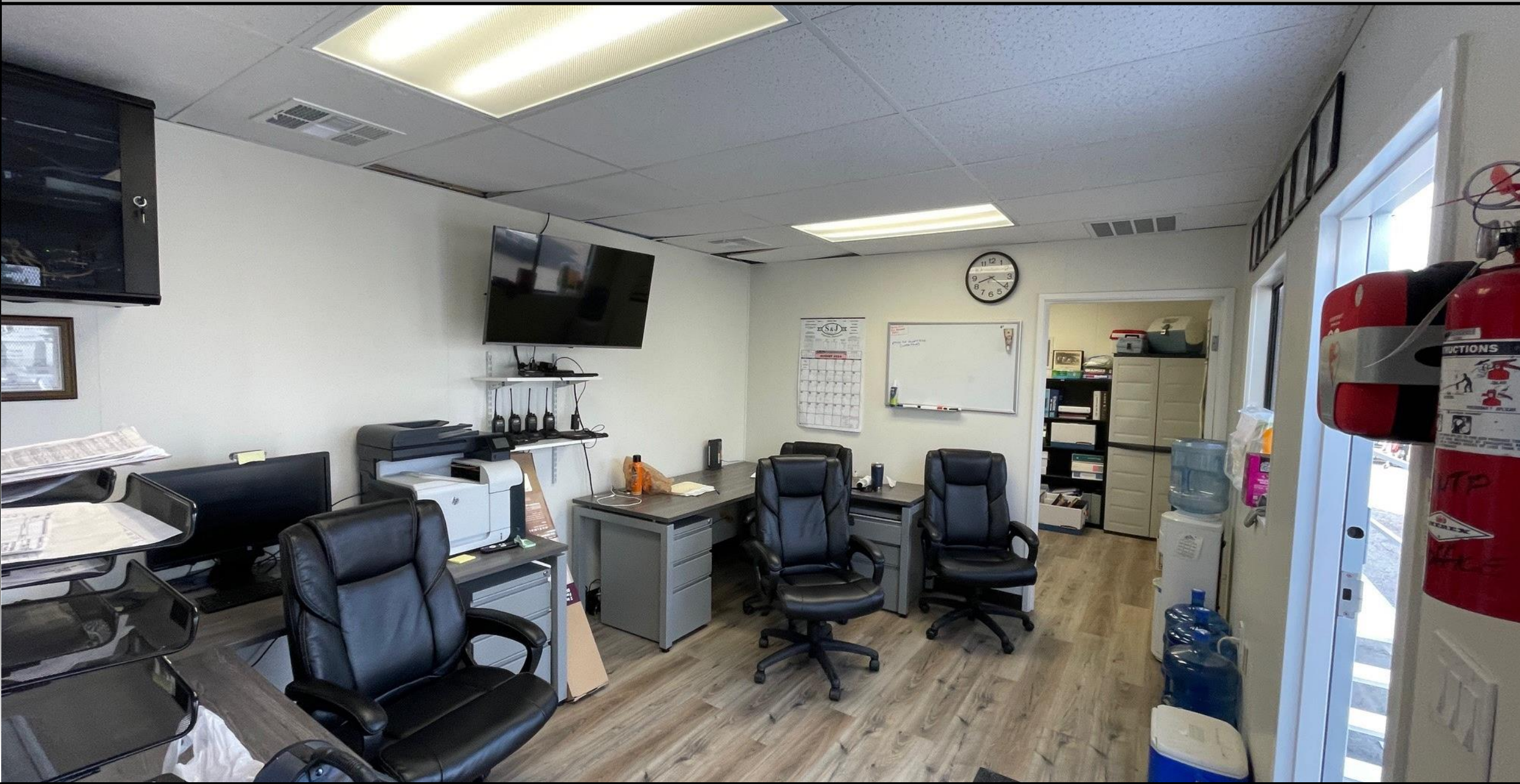
CONTACTS (staff responsible): PALUDI/LAUSTEN

DWTP Office Trailer Rehabilitation-Final

Trabuco Canyon Water District
August 7, 2024 E&O Committee

Exterior with New Stairs

Main Room



Supervisor Office and Restroom

TRABUCO CANYON WATER DISTRICT
ENGINEERING/OPERATIONAL COMMITTEE MEETING | AUGUST 7, 2024

ENGINEERING MATTERS
ITEM 5: THE OAKS AT TRABUCO DEVELOPMENT UPDATE

BACKGROUND:
The Oaks at Trabuco is a nine-lot residential subdivision on Shelter Canyon Road and Summit Trail Road near Live Oak Canyon Road in Trabuco Canyon. The District and The Oaks at Trabuco LLC have entered into agreements for water and sewer services dating back to 2001, including a 2004 agreement in which the District agreed to accept and operate an on-site wastewater package plant that would treat the subdivision's sewage (local geology is incompatible with the installation of septic systems). Construction of the treatment plant was completed in 2006 but the plant has never been accepted or operated. Construction of homes within the subdivision has taken much longer than anticipated; currently, three homes are occupied, and two additional lots are in the early stages of construction. Since 2006, the developer has contracted for the District to provide sewage hauling services and the agreement pertaining to the District's acceptance of the plant was extended in 2010, 2015, and most recently in 2020. In 2022, the developer requested that the District accept and assume operation of the plant based on data that, according to the developer, shows that the average daily sewage flow to the plant is sufficient to commence operations. The developer is currently making mechanical and electrical improvements to the plant to bring it to operating condition.

UPDATES:
The District has retained Hazen & Sawyer to perform a cost-of-service analysis that will form the basis for long-term cost recovery of the plant's operation and replacement. Thus far, Hazen has completed a condition assessment of the plant's accessible structural, mechanical, electrical, instrumentation and control systems assets with the goal of estimating valuation of facility assets, remaining useful life, and replacement cost. Hazen's draft condition assessment report is included as Exhibit 1. Once the plant is operational, Hazen will incorporate operational cost data into the cost-of service-analysis.

Hazen is also providing independent review and evaluation of the effluent disposal method proposed by the developer for the wastewater plant. Despite previous discussions between District management and the developer regarding downgrading the plant to undisinfected secondary recycled water, the plant will remain as undisinfected tertiary per the 2009 approval of its Title 22 Engineering and Certification Report. The District has tentatively agreed to pursue the developer's request to utilize a land application area for the treated effluent disposal through spray irrigation rather than distributed irrigation of the development's common areas. The District is cooperating with the developer's engineer as it works through the application with the Regional Board. Hazen's Effluent Disposal Method Review & Evaluation report is included as Exhibit 2.

District's Legal Counsel has been researching alternative cost-recovery scenarios that would be appropriate for the Oaks Development while complying with Proposition 218 and other relevant legal constraints. When complete, Hanson Bridgett's legal analysis will be made available to the Committee.

FUNDING SOURCE:
Plan check, legal, and other typical subdivision-related District expenses are borne by the developer. The General Fund is the source of funds for professional services provided by Hazen.

FISCAL IMPACT:
Not available at this time.

ENVIRONMENTAL COMPLIANCE:
Not applicable.

TRABUCO CANYON WATER DISTRICT
ENGINEERING/OPERATIONAL COMMITTEE MEETING | AUGUST 7, 2024

RECOMMENDED ACTION:
Committee to receive project status updates at the time of the Committee Meeting.

EXHIBIT(S):
1. Hazen Draft Report "Crystal Canyon WRP Condition Assessment," June 14, 2024
2. Hazen Draft Technical Memorandum "Effluent Disposal Method Review & Evaluation for CCWRP," March 15, 2024

CONTACTS (staff responsible): PALUDI/PEREA/LAUSTEN

Hazen and Sawyer
7700 Irvine Center Drive, Suite 200
Irvine, CA 92618 • 949.557.8553

TRABUCO CANYON WATER DISTRICT

CRYSTAL CANYON WRP CONDITION ASSESSMENT

Draft Report
June 14, 2024

Table of Contents

List of Tables

List of Figures

List of Appendices

List of Acronyms

Abbreviation	Definition
TCWD	Trabuco Canyon Water District
CCWTP	Crystal Canyon Wastewater Treatment Plant
HVAC	Heating, Ventilation, and Air Conditioning
GDP	Gallons Per Day
R&R	Replacement and rehab
I&C	Instrumentation and Control
O&M	Operations and Maintenance
OSHA	Occupational Safety and Health Administration
PLC	Programmable Logic Controller
RUL	Remaining Useful Life

1. Introduction

The Crystal Canyon Wastewater Treatment Plant (CCWTP) was constructed in 2006 to serve "The Oaks Trabuco" residential development. The development was planned to consist of nine homes. As of 2024, three homes have been built, with two more currently going through permitting. The Crystal Canyon Water Reclamation Plant (CCWRP) was built to treat wastewater generated from these nine (9) residences at an average rate of 7,000 gallons per day (GPD). CCWRP is currently not in operation. Once the plant is operational, ownership will be transferred to the Trabuco Canyon Water District (TCWD) for long-term operations and maintenance.

Hazen was selected by TCWD to determine the condition and remaining useful life of CCWRP assets. A visual condition assessment of the accessible structural, mechanical, electrical, instrumentation and control systems was done by Hazen, to identify additional repair, replacement or upgrades needed to ensure reliable operation of the facility. The goal of this condition assessment was to estimate valuation of facility assets based on the condition of assets, remaining useful life, and replacement cost. The CCWRP has not fully operated for about 17 years, and since the inspection was done when assets were not in operation, Hazen expects to revisit the condition scores when the CCWRP is going through startup and commissioning.

The CCWTP includes a combined emergency storage and influent pump station tank, two aeration clarifier tanks, sludge processing tank, coagulation tank, a media filter skid, chlorine contact basin, treated water reservoir, irrigation system, dewatering well and associated pumps, piping and valving, and control systems. The condition assessment included above and below ground assets.

1.1 Purpose

The purpose of the condition assessment was to evaluate the condition of CCWTP assets to estimate the assets' condition, expected remaining useful life, and expected replacement cost to determine the valuation of the facility assets to TCWD.

The primary components of the condition assessment included:

- Build an inventory through the site visit and verify asset attribute information in the field.
- Level 1 visual assessment of above ground assets and accessible below ground assets.
- Incorporate condition assessment results in the newly established asset inventory
- Remaining useful life analysis
- Replacement and rehab (R&R) analysis
- Valuation of facility assets

2. Asset Inventory

The establishment of an accurate comprehensive asset inventory is the foundation on which a visual condition assessment can be built. The first step of the CCWTP condition assessment was the consolidation of all assets associated with the wastewater treatment plant site into a consolidated database referred to as an asset inventory.

Using data from the TCDW's existing sources, Hazen developed a preliminary asset inventory of assets. The existing sources included record drawings, photographs, and the institutional knowledge of the TCDW's staff.

The asset inventory consists of a list of assets and data attributes for each unique asset. A data attribute is a characteristic that sets it apart from other assets and is key to performing condition assessment. Table 2-1 shows the typical relevant asset attributes associated with each asset within the CCWTP site. The asset inventory was used to organize and identify the assets for condition assessment. Prior to the field inventory and condition assessment of the assets, gaps in attributes such as install year, material, size, and other physical attributes were closed using record drawings, photographs, and the institutional knowledge of the TCDW's staff. Any remaining gaps in physical attributes such as Manufacturer, Model and Size were closed during the field verification and condition assessment.

Table 2-1: Typical Asset Attribute Information for the CCWTP Site

Hierarchy Levels	Physical Attributes	Grouping	Condition
Level 1 (District)	Manufacturer	Discipline	Calculated Condition Score
Level 2 (System)	Model	Asset Class	Field Condition Score
Level 3 (Location)	Material	Asset Type	Notes
Level 3 (Sub-Location)	Install Year		Photos
	Size 1 and Unit 1		
	Size 2 and Unit 2		
	Size 3 and Unit 3		
	Status		

During the field verification and condition assessment, the entire asset inventory was verified and information, such as asset photos, asset condition, and missing asset attributes such as Manufacturer, Model, and Size were added to the asset inventory. Assets found in the field, but not in the existing preliminary asset inventory were added to the asset inventory.

3. Field Condition Assessment

A standard framework was used to enhance the efficiency of the condition assessment and the quality of data collected for CCWTP. The framework is consistent with best practices in asset management.

The objective of condition assessment is to estimate asset failure or the rate of deterioration of an asset and develop replacement requirements and facility assets valuation accordingly. The likelihood of an

asset failing is most dependent upon the condition of the asset. As the condition of an asset deteriorates, the likelihood of failure increases. Ultimately, the goal of any condition assessment protocol is to acquire a more accurate knowledge of the timing to asset failure. Having more confidence in asset failures and replacement needs will lead to more efficient and effective use of resources and funds.

To assess the current condition and timing of asset failure, it is critical to understand the ways an asset can fail. Collecting information about an asset would be meaningless unless it applies to the known ways an asset will fail. The performance of an asset relates to the asset's ability to meet the current and future demands placed on it. Assets can fail in four major ways (capacity, level of service, physical mortality, and financial efficiency) known as failure modes (shown in Table 3-1), which were used to assess the condition of each asset.

Table 3-1: Failure Modes

Failure Mode	Definition	Tactical Aspects
Capacity	Volume of demand exceeds design capacity	Growth, system expansion
Level of Service	Functional requirements exceed design capability	Codes and permits: NPDES, OSHA, noise, odor, life safety; service level, etc.
Mortality	Consumption of asset reduces performance below acceptable level	Physical deterioration due to age, usage (including operator error), acts of nature
Efficiency	Operations costs exceed that of feasible alternatives	Pay-back period

3.1 Field Condition Assessment Approach

Hazen performed a condition assessment of the above ground and accessible below ground assets for CCWTP on March 21, 2024. A Level 1 (visual) condition assessment was conducted to assess the mechanical, electrical, instrumentation, and structural conditions of assets within the wastewater treatment plant site. Condition of assets, installation years, quantities, missing assets, O&M needs were identified during the on-site facility condition assessment. Additionally, inputs from TCWD staff, as to when the asset was last serviced were used to complete the condition assessment.

The field condition assessment included experienced staff in each major discipline (civil, mechanical, structural, electrical, and instrumentation and control (I&C)) who assessed the condition and identified critical issues associated with the assets. Field observations were recorded with mobile devices utilizing customized condition assessment forms. The condition scoring system within the electronic forms are presented in Figure 3-1. The condition assessment team assigned condition scores based on the International Infrastructure Management Manual (IIMM) with a rating range from 1 (Excellent condition) to 5 (Poor condition, recommended for replacement).

For most assets, specific asset class questions were asked to provide an objective set of criteria on the 1 to 5 scale, and then combined to generate a condition score. The asset class checklists supported a more objective approach to scoring, while the condition scoring guide enabled the assessment team to assign ratings in a consistent manner when the asset class checklists were not sufficient. If asset class questions were not applicable to the asset, a disciplinary expert provided a visual condition assessment score aligned to the IIMM. Descriptions for each rating enable analysts to assign ratings to assets. All the data collected for each asset, including photographs of the assets, the inspectors' notes, condition scores for specific attributes, inspection checklists, etc., were stored digitally.

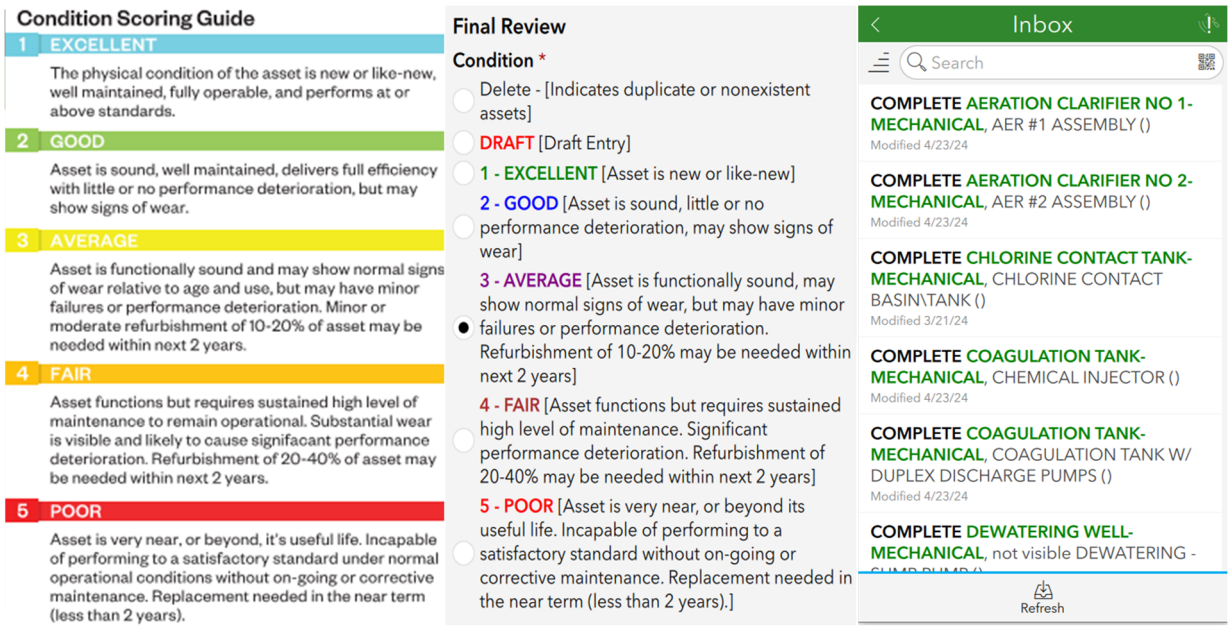


Figure 3-1: Mobile Collection Tools and Condition Scoring Guide

Figure 3-2 shows a portion of the inspection checklists for electrical and I/C assets, which were utilized during the field condition assessment. Hazen staff also captured 360-degree photos from various locations around the wastewater treatment plant site with an example shown in Figure 3-3.

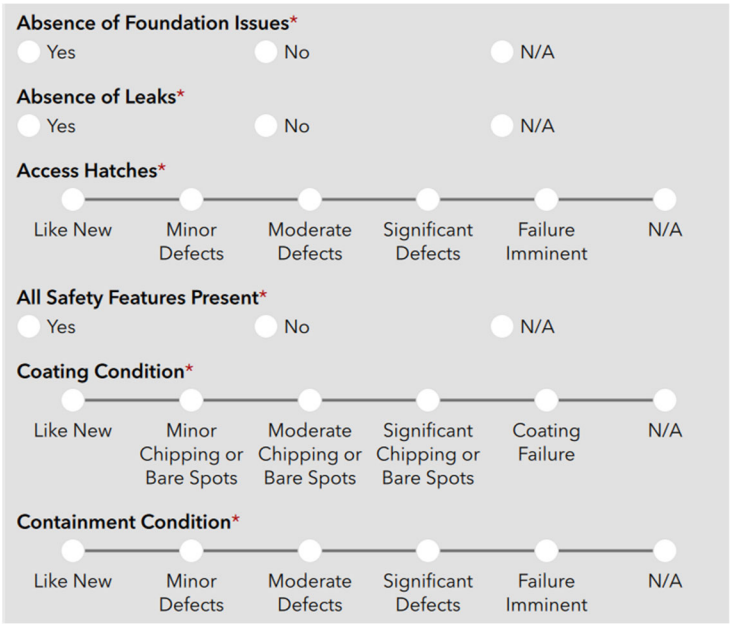


Figure 3-2: Inspection Checklists for Different Asset Classes

Figure 3-3: An Example of a 360-Degree Photo Captured from CCWTP

3.2 Field Condition Assessment Results

The level 1 condition assessment performed for the purpose of this project was a combination of staff institutional knowledge, site visits, age, and effective life assessment of the facilities. A total of 69 assets were inventoried and inspected and a condition score was assigned for all assets. The following sections summarize the assessment results. The results are presented in multiple ways to facilitate interpretation of the results.

Figure 3-4 provides a summary of the overall condition assessment results by condition score 1 through 5. Overall, many assets at CCWTP are in poor condition. About 28 assets were considered good or average condition or about 42% of total assets.

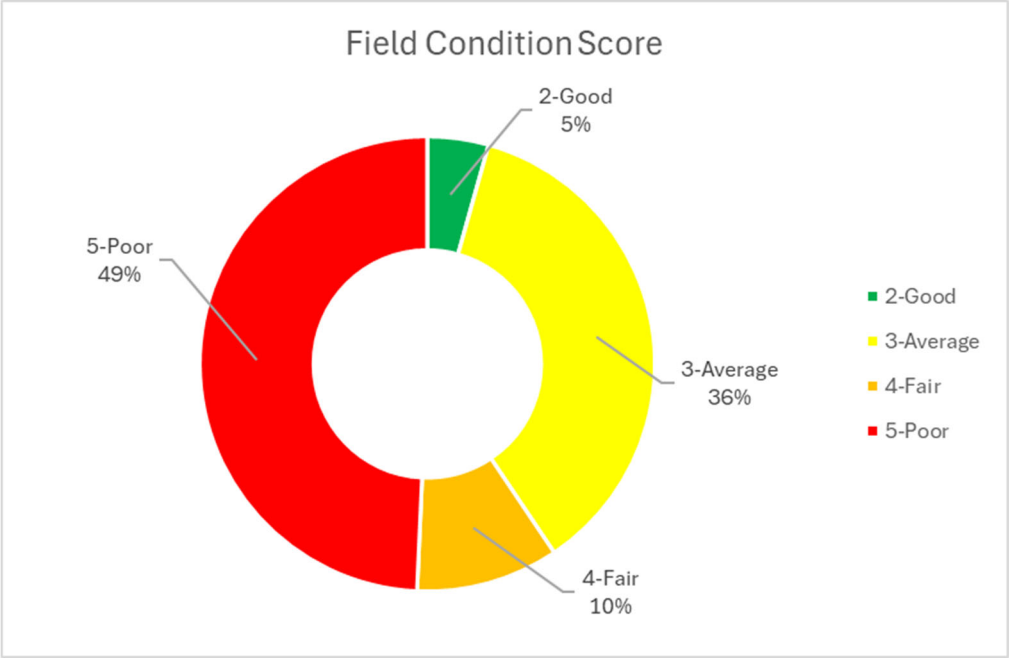


Figure 3-4: Overall Condition Assessment Results

Another way to view the overall condition results is by discipline. Figure 3-5 presents a summary of condition assessment results that have been separated into six categories: electrical, I/C, mechanical and structural.

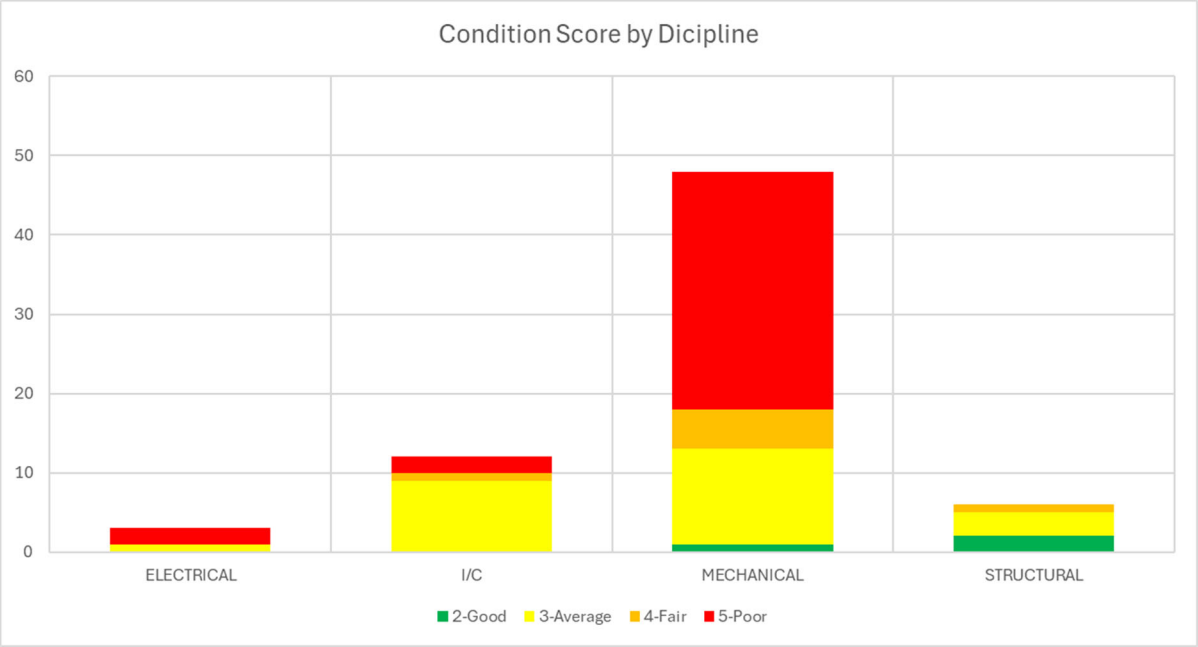


Figure 3-5: Condition Assessment Results by Discipline

Of particular important, for the purpose of this condition assessment project is the understanding of which assets were found in fair or poor condition for planning and budgeting purposes. A list of assets with a condition score of 4 (fair) or 5 (poor) is presented in Table 3-2.

Table 3-2: Assets with condition scores of 4 (fair) or 5 (poor)

Location	Asset Description	Discipline	Condition Score
AERATION CLARIFIER NO 1	AER PUMP 1a	MECHANICAL	5-Poor
AERATION CLARIFIER NO 1	AER PUMP 1b	MECHANICAL	5-Poor
AERATION CLARIFIER NO 2	AER PUMP 2a	MECHANICAL	5-Poor
AERATION CLARIFIER NO 2	AER PUMP 2b	MECHANICAL	5-Poor
AERATION CLARIFIER NO 1	AER TRANSFER PUMP 1	MECHANICAL	5-Poor
AERATION CLARIFIER NO 2	AER TRANSFER PUMP 2	MECHANICAL	5-Poor
SLUDGE PROCESSING TANK	SLUDGE - AER PUMP #1	MECHANICAL	5-Poor
SLUDGE PROCESSING TANK	SLUDGE - AER PUMP #2	MECHANICAL	5-Poor
FILTER BUILDING	ALUM DOSING PUMP	MECHANICAL	5-Poor
FILTER BUILDING	ANALYZER	I/C	5-Poor
FILTER BUILDING	CHEMICAL PUMP	MECHANICAL	5-Poor
CHLORINE CONTACT TANK	CHLORINE CONTACT BASIN\TANK	MECHANICAL	4-Fair
CHLORINE CONTACT TANK	CHLORINE PUMP 1	MECHANICAL	5-Poor
CHLORINE CONTACT TANK	CHLORINE PUMP 2	MECHANICAL	5-Poor
AERATION CLARIFIER NO 1	CLE SUMP PUMP 1a	MECHANICAL	5-Poor
AERATION CLARIFIER NO 1	CLE SUMP PUMP 1b	MECHANICAL	5-Poor
AERATION CLARIFIER NO 2	CLE SUMP PUMP 2a	MECHANICAL	5-Poor
AERATION CLARIFIER NO 2	CLE SUMP PUMP 2b	MECHANICAL	5-Poor
COAGULATION TANK	COAG - SLUDGE SUMP PUMP 4	MECHANICAL	5-Poor
COAGULATION TANK	COAGULATION DISCHARGE PUMP 1	MECHANICAL	5-Poor
COAGULATION TANK	COAGULATION DISCHARGE PUMP 2	MECHANICAL	5-Poor
COAGULATION TANK	COAGULATION PUMP 1	MECHANICAL	5-Poor
COAGULATION TANK	COAGULATION PUMP 2	MECHANICAL	5-Poor
DEWATERING WELL	DEWATERING - SUMP PUMP	MECHANICAL	5-Poor
FILTER BUILDING	FILTER BUILDING STRUCTURE	STRUCTURAL	4-Fair
FILTER BUILDING	FILTER SKID - HYDROCYCLONE	MECHANICAL	4-Fair
FILTER BUILDING	FILTER SKID - ODISMATIC SCREEN FILTER	MECHANICAL	4-Fair
EMERGENCY STORAGE TANK/INFLUENT PUMP STATION	INFLUENT PUMP 1	MECHANICAL	5-Poor
EMERGENCY STORAGE TANK/INFLUENT PUMP STATION	INFLUENT PUMP 2	MECHANICAL	5-Poor
IRRIGATION SYSTEM	IRR - PUMP #1	MECHANICAL	5-Poor
IRRIGATION SYSTEM	IRR - PUMP #2	MECHANICAL	5-Poor
AERATION CLARIFIERS	JUNCTION BOX	I/C	5-Poor
AERATION CLARIFIERS	RAW WATER FLOW METER TO AERATION CLARIFIERS	ELECTRICAL	5-Poor
CHLORINE CONTACT TANK	SAMPLE PERISTALTIC PUMP	MECHANICAL	5-Poor

Location	Asset Description	Discipline	Condition Score
SLUDGE PROCESSING TANK	SLUDGE PROCESSING TANK ASSEMBLY	MECHANICAL	4-Fair
AERATION CLARIFIER NO 1	SLUDGE SUMP PUMP 1	MECHANICAL	5-Poor
AERATION CLARIFIER NO 2	SLUDGE SUMP PUMP 2	MECHANICAL	5-Poor
SLUDGE PROCESSING TANK	SLUDGE SUMP PUMP 3	MECHANICAL	5-Poor
TREATED WATER RESERVIOR	TREATED WATER FLOW METER (CHLORINE CONTACT TANK EFFLUENT TO TREATED WATER TANK)	ELECTRICAL	5-Poor
TREATED WATER RESERVIOR	TREATED WATER RESERVOIR/PUMP WETWELL	MECHANICAL	4-Fair
FILTER BUILDING	MAIN PLC PANEL	I/C	4-Fair

The following sub-sections summarize the condition assessment results for each discipline.

3.2.1 Mechanical

The mechanical condition assessment focused on evaluation of the condition of pumps, tanks, filters, fan, piping, and valves. Figure 3-6 shows the condition profile for mechanical assets showing the number of assets for each condition score. The condition information is further broken down into different asset classes in Figure 3-7 providing an overall condition of assets within each asset class.

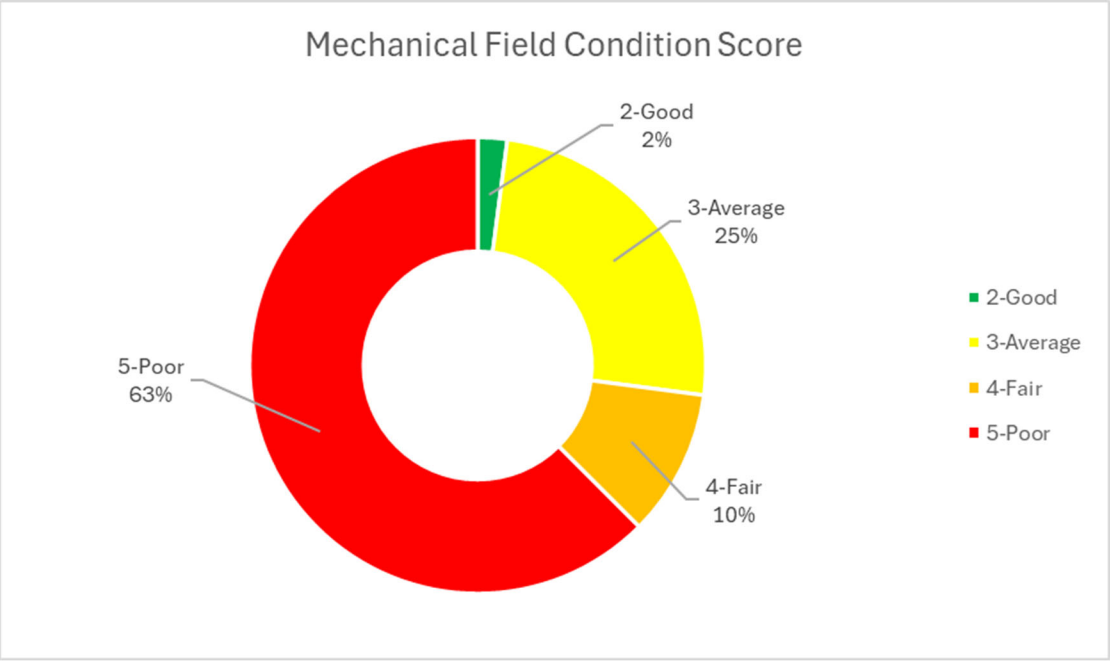


Figure 3-6: Condition Profile for Mechanical Assets

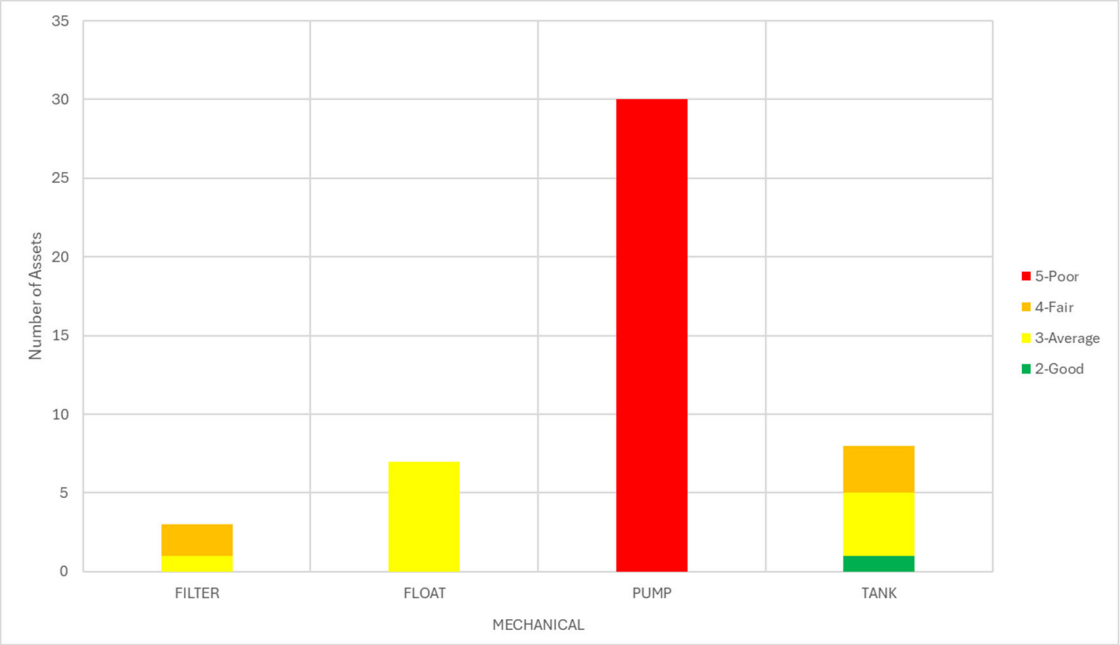
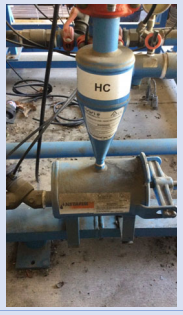


Figure 3-7: Condition Assessment Results for Mechanical Discipline by Asset Class

30 assets that are all pumps were assigned a condition score of 5 and recommended for replacement: 6 (1/3 HP) submersible pumps and 6 (1/2 HP) submersible pumps in Aeration Clarifier, 2 diaphragm pump and 1 sample peristaltic pump in Chlorine Contact Basin, 2 diaphragm pumps and 3 (1/3 HP) submersible pumps in Coagulation System, 1 (1/3 HP) submersible pump and 2 (1/2 HP) submersible pumps in Sludge Processing System, 1 (10 GPM) submersible pump for the dewatering well, 2 submersible (100 GPM) pumps for the Influent Pump Station, 1 magnetic dosing pump and a compound of chemical pumps in the Filter Building, 2 submersible pumps for the Irrigation System. At the time of inspection, these pumps were either out for repair or being replaced, once these pumps are replaced and the plant is operational the condition score can be updated.

A total of 5 assets with a condition score of 4 include Chlorination, Sludge Processing and Reservoir Tank, and a set of Hydrocyclone and Screen Filter in the Filter Skid Assembly. Table 3-3 provides additional information for the mechanical assets with condition scores of 4 or above.

Table 3-3: List of Mechanical Assets with Condition Score of 4 or 5 (Fair or Poor Condition)

Condition Score	Asset Description	Notes	Photo
Fair (4)	CHLORINE CONTACT BASIN\TANK	Signs of water ingress through side wall of the tank	
	FILTER SKID - HYDROCYCLONE	Filter system not in use, showed signs of corrosion	
	FILTER SKID - ODISMATIC SCREEN FILTER	Filter system not in use, showed signs of corrosion	
	SLUDGE PROCESSING TANK ASSEMBLY	Signs of water ingress through side wall of the tank	
	TREATED WATER RESERVOIR/PUMP WETWELL	Signs of water ingress through side wall of the tank	

Condition Score	Asset Description	Notes	Photo
Poor (5)	AER PUMP 1a	This pump was being replaced, condition score is for the pump slated to be replaced by the Developer	
	AER PUMP 1b	This pump was being replaced, condition score is for the pump slated to be replaced by the Developer	
	AER PUMP 2a	This pump was being replaced, condition score is for the pump slated to be replaced by the Developer	
	AER PUMP 2b	This pump was being replaced, condition score is for the pump slated to be replaced by the Developer	
	AER TRANSFER PUMP 1	This pump was being replaced, condition score is for the pump slated to be replaced by the Developer	
	AER TRANSFER PUMP 2	This pump was being replaced, condition score is for the pump slated to be replaced by the Developer	
	CLE SUMP PUMP 1a	This pump was being replaced, condition score is for the pump slated to be replaced by the Developer	
	CLE SUMP PUMP 1b	This pump was being replaced, condition score is for the pump slated to be replaced by the Developer	
	CLE SUMP PUMP 2a	This pump was being replaced, condition score is for the pump slated to be replaced by the Developer	
	CLE SUMP PUMP 2b	This pump was being replaced, condition score is for the pump slated to be replaced by the Developer	
	SLUDGE SUMP PUMP 1	This pump was being replaced, condition score is for the pump slated to be replaced by the Developer	
	SLUDGE SUMP PUMP 2	This pump was being replaced, condition score is for the pump slated to be replaced by the Developer	
	ALUM DOSING PUMP	Pump not installed	
	CHEMICAL PUMP	Pump not installed	
	CHLORINE PUMP 1	Pump not installed	
	CHLORINE PUMP 2	Pump not installed	
	SAMPLE PERISTALTIC PUMP	Pump not installed	
	COAG - SLUDGE SUMP PUMP 4	This pump was being replaced, condition score is for the pump slated to be replaced by the Developer	
	COAGULATION DISCHARGE PUMP 1	This pump was being replaced, condition score is for the pump slated to be replaced by the Developer	

Condition Score	Asset Description	Notes	Photo
	COAGULATION DISCHARGE PUMP 2	This pump was being replaced, condition score is for the pump slated to be replaced by the Developer	
	COAGULATION PUMP 1	Pump not installed	
	COAGULATION PUMP 2	Pump not installed	
	DEWATERING - SUMP PUMP	This pump was being replaced, condition score is for the pump slated to be replaced by the Developer	
	INFLUENT PUMP 1	This pump was being replaced, condition score is for the pump slated to be replaced by the Developer	
	INFLUENT PUMP 2	This pump was being replaced, condition score is for the pump slated to be replaced by the Developer	
	IRR - PUMP #1	This pump was being replaced, condition score is for the pump slated to be replaced by the Developer	
	IRR - PUMP #2	This pump was being replaced, condition score is for the pump slated to be replaced by the Developer	
	SLUDGE SUMP PUMP 3	This pump was being replaced, condition score is for the pump slated to be replaced by the Developer	
	SLUDGE - AER PUMP #1	This pump was being replaced, condition score is for the pump slated to be replaced by the Developer	
	SLUDGE - AER PUMP #2	This pump was being replaced, condition score is for the pump slated to be replaced by the Developer	

3.2.2 Electrical, Instrumentation and Control

The electrical condition assessment focused on evaluating the condition of the electrical distribution system, instrumentation, and controls. The condition profile for electrical assets presented in Figure 3-8 shows the number of assets for each condition score. The majority of assets are in average condition, while 4 assets are in poor condition and 1 asset is in poor condition and recommended for replacement. The condition information is further broken down into different asset classes in Figure 3-9, showing the overall condition of assets within each asset class.

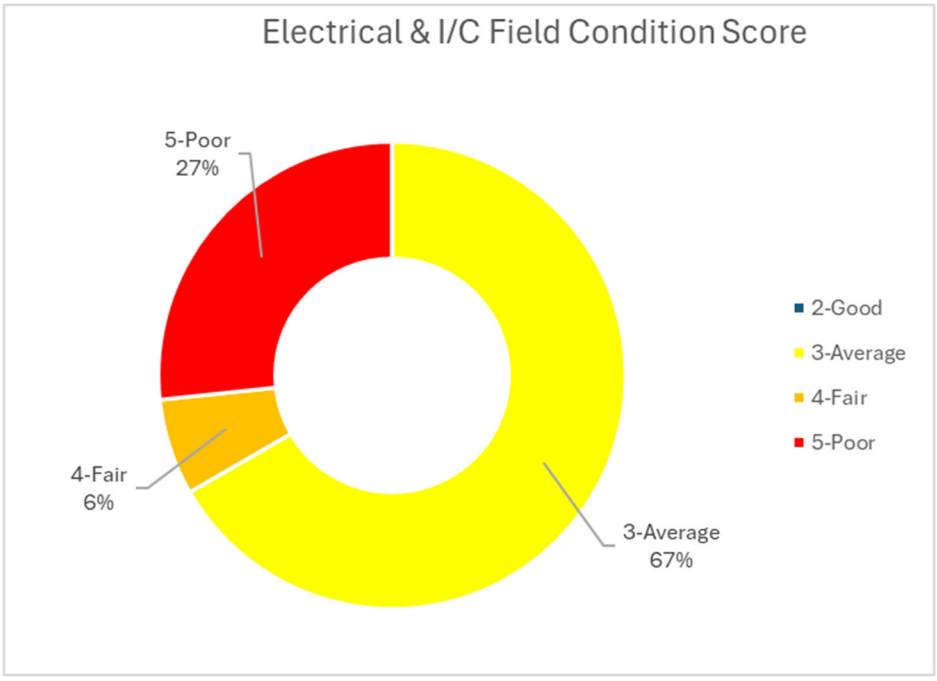


Figure 3-8: Condition Profile for Electrical and I&C Assets

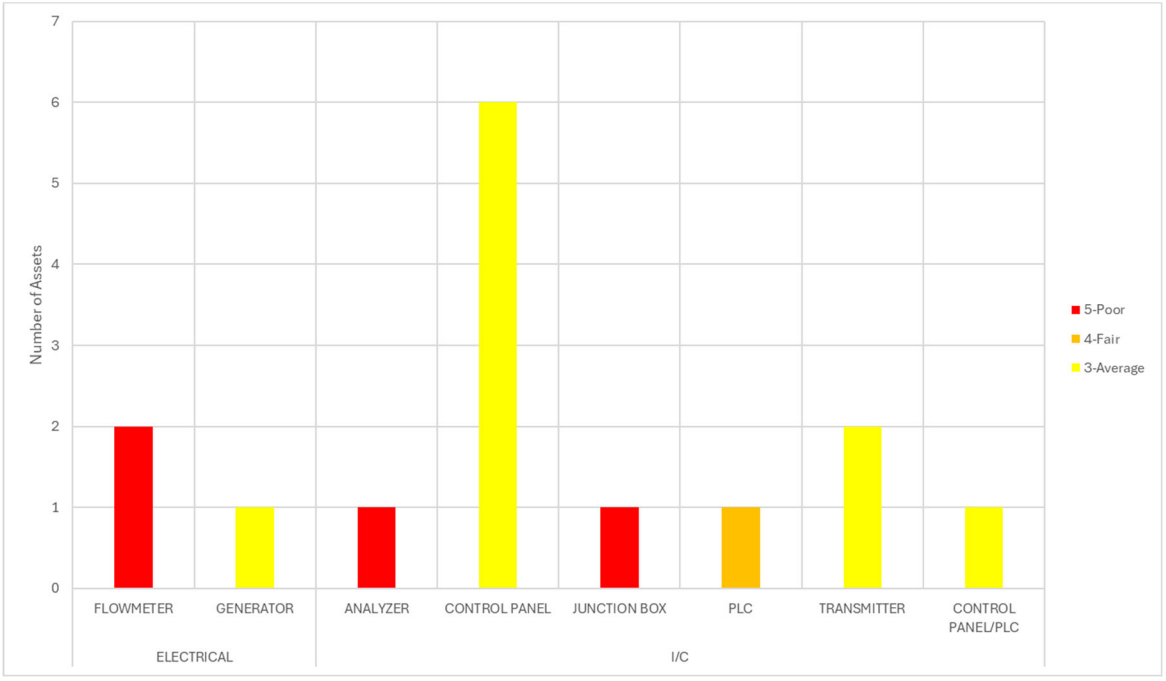


Figure 3-9: Electrical and I&C Asset Class Condition Scores

The total of 4 assets including flowmeters, chlorine analyzer and the junction boxes assigned a condition score of 5 and a main PLC asigned a condition score of 4, and all recommended for replacement. The remaining 9 assets thata assigned with a condition score of 3 were the control panels, PLC and the

ultrasonic level sensors. Table 3-4 provides additional information for electrical and I&C assets with a condition score of 4 or above.

Table 3-4: List of Electrical and I&C Assets with Condition Score of 4 or 5 (Fair or Poor Condition)

Condition Score	Asset Description	Notes	Photo
Fair (4)	MAIN PLC PANEL	PLC discontinued in 2015 and is not supported by Schneider Elec. Since 2023	
Poor (5)	RAW WATER FLOW METER TO AERATION CLARIFIERS	This flow meter was submerged in the flow meter vault. Conduit entries to the housing has corrosion which could let water into the electronics	
	TREATED WATER FLOW METER (CHLORINE CONTACT TANK EFFLUENT TO TREATED WATER TANK)	This flow meter was submerged in the flow meter vault. Conduit entries to the housing has corrosion which could let water into the electronics	
	ANALYZER	Analyzer not installed	
	JUNCTION BOX	Cover bolts were stripped and gasket on the cover likely needs to be replaced	

3.2.3 Structural

The condition assessment of structural assets focused on evaluating the condition of the materials of buildings, fencing, fans, eye wash and piping. The condition profile for structural assets presented in Figure 3-10 shows the number of assets for each condition score. Most assets are in average and good condition. 1 asset is in fair condition and recommended for replacement. The condition information is further broken down into different asset classes in Figure 3-11, showing the overall condition of assets within each asset class.

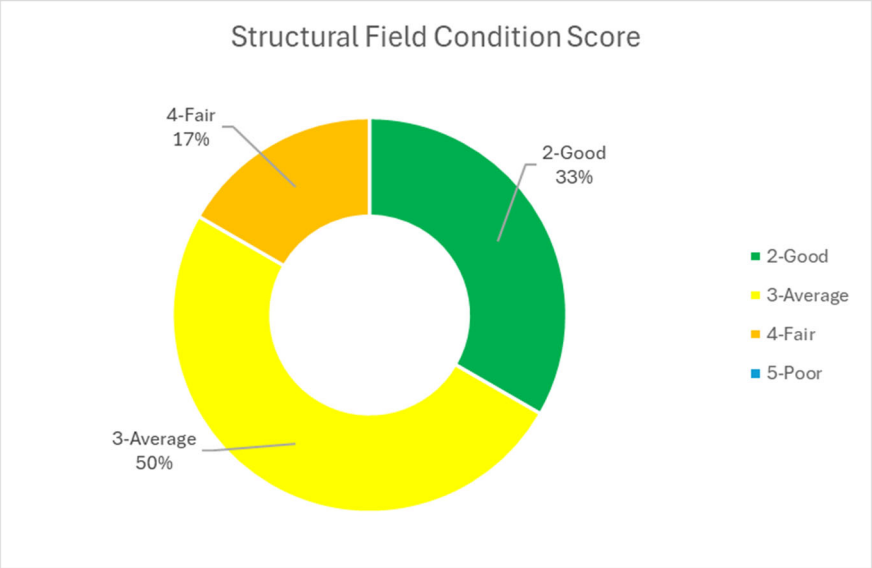


Figure 3-10: Condition Profile for Structural Assets

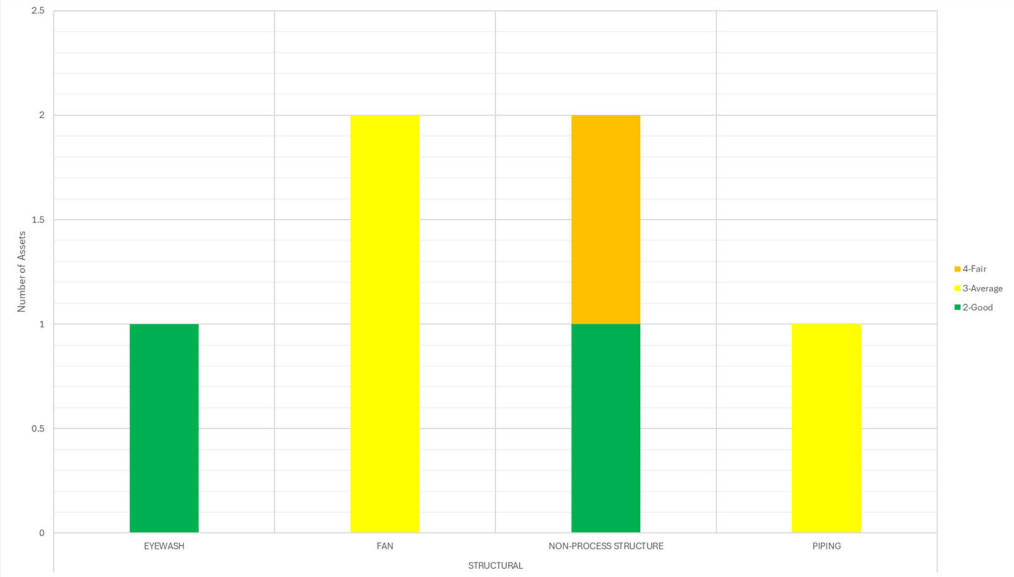
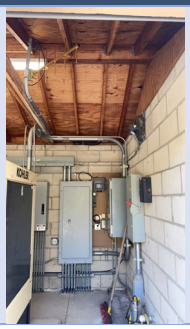


Figure 3-11: Structural Classes Condition Scores

The 1 asset assigned a condition score of 4 and recommended for renovation is the building structure. Table 3-5 provides additional information for the assets with a score of 4 or higher.

Table 3-5: List of Structural Assets with Condition Scores of 4 or 5 (Fair or Poor Condition)

Condition Score	Asset Description	Notes	Photo
Fair (4)	FILTER BUILDING	Expected roof replacement within the next 5-10 years.	

3.2.4 Remaining Useful Life

To project future rehabilitation and replacement projects, it is key to estimate the remaining useful lives of assets. While condition assessment provides important insight into the current state of the assets, it does not paint the entire picture without understanding the remaining useful life of each asset. To confidently calculate the remaining useful life of assets, it is important to first determine the realistic and customized useful life of each asset. Useful lives are enhanced or diminished by factors such as operating environment, operational history, maintenance procedures, construction quality, material quality, external stresses, among others. Hazen customized useful life for each asset class and asset type based on the condition assessment results and their performance. Table 3-6 shows the customized useful lives based on asset class and asset types.

Table 3-6: Useful Life Table

Asset Class - Asset Type	Useful Life (Years)
ANALYZER-MICROPROCESSOR	10
CONTROL PANEL/PLC-FILTER	15
CONTROL PANEL-AERATION	15
CONTROL PANEL-COAGULATION/SLUDGE	15
CONTROL PANEL-INFLUENT PUMP	15
CONTROL PANEL-IRRIGATION	15
CONTROL PANEL-RESERVOIR	15
EYEWASH-SHOWERES	30
FAN-HEAVY-DUTY	15
FILTER-HYDROCYCLONE SAND SEPARATORS	15
FILTER-MULTI-MEDIA	15

Asset Class - Asset Type	Useful Life (Years)
FILTER-ODISMATIC HYDRAULIC	15
FLOAT-LEVEL SENSOR	15
FLOWMETER-MAGNETIC	15
GENERATOR-	30
JUNCTION BOX-HATCH	20
NON-PROCESS STRUCTURE-BUILDING	60
NON-PROCESS STRUCTURE-FENCE	30
PIPING-POTABLE	50
PLC-MAIN	15
PUMP-CHEMICAL	10
PUMP-DIAPHRAGM	10
PUMP-MAGNETIC DOSING	10
PUMP-PERISTALTIC	10
PUMP-SUBMERSIBLE	10
TANK-AERATION	35
TANK-CHEMICAL	35
TANK-CHLORINATION	35
TANK-COAGULATION	35
TANK-RESERVOIR	35
TANK-SLUDGE	35
TANK-STORAGE	35
TRANSMITTER-LEVEL INDECATOR	15

Figure 3-12 shows the methodology for calculating remaining useful life. The condition-based remaining useful life is a function of percent consumed and expected useful life.

Age-Based:

RUL* = Expected Useful Life (years) - Age (years)

Condition-Based:

RUL* = (1 - % Consumed) * Expected Useful Life (years)

Where: RUL = Remaining Useful Life (years)

Figure 3-12: Remaining Useful Life Calculation Methodology

Table 3-7 shows how condition scores are converted into percent consumed.

Table 3-7: Conversion of Condition Scores to Percent Consumed

Condition Score	Percent Consumed
5	100%
4	84%
3	65%
2	39%
1	0%

Figure 3-13 presents a summarization of the remaining useful life assessment. There are 58 assets with a remaining useful life of 0 to 10 years that are recommended for replacement or major rehabilitation within the next 10 years. Out of these 58 assets, 34 assets have reached the end of their useful lives and 19 will do so within 5 years.

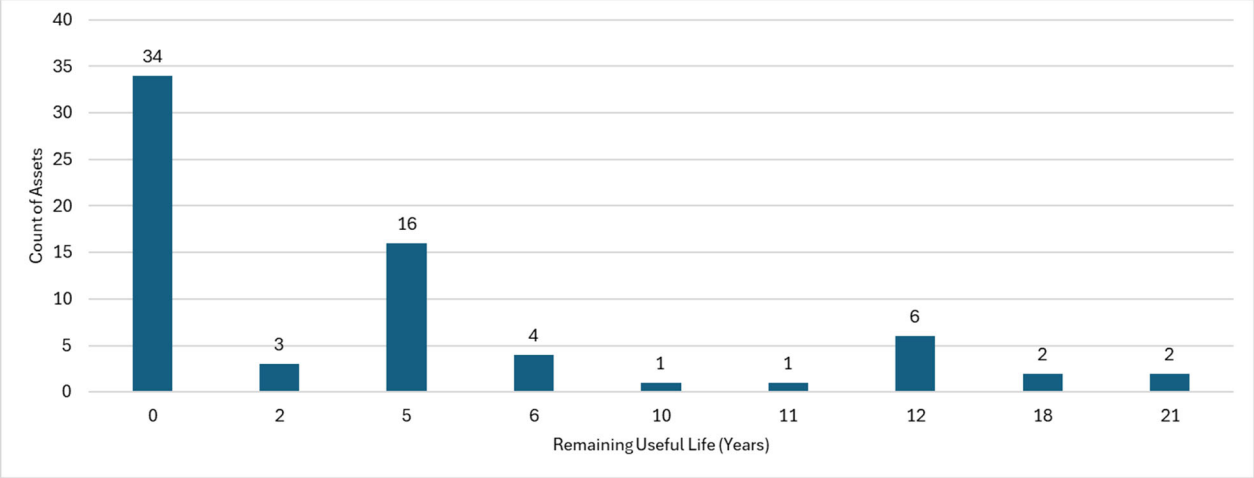
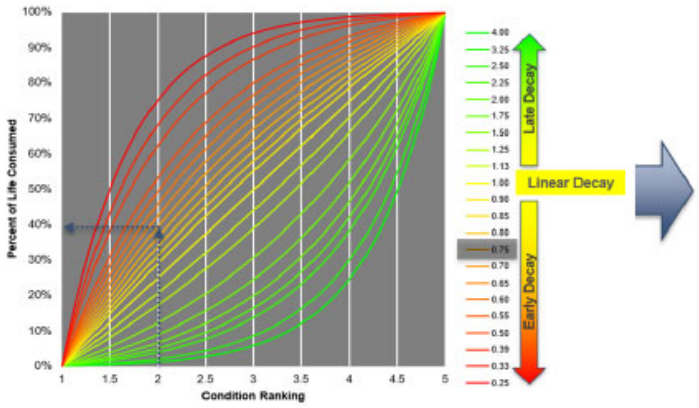


Figure 3-13: Remaining Useful Life

4. Asset Valuation

For purposes of this study, Hazen calculated the valuation of the assets by calculating the depreciated value using the 2024 estimated replacement costs. Hazen depreciated the 2024 replacement cost of assets by their remaining useful life based on condition. Figure 4-1 shows how condition scores are converted into percent of life remaining.



Condition Score	% Life Consumed	% Life Remaining
1-Excellent	0%	100%
2-Good	39%	61%
3-Average	65%	35%
4-Fair	84%	16%
5-Poor	100%	0%

Figure 4-1: Conversion of Condition Scores to Percent of Life Remaining

Using this approach, the estimated total depreciated value of the CCWRP Facility assets is approximately $1.9 million. This is the value of the assets using 2024 replacement costs but depreciated by their current condition.

5. Replacement Projection

Should the District decide to obtain ownership of the facility assets, the study also provides projections of asset rehabilitation and replacement costs over the duration of the total remaining useful life of all assets. Figure 5-1 shows the future replacement costs of the assets, that would result in anticipated expenditure of approximately $5.8 million until 2045. This would translate to about $290,000 per year. We should also note that the analysis did not consider the ongoing administrative and O&M costs associated with taking the ownership of assets.

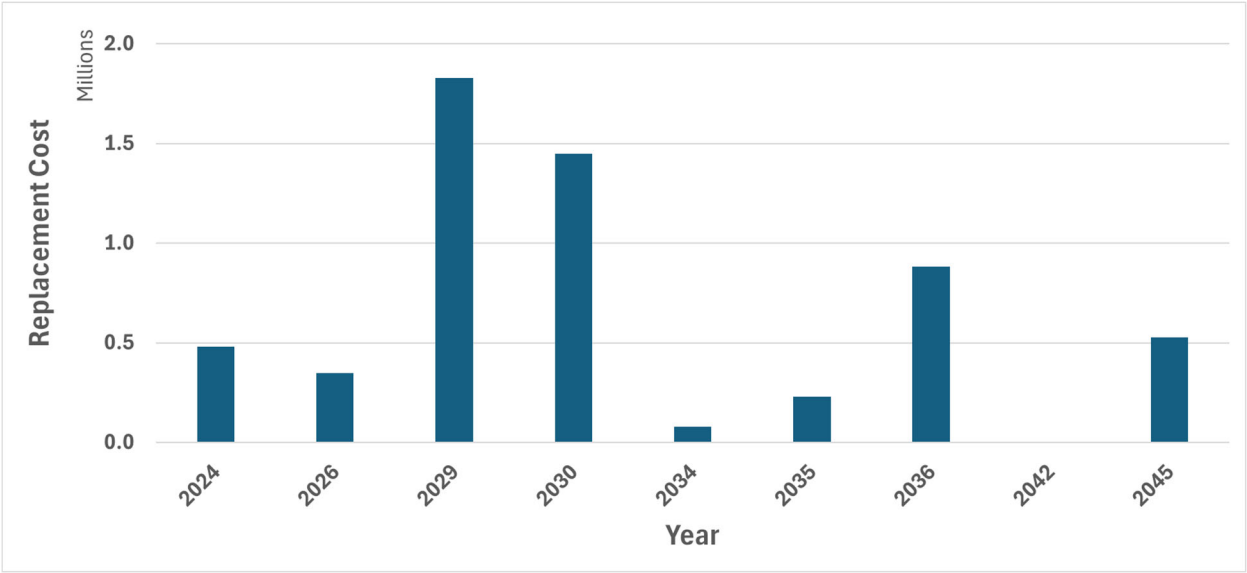


Figure 5-1: Projected Replacement Costs by Year

6. Summary of Findings

The condition assessment and economic valuation study of assets at the CCWRP Facility was performed to provide an informed basis for potential transfer of ownership to the District. The study provided projections of asset replacement costs over the upcoming 20 years. The field condition assessment indicated that the wastewater treatment plant site is in overall poor to fair condition, with only 3 assets (approximately 5%) rated in good condition and 25 assets (about 36%) in average condition. The District was addressing the urgent replacement or rehabilitation needs of assets in poor condition in collaboration with the developer at the time of inspection.

Economically, the value of the CCWRP Facility's assets combines their depreciated value—based on current physical conditions—with their replacement costs. For this study, each asset was evaluated for its current physical state and a customized depreciation percentage was applied. The depreciated values were then calculated against the estimated 2024 replacement costs, resulting in a total depreciated value of $1.9 million, which represents the expected economic value of the entire asset inventory. A summary of valuations is provided in Table 6-1.

Table 6-1: Summary of Valuations

Item	Estimated Cost
Total Replacement Cost as of 2024	$5.8 million
Total Depreciated Value in 2024	**$ 1.9 million**

In estimating the financial advantages of the prospective asset sale, the District should also consider future costs of owning the assets. Should the District assume responsibility for future asset replacements, projected expenses are estimated at approximately $5.8 million over the next 20 years, averaging about $290,000 annually. It is important to note, however, that these costs would fluctuate significantly each year, but many of the more substantial expenses are expected in the first decade. Additionally, this analysis has not accounted for the incremental administrative and operations and maintenance (O&M) costs associated with asset ownership. While these costs may not be substantial, they are nonetheless real and should be considered. Furthermore, since the facility has not been operational since its construction and the inspection occurred while the assets were inactive, Hazen anticipates revisiting the condition scores during the startup and commissioning phases. This could enhance the confidence in the estimated valuations.

Appendix A: Asset Register

Level 4 (Sub-Location)	Asset Description	Discipline	Class-Type	Install Year	Manufacturer	Model
AERATION CLARIFIER NO 1	AER PUMP 1a	MECHANICAL	PUMP-SUBMERSIBLE	2007	GOULDS	WS0511B (1/2 HP)
AERATION CLARIFIER NO 1	AER PUMP 1b	MECHANICAL	PUMP-SUBMERSIBLE	2007	GOULDS	WS0511B (1/2 HP)
AERATION CLARIFIER NO 1	AER TRANSFER PUMP 1	MECHANICAL	PUMP-SUBMERSIBLE	2007	GOULDS	WS0511B (1/2 HP)
AERATION CLARIFIER NO 1	Aeration Clarifier No 1 - Level Floats	MECHANICAL	FLOAT-LEVEL SENSOR	2007	SJ ELECTRO	SUPER SINGLE/JR SUPER SINGLE
AERATION CLARIFIER NO 1	AERATION CLARIFIER TANK #1 ASSEMBLY	MECHANICAL	TANK-AERATION	2007	CROMAGLASS	CA-50/60
AERATION CLARIFIER NO 1	CLE SUMP PUMP 1a	MECHANICAL	PUMP-SUBMERSIBLE	2007	GOULDS	WE0311M (1/3 HP)
AERATION CLARIFIER NO 1	CLE SUMP PUMP 1b	MECHANICAL	PUMP-SUBMERSIBLE	2007	GOULDS	WE0311M (1/3 HP)
AERATION CLARIFIER NO 1	SLUDGE SUMP PUMP 1	MECHANICAL	PUMP-SUBMERSIBLE	2007	GOULDS	WE0311M (1/3 HP)
AERATION CLARIFIER NO 2	AER PUMP 2a	MECHANICAL	PUMP-SUBMERSIBLE	2007	GOULDS	WS0511B (1/2 HP)
AERATION CLARIFIER NO 2	AER PUMP 2b	MECHANICAL	PUMP-SUBMERSIBLE	2007	GOULDS	WS0511B (1/2 HP)
AERATION CLARIFIER NO 2	AER TRANSFER PUMP 2	MECHANICAL	PUMP-SUBMERSIBLE	2007	GOULDS	WS0511B (1/2 HP)
AERATION CLARIFIER NO 2	Aeration Clarifier No 2 - Level Floats	MECHANICAL	FLOAT-LEVEL SENSOR	2007	SJ ELECTRO	SUPER SINGLE/JR SUPER SINGLE
AERATION CLARIFIER NO 2	AERATION CLARIFIER TANK #2 ASSEMBLY	MECHANICAL	TANK-AERATION	2007	CROMAGLASS	CA-50/60
AERATION CLARIFIER NO 2	CLE SUMP PUMP 2a	MECHANICAL	PUMP-SUBMERSIBLE	2007	GOULDS	WE0311M (1/3 HP)
AERATION CLARIFIER NO 2	CLE SUMP PUMP 2b	MECHANICAL	PUMP-SUBMERSIBLE	2007	GOULDS	WE0311M (1/3 HP)
AERATION CLARIFIER NO 2	SLUDGE SUMP PUMP 2	MECHANICAL	PUMP-SUBMERSIBLE	2007	GOULDS	WE0311M (1/3 HP)
AERATION CLARIFIERS	JUNCTION BOX	I/C	JUNCTION BOX-HATCH	2007	CANTEX	5133714-4X
AERATION CLARIFIERS	RAW WATER FLOW METER TO AERATION CLARIFIERS	ELECTRICAL	FLOWMETER-MAGNETIC	2007	ROSEMOUNT	
CHLORINE CONTACT TANK	CHLORINE CONTACT BASIN\TANK	MECHANICAL	TANK-CHLORINATION	2007	CROMAGLASS	
CHLORINE CONTACT TANK	CHLORINE HORIZONTAL PUMP 1	MECHANICAL	PUMP-DIAPHRAGM	2007	LMI PUMPS	SERIES AA
CHLORINE CONTACT TANK	CHLORINE HORIZONTAL PUMP 2	MECHANICAL	PUMP-DIAPHRAGM	2007	LMI PUMPS	SERIES AA
CHLORINE CONTACT TANK	SAMPLE PERISTALTIC PUMP	MECHANICAL	PUMP-PERISTALTIC	2007	MASTERFLEX	L/S SERIES
COAGULATION TANK	COAG - SLUDGE SUMP PUMP 4	MECHANICAL	PUMP-SUBMERSIBLE	2007	GOULDS	WE0311M (1/3 HP)
COAGULATION TANK	COAG -FLOAT	MECHANICAL	FLOAT-LEVEL SENSOR	2007	SJ ELECTRO	SUPER SINGLE/JR SUPER

COAGULATION TANK	COAGULATION DISCHARGE PUMP 1	MECHANICAL	PUMP-SUBMERSIBLE	2007	GOULDS	WE0311M (1/3 HP)
COAGULATION TANK	COAGULATION DISCHARGE PUMP 2	MECHANICAL	PUMP-SUBMERSIBLE	2007	GOULDS	WE0311M (1/3 HP)
COAGULATION TANK	COAGULATION PUMP 1	MECHANICAL	PUMP-DIAPHRAGM	2007	LMI PUMPS	SERIES AA
COAGULATION TANK	COAGULATION PUMP 2	MECHANICAL	PUMP-DIAPHRAGM	2007	LMI PUMPS	SERIES AA
COAGULATION TANK	COAGULATION TANK	MECHANICAL	TANK-COAGULATION	2007	CROMAGLASS	
DEWATERING WELL	DEWATERING - SUMP PUMP	MECHANICAL	PUMP-SUBMERSIBLE	2007	STA-RITE	20DOM05221
EMERGENCY STORAGE TANK/INFLUENT PUMP STATION	EMER TANK / INFLUENT PS	MECHANICAL	TANK-STORAGE	2007	XERXES	
EMERGENCY STORAGE TANK/INFLUENT PUMP STATION	Emergency Storage Tank - Level Floats	MECHANICAL	FLOAT-LEVEL SENSOR	2007	SJ ELECTRO	SUPER SINGLE/JR
EMERGENCY STORAGE TANK/INFLUENT PUMP STATION	INFLUENT PUMP 1	MECHANICAL	PUMP-SUBMERSIBLE	2007	Hydromatic S3HX	
EMERGENCY STORAGE TANK/INFLUENT PUMP STATION	INFLUENT PUMP 2	MECHANICAL	PUMP-SUBMERSIBLE	2007	Hydromatic S3HX	
EMERGENCY STORAGE TANK/INFLUENT PUMP STATION	Influent Pump Station - LIT	I/C	TRANSMITTER-LEVEL INDECATOR	2007		
EMERGENCY STORAGE TANK/INFLUENT PUMP STATION	Influent Pump Station- Level Floats	MECHANICAL	FLOAT-LEVEL SENSOR	2007	SJ ELECTRO	SUPER SINGLE/JR SUPER
FILTER BUILDING	Aeration Clarifier No 1 - Control Panel	I/C	CONTROL PANEL-AERATION	2007		
FILTER BUILDING	Aeration Clarifier No 2 - Control Panel	I/C	CONTROL PANEL-AERATION	2007		
FILTER BUILDING	ALUM DOSING PUMP	MECHANICAL	PUMP-MAGNETIC DOSING	2007		
FILTER BUILDING	ANALYZER	I/C	ANALYZER-MICROPROCESSOR	2007	PROMINENT	D1C
FILTER BUILDING	CHEMICAL PUMP	MECHANICAL	PUMP-CHEMICAL	2007		
FILTER BUILDING	CHEMICAL STORAGE	MECHANICAL	TANK-CHEMICAL	2007		
FILTER BUILDING	COAGULATION & SLUDGE-CONTROL PANEL	I/C	CONTROL PANEL-COAGULATION/SL	2007	WIEGMAN	N1C363008/ N1P3630
FILTER BUILDING	EYE WASH STATION	STRUCTURAL	EYEWASH-SHOWERES	2007	GRAINER	
FILTER BUILDING	FAN#1	STRUCTURAL	FAN-HEAVY-DUTY	2007		
FILTER BUILDING	FAN#2	STRUCTURAL	FAN-HEAVY-DUTY	2007		
FILTER BUILDING	FILTER BUILDING POTABLE WATER PIPE	STRUCTURAL	PIPING-POTABLE	2007		COPPER
FILTER BUILDING	FILTER BUILDING STRUCTURE	STRUCTURAL	NON-PROCESS	2007		
FILTER BUILDING	FILTER CONTROL PANEL & PLC	I/C	CONTROL PANEL/PLC-FILTER	2007	SIEMEN'S	S7226 MICRO PLC VE 1.02
FILTER BUILDING	FILTER SKID - HYDROCYCLONE	MECHANICAL	FILTER-HYDROCYCLONE	2007	ODIS FILTERING LTD	591005
FILTER BUILDING	FILTER SKID - ODISMATIC SCREEN FILTER	MECHANICAL	FILTER-ODISMATIC HYDRAULIC	2007	ODIS FILTERING LTD	
FILTER BUILDING	FILTER SKID 1-4 # ASSEMBLY	MECHANICAL	FILTER-MULTI-MEDIA	2007	ODIS FILTERING LTD	45016 DW

FILTER BUILDING	GENERATOR	ELECTRICAL	GENERATOR-	2007	KOHLER	John Deere 4045TF270E
FILTER BUILDING	INFLUENT PUMPS - CONTROL PANEL	I/C	CONTROL PANEL-INFLUENT PUMP	2007		
FILTER BUILDING	IRRIGATION CONTROLER	I/C	CONTROL PANEL-IRRIGATION	2007		KC-167
FILTER BUILDING	MAIN PLC PANEL	I/C	PLC-MAIN	2007	SCHNEIDER ELECTRIC	TSX MOMENTUM
FILTER BUILDING	RESEVOIR CONTROL PANEL	I/C	CONTROL PANEL-RESERVOIR	2007	WEIGMAN	N1C363008/ N1P3630
IRRIGATION SYSTEM	IRR - PUMP #1	MECHANICAL	PUMP-SUBMERSIBLE	2007	GRUNDFOS/FRANKLIN	224 303 52
IRRIGATION SYSTEM	IRR - PUMP #2	MECHANICAL	PUMP-SUBMERSIBLE	2007	GRUNDFOS/FRANKLIN	224 303 52
OUTDOOR	FENCING	STRUCTURAL	NON-PROCESS STRUCTURE-FENCE	2007		
SLUDGE PROCESSING TANK	SLUDGE - AER PUMP #1	MECHANICAL	PUMP-SUBMERSIBLE	2007	GOULDS	WS0511B (1/2 HP)
SLUDGE PROCESSING TANK	SLUDGE - AER PUMP #2	MECHANICAL	PUMP-SUBMERSIBLE	2007	GOULDS	WS0511B (1/2 HP)
SLUDGE PROCESSING TANK	SLUDGE - FLOAT	MECHANICAL	FLOAT-LEVEL SENSOR	2007	SJ ELECTRO	SUPER SINGLE/JR SUPER
SLUDGE PROCESSING TANK	SLUDGE PROCESSING TANK ASSEMBLY	MECHANICAL	TANK-SLUDGE	2007	CROMAGLASS	
SLUDGE PROCESSING TANK	SLUDGE SUMP PUMP 3	MECHANICAL	PUMP-SUBMERSIBLE	2007	GOULDS	WE0311M (1/3 HP)
TREATED WATER RESERVIOR	TREATED WATER FLOW METER (CHLORINE CONTACT TANK	ELECTRICAL	FLOWMETER-MAGNETIC	2007	ROSEMOUNT	
TREATED WATER RESERVIOR	TREATED WATER RESERVOIR/PUMP WETWELL	MECHANICAL	TANK-RESERVOIR	2007	XERXES	
TREATED WATER RESERVIOR	Treated Water Tank - Level Floats	MECHANICAL	FLOAT-LEVEL SENSOR	2007	SJ ELECTRO	SUPER SINGLE/JR
TREATED WATER RESERVIOR	Treated Water Tank - LIT	I/C	TRANSMITTER-LEVEL INDECATOR	2007		

Hazen *Technical Memorandum*

March 15, 2024

To: Trabuco Canyon Water District

From: Alex Rahimian-Pour, PE

Chris Jansen, PE

Re: Review and evaluation of the proposed effluent disposal method for Crystal Canyon Water Reclamation Plant

Effluent Disposal Method Review & Evaluation for Crystal Canyon Water Reclamation Plant (CCWRP)

DRAFT

Introduction

The purpose of this technical memorandum is to summarize Hazen's independent review and evaluation of the effluent disposal method proposed for the Crystal Canyon Water Reclamation Plant by Woodard & Curran.

Job no

Table of Contents

1. Background

The Oaks at Trabuco is a new residential development located in Trabuco Canyon that currently houses three (3) residences, with two (2) more currently going through permitting. The development has plans to expand to a total of nine (9) residences. The Crystal Canyon Water Reclamation Plant (CCWRP) was built to treat wastewater generated from these nine (9) residences at an average rate of 7,000 gallons per day (GPD). CCWRP is currently not in operation. Once the plant is operational, ownership will be transferred to the Trabuco Canyon Water District (TCWD) for long-term operations and maintenance.

On August 8, 2008, Water 3 Engineering, Inc. submitted a Title 22 Engineering and Certification Report to the San Diego Regional Water Quality Control Board (RWQCB) to gain approval for the use of recycled water for irrigation of common landscape areas throughout the development. Approval was ultimately granted on May 8, 2009, by the California State Water Resources Control Board (SWRCB) – Division of Drinking Water (DDW).

Since this initial report was approved, a new location has been considered for effluent disposal with limited public access that would give TCWD the flexibility of downgrading the treatment plant from disinfected tertiary recycled water to undisinfected secondary recycled water. Woodard & Curran (W&C) prepared a "Report of Waste Discharge" (ROWD) for the CCWRP in May 2019 that includes details of downgrading the plant to undisinfected secondary recycled water and utilizing a land application area (LAA) for treated effluent disposal through spray irrigation. In addition, W&C proposes to submit a revision request letter to DDW for their approval of this LAA for disposal of disinfected tertiary recycled water. The draft letter is included in Appendix A for reference, which includes a map of the CCWRP LAA, the Title 22 approval letter, and the Title 22 Engineering Report as attachments. It should also be noted that TCWD has informed Hazen that they are not considering downgrading the plant to undisinfected secondary recycled water at this time.

Hazen was selected by TCWD to provide third-party review of W&C's analysis and findings, to evaluate and confirm the technical and regulatory aspects of their proposed letter to DDW, and to advise TCWD of any errors and omissions and to evaluate the potential benefits from downgrading to undisinfected secondary recycled water. In addition to the draft letter to DDW, email correspondence between W&C and TCWD is documented in Appendix B for further context.

2. Review & Evaluation of Proposed Effluent Disposal Methods

2.1 Regulatory Requirements

Hazen reviewed W&C's proposal and found that it complies with all requirements outlined in Title 22, Division 4, Chapter 3, Article 4, Section 60310, including the following which are applicable to the proposed LAA, provided that public access to the LAA remains restricted:

- No irrigation with disinfected tertiary recycled water shall take place within 50 feet of any domestic water supply well (150 feet for undisinfected secondary recycled water).

- No impoundment of disinfected tertiary recycled water shall occur within 100 feet of any domestic water supply well (150 feet for undisinfected secondary recycled water).
- Any irrigation runoff shall be confined to the recycled water use area.
- No spray irrigation of any recycled water, other than disinfected tertiary recycled water, shall take place within 100 feet of a residence or a place where public exposure could be similar to that of a park, playground, or school yard.

W&C's proposal for spray irrigation is also in-line with the SWRCB Order WQ 2014-0153-DWQ "General Waste Discharge Requirements for Small Domestic Wastewater Treatment Systems" (Order), especially those outlined in Section 7 "Land Application and/or Recycled Water Systems". A summary of these requirements is as follows:

- Wastewater shall not be applied to an LAA within 24 hours of forecasted precipitation, during precipitation events, or when the LAA surface soil is saturated.
- Spray irrigation with treated wastewater is prohibited when wind speed exceeds 30 miles per hour.
- Discharge of wastewater from an LAA is prohibited.
- If undisinfected wastewater is applied to an LAA, storm water runoff from the LAA is prohibited.
- If storm water is allowed to runoff from an LAA (during the time of year wastewater is not applied), all applied wastewater shall meet disinfection requirements at a level equivalent to disinfected secondary-23 recycled water or better.
- Public contact with wastewater/recycled water shall be precluded through use of fences, signs, and/or other appropriate means.
- Land application areas shall be managed to mitigate breeding of mosquitoes.

A ROWD is required to be filed with the RWQCB in order for the project to be covered by the Order. The Order also contains specific provisions, including monitoring and reporting requirements, that must be followed upon issuance of a Notice of Applicability (NOA) by the RWQCB once coverage under the Order has been authorized. The NOA will include additional, site-specific requirements.

2.2 Spray Irrigation

2.2.1 Land Area Application Sizing

The ROWD describes two noncontiguous areas available for LAA use: 1.12 acres on the western side of the property and 0.07 acres on the eastern side of the property, with only 1.0 acres of the western portion of the LAA anticipated to be utilized for the project. The ROWD reports that the LAA was determined based on 100-ft setbacks from any residences, areas of public access, and nearby ephemeral streams.

These areas are consistent with the LAA map included in the revision request letter provided in Appendix A. However, in the same revision request, W&C references a spray area of 2.1 acres for the LAA. The email correspondence between W&C and TCWD states that the 2.1 acres was established based on spray irrigation for the full 7,000 GPD (8 AFY) using an application rate of 3.8 AF/acre. However, this calculation isn't shown in the ROWD, and it is unclear how the 3.8 AF/acre metric was derived. This information should be verified with W&C. In addition, we note the following in regards to W&C's water balance calculations:

- A plant factor (also known as a crop coefficient or landscape coefficient) should be applied to the reference evapotranspiration numbers that is representative of the existing vegetation in the proposed LAA.
- W&C's analysis used precipitation data from one specific wet year (1998). This is a fairly conservative approach. Another approach to consider is to follow the EPA's guidance in their Process Design Manual for Land Treatment of Municipal Wastewater Effluents. Per this Manual, precipitation should be based on monthly precipitation values for a 5-year return period[1].
- The EPA's Process Design Manual specifies a range of safety factors from 4% to 10% to be applied to published values of permeability[1]. W&C's analysis used a conservative value of 4%. However, in this case, values measured directly from the field are available, which justifies using a higher percentage of 10%.
- Cumulative storage volumes should not be allowed to fall below zero, as this does not represent a realistic scenario.
- Effluent application frequencies can be adjusted to represent operational flexibility afforded by modern day irrigation systems. This should reduce the amount of storage required.
- During the wet season, from October 15 through April 15, the water balance should only assume that effluent disposal will occur on a small percentage of the days. This is to account for the fact that irrigation will not be allowed within 24 hours of forecasted precipitation, during a precipitation event, or after a precipitation event while soils are saturated.
- More detail is needed regarding the application frequencies used by W&C. It is unclear why the frequency is higher during wet weather when effluent disposal will be limited. An additional column showing the number of days assumed for effluent disposal would be helpful.

In addition to the discussion above concerning a month-to-month water balance analysis, day-to-day operations must also be considered. During wet weather, the plant could go several days, or even weeks, without disposing effluent to the LAA. Just one precipitation event could keep the system down for approximately 5 or more days (24 hours prior + one day event + 3 days of saturated soils). At 7,000 GPD, that equates to 35,000 gallons. Any additional rain events forecasted while soils remain saturated would extend this down time even further. The plant currently has just 20,000 gallons of storage capacity for the

[1] United States Environmental Protection Agency. (2006, September). *Process Design Manual: Land Treatment of Municipal Wastewater Effluents.* U.S. EPA. EPA/625/R-06/016. Retrieved March 12, 2024, from https://cfpub.epa.gov/si/si_public_record_report.cfm?Lab=NRMRL&dirEntryId=159124

treated effluent, compared to what W&C assumed in the ROWD (i.e., 26,000 gallons). The larger storage volume of 26,000 would only be available if the plant were to be downgraded to undisinfected secondary recycled water, and the 3,000 gallon chlorine contact tank and 3,000 coagulation tank were re-plumbed and repurposed for additional storage. The plant also includes 9,645 gallons of emergency storage, (4,720 gallons in the influent pump station tank and 4,925 gallons in the upstream sewer pipe), however this should be reserved for emergencies and should not be relied upon for normal operations. Any effluent in excess of the 20,000 gallons of available treated effluent storage will need to be hauled off-site. TCWD should plan for this whenever there is a forecasted rain event.

2.2.2 Land Area Application Design Features

The ROWD states that spray disposal will occur in a fenced open space area with straw wattles to prevent stormwater runoff from leaving the LAA. Straw wattles, also known as fiber rolls or fiber logs, are porous, tube-shaped erosion control devices filled with straw or other biodegradable material and wrapped in plastic or natural netting. They are intended to slow down, filter, and spread out stormwater flows, but they are not impermeable[2,3]. Straw wattles would likely detain water from the spray application, but during a large storm event, it's likely that stormwater runoff will leave the LAA. Other options to detain the stormwater should be considered, such as a continuous concrete footing along the fence and/or minor grading along the perimeter of the LAA (containment berm). Additional calculations are needed to determine the height of such berm or footing based on design storm events and infiltration rates.

2.2.3 Additional Considerations

The ROWD states that stormwater will infiltrate at the site during wet weather. However, it also states that "because bedrock is very close to the ground surface in the vicinity of the LAA, there is no groundwater or groundwater wells by the project site." It also states that "because bedrock is very close to the surface and there is no groundwater underneath the LAA, groundwater monitoring is not required." Due to the steep slopes and depending on the depth of bedrock, there is a concern that recycled water and stormwater will discharge from the site. This infiltrated water is also accounted for as a loss in W&C's water balance calculations. However, if bedrock is within a couple feet of the ground surface, there may not be any room for subsurface storage, and therefore deep percolation, which would impact the water balance calculations. More clarity is needed on the depth of bedrock to determine if this presents a risk to the project or if W&C's analysis is sufficient.

2.3 Percolation Pond Alternative

Another option briefly discussed in email correspondence between W&C and TCWD is the use of a percolation pond or ponds, with a minimum pond surface area of 500 square feet based on the plant's average effluent flow rate of 7,000 GPD and in-situ infiltration rate of 1.08 inches per hour measured by

[2] United States Environmental Protection Agency. (2021, December). *Stormwater Best Management Practice: Fiber Rolls.* U.S. EPA. EPA/832/F-21/028S. Retrieved March 12, 2024, from https://www.epa.gov/system/files/documents/2021-11/bmp-fiber-rolls.pdf.

[3] Napa County Resource Conservation District. (n.d.). *Typical Fiber Roll/Wattle Sediment Barrier*. NAPA RCD. Retrieved March 12, 2024, from https://naparcd.org/wp-content/uploads/2017/11/NCRCD_TypicalDrawing_Wattle.pdf.

Leighton Consulting, Inc. Note that this infiltration rate does not include any factors of safety to account for uncertainty and long term deterioration that cannot be technically mitigated. A factor of safety of 2.0 would result in doubling the pond surface area to 1,000 square-feet, which is consistent with W&C's recommendations but should be confirmed with W&C if this option is pursued. W&C also recommended providing two percolation ponds to allow TCWD the flexibility of taking one out of service and accounting for rainfall without impacting disposal capacity. Hazen agrees with this approach. Having two basins would also provide additional storage and infiltration capacity for times when effluent discharge exceeds the average effluent flow rate.

Further considerations that were not discussed in the email correspondence for a percolation pond include, but are not limited to, the following[4][5]:

- Geotechnical conditions that may prevent or limit infiltration that should be assessed by a licensed geotechnical engineer, including the following:
    - The location is 50-feet or less from slopes steeper than 15 percent.
    - Slope stability.
    - Areas susceptible to landslides and/or liquefaction.
    - Fault zones.
    - Soil strata (i.e., depth to bedrock or other impermeable layers).
    - Depth to groundwater.
- Pond volume should be sized to accommodate seasonal precipitation based on a 100-year return period, while maintaining at least 2-feet of freeboard.
- Mitigation measures should be implemented to limit potential mosquito breeding.
- Pond maintenance and monitoring program should be implemented, including a Sludge Management Plan that's approved by the RWQCB.
- Adhere to setback requirements for ponds, which are similar to LAAs, but with a 150-foot setback from ephemeral streams.

[4] San Diego Regional Water Quality Control Board. (2018, December 21). *Technical Guidance Document (TGD) for the Preparation of Conceptual/Preliminary and/or Project Water Quality Management Plans (WQMPs) in South Orange County, Version 1.1*. OC Public Works. Retrieved March 12, 2024, from https://ocerws.ocpublicworks.com/service-areas/oc-environmental-resources/oc-watersheds/regional-stormwater-program/water-quality.

[5] California State Water Resources Control Board. (2014, September 23). *Order WQ 2014-0153-DWQ: General Waste Discharge Requirements for Small Domestic Wastewater Treatment Systems*. State Water Resources Control Board. Retrieved March 12, 2024 from https://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2014/wqo2014_0153_dwq.pdf.

2.4 Downgrading CCWRP to Undisinfected Secondary Recycled Water

At this time, TCWD is not considering downgrading CCWRP from disinfected tertiary recycled water to undisinfected secondary recycled water. If this were to be considered, it may result in reduced operating costs for the district due to less energy consumption and equipment maintenance at the plant. However, this is not a one-to-one cost savings. Removing filtration could lead to long-term scaling issues in the downstream system, which will add maintenance and cleaning costs. Undisinfected secondary recycled water also has additional permitting requirements and restrictions. For example, if undisinfected wastewater is applied to an LAA, storm water runoff from the LAA is prohibited. Undisinfected secondary recycled water also has more stringent setback requirements, however, as long as the setbacks proposed by W&C are followed, this wouldn't prove to be problematic for a spray irrigation system. For such a small system, the minimal cost savings may not justify the cost to downgrade the plant, additional permitting restrictions, and potential scaling issues.

3. Recommendations

Hazen agrees with a portion of W&C's recommended path forward, but there are multiple areas that require further clarification and evaluation. Before approving the DDW letter, we advise TCWD to seek clarification from W&C regarding the following items corresponding to the LAA spray field concept:

- **Size of the LAA:** Both 1.0 acres and 2.1 acres were documented. The most recent reference to 2.1 acres for the LAA is not reflected in the figure attached to the DDW letter.
- **LAA Berm Height:** Additional calculations are needed to confirm how high of a berm is needed around the LAA to prevent stormwater runoff from leaving the LAA. Straw wattles are not sufficient to contain water within the LAA, and a different, impermeable measure is recommended such as a continuous concrete footing along the fence and/or minor grading along the perimeter of the LAA (containment berm).
- **Geotechnical Considerations:** Additional context is needed regarding the depth to bedrock. It is mentioned several times in the ROWD that bedrock is very close to the ground surface with no reference to supporting documentation. The depth to bedrock is a vital component of this analysis, as it could impact the water balance calculations, and it could result in recycled water and stormwater discharges from the LAA, which would create permitting challenges especially for untreated secondary recycled water.
- **Additional Considerations:** If it is confirmed that the proposed LAA effluent disposal is a feasible option, Hazen recommends adding detail to the DDW letter regarding how water will be retained and prevented from leaving the LAA, how the treated effluent will be handled during wet weather (i.e., hauling excess effluent off-site), and a summary of the sizing methodology used to determine the LAA sizing (especially considering the proposed LAA area is less than the 2.5 areas previously planned for irrigation).

In addition to the LAA considerations, Hazen does not recommend a percolation pond at this time due to its previously mentioned challenges (geotechnical hazards, odors, mosquitoes, etc.). If a percolation pond is desired by TCWD, Hazen recommends engaging a licensed geotechnical engineer to conduct the

proper geotechnical investigations and provide recommendations for infiltration at the site. Hazen can support these efforts at the request of TCWD.

The conditional provisions of the Title 22 Permit were also highlighted in the DDW letter and should be completed for regulatory compliance. These provisions include the following:

- Conduct a site visit of the CCWRP to inspect, evaluate, and verify the operation of all alarms, set points, and failsafe procedures associated with the tertiary recycled water treatment facilities.
- Complete on-site cross connection shutdown testing of both the potable and recycled water distribution systems.
- Notify the California Department of Public Health prior to activating the recycled water system.
- Conduct a tracer study to verify the modal contact time of the chlorine contact basin when the influent flow reaches the average day flow.

Appendix A: Draft Revision Request Letter to DDW

530 Technology Drive | Suite 100
Irvine, California 92618
www.woodardcurran.com

T 800.426.4262
T 949.420.5300

Via Electronic Mail

10/24/2023

Mr. Oliver Pacifico
Santa Ana District Engineer
2 Macarthur Pl., Suite 150
Santa Ana, CA 92707

Re: Trabuco Canyon Water District
Crystal Canyon Water Reclamation Plant
Updated Irrigation Plan Approval

Dear Mr. Pacifico,

The Trabuco Canyon Water District (TCWD) would like to revise the original irrigation plan for the Crystal Canyon Water Reclamation Plant (CCWRP). The approved Title 22 Engineering report from August 2008 had originally designated the use of recycled water for slope irrigation within the common landscape areas of the Oaks at Trabuco development area connecting with an existing irrigation system. TCWD would like to request the approval of an updated irrigation area as shown in Attachment A. The proposed spray irrigation would be on approximately 2.1 acres within an Open Space Scenic Preservation Easement with limited public access that would only be connected to the recycled water from the CCWRP. The proposed irrigation system will not be connected to the domestic water system.

TCWD acknowledges the requirements outlined in the Title 22 Report approval letter dated May 8, 2009 (Attachment B). TCWD agrees that the following items will be completed prior to any distribution of recycled water:

1. TCWD must conduct a site visit of the CCWRP to inspect, evaluate and verify the operation of all alarms, set points and failsafe procedures associated with the tertiary recycled water treatment facilities.

2. TCWD must satisfactorily compete on-site cross connection shutdown testing of both potable and recycled water distribution systems in the area. A qualified cross-connection specialist must conduct all shutdown testing. The Department of Public Health must be notified at least two weeks prior to the test. The results of the shutdown test must be submitted to the Department within two weeks of completing the test.

3. TCWD must notify the Department prior to activating the recycled water system.

In addition, a tracer study to verify the modal contact time of the chlorine contact basin will be conducted by the TCWD if the influent flow reaches the average design flow of 7,000 gpd. However, due to water conservation targets and reductions in wastewater flow from residential areas it is anticipated that the ultimate average daily flow will likely not exceed 4,000 gpd.

The Title 22 Approval Letter is included as Attachment B and current version of the approved Title 22 Engineering report can be found in Attachment C for your reference. The CCWRP will treat wastewater generated from the Oaks at Trabuco residential development that will eventually comprise 9 homes and produce recycled water for subsequent irrigation.

If you have any questions, please contact Scott Goldman at sgoldman@woodardcurran.com or (949) 420-5314.

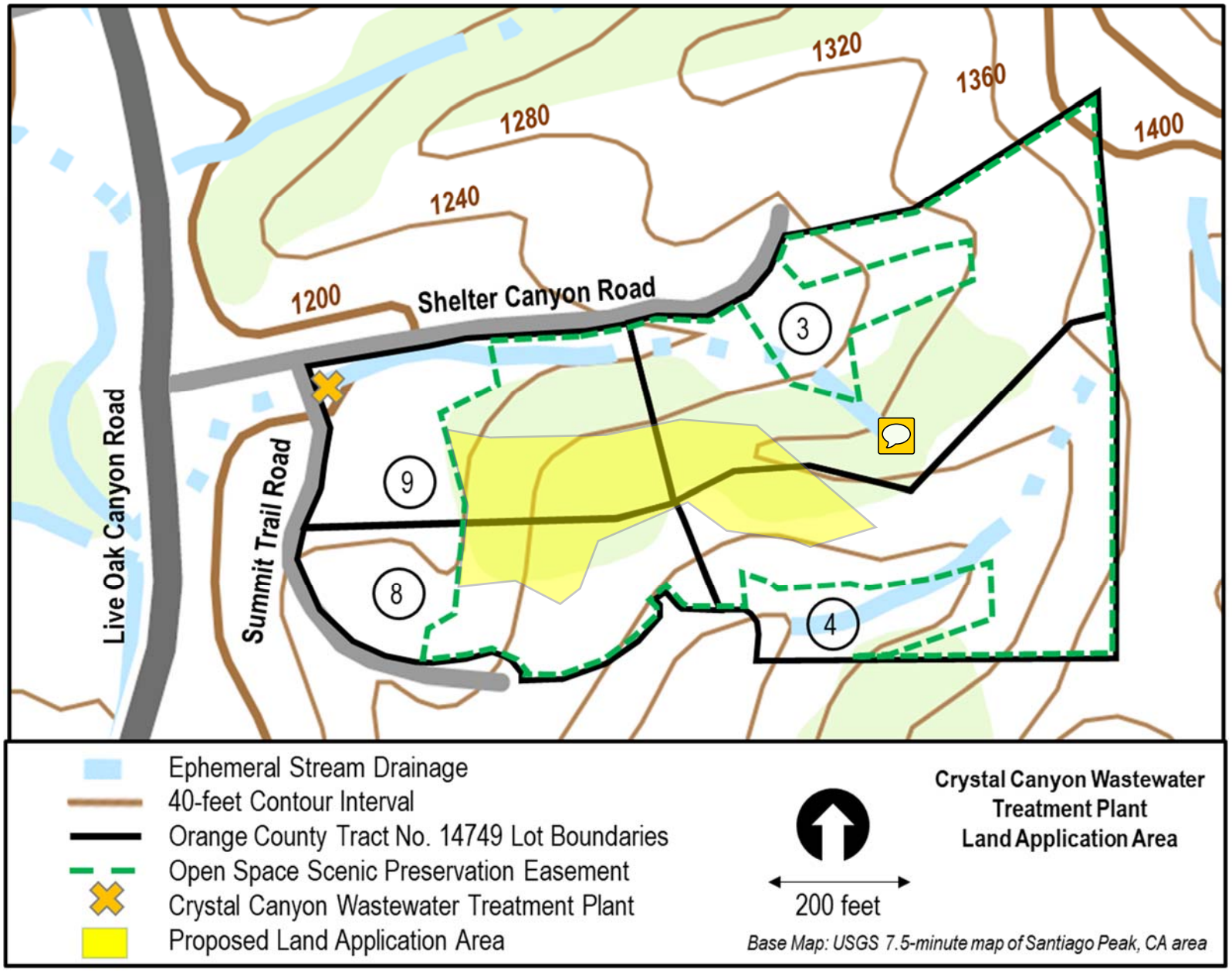
Sincerely,

WOODARD & CURRAN, INC.

Scott Goldman, P.E, BCEE
Senior Principal

Attachments:

Attachment A – CCWRP Land Application Area
Attachment B – Title 22 Approval Letter
Attachment C – Title 22 Engineering Report


1320
1360
1400
1280
1240
1200
Shelter Canyon Road
Live Oak Canyon Road
Summit Trail Road
3
9
8
4
Ephemeral Stream Drainage
40-feet Contour Interval
Orange County Tract No. 14749 Lot Boundaries
Open Space Scenic Preservation Easement
Crystal Canyon Wastewater Treatment Plant
Proposed Land Application Area
200 feet
Crystal Canyon Wastewater Treatment Plant Land Application Area
Base Map: USGS 7.5-minute map of Santiago Peak, CA area

State of California—Health and Human Services Agency
California Department of Public Health

MARK B HORTON, MD, MSPH
Director

ARNOLD SCHWARZENEGGER
Governor

May 8, 2009

Mr. Ken Theissen
California Regional Water Quality Control Board
Santa Ana Region
3737 Main Street, Suite 500
Riverside, California 92501-6288

Dear Mr. Theissen:

SYSTEM NO. 3090005—CRYSTAL CANYON WATER RECLAMATION PLANT – TITLE 22 REPORT REVIEW, TRABUCO CANYON WATER DISTRICT

The Department of Public Health, Drinking Water Field Operations Branch (Department) has reviewed the revised Title 22 Engineering Report for the Crystal Canyon Water Reclamation Plant (CCWRP) dated August 2008. The report was submitted by Water 3 Engineering, Inc., on behalf of the Trabuco Canyon Water District (TCWD). The engineering report describes the recycled water production, distribution and use at the Oaks at Trabuco development area. The report is in response to a letter sent by the Department on February 22, 2006 in which the Department found that the original Title 22 Report dated December 2005 was incomplete.

The Oaks at Trabuco is a new residential development located in Trabuco Canyon, Orange County, California. The CCWRP will treat wastewater generated from the nine homes and produce recycled water for subsequent distribution and use. The use of the recycled water is intended for irrigation of common landscape areas within the Oaks at Trabuco development area.

It is our finding that the report is now complete. The additional information requested in the February 22, 2006 letter has now been submitted. All submitted responses are acceptable. However, TCWD must address the following items prior to distribution of any recycled water:

1. TCWD must conduct a site visit of the CCWRP to inspect, evaluate and verify the operation of all alarms, set points and failsafe procedures associated with the tertiary recycled water treatment facilities.

Southern California Drinking Water Field Operations Branch, Santa Ana District
605 W. Santa Ana Blvd., Bldg. 28, Room 325, Santa Ana, CA 92701
Telephone: (714) 558-4410 Fax: (714) 567-7262
Internet Address: www.cdph.ca.gov

2. TCWD must satisfactorily complete on-site cross connection shutdown testing of both the potable and recycled water distribution systems. A qualified cross-connection specialist must conduct all shutdown testing. The Department must be notified at least two weeks prior to the test. The results of the shutdown test must be submitted to the Department within two weeks of completing the test.

3. TCWD must notify the Department prior to activating the recycled water system.

In addition, TCWD must conduct a tracer study to verify the modal contact time of the chlorine contact basin when the influent flow reaches the average day flow.

Thank you for your careful attention to this matter. If you have any other questions, please contact Mr. Bruce Berger at (714) 558-4705.

Sincerely,

Oliver Pacifico, P.E.
District Engineer
Santa Ana District

cc: Orange County Environmental Health

Scott Goldman, P.E.
Water 3 Engineering, Inc.
15510 C Rockfield Blvd Suite 200
Irvine, CA 92618

Hector Ruiz, P.E.
Trabuco Canyon Water District
32003 Dove Canyon Drive
Trabuco Canyon, CA 92678

Bruce Goren
PICOA, Inc.
10866 Wilshire Boulevard, 11th Floor
Los Angeles, California 90024

Jeff Stone, CDPH

bcc: Region
District
Reading File
BB-PICME

0905-TCWD-RW-Crystal Canyon Title 22 Report-OCP.doc
OCP/BB

WATER 3 ENGINEERING, INC.
WATER • WASTEWATER • RECYCLED WATER
15510-C Rockfield Blvd., Suite 200 • Irvine, CA 92618 • 949 587 1700 Tel • 949 587 1300 Fax

August 6, 2008

Mr. Eric Becker
Water Resources Control Engineer
San Diego Regional Water Quality Control Board
9174 Sky Park Court, Suite 100
San Diego, CA. 92123-4340

Subject: **Trabuco Canyon Water District**
Crystal Canyon Water Reclamation Plant
Revised Title 22 Engineering and Certification Report

Dear Mr. Becker:

Enclosed is a copy of the revised Title 22 Engineering and Certification Report for the Crystal Canyon Water Reclamation Plant. A copy of this report is also being provided to the California Department of Public Health for their review. Currently the plant is still under design, however partial construction of the below grade process tanks such as the influent pump station and emergency storage tank have been completed. The earliest that operation is anticipated to begin is in spring or fall 2009.

The Title 22 report was originally submitted in December 2005. Comments were received from the California Department of Public Health via a letter dated February 22, 2006. The current version of the report has been revised to address those comments, shown below with our response for your reference:

1. The report indicates that the CCWRP will continuously dose coagulant, such as alum or polymer to the settled secondary effluent. However, the report does not explain how it was determined that sufficient mixing and contact time would be provided. The report also does not provide information and the coagulant design dosage and how this dosage was determined.

The original design included a venturi injector for coagulation injection. The design has been revised to include a coagulant metering pump. The coagulant injection will be immediately upstream of a static mixer, which will be located either directly upstream of the coagulation tank or it will be installed where the venturi injection point was inside the tank. Trabuco Canyon Water District (TCWD) is using a dose of 5 mg/L of alum at the Robinson Ranch WRP. The design for this plant is based on that dosage of alum. However, jar tests will be conducted at

plant start up to determine if this coagulant dosage is reasonable. Additional design criteria are included in Table 4.

2. Page 15 of the report states, "If emergency storage is needed, raw wastewater will first fill the IPS wetwell and will then overflow the 5.25 foot high weir into the emergency storage tank. Once wastewater has overflowed into the EST, TCWD must arrange for a hauling truck to remove the contents and haul to an alternate facility for treatment and disposal or pump it back into the IPS wetwell for treatment at the CCWRP." However, page 22 states, "Due to the limited size of the plant, an emergency hauling contract will be in place for the trucking of the wastewater to another facility for treatment and disposal. Therefore, the pump back operation does not require a power supply other than the hauling truck equipment." Please clarify if pump back equipment will be installed. Please also provide information regarding the hauling truck equipment and the final destination of the wastewater stored in the EST.

Pump back equipment will not be installed. If there is wastewater in the EST, TCWD has two options: 1) if the plant is operational and can handle the flow, a portable submersible pump can be plugged into an electrical outlet in the filter building or a diesel powered trash pump can be used to pump the wastewater from the EST into the IPS wetwell side of the tank or 2) if the plant is not operational or cannot handle the flow, use a TCWD vactor truck (1,200 gallon capacity) to haul wastewater to TCWD's Robinson Ranch WRP. A wastewater hauling company, such as OC Pumping, can also be contacted to haul wastewater to either TCWD's WRP or to one of the Orange County Sanitation District's two wastewater treatment plants.

3. Section 60349 of Title 22, CCR requires all coagulation unit processes shall be provided with the following mandatory features for uninterrupted coagulant feed: (1) standby feeders, (2) adequate chemical storage and conveyance facilities, (3) adequate reserve chemical supply, and automatic dosage control. The report does not provide information regarding the method for alum/polymer dosage determination, alum/polymer dosage control mechanism, and alum/polymer storage system. In addition, there are no alarm settings specific to detect the failure in providing continuous coagulant flow.

Two coagulant pumps will be provided and operated on duty/standby mode to satisfy the standby feeder requirement. A section on coagulant feed has been added to Table 4 with alarms and settings shown in Table 11 and their discussion under Section 2.5. Coagulant will be purchased from the manufacturer in 5 gallon containers or larger and the feed pumps will draw directly from these containers. Alum dosage will be determined using the pump settings.

The flow rate between the SBR units and the coagulation tank will be constant depending on SBR operation. Only one discharge pump per SBR can be operated at a time as they operate in duty/standby mode. The Facility Control Panel will turn on coagulant pump no. 1, if SBR no. 1 discharge pump is running. If the SBR #2 discharge pump is running, the FCP will start the

coagulant pump no. 2. The SBR discharge pumps operate at a steady flowrate based on headloss in the line. Per the manufacturer, the SBR #1 pump is designed to operate at 60 gpm and the SBR #2 pump is designed to operate at 54 gpm. Therefore, the coagulant pump dosage settings will be set manually to dose 5 mg/L and will be turned on/off by the FCP.

4. Page 30 mentioned that the potable water supply at the plant will be served by the TCWD through a 1-inch connection on the west side of the plant that will feed the plant through an RP device, instead of an Air Gap. Please provide drawings that show the layout of various piping systems within the CCWRP and information regarding piping systems identification method for evaluation.

Potable water use at the plant is discussed under Section 2.6 and consists of water for the emergency eye wash station and wash down water at two hose bibs. Sheets 6 and 9 from the drawing set have been added to Appendix B to show the piping on site and within the filter building. In order to easily distinguish between the potable water line and other piping systems on-site, the potable water line is copper, while all other piping on-site is schedule 40 PVC. All buried and exposed lines will also be labeled with color coded plastic identifying tape with text indicating the contents and a flow direction arrow.

5. Page 31 of the report states, "The Oaks at Trabuco use site will have a use site supervisor. Additionally, an ongoing employee training program that will entail the following components: procedures used when working with recycled water, rules and regulations associated with recycled water use, hazards of working with recycled water, and basic cross-connection and backflow principles and procedures will be provided." Then page 33 of the report states, "The responsible party for distribution and use of the recycled water is TCWD." Please clarify if a TCWD employee will assume the responsibility of the use site supervisor for the Oaks at Trabuco use site and will have the authority to operate, maintain, and oversee the piping system changes within the Oaks at Trabuco use site.

The Oaks at Trabuco will have its own site supervisor employed by the Oaks at Trabuco Homeowner's Association to oversee the common area irrigation system. TCWD will be responsible only for the irrigation system on the WWTP site.

6. Page 32 states, "The current irrigation system uses potable water and was installed with standard white PVC pipe. This irrigation system is to be converted to recycled water once plant effluent is available. A shut down test will be conducted prior to converting the site to recycled water. If a white irrigation pipe is replaced, it will be replaced with purple pipe. If a white irrigation pipe is exposed, but not replaced, it will be laid with purple tape. Other system components replaced in the future, including valves, sprinkler heads, quick couplers and related appurtenances, will be painted purple or the item will be replaced with a purple one." It is not

clear to us about the project proponent's plan for the existing exposed valve boxes, vaults, quick coupling valves, outlets and related appurtenances. These exposed appurtenances must be color-coded, labeled or tagged, to differentiate recycled water from potable water. Please also discuss how the potential issues for on-site retrofit of landscape irrigation systems listed in the 1997 AWWA "Guidelines for the on-site retrofit of facilities using disinfected tertiary recycled water" will be addressed.

Existing exposed valve boxes, vaults, quick coupling valves, outlets and related appurtenances will be either painted purple (if applicable) or will be fitted with purple identifiers or purple tags bearing the words "Recycled Water – do not drink" in English and Spanish. The AWWA guidelines will be followed. Language from the guidelines has been added to the report.

Regarding the five items that must be addressed prior to recycled water distribution:

1. *The Department must conduct a site visit of the CCWRP, accompanied by Regional Board staff, to inspect, evaluate, and verify the operation of all alarms, set points and failsafe procedures associated with the tertiary recycled water treatment facilities.*

Currently the plant is still under design with partial construction of the below grade process tanks and emergency back up generator and filter building; the DPH and the RWQCB staff are welcome to inspect the equipment and facilities that have been installed to date and to inspect the existing potable water irrigation system in the common areas. It is anticipated that start up will occur in approximately spring 2009 and therefore a complete site visit can be conducted then.

2. *TCWD must submit a draft of their proposed "Rules and Regulations for Delivery of Recycled Water" to the Department for review and comment.*

TCWD's Rules and Regulations are included in Appendix F of the report and are also available on the District's website. The most recent version was adopted March 16, 2005; however, the District has revised its Rules and Regulations and is planning to have its Board of Directors review and approve the new version. The District also has design standards and standard specifications for the construction of water, sewer and recycled water facilities, which are dated April 2007.

3. *TCWD must adopt an approved set of "Rules and Regulations for Delivery of Recycled Water".*

See answer to question no. 2 above.

4. *TCWD must satisfactorily complete on-site cross connection shut down testing of both the potable and recycled water distribution systems. A qualified cross connection specialist must conduct all shut down testing. A Department representative must be present to verify the satisfactory completion of each test.*

Agreed. TCWD will contact the Department when it is closer to the time to perform the cross connection test to schedule the test when a Department representative can attend.

5. *TCWD must receive written permission from the Department prior to activating the recycled water system.*

Agreed.

Additional comment: TCWD must conduct a tracer study to verify the modal contact time of the chlorine contact basin when the influent flow reaches the average day flow.

A tracer study will be completed within six months of plant start up.

If you have any questions or need additional copies of any document, please do not hesitate to contact Erica Wolski at 714-350-9715 or myself at 949-587-1700.

Sincerely,

WATER 3 ENGINEERING, INC.

Scott Goldman, P.E., DEE
PRINCIPAL

cc: Mr. Oliver Pacifico, California Department of Public Health
Mr. Hector Ruiz, Trabuco Canyon Water District
Mr. Bruce Goren, Portland Investment Company of America, Inc.

CRYSTAL CANYON WATER RECLAMATION PLANT

TRABUCO CANYON WATER DISTRICT

TITLE 22 ENGINEERING REPORT

AUGUST 2008

SUBMITTED BY

WATER 3 ENGINEERING, INC.
WATER • WASTEWATER • RECYCLED WATER

CRYSTAL CANYON WATER RECLAMATION FACILITY
TITLE 22 ENGINEERING REPORT

TABLE OF CONTENTS
AUGUST 2008

TABLE OF CONTENTS (CONTINUED)

TABLE OF CONTENTS (CONTINUED)

LIST OF TABLES

FIGURES

TABLE OF CONTENTS (CONTINUED)

APPENDICES

CRYSTAL CANYON WATER RECLAMATION FACILITY
TITLE 22 ENGINEERING REPORT
AUGUST 2008

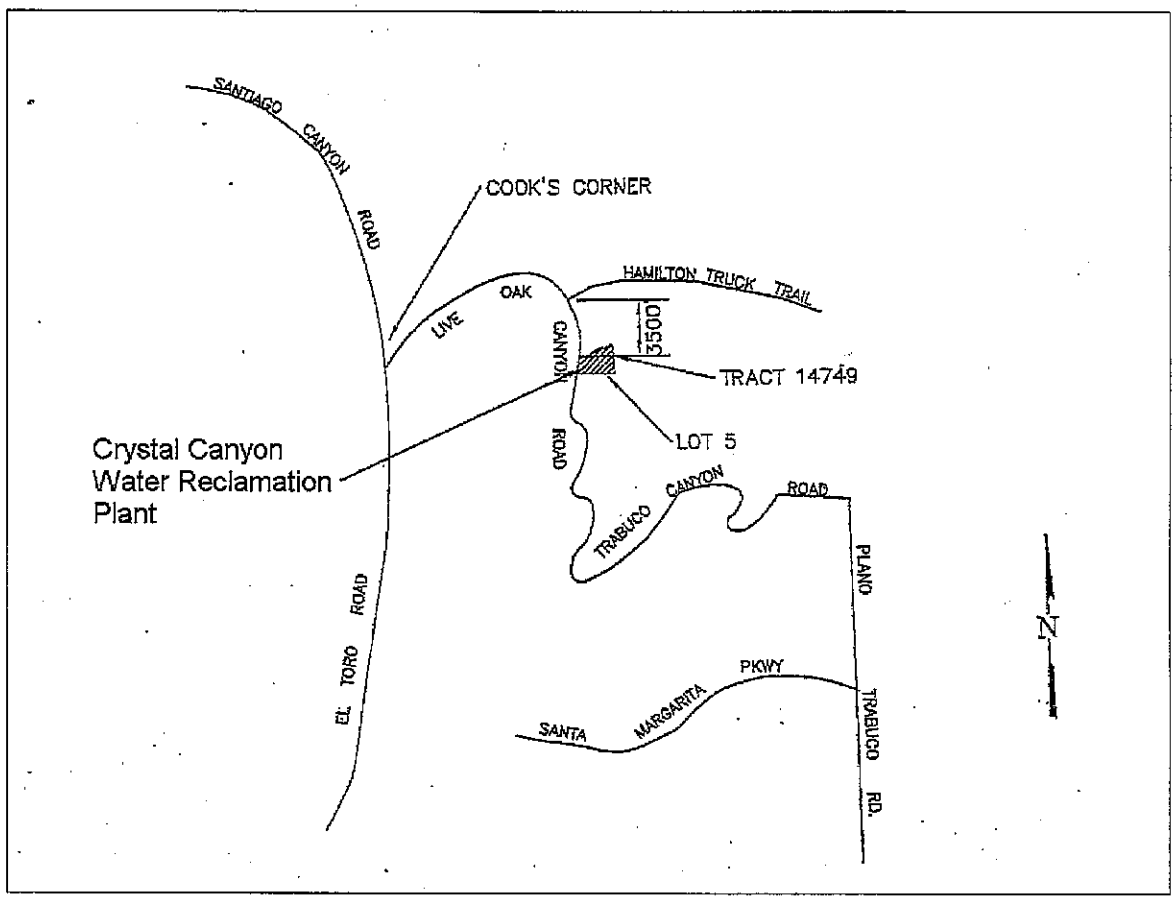
1 INTRODUCTION

This Title 22 Engineering Report is submitted in accordance with Article 7, Section 60323 of the California Code of Regulations, Title 22, Division 4, on behalf of the Trabuco Canyon Water District (TCWD) for the Crystal Canyon Water Reclamation Plant (CCWRP). The intent of this report is to serve as a Title 22 Certification Report for the Regional Water Quality Control Board (RWQCB) and a Title 22 Engineering Report for the California Department of Public Health (DPH) and RWQCB.

Portions of this report are based on data from the Engineering Report "Wastewater Treatment and Reuse System, Oaks at Trabuco" (2003 Report), published in October 2003 (Refer to **Appendix A**). Reference is also made to information provided by Cromaglass Corporation, manufacturer of the proposed treatment system equipment (Refer to **Appendix B**).

The CCWRP will serve "The Oaks at Trabuco" new residential development consisting of nine custom-built homes located in Orange County, California. The location of the proposed reclamation plant is shown on **Figure 1**. The Oaks at Trabuco development is within the service area of TCWD.

One of the requirements for the development is to construct a permanent wastewater treatment plant for treating the sewage generated by the proposed development. The ultimate treatment capacity required to serve the development is 7,000 gallons per day (gpd) average design flow, which will be provided at the Crystal Canyon Water Reclamation Plant. Treated effluent produced by the plant will be pumped from the treatment plant to an existing irrigation system serving common landscape areas entirely within the Oaks at Trabuco development area. The irrigation area is located in Trabuco Canyon, California in the Upper Trabuco Hydrologic Sub-Area (HAS 901.22).



VICINITY MAP

NOT TO SCALE

WATER 3 ENGINEERING, INC.

WATER WASTEWATER RECYCLED WATER

Figure 1
Crystal Canyon WRP
Vicinity Map

F:\CRYSTAL CANYON WRP\FIG1-7-28-05.DWG

The CCWRP will be constructed by ”The Oaks at Trabuco, LLC”. Once the plant is operational, it will be turned over to the TCWD for ownership, operation and maintenance. The plant will be operated by qualified personnel employed by the TCWD in accordance with requirements established pursuant to Chapter 9 (commencing with Section 13625) of the Water Code. A preventive maintenance program will be implemented at the plant to ensure that all equipment is kept in reliable operating condition.

2 RECYCLED WATER

2.1 Producer

The Crystal Canyon Water Reclamation Plant will be designed to treat an average daily flow of 7,000 gallons per day. The proposed plant includes emergency storage, influent pumping, screening, sequential batch reactors which provide screening, aeration and clarification to produce an oxidized wastewater effluent, a coagulation tank, granular mixed media filtration, and chlorine disinfection in conformance with Title 22.

Effluent from the CCWRP will be treated to a level that meets the current discharge permit which will allow its use for irrigation of the green belts and common areas. Trabuco Canyon Water District currently provides potable water for the irrigation of this area, estimated to be approximately 2.5 acres, as shown in **Appendix C**. Based on billing records from June 2004 through January 2008, the average demand for irrigation water for this area historically has been 6,100 gallons per day. Refer to **Table 1** for a summary of water usage by month.

Before all nine houses are constructed and occupied the plant will not produce sufficient treated effluent to meet the irrigation demand and therefore supplementary potable water will be required. Once the plant is producing near design flow of 7,000 gpd, potable water will only be required for supplementation approximately three months per year. The remainder of the year will most likely produce excess effluent. This period of surplus treated effluent would be shorter, if any, during periods of drought or low rainfall, such as was experienced in 2004. The surplus of treated water would be for longer periods during wetter years as is experienced through regional weather patterns such as “El Nino”.

TABLE 1
CRYSTAL CANYON WATER RECLAMATION PLANT
Title 22 Engineering Report

Historical Demand for Irrigation Water
The Oaks at Trabuco Common Areas

Month/Year	Irrigation Demand [1]		Excess Effluent to be Hauled[2]	Supplementary Potable Water Required[2]
	gallons per month	gallons per day	gallons per day	gallons per day
June-04	264,100	8,800	0	1,800
July-04	278,300	9,300	0	2,300
August-04	347,900	11,600	0	4,600
September-04	472,100	15,700	0	8,700
October-04	285,800	9,500	0	2,500
November-04	133,200	4,400	2,600	0
December-04	210,200	7,000	0	0
January-05	62,800	2,100	4,900	0
February-05	93,500	3,100	3,900	0
March-05	93,500	3,100	3,900	0
April-05	177,300	5,900	1,100	0
May-05	249,100	8,300	0	1,300
February-06	268,532	9,000	0	2,000
March-06	126,412	4,200	2,800	0
April-06	74,800	2,500	4,500	0
May-06	75,548	2,500	4,500	0
June-06	87,516	2,900	4,100	0
July-06	191,488	6,400	600	0
August-06	213,928	7,100	0	100
September-06	134,640	4,500	2,500	0
October-06	203,456	6,800	200	0
November-06	198,968	6,600	400	0
December-06	171,292	5,700	1,300	0
January-07	163,812	5,500	1,500	0
February-07	231,132	7,700	0	700
March-07	160,820	5,400	1,600	0
April-07	74,800	2,500	4,500	0
May-07	75,548	2,500	4,500	0
June-07	87,516	2,900	4,100	0
July-07	191,488	6,400	600	0
August-07	213,928	7,100	0	100
September-07	134,640	4,500	2,500	0
October-07	203,456	6,800	200	0
November-07	198,968	6,600	400	0
December-07	287,232	9,600	0	2,600
January-08	162,316	5,400	1,600	0
Average	**183,300**	**6,100**	**1,600**	**700**
Minimum	**62,800**	**2,100**	**0**	**0**
Maximum	**472,100**	**15,700**	**4,900**	**8,700**

[1] Data from Trabuco Canyon Water District billing records

[2] Based on 7,000 gpd plant production

When surplus treated effluent is produced, the effluent will be stored in a 20,000 gallon effluent storage tank. If necessary TCWD will haul recycled water from the storage tank to meet alternate demands in the region, to alternative non-potable water storage, to another water reclamation plant, or to TCWD's sanitary sewer system.

During times when the demand for irrigation water for the development exceeds the availability of treated effluent, TCWD will have the capability of supplementing stored effluent with potable water via an air-gapped supply. This will be more likely during the initial phases of the development or during periods of drought in the region.

Contacts for TCWD are:

Mr. Hector Ruiz, P.E./District Engineer
(949) 858-0277 ext. 117
Trabuco Canyon Water District
32003 Dove Canyon Drive
Trabuco Canyon, CA 92679

Kris Hanberg/Chief Wastewater Operator
(949) 858-0277 ext. 123
Trabuco Canyon Water District
32003 Dove Canyon Drive
Trabuco Canyon, CA 92679

Trabuco Canyon Water District is authorized by the California Regional Water Quality Control Board, San Diego Region (RWQCB) to operate the proposed Crystal Canyon Water Reclamation Plant and use recycled water for irrigation of surrounding open space per Addendum No. 3 (See **Appendix D**) to Order No. 97-52 as a member agency of the South Orange County Wastewater Authority (SOCWA). The Regional Board regulates the use of recycled water by SOCWA member agencies through Order No. 97-52 (See **Appendix E**).

2.2 Staging Plan

The CCRWP cannot operate until there is a minimum wastewater flow of approximately 500 gallons per day (approximately three homes). Beginning in August 2006, one

house was sold and occupancy began. In the interim, wastewater from the one home is collected in the Influent Pump Station tank and pumped out weekly. On an average, 1,200 gallons per week are hauled to TCWD's wastewater treatment plant for treatment. Construction of the next two homes will not be complete until approximately spring 2009 and therefore start up and testing of the plant is not anticipated to begin until approximately spring 2009.

Currently the buried tanks, buried piping and electrical conduits, filter building, and generator have been installed at the plant site. The filters, pumps, and instrumentation and controls will not be installed until enough homes are near completion to provide enough wastewater to sustain the plant. In the interim, TCWD is hauling the sewage to its wastewater treatment plant.

Under low flow conditions associated with the initial phase of the development, only one of the two Cromaglass treatment units will be operated. The discharge piping valves will be positioned such that both pumps convey flow to the active unit. As flows approach 5,000 gallons per day, both units will be placed in service, and flow will be split hydraulically between the two units.

2.3 Raw Wastewater

TCWD presently provides treatment for wastewater for the sewered area within the Trabuco Canyon service area boundary. Areas within the canyon remain unsewered, with the exception of O' Neill Regional Park and the area serviced by the proposed Crystal Canyon Water Reclamation Facility. Raw wastewater entering the CCWRP will consist of residential wastewater from up to nine proposed residences. No additional development is planned for The Oaks at Trabuco surrounding area, and further development is limited by the canyon topography.

The "2003 Report" noted that the anticipated wastewater characteristics for the CCWRP are assumed to be similar to those experienced at TCWD's existing Trabuco Canyon

Water Reclamation Plant, currently serving primarily residential services. Design wastewater characteristics are presented in **Table 2**.

TABLE 2
Design Wastewater Characteristics *

Characteristic	Units	Criteria
Biological oxygen demand (BOD)	mg/L	330
Total suspended solids (TSS)	mg/L	330
Total Kjehldahl Nitrogen (TKN)	mg/L	60

* From 2003 Report – see Appendix A.

Raw wastewater flows projected were based on the anticipated size and configuration of the proposed residences in conjunction with usage rates of residences in the TCWD service area. It is anticipated that all homes will have several bathrooms and water using appliances. Design average and peak flows were selected as shown in **Table 3** to insure that each home would have adequate wastewater treatment capacity.

TABLE 3
Design Wastewater Flows *

Average Daily Flow (ADF)	7,000 gpd
	300 gph
	5 gpm
Peak Dry Weather Design Flow (PDF)	2.5 ADF
	17,500 gpd
	730 gph
	12 gpm
Peak Hydraulic Flow (PHF)	4.0 ADF
	28,000 gpd
	1,200 gph
	20 gpm

* From 2003 Report – see Appendix A.
gpd = gallons per day, gph = gallons per hour, gpm = gallons per minute.

2.4 Treatment Process

The Crystal Canyon Water Reclamation Plant is to be constructed to treat 7,000 gpd. The combined process flow configuration is shown in **Figures 2A and 2B**. A hydraulic profile of the proposed plant is shown in **Figure 3**. The design criteria for the plant are presented in **Table 4**.

2.4.1 Flow Equalization and Influent Pumping

Raw influent wastewater flows by gravity from the residential collection system into Manhole No. 4 (MH #4) in Summit Trail Road. Flow from the northern and southern portion of the collection system is combined in this manhole and conveyed by gravity to the Influent Pump Station (IPS) and Emergency Storage Tank (EST) on the plant site for flow equalization, emergency storage and pumping into the treatment process. The IPS/EST consists of a 37-foot long, 8-foot diameter fiberglass 12,000 gallon holding tank. The bottom is located approximately 11 feet below grade. The IPS portion of the tank is divided from the EST side by a 3.5-feet high weir wall that is located approximately 12 feet from the northern end of the tank.

The rim of the lowest manhole in the development collection system, Manhole No. 2 (MH #2), is below the rim of Manhole No. 4. Standard industry design practice is to reserve 2 feet of freeboard for sewage bearing structures. The design storage available in the IPS/EST is 9,645 gallons based on 2 foot freeboard provided at MH #2.

It is also preferable to operate the influent pump station such that the collection system is not submerged. This is accomplished when the IPS/EST water surface is at or below the invert elevation of the incoming sewer. The incoming sewer enters the IPS/EST at an elevation roughly 4 feet above the bottom of the 8-foot diameter tank. Therefore, roughly 6,300 gallons of storage is available prior to sewer surcharge conditions. The IPS wetwell volume and volume of emergency storage with and without surcharging the sewer are shown in **Table 5.**

DISTRICT SCADA

HIGH-HIGH LEVEL ALARM LAHH 100
LOW LEVEL ALARM LAL 100
HIGH-HIGH LEVEL ALARM LAHH 110
LOW LEVEL ALARM LALL 110
INFLUENT WETWELL LEVEL LI 111
INFLUENT PUMP 1 AUTO HL 115
INFLUENT PUMP 1 FAIL YA 115
INFLUENT PUMP 1 RUN XL 115
INF PUMP 1 HIGH TEMP ALARM TAH 115
INF PUMP 1 MOISTURE ALARM MAH 115
INFLUENT PUMP 2 AUTO HL 116
INFLUENT PUMP 2 FAIL YA 116
INFLUENT PUMP 2 RUN XL 116
INF PUMP 2 HIGH TEMP ALARM TAH 116
INF PUMP 2 MOISTURE ALARM MAH 116
INFLUENT FLOW & TOTALIZER FQI 112
CLARIFIER DISCHARGE PUMP FAILURE YA 120
HIGH WATER LEVEL ALARM LAH 121
LOW AERATION SECTION ALARM LAL 122
LOW CLARIFIER SECTION ALARM LAL 123
DISCHARGE PUMP 1 RUN XL 130A
DISCHARGE PUMP 2 RUN XL 130B
CLARIFIER DISCHARGE PUMP FAILURE YA 120
HIGH WATER LEVEL ALARM LAH 121
LOW AERATION SECTION ALARM LAL 122
LOW CLARIFIER SECTION ALARM LAL 123
DISCHARGE PUMP 3 RUN XL 130C
DISCHARGE PUMP 4 RUN XL 130D
HIGH LEVEL ALARM LAH 124

PLC PANEL

HS 115B, HS 116B
DI (2) DI (4) AI DI DI DI DO DI DI DI DO AI
DI DI DI DI DI DI DI DI DI DI DI DI DI
XL 130A, XL 130B, XL 130C, XL 130D
TO SHEET 17

LOCAL CONTROL PANEL

2 4
YS 115 XS 115 YS 116 XS 116
STARTER PANEL
CROMAGLASS AERATION CLARIFIER No. 1
CROMAGLASS AERATION CLARIFIER No. 2
CROMAGLASS SLUDGE PROCESSING

LSH 100 LSL 100 LSHH 110 LSLL 110 LSH 110 LSL 110 LIT 111 LE 111
FROM FILTER EFFLUENT 19
FILTER BACKWASH
FROM MEDIA FILTERS 19
ATMOSPHERE ODOR CONTROL FILTER
M SLOS HS 115A M SLOS HS 116A
RAW WASTEWATER
FIT 112 M INF-FLM-01
INF-PMP-01 INF-PMP-02
EMERGENCY STORAGE TANK
INFLUENT PUMP STATION
LSH 121A LSL 122A LSL 123A
AER PUMPS (TYP 3)
AERATION/ CLARIFIER No.1
CLE-PMP-1a CLE-PMP-1b SLUDGE-PMP-01
LSH 121B LSL 122B LSL 123B
AERATION/ CLARIFIER No.2
SLUDGE-PMP-02
CLE-PMP-2a CLE-PMP-2b
LSH 124
TO COAGULATION TANK 19
FROM COAGULATION TANK 19
SLUDGE PROCESSING TANK
AER PUMPS (TYP 2)
SLUDGE-PMP-03
SLUDGE PROCESSING SUPERNATANT

Figure 2A

MARK	DESCRIPTION	DATE	APPR.
	MAY 2008 - FINAL		

DESIGNED BY: PAB - 6/07
DRAWN BY: CLM - 6/07
CHECKED BY: MSG - 6/07
LINE IS 2 INCHES AT FULL SIZE
(IF NOT 2"-SCALE ACCORDINGLY)

REGISTERED PROFESSIONAL ENGINEER MICHAEL SCOTT GUILDNER C 33041 Exp. 6/30/08 CIVIL STATE OF CALIFORNIA

WATER 3 ENGINEERING, INC.
WATER WASTEWATER RECYCLED WATER
15810-D Rockfield Blvd, Ste 200, Irvine, CA 92618
Ph: (949) 587-1700 / Fax: (949) 587-1300
BEAVENS SYSTEMS INCORPORATED
2200 PACIFIC COAST HWY. SUITE 307 HERMOSA BEACH, CA 90254

CRYSTAL CANYON WRP PHASE 2

TRABUCO CANYON WATER DISTRICT
PROCESS AND INSTRUMENTATION DIAGRAM

DRAWING NO. 16 OF 18

D:\W3\WD-PROJ\(037-01) CRYSTAL CANYON WRP\PHASE 2 - MAY 2008 FINAL\CC-SHEET-16-PH2-FINAL-FIG2A.DWG
LAST SAVED: 5/4/2008 11:26 AM
LAST PLOTTED: 5/4/2008 11:26 AM

DISCHARGE PUMP FAILURE — YA 130
LOW LEVEL ALARM — LAL 131
HIGH LEVEL ALARM — LAH 131
FILTER ALARM — YA 140A
FILTER ALARM — YA 140B
FILTER ALARM — YA 140C
HIGH STRAINER PRESSURE — PDAH 140A
HIGH FILTER PRESSURE — PDAH 140B
MAXIMUM BACKWASH TIME SETPOINT — KIC 141
FILTER EFF TURBIDITY — AI 142
FILTER EFF HIGH TURBIDITY — AAHH 142
RECYCLE VALVE OPEN — ZLO 143
CCT CL2 RESIDUAL CONTROL — AIC 150
CCT LO CL2 RESIDUAL — AAL 150
CCT EFFLUENT RECORD/TOTALIZE — FQI 151
TREATED WATER SYSTEM TROUBLE — LI 161
TREAT. WATER PUMP 1 AUTO — HL 165
TREAT. WATER PUMP 1 FAIL — YA 165
TREAT. WATER PUMP 1 RUN — XL 165
TREAT. WATER PUMP 2 AUTO — HL 166
TREAT. WATER PUMP 2 FAIL — YA 166
TREAT. WATER PUMP 2 RUN — XL 166

PLC PANEL
CONTROL PANEL

FROM SHEET 16
HS 132
HS 133
KC 141
AAH 142
AAHH 142 TU
HS 143
AIC 150
AAL 150 CL
LAL 161
HS 165B
HS 166B
HS 166
DI (4)
DI (5)
DO (7)
AO
AI

CROMAGLASS COAGULATION
FILTER CONTROL PANEL
(FUTURE)
1 2 3 4 5 6 7 8
TO FILTER VALVES
YS 165
XS 165
YS 166
XS 166
STARTER PANEL
KC-167
KC
IRRIGATION CONTROLLER

TO EMERGENCY STORAGE TANK
18
PDSH 140A
PDSH 140B
LOW CHLORINE/HIGH TURBIDITY RECYCLE
LSH 131
LSL 131
COAG-PMP-01
COAG-PMP-02
SCREEN FILTER
HYDRO CYCLONE
FLT-01
FLT-02
FLT-03
FLT-04
DCH-PMP-01
DCH-PMP-02
COAGULATION TANK
SLUDGE-PMP-04
FROM AERATION CLARIFIERS
TO SLUDGE PROCESSING TANK
TO INFLUENT PUMP STATION FILTER BACKWASH
AIT 142 TU
ZSO 143
CL-PMP-01
CL-PMP-02
CHLORINE CONTACT TANK
AIT 150 CL
SMP-PMP-01
FIT 151
EFF-FLM-01
LSH 160
LSHH 160
LSL 160
LSLL 160
LIT 161
SOV-168
POTABLE WATER
IRRIGATION SYSTEM
TREATED WATER RESERVOIR
IRR-PMP-02
IRR-PMP-01
DEWATERING WELL

Figure 2B

MARK	DESCRIPTION	DATE	APPR.
	MAY 2008 – FINAL		

DESIGNED BY: PAB – 6/07
DRAWN BY: CLM – 6/07
CHECKED BY: MSG – 6/07
LINE IS 2 INCHES AT FULL SIZE
(IF NOT 2"–SCALE ACCORDINGLY)

REGISTERED PROFESSIONAL ENGINEER — MICHAEL SCOTT GOLDMAN — C 33041 Exp. 6/30/08 — CIVIL — STATE OF CALIFORNIA

WATER 3 ENGINEERING, INC.
WATER WASTEWATER RECYCLED WATER
15510-C Rockfield Blvd, Ste 200, Irvine, CA 92618
Ph: (949) 587-1700 / Fax: (949) 587-1300
BEAVENS SYSTEMS INCORPORATED
2200 PACIFIC COAST HWY, SUITE 307 HERMOSA BEACH, CA 90254

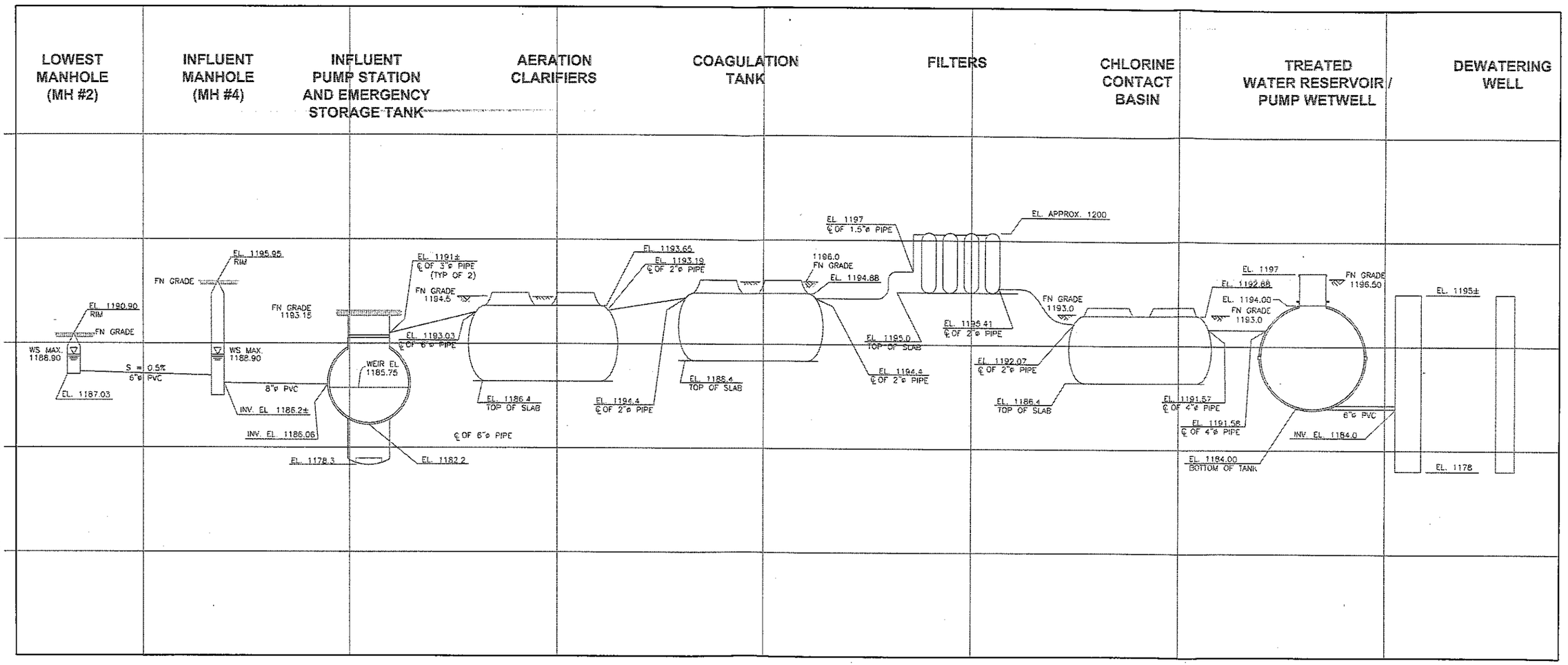
CRYSTAL CANYON WRP PHASE 2

TRABUCO CANYON WATER DISTRICT

PROCESS AND INSTRUMENTATION DIAGRAM

DRAWING NO. 17

D:\W3\W3-PROJ\2007-01 CRYSTAL CANYON WRP\PHASE 2 - MAY 2008 FINAL\DC-SHEET-17-PH2-FINAL-FIG2B.DWG
LAST PLOTTED: 6/4/2008 11:37 AM
LAST PRINTED: 6/4/2008 11:30 AM



RECYCLING PLANT PROFILE

SCALE:
VERT: 1" = 5'-0"
HOR: NONE

Figure 3

MARK	DESCRIPTION	DATE	APPR.
	MAY 2008 - FINAL		

DESIGNED BY: PAB - 6/07
DRAWN BY: CLM - 6/07
CHECKED BY: MSG - 6/07
LINE IS 2 INCHES AT FULL SIZE
(IF NOT 2"-SCALE ACCORDINGLY)

REGISTERED PROFESSIONAL ENGINEER MICHAEL SCOTT GOLDMAN C 33041 Exp. 6/30/08 CIVIL STATE OF CALIFORNIA

WATER 3 ENGINEERING, INC.
WATER WASTEWATER RECYCLED WATER
15510-C Rockfield Blvd, Ste 200, Irvine, CA 92618
PH: (949) 587-1700 / FAX: (949) 587-1300

CRYSTAL CANYON WRP PHASE 2

TRABUCO CANYON WATER DISTRICT

PLANT PROFILE

DRAWING NO. 3 OF 18

TABLE 4
CRYSTAL CANYON WATER RECLAMATION PLANT
DESIGN CRITERIA

Description	Unit	Value
Plant Flow		
Average Daily Flow (ADF)	gpd	7,000
	gpm	5
Peak Dry Weather Flow (2.5 ADF)	gpm	12
Peak Hydraulic Flow (4.0 ADF)	gpm	20
Waste Characteristics		
BOD	mg/L	330
Suspended	mg/L	330
TKN	mg/L	60
Influent Pump Station and Emergency Storage		
Manufacturer		Hydromatic S3HX
Type of Pumps		Submersible Sewage Non-Clog Pumps
Number of pumps		2 Total (1 duty, 1 standby)
Capacity, each pump	primary	55 gpm at 15 ft TDH
	secondary	100 gpm @ 12-ft
Motor speed	rpm	1,150
Horsepower, each pump	hp	0.75
Influent wetwell volume	gallons	1,425
Discharge force main diameter	inches	3
After tee	inches	6
Line velocity @ 55 gpm		
3 inch line	fps	2.5
6 inch line	fps	0.6
Emergency Storage Volume (includes wetwell volume)		
with sewer surcharged	gallons	9,645
without surcharging the sewer	gallons	4,720
Liquid Processing System		
Aeration/Clarifier Tank		Cromaglass CA-50
Type		Sequential Batch Reactor
Number of Units	-	2
Nominal Capacity, Average	gpd	5,000
Volume, each	gallons	4,590
Aeration Volume, each	gallons	3,118
Clarifier Volume, each	gallons	1,472
Surge Capacity	gallons	625
Aeration Capability	lbs/O_2 per day	24.3
Max. Organic Loading	lbs/BOD_5 per day	9.1
Standard Aerator Effeciency (SAE)	lb O_2/hp-hr	0.81
Oxygen Transfer Rate (OTR)	actual lb O_2/hp-hr	0.40
Minimum Design Dissolved Oxygen	mg/L	2.0
Design MLVSS	mg/L	2,000
F/M Ratio		0.19
Typical Cycles Per Day		6

TABLE 4
CRYSTAL CANYON WATER RECLAMATION PLANT
DESIGN CRITERIA

Description	Unit	Value
Aeration Pumps		Goulds WS0511B
Type		Submersible
Number of Pumps, Each Unit	-	2 (1 duty, 1 standby)
Capacity, gpm at feet TDH	primary	122 gpm @ 10-ft
	secondary	90 gpm @ 15-ft
Sludge Return Pumps		Goulds WE0311M
Type		Submersible
Number of Pumps, Each Unit	-	1
Capacity, gpm at feet TDH	primary	63 gpm @ 10-ft
	secondary	35 gpm @ 20-ft
Discharge Pumps		Goulds WE311M
Type		Submersible
Number of Pumps, Each Unit	-	2 (1 duty, 1 standby)
Capacity, gpm at feet TDH	primary	63 gpm @ 10-ft
	secondary	35 gpm @ 20-ft
Effluent line diameter	inches	2
Line velocity @ 63 gpm	fps	6.4
Coagulation Tank		
Number	-	1
Volume	gallons	3,000
Discharge Pump		Goulds WE1512HH
Type of Pump		Submersible
Number	-	2 (1 duty, 1 standby)
Capacity	gpm	25
Effluent line diameter	inches	2
Line velocity @ 25 gpm	fps	2.6
Sludge Waste Pump		Goulds WE0311M
Type of Pump		Submersible
Number	-	1
Capacity, gpm at feet TDH	primary	63 gpm @ 10-ft
	secondary	35 gpm @ 20-ft
Sludge Processing Tank		Aerobic
Number	-	1
Volume	gallons	3,000
Aeration Pump		Goulds WS0511B
Type of Pump	-	Submersible
Number	-	2 (1 duty, 1 standby)
Capacity, gpm at feet TDH	primary	122 gpm @ 10-ft
	secondary	90 gpm @ 15-ft
Discharge Decant Pump		Liberty 241
Type of Pump	-	Submersible
Number	-	1
Capacity, gpm at feet TDH	primary	30 gpm @ 5-ft
	secondary	15 gpm @ 15-ft

TABLE 4
CRYSTAL CANYON WATER RECLAMATION PLANT
DESIGN CRITERIA

Description	Unit	Value	
Mixed Media Filter		Sewaclear	
Number	-	4	
Diameter, each	inches	16	
Area	$feet^2$	1.4	
Design Capacity		*per filter*	*total*
Flow	gpm	6.25	25 gpm
Filtration Rate	gpm/ft^2	4.5	
Backwash flow	gpm/ft^2	15	
Backwash flow (from the other 3 filters)	gpm	21	
Turbidity analyzer		Hach 1720E	
Chlorine Contact Tank			
Type		Fiberglass w/internal Baffles	
Number	-	1	
Volume	gallons	3,000	
Assumed Contact efficiency	%	75	
Modal Contact Time	minutes	90	at 25 gpm
Disinfection			
Type		12.5 % NaOCI (Sodium Hypochlorite)	
Average dose	mg/L	10	
Desired effluent residual	mg/L	5	minimum
Feed Pumps		LMI AA 741-358HI	
Number	-	2	
Capacity	gph	0.001 - 0.58	
Max Demand at Q = 25 gpm (36,000 gpd)	gph	0.108	
Ave Demand at Q = 5 gpm (7,000 gal/day)	gph	0.022	
Storage Volume	gallons	10	
Days of Storage at Q = 5 gpm	days	19.3	
Static Mixer		Koflo #2-80-4-6-2	
Length	inches	18	
No. of elements		6	
Headloss @ 25 gpm	psi	1.6	
G value @ 25 gpm	1/sec	4,427	
Mixing time, t, @ 25 gpm	sec	0.60	
G x t @ 25 gpm	-	2,612	
Chlorine analyzer		Prominent Dulcometer D1C with CTE total Cl2 probe	

TABLE 4
CRYSTAL CANYON WATER RECLAMATION PLANT
DESIGN CRITERIA

Description	Unit	Value
Coagulant Feed		
Type		Alum
Average dose	mg/L	5
Feed Pumps		LMI AA 741-155HV
Number	-	2
Capacity	gph	0.001 - 0.58
Chemical Flowrate at Q = 63 gpm	gph	0.029
Average chemical flowrate at Q = 5 gpm	gph	0.002
Storage Volume	gallons	5
Days of Storage at Q = 5 gpm	days	104
Static Mixer		Koflo #2-40-4-3SP25-2
Length	inches	17
No. of elements		3
Headloss @ 63 gpm	psi	2.9
G value @ 63 gpm	1/sec	8,669
Mixing time, t, @ 63 gpm	sec	0.22
G x t @ 63 gpm	-	1,909
Irrigation Pumps		
Type		Grundfos/Franklin Electric 224 303 52 Water well submersible
No of Pumps	-	2 (1 duty, 1 standby)
Capacity	gpm	40 gpm at 310 ft TDH
Horsepower	hp	5
Motor/pump diameter	inches	4
Speed	rpm	3450
Effluent Storage	gallons	20,000
Standby Power		
Number	-	1
Type		Diesel
Capacity	KW	50

TABLE 5 IPS/EST Volume	
	Volume (gallons)
Influent Pump Station Wetwell	
Working volume	1,425
Volume to submerge pumps	165
Total volume	1,590
Emergency Storage	
without surcharging the sewer	
Emergency Storage Tank	4,720
with surcharging the sewer	
Emergency Storage Tank*	9,245
Manhole No. 4	220
Manhole No. 2	180
Total volume	9,645
*This volume includes the IPS wetwell volume	

The IPS wetwell will be equipped with two submersible sewage non-clog pumps, one duty and one standby. Each pump is capable of pumping at a rate of 55 gallons per minute at a total dynamic head of 15 feet. The pumps will be controlled by the plant PLC to alternate lead pump designation, such that both pumps are used equally in the operation. The influent pumps will be controlled by timer and level control operation. For purposes of level operation, the levels shown in **Table 6** will be set.

TABLE 6 Influent Pump Station Setpoints	
Level Description	**Setpoint,** **Feet above Pump Base**
Low Level Pump Shut-off*	21-Inches
Normal Operating Level	4.5
Normal-High Level	5.5
Alarm High Level (influent begins to submerge)	7.3
Emergency High Level (2 ft freeboard**)	10.0
* 2-feet or as required based on Pump Manufacturer Recommendations. **Freeboard is calculated from the sewer overflow level (1190.9 feet).	

When the wetwell level is between the Low Level and Normal Level settings, flow from the collection system will enter and begin filling the pump station wetwell operational volume. After an operator adjustable time interval (initially set at 60 minutes), the lead pump will start and pump for an operator adjustable time period (initially set at 5 minutes) or until the low level pump shut-off is reached. Flow will be conveyed through discharge piping, with manual valves positioned to direct flow to either or both of the treatment units.

When the wetwell level reaches the Normal-High Level, the lead pump will start and pump until the Normal Level is reached. If the Alarm High Level is reached, both influent pumps will start, and pump until the Normal Level is reached. The system will also alarm high influent pump station level. If the Emergency High Level is reached, Emergency High Level will alarm.

2.4.2 Emergency Storage

In order to meet the requirements of Title 22, Section 60341 – Emergency Storage and/or Disposal, the CCWRP must have at least 7,000 gallons of total raw wastewater storage. As described in the previous section, the plant will have 4,720 gallons of emergency storage without surcharging the sewer and 9,645 gallons of emergency storage with the sewer surcharged.

If emergency storage is needed, raw wastewater will first fill the IPS wetwell and will then overflow the 3.5 foot high weir into the emergency storage tank. Once wastewater has overflowed into the EST, TCWD must either arrange for a hauling truck to remove the contents and haul to an alternate facility for treatment and disposal or pump it back into the IPS wetwell for treatment at the CCWRP using either a vactor truck or a portable submersible pump.

2.4.3 Secondary Treatment

Two sequential batch reactors (SBR) units manufactured by Cromaglass, Inc. are provided for secondary treatment aeration/clarification. Each SBR unit has the treatment capacity for a nominal flow rate of 5,000 gallons per day, with treatment capability of up to 7,000 gallons per day for several days in emergency circumstances, and with hydraulic capacity of 14,400 gallons per day (10 gpm). The treatment process takes place within a 5,000 gallon tank partitioned into a Solids Retention Section, an Aeration Section and a Contact Clarifier. Flow is pumped from the Influent Pump Station into the SBR units.

Flow enters the Solids Retention Section of the SBR unit where larger solids are separated and the liquid stream passes through a screened baffle wall and into the Aeration Section. Solids are removed from the Solids Retention Section periodically (typically two times per year) through the access hatch in the top of the tank.

There are two aerators (one duty and one standby) in the aeration section that are each capable of transferring 0.80 pounds of oxygen per hour per hp. Mixed liquor is pumped from the aeration chamber to the clarifier and settling occurs under quiescent conditions. Aeration continues in the aeration chamber while settling is in progress.

After settling, effluent is decanted through a floating discharge assembly to the Coagulation Unit. SBR tank level setpoints are shown in **Table 7**. Sludge is pumped from the bottom of the clarifier. Some of the sludge is returned to the aeration chamber (RAS – return activated sludge) and some sludge (WAS – waste activated sludge) is discharged to the Sludge Processing Tank for aerobic digestion. The quantity of WAS is controlled to maintain the desired mixed liquor concentration in the aeration basin.

TABLE 7 SBR Setpoints	
Level Description	**Setpoint* (feet)**
High Water Alarm	6.7
Dual Aeration (C Float – starts lag aeration pump)	2.7
Aeration Section Low Water Level (LWDF Float)	2.1
Clarifier Discharge Pump Failure Alarm (H Float)	5.5
Clarifier Discharge Pump Shutoff (DF Float)	3.7
* estimated from bottom of tank. Tank is 6.8' from bottom to discharge pipe.	

2.4.4 Coagulation

Per Title 22, Sections 60301.230 and 60301.320, disinfected tertiary recycled water is defined as an oxidized wastewater that has been coagulated, filtered and subsequently disinfected. The CCRWP will continuously dose coagulant and therefore will not measure the filter influent turbidity as required by Section 60304 for plants that do not use coagulant.

Secondary effluent from the SBRs is conveyed to the Coagulation Tank. A coagulant, such as alum or polymer will be added to the settled secondary effluent, using a LMI metering pump. Two coagulant metering pumps will be provided and the units will operate in duty/standby mode. A static mixer will be installed directly downstream of the coagulant injection point. TCWD's Robinson Ranch WRP is using a dosage of 5 mg/L alum for its tertiary process. Design for this plant is also based on 5 mg/L alum. However, jar tests will be performed at plant start-up to determine the appropriate coagulant dosage.

The flow rate between the SBR units and the coagulation tank will be constant depending on SBR operation. Only one discharge pump per SBR can be operated at a time as they operated in duty/standby mode. If SBR #1 is operating, the discharge pump output is 60 gpm. If SBR #2 is operating, the discharge pump output is 54 gpm. If both SBRs are operating, the combined discharge pump output is 85 gpm.

SBRs cannot be started up without an operator present, as seeding the reactor will be required if the unit has not been operating. If an SBR is started, the coagulant dosage may be adjusted by the operator, if desired. The coagulant pumps will be operated in on/off mode by the Facility Control Panel based on whether or not a SBR discharge pump is active. If one SBR decant pump is operating, one coagulant pump will operated. If both SBR decant pumps are operating, two coagulant pumps will operate.

Settling time in the coagulant tank is factory pre-set at 60 minutes, but can be changed by the operator. After settling, effluent is decanted through a floating discharge assembly to the filters. Coagulation tank level setpoints are shown in **Table 8**. Sludge is pumped from the tank bottom to the sludge processing tank either manually or when the sludge wasting float is triggered. A ball valve on the sludge discharge line controls the sludge discharge rate.

TABLE 8

Coagulation Tank Setpoints

Level Description	Setpoint* (feet)
Low Level Pump Shut-off	2.2
Normal Operating Level (start lead pump)	3.0
Normal-High Level (start lag pump)	3.7
High Level Alarm	5.6‡

*estimated level from bottom of tank. Tank is 6' from bottom to discharge pipe.
‡recommended to be set approximately 4 inches below maximum water surface

2.4.5 Filtration

Tertiary treatment will be accomplished through granular mixed media filtration at a rate not to exceed 5 gallons per minute per square foot (gpm/ft^2) of surface area to produce filtered wastewater as defined by Title 22, Section 60301.320. A 25 gpm maximum Sewaclear unit with four 16-inch diameter downflow pressure filters will be provided. The coagulation tank discharge pump and filter effluent control valve will maintain a filtration rate of 4.5 gpm/ft^2 and a corresponding filtered effluent flow of 25 gpm. The filter media specifications are shown in **Table 9**.

TABLE 9 Filter Media Specification			
Media	**Depth (inches)**	**Uniformity Coefficient**	**Effective Size (millimeters)**
Basalt	4	1.5	0.8 – 1.2
Quartz	20	1.267	0.6 – 0.8
Anthracite	10	1.5	1.2
* From Cromaglass representative.			

The filters will be backwashed with unchlorinated filtered effluent. During backwash, the filter effluent valve will close and filter effluent from three filters will be used to backwash the fourth filter. The backwash rate required is 15 gpm/ft^2, which is equivalent to 21 gpm. A Hach 1720E turbidimeter will be used to continuously analyze filter effluent turbidity. Filter effluent that exceeds 2 NTU will be sent to the Emergency Storage Tank and the alarm dialer will page the operator.

2.4.6 Disinfection - Chlorination

Disinfection will be by chlorination through sodium hypochlorite dosing to achieve a minimum CT value of 450 milligram-minutes per liter (mg/L-min) at all times with a modal contact time of at least 90 minutes, based on peak dry weather design flow, as required by Title 22, Section 60301.230. With the filter flow restricted to 25 gpm and assuming the 3,000 gallon baffled basin has a short-circuiting factor of 0.75, the contact time will be 90 minutes. A tracer study will be completed within six months of plant start up. Prior to approval of the tracer study results, 90 minutes will be used to calculate CT. Effluent from the contact basin will flow by gravity to the covered reservoir where irrigation water is stored.

Chlorine residual in the contact basin effluent will be 5 mg/L or more. A Prominent Dulcometer total chlorine analyzer will continuously analyze the contact basin effluent for chlorine residual to ensure that CT is continuously being met.

2.4.7 Sludge Handling

At the average design flow of 7,000 gpd, sludge production is estimated to be about 12 pounds dry solids per day (ppd) and waste sludge about 150 gallons per day (gpd). Waste activated sludge and accumulated solids from the coagulation tank will be pumped to a sludge processing tank with a capacity of 3,000 gallons. The tank will be equipped with two submersible pump aerators rated at 0.4 pound oxygen per hour per hp each and one decant pump. **Table 10** shows the setpoint levels in the sludge processing tank.

TABLE 10
Sludge Processing Tank Setpoints

Level Description	Setpoint* (feet)
Low Water Shutoff (LW float)	3.0
Dual Aeration (C Float – starts lag aeration pump)	4.8
High Level Alarm	5.6
*estimated level from bottom of tank. Tank is 6.1' from bottom to discharge pipe.	

The aerators will shut down periodically for solids settling with supernatant decant to the influent pump station. Most of the volatile solids will be oxidized during digestion. Remaining solids will be removed once or twice a year and hauled to the TCWD wastewater treatment plant for disposal.

2.4.8 Controls

Equipment local control panels will be provided to control processes in the field. These panels include:

- Facility Control Panel
- Influent Pump Panel
- SBR Control Panel
- Coagulation Tank / Sludge Processing Panel
- Filtration Panel
- Treated Water Pump Panel

The equipment panels interface with the Facility Control Panel (FCP). Alarms from the individual panels are sent to the FCP, and are then routed to TCWD's SCADA's system via radio, which will contact the operator and supervisory staff designated to be on-duty or on-call after hours.

2.4.9 Structure

The equipment control panels, generator, and filtration system require controlled environmental conditions. The filter building consists of block wall on three sides, with a wooden roof and doors on the front for access. However, no air conditioning/heating units will be installed and therefore the equipment panels are constructed to meet NEMA 4x requirements.

2.5 Plant Reliability Features

The following paragraphs are from the applicable Sections of Article 8 and Article 10 (60333-60355) of the *Recycled Water Criteria* of the California Code of Regulations, Title 22. The discussion of each reliability feature specific to the CCWRP follows each section. The CCWRP's alarms and analyzer outputs will be connected to a local plant PLC (the Facility Control Panel), which will be tied into TCWD's SCADA system. The SCADA system will dial the operator if an alarm setpoint is triggered.

Section 60333 - Flexibility of Design

> *"The design of process piping, equipment arrangement, and unit structures in the reclamation plant must allow for efficiency and convenience in operation and maintenance and provide flexibility of operation to permit the highest possible degree of treatment to be obtained under varying circumstances."*

The design of the process piping, equipment arrangement and unit structures in the CCWRP allows for efficiency and convenience in operation and maintenance, and provides flexibility of operation to permit the highest possible degree of treatment to be

obtained under varying circumstances. TCWD will have the option of running one or both SBR units at low flows; additionally at full plant flow (7000 gpd) one SBR unit can process the entire flow.

Section 60335 - Alarms

"(a) Alarm devices required for various unit processes as specified in other sections of these regulations shall be installed to provide warning of:

(1) Loss of power from the normal power supply."

The CCWRP will be equipped with the alarms shown in **Table 11**. The alarm device provides warning of loss of power and TCWD's PLC will dial the plant operator. The switchover to standby power will be automatic.

"(2) Failure of a biological treatment process."

Upon equipment failure of a biological treatment process, such as low aeration section, low clarifier section, high water level and/or clarifier pump discharge failure, alarm lights will be activated at the plant site, and TCWD's PLC will dial the plant operator.

"(3) Failure of a disinfection process."

An alarm is activated on low chlorine residual of approximately 5 mg/L. This set point will be adjusted as necessary to ensure that CT is continuously met. When the set point is triggered, the standby chlorine pump will be activated and the operator will be called.

"(4) Failure of a coagulation process."

The coagulation tank is equipped with a high water level alarm and a discharge pump failure alarm. If either should occur, an alarm lamp will be illuminated and the operator

TABLE 11
CRYSTAL CANYON WATER RECLAMATION PLANT
System Alarms and Setpoints

Type	Triggers	Delay	Setpoint
Influent Pump Station			
Emergency High Level (2' freeboard)	Dials operator		8.4 feet
High Level	Dials operator		5.6 feet
Cromaglass SBR Alarms			
High Water Level (AL Float)[2]	-Dials operator - Assumes Surge Cycle & shortens detention time in each part of SBR (not adjustable)[3]	1 minute	6.7 feet[1]
Low Aeration Section (LWDF Float)	-Shuts off aeration/transfer pumps -Dials operator		2.1 feet[1]
Low Clarifier Section Alarm (DF Float)[4]	-Shuts off discharge pumps -Dials operator		3.7 feet[1]
Clarifier Discharge Pump Failure (H Float)[2]	-Dials operator -If water level does not drop within delay period, lag pump is started.	7 minutes	5.5 feet[1]
Coagulation Tank Alarms[5]			
Discharge Pump Failure	-Dials operator	7 minutes	5.6 feet[1] (4" below max water level)
Tank high level alarm	-Dials operator -Starts discharge pumps if not running		3.7 feet[1]
Tank Low Level Alarm	-Dials operator		2 feet[1]
Sludge Processing Alarms			
High level alarm	-Dials operator		5.6 feet[1] (4" below max water level)
Filtration Alarms			
High Turbidity at Filter Effluent	-Dials operator -Reroutes effluent to Emergency Storage Tank	10 minutes	2 NTU
Disinfection Alarms			
Low Chlorine Residual at Contact Basin Effluent	-Dials operator -Starts standby chlorinator	10 minutes	5 mg/L
High Chlorine Residual at Contact Basin Effluent	-Dials operator		15 mg/L
Power Failure Alarm			
Power Failure	-Dials operator -Starts standby generator	10 minutes[6]	

[1] Estimated value.
[2] From Cromaglass O&M Manual pg 8-4
[3] A Surge Cycle reduces process times to the following: transfer (15 minutes); Settle 1 (20 minutes); Sludge Return (5 minutes); Settle 2 (5 minutes) and Discharge (15 minutes). If the Sludge Return Float or Clarifier Discharge Pump Failure is activated, the cycle will start at Settle 1. If the SBR is in Discharge mode, Settle 2 mode or Sludge Return mode, the cycle will start with Discharge.
[4] From Cromaglass O&M Manual pg 8-5
[5] From Cromaglass Coagulation Tank O&M Manual p 2-3
[6] From Cromaglass O&M Manual pg 13-5

will be dialed. The coagulant metering pumps have a failure alarm, which would trigger an alarm at the Facility Control Panel and dial an operator.

"(5) Failure of a filtration process."

An alarm will be activated when high effluent turbidity of greater than 2 NTU occurs. The operator will be dialed and the filter effluent will be rerouted to the coagulation tank until effluent turbidity falls below 2 NTU.

"(6) Any other specific process failure for which warning is required by the regulatory agency."

No other alarms other than those already included are anticipated to be required by the regulatory agencies.

"(b) All required alarm devices shall be independent of the normal power supply of the reclamation plant."

All alarms will be powered by the uninterruptible power supply (UPS).

"(c) The person to be warned shall be the plant operator, superintendent, or any other responsible person designated by the management of the reclamation plant and capable of taking prompt corrective action."

The person to be warned will be the on-duty plant operator. The on-duty plant operator will either be at the plant, at other facilities operated by the TCWD or off-duty on-call. Additional supervisory staff will also be programmed to be contacted via auto-dialer until the alarm is acknowledged.

"(d) Individual alarm devices may be connected to a master alarm to sound at a location where it can be conveniently observed by the attendant. In case the reclamation plant is not attended full time, the alarm(s) shall be

connected to sound at a police station, fire station or other full time service unit with which arrangements have been made to alert the person in charge at times that the reclamation plant is unattended. TCWD Scada System will pick up the alarms and contact the standby operator."

Not applicable to this plant.

Section 60337 - Power Supply

"The power supply shall be provided with one of the following reliability features:

(a) Alarm and standby power source.

(b) Alarm and automatically actuated short-term retention or disposal provisions as specified in Section 60341.

(c) Automatically actuated long-term storage or disposal provisions as specified in Section 60341."

The CCWRP will be provided with alarms, standby power and short term retention of raw wastewater for 24 hours in the influent pump station and emergency storage. Therefore, the plant design satisfies both Section 60337(a) and (b).

Section 60341 - Emergency Storage and/or Disposal

"(a) Where short-term retention or disposal provisions are used as a reliability feature, these shall consist of facilities reserved for the purpose of storing or disposing of untreated or partially treated wastewater for at least a 24-hour period. The facilities shall include all the necessary diversion devices, provisions for odor control, conduits, and pumping and pump back equipment. All of the equipment other than the pump back equipment shall be either independent of the normal power supply or provided with a standby power source."

The CCWRP will have a 4,720 gallon of emergency storage without surcharging the sewer and 9,645 gallons of emergency storage with the sewer surcharged, which will allow for over 24 hours of storage at the average plant flow at build-out of 7,000 gpd. The emergency storage is fed by overflowing a weir wall from the influent wet well.

Pump back equipment will not be installed. If there is wastewater in the EST, TCWD has two options: 1) if the plant is operational and can handle the flow, a portable submersible pump can be plugged into an electrical outlet in the filter building and used to pump the wastewater from the EST into the IPS wetwell side of the tank or 2) if the plant is not operational or cannot handle the flow, use a TCWD vactor truck to haul wastewater to TCWD's Robinson Ranch WRP. A wastewater hauling company can also be contacted to haul wastewater to either TCWD's WRP or to one of the Orange County Sanitation District's two wastewater treatment plants.

Section 60343 - Primary Treatment

"All primary treatment unit processes shall be provided with one of the following reliability features:

(a) Multiple primary treatment units capable of producing primary effluent with one unit not in operation.
(b) Standby primary treatment unit process.
(c) Long-term storage or disposal provisions."

There is no primary treatment being provided at this facility and therefore this section is not applicable to the CCWRP.

Section 60345 - Biological Treatment

"All biological treatment unit processes shall be provided with one of the following reliability features:

(a) Alarm and multiple biological treatment units capable of producing oxidized wastewater with one unit not in operation.

(b) Alarm, short-term retention or disposal provisions, and standby replacement equipment.

(c) Alarm and long-term storage or disposal provisions.

(d) Automatically actuated long-term storage or disposal provisions."

The biological treatment process will be equipped with alarms, short-term retention of raw wastewater. One SBR is capable of treating the entire plant flow of 7000 gpd during a short term emergency requiring the second unit to be offline. Each SBR also has redundant equipment installed: two aeration pumps and clarifier discharge pumps per SBR unit. Standby replacement equipment in the form of the aeration pumps and PLC components will be provided. The aeration pumps and PLC components are being provided as "on the shelf" replacements that are available at TCWD warehouse facilities and are readily accessible for replacement. Therefore the CCWRP will satisfy both Section 60345 (a) and (b).

Section 60347 - Secondary Sedimentation

"All secondary sedimentation unit processes shall be provided with one of the following reliability features:

(a) Multiple sedimentation units capable of treating the entire flow with one unit not in operation.

(b) Standby sedimentation unit process.

(c) Long-term storage or disposal provisions."

The secondary sedimentation is within the SBR biological units and is being provided with alarms and installed redundant pumps as noted in the previous section. Additionally one SBR unit can treat the entire plant flow of 7000 gpd under emergency conditions. Therefore the plant meets Section 60347(a).

Section 60349 - Coagulation

"(a) All coagulation unit processes shall be provided with the following mandatory features for uninterrupted coagulant feed:

(1) Standby feeders,
(2) Adequate chemical storage and conveyance facilities,
(3) Adequate reserve chemical supply, and
(4) Automatic dosage control.

Coagulant will be fed via LMI metering pumps. Two coagulant pumps will be provided and operated on duty/standby mode to satisfy the standby feeder requirement. Coagulant will be bought from the manufacturer in 5 gallon containers or larger and the feed pumps will draw directly from these containers. As shown in **Table 4**, a 5 gallon container of alum will supply the plant for 3 months.

The Facility Control Panel will automatically start a coagulant feed pump when an SBR discharge pump is operating.

(b) All coagulation unit processes shall be provided with one of the following reliability features:

(1) Alarm and multiple coagulation units capable of treating the entire flow with one unit not in operation;
(2) Alarm, short-term retention or disposal provisions, and standby replacement equipment;
(3) Alarm and long-term storage or disposal provisions;
(4) Automatically actuated long-term storage or disposal provisions, or
(5) Alarm and standby coagulation process."

The coagulation tank will be alarmed for high water level and discharge pump failure. Short term retention for 24 hours is available in the influent pump station and

emergency storage tank. Redundant discharge and coagulant metering pumps are available. Therefore, Section 60349(b)(2) is satisfied.

Section 60351 - Filtration

"All filtration unit processes shall be provided with one of the following reliability features:

(a) Alarm and multiple filter units capable of treating the entire flow with one unit not in operation.
(b) Alarm, short-term retention or disposal provisions and standby replacement equipment.
(c) Alarm and long-term storage or disposal provisions.
(d) Automatically actuated long-term storage or disposal provisions.
(e) Alarm and standby filtration unit process."

An alarm will be triggered if filter effluent turbidity is 2 NTU or greater. When triggered, the alarm will call the operator and after a short time delay (approximately 10 minutes), the filter effluent will be sent to the coagulation tank until turbidity falls below 2 NTU. Four filters are being provided. If one filter must be taken offline for maintenance, the filter inlet valve can reduce the flow from 25 gpm to 21 gpm to maintain the maximum flux rate of 5 gpm/ft^2 through the filter units. 21 gpm is greater than the average plant flow of 5 gpm and therefore the filters meet Section 60351(a).

Section 60353 - Disinfection

"(a) All disinfection unit processes where chlorine is used as the disinfectant shall be provided with the following features for uninterrupted chlorine feed:

(1) Standby chlorine supply,
(2) Manifold systems to connect chlorine cylinders,
(3) Chlorine scales, and
(4) Automatic devices for switching to full chlorine cylinders.

(Note: items 2-4 apply to gas chlorination only and are not applicable to this project.)

Automatic residual control of chlorine dosage, automatic measuring and recording of chlorine residual, and hydraulic performance studies may also be required.

(b) All disinfection unit processes where chlorine is used as the disinfectant shall be provided with one of the following reliability features:

(1) Alarm and standby chlorinators;
(2) Alarm, short-term retention or disposal provisions, and standby replacement equipment;
(3) Alarm and long-term storage or disposal provisions;
(4) Automatically actuated long-term storage or disposal provisions; or
(5) Alarm and multiple point chlorination, each with independent power source, separate chlorinator, and separate chlorine supply."

The CCWRP will use sodium hypochlorite as the disinfectant. Two chemical injection pumps will be provided for the plant. One pump will be reserved for standby injection if the low chlorine residual alarm is triggered at the chlorine contact basin effluent, in order to meet Section 60353(a)(1). The chlorine dosage will be controlled automatically based on the contact basin effluent flow and chlorine residual. Total chlorine residual will be continuously analyzed by a Prominent Dulcometer chlorine analyzer and will be continuously recorded (at intervals of 15 minutes or less) by the plant's Facility Control Panel. A tracer study will also be completed to verify the modal contact time in the contact basin. Section 60353(b)(1) and (2) are met as there is an alarm, a standby chlorinator, and short term retention is available both in the treated water storage tank and at the plant headworks.

2.6 Supplemental Water Supply

2.6.1 Plant Potable Water Supply

The CCWRP will use a minimal amount of potable water in the operation of the plant. Two potable water hose bibs will be installed at the plant, one at each side of the filter building. An emergency eye wash is also installed in the filter building. It is anticipated that the daily potable water use for plant operations will be below 10 gallons.

The potable water supply at the plant will be served by TCWD through a 1-inch connection in the southwest corner of the plant that will flow through a Reduced Pressure Principle (RP) backflow prevention device. The potable water line on-site is copper. All other on-site piping is schedule 40 PVC. Therefore the potable water line will be easy to determine

2.6.2 Landscape Irrigation

The Oaks at Trabuco will use tertiary effluent from the CCWRP for landscape irrigation. The effluent storage tank will be supplemented with potable water through an air gap should irrigation demands exceed treated effluent quantities. Excess effluent will be hauled offsite to TCWD's other wastewater plant or used for other Title 22 disinfected tertiary 2.2 uses.

2.7 Monitoring and Reporting

Because water applied to the land is not being discharged to navigable water of the United States, the provisions of the Federal Water Pollution Control Act and Amendments do not govern this type of discharge. However, Division 7 of the California Water Code gives the RWQCB authority to establish and enforce waste discharge requirements for land disposal of treated wastewater.

RWQCB Addendum No. 3 to Order 97-52 contains the waste discharge requirements for the continuous discharge of up to 7,000 gpd of treated wastewater to irrigate the landscape at the Oaks at Trabuco. In addition to the waste discharge requirements established by Order No. 97-52, the California Department of Public Health and/or the Orange County Department of Public Health may require compliance with additional reuse requirements in the future.

Order No. 97-52 contains the waste discharge requirements that all treated wastewater from the Crystal Canyon WRP must satisfy before it can legally be discharged to the disposal area (landscaping). These requirements were established in order to ensure that the goals of the Water Quality Control Plan and the provisions of Division 7 of the California Water Code are not adversely affected by the discharge of treated wastewater to the disposal area. The discharge specifications established are summarized in Order 97-52, Section 10, Table 6, page 6.

In summary, the major waste discharge requirements established for the effluent from the Crystal Canyon WRP by Order No. 97-52 are:

1. The discharge for landscape irrigation and other land disposal projects of an effluent containing pollutants in excess the limits listed in **Table 12** is prohibited.

2. Total coliform concentration of recycled water produced shall not exceed a MPN (most probably number) of 2.2 per 100 mL, utilizing the bacteriological results of the last seven days for which analyses have been completed and shall not exceed a MPN of 23 per 100 mL in more than one sample in any 30-day period.

3. Turbidity concentration of recycled water effluent shall not exceed daily average value of 2 NTU (Nephelometric turbidity unit), shall not exceed 5 NTU more than 5% of the time during a 24-hour period and shall not exceed 10 NTU at any one time.

TABLE 12
CRYSTAL CANYON WATER RECLAMATION PLANT
Discharge Limits

CONSTITUENT	12 MONTH AVERAGE (MG/L)[1]	DAILY MAXIMUM (MG/L)[2]
Biochemical Oxygen Demand (BOD_5 @ 20 degrees C)	30	45
Total Suspended Solids	30	45
pH (within limits shown at all times)	6.0 – 9.0	
Total Dissolved Solids	1,000	1,100
Chloride	375	400
Sulfate	400	450
% Sodium	60	65
Nitrate	45	50
Iron	0.3	0.4
Manganese	0.05	0.06
MBAS	0.5	0.6
Boron	0.67	0.75
Odor	NONE	NONE
Aluminum	1.0	See Note 3.
Arsenic	0.05	See Note 3.
Antimony	0.006	See Note 3.
Barium	1.0	See Note 3.
Beryllium	0.004	See Note 3.
Cadmium	0.005	See Note 3.
Chromium	0.05	See Note 3.
Cyanide	0.2	See Note 3.
Mercury	0.002	See Note 3.
Nickel	0.1	See Note 3.
Selenium	0.05	See Note 3.
Thallium	0.002	See Note 3.

1. The 12-month average effluent limitations shall apply to the arithmetic mean of the results of all samples collected during any 12 consecutive month period.
2. The daily maximum effluent limitation shall apply to the results of a single composite or grab sample.
3. Daily Maximum Value left blank in Order No. 97-52.

4. Disinfection must comply with all requirements of the California Code of Regulations, Title 22, Division 4. Disinfection shall be accomplished by a chlorine disinfection process that provides a CT (chlorine concentration times modal contact time) value of not less than 450 mg-min/liter at all times with a modal chlorine contact time of at least 90 minutes based on peak design flow.

2.7.1 Monitoring

Monitoring and reporting shall be in accordance with Order No. 97-52, Attachment No. 1, Table B. These requirements are provided in **Table 13** of this Title 22 Certification report. CT and turbidity reporting shall be submitted monthly to SOCWA, formerly SOCRA, by the 15th of the following month as required by the Order.

The turbidity of the filter effluent will be measured continuously with a Hach 1720E analyzer to ensure the plant is in conformance with the discharge requirements established by Order No. 97-52 for CCWRP and the Title 22 guidelines. The daily average, daily 95th percentile and daily maximum turbidity values will be reported monthly to the SOCWA.

The chlorine residual at the chlorine contact basin (CCB) effluent shall be continuously measured using a Prominent Dulcometer total chlorine analyzer. The flow rate shall also be continuously measured at the CCB effluent. CT will be calculated daily.

The turbidimeters and chlorine residual analyzers will be calibrated on a quarterly basis.

2.7.2 Disposal Log

TCWD shall submit an annual report listing the dates, volumes, and disposal locations for biosolids, recycled water, and wastewater discharged or transported from the CCWRP.

TABLE 13
CRYSTAL CANYON WATER RECLAMATION PLANT
Sampling and Reporting Requirements

DETERMINATION	UNITS	SAMPLE TYPE	SAMPLING FREQUENCY [1]	REPORTING FREQUENCY
Flowrate	MGD	Continuous	Continuous	Monthly
Biochemical Oxygen Demand (5-Day @ 20 degrees C)	mg/l	Composite	1x/week	Monthly
Total Suspended Solids	mg/l	Composite	1x/week	Monthly
Volatile Suspended Solids	mg/l	Composite	1x/week	Monthly
pH	UNIT	Composite	1x/week	Monthly
Total Dissolved Solids	mg/l	Composite	Quarterly	Quarterly
Chloride	mg/l	Composite	Quarterly	Quarterly
Adjusted Sodium Adsorption Ratio	2	Composite	Quarterly	Quarterly
Sulfate	mg/l	Composite	Quarterly	Quarterly
Iron	mg/l	Composite	Quarterly	Quarterly
Manganese	mg/l	Composite	Quarterly	Quarterly
Methylene Blue Active Substances	mg/l	Composite	Quarterly	Quarterly
Boron	mg/l	Composite	Quarterly	Quarterly
Aluminum	mg/l	Composite	Annual	Annual
Arsenic	mg/l	Composite	Annual	Annual
Barium	mg/l	Composite	Annual	Annual
Cadmium	mg/l	Composite	Annual	Annual
Chromium	mg/l	Composite	Annual	Annual
Copper	mg/l	Composite	Annual	Annual
Lead	mg/l	Composite	Annual	Annual
Mercury	mg/l	Composite	Annual	Annual
Selenium	mg/l	Composite	Annual	Annual
Silver	mg/l	Composite	Annual	Annual
Zinc	mg/l	Composite	Annual	Annual
Nitrate-Nitrogen	mg/l	Composite	Annual	Annual
Total Organic Carbon	mg/l	Composite	Quarterly	Quarterly
Chlorine Residual	mg/l	Continuous	Continuous	Monthly
Coliform	MPN/100 mL	Grab	Daily	Monthly
Turbidity	NTU	Continuous	Continuous	Monthly

1 The sampling frequency shall be increased for any constituent that exceeds the limit specified by Discharge Specification B.1 of Order No. 97-52. The increased frequencies shall be as follows:
1x/week to 3x/week; Quarterly to monthly; Annually to quarterly
The increased sampling frequency shall continue until compliance is achieved with the effluent limitations for three consecutive time frames (i.e. three weeks, three months or three quarters)

2 The adjusted sodium adsorption ratio is calculated as follows:

Adjusted Sodium Ration (Adj SAR): $Na/(\sqrt{((Ca_x + Mg)/2)})$,

Where: Na and Mg are in milliequivalent per liter (me/l)

Ca_x is a modified Ca value calculated using Table 3-2 contained in *Irrigation with Reclaimed Municipal Wastewater, a Guidance Manual*.

Notes: MGD = million gallons per day, mg/l = milligrams per liter, MPN/100mL = Most Probable Number per 100 milliliters

2.8 Contingency Plan

2.8.1 Influent Pump Station

In the event of a system failure, raw influent wastewater can be stored in the influent pump station wet well system and emergency overflow tank with a total 6,310 gallons of storage or 9,645 gallons of storage with the sewer surcharged. If there is a failure in a downstream facility, the flows can be held at the treated water reservoir tank which has a capacity of 20,000 gallons.

2.8.2 Secondary/Tertiary Treatment Processes

A turbidity meter will be used to monitor the tertiary effluent quality. If the water does not meet turbidity requirements as described above, the autodialer will dial the operator and the Facility Control Panel will reroute the high turbidity effluent via a 3-way valve on the filter effluent line to the Emergency Storage Tank. If the coagulation tank reaches high level alarm, the plant will shut down and wastewater will be stored in the IPS and EST until the problem is resolved.

The chlorine residual analyzer located at the effluent end of the chlorine contact basin will be used to monitor for adequate chlorine residual in the plant effluent. If a residual of 5 mg/L is not maintained an alarm will be sent and the effluent pumps will be shut off. The water surface in the effluent storage tank will rise, due to the pumps being shut down, to an alarm high level. The plant will shut down, thereby stopping further flow from entering the effluent storage tank. Flow coming into the plant will fill the IPS wetwell and overflow to the EST.

The operation personnel that respond to the alarm signal will then determine the cause of the water quality failure and resolve the issue as soon as possible. Once the issue has been resolved, the operation personnel will then test the water that has been collected in the effluent storage tank. If necessary, the operator will dose the treated

water storage tank with chlorine and wait until CT has been met prior to discharge to the irrigation system.

The names and phone numbers of the responsible TCWD staff members will be included in the CCWRP Operations Manual as well as be accessible at the plant.

Under no circumstances will the treatment facilities be bypassed and be allowed to flow directly to the effluent use area.

2.9 Cross-Connection Control

The potable water supply at the plant will be served by the TCWD through a 1-inch connection on the west side of the plant that will feed the plant through an RP device. The water will then be connected into the plant's potable water system. The potable water line on-site is copper. All other on-site piping is schedule 40 PVC. Therefore the potable water line will be easy to determine. All exposed lines will also be labeled with color coded plastic identifying tape with text indicating the contents and a flow direction arrow.

It is anticipated that an annual cross-connection test will be performed to ensure no inadvertent cross connections have been made. This will consist of turning off the valve on the plant potable water feed at the District's meter. The eye wash shower system and hose bibs will be opened up for a period of 2 minutes. This time period should be sufficient to drain the potable water system within the CCWRP site. If the water stops flowing through the eye wash/shower system will indicate that there is not a cross connection within the system.

Monthly inspections of the plant's recycled water system shall be held to assure proper operation and adequate cross-connection control in accordance with TCWD's Rules and Regulations and per the Water Recycling Criteria (CCR, Title 22, Division 4,

Chapter 3). A copy of the TCWD Rules and Regulations governing the use of recycled water will be kept at the plant site.

The Oaks at Trabuco use site will have a use site supervisor, hired by the HOA. Additionally, an ongoing employee training program that will entail the following components: procedures used when working with recycled water, rules and regulations associated with recycled water use, hazards of working with recycled water, and basic cross-connection and backflow principles and procedures will be provided.

The 1997 AWWA "Guidelines for the On-Site Retrofit of Facilities Using Disinfected Tertiary Recycled Water" will be followed when converting the site to recycled water. Identification of irrigation system outlets, requirements for site signage, minimization of overspray and runoff, physical separation requirements, and other applicable requirements will be followed per the Guidelines and Title 22. Inspections during the retrofit process shall meet section 4.11 of the Guidelines:

- Overspray and runoff shall be identified and minimized by necessary alterations.
- Existing potable POCs to be eliminated shall be inspected and recorded before being buried or covered.
- All backflow protection will be removed from the irrigation system.
- Hose bibs and unnecessary quick couplers shall be removed and capped or plugged.
- Purple pipe and/or taping should be inspected before it is buried or covered.
- A thorough cross connection test must be performed.
- All backflow prevention requirements on potable water service(s) shall be completed before activating recycled water service. Backflow assemblies shall be tested and in proper working condition.

3 TRANSMISSION AND DISTRIBUTION SYSTEMS

A map is provided in **Appendix C** showing the location of the transmission facilities and the areas where the recycled water is going to be used. The system is currently fed by the potable water meter noted on the map, which is immediately next to the Crystal Canyon WRP. The existing potable water meter and RP device will be used to supply the two hose bibs and eyewash/shower in the CCWRP filter building. The discharge line from the irrigation pumps at the treated water storage tank will be tied into the existing irrigation feed location. Two irrigation meters will be installed on the line from the irrigation pumps. The first will be for feeding the existing common areas and the second meter will be for the irrigation that is on-site at the CCWRP site.

The current irrigation system uses potable water and was installed with standard white PVC pipe. This irrigation system is to be converted to recycled water use once plant effluent is available. A shut down test will be conducted prior to converting the site to recycled water. Existing exposed valve boxes, vaults, quick coupling valves, outlets and related appurtenances will be either painted purple (if applicable) or will be fitted with purple identifiers or purple tags bearing the words “Recycled Water – do not drink” in English and Spanish. If a white irrigation pipe is replaced, it will be replaced with purple pipe. If a white irrigation pipe is exposed, but not replaced, the length exposed will be laid with purple tape. All new recycled water construction will be purple or be painted purple. Signage will be posted throughout the development notifying the public of the use of recycled water. Suggested signage locations are noted on the map in **Appendix C**. Sign locations will be adjusted as necessary prior to project start-up.

4 USE AREAS

The use areas where irrigation with reuse water is practiced are identified in **Appendix C**. It is anticipated that all of the effluent generated by the CCWRP will be used to irrigate the acres of landscaping at the Oaks at Trabuco. The recycled water systems are totally independent/isolated from all other irrigation and drinking water systems.

The responsible party for distribution and use of the recycled water is TCWD. There will be an on-site supervisor for the common area irrigation, who will be employed by the Oaks at Trabuco HOA. TCWD will be responsible for the irrigation system on the CCWRP site. The operators running the plant have been trained in the areas of recycled water system installation, maintenance, repair, identification and cross-connection requirements, plus personnel training and protection. They have trained their employees that are involved with recycled water systems.

Wherever possible, the development will attempt to maintain a 10 foot separation between potable water and recycled water sprinkler heads to help prevent cross connections if there is no wall separating the two irrigation areas.

4.1 Irrigation

Recycled water is applied via spray and drip irrigation on the acres of turf and ground covering at the Oaks at Trabuco. Recycled water warning signs will be posted throughout the tract informing the public the hazards of consuming the irrigation water for drinking purposes. No drinking water fountains or water supply wells are located within or near the irrigation area.

4.2 Impoundments

Not applicable.

4.3 Cooling

Not applicable.

4.4 Groundwater Recharge

Not applicable.

4.5 Dual Plumbed Use Areas

Not applicable.

4.6 Other Industrial Uses

Not applicable.

4.7 Use Area Design

Not applicable.

4.8 Use Area Inspections and Monitoring

Along the footpaths, overspray will be monitored to verify little or no water reaches the paths.

4.9 Employee Training

The responsible party for distribution and use of recycled water is the TCWD. The manager of the CCWRP and his/her staff will have been trained in the areas of recycled water system installation, maintenance, repair, identification and cross-connection requirements.

4.10 Rules and Regulations

There are no procedures, restrictions or other requirements imposed on the Oaks at Trabuco with respect to the irrigation practices described in this document other than those needed to maintain compliance with the *Recycled Water Criteria* contained in Sections 60301 through 60355 of the California Code of Regulations, Title 22 and the TCWD Rules and Regulations. A copy of the TCWD Rules and Regulations is included as **Appendix F.**

REFERENCES

George Mack Wesner, *Engineering Report, Wastewater Treatment and Reuse System, Oaks at Trabuco*, October 2003.

California Regional Water Quality Control Board, Orange San Diego Region. Order No. 97-52, *Waste Discharge and Water Recycling Requirements for the Production and Purveyance of Recycled Water by Member Agencies of the South Orange County Reclamation Authority, Orange County,* September 12, 1992

California Regional Water Quality Control Board, San Diego Region. Addendum No. 3 to Order 97-52, *Addition of Goren Wastewater Treatment Plant under SOCWA, Orange County*, September 9, 2004 (Note Goren Wastewater Treatment Plant designation has changed to Crystal Canyon Water Reclamation Plant)

California Department of Health Services, Division of Drinking Water and Environmental Management, Drinking Water Program, Recycled Water Unit; *The Purple Book – California Health Laws Related to Recycled Water, Excerpts from the Health and Safety Code, Water Code and Titles 22 and 17 of the California Code of Regulations,* June 2001.

California Department of Health Services, Division of Drinking Water and Environmental Management, Drinking Water Program, Recycled Water Unit; *Guidelines for the Preparation of an Engineering Report for the Production, Distribution and Use of Recycled Water,* March 2001.

California Department of Health Services, Division of Drinking Water and Environmental Management, Drinking Water Program, Recycled Water Unit; *Treatment Technology Report for Recycled Water*, September 2004

Appendix B: Email Correspondence between Woodard & Curran and TCWD

Jansen, Christopher

From: Scott Goldman
Sent: Thursday, January 11, 2024 3:01 PM
To: Fernando Paludi; Bruce Goren; Lorrie Lausten; Michael Perea
Cc: Oliver Saeby
Subject: RE: Irrigation Plan request for DDW
Attachments: CrystalCanyon_LAA_Oct2018.pdf; Crystal Canyon Disposal Areas - Aerial Map.pdf; 2019 Jan Infiltration Test Results in LAA.pdf

Fernando,

Most the work we have done over the past few years related to the identified disposal site has been to select a site that would be suitable for undisinfected secondary effluent, which has more restrictions than disinfected tertiary recycled water. We looked at several sites (see attached), but this open space area was the only one large enough. Use area restrictions for disinfected tertiary and undisinfected secondary effluent from Title 22 are as follows:

(e) Any use of recycled water shall comply with the following:

(1) Any irrigation runoff shall be confined to the recycled water use area, unless the runoff does not pose a public health threat and is authorized by the regulatory agency.

(2) Spray, mist, or runoff shall not enter dwellings, designated outdoor eating areas, or food handling facilities.

(3) Drinking water fountains shall be protected against contact with recycled water spray, mist, or runoff.

(f) No spray irrigation of any recycled water, other than disinfected tertiary recycled water, shall take place within 100 feet of a residence or a place where public exposure could be similar to that of a park, playground, or school yard.

There are no setback requirements from residential areas for disinfected tertiary effluent. There are additional setbacks for any effluent spray near domestic water supply wells, but those are not applicable in this case. The selected area is not accessible to the public so there are no signage requirements, but the District can still choose to provide.

At this time we are only asking for a disposal site for disinfected tertiary to keep things simpler, but the selected disposal site can be converted at a later date to land application or percolation of undisinfected secondary. We provided for a setback of 150 feet for the proposed land application area within the open space even though only 100 feet is required by Title 22.

The area is sized for spray irrigation for the full 7,000 gpd (8 afy) using an application rate of 3.8 AF/acre resulting in 2.1 acres.

We also looked at percolation rates in the area and Leighton did an infiltration test which resulted in a rate of around 2 feet per day (see attached). Therefore a percolation pond of around 500 square feet would also be adequate. Best practices would be to double this size and provide two perc ponds to allow the District to take one out of service and account for rainfall without impacting disposal capacity.

Either spray irrigation or percolation will work on this site. Our request to DDW is to ask for permission to modify the existing Title 22 Engineering Report just in reference to the location of the irrigation. This should be relatively simple, but could still take a month or so to get a response.

Let me know if you have any other questions and/or if you would still like a meeting to discuss further.

Scott

From: Fernando Paludi <fpaludi@tcwd.ca.gov>
Date: Wednesday, January 10, 2024 at 5:07 PM
To: Scott Goldman <sgoldman@woodardcurran.com>, Lorrie Lausten <llausten@tcwd.ca.gov>, Michael Perea <MPerea@tcwd.ca.gov>
Cc: Bruce Goren <bggoren@picoainc.com>, Oliver Saeby <OSaeby@woodardcurran.com>, Martha De Maria y Campos <mdemaria@woodardcurran.com>, Kyle Tracy <KTracy@woodardcurran.com>
Subject: RE: Irrigation Plan request for DDW

Scott, TCWD is not comfortable making this request of DDW until we are more familiar with and comfortable with the change in application area. Can we set up a meeting to review your plan?

Fernando Paludi
General Manager

From: Scott Goldman <sgoldman@woodardcurran.com>
Sent: Monday, January 8, 2024 10:56 AM
To: Lorrie Lausten <llausten@tcwd.ca.gov>; Michael Perea <MPerea@tcwd.ca.gov>
Cc: Fernando Paludi <fpaludi@tcwd.ca.gov>; Bruce Goren <bggoren@picoainc.com>; Oliver Saeby <OSaeby@woodardcurran.com>; Martha De Maria y Campos <mdemaria@woodardcurran.com>; Kyle Tracy <KTracy@woodardcurran.com>
Subject: Irrigation Plan request for DDW

Attached is a draft letter to send to DDW requesting a change in the permitted area for irrigation of the recycled water from the Crystal Canyon WRF. Please review and let us know if you have any comments before we submit to DDW. Please let us know by the end of the week if possible.

This request is only to change the location of the irrigation and there is no requested change in the quality of the recycled water, which is still to be filtered and disinfected. Once the WRF is in operation and District staff is comfortable with the facility a request to change the water quality can be initiated.

Thanks, Scott

Scott Goldman, PE, BCEE
Senior Environmental Engineer | Senior Principal

Woodard & Curran

949.420.53149 714.292.6488 woodardcurran.com

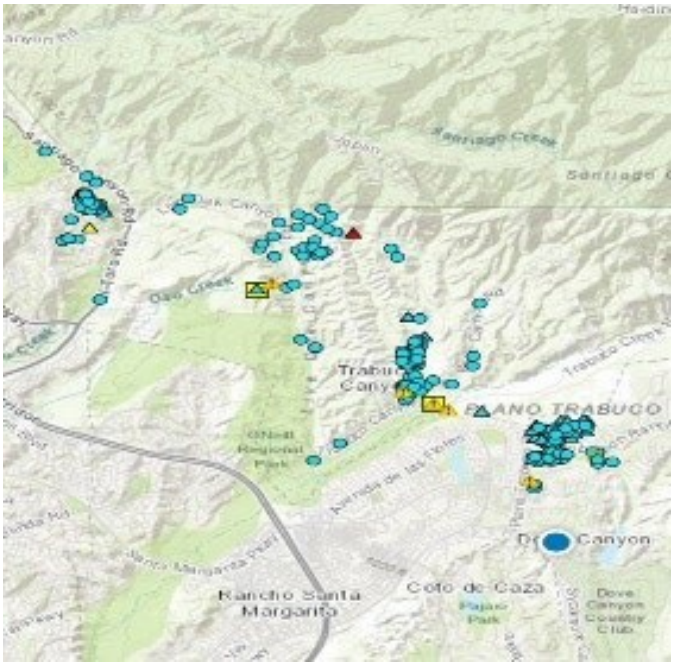
530 Technology Drive, Suite 100, Irvine, CA 92618

TRABUCO CANYON WATER DISTRICT
ENGINEERING/OPERATIONAL COMMITTEE MEETING | AUGUST 7, 2024

ENGINEERING MATTERS
ITEM 6: LEAD AND COPPER RULE REVISIONS (LCRR) SERVICE LINE INVENTORIES PROJECT

The United States Environmental Protection Agency (USEPA) published the Lead and Copper Rule Revisions (LCRR) Final Rule on January 15, 2021, with an effective date of December 17, 2021. Included in the LCRR are requirements for all water systems to complete a Service Line Inventory (SLI) regardless ownership of the service line (i.e., including private property); and if service lines are found to contain or possibly contain lead, to also submit a Service Line Replacement Plan to the State (which has been delegated primary enforcement authority from the USEPA) by October 16, 2024. In March 2023, water industry guidance for completing the LCRR inventory was released. Service connections installed after January 1, 1986, are assumed not to contain lead; however, the rule requires agencies to complete a desktop inventory on each service.

TCWD worked with MWDOC on a shared services contract with other Orange County agencies on the project. MWDOC selected Hazen to perform the LCRR work. The District opted to do the field verification with internal staff. Water Operations and the Engineering Intern conducted the 247 field inspections that were approved by the Department of Drinking Water (DDW). TCWD staff started the field verification May 21, 2024, and it was completed by the end of July 2024. Staff used ArcGIS Field Maps application (see photo) to complete the verifications. Staff did not find any lead services (utility or owner side). As a result of this internal effort, TCWD saved $73,000 on the contract.



GIS Field Maps App

FUNDING SOURCE:
General Fund

FISCAL IMPACT (PROJECT BUDGET):
$103,988

ENVIRONMENTAL COMPLIANCE:
Not Applicable

TRABUCO CANYON WATER DISTRICT
ENGINEERING/OPERATIONAL COMMITTEE MEETING | AUGUST 7, 2024

RECOMMENDED ACTION:
Committee to receive project status updates at the time of the Committee Meeting.

EXHIBIT(S):
None

CONTACTS (staff responsible): PALUDI/PEREA/LAUSTEN

TRABUCO CANYON WATER DISTRICT
ENGINEERING/OPERATIONAL COMMITTEE MEETING | AUGUST 7, 2024

ENGINEERING MATTERS
ITEM 7: BELL CANYON AND BARNBURG SEWER LIFT STATION EASEMENT

Trabuco Canyon Water District (District) owns and operates the Bell Canyon and Barnburg Sewer Lift Stations (SLS) in the Dove Canyon community.

The stations were constructed in the early 1990s and the temporary easements during construction were recorded in 1987, which granted easements to the District over the entire Dove Canyon development, until such time that the owner would grant permanent easements and right of ways to the District. The pipeline easements were dedicated on the tract map, but the sewer lift stations were never converted to permanent easements nor dedicated in fee. District staff worked with the Dove Canyon Master Association on acquiring easements which are included as Exhibit 1.

FUNDING SOURCE:
Capital Improvement Program

FISCAL IMPACT (PROJECT BUDGET):
$15,000 for survey and easement preparation.

ENVIRONMENTAL COMPLIANCE:
Not Applicable

RECOMMENDED ACTION:
Recommend that the Board of Directors receive the Grants of Easement to the Trabuco Canyon Water District by Dove Canyon Master Association for the Bell Canyon and Barnburg Sewer Lift Stations and authorize the District Secretary to execute said Grants of Easement (Action Calendar).

EXHIBIT(S):
1. Grants of Easement

CONTACTS (staff responsible): PALUDI/LAUSTEN

RECORDING REQUESTED BY AND
WHEN RECORDED MAIL TO:

Michael Perea, Secretary
Trabuco Canyon Water District
32003 Dove Canyon Dr.
Trabuco Canyon, California 92679
TCWD Doc. _____

ASSESSOR'S PARCEL NO.:_____

MAIL TAX STATEMENTS TO ADDRESS ABOVE

(Space Above For Recorder's Use)

EXEMPT from Documentary Transfer Tax per Revenue and Taxation Code §11922.

FREE RECORDING REQUESTED -- Essential to acquisition by Trabuco Canyon Water District (Government Code §§6103 & 27383)

GRANT OF EASEMENT TO THE TRABUCO CANYON WATER DISTRICT BY DOVE CANYON MASTER ASSOCIATION FOR BELL CANYON WASTEWATER LIFT STATION

1. FOR A VALUABLE CONSIDERATION, receipt of which is hereby acknowledged, DOVE CANYON MASTER ASSOCIATION, a nonprofit mutual benefit corporation, ("Grantor"), hereby grants and conveys to TRABUCO CANYON WATER DISTRICT, a County water district formed and existing pursuant to Division 12, Sections 30000-33901 of the California Water Code ("Grantee"), and its successors and assigns, a perpetual non-exclusive easement and right-of-way for the "Bell Canyon Sewer Lift Station" facilities and purposes.

2. This easement shall include, but not by way of limitation, the right to install, construct, reconstruct, remove, and replace, renew, inspect, maintain, repair, improve, and relocate sewer pipelines, lift station equipment, electrical equipment, emergency electrical generator and together with incidental appurtenances, connections and structures in, over, under, upon, along, through and across the respective portions of the real property hereinafter the following described real property (the "Easement Area") in the County of Orange, State of California. The Easement Area shall not be used for any purpose other than that expressly set forth in this Grant of Easement.

3. Said easement shall lie in, over, under, upon, along, through and across that certain real property situated in Unincorporated Territory, Orange County, described in Exhibit "A" and depicted in Exhibit "B", both of which are attached hereto and by this reference incorporated herein (the "Easement Area"),

4. This easement shall include the right to enter upon and to pass and repass over and along the Easement Area for the construction, reconstruction, operation, and maintenance of the facilities to be constructed in the Easement Area by Grantee or its successors and assigns, its officers, agents, and employees and by persons under contract with Grantee or its successors and assigns.

5. Grantee expressly agrees to defend, indemnify and hold the Grantor, Grantor's management agent, and their agents, employees, directors, officers, committees and committee members, members, attorneys, insurers and the like, free and harmless from claims, demands, suits, causes of action, damage, and loss which arise out of or are in any way connected with the performance of work, maintenance of improvements, or exercise of any other right or obligation expressed within or related to this Grant of Easement. This indemnity will not extend to claims arising from the sole negligence or sole willful misconduct or gross negligence of Grantor.

6. Grantee shall not suffer or permit to be enforced against the Easement Area, or any part thereof, any mechanics', laborers', materialmen's, contractors', subcontractors', or any other liens arising from any claims for damages growing out of any work of construction or improvement performed in or under the Easement Area by or for Grantee, or any other claim or demand howsoever the same may arise, but Grantee shall pay or cause to be paid all of said liens, claims, and demands before any action is brought to enforce the same against the Easement Area.

7. Grantee agrees at its sole expense to repair to the original functioning state or replace all those improvements or other things, including without limitation, streets, alleys, roadways, landscaping and other growing things, sidewalks, fences, pipelines, and conduits upon, under, over, across or along Grantor's property, including but not limited to the Easement Area, which are removed or damaged in connection with the exercise by Grantee of the rights herein granted. Any such repair or replacement shall be accomplished promptly following completion of the work of Grantee causing the damage or removal.

EXHIBIT "A"

LEGAL DESCRIPTION

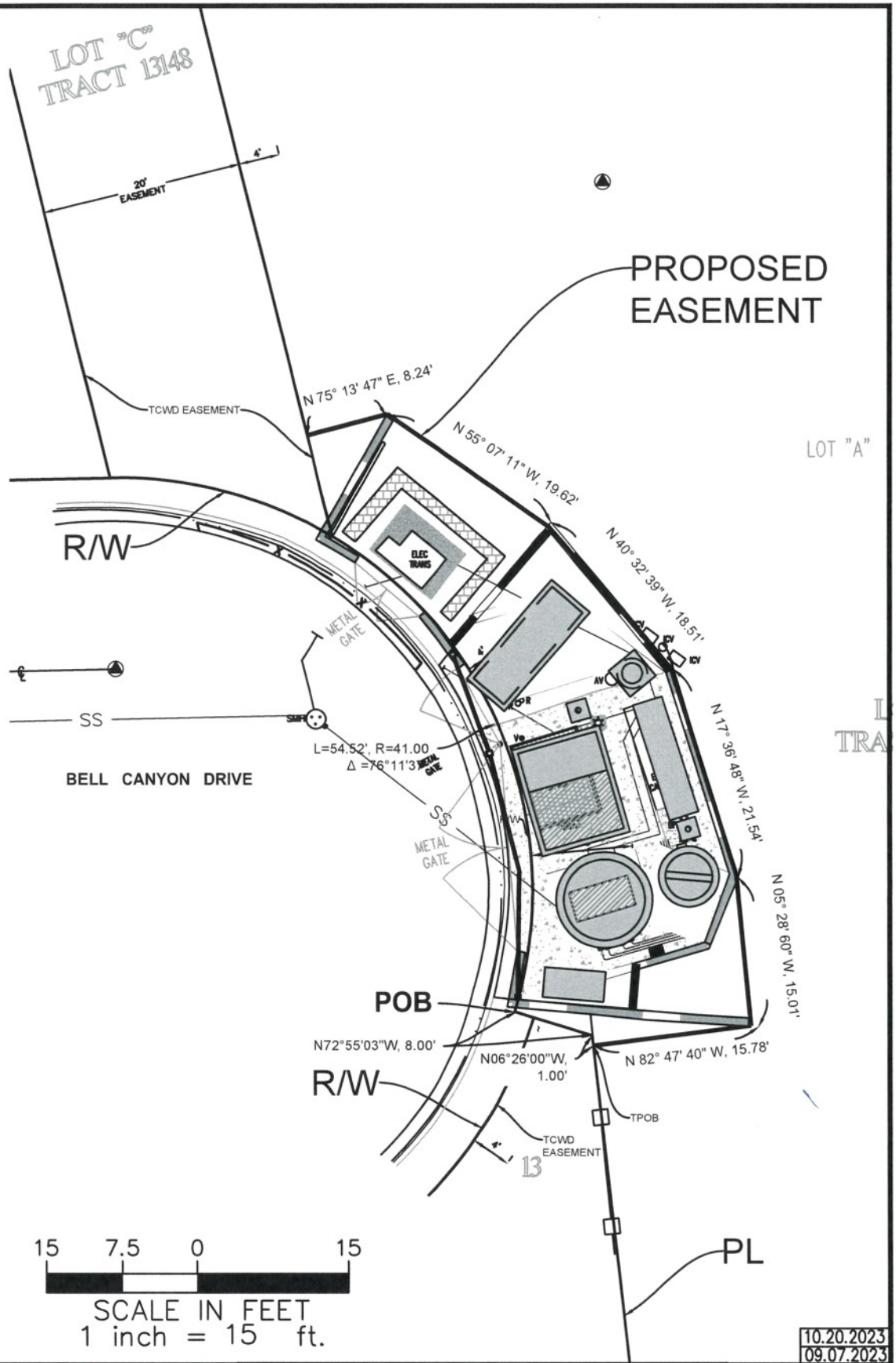
THAT CERTAIN PARCEL OF LAND IN THE UNINCORPORATED TERRITORY OF THE COUNTY OF ORANGE, STATE OF CALIFORNIA LYING WITHIN THE PARCEL OF LAND AS SHOWN ON TRACT MAP NO. 13148 RECORDED ON MAY 25, 1990, IN BOOK 661, PAGES 5 - 8 OF SAID COUNTY, MORE PARTICULLARLY DESCRIBED AS FOLLOWS:

POINT OF BEGINNING **(POB)** AT THE MOST NORTHWESTERLY CORNER OF LOT 13 OF SAID PARCEL OF LAND AS SHOWN ON TRACT NO. 13148, SAID CORNER BEING ALONG THE RIGHT-OF-WAY OF BELL CANYON DRIVE. THENCE ALONG A NON-TANGENT CURVE, A DISTANCE OF 54.52 FEET CONCAVE NORTHWESTERLY, HAVING A RADIUS OF 41.00 FEET, A RADIAL LINE TO SAID POINT BEARS N 19° 38' 57" E. THENCE N 13°56'00" W A DISTANCE OF 10.36 FEET; THENCE N7 6°04'00" E, A DISTANCE OF 8.09 FEET; THENCE N 57°06'21" E, A DISTANCE OF 19.53 FEET; THENCE N 39°42'43" W, A DISTANCE OF 18.97 FEET; THENCE N 17°14'17" W, A DISTANCE OF 21.64 FEET; THENCE N 07°35'33" W, A DISTANCE OF 15.00 FEET; THENCE N 83°34'00" W, A DISTANCE OF 16.41 FEET; THENCE N 06°26'00" W, A DISTANCE OF 1.00 FEET; THENCE N 72°55'00" W, A DISTANCE OF 8.00 FEET; TO THE POB.

SUBJECT TO COVENANTS, CONDITIONS AND RESTRICTIONS, IF ANY.

MORE PARTICULARLY SHOWN ON EXHIBIT "B" ATTACHED HERETO AND BY THIS REFERENCE MADE A PART HEREOF.

5-24-24



10.20.2023
09.07.2023

BELL CANYON LIFT STATION
EASEMENT AREA
TRABUCO CANYON, CA

DMc ENGINEERING
CIVIL ■ SURVEYING ■ PLANNING ■ CONSTRUCTION
Tel: (949) 753-9393
18 Technology Drive, Suite 100, Irvine, California 92618
E-Mail: dmc@dmceng.com ♦ www.dmceng.com

DATE: 09.07.2023
DRAFTED: AB
CHECKED: DJM
SHEET: 1 OF 1

IN WITNESS WHEREOF, the undersigned has executed this Grant of Easement as of the date written.

DATED: _____

Trabuco Canyon Water District, a County water district formed and existing pursuant to Division 12, Sections 30000-33901 of the California Water Code ("Grantee")

By: _____
Print name: _____
Title: _____

By: _____
Print name: _____
Title: _____

Dove Canyon Master Association, a nonprofit mutual benefit corporation ("Grantor")

By: _____
Robert Murphy, President
President, Board of Directors

By: _____
Neil Phillips
Vice President, Board of Directors

See Attached Certificate

CALIFORNIA ACKNOWLEDGMENT CIVIL CODE § 1189

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California
County of ORANGE

On JUNE 27, 2024 before me, MICHAEL MEMLEY, NOTARY PUBLIC,
Date *Here Insert Name and Title of the Officer*

personally appeared NEIL PHILLIPS
Name(s) of Signer(s)

who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/~~are~~ subscribed to the within instrument and acknowledged to me that he/~~she/they~~ executed the same in his/~~her/their~~ authorized capacity(~~ies~~), and that by his/~~her/their~~ signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

MICHAEL MEMLEY
Notary Public - California
Orange County
Commission # 2443183
My Comm. Expires Apr 10, 2027

Place Notary Seal and/or Stamp Above

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature Michael Memley, NOTARY PUBLIC
Signature of Notary Public

OPTIONAL

Completing this information can deter alteration of the document or fraudulent reattachment of this form to an unintended document.

Description of Attached Document

Title or Type of Document: _____

Document Date: _____ Number of Pages: _____

Signer(s) Other Than Named Above: _____

Capacity(ies) Claimed by Signer(s)

Signer's Name: _____	Signer's Name: _____
☐ Corporate Officer – Title(s): _____	☐ Corporate Officer – Title(s): _____
☐ Partner – ☐ Limited ☐ General	☐ Partner – ☐ Limited ☐ General
☐ Individual ☐ Attorney in Fact	☐ Individual ☐ Attorney in Fact
☐ Trustee ☐ Guardian or Conservator	☐ Trustee ☐ Guardian or Conservator
☐ Other: _____	☐ Other: _____
Signer is Representing: _____	Signer is Representing: _____

NOTARY ACKNOWLEDGEMENT

STATE OF CALIFORNIA)
)
COUNTY OF ORANGE)

On JUNE 25, 2024, before me, MICHAEL MEMLEY, NOTARY PUBLIC, a Notary Public in and for said State, personally appeared ROBERT MURPHY, who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/~~are~~ subscribed to the within instrument and acknowledged to me that he/~~she/they~~ executed the same in his/~~her/their~~ authorized capacity(~~ies~~), and that by his/~~her/their~~ signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Michael Memley, NOTARY PUBLIC

Notary Public in and for said State

(SEAL)

See Attached Certificate

CALIFORNIA ACKNOWLEDGMENT CIVIL CODE § 1189

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California
County of ORANGE

On JUNE 25, 2024 (Date) before me, MICHAEL MEMLEY, NOTARY PUBLIC (Here Insert Name and Title of the Officer),

personally appeared ROBERT MURPHY (Name(s) of Signer(s)),

who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/~~are~~ subscribed to the within instrument and acknowledged to me that he/~~she/they~~ executed the same in his/~~her/their~~ authorized capacity~~(ies)~~, and that by his/~~her/their~~ signature~~(s)~~ on the instrument the person~~(s)~~, or the entity upon behalf of which the person~~(s)~~ acted, executed the instrument.

MICHAEL MEMLEY
Notary Public - California
Orange County
Commission # 2443183
My Comm. Expires Apr 10, 2027

Place Notary Seal and/or Stamp Above

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature Michael Memley, NOTARY PUBLIC
Signature of Notary Public

OPTIONAL

Completing this information can deter alteration of the document or fraudulent reattachment of this form to an unintended document.

Description of Attached Document

Title or Type of Document: _____

Document Date: _____ Number of Pages: _____

Signer(s) Other Than Named Above: _____

Capacity(ies) Claimed by Signer(s)

Signer's Name: _____	Signer's Name: _____
☐ Corporate Officer – Title(s): _____	☐ Corporate Officer – Title(s): _____
☐ Partner – ☐ Limited ☐ General	☐ Partner – ☐ Limited ☐ General
☐ Individual ☐ Attorney in Fact	☐ Individual ☐ Attorney in Fact
☐ Trustee ☐ Guardian or Conservator	☐ Trustee ☐ Guardian or Conservator
☐ Other: _____	☐ Other: _____
Signer is Representing: _____	Signer is Representing: _____

DOVE CANYON

July 8, 2024

RE: AUTHORIZATION TO SIGN EASEMENTS

TO WHOM IT MAY CONCERN:

Robert (Bob) Murphy is currently seated as the President of the Dove Canyon Master Association and Neil Phillips is seated as Vice President of the Dove Canyon Master Association.

As two of the five Directors they have authorization to sign documents on behalf of the Association.

Should you have any questions, please forward them to me at debi.cole@seabreezemgmt.com or call me at (949) 672-9067.

Sincerely,
On behalf of the Board of Directors,
Debi Cole, General Manager
Dove Canyon Master Association

TRABUCO CANYON WATER DISTRICT

CERTIFICATE OF ACCEPTANCE

This is to certify that the interest in real property conveyed by deed or grant dated_____ _____ from _____ _____ to TRABUCO CANYON WATER DISTRICT, a County water district, is hereby accepted by the undersigned officer on behalf of the Board of Directors, pursuant to authority conferred by Resolution No. 99-894 of the Board of Directors, adopted on June 16, 1999, and the TRABUCO CANYON WATER DISTRICT consents to recordation thereof by its duly authorized officer.

Date:_____ TRABUCO CANYON WATER DISTRICT

By: _____
Michael Perea
District Secretary
Trabuco Canyon Water District

NOTARY ACKNOWLEDGEMENT

STATE OF CALIFORNIA)
)
COUNTY OF ORANGE)

On _____, 20___, before me, _____, a Notary Public in and for said State, personally appeared _____ _____ , who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

_____

Notary Public in and for said State.

(SEAL)

RECORDING REQUESTED BY AND
WHEN RECORDED MAIL TO:

Michael Perea, Secretary
Trabuco Canyon Water District
32003 Dove Canyon Dr.
Trabuco Canyon, California 92679
TCWD Doc. _____

ASSESSOR'S PARCEL NO.:_____

MAIL TAX STATEMENTS TO ADDRESS ABOVE

(Space Above For Recorder's Use)

EXEMPT from Documentary Transfer Tax per Revenue and Taxation Code §11922

FREE RECORDING REQUESTED -- Essential to acquisition by Trabuco Canyon Water District (Government Code §§6103 & 27383)

GRANT OF EASEMENT
TO THE
TRABUCO CANYON WATER DISTRICT
BY
DOVE CANYON MASTER ASSOCIATION
FOR
BARNEBURG WASTEWATER LIFT STATION

1. FOR A VALUABLE CONSIDERATION, receipt of which is hereby acknowledged, Dove Canyon Master Association, ("Grantor"), hereby grants and conveys to TRABUCO CANYON WATER DISTRICT, a County water district formed and existing pursuant to Division 12, Sections 30000-33901 of the California Water Code ("Grantee"), and its successors and assigns, a perpetual non-exclusive easement for the "Barneburg Sewer Lift Station" facilities and purposes.

2. This easement shall include, but not by way of limitation, the right to install, construct, reconstruct, remove, and replace, renew, inspect, maintain, repair, improve, and relocate sewer pipelines, lift station equipment, wet well, electrical equipment, emergency electrical generator and together with incidental appurtenances, connections and structures in, over, under, upon, along, through and across the respective portions of the real property hereinafter the following described real property (the "Easement Area") in the County of Orange, State of California. The Easement Area shall not be used for any purpose other than that expressly set forth in this Grant of Easement

3. Said easement shall lie in, over, under, upon, along, through and across that certain real property situated in Unincorporated Territory, Orange County, described in Exhibit "A" and depicted in Exhibit "B", both of which are attached hereto and by this reference incorporated herein (the "Easement Area"),

4. This easement shall include the right to enter upon and to pass and repass over and along the Easement Area for the construction, reconstruction, operation, and maintenance of the facilities to be constructed in the Easement Area by Grantee or its successors and assigns, its officers, agents, and employees and by persons under contract with Grantee or its successors and assign.

5. Grantee expressly agrees to defend, indemnify and hold the Grantor, Grantor's management agent, and their agents, employees, directors, officers, committees and committee members, members, attorneys, insurers and the like, free and harmless from claims, demands, suits, causes of action, damage, and loss which arise out of or are in any way connected with the performance of work, maintenance of improvements, or exercise of any other right or obligation expressed within or related to this Grant of Easement. This indemnity will not extend to claims arising from the sole negligence or sole willful misconduct or gross negligence of Grantor.

6. Grantee shall not suffer or permit to be enforced against the Easement Area, or any part thereof, any mechanics', laborers', materialmen's, contractors', subcontractors', or any other liens arising from any claims for damages growing out of any work of construction or improvement performed in or under the Easement Area by or for Grantee, or any other claim or demand howsoever the same may arise, but Grantee shall pay or cause to be paid all of said liens, claims, and demands before any action is brought to enforce the same against the Easement Area.

7. Grantee agrees at its sole expense to repair to the original functioning state or replace all those improvements or other things, including without limitation, streets, alleys, roadways, landscaping and other growing things, sidewalks, fences, pipelines, and conduits upon, under, over, across or along Grantor's property, including but not limited to the Easement Area, which are removed or damaged in connection with the exercise by Grantee of the rights herein granted. Any such repair or replacement shall be accomplished promptly following completion of the work of Grantee causing the damage or removal.

EXHIBIT "A"

LEGAL DESCRIPTION

THAT CERTAIN PARCEL OF LAND IN THE UNINCORPORATED TERRITORY OF THE COUNTY OF ORANGE, STATE OF CALIFORNIA LYING WITHIN THE PARCEL OF LAND AS SHOWN ON TRACT MAP NO. 13139 RECORDED ON MARCH 29, 1989, IN BOOK 629, PAGES 31 - 36 OF SAID COUNTY, MORE PARTICULLARLY DESCRIBED AS FOLLOWS:

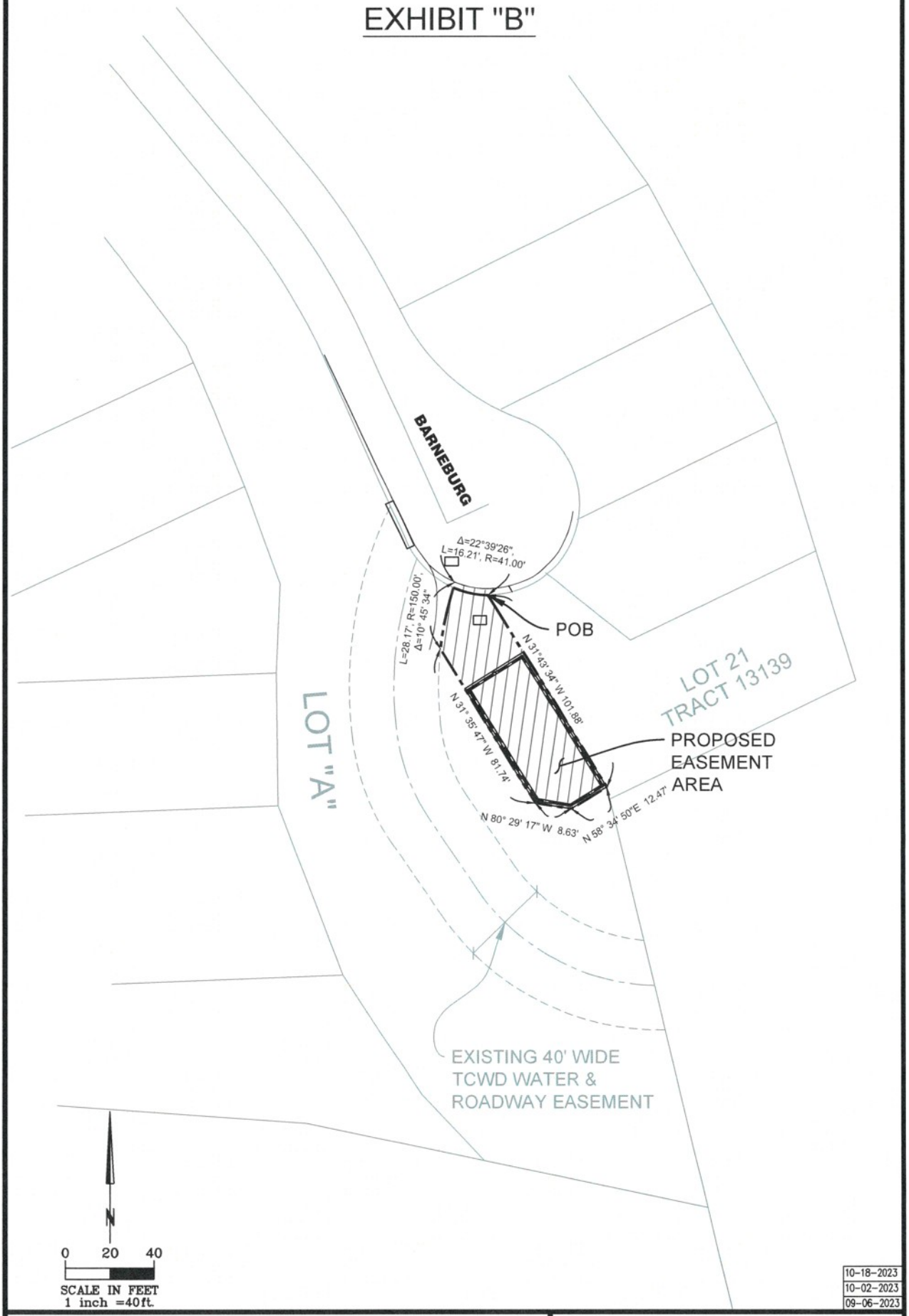
POINT OF BEGINNING **(POB)** AT THE MOST NORTHWESTERLY CORNER OF LOT 21 OF SAID PARCEL OF LAND AS SHOWN ON TRACT NO. 13139, SAID CORNER BEING ALONG THE RIGHT-OF-WAY OF BARNEBURG. THENCE S 31°46'00" E, A DISTANCE OF 105.30 FEET; THENCE S 58°34'50" W A DISTANCE OF 12.50 FEET; THENCE S 80°29'17" E, A DISTANCE OF 8.60 FEET; THENCE N 31°35'47" W, A DISTANCE OF 81.70 FEET; THENCE ALONG A CURVE WITH A RADIUS 150.00 FEET, LENGTH OF 30.85' WITH A DELTA OF 11"46'56"; AND ALONG A CURVE WITH A RADIUS OF 38.31 FEET, LENGTH OF 13.03 FEET WITH A DELTA OF 19'28'50" TO THE POB.

SUBJECT TO COVENANTS, CONDITIONS AND RESTRICTIONS, IF ANY.

MORE PARTICULARLY SHOWN ON EXHIBIT "B" ATTACHED HERETO AND BY THIS REFERENCE MADE A PART HEREOF.

5/24/24

EXHIBIT "B"



10-18-2023
10-02-2023
09-06-2023

BARNEBURG LIFT STATION
PROPOSED EASEMENT AREA

DMc ENGINEERING
CIVIL ■ SURVEYING ■ PLANNING ■ CONSTRUCTION
Tel: (949) 753-9393 ♦ Fax: (949) 753-9322
18 Technology Drive, Suite 100, Irvine, California 92618
E-Mail: dmc@dmceng.com ♦ www.dmceng.com

IN WITNESS WHEREOF, the undersigned has executed this Grant Deed as of the date written.

DATED: _____

Trabuco Canyon Water District, a County water district formed and existing pursuant to Division 12, Sections 30000-33901 of the California Water Code ("Grantee")

By: _____
Print name: _____
Title: _____

By: _____
Print name: _____
Title: _____

Dove Canyon Master Association, a nonprofit mutual benefit corporation ("Grantor")

By: _____
Robert Murphy. President
President, Board of Directors

By: _____
Neil Phillips
Vice President, Board of Directors

See Attached Certificate

CALIFORNIA ACKNOWLEDGMENT **CIVIL CODE § 1189**

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California
County of ORANGE

On JUNE 27, 2024 (*Date*) before me, MICHAEL MEMLEY, NOTARY PUBLIC (*Here Insert Name and Title of the Officer*),

personally appeared NEIL PHILLIPS (*Name(s) of Signer(s)*),

who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/~~are~~ subscribed to the within instrument and acknowledged to me that he/~~she/they~~ executed the same in his/~~her/their~~ authorized capacity(~~ies~~), and that by his/~~her/their~~ signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

MICHAEL MEMLEY
Notary Public - California
Orange County
Commission # 2443183
My Comm. Expires Apr 10, 2027

Place Notary Seal and/or Stamp Above

Signature Michael Memley, NOTARY PUBLIC
Signature of Notary Public

OPTIONAL

Completing this information can deter alteration of the document or fraudulent reattachment of this form to an unintended document.

Description of Attached Document

Title or Type of Document: _____

Document Date: _____ Number of Pages: _____

Signer(s) Other Than Named Above: _____

Capacity(ies) Claimed by Signer(s)

Signer's Name: _____	Signer's Name: _____
☐ Corporate Officer – Title(s): _____	☐ Corporate Officer – Title(s): _____
☐ Partner – ☐ Limited ☐ General	☐ Partner – ☐ Limited ☐ General
☐ Individual ☐ Attorney in Fact	☐ Individual ☐ Attorney in Fact
☐ Trustee ☐ Guardian or Conservator	☐ Trustee ☐ Guardian or Conservator
☐ Other: _____	☐ Other: _____
Signer is Representing: _____	Signer is Representing: _____

NOTARY ACKNOWLEDGEMENT

STATE OF CALIFORNIA)
)
COUNTY OF ORANGE)

On JUNE 25, 2024, before me, MICHAEL MEMLEY, NOTARY PUBLIC, a Notary Public in and for said State, personally appeared ROBERT MURPHY, who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/~~are~~ subscribed to the within instrument and acknowledged to me that he/~~she/they~~ executed the same in his/~~her/their~~ authorized capacity(~~ies~~), and that by his/~~her/their~~ signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Michael Memley, NOTARY PUBLIC
Notary Public in and for said State

(SEAL)

See Attached Certificate

CALIFORNIA ACKNOWLEDGMENT CIVIL CODE § 1189

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California
County of ORANGE

On JUNE 25, 2024 (Date) before me, MICHAEL MEMLEY, NOTARY PUBLIC (Here Insert Name and Title of the Officer),

personally appeared ROBERT MURPHY (Name(s) of Signer(s)),

who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/~~are~~ subscribed to the within instrument and acknowledged to me that he/~~she/they~~ executed the same in his/~~her/their~~ authorized capacity(~~ies~~), and that by his/~~her/their~~ signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

MICHAEL MEMLEY
Notary Public - California
Orange County
Commission # 2443183
My Comm. Expires Apr 10, 2027

Place Notary Seal and/or Stamp Above

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature Michael Memley, NOTARY PUBLIC
Signature of Notary Public

OPTIONAL

Completing this information can deter alteration of the document or fraudulent reattachment of this form to an unintended document.

Description of Attached Document

Title or Type of Document: _____

Document Date: _____ Number of Pages: _____

Signer(s) Other Than Named Above: _____

Capacity(ies) Claimed by Signer(s)

Signer's Name: _____	Signer's Name: _____
☐ Corporate Officer – Title(s): _____	☐ Corporate Officer – Title(s): _____
☐ Partner – ☐ Limited ☐ General	☐ Partner – ☐ Limited ☐ General
☐ Individual ☐ Attorney in Fact	☐ Individual ☐ Attorney in Fact
☐ Trustee ☐ Guardian or Conservator	☐ Trustee ☐ Guardian or Conservator
☐ Other: _____	☐ Other: _____
Signer is Representing: _____	Signer is Representing: _____

DOVE CANYON

July 8, 2024

RE: AUTHORIZATION TO SIGN EASEMENTS

TO WHOM IT MAY CONCERN:

Robert (Bob) Murphy is currently seated as the President of the Dove Canyon Master Association and Neil Phillips is seated as Vice President of the Dove Canyon Master Association.

As two of the five Directors they have authorization to sign documents on behalf of the Association.

Should you have any questions, please forward them to me at debi.cole@seabreezemgmt.com or call me at (949) 672-9067.

Sincerely,
On behalf of the Board of Directors,
Debi Cole, General Manager
Dove Canyon Master Association

TRABUCO CANYON WATER DISTRICT

CERTIFICATE OF ACCEPTANCE

This is to certify that the interest in real property conveyed by deed or grant dated_____ from _____ to TRABUCO CANYON WATER DISTRICT, a County water district, is hereby accepted by the undersigned officer on behalf of the Board of Directors, pursuant to authority conferred by Resolution No. 99-894 of the Board of Directors, adopted on June 16, 1999, and the TRABUCO CANYON WATER DISTRICT consents to recordation thereof by its duly authorized officer.

Date:_____ TRABUCO CANYON WATER DISTRICT

By: _____
Michael Perea
District Secretary
Trabuco Canyon Water District

NOTARY ACKNOWLEDGEMENT

STATE OF CALIFORNIA)
)
COUNTY OF ORANGE)

On _____, 20___, before me, _____, a Notary Public in and for said State, personally appeared _____ _____ , who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

_____

Notary Public in and for said State.

(SEAL)

TRABUCO CANYON WATER DISTRICT
ENGINEERING/OPERATIONAL COMMITTEE MEETING | AUGUST 7, 2024

ENGINEERING MATTERS
ITEM 8: TCWD BUSINESS SYSTEM SERVER REPLACEMENT PROJECT – PHASE ONE

TCWD's business system is comprised of two physical servers and multiple virtual machines to provide staff the required software solutions and storage requirements for day-to-day business. The last server upgrade occurred in 2016, and the District has fully maximized the storage expansion capacity and the use of the existing business system since that time. The physical servers require replacement as there is approximately ten percent storage capacity remaining, and the risk of not replacing the servers include (1) the inability to increase file storage; (2) limitations on critical system upgrades; and (3) the risk of system failure through the use of non-updated software due to storage capacity restrictions.

It is the opinion of District staff that these limitations have the potential to significantly slow down business productivity due to the limited storage capacity and lack of expansion without upgrading, and as such, District staff has worked with Highroad IT (independent contract IT manager) to budget for a two-phased upgrade approach. The project would include the implementation of a Single Node On-Premises Server System with an Azure Disaster Recovery Network Solution and associated networking configuration improvements to ensure continuous access, storage availability, and redundant systems. Please note that this project is independent and separate from the District's SCADA server environment. Highroad IT has worked with its partners (Microsoft, Dell, SonicWall, and Netgear) to provide the attached quote with competitive pricing, including hardware, software, and maintenance agreements, that meets the District's project goals. This project is an approved CIP project in the FY 2024-25 budget.

FUNDING SOURCE:
Capital Improvement Plan

FISCAL IMPACT (PROJECT BUDGET):

Highroad IT Quote:	$ 99,648
Project Contingency:	$ 15,352
FY 24/25 Budget (Phase 1):	**$115,000**
FY 25/26 Budget (Phase 2):	$ 65,000
Total Project Budget:	$180,000

ENVIRONMENTAL COMPLIANCE:
None

RECOMMENDED ACTION:
Recommend the Board of Directors authorize the General Manager to approve the Server Replacement Project Quote No. TCWD24-0726A from Highroad IT in the amount of $99,648 (Action Calendar).

EXHIBIT:
1. Highroad IT Quote No. TCWD24-0726A

CONTACTS (staff responsible): PALUDI/PEREA

Quote for Products and Services

Company Name	Trabuco Canyon Water District	**Quote Number**	TCWD24-0726A
Requested By	Michael Perea	**Initiate Date**	July 26, 2024
Quote Type	Project	**Expiration Date**	August 26, 2024
Description	Server Replacement		

Cost Breakdown

Description	Qty	Unit Price	Total	Type	Taxable	Notes
Server						
Dell AX7525 – 32 Core Single Node	1	69,521	69,521	Hardware	Yes	*Includes 3 Year Mfr Mnt*
*Azure Stack HCI (32 core) **	*1*	*400/mo*	*400/mo*	*Software*	*No*	
I7 16GB 32GB SSD	1	1,224	1,224	Hardware	Yes	
27" Standard Monitor	1	350	350	Hardware	Yes	
Wireless Keyboard & Mouse	1	75	75	Hardware	Yes	
Windows 10 Pro	1	233	233	Software	Yes	
*Workstation Antivirus **	*1*	*7/mo*	*7/mo*	*Software*	*Yes*	
Configuration, Installation and Data Migration	160	100	16,000	Services	No	
Networking						
Netgear 28-Port Ethernet Smart Switch	2	2,699	5,398	Hardware	Yes	
10GBASE Transceiver	12	65	780	Hardware	Yes	
Network Cabling	1	4,860	4,860	Hardware	Yes	
Configuration and Installation	8	100	800	Services	No	
Total			**$ 99,648**	* *Monthly software Renewal begins at project launch*		

All applicable taxes, shipping and handling will be applied at the time of invoice.

As evidenced by the signature below, I hereby authorize Highroad IT to furnish all materials and services mentioned in this quote, and Trabuco Canyon Water District agrees to pay the quoted amount, including all applicable taxes, shipping, and handling costs.

Approval Signature	
Printed Name	
Title	
Approved Date	

TRABUCO CANYON WATER DISTRICT
ENGINEERING/OPERATIONAL COMMITTEE MEETING | AUGUST 7, 2024

ENGINEERING MATTERS

ITEM 9: OTHER ENGINEERING AND OPERATIONS PROJECT UPDATES

1. Santa Margarita Parkway Force Main Repair Completion
2. Live Oak Pipeline Design – PDR Received

RECOMMENDED ACTION:

Committee to receive project status updates at the time of the Committee Meeting.

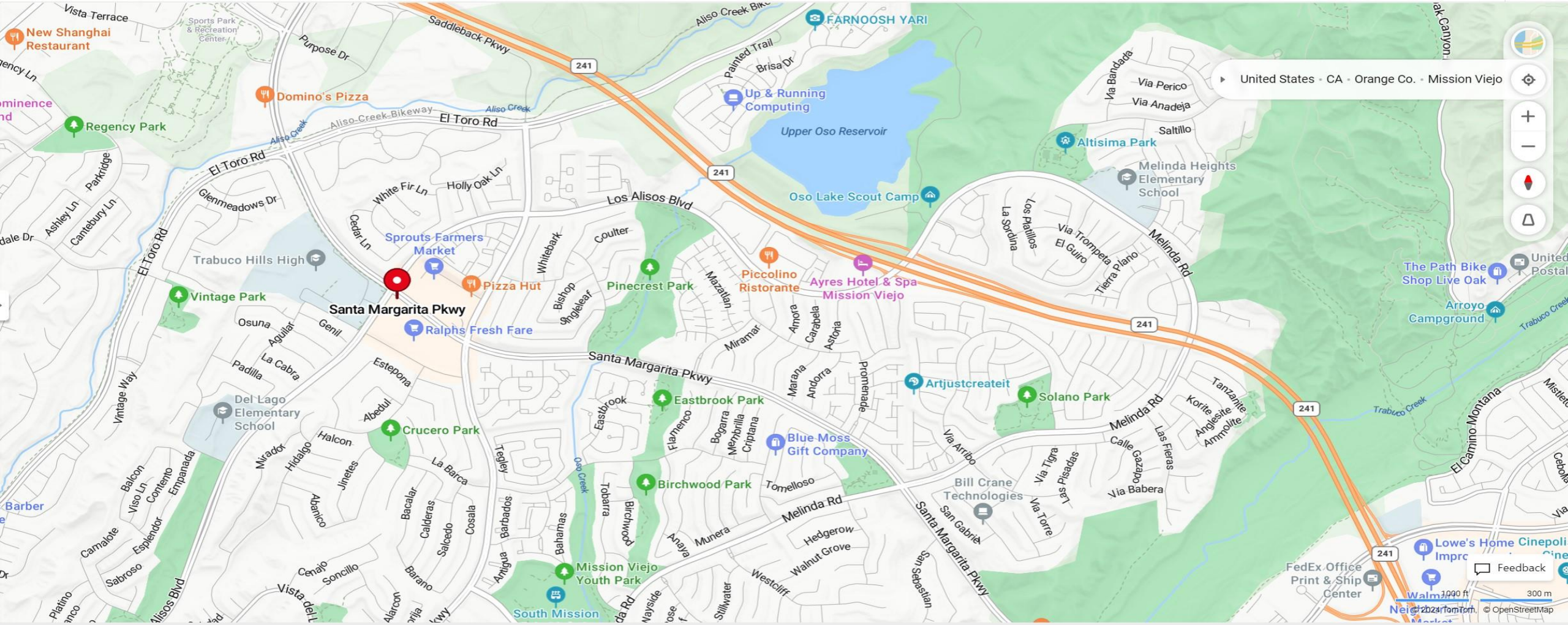
EXHIBIT(S):

1. Santa Margarita Parkway Force Main Repairs

CONTACTS (staff responsible): PALUDI/PEREA/LAUSTEN

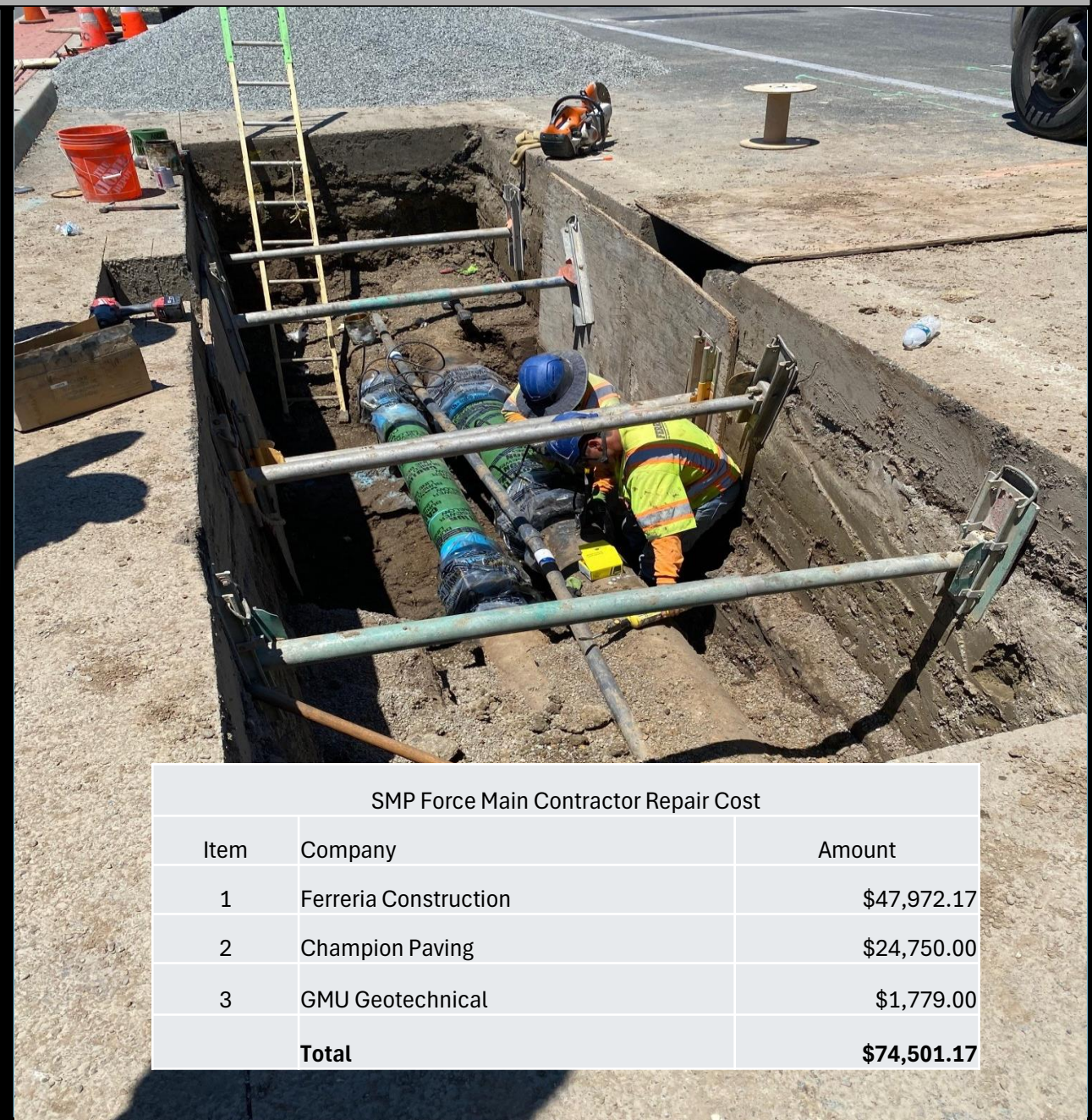
Santa Margarita Parkway 12-Inch Ductile Iron Pipe Force Main Break

Trabuco Canyon Water District
August 7, 2024 E&O Committee



12” Force Main Break

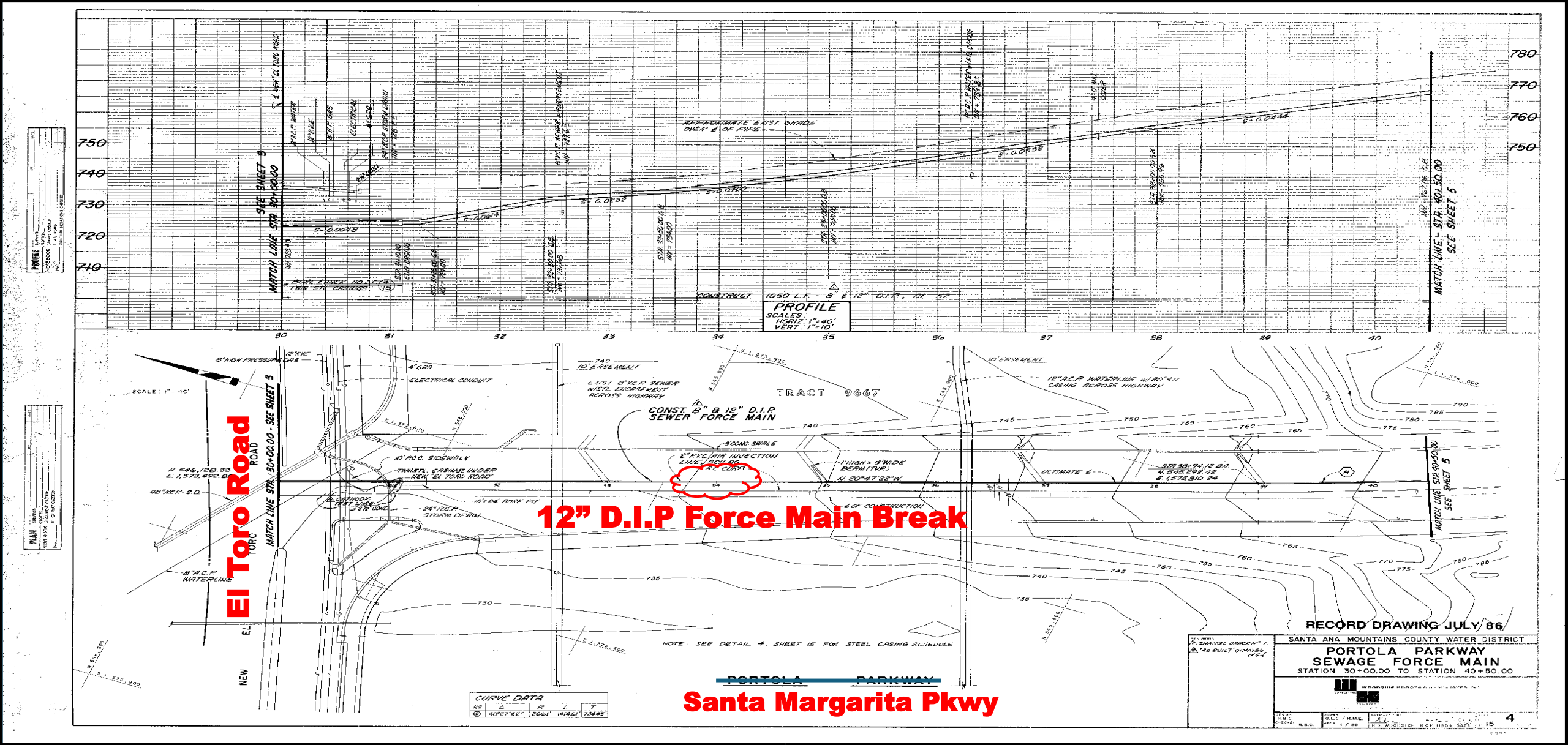
12” Force Main Break



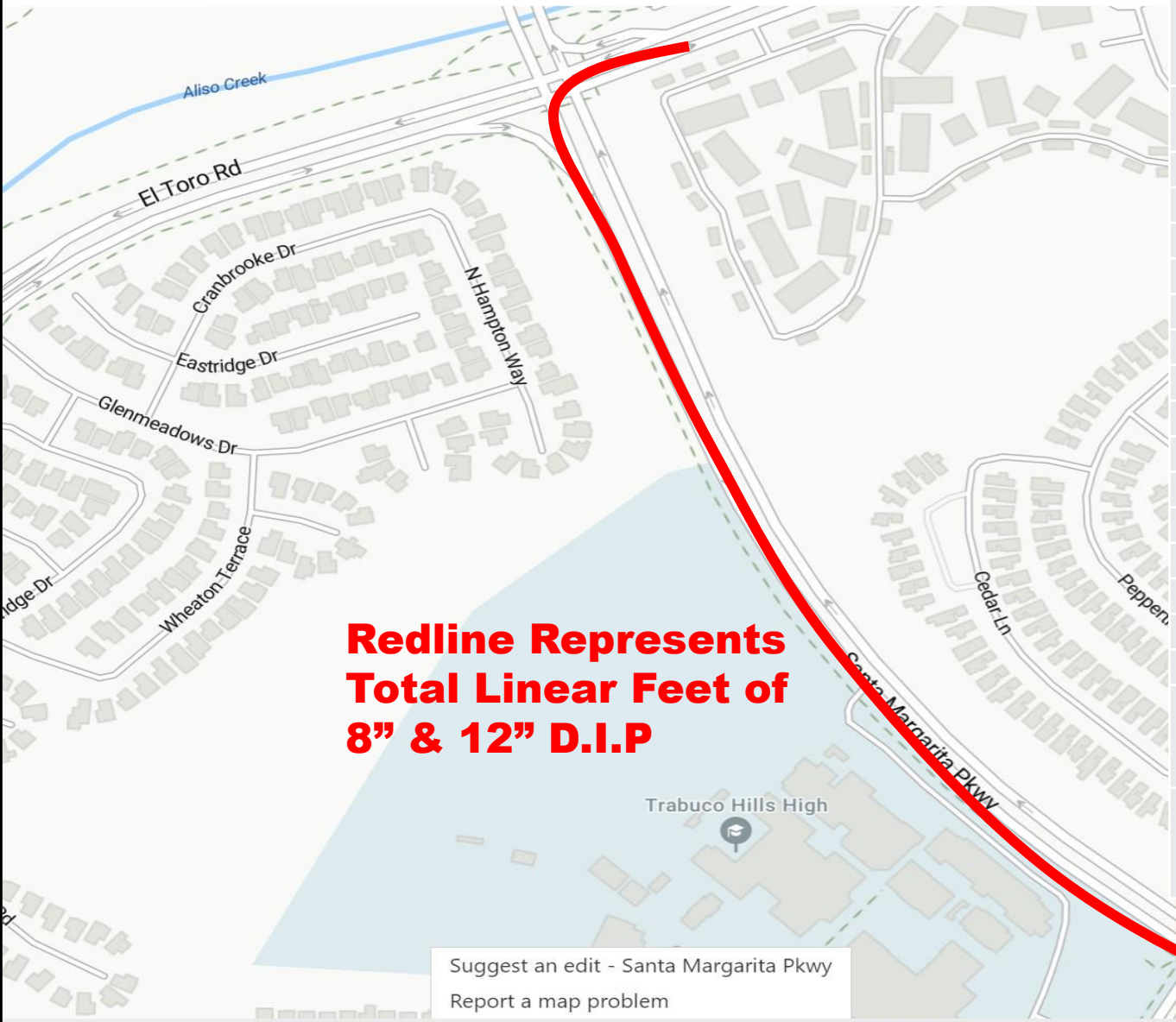
SMP Force Main Contractor Repair Cost

Item	Company	Amount
1	Ferreria Construction	$47,972.17
2	Champion Paving	$24,750.00
3	GMU Geotechnical	$1,779.00
	Total	**$74,501.17**

Force Main Break Occurred Approximately 250 Linear Feet from El Toro Road



Santa Margarita Parkway Total Linear Feet of Ductile Iron Pipe to be Sliplined or CIPP Rehabbed



Total Distance of 8-inch and 12-Inch Linear Feet of Ductile Iron Pipe to be Either Sliplined or CIPP Rehabbed

	Stations No.	Dwg. Sheet No.	Pipe Material	Distance (feet)
1	26+00.00	3	Ductile Iron Pipe	
2	29+17.00	3	Ductile Iron Pipe	317
3	29+17.00	3	Ductile Iron Pipe	
4	30+00.00	3	Ductile Iron Pipe	83
5	30+00.00	4	Ductile Iron Pipe	
6	**34+00.00**	**4**	**12" Ductile Iron Pipe Break**	**250**
7	40+50.00	4	Ductile Iron Pipe	1,050
8	40+50.00	5	Ductile Iron Pipe	
9	52+00.00	5	Ductile Iron Pipe	1,150
10	52+00.00	6	Ductile Iron Pipe	
11	**64+66.73**	**6**	**Ductile Iron Pipes Transitions to PVC**	**1,267**
			Total Linear Feet for One Ductile Iron Pipe	**4,117**
			Total Linear Feet for Two Ductile Iron Pipe (8-inch and 12-inch)	**8,233**

TRABUCO CANYON WATER DISTRICT
ENGINEERING/OPERATIONAL COMMITTEE MEETING | AUGUST 7, 2024

OPERATIONAL MATTERS
ITEM 10: WATER SYSTEM UPDATES

The following is a brief report of the water system through **July 2024**.

Projects and Repairs

Water Operations staff performed and/or completed the following tasks and projects:

1. Conducted Lead and Copper sampling as required every three years
2. Worked with contractor to replace 2" air vac on Rose Canyon
3. Worked with Engineering to complete the Lead Line Survey
4. Repaired 2" Service on Live Oak Canyon
5. Worked with resident to replace and raise 2" meter on Hamilton Trail
6. Started/stopped Dimension Water Treatment Plant

Monthly Water System Operations Summary

The Monthly Water System Operations Summary is attached for the Committee's review. Any anomalies will be presented at the time of the Engineering/Operational Committee Meeting.

RECOMMENDED ACTION:

Committee to receive system status updates. No action required.

EXHIBITS

1. Monthly Water System Operations Summary

CONTACTS (staff responsible): PEREA/KESSLER

TRABUCO CANYON WATER DISTRICT

MONTHLY WATER SYSTEM OPERATIONS SUMMARY - 2024

SYSTEM PRODUCTION/SUPPLIES	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	*TOTAL*
Number of Days	31	28	31	30	31	30	31	31	30	31	30	31	*365*
Dimension WTP	8%	17%	25%	33%	42%	50%	58%	67%	75%	83%	92%	100%	
SAC Pipeline Meter	0.0	61.3	52.5	0.0	0.0	0.0	0.0						113.8
Backwash, AF	0.0	2.2	1.6	0.0	0.0	0.0	1.2						5.0
Flushwater, AF	0.0	3.7	1.8	0.0	0.0	0.0	1.9						7.4
DWTP Effluent (1)	0.0	65.0	49.3	0.0	0.0	0.0	26.9						141.2
Groundwater, AF													
Trabuco Creek GWTF	0.0	0.0	32.6	98.1	115.2	111.7	91.2						448.8
U.S. Well AF	0.0	0.0	0.0	0.0	0.0	0.0	0.0						0.0
Total Groundwater (2)	0.0	0.0	32.6	98.1	115.2	111.7	91.2						448.8
Water Purchases, AF													
SMWD Treated Interconnection	0.0	0.0	0.0	0.0	0.0	0.0	0.0						0.0
IRWD Treated Interconnections	96.1	17.0	9.6	0.0	34.2	71.2	92.3						320.4
IRWD Irvine Lake	0.0	0.0	0.0	0.0	0.0	0.0	0.0						0.0
Total Purchases (3)	96.1	17.0	9.6	0.0	34.2	71.2	92.3						320.4
Total Supply													
Total Supply AF (1,2,3)	**96.1**	**82.0**	**91.5**	**98.1**	**149.4**	**182.9**	**210.4**						910.4
% Year - Peak Prod. - 2,449 AF (2018)	4%	7%	11%	15%	21%	29%	37%						37%
AF/Day	3.1	2.8	3.0	3.3	4.8	6.1	6.8						4.3
CFS/Day, Avg.	1.5	1.4	1.5	1.6	2.4	3.0	3.4						2.1
Reservoir Storage													
Monthly Average, MG	9.1	9.1	9.0	9.0	9.1	9.0	9.0						9.0
Monthly Average, AF	27.9	27.9	27.0	27.0	27.9	27.0	27.0						27.4
Days of Storage	4.0	4.0	4.0	4.0	4.0	4.0	4.0						4.0
SYSTEM DEMANDS													
District Operations, AF (1)													
Dimension WTP	0.00	0.00	0.12	0.00	0.00	0.00	1.90						2.02
Robinson Ranch WWTP	0.004	0.004	0.004	0.004	0.004	0.004	0.020						0.044
Supplemental Domestic to RW Res.	0.0	0.0	0.0	0.0	0.0	0.0	0.0						0.00
Subtotal	0.004	0.004	0.124	0.004	0.004	0.004	1.920						2.06
System Losses, AF (2)													
Flushing	0.00	3.00	3.00	2.80	3.00	3.00	1.50						16.30
Sewer Cleaning	0.02	0.02	0.02	0.02	0.02	0.02	0.02						0.14
Line Breaks	0.00	0.00	0.23	0.00	0.27	0.02	0.01						0.53
Subtotal	0.02	3.02	3.25	2.82	3.29	3.04	1.53						16.97
Zone Demands, AF (3)													
Topanga Canyon	Inop.	Inop.	Inop.	Inop.	Inop.	Inop.	Inop.						0.00
Falcon Estates	0.13	0.1	0.1	0.0	0.1	0.8	0.9						2.16
Rose PRV/The Oaks	1.5	2.5	1.4	1.04	1.9	3.4	3.0						14.74
Canyon Creek	0.2	0.1	0.2	0.2	0.2	0.3	0.3						1.37
Rose Pump Station	0.5	1.5	0.4	0.8	0.7	0.3	0.2						4.42
Robinson Ranch	21.1	12.4	6.1	19.2	39.2	41.9	56.9						196.80
Dove Canyon	45.2	37.5	36.1	43.3	63.5	77.7	84.7						388.00
Subtotal	68.6	54.1	44.3	64.6	105.6	124.4	146.0						607.49
Total System Demand (1,2,3)	**68.6**	**57.1**	**47.7**	**67.4**	**108.9**	**127.4**	**149.5**						626.52

TRABUCO CANYON WATER DISTRICT

MONTHLY WATER SYSTEM OPERATIONS SUMMARY - 2024

System Demands													
AF/Day	3.1	2.8	3.0	3.3	4.8	6.1	6.8						4.3
Daily Average, CFS	1.5	1.4	1.5	1.6	2.4	3.0	3.4						2.1
Other Water Deliveries/Purchases													
Ridgeline (DWTP Delivery)	0.0	51.5	43.4	0.0	0.0	0.0	26.9						121.8
El Toro (Interconnection Purchase)	0.0	0.0	0.0	0.0	0.0	0.0	0.0						0.0
Baker WTP (CSC Delivery)	89.1	89.7	106.2	106.3	115.6	119.4	104.9						731.2
Portola Hills (Wholesale Purchase)	8.5	7.5	7.0	7.2	7.5	11.0	11.0						59.7
Skyridge (Wholesale Purchase)	1.7	1.5	1.5	1.5	1.6	2.0	1.9						11.7
** Usage estimated*	*** Excludes Operational use, losses, and supplement to Recycled Water Reservoir (RW)*												

TRABUCO CANYON WATER DISTRICT
ENGINEERING/OPERATIONAL COMMITTEE MEETING | AUGUST 7, 2024

OPERATIONAL MATTERS
ITEM 11: WASTEWATER SYSTEM UPDATES

The following is a brief report of the wastewater system through **July 2024.**

Projects and Repairs

Wastewater Operations staff performed and/or completed the following tasks and projects:

1. Replaced a 40HP pump for the Equalization basin at the Wastewater Treatment Plant (WWTP)
2. Cleaned Barneburg Sewer Lift Station wet well
3. Cleaned sanitary sewer system "hot spots" that lead to Via Allegre Sewer Lift Station
4. Replaced the air solenoids for a backwash filter at the WWTP

Sewer System Management Plan (SSMP) Report

The purpose of the program is to communicate on a regular basis with the public on the development, implementation, and performance of TCWD's SSMP. Status updates on the work and type of work performed on the sewer system will be provided, including sewer line and manhole cleaning, system repairs, lift station cleaning, and updates from satellite facilities:

Sewer System Management Plan (SSMP) Monthly Update	
Total Sewer Line, Feet*	212,045
Total Sewer Line Cleaned (Ft) – Month	**2,300**
Total Sewer Line Cleaned (Ft) – Cleaning Cycle	72,914
Cleaning Cycle Period (Mos.) [Start date: 1/1/24]	1
Total Sewer Line Cleaned, %	**34%**
The Oaks at Trabuco – Pumping Frequency for the Month	12
O'Neill Park Sewer System Status	Ok
O'Neill Park Sewer System Repairs	None
SSMP Quarterly Report – *Next Quarterly Report*	3Q 2024
SSMP Program Audit – *Next Audit Report***	February 2025

**This amount includes the OC Parks-owned O'Neill Park sewer system the District is contracted to clean.*
***Periodic internal audits shall be conducted, at a minimum every two years, with reports kept on file. The audit shall focus on evaluating the effectiveness of the SSMP and TCWD's compliance with the mandatory elements of TCWD's SSMP:*

Monthly Recycled Water System Operations Summary

The Monthly Recycled Water System Operations Summary is attached for the Committee's review. Any anomalies will be presented at the time of the Engineering/Operational Committee Meeting.

RECOMMENDED ACTION:

Committee to receive system status updates. No action required.

EXHIBITS

1. Monthly Recycled Water System Operations Summary

CONTACTS (staff responsible): PEREA/ULLOA

TRABUCO CANYON WATER DISTRICT | RECYCLED WATER SYSTEM SUMMARY - 2024

RECYCLED WATER SUPPLY	MAX	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL	FIVE YEAR AVG
WWTP Reclaimed Water Production, AF	78.3	39.4	40.0	42.4	42.1	41.7	39.1	39.1						283.9	517.2
Reclaimed Reservoir Level, FT	1274.5	1,272.8	1,273.0	1,273.5	1,273.5	1,271.0	1,266.0	1,250.5						-	-
Reclaimed Reservoir Free Board, FT	25.5	1.7	1.5	1.0	1.0	3.5	8.5	24.0						-	-
Reclaimed Reservoir Storage, AF	145.5	134.3	135.7	137.5	137.5	126.8	96.4	37.1						-	-
Supplemental Domestic Water Added, AF	N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0						0.0	5.2

RECYCLED WATER SYSTEM DEMAND															
NON DOMESTIC WATER USER	ALLOC. AF	8% JAN	17% FEB	25% MAR	33% APR	42% MAY	50% JUN	58% JUL	67% AUG	75% SEP	83% OCT	92% NOV	100% DEC	TOTAL	ALLOC. %
Dahlia Court	8.2	0.00	0.1	0.1	0.2	0.2	0.2	0.4						1.21	14.7%
Dove Canyon Golf Course	106.7	0.54	1.1	0.4	8.5	29.7	38.8	49.3						128.30	120.3%
Dove Canyon Master Association	279.3	0.90	1.2	3.0	4.6	23.2	24.5	28.9						86.28	30.9%
Robinson Ranch	80.2	0.78	1.1	0.3	0.4	2.2	3.0	4.1						11.89	14.8%
Trabuco Highlands	159.7	1.97	2.0	0.2	1.7	6.8	5.9	7.7						26.32	16.5%
City of RSM	0.1	0.03	0.00	0.00	0.01	0.04	0.03	0.06						0.17	128.5%
Construction Water	N/A	0.00	0.0	0.0	0.0	0.0	0.0	0.0						0.00	N/A
Sakaida Nursery	1.1	0.00	0.0	0.0	0.0	0.0	0.0	0.0						0.00	0.0%
SMWD	N/A	-	-	-	0.0	2.4	5.1	7.7						15.16	N/A
TY Nursery	17.9	0.00	0.00	0.0	0.0	0.0	0.0	11.5						11.51	64.3%
TOTAL, AF	**653.2**	**4.2**	**5.5**	**4.0**	**15.4**	**64.5**	**77.5**	**109.6**						**280.83**	**43.0%**
PERCENTAGE OF NDW ALLOCATION/YEAR		**0.6%**	**1.5%**	**2.1%**	**4.5%**	**14.3%**	**26.2%**	**43.0%**							
TOTAL ANNUAL AVG. NDW AVAILABLE**	**774.36**														

URBAN RUNOFF CAPTURE AND REUSE															
DISTRICT FACILITY		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL	FIVE YEAR AVG
Shadow Rock Detention Basin Production		0.06	0.06	0.00	0.00	0.00	0.00	0.00						0.12	14.2
Dove | Tick Creek Production*	*Dry Season*	4.9	0.0	0.0	0.0	0.0	0.0	0.0						4.9	43.5
	TCWD Portion	4.9	0.0	0.0	0.0	0.0	0.0	0.0						4.9	-
	SMWD Portion	0.0	0.0	0.0	0.0	0.0	0.0	0.0						0.0	-
Dove Lake Water Pumped		0.0	0.0	0.0	0.0	0.0	0.0	0.0						0.0	183.0
Dove Lake Free Board, Ft		0.0	0.0	0.0	0.0	0.0	0.0	0.5						-	-
Dove Lake Storage, AF		331.0	331.0	331.0	331.0	331.0	331.0	328.2						-	-
Total Rainfall, In.		4.7	11.0	4.5	1.6	0.4	0.0	0.0						22.3	14.7

**** SMWD share of Dove/Tick Pump Station Dry Season Water is 50% of production.***

***** Based on 5-Year Average Reclaimed Water Reservoir Base Supply & Recycled Water Production***

TRABUCO CANYON WATER DISTRICT
ENGINEERING/OPERATIONAL COMMITTEE MEETING | AUGUST 7, 2024

OPERATIONAL MATTERS
ITEM 12: MAINTENANCE DEPARTMENT UPDATES

The following is a brief report of work completed by Maintenance staff through **July 2024**

Projects and Repairs

Maintenance staff performed and/or completed the following tasks and projects:

Water Operations

1. Troubleshoot and replaced damaged ROTRON blower at Dimension Water Treatment Plant (DWTP)
2. Worked with Hydrotech Electric to troubleshoot failed #3 booster pump at DWTP

Wastewater Operations

1. Assisted Wastewater Operations, Hydrotech Electric, and WM Lyles at Plano Lift Station with PLC failure.
2. Participated in a field meeting on Robinson Ranch Wastewater Treatment Plant (WWTP) Blower Room project
3. Participated in a field meeting on Dove Recycle Booster Station
4. Replaced damaged EQ basin pump at WWTP
5. Golf Club bypass startup job walk with Pacific Hydrotech
6. Prepped Barneburg Sewer Lift Station for wet well rehab
7. Assisted Hydrotech Electric at Via Allegre Sewer Lift Station with new dialer upgrade
8. Stage one wet well pump failed at Golf Club Sewer Lift Station. Swapped in new Cornell pump
9. ARC Flash inspection found catastrophic failure of electrical distribution bar leading to Heritage Sewer Lift Station. Prepped station for power outage until further notice. Met with Southern California Edison (SCE) representatives to discuss the electrical service repairs needed.
10. VFD lunch and learn meeting at WWTP

District Fleet Upgrades & Other Projects

1. Completed required Sexual Harassment Prevention Training through ACWA JPIA
2. LOF truck #29

RECOMMENDED ACTION:

Committee to receive system status updates. No action required.

EXHIBITS

None

CONTACTS (staff responsible): PEREA/STROUD

TRABUCO CANYON WATER DISTRICT
ENGINEERING/OPERATIONAL COMMITTEE MEETING | AUGUST 7, 2024

REGULATORY AND OTHER MATTERS
ITEM 13: OTHER MATTERS/REPORTS

Other Matters/Reports from the General Manager and/or District staff may be provided at the time of the Engineering/Operational Committee Meeting.

RECOMMENDED ACTION:
Hear Other Matters/Reports that may have arisen after the posting of the agenda.

EXHIBITS
None

CONTACTS (staff responsible): PALUDI/PEREA