



**ENGINEERING/OPERATIONAL COMMITTEE MEETING AGENDA
TRABUCO CANYON WATER DISTRICT
ADMINISTRATION FACILITY
32003 DOVE CANYON DRIVE, TRABUCO CANYON, CA
FEBRUARY 4, 2026 AT 2:00 PM**

COMMITTEE MEMBERS

Mark Anderson, Committee Chair
Edward Mandich, Committee Member
Glenn Acosta, Committee Member Alternate

DISTRICT STAFF

Larry McKenney, General Manager
Michael Perea, Assistant General Manager
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: 986-4866-8880

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 1:00 P.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 at the time of the meeting or 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 at the time of the meeting 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

**TRABUCO CANYON WATER DISTRICT
ENGINEERING/OPERATIONAL COMMITTEE MEETING AGENDA | FEBRUARY 4, 2026**

ENGINEERING MATTERS

PRESENTER(S):

Larry McKenney, 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. *January 7, 2026 Committee Meeting*

ITEM 2: HERITAGE SEWER LIFT STATION CONSTRUCTION MANAGEMENT CONTRACT AWARD

RECOMMENDED ACTION:

Recommend the Board of Directors authorize the General Manager to award a professional services contract for the Construction Management of the Heritage Sewer Lift Station Improvements to MCM Consulting in the amount of \$247,464 plus a 10% contingency of \$24,746, for a not-to-exceed amount of \$272,210 (Action Calendar).

ITEM 3: DOVE RECYCLED WATER PUMP STATION IMPROVEMENTS

RECOMMENDED ACTION:

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

ITEM 4: HAMILTON OAKS COMMUNITY PRESSURE ZONE TECHNICAL MEMORANDUM UPDATE

RECOMMENDED ACTION:

Receive information at the time of the Committee Meeting and make recommendations as necessary.

ITEM 5: OTHER ENGINEERING AND OPERATIONS PROJECT UPDATES

1. Dimension Water Treatment Plant Transmission Main Rehabilitation Project
2. Pipeline Condition Assessment - Proposal

RECOMMENDED ACTION:

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



**TRABUCO CANYON WATER DISTRICT
ENGINEERING/OPERATIONAL COMMITTEE MEETING AGENDA | FEBRUARY 4, 2026**

OPERATIONAL MATTERS

PRESENTER(S):

Gary Kessler, Water System Superintendent
Oscar Ulloa, Wastewater Operations Superintendent
Jason Stroud, Maintenance Department Superintendent

ITEM 6: WATER SYSTEM UPDATES

RECOMMENDED ACTION:

Committee to receive system status updates. No action required.

ITEM 7: WASTEWATER SYSTEM UPDATES

RECOMMENDED ACTION:

Committee to receive system status updates. No action required.

ITEM 8: MAINTENANCE DEPARTMENT UPDATES

RECOMMENDED ACTION:

Committee to receive system status updates. No action required.

REGULATORY AND OTHER MATTERS

ITEM 9: 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 | FEBRUARY 4, 2026**

ENGINEERING 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. January 7, 2026 Committee Meeting*

CONTACTS (staff responsible): MCKENNEY/PEREA



**TRABUCO CANYON WATER DISTRICT
ENGINEERING/OPERATIONAL COMMITTEE MEETING RECAP | JANUARY 7, 2026**

DIRECTORS PRESENT

Mark Anderson, Committee Chair
Glenn Acosta, Committee Member

STAFF PRESENT

Larry McKenney, General Manager
Michael Perea, Assistant General Manager
Lorrie Lausten, District Engineer
Gary Kessler, Water Superintendent
Oscar Ulloa, Wastewater Superintendent
Jason Stroud, Maintenance Superintendent
Dave Rodriguez, Principal Engineer
Karen Warner, Principal Accountant
Roseann Lejsek, Executive Assistant
Phil Serpas, CMMS/SCADA Administrator

STAFF ABSENT

None

DISTRICT CONSULTANTS

None

PUBLIC PRESENT

None

CALL MEETING TO ORDER

Director Anderson called the January 7, 2026 Engineering/Operational Committee Meeting to order at 8:00 a.m.

VISITOR PARTICIPATION

No comments were received.

ORAL COMMUNICATION

No comments were received.

COMMITTEE MEMBER COMMENTS

Director Acosta commented that the Labor Negotiations Ad Hoc Committee was working with general counsel to expedite the Memorandum of Understanding (MOU), with the goal of completing it this month.

Director Anderson commented that the MOU was 80% complete.

REPORT FROM THE GENERAL MANAGER

Mr. McKenney reported that he toured the pipeline rehabilitation project and thanked staff for their time.

**TRABUCO CANYON WATER DISTRICT
ENGINEERING/OPERATIONAL COMMITTEE MEETING RECAP | JANUARY 7, 2026**

ITEM 1: ENGINEERING/OPERATIONAL COMMITTEE MEETING RECAP

Mr. McKenney presented the Engineering/Operational Committee Meeting Recap for Committee review in accordance with the agenda.

RECOMMENDATION: The Committee recommended forwarding this matter to the Board of Directors (Consent Calendar).

ITEM 2: DIMENSION WATER TREATMENT PLANT PIPELINE REHABILITATION PROJECT

Ms. Lausten presented this matter for Committee consideration, and she reported that Phase 1B of the project was expected to be completed the following week, while the open-cut portion was scheduled for completion by mid-February. Ms. Lausten also reported that since Phase 1 progressed faster than anticipated and was currently under budget, she recommended a change order to advance Phase 2A of the project ahead of the original schedule. Mr. Perea added that staff identified potential savings by completing Phase 2A now while the equipment is on-site and the contractor's prices hold firm.

Director Anderson expressed his concerns concerning potential vulnerabilities in the lower portion of the pipeline compared to the upper portion in Phase 2, and he stressed the need for a contingency plan in the event of a failure. Director Anderson also expressed his concerns regarding the expenditure, given the District's current financial position. Mr. Perea stated that staff will revisit the projected cost savings.

Director Acosta expressed his support for completing Phase 2A at this time, stating that the pipeline is critical and that a potential consolidation should not be a determining factor. Director Acosta emphasized that the upper section presents a critical opportunity for cost savings that will help in offsetting costs once the District moves forward with the lower section. Director Acosta also asked that staff explore all options to fast track Phase 2 of the project.

RECOMMENDATION: Recommend the Board of Directors authorize the General Manager to approve a contract change order for the DWTP Transmission Main Pipeline Rehabilitation Project – Phase 2A to TE Roberts in the Not-to-exceed amount of \$915,998 (Action Calendar).

ITEM 3: DOVE & TICK CREEK PUMP STATIONS UPDATE – DESIGN & ENVIRONMENTAL PROFESSIONAL SERVICES

Ms. Lausten presented this matter for Committee consideration, and she reported that the project would upgrade both pump stations and expand runoff capture. Ms. Lausten provided a brief overview of the recycled/reclaimed water system and explained that the current maintenance issues at the pump stations prevent the District from taking advantage of storm flows. Ms. Lausten reported that staff solicited bids and received two proposals. Ms. Lausten presented a proposal evaluation summary, and she stated that staff recommends awarding a professional services agreement to AKM Consulting Engineering.

RECOMMENDATION: Recommend the Board of Directors authorize the General Manager to award a professional services contract for the Dove and Tick Creek Station Improvements to AKM Consulting Engineering in the amount of \$511,412 plus a 10% contingency of \$51,141, for a not-to-exceed amount of \$562,553 (Action Calendar).

ITEM 4: OTHER ENGINEERING AND OPERATIONS PROJECT UPDATES

No other projects were presented to the Committee.

RECOMMENDATION: None

**TRABUCO CANYON WATER DISTRICT
ENGINEERING/OPERATIONAL COMMITTEE MEETING RECAP | JANUARY 7, 2026**

ITEM 5: 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 leaking fire hydrant on Huntknoll Drive in the Trabuco Highlands community.
2. Recoated and painted the pumps and pipes at Rose Canyon Booster Pump Station.
3. Assisted Customer Service Field Technician with residential curb stop replacement on El Toro Road.
4. Continued to work with contractors on the DWTP Transmission Line Rehabilitation Project.

Ms. Lausten noted that the Saddle Crest pipeline improvements project would be starting the following month.

Director Acosta requested that the hydrant pressures in the Hamilton Oaks community be agendized for discussion the following month. Mr. Perea noted that staff worked with Hazen based on feedback from the Committee and that an update would be provided to the Committee next month.

RECOMMENDATION: None – Informational item only.

ITEM 6: 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. Repaired the 2” Cla-Val at Portola Basin intertie.
2. Replaced the Sutorbilt blower at the Robinson Ranch Wastewater Treatment Plant (WWTP).
3. Repaired a leaking 6” airline at the WWTP.
4. Built a new airline to be installed in the East SBR tank at the WWTP.
5. Quarterly wet well cleaning completed at sewer lift stations.
6. Quarterly F.O.G. (Fats, Oil, and Grease) source control inspections at commercial accounts completed.

Mr. Ulloa presented the Recycled Water System Summary for Committee review, and he reported that reservoir level was at 1267 feet and Dove Lake was full. Mr. Ulloa also reported that Dove/Tick Dry Season Recovery was offline.

Discussion occurred concerning the Dove Canyon Golf Club F.O.G. cleaning process and frequency.

RECOMMENDATION: None – Informational item only.

ITEM 7: 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. Performed load banking on the emergency backup generator at the Saddle Crest Booster Pump Station.
2. Serviced Water Department vehicles.

**TRABUCO CANYON WATER DISTRICT
ENGINEERING/OPERATIONAL COMMITTEE MEETING RECAP | JANUARY 7, 2026**

Wastewater Operations

1. Repaired an air release valve on the compressor at El Toro Sewer Lift Station.
2. Cleared a new area and graded the hillside at the WWTP for future Vactor truck parking.
3. Re-graded and maintained fire roads at WWTP due to rain events.

District Fleet Upgrades & Other Projects

1. Assisted in Arc Flash job walk with P2S and Hydrotech Electric at various District facilities.
2. Completed Onboard Diagnostic (OBD) compliance test on the Vactor Truck.
3. Completed BIT Inspection on Class A fleet vehicles.
4. Completed smog test on all District vehicles.
5. Performed ATS transfer checks on all emergency backup generators.

A brief discussion occurred regarding communication with Southern California Edison (SCE) related to isolation switches at the District’s facilities.

Director Anderson requested that staff add long-term projects to the overall CIP list. Mr. Perea stated that a meeting has been set up for the following week with the District’s consultants and that a monthly recurring meeting at the staff level has been scheduled to receive regular updates on projects.

RECOMMENDATION: None – Informational item only.

ITEM 8: OTHER MATTERS/REPORTS

No other matters were reported.

RECOMMENDATION: None

ADJOURNMENT

Director Anderson adjourned the January 7, 2026 Engineering/Operational Committee Meeting at 8:46 a.m.

**TRABUCO CANYON WATER DISTRICT
ENGINEERING/OPERATIONAL COMMITTEE MEETING | FEBRUARY 4, 2026**

ENGINEERING MATTERS

ITEM 2: HERITAGE SEWER LIFT STATION CONSTRUCTION MANAGEMENT CONTRACT AWARD

Trabuco Canyon Water District (District) owns and operates the Heritage Sewer Lift Station (Heritage SLS) located on Heritage Drive between Robinson Ranch Road and Silvertree Lane in the Trabuco Highlands Community. The Heritage SLS is a critical pump station that conveys pumped wastewater flows from a portion of the lower Dove Canyon community and Rancho Cielo community (from Via Allegre SLS), Walden Homes, Trabuco Marketplace, Dahlia Court community, and lower Robinson Ranch (from Plano Trabuco SLS) via a sewer force main. The facility also receives gravity sewer flows from the upper Robinson Ranch community and Trabuco Highlands community and serves as the final pump station of the sanitary sewer system before the Robinson Ranch Wastewater Treatment Plant (WWTP).

In FY 22/23, a sewer bypass valve assembly was installed for emergency and maintenance work. This work was completed in February 2023. In FY 24/25, construction was completed to install a back-up in stock pump, including new discharge header improvements and isolation valves. The remaining full site upgrades were budgeted for FY 25/26 and FY 26/27, which include dry pit and yard piping improvements, installation of a bypass wet well, gravity sewer main, wet well improvements, MCC upgrades and site/security improvements.

At the November 2025 Regular Board Meeting, the construction contract was awarded to Ferreira Construction in the amount of \$1,799,813. Staff solicited proposals for the Construction Management/Inspection Services and received proposals from the following firms:

Heritage SLS Improvements- CM Proposals
AKM Consulting Engineers
Butier
MCM Consulting
MKN, an Ardurra Company

Staff have evaluated proposals, conducted interviews, and have negotiated lower costs by reducing several tasks. District staff recommends the approval of the professional services contract with MCM Consulting.

FUNDING SOURCE:

Capital Improvement Program

FISCAL IMPACT (PROJECT BUDGET):

Original Project Budget: \$1,506,360

Revised Mid-Year Project Budget: \$2,500,000

ENVIRONMENTAL COMPLIANCE:

Notice of Exemption was filed with the County of Orange on October 21, 2021.

RECOMMENDED ACTION:

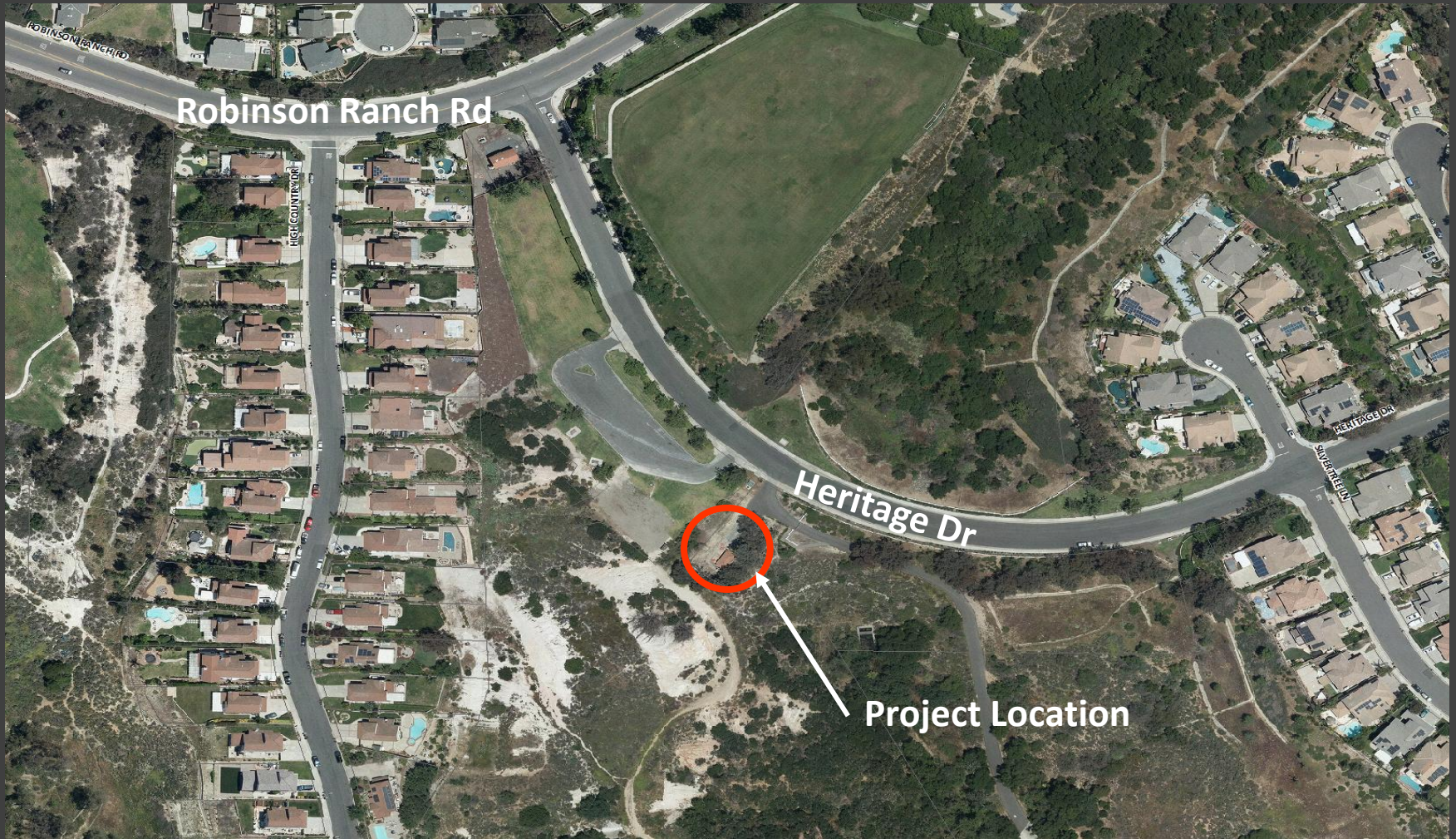
Recommend the Board of Directors authorize the General Manager to award a professional services contract for the Construction Management of the Heritage Sewer Lift Station Improvements to MCM Consulting in the amount of \$247,464 plus a 10% contingency of \$24,746, for a not-to-exceed amount of \$272,210 (Action Calendar).

EXHIBIT(S):

1. Project Location
2. Proposal Evaluation

CONTACTS (staff responsible): MCKENNEY/LAUSTEN

Heritage Sewer Lift Station Improvements Project Location



PROPOSAL EVALUATION

Heritage SLS Construction Management and Inspection					
Category	Weight	AKM	MCM	MKN	Butier
Project Approach/Scope of Services Project Approach, Understanding of the Scope of Work & Level of Effort on the Proposal	25%	3	4	5	4
Qualifications and experience of the Proposer related to the services described in this RFP Team Expertise & Experience (Qualifications, Registrations, Licenses), including subconsultants	20%	2	4	4	4
Proposer's understanding of the project and subject matter expertise Firms Experience on Similar Projects, Local Staffing	20%	3	4	4	4
Proposer's ability and available resources to perform the requested services	20%	4	4	4	4
Proposed project cost	15%	3	5	4	4
Total Weighted Score:	100%	3.0	4.2	4.3	4.0
Subconsultants		AKM	MCM	MKN	Butier
Materials Testing/Special Inspection		GMU Geotechnical	GMU Geotechnical	GMU Geotechnical	GMU Geotechnical
Labor *		AKM	MCM	MKN	Butier
Task 1- Pre-Construction Services		46	5	20	20
Task 2 - Construction Manager/Resident Engineer, Inspectors and Testing Services		1300	1229	1064	1052
Task 3 - Project Close-Out		48	34	32	24
Total:		1394	1268	1116	1096
Budget		AKM	MCM	MKN	Butier
Task 1- Pre-Construction		\$ 11,026.00	\$ 950.00	\$ 4,582.00	\$ 4,344.00
Task 2 - Construction Manager, Inspector and Testing		\$ 257,616.00	\$ 205,590.00	\$ 228,548.00	\$ 221,672.00
Subconsultant/Direct Cost		\$ 36,920.00	\$ 34,764.00	\$ 38,240.00	\$ 34,764.00
Task 3 - Project Close-Out		\$ 9,562.00	\$ 6,160.00	\$ 7,002.00	\$ 5,128.00
Total:		\$ 315,124.00	\$ 247,464.00	\$ 278,372.00	\$ 265,908.00
\$/Manhour		\$ 226.06	\$ 195.16	\$ 249.44	\$ 242.62
* Labor hours do not include subconsultants					
CM Cost as a Percentage of Construction Cost		17.51%	13.75%	15.47%	14.77%

Contract is 210 calendar days (7 months); 140 working days. Assume 5 months (800 hours) is FT Inspection and 2 months is PT (10-20 hrs/week) (120 hours)
Inspector Only Hours: AKM 908, MCM 874, MKN 800, Butier (93 WDx8) 744

**TRABUCO CANYON WATER DISTRICT
ENGINEERING/OPERATIONAL COMMITTEE MEETING | FEBRUARY 4, 2026**

ENGINEERING MATTERS

ITEM 3: DOVE RECYCLED WATER PUMP STATION IMPROVEMENTS

The Dove and Robinson Ranch Recycled Water Pump Stations (DCRRPS) (Exhibit 1) 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 which include the following components:

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

At the December 2024 Regular Board Meeting, the Engineering Design was awarded to JIG Consultants. Staff and JIG have been working on the design over the past 9 months and have met with several filter design companies and visited adjacent agencies investigating the best filter system which would fit in the small building envelope. Bid documents are now complete and staff intend to bring back the results at the March committee meeting.

FUNDING SOURCE:

Capital Improvement Program

FISCAL IMPACT (PROJECT BUDGET):

\$1,430,000

ENVIRONMENTAL COMPLIANCE:

Notice of Exemption

RECOMMENDED ACTION:

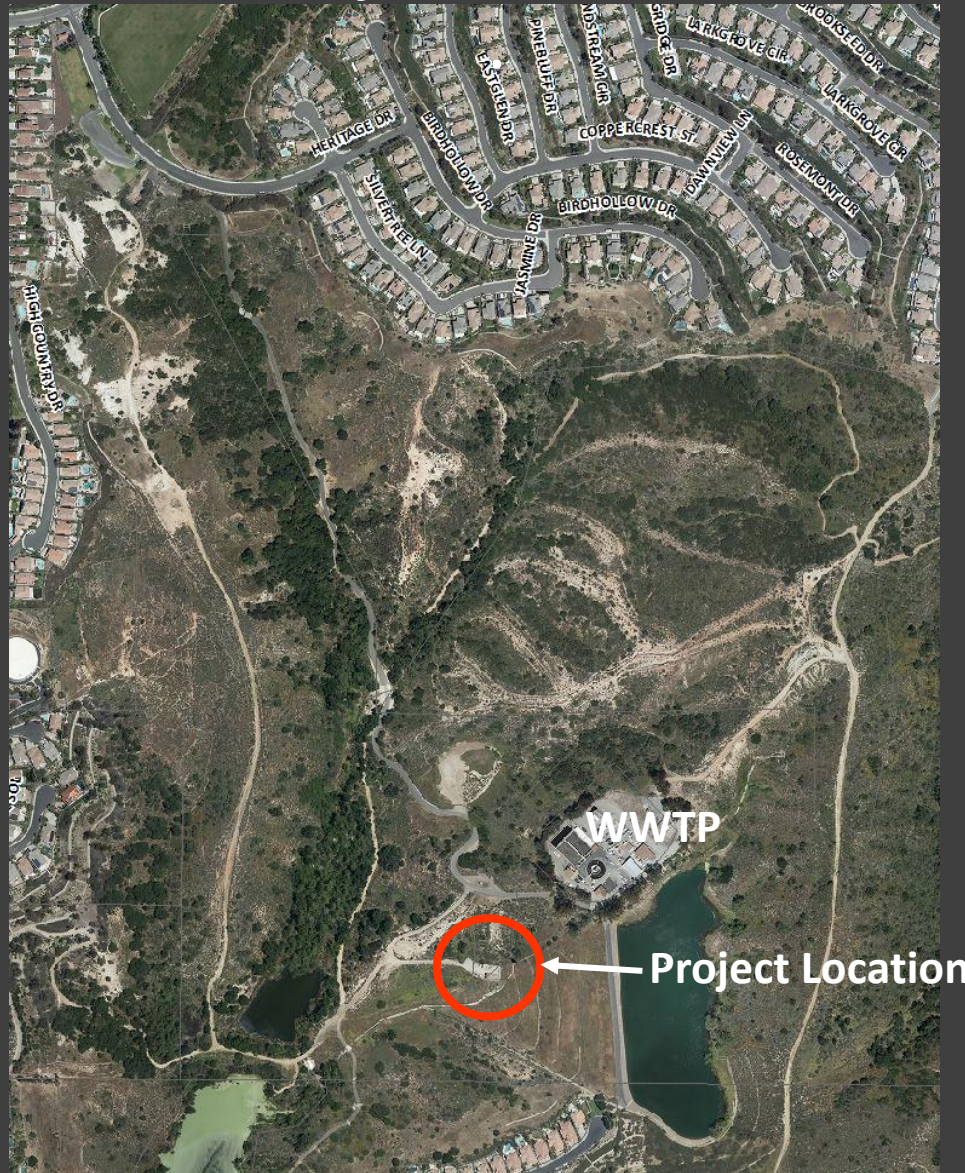
Committee to receive project status updates at the time of the Committee Meeting.

EXHIBIT(S):

1. Project Location
2. 100% Construction Plans

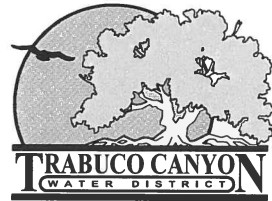
CONTACTS (staff responsible): MCKENNEY/LAUSTEN

Dove/Robinson Ranch RWPS Improvements Project Location



TRABUCO CANYON WATER DISTRICT

DOVE CANYON RECYCLED WATER PUMP STATION IMPROVEMENTS PROJECT NO. RW-13-FY24



DECEMBER 2025

APPROVED: TRABUCO CANYON WATER DISTRICT	
LORRAINE S. LAUSTEN R.C.E. 67027 DISTRICT ENGINEER	DATE

GENERAL NOTES

1. NOTIFY TRABUCO CANYON WATER DISTRICT (DISTRICT) 714-858-0277 AT LEAST 48 HOURS BUT NOT MORE THAN 72 HOURS BEFORE STARTING WORK, OR AFTER ANY DELAY, BEFORE RESUMING WORK.
2. THE CONTRACTOR SHALL CONTACT UNDERGROUND SERVICE ALERT (U.S.A.) AT 811 AT LEAST 48 HOURS PRIOR TO STARTING WORK.
3. ALL WORK IS TO BE DONE IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS AND THE "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION" (GREEN BOOK) LATEST EDITION, AND THE DISTRICT'S STANDARD SPECIFICATIONS AND DRAWINGS. THE CONTRACTOR SHALL HAVE A COPY OF THESE PLANS AND THE SPECIFICATIONS AND THE STANDARD SPECIFICATIONS ON THE JOB AT ALL TIMES.
4. CONCRETE WORK SHALL BE PER PLANS AND SPECIFICATIONS UNLESS OTHERWISE INDICATED.
5. PIPELINES SHALL BE PRESSURE TESTED TO 150 PSIG IN ACCORDANCE WITH SECTION 33 08 11.
6. CONTRACTOR SHALL MAINTAIN THE WORK AREA IN A NEAT, SAFE, CLEAN AND SANITARY CONDITION AT ALL TIMES. STREETS SHALL BE KEPT CLEAN OF DEBRIS, WITH DUST AND NUISANCE BEING CONTROLLED AT ALL TIMES. THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR ANY CLEANUP OF ADJACENT STREETS AFFECTED BY HIS CONSTRUCTION. CONTRACTOR TO CLEAN STREET WITH SWEEPER OR EQUAL PRIOR TO END OF EACH WORK DAY AS A MINIMUM.
7. ALL SURPLUS MATERIAL REMOVED, INCLUDING EXCAVATED MATERIALS WHICH ARE NOT SUITABLE FOR USE IN THIS PROJECT SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF ANYWHERE ON THE SITE IN A MANNER AND AT LOCATION ACCEPTABLE TO ALL AFFECTED AGENCIES.
8. THE CONTRACTOR SHALL DESIGN, CONSTRUCT AND MAINTAIN ALL SAFETY DEVICES INCLUDING SHORING AND BE RESPONSIBLE FOR CONFORMING TO ALL LOCAL, STATE, AND FEDERAL SAFETY AND HEALTH STANDARDS, LAWS, AND REGULATIONS. NEITHER THE DISTRICT NOR THE DISTRICT'S ENGINEER SHALL ENFORCE SAFETY MEASURES OR REGULATIONS. THE CONTRACTOR IS RESPONSIBLE FOR SITE SAFETY.
9. ALL BOLTS AND NUTS SHALL BE 316 STAINLESS STEEL. AFTER INSTALLATION, ALL BURIED BOLTS, NUTS, ETC., SHALL BE COATED WITH DEV WRAP OR AN APPROVED EQUAL.
10. THE SURROUNDING AREA SHALL BE RETURNED TO THE CONDITION ENCOUNTERED AT THE START OF CONSTRUCTION.
11. CONTRACTOR SHALL CONTACT THE DISTRICT A MINIMUM OF 48 HOURS IN ADVANCE FOR SCHEDULING OF ACCESS TO THE PROJECT SITE. CONTRACTOR SHALL ADHERE TO ALL DISTRICT REQUIREMENTS FOR SITE ACCESS AND MAINTAIN CONTINUAL COORDINATION WITH DISTRICT FOR THE DURATION OF CONSTRUCTION.
12. THE CONTRACTOR SHALL PROTECT IN PLACE EXISTING SEWER, GAS, WATER LATERALS AND OTHER UTILITIES OR REPLACE IN KIND. LOCATIONS OF EXISTING UTILITIES AND SUBSTRUCTURES SHOWN ON THE DRAWINGS ARE APPROXIMATE ONLY. CONTRACTOR SHALL VERIFY EXACT LOCATIONS, ELEVATIONS AND DIMENSIONS IN THE FIELD PRIOR TO CONSTRUCTION IN THE AREA OF THE SPECIFIC SUB-STRUCTURE.
13. CONTRACTOR SHALL VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF ALL POINTS OF CONNECTION PRIOR TO COMMENCING CONSTRUCTION.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGE TO ALL EXISTING UTILITIES, PAVEMENT, CURB, STRUCTURE, TREES, LANDSCAPING, AND IRRIGATION SYSTEMS AS A RESULT OF HIS OPERATIONS, AND WILL BE REQUIRED TO REPAIR OR REPLACE SAME TO THE SATISFACTORY OF, AND AS DIRECTED BY, THE DISTRICT REPRESENTATIVE OR IMPACTED UTILITY COMPANY.
15. THE CONTRACTOR SHALL MAINTAIN AND PROVIDE THE DISTRICT WITH A "RECORD" SET OF AS BUILT DRAWINGS AT THE COMPLETION OF ALL WORK PER THE PLANS AND SPECIFICATIONS.
16. LOOSE EXCAVATED MATERIAL SHALL NOT BE PLACED OR STORED IN WATERWAYS OR STORM DRAIN CHANNELS. ALL EXCESS EXCAVATED SOIL AND MATERIALS SHALL BE REMOVED AND DISPOSED OF IN A PROPER AND LEGAL MANNER BY THE CONTRACTOR. ALL DISTURBED SURFACE AREAS SHALL BE SHAPED TO FACILITATE DRAINAGE AND AVOID PONDING AND SHALL BE RESTORED TO NEAR NATURAL OR PRE-CONSTRUCTION CONDITIONS.
17. THE CONTRACTOR SHALL CONDUCT HIS CONSTRUCTION OPERATIONS IN SUCH A MANNER THAT STORM OR OTHER WATERS MAY PROCEED UNINTERRUPTED ALONG THE STREET OR DRAINAGE COURSES.
18. CONSTRUCTION SITES SHALL BE MAINTAINED IN SUCH A CONDITION THAT AN UNANTICIPATED STORM DOES NOT CARRY WASTES OR POLLUTANTS OFF THE SITE. SUCH "DISCHARGES" OF MATERIAL OTHER THAN STORM WATER ARE ALLOWED ONLY WHEN NECESSARY FOR PERFORMANCE AND COMPLETIONS OF CONSTRUCTION PRACTICES AND WHERE THEY DO NOT CAUSE OR CONTRIBUTE TO A VIOLATION OF ANY WATER QUALITY STANDARD; CAUSE OR THREATEN TO CAUSE POLLUTION, CONTAMINATION, OR NUISANCE; OR CONTAIN A HAZARDOUS SUBSTANCE IN A QUANTITY REPORTABLE UNDER FEDERAL REGULATIONS 40 CFR PARTS 117 AND 302.

MATERIALS WHICH MAY HAVE EFFECTS OF POLLUTION INCLUDE BUT ARE NOT LIMITED TO: SOLID OR LIQUID CHEMICAL SPILLS; WASTES FROM PAINTS, STAINS, SEALANTS, GLUES, LIMES, PESTICIDES, HERBICIDES, WOOD PRESERVATIVES AND SOLVENTS; ASBESTOS FIBERS, PAINT FLAKES OR STUCCO FRAGMENTS; FUELS, OILS, LUBRICANTS, AND HYDRAULIC, RADIATOR OR BATTERY FLUIDS; FERTILIZERS, VEHICLE/EQUIPMENT WASH WATER AND CONCRETE WASH WATER; CONCRETE DETERGENT OR FLUATABLE WASTES; WASTES FROM ANY ENGINE/EQUIPMENT STEAM CLEANING OR CHEMICAL DEGREASING, AND SUPER CHLORINATED WATER LINE FLUSHINGS.

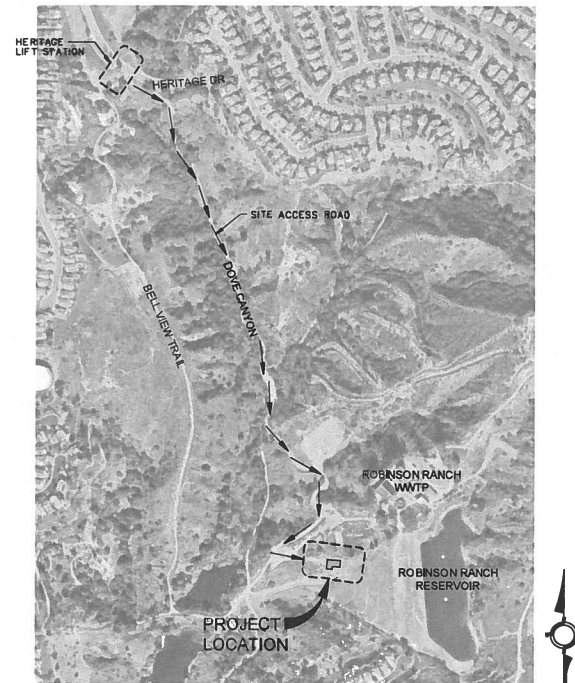
DURING CONSTRUCTION, DISPOSAL OF SUCH MATERIALS SHOULD OCCUR IN A SPECIFIED AND CONTROLLED TEMPORARY AREA ON SITE PHYSICALLY SEPARATED FROM POTENTIAL STORM WATER RUN-OFF, WITH ULTIMATE DISPOSAL IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REQUIREMENTS.

18. CONSTRUCTION WORK HOURS SHALL BE 8:00 AM TO 4:30 PM EXCLUSIVE OF SATURDAYS, SUNDAYS, OR HOLIDAYS, UNLESS OTHERWISE NOTED.

20. BY ACCEPTING THIS CONTRACT, CONTRACTOR HEREBY RELEASES AND AGREES TO INDEMNIFY, DEFEND, HOLD HARMLESS THE OWNER, TRABUCO CANYON WATER DISTRICT AND ITS REPRESENTATIVES, ENGINEER (HEREINAFTER JIG CONSULTANTS) THEIR PARENT AND SUBSIDIARY COMPANIES, AGENTS, EMPLOYEES, CONSULTANTS AND REPRESENTATIVES FOR ANY AND ALL DAMAGE TO PERSONS OR PROPERTY OR WRONGFUL DEATH REGARDLESS OF WHETHER OR NOT SUCH CLAIM, DAMAGE LOSS OR EXPENSE IS CAUSED IN WHOLE OR IN PART BY THE NEGLIGENCE, ACTIVE OR PASSIVE, OF OWNER, ENGINEER, THEIR PARENT AND SUBSIDIARY COMPANIES, AS WELL AS THEIR AGENTS AND EMPLOYEES, EXCEPTING ONLY THE SOLE NEGLIGENCE OF OWNER, ENGINEER, THEIR PARENT OR SUBSIDIARY COMPANIES AND THEIR AGENTS AND EMPLOYEES TO THE FULLEST EXTENT PERMITTED BY LAW. SUCH INDEMNIFICATION SHALL EXTEND TO ALL CLAIMS, DEMANDS, ACTIONS, OR LIABILITY FOR INJURIES, DEATH OR DAMAGES OCCURRING AFTER COMPLETION OF THE PROJECT, AS WELL AS DURING THE WORK'S PROGRESS. CONTRACTOR FURTHER AGREES THAT IT SHALL ACCOMPLISH THE ABOVE AT ITS OWN COST, EXPENSE AND RISK EXCLUSIVE OF AND REGARDLESS OF ANY APPLICABLE INSURANCE COMPANY REGARDING COVERAGE.

SHEET INDEX

DWG. NO.	SHT. NO.	SHEET TITLE
G-01	1	TITLE SHEET
G-02	2	GENERAL NOTES, SHEET INDEX, VICINITY AND LOCATION MAPS
D-01	3	MECHANICAL DEMOLITION PLAN AND DETAILS
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M-01	5	PUMP ROOM MECHANICAL PLAN AND SECTIONS
M-02	6	FILTER ROOM MECHANICAL PLAN AND SECTIONS
M-03	7	CHEMICAL PUMP AND ANALYZER PLAN AND SECTION
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E-07	19	INSTRUMENTATION DIAGRAM AND I/O SUMMARY



90% MILESTONE

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DATE	
ENGINEER	JOSEPH I. GUTIERREZ RCE 55604
DISTRICT ENGINEER	LORRIE LAUSTEN RCE 67027

TRABUCO CANYON WATER DISTRICT
DOVE CANYON RECYCLED WATER PUMP STATION IMPROVEMENTS
 PROJECT NO. XXXX-XX

GENERAL NOTES, SHEET INDEX, VICINITY AND LOCATION MAPS

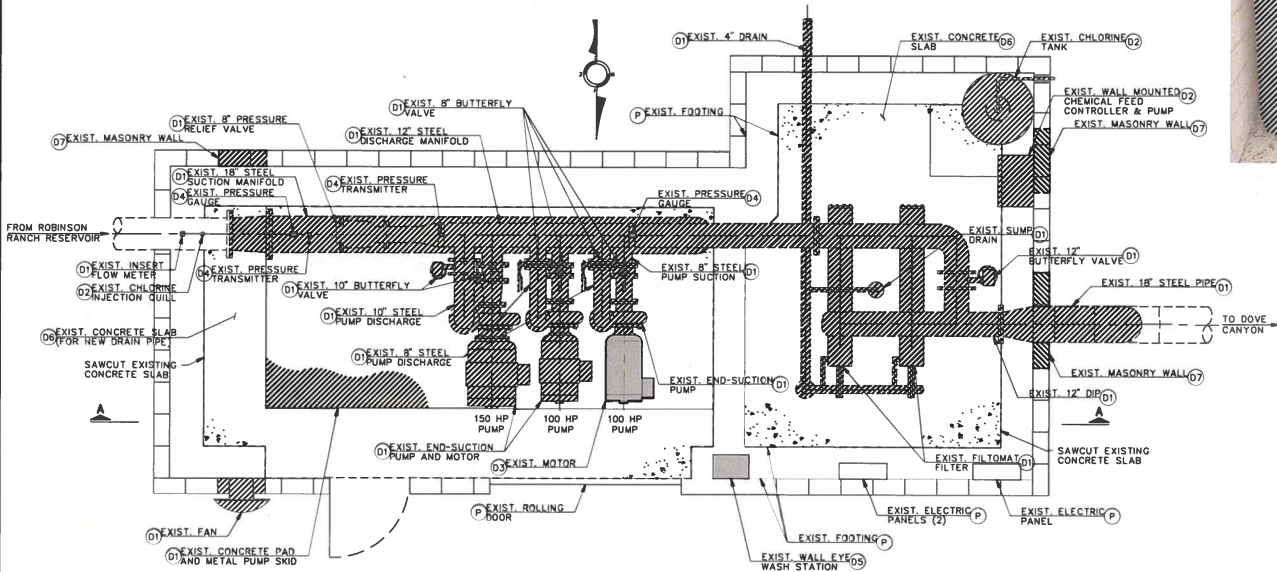
G-02
SHEET
2
OF
19

DEMOLITION NOTES

- (D1) DEMOLISH AND DISPOSE OF EXISTING PIPING, VALVES, PUMPS, AND APPURTENANCES PER 1 & 2
- (D2) DEMOLISH AND DISPOSE OF EXISTING CHLORINE TANK, PUMP, PIPING, AND APPURTENANCES PER 1
- (D3) SALVAGE EXISTING MOTOR AND DELIVER TO OWNER PER 1
- (D4) SALVAGE, RECALIBRATE, AND DELIVER EXISTING PRESSURE GAUGES AND TRANSMITTERS TO OWNER PER 1
- (D5) SALVAGE AND REUSE EXISTING WALL EYEWASH STATION PER 1
- (D6) SAWCUT, JACKHAMMER, AND REMOVE EXISTING CONCRETE SLAB PER 1
- (D7) CUT AND REMOVE EXISTING MASONRY WALL
- (P) PROTECT IN PLACE

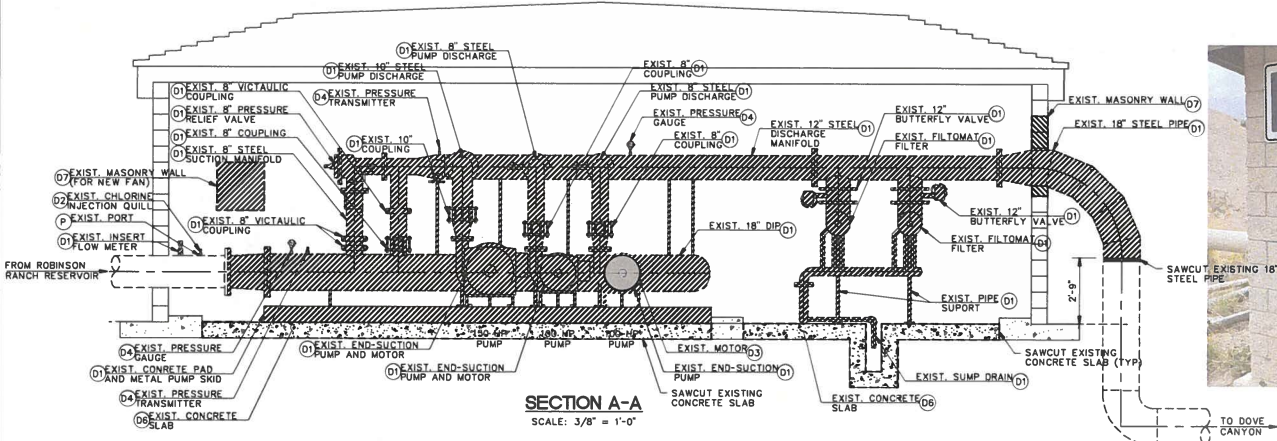
LEGEND

- DEMOLISH AND DISPOSE OF EXISTING PUMPS, MOTORS, PIPING, VALVES, AND APPURTENANCES
- SAWCUT AND REMOVE EXISTING CONCRETE SLAB
- SALVAGE EXISTING MOTOR, PRESSURE TRANSMITTERS, PRESSURE GAUGES, AND EYEWASH STATION
- LIMITS OF CONCRETE REMOVAL



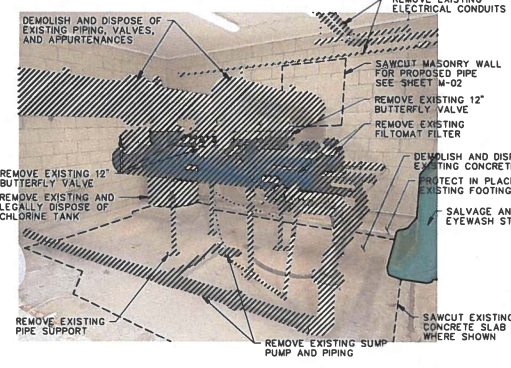
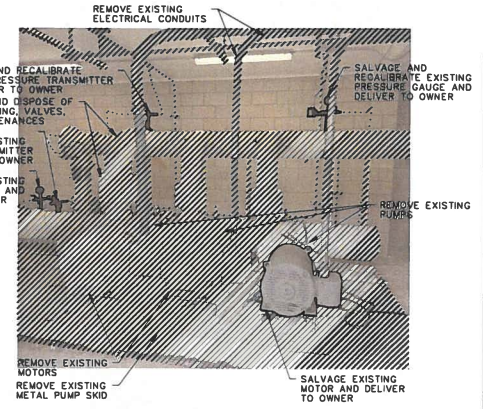
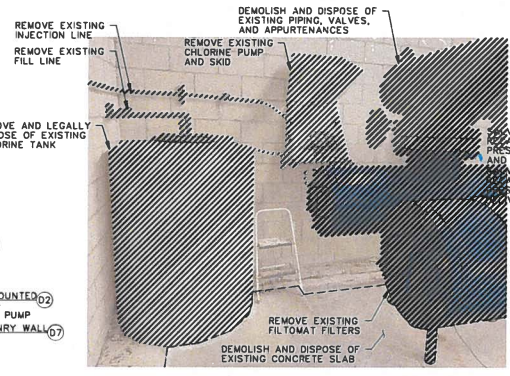
MECHANICAL DEMOLITION PLAN

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



SECTION A-A

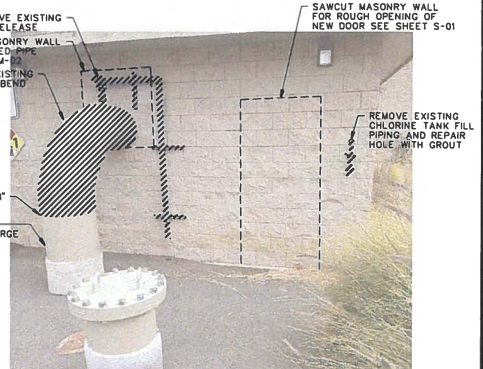
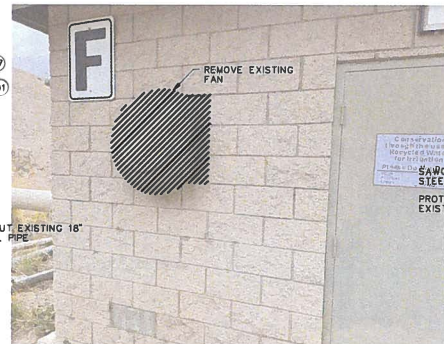
SCALE: 3/8" = 1'-0"



INTERIOR DEMOLITION DETAIL 1

NOT TO SCALE

1



EXTERIOR DEMOLITION DETAIL 2

NOT TO SCALE

2

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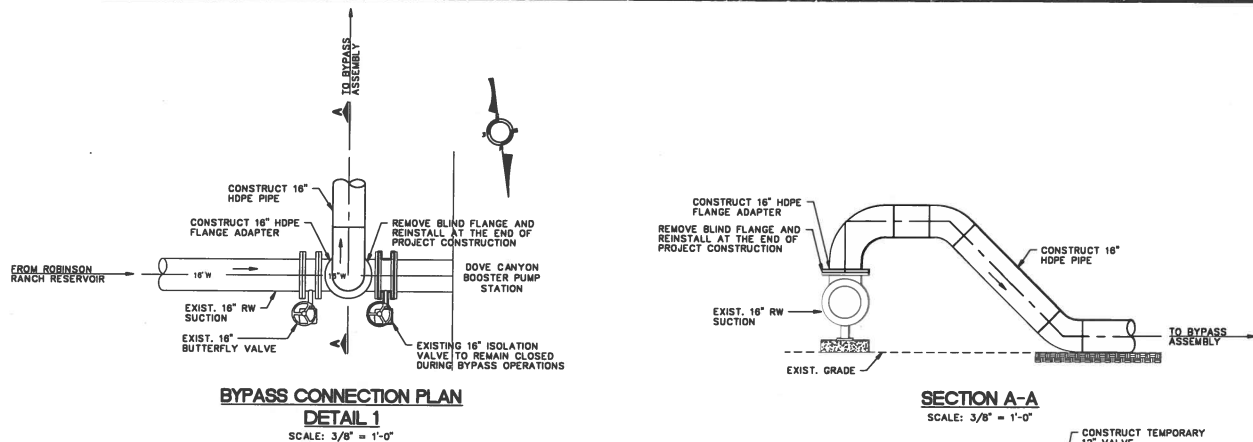
DATE
ENGINEER: JOSEPH I. GUTIERREZ RCE 35604
DISTRICT ENGINEER: LORRIE CAUSTEN RCE 67627

TRABUCO CANYON WATER DISTRICT
DOVE CANYON RECYCLED WATER PUMP STATION IMPROVEMENTS
PROJECT NO. XXXX-XX

MECHANICAL DEMOLITION PLAN AND DETAILS

D-01
SHEET 3
OF 19

90% MILESTONE

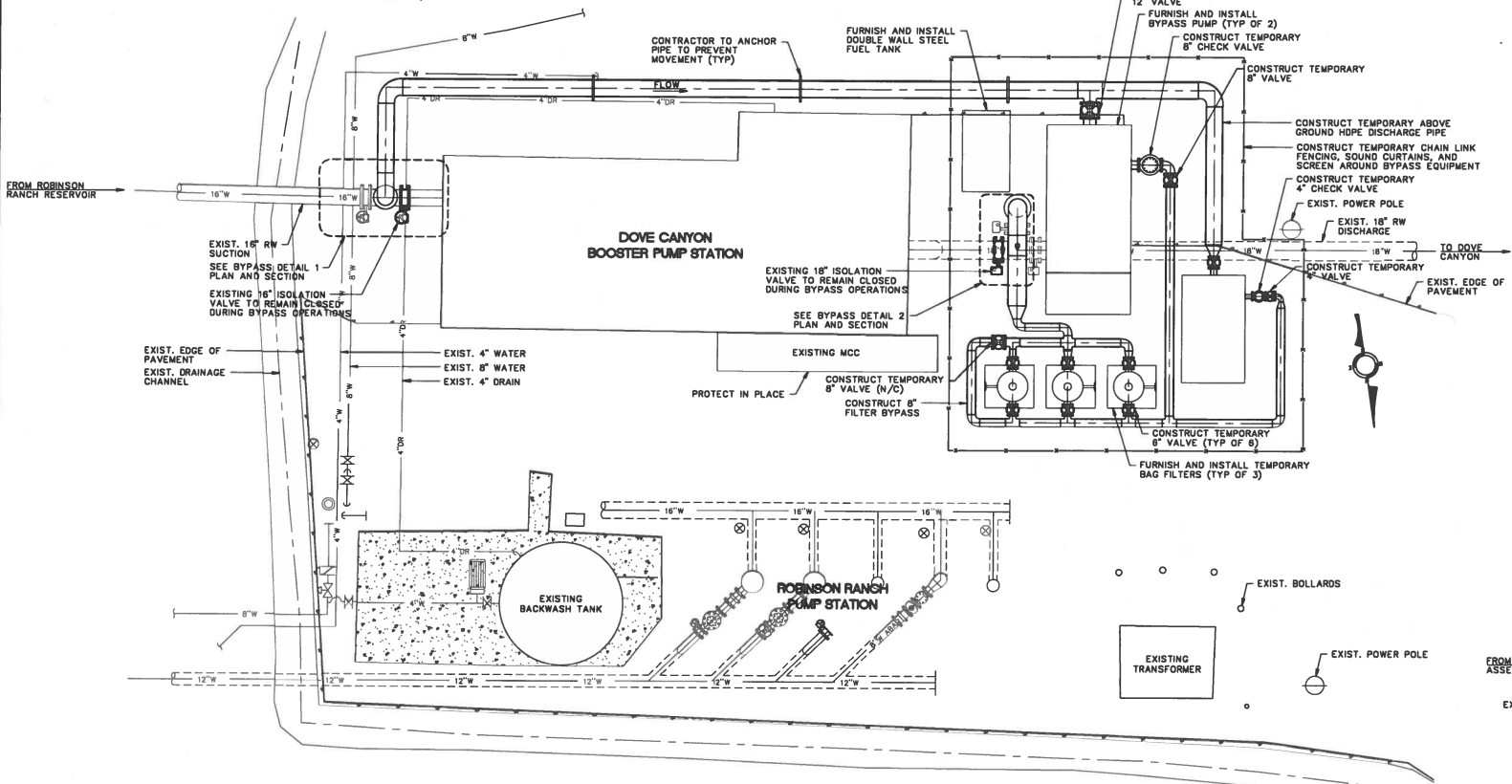


**BYPASS CONNECTION PLAN
DETAIL 1**
SCALE: 3/8" = 1'-0"

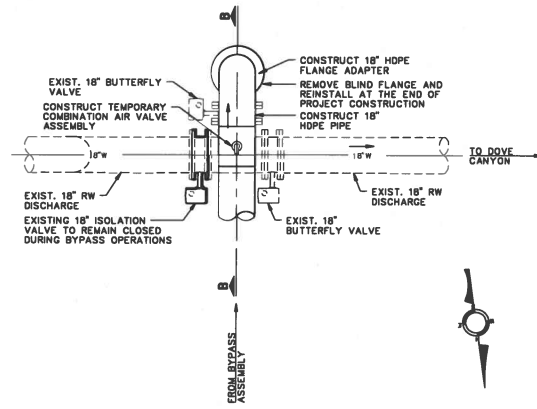
SECTION A-A
SCALE: 3/8" = 1'-0"

TEMPORARY BYPASS WORK SEQUENCE SUMMARY

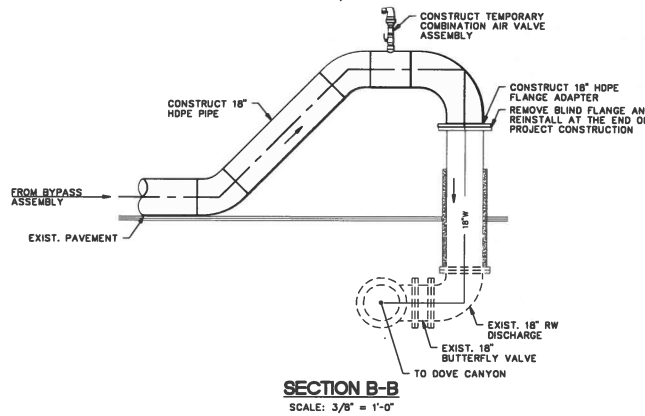
1. CONTRACTOR SHALL DESIGN, FURNISH, AND INSTALL TEMPORARY RECYCLED WATER BYPASS FOR THE DOVE CANYON PUMP STATION.
2. CONTRACTOR SHALL MOBILIZE TEMPORARY BYPASS PUMPS AND BAG FILTERS AND FABRICATE AND INSTALL THE BYPASS PIPELINE, VALVES AND APPURTENANCES. THE LAYOUT OF THE RECYCLED WATER BYPASS SYSTEM AS SHOWN ON THIS SHEET ARE CONCEPTUAL ONLY. THE CONTRACTOR SHALL DESIGN, FURNISH, AND INSTALL THEIR RECYCLED WATER BYPASS SYSTEM IN ACCORDANCE WITH THE REQUIREMENTS OF SPECIFICATION SECTION 33 01 30.
3. RECYCLED WATER BYPASS SYSTEM SHALL MAINTAIN DISCHARGE PRESSURE WITH A PRESSURE TRANSMITTER TO CONTROL THE OPERATION OF THE TEMPORARY BYPASS PUMPS. THE BYPASS SYSTEM SHALL INCORPORATE AN AUTO DIALER ALARM AGENT TO NOTIFY THE CONTRACTOR'S RESPONSE PERSONNEL AND TOWD OPERATIONS STAFF IN THE EVENT OF EMERGENCIES.
4. CONTRACTOR SHALL ERECT TEMPORARY FENCING AND SOUND ATTENUATION.
5. CONTRACTOR SHALL TEST THE FUNCTIONALITY OF THE TEMPORARY BYPASS SYSTEM AND SEEK APPROVAL FROM THE DISTRICT. WITH APPROVAL, THE DOVE CANYON PUMP STATION SHALL BE TENTATIVELY TAKEN OUT OF SERVICE AND THE TEMPORARY BYPASS SYSTEM OPERATED AND MONITORED CONTINUOUSLY FOR 48 HOURS. NO CONSTRUCTION WILL BE ALLOWED DURING THE 48-HOUR MONITORING PERIOD. MONITORING WILL INCLUDE 24-HOURS/DAY SITE PRESENCE FROM THE CONTRACTOR. CONTRACTOR TO MAKE ADJUSTMENTS AS NEEDED DURING THE 48-HOUR MONITORING PERIOD.
6. AFTER SUCCESSFUL COMPLETION OF THE 48-HOUR MONITORING PERIOD, THE CONTRACTOR WILL ADMINISTER A "GO-NO GO" MEETING WITH DISTRICT STAFF TO PRESENT THE TEMPORARY BYPASS SYSTEM.
7. AFTER RECEIVING A "GO" DIRECTIVE, THE CONTRACTOR CAN FORMALLY TAKE THE DOVE CANYON PUMP STATION OUT OF SERVICE AND COMMENCE WITH THE PROJECT IMPROVEMENTS.



**TEMPORARY CONCEPTUAL
BYPASS PLAN**
SCALE: 1" = 5'



**BYPASS CONNECTION PLAN
DETAIL 2**
SCALE: 3/8" = 1'-0"



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

90% MILESTONE

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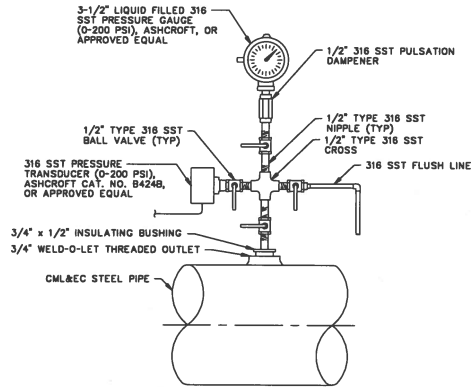
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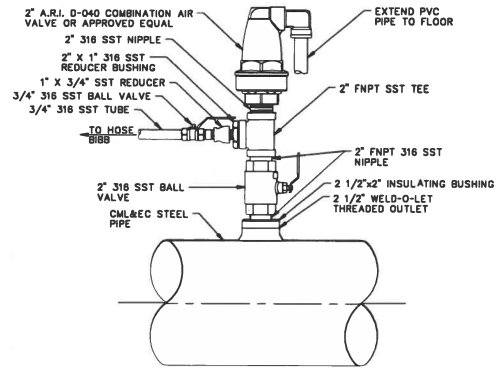
JOSEPH I. GUTIERREZ	RCE 55604	ENGINEER	DATE
CORRE LAUSTEN	RCE 67027	DISTRICT ENGINEER	

**TRABUCO CANYON WATER DISTRICT
DOVE CANYON RECYCLED WATER
PUMP STATION IMPROVEMENTS
PROJECT NO. XXXX-XX**

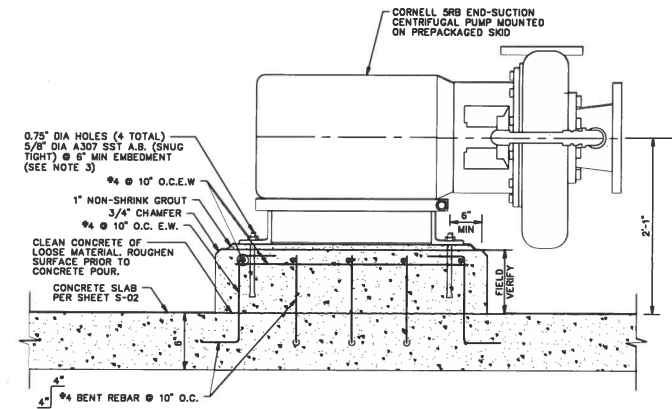
**CONCEPTUAL RECYCLED WATER
BYPASS PLAN**
C-01
SHEET 4 OF 19



PRESSURE GAUGE/TRANSDUCER ASSEMBLY 1
NOT TO SCALE

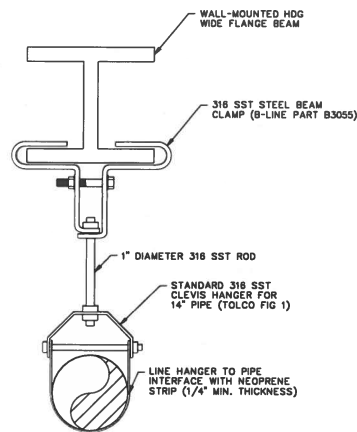


COMBINATION AIR VALVE ASSEMBLY 2
NOT TO SCALE

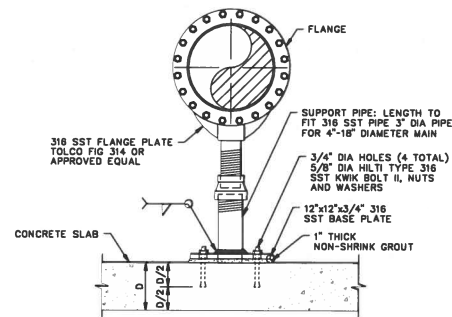


- NOTES:
- USE CLASS C CONCRETE MIX
 - CONTRACTOR TO VERIFY LOCATION OF CONCRETE PAD IN CONJUNCTION WITH LAYOUT OF NEW DISCHARGE PIPING
 - CONTRACTOR TO VERIFY ANCHOR BOLT SIZE AND EMBEDMENT WITH PUMP MANUFACTURER. MANUFACTURER TO SUBMIT STRUCTURAL CALCULATIONS FOR REVIEW.

CONCRETE PUMP PAD 3
NOT TO SCALE

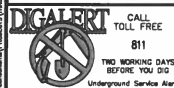


PIPE HANGER 4
NOT TO SCALE



PIPE FLANGE SUPPORT 5
NOT TO SCALE

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JOSEPH I. GUTIERREZ RCE 55604 ENGINEER

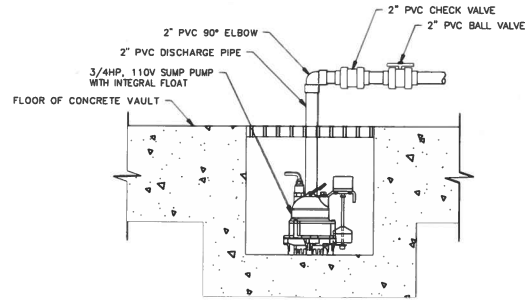
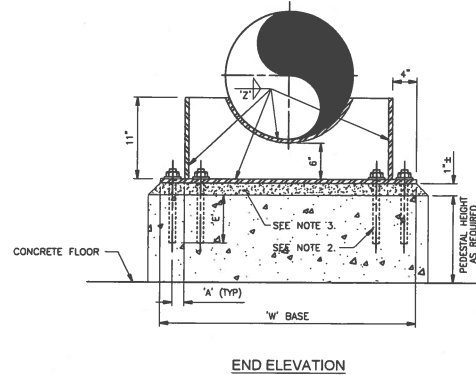
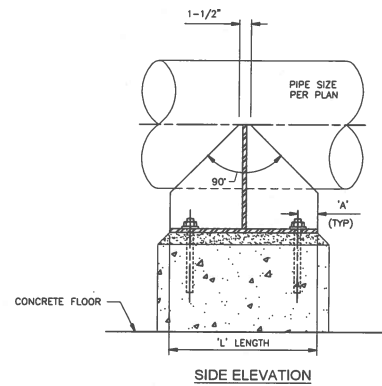
LORRIE LAUSTEN RCE 67027 DISTRICT ENGINEER

TRABUCO CANYON WATER DISTRICT
DOVE CANYON RECYCLED WATER PUMP STATION IMPROVEMENTS
PROJECT NO. XXXX-XX

MISCELLANEOUS MECHANICAL DETAILS

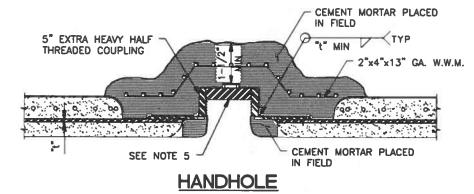
M-04
SHEET 8 OF 19

90% MILESTONE

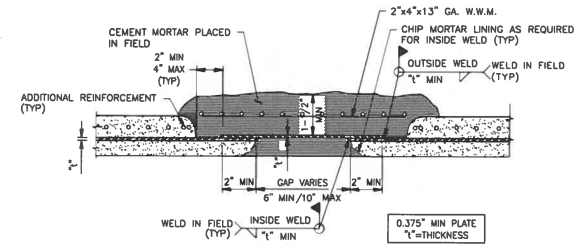


NOTE: SUMP PUMP TO BE CONNECTED TO GFI PROTECTED CIRCUIT

SUMP PUMP ASSEMBLY 2
NOT TO SCALE



HANDHOLE



TYPICAL SECTION

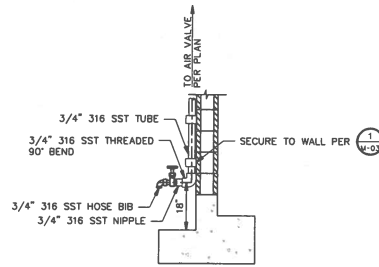
NOTES:

1. PLATES SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION.
2. USE 316 STAINLESS STEEL ADHESIVE ANCHOR BOLTS, NUTS & WASHERS.
3. NON-SHRINK GROUT.
4. PIPE OD SIZE IS THE OD OF THE WELD NECK.

PIPE DIA	PLATE THK	BOLT QUAN	BOLT SIZE	'E' ANCHOR BOLD EMBED	'A' BOLT OFFSET	'L' BASE LENGTH	'W' BASE WIDTH	'Z' WELD
18"	11/16"	8	5/8"	5-5/8" MIN	1-1/2"	1'-9"	2'-10"	5/8"

THRUST RESTRAINING PIPE SUPPORT 1

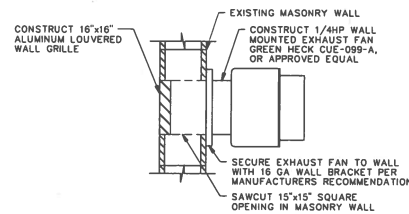
NOT TO SCALE



- NOTE:
1. SECURE SIGN TO HOSE BIB "RECYCLED WATER DO NOT DRINK"

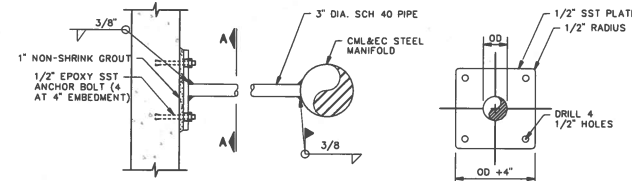
HOSE BIB CONNECTION 4

NOT TO SCALE



EXHAUST FAN 5

NOT TO SCALE



ELEVATION

SECTION A-A

WALL THRUST SUPPORT 6

NOT TO SCALE

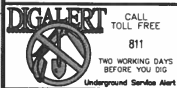
NOTES:

1. BUTT-STRAPS TO BE FURNISHED IN TWO PIECES AND SHIPPED LOOSE FOR FIELD JOINING.
2. FOR PIPING 12" IN DIAMETER AND SMALLER, ONE HANDHOLE IS REQUIRED PER EACH BUTT-STRAP JOINT. FOR PIPING 14" IN DIAMETER THROUGH 24" IN DIAMETER, TWO HANDHOLES ARE REQUIRED PER EACH BUTT-STRAP JOINT; THE HANDHOLES SHALL BE LOCATED 120" APART. FOR PIPING 36" IN DIAMETER, FOUR HANDHOLES ARE REQUIRED PER EACH BUTT-STRAP JOINT; THE HANDHOLES SHALL BE LOCATED 90" APART.
3. FOR PIPING SMALLER THAN 30" IN DIAMETER, INSIDE WELDS ARE NOT REQUIRED.
4. WELD PLUG TO COUPLING AND CEMENT MORTAR LINE OR COAT EXPOSED INTERIOR METAL SURFACES WITH TWELVE (12) MILS (MIN) EPOXY COATING IN FIELD.
5. ALL WELD ROD TO BE 6010, 6012, OR APPROVED EQUAL.

BUTT STRAP JOINT DETAILS 3

NOT TO SCALE

90% MILESTONE



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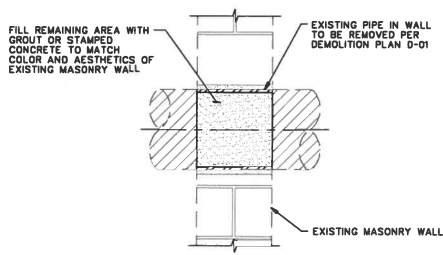


JOSEPH I. GUTIERREZ	RCE 55604	ENGINEER
LORRIE LAUSTEN	RCE 67027	DISTRICT ENGINEER

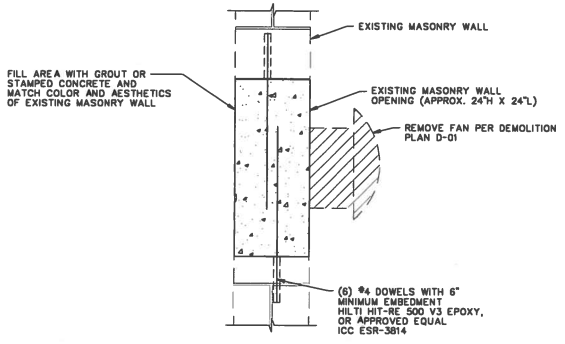
TRABUCO CANYON WATER DISTRICT
DOVE CANYON RECYCLED WATER PUMP STATION IMPROVEMENTS
PROJECT NO. XXXX-XX

MISCELLANEOUS MECHANICAL DETAILS

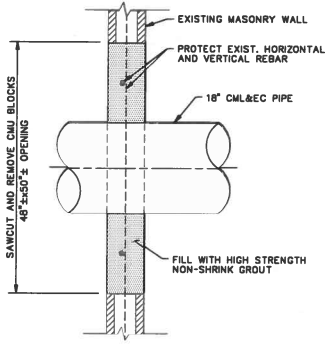
M-05
SHEET 9
OF 19



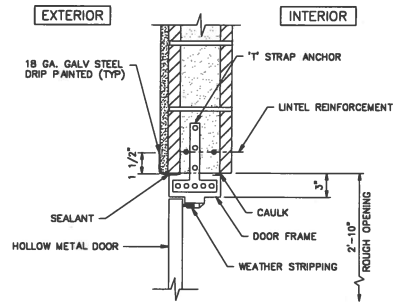
MASONRY WALL SMALL OPENING REPAIR ①
NOT TO SCALE



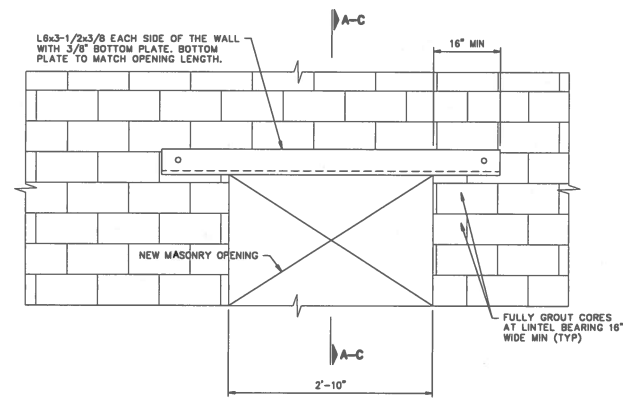
MASONRY WALL LARGE OPENING REPAIR ②
NOT TO SCALE



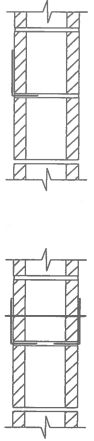
MASONRY WALL REPAIR AND PENETRATION ③
NOT TO SCALE



DOOR HEAD ④
NOT TO SCALE



DOOR ⑤
NOT TO SCALE

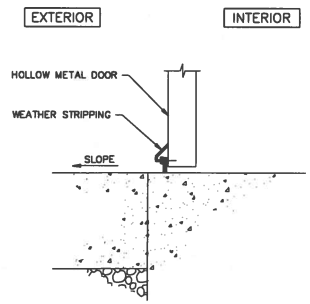


DOOR JAMB ⑥
NOT TO SCALE

- STEP A:**
- FULLY GROUT CMU LINTEL IF HOLLOW.
 - SAWCUT MORTAR JOINT ON ONE SIDE OF WALL.
 - INSTALL ONE LINTEL ANGLE IN CUT JOINT TIGHT TO BOTTOM OF CMU TO REMAIN. APPLY NON-SHRINK GROUT FOR FULL BEARING AT ENDS.

- STEP B:**
- AFTER MINIMUM OF 24 HOURS, CUT OUT MORTAR JOINT ON OPPOSITE SIDE OF WALL.
 - INSTALL ONE LINTEL ANGLE IN CUT JOINT TIGHT TO BOTTOM OF CMU TO REMAIN. APPLY NON-SHRINK GROUT FOR FULL BEARING AT ENDS.
 - 3/4\"/>

- STEP C:**
- AFTER MINIMUM OF 48 HOURS, REMOVE MASONRY TO CREATE NEW OPENING. SAWCUT JAMBS.
 - TROWEL EXPOSED MASONRY BETWEEN ANGLES FLUSH WITH MORTAR.
 - INSTALL BOTTOM PLATE.



DOOR THRESHOLD ⑦
NOT TO SCALE

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DATE
JOSEPH I. GUTIERREZ RCE 55604 ENGINEER
LORRE LAUSTEN RCE 67027 DISTRICT ENGINEER

**TRABUCO CANYON WATER DISTRICT
DOVE CANYON RECYCLED WATER
PUMP STATION IMPROVEMENTS
PROJECT NO. XXXX-XX**

MISCELLANEOUS STRUCTURAL DETAILS

S-02
SHEET
11
OF
19

90% MILESTONE

CONDUIT PLAN	SINGLE LINE DIAGRAM	SCHEMATIC DIAGRAM	DESCRIPTION
	30A 3P		CIRCUIT BREAKER. UPPER NUMBER IS TRIP RATING. LOWER NUMBER IS NUMBER OF POLES.
			THREE POSITION SWITCH. MAINTAINED CONTACT FUNCTION MAY VARY AS NOTED ON DIAGRAMS. CENTER POSITION IS OFF.
			TWO POSITION SWITCH. MAINTAINED CONTACT FUNCTION MAY VARY AS NOTED ON DIAGRAMS.
			MOMENTARY CONTACT PUSHBUTTON. FUNCTION MAY VARY AS NOTED ON DIAGRAMS.
			MOMENTARY CONTACT PUSHBUTTON WITH PROVISION FOR LOCKOUT.
			LOCKABLE DISCONNECT SWITCH. RATINGS AND DETAILS AS NOTED ON DRAWINGS.
	25		LIMIT SWITCH, NORMALLY OPEN.
	25		LIMIT SWITCH, NORMALLY CLOSED.
			TIME DELAY RELAY CONTACT. OFF DELAY, NORMALLY OPEN, TIME OPEN.
			TIME DELAY RELAY CONTACT. OFF DELAY, NORMALLY CLOSED, TIME CLOSED.
			TIME DELAY RELAY CONTACT. ON DELAY, NORMALLY OPEN, TIME OPEN.
			TIME DELAY RELAY CONTACT. ON DELAY, NORMALLY CLOSED, TIME OPEN.
	30V		SOLENOID OPERATED VALVE.
			MOTOR CONTROL CENTER DRAWOUT STABS.
			MOTOR STARTER WITH THERMAL OVERLOADS. NUMBER INDICATES NEMA SIZE.
			MOTOR OVERLOAD CONTACT.
	2		MOTOR, NUMBER INDICATES HORSEPOWER.
			INDICATING LIGHT. PUSH-TO-TEST. LETTER INDICATES COLOR. R-RED B-BLUE G-GREEN A-AMBER W-WHITE
			CONTACTOR OR RELAY COIL. LETTER OR NUMBER IS DESIGNATION.
			NORMALLY CLOSED CONTACT. LETTER OR NUMBER IS DESIGNATION.
			NORMALLY OPEN CONTACT. LETTER OR NUMBER IS DESIGNATION.
			RUNNING TIME METER, NON-RESETTABLE.
	20A		FUSE, NUMBER INDICATES RATINGS.
			CONTROL TRANSFORMER. RATING AS NOTED ON DRAWINGS OR AS REQUIRED BASED ON LOAD SERVED.
			KILOWATT METER.
			PRESSURE SWITCH. CONTACT ACTION AS NOTED ON DRAWINGS.

CONDUIT PLAN	SINGLE LINE DIAGRAM	SCHEMATIC DIAGRAM	DESCRIPTION
			POWER TRANSFORMER. RATINGS AS NOTED ON DRAWINGS.
			DUPLEX RECEPTACLE. 20A, SPEC GRADE GROUNDING TYPE. UNLESS OTHERWISE NOTED ON DRAWINGS.
			TELEPHONE OUTLET.
			JUNCTION BOX OR CONDUIT FITTING AS NOTED OR REQUIRED. (SHOWN WITH CONDUIT TURNING UP)
			LEVEL SWITCH. CONTACT ACTION AS NOTED ON DRAWINGS.
			CONTROL PANEL OR EQUIPMENT AS NOTED.
			FLOW SWITCH. CONTACT ACTION AS NOTED ON DRAWINGS.
			FLUSH TOGGLE SWITCH, SINGLE POLE, SINGLE THROW.
			FLUSH TOGGLE SWITCH, THREE WAY.
			FLUORESCENT FIXTURE. SEE LIGHTING SCHEDULE.
			LIGHTING FIXTURE, WALL MOUNTED. SEE LIGHTING SCHEDULE.
			MH-MANHOLE PB-PULLBOX MH-HANDHOLE OR AS NOTED ON DRAWINGS.
			TELEPHONE CONDUIT. SIZE AS NOTED.
			GROUNDING GRID OR GROUNDING CONDUCTOR. SIZE AS REQUIRED OR AS NOTED ON DRAWINGS.
			GROUND PISTAIL. SIZE AS NOTED ON DRAWINGS.
			EXOTHERMIC GROUND CONNECTION.
			BOLTED GROUND CONNECTION.
			CONDUIT BENDING UP.
			CONDUIT BENDING DOWN.
			UNDERGROUND OR CONCEALED CONDUIT, 1" MINIMUM.
			EXPOSED CONDUIT, 3/4" MINIMUM.
			HOME-RUN CONDUIT WITH 3 CONDUCTORS, NEUTRAL AND GROUND, CIRCUITS 1, 3, 5. PANEL PSI. NO HASHMARKS INDICATE 2 CONDUCTORS AND GROUND.
			DRIVEN GROUND ROD/TEST WELL. 3/4" X 10' Cu CLAD STEEL.
			PANELBOARD OR AS NOTED ON DRAWING.
			LIQUIDTIGHT FLEXIBLE CONDUIT.
	XXX		CONDUIT NUMBER 'XXX', REFER TO CONDUIT SCHEDULE FOR DESCRIPTION.

CONDUIT PLAN	SINGLE LINE DIAGRAM	SCHEMATIC DIAGRAM	DESCRIPTION
			MANUAL MOTOR STARTER.
			GROUND.
			HEATER. RATING AS NOTED ON DRAWING.
			HORN OR AUDIBLE SIGNAL.
			PHASE.
			TERMINAL, INTERNAL WIRING.
			TERMINAL, FIELD WIRING.
			DOOR SWITCH.
			CONDUIT STUB OUT.
			DISCONNECT SWITCH, F = FUSED NF = NON-FUSED XX = AMP RATING
			PLC INPUT POINT AT RTU.

STANDARD ABBREVIATIONS

A	AMPERES	MH	MANHOLE
AC	ALTERNATING CURRENT	MIN	MINIMUM OR MINUTE
AF	AMPERE FRAME	MLO	MIN LUBS ONLY
APC	ABOVE FINI SHED CONCRETE	MOV	MOTOR OPERATED VALVE ACTUATOR
AFB	ABOVE FINI SHED FLOOR	MBS	MAIN SWITCHBOARD
AFS	ABOVE FINI SHED GRADE	MTS	MOUNTINGS
AT	AMPERE TRIP	MTR	MOTOR
ATS	AUTOMATIC TRANSFER SWITCH	N	NEUTRAL
AUX	AUXILIARY	NA	NON-AUTOMATIC
AUTO	AUTOMATIC	NC	NORMALLY CLOSED
BB	BARRE COPPER	NCIO	NORMALLY CLOSED, INSTANTANEOUS OPEN
BC	BARRE COPPER	NCTO	NORMALLY CLOSED, TIME CLOSE
BR	BREAKER	NCTD	NORMALLY CLOSED, TIME OPEN
C	CABINET	NEC	NATIONAL ELECTRIC CODE
CB	CIRCUIT BREAKER	NIC	NOT IN CONTRACT NUMBER
CKT	CIRCUIT	NO	NORMALLY OPEN
CLS	CELLING	NOIC	NORMALLY OPEN, INSTANTANEOUS CLOSE
C.O.	CONDUIT ONLY	NOTC	NORMALLY OPEN, TIME CLOSE
COMP	COMPARTMENT	NOTD	NORMALLY OPEN, TIME OPEN
COND	CONDUIT	OP	TIME OPEN
CONT	CONTROL	OT	OVERTEMP SWITCH
CONT	CONTROL	PB	PUSHBUTTON
CP	CONTROL PANEL	PB	PULLBOX
CT	CURRENT TRANSFORMER	PC	PROTECTOR
CJ	COPPER	PCV	PUMP CONTROL VALVE
CR	CONTROL RELAY	PFR	POWER MONITOR RELAY
DC	DIRECT CURRENT	PNL	PANEL
DISC	DISCONNECT	POS	POSITION
DISC SW	DISCONNECT SWITCH	PR	PAIR
DPT	DOUBLE POLE DOUBLE THROW	PR	PRIMARY
DPST	DOUBLE POLE SINGLE THROW	PS	PRESSURE SWITCH
DWS	DOOR SWITCH	PT	POTENTIAL TRANSFORMER
EL, ELEV	ELEVATION	PTV	POLYVINYL TEREPHTHALE
EMT	ELECTRICALLY OPERATED METAL TUBING	PVC/RSS	PVC JACKETED RIBBON GALVANIZED STEEL CONDUIT
EXIST	EXISTING	PW	PART WINDING
FED	FURNISHED BY OWNER	RECEP	RECEPTACLE
FBR	FEDER	RCF	REMOTE CONTROL PANEL
FIN	FINI SHED	RSS	RIBBON GALVANIZED STEEL CONDUIT
FLA	FULL LOAD AMPS	RTU	REMOTE TERMINAL UNIT
FLEX	FLEXIBLE	RVAD	REDUCED VOLTAGE AUTO TRANSFORMER
FM	FLOW METER	RVVD	REDUCED VOLTAGE WYE DELTA
FS	FLOW SWITCH	SEC	SOUTHERN CALIFORNIA EDISON SECONDARY
FT OR	FEET OR FOOT	SEL	SELECTOR
FT	FLOW TRANSMITTER	SP	SPARE
FUT	FUTURE	SPEC	SPECIFICATION
FVNR	FULL VOLTAGE NON REVERBING	SPDT	SINGLE POLE DOUBLE THROW
GALV	GALVANIZED	SPST	SINGLE POLE SINGLE THROW
GD	GAS DETECTORS	SS	STAINLESS STEEL
GFI	GROUND FAULT INTERRUPTER	SSRV	SOLID STATE REDUCED VOLTAGE STARTER
GFP	GROUND FAULT PROTECTION	ST	SHUNT TRIP
GRD OR G	GROUND	STA	STATION
MH	MANHOLE	STL	STEEL
MHA	HAND/OFF/AUTO	STP	SHIELDED TWISTED PAIR
HTR	HEATER	STR	STARTER
IC	INTER interrupting CURRENT	STT	SHIELDED TWISTED TRIPLET
IN OR	INCHES OR INCH	SV	SOLENOID VALVE
IND	INDICATING	SW	SWITCH
INST	INSTANTANEOUS	SWBD	SWITCHBOARD
INSTR	INSTRUMENT	TB	TERMINAL BOX
INTLK	INTERLOCK	TEL	TELEPHONE
JB OR J	JUNCTION BOX, CONDULET OR FITTING AS REQUIRED BY NEC. UNLESS OTHERWISE NOTED	TEMP	TEMPERATURE
KW	KILOWATTS	TERM	TERMINAL
LCL	LONG CONTINUOUS LOAD	TM	TELEMETRY
LCP	LOCAL CONTROL PANEL	TS	TEMPERATURE SWITCH
LEV	LEVEL	TSW	TWO SPEED TWO WINDING
LIM	LIMIT	TVBS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
LR	LOCAL/REMOTE	TVSH	TV SET SHIELDED
LOS	LOCKOUT STOP STATION	TYP	TYPICAL
LS	LEVEL OR LIMIT SWITCH	UN	UNDERGROUND
LS10	LONG TIME, SHORT TIME, INSTANTANEOUS AND BOUND FAULT ADJUSTMENTS	UNH	UNLESS OTHERWISE NOTED
LT	LIGHT	V	VOLTS
LTS	LIGHTING	W	WATTS
LV	LOW VOLTAGE	W/O	WITHOUT
MA	MILLIAMPERE	WP	WEATHERPROOF
MAINT	MAINTAINED	XFR	TRANSFORMER
MAN	MANUAL	XP	EXPLOSION PROOF
MAX	MAXIMUM	ZB	POSITION SWITCH OR LIMIT SWITCH
MC	MAINTAINED CONTACT	3W	THREE WIRE
MCC	MOTOR CONTROL CENTER	4W	FOUR WIRE
MCN	THOUSAND CIRCULAR MILLS		
MCP	MOTOR CIRCUIT PROTECTOR		



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

GERRY GREEN INC.
Consulting Electrical Engineers
2734 Locker Ave West, Suite M, Carlsbad, CA 92010 Tel: (619) 963-2336



DATE: XX/XX/25

NO.	DATE	REVISIONS

DESIGN:	GG
DRAWN:	AH
CHECKED:	GG



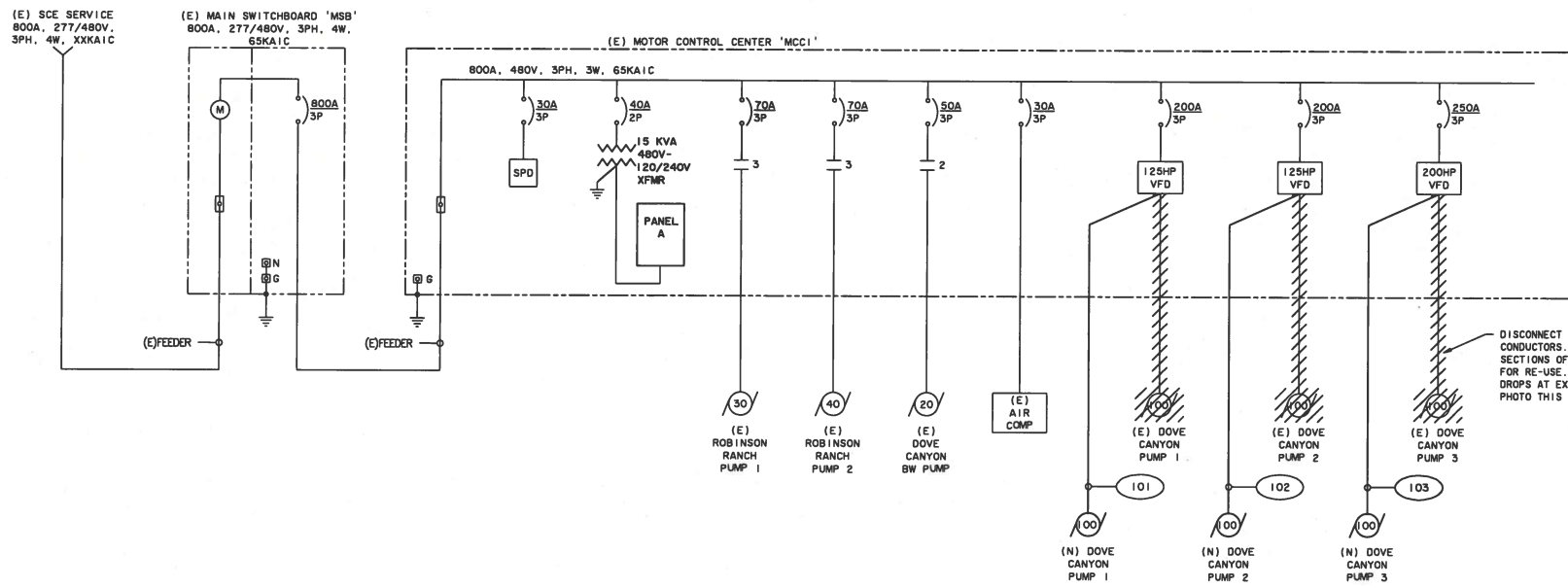
DESIGNER:	JOSEPH I. BUTTNEREZ	NO. 53604	ENGINEER
CHECKER:	LOARTE LAUSTEN	NO. 67027	DISTRICT ENGINEER

TRABUCO CANYON WATER DISTRICT
DOVE CANYON RECYCLED WATER PUMP STATION IMPROVEMENTS
PROJECT NO. XXXX-XX

STANDARD ELECTRICAL SYMBOLS AND ABBREVIATIONS

E-01
SHEET
13
OF
19

90% MILESTONE



LEGEND

— EXISTING

- - - NEW

/// REMOVE

DISCONNECT AND REMOVE (E) CONDUCTORS. PROTECT IN PLACE ALL SECTIONS OF (E) CONDUIT SUITABLE FOR RE-USE. REMOVE CONDUIT SECTION DROPS AT EXISTING PUMPS (TYP). SEE PHOTO THIS SHEET

SINGLE LINE DIAGRAM

DIALERT CALL TOLL FREE 811
CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT A MINIMUM OF 48 HOURS PRIOR TO BEGINNING ANY CONSTRUCTION WORK. SEE GENERAL NOTES FOR FURTHER INFORMATION.

GERRY GREEN INC. Consulting Electrical Engineers
2724 Loker Ave West, Suite M, Carlsbad, CA 92010 Tel: (619) 961-2356



DATE: XX/XX/25

NO.	DATE	REVISIONS

DESIGN: GG
DRAWN: AH
CHECKED: GG

JOSEPH I. GUTIERREZ RCE 55804 ENGINEER
LORRIE LAUSTEN RCE 67027 DISTRICT ENGINEER

TRABUCO CANYON WATER DISTRICT
DOVE CANYON RECYCLED WATER PUMP STATION IMPROVEMENTS
PROJECT NO. XXXX-XX

EXISTING SINGLE LINE DIAGRAM AND MODIFICATIONS

E-02
SHEET 14 OF 19

90% MILESTONE

PANEL: A										MOUNTED IN MCC1										EXISTING									
VOLT: 120/240V 1 PHASE, 3 WIRE										FLUSH MOUNTED										10 kAIC RATING									
BUS: 100 AMP										NEMA 1 ENCLOSURE										KEY: N - NON-COINCIDENT LOADS									
MAIN: LUGS ONLY										FED FROM: TRANSFORMER 15KVA, 480V-120/240V, 1 PHASE																			
DESCRIPTION	C K T	LOAD	Q T Y	B R K E R	VOLT AMPERES PER PHASE				B R K E R	K I C H	Q T Y	LOAD	C K T	DESCRIPTION															
					A Ø	B Ø	P AMP	P Ø																					
MAIN BREAKER	1			80	2	300			1	20	300	2	SWITCHBOARD LIGHT & RECEPTACLE																
	3			-	-	300			1	20	300	4	MCC LIGHT & RECEPTACLE																
CONTROL PANEL LIGHT & RECEPTACLE	5	300		20	1	800			1	20	500	6	CONTROL PANEL																
METERING PUMP	7	500		20	1	1000			1	20	500	8	PUMP HOUSE LIGHTING																
EXH FAN	9	500		20	1	1000			1	20	500	10	PUMP HOUSE RECEPTACLES																
SUMP PUMP	11	1600		20	1	2100			1	20	500	12	SUMP PUMP																
CHLORINE ANALYZER	13	100		20	1	600			1	20	500	14	DOVE LAKE FLOW METER																
SPARE	15			20	1	0			1	20		16	SPARE																
SPARE	17			20	1	0			1	20		18	SPARE																
THROUGH FEED OR DOUBLE LUG TOTAL VA PER PHASE					0					PANEL:																			
TOTAL VOLT AMPERES PER PHASE					2700					3400					TOTALS														
KEY		DEMAND		DESIGN		CONNECTED																							
L-GENERAL LIGHTING LOAD		125%	0	VA	0	VA	6	TOTAL CONNECTED KVA																					
R-RECEPTACLES (NEC ART. 220-13)			0	VA	0	VA	6	TOTAL DESIGN KVA																					
M-MOTOR LOADS			0	VA	0	VA	25	TOTAL CONNECTED AMPS																					
K-KITCHEN RECEPTACLES		Ø AT 100%	=	0	VA	0	VA	0	25% OF LARGEST MOTOR AMPS																				
ALL OTHER LOADS				6100	VA	6100	VA	25	TOTAL DESIGN AMPS																				

CONDUIT/CABLE SCHEDULE									
TAG I.D.	CONDUIT		CABLE (EA CONDUIT)			FROM	TO	REMARKS	
	QTY.	SIZE	QTY.	SIZE	GND				
101	1	2	3	2/0	2	MOTOR CONTROL CENTER MCC1	PUMP P1		
102	1	2	3	2/0	2	MOTOR CONTROL CENTER MCC1	PUMP P2		
103	1	2	3	2/0	2	MOTOR CONTROL CENTER MCC1	PUMP P3		
104	1	1	12	14	14	MOTOR CONTROL CENTER MCC1	PUMP P1 (J-BOX)	P1, P2, AND P3 LOS SWITCHES AND OVERTEMP. EXTEND WIRING TO P1	
104A	1	1	8	14	14	PUMP P1 (J-BOX)	PUMP P2 (J-BOX)	P2, AND P3 LOS SWITCHES AND OVERTEMP. EXTEND WIRING TO P2	
104B	1	1	4	14	14	PUMP P2 (J-BOX)	PUMP P3 (J-BOX)	P3 LOS SWITCH AND OVERTEMP. EXTEND WIRING TO P3	
105	1	1	6	12	12	PANEL A (MCC1)	POWER J-BOX PJB1	LTG, CHEM PUMP, AND EXH FAN. EXTEND WIRING TO LIGHTS	
105A	1	1	4	12	12	POWER J-BOX PJB1	POWER J-BOX PJB2	CHEM PUMP AND EXH FAN. EXTEND WIRING TO CHEM PUMP RECEPT	
105B	1	1	2	12	12	POWER J-BOX PJB2	EXH FAN		
106	1	1	2	TSP 4	14	PLC CONTROL PANEL (MCC1)	PT-01 (J-BOX)	PT-01 AND FIT-01. EXTEND WIRING TO PT-01	
106A	1	1	1	TSP 4	14	PT-01 (J-BOX)	FIT-01 (J-BOX)	FIT-01, PT-02, AND CMP-01. EXTEND WIRING TO FIT-01	
107	1	1	3	TSP 2	14	PLC CONTROL PANEL (MCC1)	PT-02 (J-BOX)	PT-02 AND CMP-01. EXTEND WIRING TO PT-02	
107A	1	1	2	TSP 2	14	PT-02 (J-BOX)	CMP-01		
108	1	3/4	1	TSP		PLC CONTROL PANEL (MCC1)	AIT-01		
109	1	3/4	2	12	12	PANEL A (MCC1)	AIT-01		
110	1	3/4	10	14	14	PANEL A (MCC1)	SUMP PUMP RECEPTACLE		

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.

GERRY GREEN INC. Consulting Electrical Engineers
 2734 Lohr Ave West, Suite M, Carlsbad, CA 92010 Tel: (619) 962-2356



DATE: XX/XX/25

NO.	DATE	REVISIONS

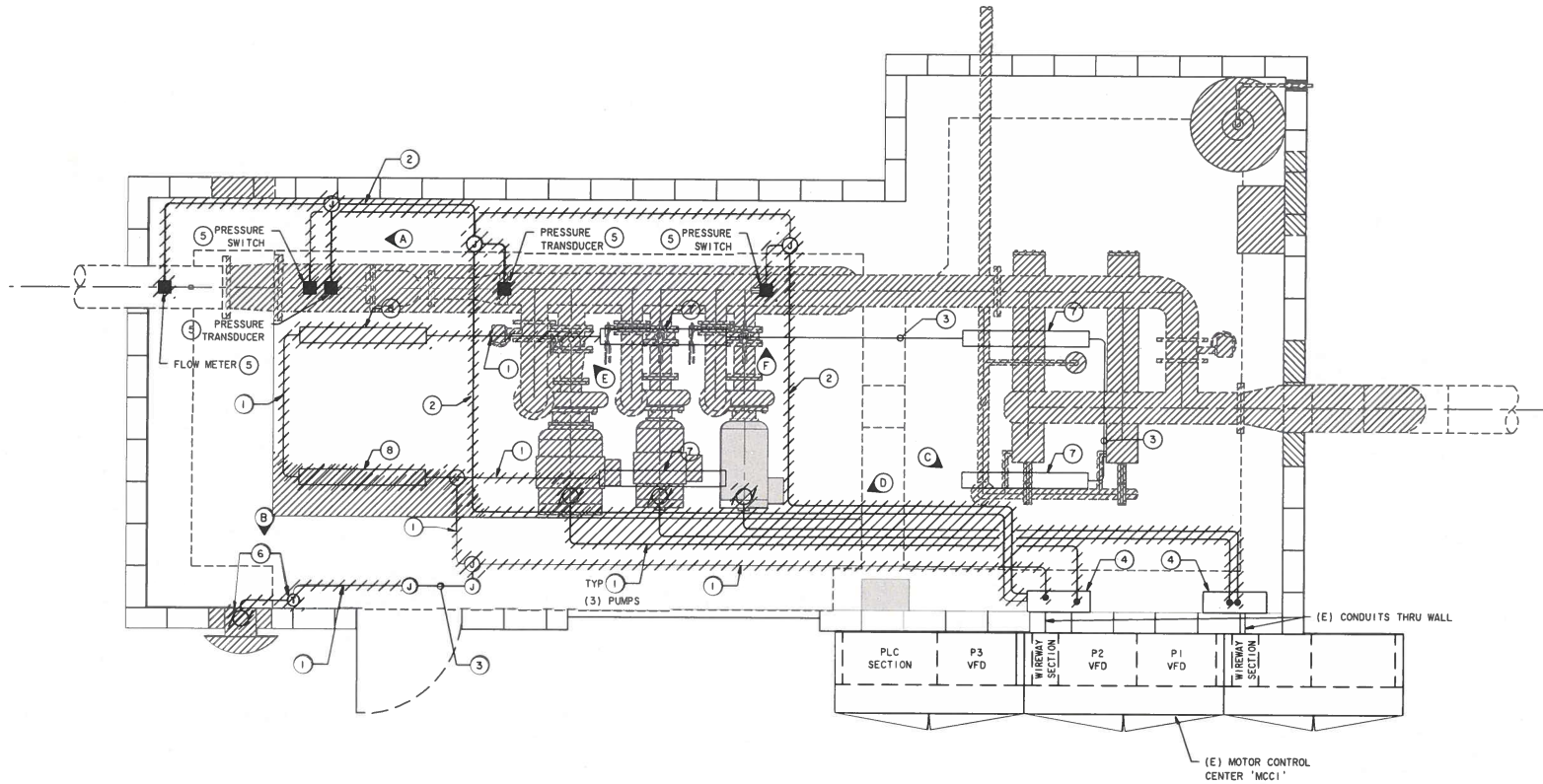
DESIGN: GG
 DRAWN: AH
 CHECKED: GG

ENGINEER: JOSEPH I. GUTIERREZ RCE 55604
 DISTRICT ENGINEER: LORRIE LAUSTEN RCE 67027

TRABUCO CANYON WATER DISTRICT
DOVE CANYON RECYCLED WATER PUMP STATION IMPROVEMENTS
 PROJECT NO. XXXX-XX

CONDUIT AND PANEL SCHEDULES

90% MILESTONE



- NOTES**
- ① DISCONNECT AND REMOVE (E) POWER CONDUCTORS AND CONDUIT.
 - ② DISCONNECT AND REMOVE INSTRUMENTATION CONDUCTORS AND CONDUIT.
 - ③ PROTECT IN PLACE (E) POWER OR INSTRUMENTATION CONDUITS.
 - ④ PROTECT IN PLACE (E) PULLBOXES AND (E) CONDUITS THRU WALL TO MCC FOR RE-USE (TYP 3).
 - ⑤ DISCONNECT, REMOVE, AND SALVAGE (E) INSTRUMENT. SEE DRAWING D-01.
 - ⑥ DISCONNECT AND REMOVE (E) THERMOSTAT AND EXHAUST FAN.
 - ⑦ PROTECT IN PLACE (E) CEILING LIGHT FIXTURE.
 - ⑧ DISCONNECT, REMOVE, AND RETAIN (E) LIGHT FIXTURE. REINSTALL AT NEW LOCATION PER POWER AND CONTROLS PLAN ON E-06.
 - ▲ SEE DEMOLITION PHOTO "A" OF DEMO PHOTOS WITH ADDITIONAL DEMOLITION NOTES ON DRAWING E-05.

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.

GERRY GREEN INC.
 Consulting Electrical Engineers
 2754 Lohar Ave West, Suite M, Carlsbad, CA 92010 Tel: (619) 962-2356



DATE: XX/XX/25

NO	DATE	REVISIONS

DESIGN: GG
 DRAWN: AH
 CHECKED: GG



ENGINEER: JOSEPH I. GUTIERREZ RCE 55804
 DISTRICT ENGINEER: LORRIE LAUSTEN RCE 67027

TRABUCO CANYON WATER DISTRICT
DOVE CANYON RECYCLED WATER PUMP STATION IMPROVEMENTS
 PROJECT NO. XXXX-XX

ELECTRICAL DEMOLITION PLAN

E-04
 SHEET 16 OF 19

90+ MILESTONE

**TRABUCO CANYON WATER DISTRICT
ENGINEERING/OPERATIONAL COMMITTEE MEETING | FEBRUARY 4, 2026**

ENGINEERING MATTERS

ITEM 4: HAMILTON OAKS COMMUNITY PRESSURE ZONE TECHNICAL MEMORANDUM UPDATE

The Hamilton Oaks community is located in the unincorporated County of Orange portion of the District's service area and includes approximately thirty-five (35) homes. The Hamilton Oaks community is situated near the same elevation as the Harris Grade above-ground reservoirs near the community. The District completed a 2022 System-wide Master Plan Update (Master Plan) with the assistance of Hazen to perform a review of all systems and to identify areas of improvement.

In Section 6.5 Distribution System Pressure, Hazen provided an overview of the District's minimum pressure criteria and indicated that "low- and high-pressure areas in the system are primarily attributed to elevation...it is also typically not preferred in operations to change pressures for certain areas because the pipelines are accustomed to certain pressures and raising those pressures could result in leaks or breaks."

Many of the homes in the Hamilton Oaks community have historically had low pressures due to the relatively high elevations in the Harris Grade Zone along Hamilton Trail; this was documented in the 2022 Master Plan in Section 6.5. In their recommendations, Hazen indicated that a proposed solution would be "the installation of a parallel line and a new pump station, essentially creating a new sub zone, would be required to mitigate low pressures along Hamilton Trail." (6.6.2)

Based on feedback and input from District customers in the Hamilton Oaks community, District staff requested a technical memorandum (TM) and conceptual estimate from Hazen on this potential system improvement (attached). The TM recommends the construction of a pump station with two pumps, one fire flow pump, a backup power generator, 4,500 LF of PVC pipe, and a 2,000-gallon hydro-pneumatic tank.

More information may be presented at the time of the meeting.

FUNDING SOURCE:

TBD

FISCAL IMPACT (PROJECT BUDGET):

TBD

ENVIRONMENTAL COMPLIANCE:

TBD

RECOMMENDED ACTION:

Receive information at the time of the Committee Meeting and make recommendations as necessary.

EXHIBIT(S):

1. Hazen Hamilton Trail Technical Memo

CONTACTS (staff responsible): MCKENNEY/PEREA/LAUSTEN

Hazen *Technical Memorandum*

January 28, 2025

To: Michael Perea (Trabuco Canyon Water District)
Lorrie Lausten, PE (Trabuco Canyon Water District)

From: Peace Maari, PE (Hazen and Sawyer)
Tori Yokoyama, PE (Hazen and Sawyer)
Nidia Ibarra (Hazen and Sawyer)

Hamilton Trail Low Pressures

FINAL

Introduction

The purpose of this technical memorandum is to address low-water pressures identified along Hamilton Trail. The recommended improvements include the installation of a new pump station and supporting pipeline to increase water pressures in the region above 40 psi and continue Trabuco Canyon Water District's mission of providing reliable service to its customers. Alternative options are also evaluated, which involve installing a new pump station, reservoir, and supporting pipeline dedicated for fire flow only.

1. Background

The 2022 System-wide Master Plan Update and Condition Assessment was prepared as an update to the 1999 Water, Wastewater and Reclaimed Water Master Plan. The Master Plan efforts included evaluating distribution pressures and fire flow within the water system using the criteria shown in Table 1 and Table 2.

Table 1: Pressure Criteria for Distribution System

Demand Condition	Minimum Service Pressure (psi)	Notes
Static Pressure (No Demands)	60 psi	This is preferred, not required. Desired range is 60 to 80 psi.
Dynamic Pressure (Operating)	40 psi	This is a requirement for all demand conditions, except fire flow.
Maximum Day + Fire Flow	20 psi	This is a requirement

Table 2: Fire Flow Criteria

Land Use Designation	Fire Flow Required (gpm)	Duration (hrs)
Single Family Residential	1,500	2
Multi-family Residential	2,500	2
Commercial, Institutional	3,000	3

The 2022 Master Plan modeling analysis identified segments along Hamilton Trail where minimum water pressures drop below 40 psi. These low pressures are attributed to the relatively high elevations within the Harris Grade Pressure Zone (HGL 1508 ft). The Master Plan also identified hydrants in the system with static pressures below 30 psi, which were determined to be incapable of delivering adequate fire flow. Refer to Appendix B for these results. Figure 1 illustrates the affected region along Hamilton Trail of approximately 4,000 linear feet constructed of 8 and 16-inch pipes. This memorandum presents three alternatives:

1. A project to construct a pump station and pipeline to address low-pressure conditions and increase available fire flow.
2. An alternative project to construct a pump station solely for improving fire flow.
3. An alternative project to construct a reservoir and pump station solely for improving fire flow.

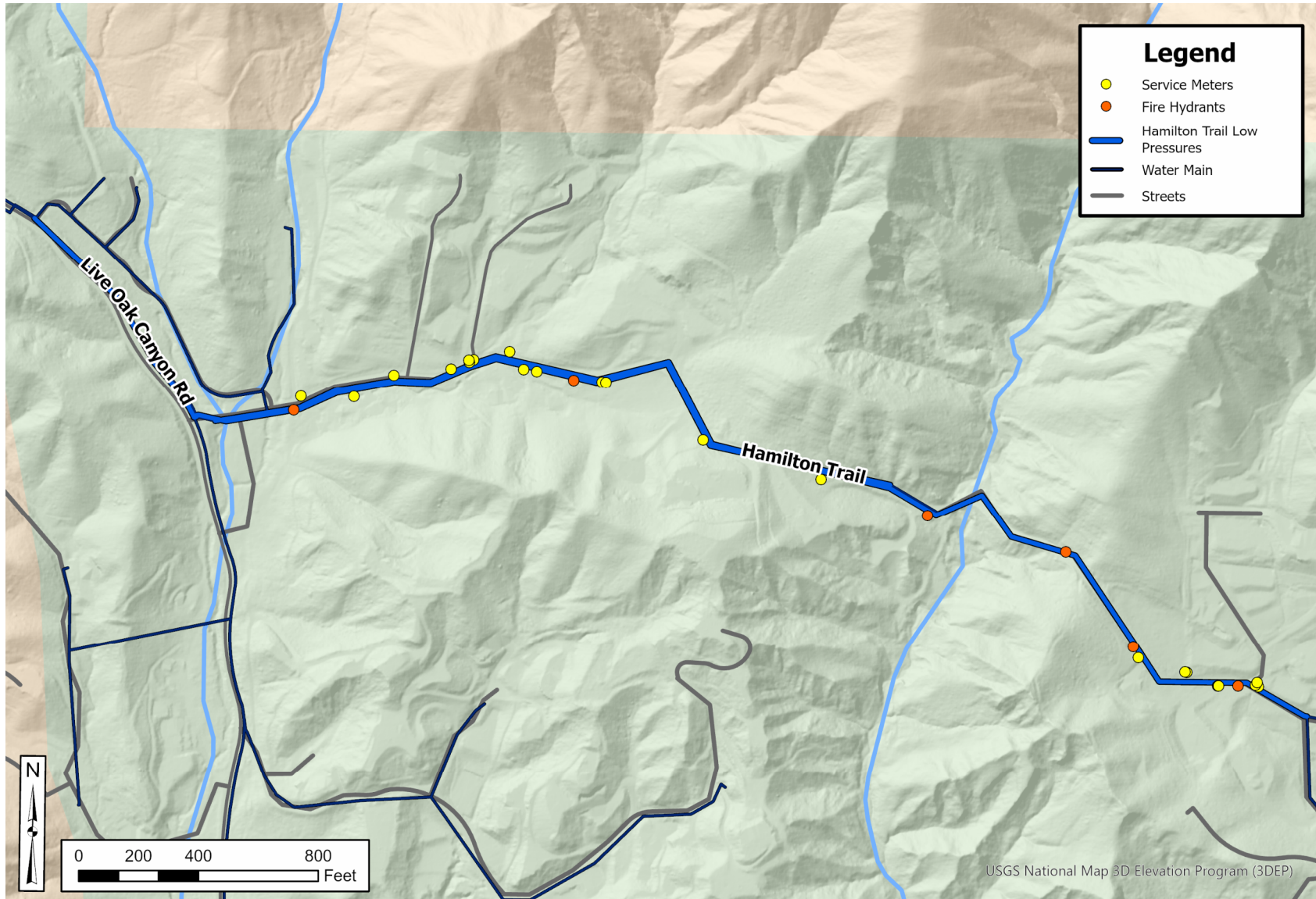


Figure 1: Hamilton Trail Low Pressure Areas

2. Alternative 1 – Pump Station for Daily & Fire Flow Demands

Low water pressure in this area affects approximately 22 homes and 6 fire hydrants along Hamilton Trail. To address this issue, installing a parallel pipeline and a new pump station, effectively creating a new sub-zone, would be necessary to meet the required minimum dynamic operating pressure of 40 psi and fire flow requirement of 1,500 gpm for two hours.

Table 3 lists the proposed pump station components and associated supporting pipeline. The pump station will include two (2) 175 gpm pumps for daily system demands and one (1) 1,500 gpm pump for fire flow during emergency events. Additionally, the project includes the installation of approximately 4,500 linear feet of 10-inch PVC pipeline to serve the 22 homes currently experiencing low water pressure and supply 6 fire hydrants. As part of the improvements, existing service lines and fire hydrant laterals will be relocated and connected to the new pipeline.

To ensure uninterrupted operation during power outages, a permanent diesel generator is recommended for backup power. Additionally, a hydropneumatic tank is proposed to help maintain consistent water pressure, reduce pump cycling, and extend the operational life of the pumps.

Table 3: Alternative 1 Proposed Pump Station Components

Description	Quantity
175 GPM, 10 HP Pump	2
1500 GPM, 40 HP Fire Flow Pump	1
80 kW Backup Generator	1
10-inch PVC Pipe	4,500 LF
2,000 gallon Hydro-Pneumatic Tank	1
5,000 SF Land	1

3. Alternative 2 – Pump Station for Fire Flow Demands

This alternative option includes installing a parallel pipeline and a new pump station only for fire flow. Although service line pressures will remain below 40 psi, the project will enhance available fire flow along Hamilton Trail to satisfy residential fire flow requirements of 1,500 gpm for two hours.

Table 4 lists the proposed pump station components and associated supporting pipeline. The pump station will include one (1) 1,500 gpm pump for fire flow during emergency events. This alternative will also include the installation of approximately 4,500 linear feet of 10-inch PVC pipeline, a backup generator to ensure continued operation during power outages, and a hydropneumatic tank to protect the system from pressure spikes. Only fire hydrant laterals will be relocated and connected to the new pipeline.

Table 4: Alternative 2 Proposed Pump Station Components for Fire Flow

Description	Quantity
1500 GPM, 40 HP Fire Flow Pump	1
50 kW Backup Generator	1
10-inch PVC Pipe	4,500 LF
2,000 gallon Hydro-Pneumatic Tank	1
3,000 SF Land	1

4. Alternative 3 – Pump Station and Reservoir for Fire Flow

Alternative 3 includes the installation of a reservoir, new pump station and parallel pipeline only for fire flow along Hamilton Trail. Under this alternative, service lines will continue to operate at current low pressures while providing sufficient available fire flow to meet residential requirements of 1,500 gpm for two hours. The reservoir location, as depicted in Figure 2, was selected to provide a minimum elevation of 60 ft above the highest section of the pipeline to overcome system headloss and meet required pressure of 20 psi for fire flow demands.

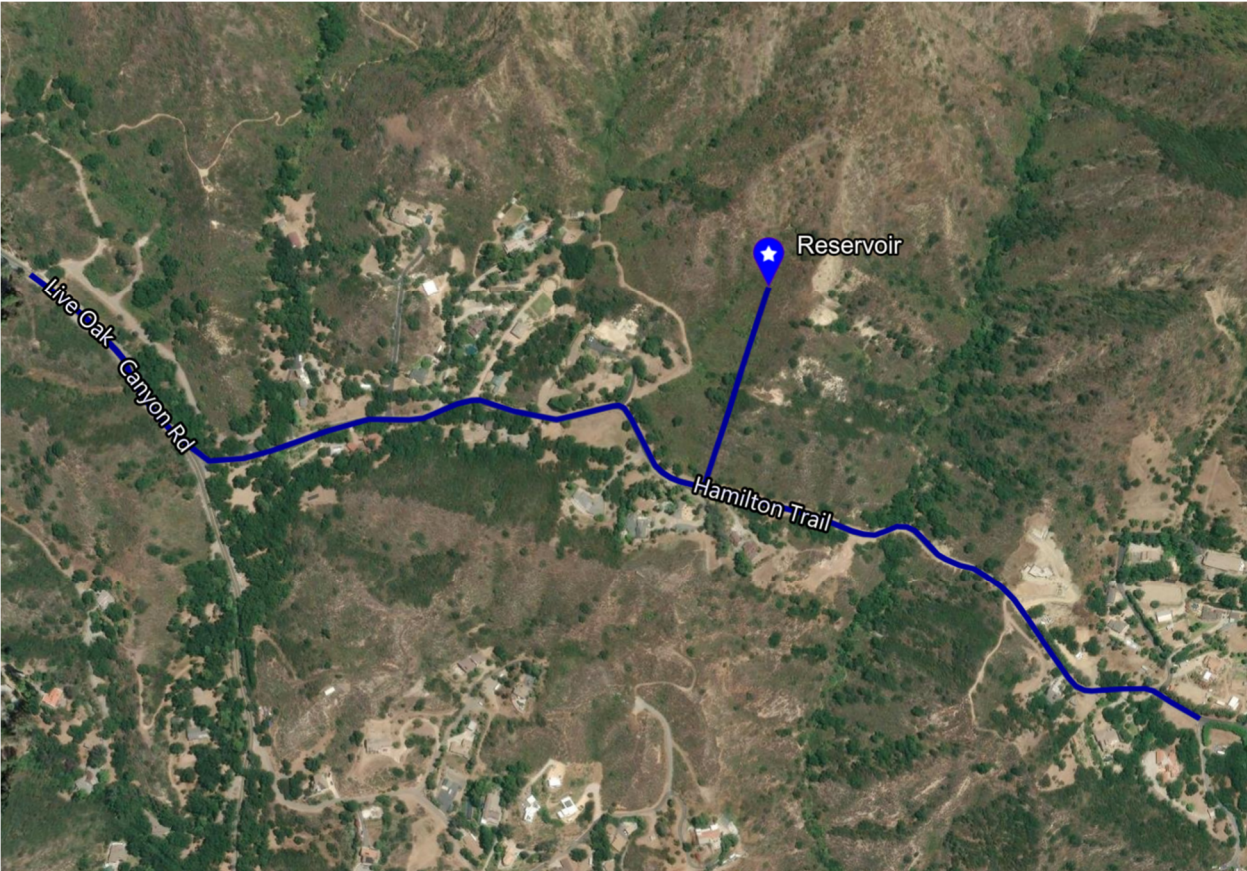


Figure 2: Alternative 3 Reservoir and Pump Station Location

Table 5 lists the proposed 250,000-gallon reservoir, pump station components, and associated supporting pipeline. The pump station will include one (1) 175 gpm pump assuming redundancy will be provided by the reservoir, and a backup 15 kW generator to ensure continued operation during power outages. This alternative will also include the installation of approximately 5,500 linear feet of 10-inch PVC pipeline. Only fire hydrants laterals will be relocated and connected to the new pipeline.

Table 5: Alternative 3 Proposed Reservoir and Pump Station Components for Fire Flow

Description	Quantity
250,000-gallon Reservoir	1
175 GPM, 10 HP Pump	1
15 kW Backup Generator	1
10-inch PVC Pipe	5,500 LF
10,000 SF Land	1

5. Cost Estimate

A cost estimate of the proposed alternatives can be found in Appendix A, including a conceptual basis of cost estimate memorandum. The total cost estimate for Alternative 1 is approximately \$7.2 M. Please view Table 6 for the cost estimate summary breakdown.

Table 6: Alternative 1 Cost Estimate Summary

No.	Description	Total
1	Pump and Aboveground Piping	\$610,619
2	Pump Building	\$951,092
3	Yard Piping	\$785,371
4	Site Work	\$614,372
5	Electrical and Controls	\$1,555,827
6	Generator	\$248,330
7	Transmission Pipe	\$2,030,904
8	Land Acquisition	\$225,000
Total:		\$7,021,514

1. Construction duration assumed to be 18 months.

The total cost for Alternative 2 is approximately \$5.6 M. Please view Table 7 for the cost estimate summary breakdown.

Table 7: Alternative 2 Cost Estimate Summary

No.	Description	Total
1	Pump and Aboveground Piping	\$357,216
2	Pump Building	\$637,726
3	Yard Piping	\$568,662
4	Site Work	\$491,070
5	Electrical and Controls	\$1,237,716
6	Generator	\$209,747
7	Transmission Pipe	\$2,030,904
8	Land Acquisition	\$135,000
Total		\$5,668,042

- 1. Construction duration assumed to be 18 months.

The total cost for Alternative 3 is approximately \$7 M. Please view Table 8 for the cost estimate summary breakdown.

Table 8: Alternative 3 Cost Estimate Summary

No.	Description	Total
1	Pump and Aboveground Piping	\$201,905
2	Pump Building	\$324,360
3	Reservoir	\$1,567,459
4	Yard Piping	\$290,968
5	Site Work	\$376,053
6	Electrical and Controls	\$1,243,284
7	Generator	\$101,348
8	Transmission Pipe	\$2,477,985
9	Land Acquisition	\$450,000
Total:		\$7,033,363

- 1. Construction duration assumed to be 18 months.

Appendix A: Cost Estimate

Hazen *Memorandum*

November 5, 2025

To: Hazen Design Team

From: Chris Portner, PE, CEP

**Re: Trabuco Canyon Water District
Hamilton Trail Lower Pressures
Conceptual Estimate**

1. Introduction

This memorandum is a supplement to the cost estimate that corresponds to the Conceptual Estimate submitted to the client in November 2025. The project work is to be performed in Orange County, California. This estimate is for construction of a booster pump station.

The probable construction cost for the alternatives is as shown in Attachment 1 Summary. The estimate serves for alternative analysis and budget authorization and is considered to be an AACE Class 5 level. Class 5 has a typical accuracy range of -50% on the low side and +100% on the high side. A 40% design contingency has been added to the estimate based on current status of the design documents, the nature of the project and the estimate classification.

2. Estimate Basis

Estimate costs are derived from the following:

1. 1604 Zone Hydro-Pneumatic Booster Pump Station Improvement Plans for Tract 17388, project drawing dated August 2018.
2. Discussions with Design Team.

3. Planning Basis

Base Assumptions are the following

1. Construction NTP was assumed to be second quarter 2026.
2. Construction Duration was assumed to be 18 months.
3. The project is assumed to be procured as a single prime contract through a traditional design/bid/build process.

4. Cost Basis

1. Wage rates utilized are based on prevailing wages published for Orange County current to June 30, 2026.

2. A 40-hour work week is assumed, no shift, weekend or other premium time is provided
3. Wherever possible, equipment rates are based on current published rental rates as listed in the AED Blue Book, supplemented by RS Mean's data, the AED Green Book and local rental suppliers.
4. Crews, equipment and productivity used for work items are based mostly on standards specific to each trade. Some information was supplemented by RS Mean's data modified where necessary by estimator judgment.
5. The following item costs were based upon vendor quotes:
 - a) None

5. Itemized Estimate Notes

- 1) Alternative 1 – Combined Pump Station
 - a) Pumps and Aboveground Piping
 - i) Furnish/install 10hp centrifugal pump (2).
 - ii) Furnish/install 40hp centrifugal fire pump (1).
 - iii) Allow for 4- and 10-inch diameter discharge piping, fittings, and valves.
 - iv) Allow for additional small piping.
 - b) Pump Building
 - i) Construct CMU building (24-ft x 42-ft).
 - c) Yard Piping
 - i) Allow for 4- and 12-inch diameter suction and discharge piping.
 - ii) Allow for additional small piping.
 - d) Site Work
 - i) Furnish/install 2,000 gallon hydropneumatic tank
 - (1) Place cast-in-place concrete slab-on-grade (10-ft x 10-ft)
 - ii) Allow for site finishing as a percentage of cost.
 - e) Generator
 - i) Furnish/install 80kW generator.
 - (1) Place cast-in-place concrete slab-on-grade (10-ft x 20-ft).
 - f) Electrical and Controls
 - i) Allow for duct banks.
 - ii) Allow for electrical equipment:
 - (1) Utility transformer, 100kVA
 - (2) Utility meter, 200A
 - (3) MCC, 200A
 - (4) ATS, 200A
 - (5) LP, PP, LP-TX, PP-TX
 - iii) Allow for miscellaneous instrumentation and field wiring.
 - iv) Allow for programming.
 - g) Transmission Pipeline
 - i) Furnish/install 10-inch diameter PVC pipe.
 - (1) Assume 4-ft cover.

- (2) Assume through an existing street so include pavement replacement and traffic control.
- h) Land Acquisition
 - i) 5,000SF parcel
- 2) Alternative 2 – Fire Flow Pump Station
 - a) Pumps and Aboveground Piping
 - i) Furnish/install 40hp centrifugal fire pump (1).
 - ii) Allow for 4- and 10-inch diameter discharge piping, fittings, and valves.
 - iii) Allow for additional small piping.
 - b) Pump Building
 - i) Construct CMU building (24-ft x 28-ft).
 - c) Yard Piping
 - i) Allow for 4- and 12-inch diameter suction and discharge piping.
 - ii) Allow for additional small piping.
 - d) Site Work
 - i) Furnish/install 2,000 gallon hydropneumatic tank
 - (1) Place cast-in-place concrete slab-on-grade (10-ft x 10-ft)
 - ii) Allow for site finishing as a percentage of cost.
 - e) Generator
 - i) Furnish/install 50kW generator.
 - (1) Place cast-in-place concrete slab-on-grade (5-ft x 10-ft).
 - f) Electrical and Controls
 - i) Allow for duct banks.
 - ii) Allow for electrical equipment:
 - (1) Utility transformer, 50kVA
 - (2) Utility meter, 100A
 - (3) MCC, 100A
 - (4) ATS, 100A
 - (5) LP, PP, LP-TX, PP-TX
 - iii) Allow for miscellaneous instrumentation and field wiring.
 - iv) Allow for programming.
 - g) Transmission Pipeline
 - i) Furnish/install 10-inch diameter PVC pipe.
 - (1) Assume 4-ft cover.
 - ii) Assume through an existing street so include pavement replacement and traffic control.
 - h) Land Acquisition
 - i) 3,000SF parcel
- 3) Alternative 3
 - a) Pumps and Aboveground Piping
 - i) Furnish/install 10hp centrifugal pump (1).
 - ii) Allow for 4- and 10-inch diameter discharge piping, fittings, and valves.
 - iii) Allow for additional small piping.
 - b) Pump Building
 - i) Construct CMU building (24-ft x 14-ft).
 - c) Reservoir

- i) Furnish/install 250,000 gallon welded steel aboveground tank.
 - (1) Include cast-in-place concrete slab-on-grade (45-ft x 45-ft)
 - ii) Allow for miscellaneous small pipe.
- d) Yard Piping
 - i) Allow for 4-inch diameter suction and discharge piping.
 - ii) Allow for additional small piping.
- e) Site Work
 - i) Allow for site finishing as a percentage of cost.
- f) Generator
 - i) Furnish/install 15kW generator.
 - (1) Place cast-in-place concrete slab-on-grade (5-ft x 5-ft).
- g) Electrical and Controls
 - i) Allow for duct banks.
 - ii) Allow for electrical equipment:
 - (1) Utility transformer, 50kVA
 - (2) Utility meter, 100A
 - (3) MCC, 100A
 - (4) ATS, 100A
 - (5) LP, PP, LP-TX, PP-TX
 - iii) Allow for miscellaneous instrumentation and field wiring.
 - iv) Allow for programming.
- h) Land Acquisition
 - i) 10,000SF parcel
- i) Transmission Pipeline
 - i) Furnish/install 10-inch diameter PVC pipe.
 - (1) Assume 4-ft cover.
 - ii) Assume through an existing street so include pavement replacement and traffic control.

6. Below the Line Adders

The following adders were used:

Below the Line Adders	
Item	%
General Conditions (Div01)	15
Contractor Overhead	10
Contractor Profit	10
Annual Labor Escalation to Mid-Point of Construction	5
Annual Material Escalation to Mid-Point of Construction	5
Insurance and Bonding	3
Design Contingency	40

These factors are generally in-line with recent estimated projects in this location and of this size and conform to the AACE Class of each scope.

7. Other Assumptions

Additional assumptions to the estimate include:

1. It is assumed that high groundwater will not impact excavations.
2. It is assumed that normal soils are present for excavation purposes and are suitable as backfill.
3. It is assumed that no hazardous materials are present.
4. It is assumed that no temporary pumping or service is required when connecting to existing distribution piping.
5. It is assumed that a new utility transformer and meter are required.

8. Exclusions

The following items are specifically excluded from the scope of this estimate:

1. Hazardous material abatement, removal or disposal
2. Dewatering
3. Temporary pumping or service

9. Exceptions

None taken.

10. Risks and Opportunities

Some risk items and opportunities need to be considered in the process of reviewing estimated costs. These are the following:

1. Whenever performing underground work, there is the risk that previously unmarked utilities, cultural artifacts or other unknown buried objects will be uncovered that will lead to delays and cost impacts to the project.
2. The current bid climate has exhibited higher than expected low bids. The combination of high material prices continued uncertainty about the long-term economic outlook, a shortage of labor in both construction trades and onsite management, and a still robust number of construction starts has led to fewer bidders on most projects and less competitive bids overall. These effects are highly localized and depend upon a project's specialization, cost, duration, and location. As the bid period approaches, the bid climate should be analyzed and appropriate factors included.
3. Recent imposition of tariffs has led to uncertainty and increases in material costs. The extent and duration of the tariffs is currently unknown. Whether tariffs, or their impacts, will be in effect for the project duration is unknown but as bid draws near the impact of any remaining tariffs should be evaluated.

11. Estimate Quality Assurance

Estimate review has been ongoing. No second party review has been undertaken.

12. Estimating Team

Oversight to the estimating team is provided by Peace Maari.

The principal or lead estimator is Chris Portner, P.E, CEP.

All estimate reviews have been internally reviewed by the Design and Estimating Teams.



Trabuco Canyon Water District
Hamilton Trail Low Pressures
Conceptual Estimate
High Level Estimate Summary

10/10/2025
10/10/2025

	Description	Alternative 1 Combined Pump Station	Alternative 2 Fire Flow Pump Station	Alternative 3 Fire Flow Reservoir & Pump Station
1	Pump and Aboveground Piping	\$610,619	\$357,216	\$201,905
2	Pump Building	\$951,092	\$637,726	\$324,360
3	Reservoir			\$1,567,459
4	Yard Piping	\$785,371	\$568,662	\$290,968
5	Site Work	\$614,372	\$491,070	\$376,053
6	Electrical and Controls	\$1,555,827	\$1,237,716	\$1,243,284
7	Generator	\$248,330	\$209,747	\$101,348
8	Transmission Pipe	\$2,030,904	\$2,030,904	\$2,477,985
9	Land Acquisition	\$225,000	\$135,000	\$450,000
10	Total:	\$7,021,514	\$5,668,042	\$7,033,363



Trabuco Canyon Water District
Hamilton Trail Low Pressures
Conceptual Estimate
Estimate Summary - CSI Division by WBS

10/10/2025
10/10/2025

Description	Alternative 1 Combined Pump Station Pump and Aboveground Piping	Alternative 1 Combined Pump Station Pump Building	Alternative 1 Combined Pump Station Yard Piping	Alternative 1 Combined Pump Station Site Work	Alternative 1 Combined Pump Station Generator	Alternative 1 Combined Pump Station Electrical and Controls	Alternative 1 Combined Pump Station Transmission Pipe	Alternative 1 Combined Pump Station Land Acquisition	Alternative 2 Fire Flow Pump Station Pump and Aboveground Piping	Alternative 2 Fire Flow Pump Station Pump Building	Alternative 2 Fire Flow Pump Station Yard Piping	Alternative 2 Fire Flow Pump Station Site Work	Alternative 2 Fire Flow Pump Station Generator	Alternative 2 Fire Flow Pump Station Electrical and Controls	Alternative 2 Fire Flow Pump Station Transmission Pipe	Alternative 2 Fire Flow Pump Station Land Acquisition	Alternative 3 Pump and Aboveground Piping	Alternative 3 Pump Building	Alternative 3 Reservoir	Alternative 3 Yard Piping	Alternative 3 Site Work	Alternative 3 Generator	Alternative 3 Electrical and Controls	Alternative 3 Land Acquisition	Alternative 3 Transmission Pipe	Total	
Div 02 Existing Conditions	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 73,799	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 73,799	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 91,403	\$ 239,001
Div 03 Concrete	\$ -	\$ 56,605	\$ -	\$ 5,688	\$ 10,801	\$ -	\$ -	\$ -	\$ -	\$ 38,312	\$ -	\$ 5,688	\$ 3,132	\$ -	\$ -	\$ -	\$ -	\$ 20,020	\$ 110,650	\$ -	\$ -	\$ 5,688	\$ -	\$ -	\$ -	\$ 256,585	
Div 04 Masonry	\$ -	\$ 352,989	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 235,326	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 117,663	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 705,978	
Div 26 Electrical	\$ -	\$ -	\$ -	\$ 100,765	\$ 93,602	\$ 620,483	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 100,765	\$ 87,053	\$ 493,992	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 35,040	\$ 482,743	\$ -	\$ -	\$ 2,014,444	
Div 31 Earthwork	\$ -	\$ 26,370	\$ -	\$ 4,224	\$ 6,989	\$ -	\$ 352,964	\$ -	\$ -	\$ 18,584	\$ -	\$ 4,224	\$ 2,842	\$ -	\$ 352,964	\$ -	\$ -	\$ 10,798	\$ 48,029	\$ -	\$ -	\$ 4,224	\$ -	\$ -	\$ -	\$ 1,263,726	
Div 32 Exterior Improvements	\$ -	\$ -	\$ -	\$ 171,230	\$ -	\$ -	\$ -	\$ 119,983	\$ -	\$ -	\$ -	\$ 114,185	\$ -	\$ -	\$ 119,983	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 173,979	\$ -	\$ -	\$ -	\$ -	\$ 847,979	
Div 40 Process Interconnections	\$ 148,308	\$ -	\$ 349,932	\$ -	\$ -	\$ -	\$ 346,693	\$ -	\$ 93,622	\$ -	\$ 253,755	\$ -	\$ -	\$ -	\$ 346,693	\$ -	\$ 60,201	\$ -	\$ 29,795	\$ 127,323	\$ -	\$ -	\$ -	\$ -	\$ 2,174,801		
Div 40P Process Monitoring and Control System	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 83,129	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 77,284	\$ -	\$ -	\$ 224,139	
Div 43 Process Gas and Liquid Handling, Purification and Storage Equipment	\$ 125,224	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 66,883	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 29,171	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 221,278	
Subtotal:	\$ 273,532	\$ 435,964	\$ 349,932	\$ 281,908	\$ 111,392	\$ 703,612	\$ 893,439	\$ -	\$ 160,505	\$ 292,222	\$ 253,755	\$ 224,863	\$ 93,026	\$ 557,719	\$ 893,439	\$ -	\$ 89,372	\$ 148,480	\$ 711,264	\$ 127,323	\$ 173,979	\$ 44,953	\$ 560,027	\$ -	\$ 1,090,014	\$ 8,470,721	
Small Tools (Applied on Labor) 4.0%	\$ 64,054	\$ 28,962	\$ 95,831	\$ 16,631	\$ 24,975	\$ 115,601	\$ 329,640	\$ -	\$ 33,996	\$ 20,136	\$ 66,669	\$ 16,631	\$ 28,659	\$ 106,465	\$ 329,640	\$ -	\$ 28,847	\$ 11,311	\$ 99,388	\$ 52,084	\$ -	\$ 13,826	\$ 108,374	\$ -	\$ 402,958		
Small Tools (Applied on Labor) Total:	\$ 2,562	\$ 1,158	\$ 3,833	\$ 665	\$ 999	\$ 4,624	\$ 13,186	\$ -	\$ 1,360	\$ 805	\$ 2,667	\$ 665	\$ 1,146	\$ 4,259	\$ 13,186	\$ -	\$ 1,154	\$ 452	\$ 3,976	\$ 2,083	\$ -	\$ 553	\$ 4,335	\$ -	\$ 16,118		
Incidental Overtime (Applied on Labor) 10.0%	\$ 64,054	\$ 28,962	\$ 95,831	\$ 16,631	\$ 24,975	\$ 115,601	\$ 329,640	\$ -	\$ 33,996	\$ 20,136	\$ 66,669	\$ 16,631	\$ 28,659	\$ 106,465	\$ 329,640	\$ -	\$ 28,847	\$ 11,311	\$ 99,388	\$ 52,084	\$ -	\$ 13,826	\$ 108,374	\$ -	\$ 402,958		
Incidental Overtime (Applied on Labor) Total:	\$ 6,405	\$ 2,896	\$ 9,583	\$ 1,663	\$ 2,497	\$ 11,560	\$ 32,964	\$ -	\$ 3,400	\$ 2,014	\$ 6,667	\$ 1,663	\$ 2,866	\$ 10,646	\$ 32,964	\$ -	\$ 2,885	\$ 1,131	\$ 9,939	\$ 5,208	\$ -	\$ 1,383	\$ 10,837	\$ -	\$ 40,296		
General Conditions 15.0%	\$ 282,500	\$ 440,019	\$ 363,348	\$ 284,236	\$ 114,889	\$ 719,796	\$ 939,589	\$ -	\$ 165,264	\$ 295,041	\$ 263,089	\$ 227,191	\$ 97,039	\$ 572,624	\$ 939,589	\$ -	\$ 93,410	\$ 150,064	\$ 725,178	\$ 134,615	\$ 173,979	\$ 46,888	\$ 575,200	\$ -	\$ 1,146,428		
General Conditions Total:	\$ 42,375	\$ 66,003	\$ 54,502	\$ 42,635	\$ 17,233	\$ 107,969	\$ 140,938	\$ -	\$ 24,790	\$ 44,256	\$ 39,463	\$ 34,079	\$ 14,556	\$ 85,894	\$ 140,938	\$ -	\$ 14,012	\$ 22,510	\$ 108,777	\$ 20,192	\$ 26,097	\$ 7,033	\$ 86,280	\$ -	\$ 171,964		
Direct and Indirect Costs Total:	\$ 324,875	\$ 506,021	\$ 417,850	\$ 326,872	\$ 132,122	\$ 827,765	\$ 1,080,527	\$ -	\$ 190,054	\$ 339,297	\$ 302,552	\$ 261,270	\$ 111,594	\$ 658,517	\$ 1,080,527	\$ -	\$ 107,422	\$ 172,573	\$ 833,955	\$ 154,807	\$ 200,076	\$ 53,921	\$ 661,480	\$ -	\$ 1,318,393	\$ 10,062,472	
Add-On / Mark-Up																											
Labor Escalation at 5% annually 4.1%	\$ 102,240	\$ 81,360	\$ 146,290	\$ 50,271	\$ 40,397	\$ 208,138	\$ 468,308	\$ -	\$ 55,988	\$ 55,342	\$ 102,934	\$ 43,854	\$ 42,441	\$ 181,531	\$ 468,308	\$ -	\$ 42,240	\$ 29,324	\$ 190,910	\$ 72,437	\$ 19,573	\$ 20,483	\$ 183,922	\$ -	\$ 572,227		
Labor Escalation Total:	\$ 4,243	\$ 3,376	\$ 6,071	\$ 2,086	\$ 1,676	\$ 8,637	\$ 19,433	\$ -	\$ 2,323	\$ 2,297	\$ 4,271	\$ 1,820	\$ 1,761	\$ 7,533	\$ 19,433	\$ -	\$ 1,753	\$ 1,217	\$ 7,922	\$ 3,006	\$ 812	\$ 850	\$ 7,632	\$ -	\$ 23,745		
Material/Equipment Escalation at 5% annually 4.1%	\$ 222,635	\$ 424,661	\$ 271,560	\$ 276,601	\$ 91,725	\$ 619,627	\$ 612,219	\$ -	\$ 134,066	\$ 283,955	\$ 199,619	\$ 217,417	\$ 69,153	\$ 476,986	\$ 612,219	\$ -	\$ 65,182	\$ 143,249	\$ 643,045	\$ 82,370	\$ 180,504	\$ 33,438	\$ 477,558	\$ -	\$ 746,165		
Material/Equipment Escalation Total:	\$ 9,239	\$ 17,622	\$ 11,269	\$ 11,478	\$ 3,806	\$ 25,712	\$ 25,405	\$ -	\$ 5,563	\$ 11,783	\$ 8,283	\$ 9,022	\$ 2,870	\$ 19,793	\$ 25,405	\$ -	\$ 2,705	\$ 5,944	\$ 26,684	\$ 3,418	\$ 7,490	\$ 1,388	\$ 19,817	\$ -	\$ 30,963		
Subtotal:	\$ 338,356	\$ 527,019	\$ 435,190	\$ 340,436	\$ 137,605	\$ 862,115	\$ 1,125,365	\$ -	\$ 197,941	\$ 353,377	\$ 315,107	\$ 272,112	\$ 116,225	\$ 685,843	\$ 1,125,365	\$ -	\$ 111,880	\$ 179,734	\$ 868,561	\$ 161,231	\$ 208,379	\$ 56,159	\$ 688,929	\$ -	\$ 1,373,101	\$ 10,480,028	
Subcontractor Overhead, Profit and Fee 35.0%	\$ 67,671	\$ 105,404	\$ 87,038	\$ 68,087	\$ 27,521	\$ 172,423	\$ 225,073	\$ -	\$ 39,588	\$ 70,675	\$ 63,021	\$ 54,422	\$ 23,245	\$ 137,169	\$ 225,073	\$ -	\$ 22,376	\$ 35,947	\$ 173,712	\$ 32,246	\$ 41,676	\$ 11,232	\$ 137,786	\$ -	\$ 274,620		
Subcontractor Overhead, Profit and Fee Total:	\$ 23,685	\$ 36,891	\$ 30,463	\$ 23,831	\$ 9,632	\$ 60,348	\$ 78,776	\$ -	\$ 13,856	\$ 24,736	\$ 22,058	\$ 19,048	\$ 8,136	\$ 48,009	\$ 78,776	\$ -	\$ 7,832	\$ 12,581	\$ 60,799	\$ 11,286	\$ 14,587	\$ 3,931	\$ 48,225	\$ -	\$ 96,117		
Subtotal:	\$ 362,041	\$ 563,911	\$ 465,653	\$ 364,266	\$ 147,237	\$ 922,463	\$ 1,204,140	\$ -	\$ 211,796	\$ 378,113	\$ 337,165	\$ 291,160	\$ 124,361	\$ 733,852	\$ 1,204,140	\$ -	\$ 119,711	\$ 192,316	\$ 929,360	\$ 172,517	\$ 222,965	\$ 60,090	\$ 737,154	\$ -	\$ 1,469,218	\$ 11,213,630	
Prime Contractor Overhead 10.0%	\$ 270,685	\$ 421,616	\$ 348,152	\$ 272,349	\$ 110,084	\$ 689,692	\$ 900,292	\$ -	\$ 158,352	\$ 282,702	\$ 252,086	\$ 217,690	\$ 92,980	\$ 548,675	\$ 900,292	\$ -	\$ 89,504	\$ 143,788	\$ 694,849	\$ 128,985	\$ 166,703	\$ 44,927	\$ 551,143	\$ -	\$ 1,098,481		
Prime Contractor Overhead Total:	\$ 27,068	\$ 42,162	\$ 34,815	\$ 27,235	\$ 11,008	\$ 68,969	\$ 90,029	\$ -	\$ 15,835	\$ 28,270	\$ 25,209	\$ 21,769	\$ 9,298	\$ 54,867	\$ 90,029	\$ -	\$ 8,950	\$ 14,379	\$ 69,485	\$ 12,898	\$ 16,670	\$ 4,493	\$ 55,114	\$ -	\$ 109,848		
Subtotal:	\$ 389,109	\$ 606,072	\$ 500,468	\$ 391,501	\$ 158,245	\$ 991,432	\$ 1,294,169	\$ -	\$ 227,632	\$ 406,384	\$ 362,373	\$ 312,929	\$ 133,659	\$ 788,720	\$ 1,294,169	\$ -	\$ 128,662	\$ 206,695	\$ 998,845	\$ 185,416	\$ 239,636	\$ 64,583	\$ 792,268	\$ -	\$ 1,579,066	\$ 12,052,032	
Prime Contractor Profit 10.0%	\$ 297,753	\$ 463,777	\$ 382,967	\$ 299,583	\$ 121,092	\$ 758,661	\$ 990,321	\$ -	\$ 174,188	\$ 310,972	\$ 277,294	\$ 239,459	\$ 102,278	\$ 603,542	\$ 990,321	\$ -	\$ 98,454	\$ 158,166	\$ 784,333	\$ 141,883	\$ 183,373	\$ 49,420	\$ 606,257	\$ -	\$ 1,208,329		
Prime Contractor Profit:	\$ 29,775	\$ 46,378	\$ 38,297	\$ 29,958	\$ 12,109	\$ 75,866	\$ 99,032	\$ -	\$ 17,419	\$ 31,097	\$ 27,729	\$ 23,946	\$ 10,228	\$ 60,354	\$ 99,032	\$ -	\$ 9,845	\$ 15,817	\$ 76,433	\$ 14,188	\$ 18,337	\$ 4,942	\$ 60,626	\$ -	\$ 120,833		
Subtotal:	\$ 418,885	\$ 652,450	\$ 538,765	\$ 421,459	\$ 170,354	\$ 1,067,298	\$ 1,393,202	\$ -	\$ 245,050	\$ 437,481	\$ 390,103	\$ 336,875	\$ 143,887	\$ 849,074	\$ 1,393,202	\$ -	\$ 138,507	\$ 222,511	\$ 1,075,278	\$ 199,604	\$ 257,973	\$ 69,525	\$ 852,894	\$ -	\$ 1,699,899	\$ 12,974,275	
Prime Profit on Subcontracted Work 5.0%	\$ 91,356	\$ 142,295	\$ 117,501	\$ 91,918	\$ 37,153	\$ 232,771	\$ 303,848	\$ -	\$ 53,444	\$ 95,412	\$ 85,079	\$ 73,470	\$ 31,381	\$ 185,178	\$ 303,848	\$ -	\$ 30,207	\$ 48,528	\$ 234,511	\$ 43,532	\$ 56,262	\$ 15,163	\$ 186,011	\$ -	\$ 370,737		
Prime Profit on Subcontracted Work Total:	\$ 4,568	\$ 7,115	\$ 5,875	\$ 4,596	\$ 1,858	\$ 11,839	\$ 15,192	\$ -	\$ 2,672	\$ 4,771	\$ 4,254	\$ 3,674	\$ 1,569	\$ 9,259	\$ 15,192	\$ -	\$ 1,510	\$ 2,426	\$ 11,726	\$ 2,177	\$ 2,813	\$ 758	\$ 9,301	\$ -	\$ 18,537		
Subtotal:	\$ 423,453	\$ 659,565	\$ 544,640	\$ 426,055	\$ 172,212	\$ 1,078,937	\$ 1,408,394	\$ -	\$ 247,723	\$ 442,251	\$ 394,357	\$ 340,548	\$ 145,456	\$ 858,333	\$ 1,408,394	\$ -	\$ 140,017	\$ 224,938	\$ 1,087,004	\$ 201,781	\$ 260,786	\$ 70,283	\$ 862,194	\$ -	\$ 1,718,436	\$ 13,115,755	
B																											

Location Code	CSI Div.	Description	Quantity	Unit	Notes	Labor Unit Cost	Equipment Unit Cost	Material Unit Cost	Total Unit Cost	Total Amount
		Alternative 1 Combined Pump Station Pumps and Aboveground Piping				\$0.00	\$0.00		\$ -	\$ -
						\$0.00	\$0.00		\$ -	\$ -
						\$0.00	\$0.00		\$ -	\$ -
1Pump	Div 43	Furnish/install pump	2	ea	Assume 10 hp centrifugal	\$5,631.92	\$3,546.51	\$15,000.00	\$ 25,341	\$ 50,682
1Pump	Div 43	Furnish/install fire pump	1	ea	Assume 40 hp centrifugal	\$5,631.92	\$3,546.51	\$50,000.00	\$ 63,053	\$ 63,053
						\$0.00	\$0.00		\$ -	\$ -
1Pump	Div 43	Testing	9	cd		\$1,276.54	\$0.00		\$ 1,277	\$ 11,489
						\$0.00	\$0.00		\$ -	\$ -
		<i>Booster pumps</i>				\$0.00	\$0.00		\$ -	\$ -
		<i>Discharge piping</i>				\$0.00	\$0.00		\$ -	\$ -
1Pump	Div 40	4-inch diameter pipe	34	lf		\$90.25	\$0.00	\$172.65	\$ 276	\$ 9,393
1Pump	Div 40	90-elbow	1	ea		\$293.31	\$0.00	\$243.00	\$ 555	\$ 555
1Pump	Div 40	Tee	1	ea		\$586.63	\$0.00	\$443.00	\$ 1,064	\$ 1,064
1Pump	Div 40	Check valve	2	ea		\$293.31	\$0.00	\$7,541.95	\$ 8,420	\$ 16,840
1Pump	Div 40	Butterfly valve	4	ea		\$293.31	\$0.00	\$904.95	\$ 1,268	\$ 5,074
1Pump	Div 40	Cla-val	1	ea		\$293.31	\$0.00	\$3,000.00	\$ 3,526	\$ 3,526
1Pump	Div 40	Dismantling joint	3	ea		\$293.31	\$0.00	\$1,231.83	\$ 1,621	\$ 4,862
1Pump	Div 40	Supports	4	ea		\$293.31	\$0.00	\$250.00	\$ 563	\$ 2,251
						\$0.00	\$0.00		\$ -	\$ -
		<i>Fire pump</i>				\$0.00	\$0.00		\$ -	\$ -
		<i>Discharge piping</i>				\$0.00	\$0.00		\$ -	\$ -
1Pump	Div 40	10-inch diameter pipe	42	lf		\$146.66	\$0.00	\$355.43	\$ 530	\$ 22,244
1Pump	Div 40	90-elbow	2	ea		\$335.21	\$0.00	\$975.00	\$ 1,386	\$ 2,772
1Pump	Div 40	Reducer	4	ea		\$335.21	\$0.00	\$975.00	\$ 1,386	\$ 5,543
1Pump	Div 40	Tee	2	ea		\$670.43	\$0.00	\$1,392.00	\$ 2,170	\$ 4,341
1Pump	Div 40	Check valve	1	ea		\$335.21	\$0.00	\$11,846.75	\$ 13,100	\$ 13,100
1Pump	Div 40	Butterfly valve	3	ea		\$335.21	\$0.00	\$2,347.95	\$ 2,865	\$ 8,595
1Pump	Div 40	Dismantling joint	2	ea		\$335.21	\$0.00	\$2,505.59	\$ 3,035	\$ 6,070
1Pump	Div 40	Supports	4	ea		\$293.31	\$0.00	\$750.00	\$ 1,101	\$ 4,406
						\$0.00	\$0.00		\$ -	\$ -
1Pump	Div 40	Allow for miscellaneous small pipe	3	cd		\$2,346.50	\$0.00	\$7,039.50	\$ 9,932	\$ 29,795
						\$0.00	\$0.00		\$ -	\$ -
1Pump	Div 40	Testing	5	cd		\$1,575.70	\$0.00		\$ 1,576	\$ 7,878
						\$0.00	\$0.00		\$ -	\$ -
						\$0.00	\$0.00		\$ -	\$ -
						\$0.00	\$0.00		\$ -	\$ -
		Pump Building				\$0.00	\$0.00		\$ -	\$ -
1Bldg	Div 04	CMU building	1,008	sf		\$0.00	\$0.00	\$325.00	\$ 350	\$ 352,989
						\$0.00	\$0.00		\$ -	\$ -
		<i>Slab</i>	1	ea		\$0.00	\$0.00		\$ -	\$ -
1Bldg	Div 03	Erect/Strip Formwork	363	sf		\$8.52	\$0.00	\$3.00	\$ 12	\$ 4,264
1Bldg	Div 03	Place Rebar	9,993	lb		\$0.88	\$0.00	\$1.03	\$ 1.99	\$ 19,894
1Bldg	Div 03	Place Concrete	103	cy		\$52.94	\$2.34	\$225.45	\$ 298	\$ 30,615
1Bldg	Div 03	Concrete Finishing	1,371	sf		\$1.34	\$0.00		\$ 1.34	\$ 1,831
						\$0.00	\$0.00		\$ -	\$ -
1Bldg	Div 31	Excavation	305	cy		\$12.60	\$13.26		\$ 26	\$ 7,900
1Bldg	Div 31	Gravel bedding	56	cy	Assume 12-inches thick	\$18.90	\$16.11	\$35.00	\$ 73	\$ 4,038
1Bldg	Div 31	Backfill (reuse)	55	cy		\$18.90	\$16.11		\$ 35	\$ 1,911
1Bldg	Div 31	Backfill (Import)	111	cy		\$18.90	\$16.11	\$35.00	\$ 73	\$ 8,077
1Bldg	Div 31	Disposal of soil	251	cy		\$7.14	\$5.19	\$5.00	\$ 18	\$ 4,444
						\$0.00	\$0.00		\$ -	\$ -
						\$0.00	\$0.00		\$ -	\$ -

Location Code	CSI Div.	Description	Quantity	Unit	Notes	Labor Unit Cost	Equipment Unit Cost	Material Unit Cost	Total Unit Cost	Total Amount
		Yard Piping				\$0.00	\$0.00		\$ -	\$ -
						\$0.00	\$0.00		\$ -	\$ -
1Yard	Div 40	Furnish/install 12-inch diameter pipe	270	lf		\$27.10	\$14.39	\$216.81	\$ 275	\$ 74,279
1Yard	Div 40	45-elbow	2	ea		\$249.24	\$0.00	\$1,071.00	\$ 1,403	\$ 2,806
1Yard	Div 40	90-elbow	4	ea		\$249.24	\$0.00	\$1,267.00	\$ 1,614	\$ 6,458
1Yard	Div 40	Reducer	7	ea		\$249.24	\$0.00	\$1,267.00	\$ 1,614	\$ 11,301
1Yard	Div 40	Tee	8	ea		\$498.48	\$0.00	\$2,021.00	\$ 2,676	\$ 21,409
1Yard	Div 40	RFA	6	ea		\$249.24	\$0.00	\$2,070.18	\$ 2,480	\$ 14,879
1Yard	Div 40	Check valve	1	ea		\$249.24	\$0.00	\$15,076.00	\$ 16,494	\$ 16,494
1Yard	Div 40	Gate valve	3	ea		\$249.24	\$0.00	\$6,174.95	\$ 6,903	\$ 20,708
						\$0.00	\$0.00		\$ -	\$ -
1Yard	Div 40	Excavation	319	cy		\$37.81	\$39.79		\$ 78	\$ 24,785
1Yard	Div 40	Gravel base	46	cy		\$37.81	\$32.22	\$35.00	\$ 108	\$ 4,916
1Yard	Div 40	Backfill (reuse)	319	cy		\$37.81	\$32.22		\$ 70	\$ 22,366
1Yard	Div 40	Disposal	0	cy		\$7.14	\$5.19	\$5.00	\$ 18	\$ -
1Yard	Div 40	Trench box	3	wk		\$277.22	\$189.34	\$250.00	\$ 736	\$ 2,208
						\$0.00	\$0.00		\$ -	\$ -
1Yard	Div 40	Furnish/install 4-inch diameter pipe	105	lf		\$14.27	\$7.57	\$101.93	\$ 132	\$ 13,825
1Yard	Div 40	90-elbow	1	ea		\$249.24	\$0.00	\$243.00	\$ 511	\$ 511
1Yard	Div 40	RFA	3	ea		\$249.24	\$0.00	\$611.55	\$ 908	\$ 2,725
1Yard	Div 40	Gate valve	3	ea		\$249.24	\$0.00	\$1,521.95	\$ 1,889	\$ 5,667
						\$0.00	\$0.00		\$ -	\$ -
1Yard	Div 40	Excavation	99	cy		\$37.81	\$39.79		\$ 78	\$ 7,675
1Yard	Div 40	Gravel base	16	cy		\$37.81	\$32.22	\$35.00	\$ 108	\$ 1,683
1Yard	Div 40	Backfill (reuse)	99	cy		\$37.81	\$32.22		\$ 70	\$ 6,926
1Yard	Div 40	Disposal	0	cy		\$7.14	\$5.19	\$5.00	\$ 18	\$ -
1Yard	Div 40	Trench box	1	wk		\$277.22	\$189.34	\$250.00	\$ 736	\$ 736
						\$0.00	\$0.00		\$ -	\$ -
1Yard	Div 40	Furnish/install 4-inch diameter pipe	200	lf	Miscellaneous small pipe	\$14.27	\$7.57	\$101.93	\$ 132	\$ 26,334
1Yard	Div 40	90-elbow	3	ea		\$249.24	\$0.00	\$243.00	\$ 511	\$ 1,533
1Yard	Div 40	RFA	3	ea		\$249.24	\$0.00	\$611.55	\$ 908	\$ 2,725
1Yard	Div 40	Gate valve	3	ea		\$249.24	\$0.00	\$1,521.95	\$ 1,889	\$ 5,667
						\$0.00	\$0.00		\$ -	\$ -
1Yard	Div 40	Excavation	181	cy		\$37.81	\$39.79		\$ 78	\$ 14,015
1Yard	Div 40	Gravel base	29	cy		\$37.81	\$32.22	\$35.00	\$ 108	\$ 3,072
1Yard	Div 40	Backfill (reuse)	181	cy		\$37.81	\$32.22		\$ 70	\$ 12,647
1Yard	Div 40	Disposal	0	cy		\$7.14	\$5.19	\$5.00	\$ 18	\$ -
1Yard	Div 40	Trench box	2	wk		\$277.22	\$189.34	\$250.00	\$ 736	\$ 1,472
						\$0.00	\$0.00		\$ -	\$ -
1Yard	Div 40	Testing	15	cd		\$1,340.64	\$0.00		\$ 1,341	\$ 20,110
						\$0.00	\$0.00		\$ -	\$ -
						\$0.00	\$0.00		\$ -	\$ -
						\$0.00	\$0.00		\$ -	\$ -
		Site Work				\$0.00	\$0.00		\$ -	\$ -
1Site	Div 26	Furnish/install hydropneumatic tank	1	ea	Assume 2000 gallons	\$4,870.80	\$3,546.51	\$78,394.00	\$ 92,887	\$ 92,887
						\$0.00	\$0.00		\$ -	\$ -
1Site	Div 26	Testing	5	cd		\$1,575.70	\$0.00		\$ 1,576	\$ 7,878
						\$0.00	\$0.00		\$ -	\$ -
		<i>Slab</i>	1	ea		\$0.00	\$0.00		\$ -	\$ -
1Site	Div 03	Erect/Strip Formwork	88	sf		\$8.52	\$0.00	\$3.00	\$ 12	\$ 1,034
1Site	Div 03	Place Rebar	991	lb		\$0.88	\$0.00	\$1.03	\$ 1.99	\$ 1,974
1Site	Div 03	Place Concrete	8	cy		\$52.94	\$2.34	\$225.45	\$ 298	\$ 2,430
1Site	Div 03	Concrete Finishing	188	sf		\$1.34	\$0.00		\$ 1.34	\$ 251

Location Code	CSI Div.	Description	Quantity	Unit	Notes	Labor Unit Cost	Equipment Unit Cost	Material Unit Cost	Total Unit Cost	Total Amount
						\$0.00	\$0.00		\$ -	\$ -
1Site	Div 31	Excavation	46	cy		\$12.60	\$13.26		\$ 26	\$ 1,186
1Site	Div 31	Gravel bedding	9	cy	Assume 12-inches thick	\$18.90	\$16.11	\$35.00	\$ 73	\$ 667
1Site	Div 31	Backfill (reuse)	13	cy		\$18.90	\$16.11		\$ 35	\$ 459
1Site	Div 31	Backfill (Import)	18	cy		\$18.90	\$16.11	\$35.00	\$ 73	\$ 1,333
1Site	Div 31	Disposal of soil	33	cy		\$7.14	\$5.19	\$5.00	\$ 18	\$ 580
						\$0.00	\$0.00		\$ -	\$ -
1Site	Div 32	Allow for site finishing	1	ls	Allow at 15% of cost	\$0.00	\$0.00	\$158,914.21	\$ 171,230	\$ 171,230
						\$0.00	\$0.00		\$ -	\$ -
						\$0.00	\$0.00		\$ -	\$ -
						\$0.00	\$0.00		\$ -	\$ -
		Generator				\$0.00	\$0.00		\$ -	\$ -
1Gen	Div 26	Furnish/install generator	1	ea	Assume 80kW	\$12,330.75	\$10,747.00	\$60,000.00	\$ 87,728	\$ 87,728
						\$0.00	\$0.00		\$ -	\$ -
1Gen	Div 26	Testing	5	cd		\$1,174.87	\$0.00		\$ 1,175	\$ 5,874
						\$0.00	\$0.00		\$ -	\$ -
		<i>Slab</i>	1	ea		\$0.00	\$0.00		\$ -	\$ -
1Gen	Div 03	Erect/Strip Formwork	132	sf		\$8.52	\$0.00	\$3.00	\$ 12	\$ 1,551
1Gen	Div 03	Place Rebar	1,983	lb		\$0.88	\$0.00	\$1.03	\$ 1.99	\$ 3,947
1Gen	Div 03	Place Concrete	16	cy		\$52.94	\$2.34	\$225.45	\$ 298	\$ 4,860
1Gen	Div 03	Concrete Finishing	332	sf		\$1.34	\$0.00		\$ 1.34	\$ 443
						\$0.00	\$0.00		\$ -	\$ -
1Gen	Div 31	Excavation	76	cy		\$12.60	\$13.26		\$ 26	\$ 1,976
1Gen	Div 31	Gravel bedding	15	cy	Assume 12-inches thick	\$18.90	\$16.11	\$35.00	\$ 73	\$ 1,111
1Gen	Div 31	Backfill (reuse)	19	cy		\$18.90	\$16.11		\$ 35	\$ 661
1Gen	Div 31	Backfill (Import)	31	cy		\$18.90	\$16.11	\$35.00	\$ 73	\$ 2,222
1Gen	Div 31	Disposal of soil	58	cy		\$7.14	\$5.19	\$5.00	\$ 18	\$ 1,019
						\$0.00	\$0.00		\$ -	\$ -
						\$0.00	\$0.00		\$ -	\$ -
						\$0.00	\$0.00		\$ -	\$ -
		Electrical and Controls				\$0.00	\$0.00		\$ -	\$ -
1E/I&C	Div 26	Ductbanks	300	lf		\$0.00	\$0.00	\$350.00	\$ 377	\$ 113,138
						\$0.00	\$0.00		\$ -	\$ -
1E/I&C	Div 26	Utility transformer	1	ea	100kVA	\$8,138.30	\$7,093.02	\$50,000.00	\$ 69,106	\$ 69,106
1E/I&C	Div 26	Utility Meter	1	ea	200A	\$4,069.15	\$3,546.51	\$25,000.00	\$ 34,553	\$ 34,553
1E/I&C	Div 26	ATS	1	ea	200A	\$872.63	\$0.00	\$10,000.00	\$ 11,648	\$ 11,648
1E/I&C	Div 26	MCC	1	ea	200A	\$12,330.75	\$10,747.00	\$50,000.00	\$ 76,953	\$ 76,953
1E/I&C	Div 26	LP	1	ea		\$3,490.52	\$0.00	\$7,500.00	\$ 11,572	\$ 11,572
1E/I&C	Div 26	LP-TX	1	ea		\$3,490.52	\$0.00	\$12,000.00	\$ 16,421	\$ 16,421
1E/I&C	Div 26	PP	1	ea		\$3,490.52	\$0.00	\$7,500.00	\$ 11,572	\$ 11,572
1E/I&C	Div 26	PLC	1	ea		\$3,490.52	\$0.00	\$50,000.00	\$ 57,366	\$ 57,366
						\$0.00	\$0.00		\$ -	\$ -
1E/I&C	Div 26	Testing	20	cd		\$1,174.87	\$0.00		\$ 1,175	\$ 23,497
						\$0.00	\$0.00		\$ -	\$ -
		Pump building				\$0.00	\$0.00		\$ -	\$ -
1E/I&C	Div 26	Ground rod and test well	4	ea		\$872.63	\$0.00	\$150.00	\$ 1,034	\$ 4,137
1E/I&C	Div 26	4/0	220	lf		\$5.45	\$0.00	\$6.74	\$ 13	\$ 2,798
1E/I&C	Div 26	Exothermic weld	11	ea		\$218.16	\$0.00	\$610.00	\$ 875	\$ 9,630
						\$0.00	\$0.00		\$ -	\$ -
		Generator slab				\$0.00	\$0.00		\$ -	\$ -
1E/I&C	Div 26	Ground rod and test well	4	ea		\$872.63	\$0.00	\$150.00	\$ 1,034	\$ 4,137
1E/I&C	Div 26	4/0	85	lf		\$5.45	\$0.00	\$6.74	\$ 13	\$ 1,081

Location Code	CSI Div.	Description	Quantity	Unit	Notes	Labor Unit Cost	Equipment Unit Cost	Material Unit Cost	Total Unit Cost	Total Amount
1E/I&C	Div 26	Exothermic weld	2	ea		\$218.16	\$0.00	\$610.00	\$ 875	\$ 1,751
						\$0.00	\$0.00		\$ -	\$ -
1E/I&C	Div 40P	Programming/integration	25	cd		\$1,650.00	\$0.00		\$ 1,650	\$ 41,250
						\$0.00	\$0.00		\$ -	\$ -
1E/I&C	Div 40P	Miscellaneous instrumentation	1	ls	Allow at 2% of cost	\$0.00	\$0.00	\$38,866.72	\$ 41,879	\$ 41,879
1E/I&C	Div 26	Field wiring	1	ls	Allow at 8% of cost	\$0.00	\$0.00	\$158,817.17	\$ 171,126	\$ 171,126
						\$0.00	\$0.00		\$ -	\$ -
						\$0.00	\$0.00		\$ -	\$ -
						\$0.00	\$0.00		\$ -	\$ -
		Transmission Pipeline				\$0.00	\$0.00		\$ -	\$ -
1Trans	Div 40	Furnish/Install 10-inch diameter pipe	4,500	lf	PVC	\$13.48	\$7.11	\$34.78	\$ 58	\$ 261,295
1Trans	Div 40	90-elbow	5	ea		\$179.44	\$94.67	\$1,687.89	\$ 2,093	\$ 10,464
						\$0.00	\$0.00		\$ -	\$ -
1Trans	Div 31	Excavation	4,634	cy		\$12.60	\$13.26		\$ 26	\$ 119,869
1Trans	Div 31	Gravel Bedding	794	cy		\$18.90	\$16.11	\$35.00	\$ 73	\$ 57,775
1Trans	Div 31	Backfill (reuse)	4,634	cy		\$18.90	\$16.11		\$ 35	\$ 162,252
1Trans	Div 31	Disposal of soil	0	cy		\$7.14	\$5.19	\$5.00	\$ 17	\$ -
1Trans	Div 31	Trench box	13	wk		\$277.22	\$189.34	\$500.00	\$ 1,005	\$ 13,069
						\$0.00	\$0.00		\$ -	\$ -
1Trans	Div 02	Sawcut	8,393	lf		\$1.59	\$1.30		\$ 2.89	\$ 24,263
1Trans	Div 02	Remove/dispose of pavement	26,537	sf		\$0.87	\$0.35	\$0.65	\$ 1.87	\$ 49,535
1Trans	Div 32	Replacement pavement	912	tn		\$11.27	\$1.31	\$110.40	\$ 132	\$ 119,983
						\$0.00	\$0.00		\$ -	\$ -
1Trans	Div 40	Connections	1	ea		\$2,871.00	\$1,514.71	\$8,613.00	\$ 13,666	\$ 13,666
1Trans	Div 40	Utility relocations	1	ls		\$0.00	\$0.00		\$ -	\$ -
						\$0.00	\$0.00		\$ -	\$ -
1Trans	Div 40	Flagger	65	cd	1 flagger per day	\$192.00	\$0.00		\$ 192	\$ 12,480
1Trans	Div 40	Plastic barrels	2,160	ea	Every 5lf	\$7.97	\$1.23		\$ 9.20	\$ 19,875
1Trans	Div 40	Flashing arrow board	13	wk		\$0.00	\$0.00		\$ -	\$ -
1Trans	Div 40	Permanent/Temporary signage	1	ls		\$0.00	\$0.00		\$ -	\$ -
						\$0.00	\$0.00		\$ -	\$ -
1Trans	Div 40	Testing	9	cd		\$2,679.72	\$532.72		\$ 3,212	\$ 28,912
						\$0.00	\$0.00		\$ -	\$ -
						\$0.00	\$0.00		\$ -	\$ -
						\$0.00	\$0.00		\$ -	\$ -
						\$0.00	\$0.00		\$ -	\$ -
		Alternative 2 Fire Flow Pump Station Pumps and Aboveground Piping				\$0.00	\$0.00		\$ -	\$ -
						\$0.00	\$0.00		\$ -	\$ -
2Pump	Div 43	Furnish/install fire pump	1	ea	Assume 40 hp centrifual	\$5,631.92	\$3,546.51	\$50,000.00	\$ 63,053	\$ 63,053
						\$0.00	\$0.00		\$ -	\$ -
2Pump	Div 43	Testing	3	cd		\$1,276.54	\$0.00		\$ 1,277	\$ 3,830
						\$0.00	\$0.00		\$ -	\$ -
		<i>Fire pump</i>				\$0.00	\$0.00		\$ -	\$ -
		<i>Discharge piping</i>				\$0.00	\$0.00		\$ -	\$ -
2Pump	Div 40	10-inch diameter pipe	21	lf		\$146.66	\$0.00	\$355.43	\$ 530	\$ 11,122
2Pump	Div 40	90-elbow	2	ea		\$335.21	\$0.00	\$975.00	\$ 1,386	\$ 2,772
2Pump	Div 40	Reducer	4	ea		\$335.21	\$0.00	\$975.00	\$ 1,386	\$ 5,543
2Pump	Div 40	Tee	2	ea		\$670.43	\$0.00	\$1,392.00	\$ 2,170	\$ 4,341
2Pump	Div 40	Check valve	1	ea		\$335.21	\$0.00	\$11,846.75	\$ 13,100	\$ 13,100
2Pump	Div 40	Butterfly valve	3	ea		\$335.21	\$0.00	\$2,347.95	\$ 2,865	\$ 8,595
2Pump	Div 40	Dismantling joint	2	ea		\$335.21	\$0.00	\$2,505.59	\$ 3,035	\$ 6,070
2Pump	Div 40	Supports	4	ea		\$293.31	\$0.00	\$750.00	\$ 1,101	\$ 4,406

Location Code	CSI Div.	Description	Quantity	Unit	Notes	Labor Unit Cost	Equipment Unit Cost	Material Unit Cost	Total Unit Cost	Total Amount
2Pump	Div 40	Allow for miscellaneous small pipe	3	cd		\$0.00	\$0.00		\$ -	\$ -
						\$2,346.50	\$0.00	\$7,039.50	\$ 9,932	\$ 29,795
2Pump	Div 40	Testing	5	cd		\$0.00	\$0.00		\$ -	\$ -
						\$1,575.70	\$0.00		\$ 1,576	\$ 7,878
						\$0.00	\$0.00		\$ -	\$ -
						\$0.00	\$0.00		\$ -	\$ -
						\$0.00	\$0.00		\$ -	\$ -
		Pump Building				\$0.00	\$0.00		\$ -	\$ -
2Bldg	Div 04	CMU building	672	sf		\$0.00	\$0.00	\$325.00	\$ 350	\$ 235,326
						\$0.00	\$0.00		\$ -	\$ -
		<i>Slab</i>	1	ea		\$0.00	\$0.00		\$ -	\$ -
2Bldg	Div 03	Erect/Strip Formwork	286	sf		\$8.52	\$0.00	\$3.00	\$ 12	\$ 3,360
2Bldg	Div 03	Place Rebar	6,662	lb		\$0.88	\$0.00	\$1.03	\$ 1.99	\$ 13,263
2Bldg	Div 03	Place Concrete	68	cy		\$52.94	\$2.34	\$225.45	\$ 298	\$ 20,410
2Bldg	Div 03	Concrete Finishing	958	sf		\$1.34	\$0.00		\$ 1.34	\$ 1,280
						\$0.00	\$0.00		\$ -	\$ -
2Bldg	Div 31	Excavation	214	cy		\$12.60	\$13.26		\$ 26	\$ 5,547
2Bldg	Div 31	Gravel bedding	39	cy	Assume 12-inches thick	\$18.90	\$16.11	\$35.00	\$ 73	\$ 2,835
2Bldg	Div 31	Backfill (reuse)	42	cy		\$18.90	\$16.11		\$ 35	\$ 1,481
2Bldg	Div 31	Backfill (Import)	78	cy		\$18.90	\$16.11	\$35.00	\$ 73	\$ 5,671
2Bldg	Div 31	Disposal of soil	172	cy		\$7.14	\$5.19	\$5.00	\$ 18	\$ 3,050
						\$0.00	\$0.00		\$ -	\$ -
						\$0.00	\$0.00		\$ -	\$ -
						\$0.00	\$0.00		\$ -	\$ -
						\$0.00	\$0.00		\$ -	\$ -
		Yard Piping				\$0.00	\$0.00		\$ -	\$ -
2Yard	Div 40	Furnish/install 12-inch diameter pipe	200	lf		\$27.10	\$14.39	\$216.81	\$ 275	\$ 55,021
2Yard	Div 40	45-elbow	2	ea		\$249.24	\$0.00	\$1,071.00	\$ 1,403	\$ 2,806
2Yard	Div 40	90-elbow	4	ea		\$249.24	\$0.00	\$1,267.00	\$ 1,614	\$ 6,458
2Yard	Div 40	Reducer	5	ea		\$249.24	\$0.00	\$1,267.00	\$ 1,614	\$ 8,072
2Yard	Div 40	Tee	8	ea		\$498.48	\$0.00	\$2,021.00	\$ 2,676	\$ 21,409
2Yard	Div 40	RFA	5	ea		\$249.24	\$0.00	\$2,070.18	\$ 2,480	\$ 12,399
2Yard	Div 40	Check valve	1	ea		\$249.24	\$0.00	\$15,076.00	\$ 16,494	\$ 16,494
2Yard	Div 40	Gate valve	2	ea		\$249.24	\$0.00	\$6,174.95	\$ 6,903	\$ 13,805
						\$0.00	\$0.00		\$ -	\$ -
2Yard	Div 40	Excavation	240	cy		\$37.81	\$39.79		\$ 78	\$ 18,589
2Yard	Div 40	Gravel base	34	cy		\$37.81	\$32.22	\$35.00	\$ 108	\$ 3,687
2Yard	Div 40	Backfill (reuse)	240	cy		\$37.81	\$32.22		\$ 70	\$ 16,774
2Yard	Div 40	Disposal	0	cy		\$7.14	\$5.19	\$5.00	\$ 18	\$ -
2Yard	Div 40	Trench box	3	wk		\$277.22	\$189.34	\$250.00	\$ 736	\$ 2,208
						\$0.00	\$0.00		\$ -	\$ -
2Yard	Div 40	Furnish/install 4-inch diameter pipe	65	lf		\$14.27	\$7.57	\$101.93	\$ 132	\$ 8,558
2Yard	Div 40	90-elbow	1	ea		\$249.24	\$0.00	\$243.00	\$ 511	\$ 511
2Yard	Div 40	RFA	1	ea		\$249.24	\$0.00	\$611.55	\$ 908	\$ 908
2Yard	Div 40	Gate valve	1	ea		\$249.24	\$0.00	\$1,521.95	\$ 1,889	\$ 1,889
						\$0.00	\$0.00		\$ -	\$ -
2Yard	Div 40	Excavation	65	cy		\$37.81	\$39.79		\$ 78	\$ 5,005
2Yard	Div 40	Gravel base	10	cy		\$37.81	\$32.22	\$35.00	\$ 108	\$ 1,097
2Yard	Div 40	Backfill (reuse)	65	cy		\$37.81	\$32.22		\$ 70	\$ 4,517
2Yard	Div 40	Disposal	0	cy		\$7.14	\$5.19	\$5.00	\$ 18	\$ -
2Yard	Div 40	Trench box	1	wk		\$277.22	\$189.34	\$250.00	\$ 736	\$ 736
						\$0.00	\$0.00		\$ -	\$ -
2Yard	Div 40	Furnish/install 4-inch diameter pipe	100	lf	Miscellaneous small pipe	\$14.27	\$7.57	\$101.93	\$ 132	\$ 13,167

Location Code	CSI Div.	Description	Quantity	Unit	Notes	Labor Unit Cost	Equipment Unit Cost	Material Unit Cost	Total Unit Cost	Total Amount
2Yard	Div 40	90-elbow	3	ea		\$249.24	\$0.00	\$243.00	\$ 511	\$ 1,533
2Yard	Div 40	RFA	3	ea		\$249.24	\$0.00	\$611.55	\$ 908	\$ 2,725
2Yard	Div 40	Gate valve	3	ea		\$249.24	\$0.00	\$1,521.95	\$ 1,889	\$ 5,667
						\$0.00	\$0.00		\$ -	\$ -
2Yard	Div 40	Excavation	95	cy		\$37.81	\$39.79		\$ 78	\$ 7,341
2Yard	Div 40	Gravel base	15	cy		\$37.81	\$32.22	\$35.00	\$ 108	\$ 1,609
2Yard	Div 40	Backfill (reuse)	95	cy		\$37.81	\$32.22		\$ 70	\$ 6,625
2Yard	Div 40	Disposal	0	cy		\$7.14	\$5.19	\$5.00	\$ 18	\$ -
2Yard	Div 40	Trench box	1	wk		\$277.22	\$189.34	\$250.00	\$ 736	\$ 736
						\$0.00	\$0.00		\$ -	\$ -
2Yard	Div 40	Testing	10	cd		\$1,340.64	\$0.00		\$ 1,341	\$ 13,406
						\$0.00	\$0.00		\$ -	\$ -
						\$0.00	\$0.00		\$ -	\$ -
						\$0.00	\$0.00		\$ -	\$ -
						\$0.00	\$0.00		\$ -	\$ -
		Site Work				\$0.00	\$0.00		\$ -	\$ -
2Site	Div 26	Furnish/install hydropneumatic tank	1	ea	Assume 2000 gallons	\$4,870.80	\$3,546.51	\$78,394.00	\$ 92,887	\$ 92,887
						\$0.00	\$0.00		\$ -	\$ -
2Site	Div 26	Testing	5	cd		\$1,575.70	\$0.00		\$ 1,576	\$ 7,878
						\$0.00	\$0.00		\$ -	\$ -
		<i>Slab</i>	1	ea		\$0.00	\$0.00		\$ -	\$ -
2Site	Div 03	Erect/Strip Formwork	88	sf		\$8.52	\$0.00	\$3.00	\$ 12	\$ 1,034
2Site	Div 03	Place Rebar	991	lb		\$0.88	\$0.00	\$1.03	\$ 1.99	\$ 1,974
2Site	Div 03	Place Concrete	8	cy		\$52.94	\$2.34	\$225.45	\$ 298	\$ 2,430
2Site	Div 03	Concrete Finishing	188	sf		\$1.34	\$0.00		\$ 1.34	\$ 251
						\$0.00	\$0.00		\$ -	\$ -
2Site	Div 31	Excavation	46	cy		\$12.60	\$13.26		\$ 26	\$ 1,186
2Site	Div 31	Gravel bedding	9	cy	Assume 12-inches thick	\$18.90	\$16.11	\$35.00	\$ 73	\$ 667
2Site	Div 31	Backfill (reuse)	13	cy		\$18.90	\$16.11		\$ 35	\$ 459
2Site	Div 31	Backfill (Import)	18	cy		\$18.90	\$16.11	\$35.00	\$ 73	\$ 1,333
2Site	Div 31	Disposal of soil	33	cy		\$7.14	\$5.19	\$5.00	\$ 18	\$ 580
						\$0.00	\$0.00		\$ -	\$ -
2Site	Div 32	Allow for site finishing	1	ls	Allow at 15% of cost	\$0.00	\$0.00	\$105,972.36	\$ 114,185	\$ 114,185
						\$0.00	\$0.00		\$ -	\$ -
						\$0.00	\$0.00		\$ -	\$ -
						\$0.00	\$0.00		\$ -	\$ -
		Generator				\$0.00	\$0.00		\$ -	\$ -
2Gen	Div 26	Furnish/install generator	1	ea	Assume 50kW	\$20,345.74	\$17,732.54	\$40,000.00	\$ 81,178	\$ 81,178
						\$0.00	\$0.00		\$ -	\$ -
2Gen	Div 26	Testing	5	cd		\$1,174.87	\$0.00		\$ 1,175	\$ 5,874
						\$0.00	\$0.00		\$ -	\$ -
		<i>Slab</i>	1	ea		\$0.00	\$0.00		\$ -	\$ -
2Gen	Div 03	Erect/Strip Formwork	66	sf		\$8.52	\$0.00	\$3.00	\$ 12	\$ 775
2Gen	Div 03	Place Rebar	496	lb		\$0.88	\$0.00	\$1.03	\$ 1.99	\$ 987
2Gen	Div 03	Place Concrete	4	cy		\$52.94	\$2.34	\$225.45	\$ 298	\$ 1,215
2Gen	Div 03	Concrete Finishing	116	sf		\$1.34	\$0.00		\$ 1.34	\$ 155
						\$0.00	\$0.00		\$ -	\$ -
2Gen	Div 31	Excavation	31	cy		\$12.60	\$13.26		\$ 26	\$ 790
2Gen	Div 31	Gravel bedding	6	cy	Assume 12-inches thick	\$18.90	\$16.11	\$35.00	\$ 73	\$ 444
2Gen	Div 31	Backfill (reuse)	10	cy		\$18.90	\$16.11		\$ 35	\$ 358
2Gen	Div 31	Backfill (Import)	12	cy		\$18.90	\$16.11	\$35.00	\$ 73	\$ 889
2Gen	Div 31	Disposal of soil	20	cy		\$7.14	\$5.19	\$5.00	\$ 18	\$ 360
						\$0.00	\$0.00		\$ -	\$ -

Location Code	CSI Div.	Description	Quantity	Unit	Notes	Labor Unit Cost	Equipment Unit Cost	Material Unit Cost	Total Unit Cost	Total Amount
						\$0.00	\$0.00		\$ -	\$ -
						\$0.00	\$0.00		\$ -	\$ -
		Electrical and Controls				\$0.00	\$0.00		\$ -	\$ -
2E/I&C	Div 26	Ductbanks	200	lf		\$0.00	\$0.00	\$350.00	\$ 377	\$ 75,425
						\$0.00	\$0.00		\$ -	\$ -
2E/I&C	Div 26	Utility transformer	1	ea	50kVA	\$8,138.30	\$7,093.02	\$30,000.00	\$ 47,556	\$ 47,556
2E/I&C	Div 26	Utility Meter	1	ea	100A	\$4,069.15	\$3,546.51	\$20,000.00	\$ 29,166	\$ 29,166
2E/I&C	Div 26	ATS	1	ea	100A	\$872.63	\$0.00	\$7,500.00	\$ 8,954	\$ 8,954
2E/I&C	Div 26	MCC	1	ea	100A	\$12,330.75	\$10,747.00	\$40,000.00	\$ 66,178	\$ 66,178
2E/I&C	Div 26	LP	1	ea		\$3,490.52	\$0.00	\$7,500.00	\$ 11,572	\$ 11,572
2E/I&C	Div 26	LP-TX	1	ea		\$3,490.52	\$0.00	\$12,000.00	\$ 16,421	\$ 16,421
2E/I&C	Div 26	PP	1	ea		\$3,490.52	\$0.00	\$7,500.00	\$ 11,572	\$ 11,572
2E/I&C	Div 26	PLC	1	ea		\$3,490.52	\$0.00	\$50,000.00	\$ 57,366	\$ 57,366
						\$0.00	\$0.00		\$ -	\$ -
2E/I&C	Div 26	Testing	20	cd		\$1,174.87	\$0.00		\$ 1,175	\$ 23,497
						\$0.00	\$0.00		\$ -	\$ -
		Pump building				\$0.00	\$0.00		\$ -	\$ -
2E/I&C	Div 26	Ground rod and test well	4	ea		\$872.63	\$0.00	\$150.00	\$ 1,034	\$ 4,137
2E/I&C	Div 26	4/0	175	lf		\$5.45	\$0.00	\$6.74	\$ 13	\$ 2,225
2E/I&C	Div 26	Exothermic weld	9	ea		\$218.16	\$0.00	\$610.00	\$ 875	\$ 7,879
						\$0.00	\$0.00		\$ -	\$ -
		Generator slab				\$0.00	\$0.00		\$ -	\$ -
2E/I&C	Div 26	Ground rod and test well	4	ea		\$872.63	\$0.00	\$150.00	\$ 1,034	\$ 4,137
2E/I&C	Div 26	4/0	48	lf		\$5.45	\$0.00	\$6.74	\$ 13	\$ 604
2E/I&C	Div 26	Exothermic weld	2	ea		\$218.16	\$0.00	\$610.00	\$ 875	\$ 1,751
						\$0.00	\$0.00		\$ -	\$ -
2E/I&C	Div 40P	Programming/integration	20	cd		\$1,650.00	\$0.00		\$ 1,650	\$ 33,000
						\$0.00	\$0.00		\$ -	\$ -
2E/I&C	Div 40P	Miscellaneous instrumentation	1	ls	Allow at 2% of cost	\$0.00	\$0.00	\$28,516.21	\$ 30,726	\$ 30,726
2E/I&C	Div 26	Field wiring	1	ls	Allow at 8% of cost	\$0.00	\$0.00	\$116,522.95	\$ 125,553	\$ 125,553
						\$0.00	\$0.00		\$ -	\$ -
						\$0.00	\$0.00		\$ -	\$ -
						\$0.00	\$0.00		\$ -	\$ -
		Transmission Pipeline				\$0.00	\$0.00		\$ -	\$ -
2Trans	Div 40	Furnish/Install 10-inch diameter pipe	4,500	lf	PVC	\$13.48	\$7.11	\$34.78	\$ 58	\$ 261,295
2Trans	Div 40	90-elbow	5	ea		\$179.44	\$94.67	\$1,687.89	\$ 2,093	\$ 10,464
						\$0.00	\$0.00		\$ -	\$ -
2Trans	Div 31	Excavation	4,634	cy		\$12.60	\$13.26		\$ 26	\$ 119,869
2Trans	Div 31	Gravel Bedding	794	cy		\$18.90	\$16.11	\$35.00	\$ 73	\$ 57,775
2Trans	Div 31	Backfill (reuse)	4,634	cy		\$18.90	\$16.11		\$ 35	\$ 162,252
2Trans	Div 31	Disposal of soil	0	cy		\$7.14	\$5.19	\$5.00	\$ 17	\$ -
2Trans	Div 31	Trench box	13	wk		\$277.22	\$189.34	\$500.00	\$ 1,005	\$ 13,069
						\$0.00	\$0.00		\$ -	\$ -
2Trans	Div 02	Sawcut	8,393	lf		\$1.59	\$1.30		\$ 2.89	\$ 24,263
2Trans	Div 02	Remove/dispose of pavement	26,537	sf		\$0.87	\$0.35	\$0.65	\$ 1.87	\$ 49,535
2Trans	Div 32	Replacement pavement	912	tn		\$11.27	\$1.31	\$110.40	\$ 132	\$ 119,983
						\$0.00	\$0.00		\$ -	\$ -
2Trans	Div 40	Connections	1	ea		\$2,871.00	\$1,514.71	\$8,613.00	\$ 13,666	\$ 13,666
2Trans	Div 40	Utility relocations	1	ls		\$0.00	\$0.00		\$ -	\$ -
						\$0.00	\$0.00		\$ -	\$ -
2Trans	Div 40	Flagger	65	cd	1 flagger per day	\$192.00	\$0.00		\$ 192	\$ 12,480
2Trans	Div 40	Plastic barrels	2,160	ea	Every 5lf	\$7.97	\$1.23		\$ 9.20	\$ 19,875
2Trans	Div 40	Flashing arrow board	13	wk		\$0.00	\$0.00		\$ -	\$ -

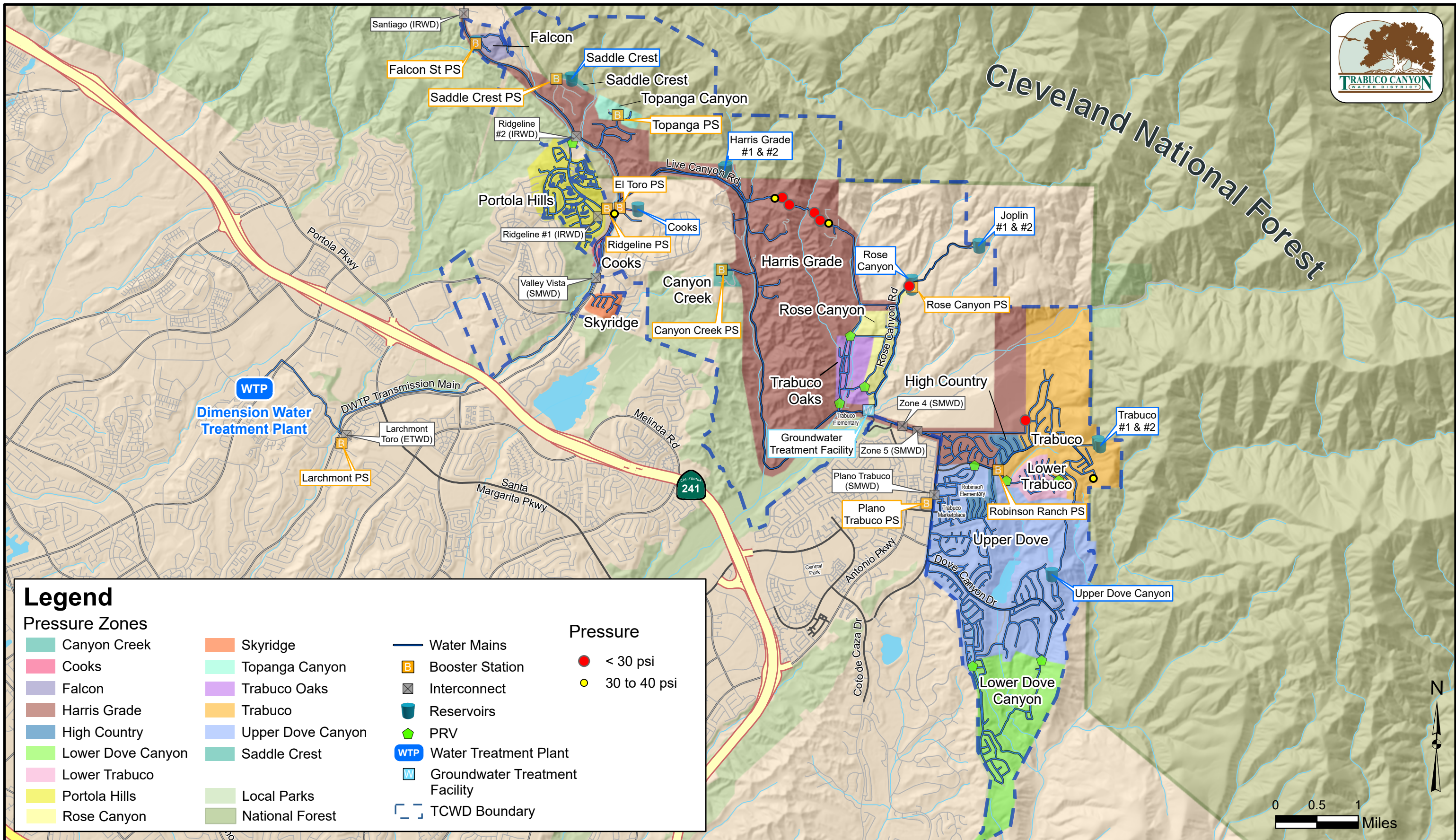
Location Code	CSI Div.	Description	Quantity	Unit	Notes	Labor Unit Cost	Equipment Unit Cost	Material Unit Cost	Total Unit Cost	Total Amount
2Trans	Div 40	Permanent/Temporary signage	1	ls		\$0.00	\$0.00		\$ -	\$ -
						\$0.00	\$0.00		\$ -	\$ -
2Trans	Div 40	Testing	9	cd		\$2,679.72	\$532.72		\$ 3,212	\$ 28,912

Location Code	CSI Div.	Description	Quantity	Unit	Notes	Labor Unit Cost	Equipment Unit Cost	Material Unit Cost	Total Unit Cost	Total Amount
3Res	Div 03	Erect/Strip Formwork	495	sf		\$8.52	\$0.00	\$3.00	\$ 12	\$ 5,815
3Res	Div 03	Place Rebar	20,074	lb		\$0.88	\$0.00	\$1.03	\$ 1.99	\$ 39,966
3Res	Div 03	Place Concrete	206	cy		\$52.94	\$2.34	\$225.45	\$ 298	\$ 61,504
3Res	Div 03	Concrete Finishing	2,520	sf		\$1.34	\$0.00		\$ 1.34	\$ 3,366
						\$0.00	\$0.00		\$ -	\$ -
3Res	Div 31	Excavation	560	cy		\$12.60	\$13.26		\$ 26	\$ 14,490
3Res	Div 31	Gravel bedding	102	cy	Assume 12-inches thick	\$18.90	\$16.11	\$35.00	\$ 73	\$ 7,407
3Res	Div 31	Backfill (reuse)	81	cy		\$18.90	\$16.11		\$ 35	\$ 2,820
3Res	Div 31	Backfill (Import)	204	cy		\$18.90	\$16.11	\$35.00	\$ 73	\$ 14,814
3Res	Div 31	Disposal of soil	480	cy		\$7.14	\$5.19	\$5.00	\$ 18	\$ 8,498
						\$0.00	\$0.00		\$ -	\$ -
						\$0.00	\$0.00		\$ -	\$ -
						\$0.00	\$0.00		\$ -	\$ -
		Yard Piping				\$0.00	\$0.00		\$ -	\$ -
3Yard	Div 40	Furnish/install 4-inch diameter pipe	105	lf		\$14.27	\$7.57	\$101.93	\$ 132	\$ 13,825
3Yard	Div 40	90-elbow	1	ea		\$249.24	\$0.00	\$243.00	\$ 511	\$ 511
3Yard	Div 40	RFA	3	ea		\$249.24	\$0.00	\$611.55	\$ 908	\$ 2,725
3Yard	Div 40	Gate valve	3	ea		\$249.24	\$0.00	\$1,521.95	\$ 1,889	\$ 5,667
						\$0.00	\$0.00		\$ -	\$ -
3Yard	Div 40	Excavation	99	cy		\$37.81	\$39.79		\$ 78	\$ 7,675
3Yard	Div 40	Gravel base	16	cy		\$37.81	\$32.22	\$35.00	\$ 108	\$ 1,683
3Yard	Div 40	Backfill (reuse)	99	cy		\$37.81	\$32.22		\$ 70	\$ 6,926
3Yard	Div 40	Disposal	0	cy		\$7.14	\$5.19	\$5.00	\$ 18	\$ -
3Yard	Div 40	Trench box	1	wk		\$277.22	\$189.34	\$250.00	\$ 736	\$ 736
						\$0.00	\$0.00		\$ -	\$ -
3Yard	Div 40	Furnish/install 4-inch diameter pipe	200	lf	Miscellaneous small pipe	\$14.27	\$7.57	\$101.93	\$ 132	\$ 26,334
3Yard	Div 40	90-elbow	3	ea		\$249.24	\$0.00	\$243.00	\$ 511	\$ 1,533
3Yard	Div 40	RFA	3	ea		\$249.24	\$0.00	\$611.55	\$ 908	\$ 2,725
3Yard	Div 40	Gate valve	3	ea		\$249.24	\$0.00	\$1,521.95	\$ 1,889	\$ 5,667
						\$0.00	\$0.00		\$ -	\$ -
3Yard	Div 40	Excavation	181	cy		\$37.81	\$39.79		\$ 78	\$ 14,015
3Yard	Div 40	Gravel base	29	cy		\$37.81	\$32.22	\$35.00	\$ 108	\$ 3,072
3Yard	Div 40	Backfill (reuse)	181	cy		\$37.81	\$32.22		\$ 70	\$ 12,647
3Yard	Div 40	Disposal	0	cy		\$7.14	\$5.19	\$5.00	\$ 18	\$ -
3Yard	Div 40	Trench box	2	wk		\$277.22	\$189.34	\$250.00	\$ 736	\$ 1,472
						\$0.00	\$0.00		\$ -	\$ -
3Yard	Div 40	Testing	15	cd		\$1,340.64	\$0.00		\$ 1,341	\$ 20,110
						\$0.00	\$0.00		\$ -	\$ -
						\$0.00	\$0.00		\$ -	\$ -
						\$0.00	\$0.00		\$ -	\$ -
						\$0.00	\$0.00		\$ -	\$ -
		Site Work				\$0.00	\$0.00		\$ -	\$ -
3Site	Div 32	Allow for site finishing	1	ls	Allow at 15% of cost	\$0.00	\$0.00	\$161,465.81	\$ 173,979	\$ 173,979
						\$0.00	\$0.00		\$ -	\$ -
						\$0.00	\$0.00		\$ -	\$ -
						\$0.00	\$0.00		\$ -	\$ -
						\$0.00	\$0.00		\$ -	\$ -
		Generator				\$0.00	\$0.00		\$ -	\$ -
3Gen	Div 26	Furnish/install generator	1	ea	Assume15kW	\$4,069.15	\$3,546.51	\$20,000.00	\$ 29,166	\$ 29,166
						\$0.00	\$0.00		\$ -	\$ -
3Gen	Div 26	Testing	5	cd		\$1,174.87	\$0.00		\$ 1,175	\$ 5,874
						\$0.00	\$0.00		\$ -	\$ -
						\$0.00	\$0.00		\$ -	\$ -
		<i>Slab</i>	1	ea		\$0.00	\$0.00		\$ -	\$ -
3Gen	Div 03	Erect/Strip Formwork	88	sf		\$8.52	\$0.00	\$3.00	\$ 12	\$ 1,034

Location Code	CSI Div.	Description	Quantity	Unit	Notes	Labor Unit Cost	Equipment Unit Cost	Material Unit Cost	Total Unit Cost	Total Amount
3Gen	Div 03	Place Rebar	991	lb		\$0.88	\$0.00	\$1.03	\$ 1.99	\$ 1,974
3Gen	Div 03	Place Concrete	8	cy		\$52.94	\$2.34	\$225.45	\$ 298	\$ 2,430
3Gen	Div 03	Concrete Finishing	188	sf		\$1.34	\$0.00		\$ 1.34	\$ 251
						\$0.00	\$0.00		\$ -	\$ -
3Gen	Div 31	Excavation	46	cy		\$12.60	\$13.26		\$ 26	\$ 1,186
3Gen	Div 31	Gravel bedding	9	cy	Assume 12-inches thick	\$18.90	\$16.11	\$35.00	\$ 73	\$ 667
3Gen	Div 31	Backfill (reuse)	13	cy		\$18.90	\$16.11		\$ 35	\$ 459
3Gen	Div 31	Backfill (Import)	18	cy		\$18.90	\$16.11	\$35.00	\$ 73	\$ 1,333
3Gen	Div 31	Disposal of soil	33	cy		\$7.14	\$5.19	\$5.00	\$ 18	\$ 580
						\$0.00	\$0.00		\$ -	\$ -
						\$0.00	\$0.00		\$ -	\$ -
						\$0.00	\$0.00		\$ -	\$ -
		Electrical and Controls				\$0.00	\$0.00		\$ -	\$ -
3E/I&C	Div 26	Ductbanks	150	lf		\$0.00	\$0.00	\$350.00	\$ 377	\$ 56,569
						\$0.00	\$0.00		\$ -	\$ -
3E/I&C	Div 26	Utility transformer	1	ea	50kVA	\$8,138.30	\$7,093.02	\$30,000.00	\$ 47,556	\$ 47,556
3E/I&C	Div 26	Utility Meter	1	ea	100A	\$4,069.15	\$3,546.51	\$20,000.00	\$ 29,166	\$ 29,166
3E/I&C	Div 26	ATS	1	ea	100A	\$872.63	\$0.00	\$7,500.00	\$ 8,954	\$ 8,954
3E/I&C	Div 26	MCC	1	ea	100A	\$12,330.75	\$10,747.00	\$40,000.00	\$ 66,178	\$ 66,178
3E/I&C	Div 26	LP	1	ea		\$3,490.52	\$0.00	\$7,500.00	\$ 11,572	\$ 11,572
3E/I&C	Div 26	LP-TX	1	ea		\$3,490.52	\$0.00	\$12,000.00	\$ 16,421	\$ 16,421
3E/I&C	Div 26	PP	1	ea		\$3,490.52	\$0.00	\$7,500.00	\$ 11,572	\$ 11,572
3E/I&C	Div 26	PLC	1	ea		\$3,490.52	\$0.00	\$50,000.00	\$ 57,366	\$ 57,366
						\$0.00	\$0.00		\$ -	\$ -
3E/I&C	Div 26	Testing	20	cd		\$1,174.87	\$0.00		\$ 1,175	\$ 23,497
						\$0.00	\$0.00		\$ -	\$ -
		Generator slab				\$0.00	\$0.00		\$ -	\$ -
3E/I&C	Div 26	Ground rod and test well	4	ea		\$872.63	\$0.00	\$150.00	\$ 1,034	\$ 4,137
3E/I&C	Div 26	4/0	60	lf		\$5.45	\$0.00	\$6.74	\$ 13	\$ 763
3E/I&C	Div 26	Exothermic weld	2	ea		\$218.16	\$0.00	\$610.00	\$ 875	\$ 1,751
						\$0.00	\$0.00		\$ -	\$ -
3E/I&C	Div 40P	Programming/integration	25	cd		\$1,650.00	\$0.00		\$ 1,650	\$ 41,250
						\$0.00	\$0.00		\$ -	\$ -
3E/I&C	Div 40P	Miscellaneous instrumentation	1	ls	Allow at 2% of cost	\$0.00	\$0.00	\$33,442.42	\$ 36,034	\$ 36,034
3E/I&C	Div 26	Field wiring	1	ls	Allow at 8% of cost	\$0.00	\$0.00	\$136,652.41	\$ 147,243	\$ 147,243
						\$0.00	\$0.00		\$ -	\$ -
						\$0.00	\$0.00		\$ -	\$ -
						\$0.00	\$0.00		\$ -	\$ -
		Transmission Pipeline				\$0.00	\$0.00		\$ -	\$ -
3Trans	Div 40	Furnish/Install 10-inch diameter pipe	5,500	lf	PVC	\$13.48	\$7.11	\$34.78	\$ 58	\$ 319,361
3Trans	Div 40	90-elbow	5	ea		\$179.44	\$94.67	\$1,687.89	\$ 2,093	\$ 10,464
						\$0.00	\$0.00		\$ -	\$ -
3Trans	Div 31	Excavation	5,664	cy		\$12.60	\$13.26		\$ 26	\$ 146,506
3Trans	Div 31	Gravel Bedding	971	cy		\$18.90	\$16.11	\$35.00	\$ 73	\$ 70,614
3Trans	Div 31	Backfill (reuse)	5,664	cy		\$18.90	\$16.11		\$ 35	\$ 198,308
3Trans	Div 31	Disposal of soil	0	cy		\$7.14	\$5.19	\$5.00	\$ 17	\$ -
3Trans	Div 31	Trench box	16	wk		\$277.22	\$189.34	\$500.00	\$ 1,005	\$ 16,085
						\$0.00	\$0.00		\$ -	\$ -
3Trans	Div 02	Sawcut	10,393	lf		\$1.59	\$1.30		\$ 2.89	\$ 30,045
3Trans	Div 02	Remove/dispose of pavement	32,870	sf		\$0.87	\$0.35	\$0.65	\$ 1.87	\$ 61,358
3Trans	Div 32	Replacement pavement	1,130	tn		\$11.27	\$1.31	\$110.40	\$ 132	\$ 148,619
						\$0.00	\$0.00		\$ -	\$ -

Location Code	CSI Div.	Description	Quantity	Unit	Notes	Labor Unit Cost	Equipment Unit Cost	Material Unit Cost	Total Unit Cost	Total Amount
3Trans	Div 40	Connections	1	ea		\$2,871.00	\$1,514.71	\$8,613.00	\$ 13,666	\$ 13,666
3Trans	Div 40	Utility relocations	1	ls		\$0.00	\$0.00		\$ -	\$ -
						\$0.00	\$0.00		\$ -	\$ -
3Trans	Div 40	Flagger	80	cd	1 flagger per day	\$192.00	\$0.00		\$ 192	\$ 15,360
3Trans	Div 40	Plastic barrels	2,640	ea	Every 5lf	\$7.97	\$1.23		\$ 9.20	\$ 24,292
3Trans	Div 40	Flashing arrow board	16	wk		\$0.00	\$0.00		\$ -	\$ -
3Trans	Div 40	Permanent/Temporary signage	1	ls		\$0.00	\$0.00		\$ -	\$ -
						\$0.00	\$0.00		\$ -	\$ -
3Trans	Div 40	Testing	11	cd		\$2,679.72	\$532.72		\$ 3,212	\$ 35,337
						\$0.00	\$0.00		\$ -	\$ -
						\$0.00	\$0.00		\$ -	\$ -
						\$0.00	\$0.00		\$ -	\$ -
						\$0.00	\$0.00		\$ -	\$ -
						\$0.00	\$0.00		\$ -	\$ -
						\$0.00	\$0.00		\$ -	\$ -
						\$0.00	\$0.00		\$ -	\$ -

Appendix B: 2022 Master Plan Results



Legend

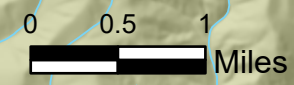
Pressure Zones

- Canyon Creek
- Cooks
- Falcon
- Harris Grade
- High Country
- Lower Dove Canyon
- Lower Trabuco
- Portola Hills
- Rose Canyon
- Skyridge
- Topanga Canyon
- Trabuco Oaks
- Trabuco
- Upper Dove Canyon
- Saddle Crest
- Local Parks
- National Forest

Pressure

- < 30 psi
- 30 to 40 psi

- Water Mains
- Booster Station
- Interconnect
- Reservoirs
- PRV
- Water Treatment Plant
- Groundwater Treatment Facility
- TCWD Boundary



**TRABUCO CANYON WATER DISTRICT
ENGINEERING/OPERATIONAL COMMITTEE MEETING | FEBRUARY 4, 2026**

ENGINEERING MATTERS

ITEM 5: OTHER ENGINEERING AND OPERATIONS PROJECT UPDATES

1. Dimension Water Treatment Plant Transmission Main Rehabilitation Project
2. Pipeline Condition Assessment - Proposal

RECOMMENDED ACTION:

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

EXHIBIT(S):

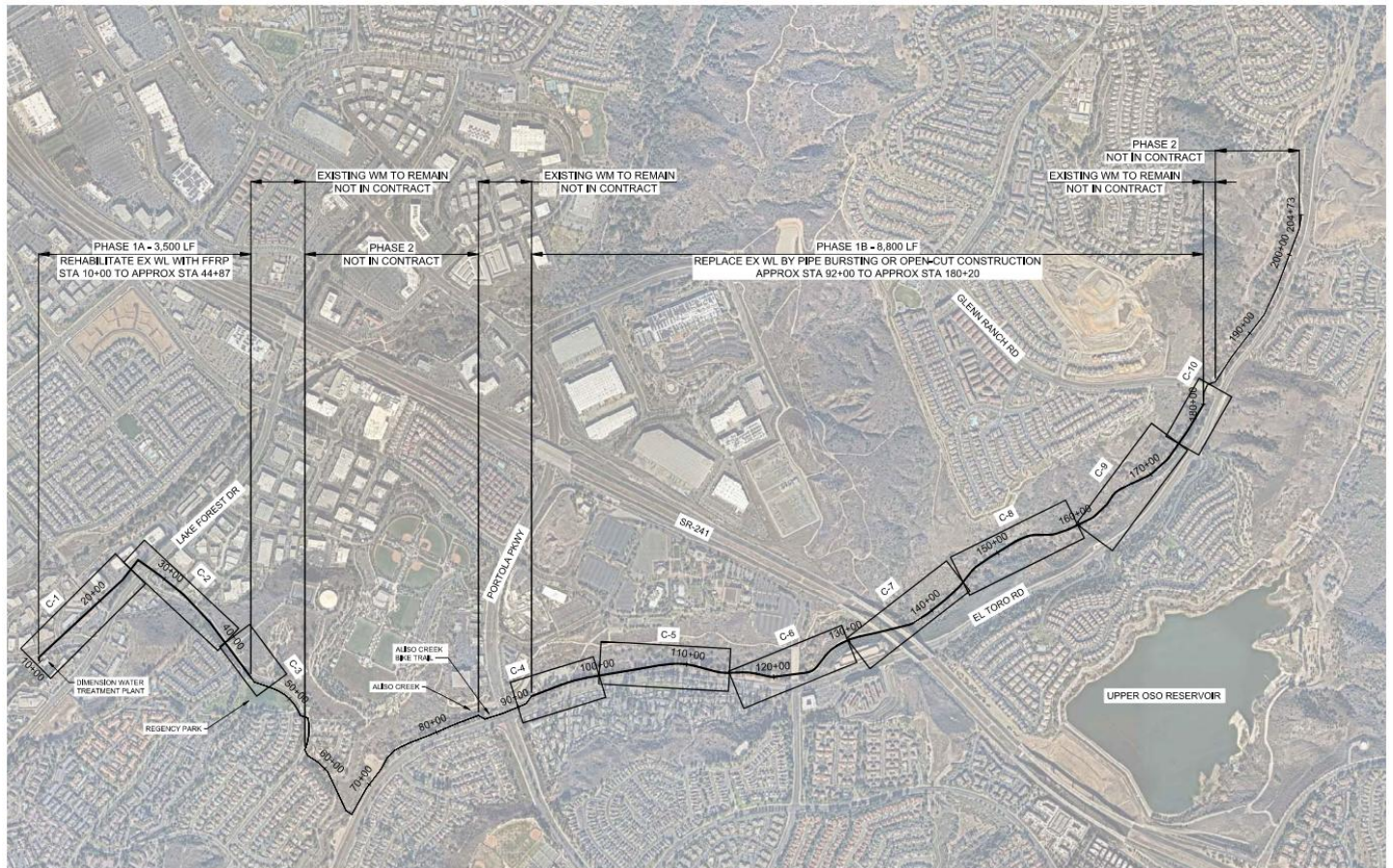
1. DWTP Transmission Main January Construction Report
2. Hazen Condition Assessment Proposal

CONTACTS (staff responsible): MCKENNEY/LAUSTEN



Phase 1A/1B/1C - DWTP Transmission Main Rehabilitation and Replacement Project

Construction Report January 2026



I. GENERAL PROJECT INFORMATION

Contractor

TE Roberts, Inc.

Contract Time

Original Calendar Days:	153 Days
Notice to Proceed:	June 23, 2025
Material Delivery:	August 5, 2025
Original Contract Completion Date:	Jan 5, 2026
Revised Contract Completion Date:	Mar 13, 2026

Contract Price

Phase 1A Original Contract Amount:	\$1,793,012.00
Phase 1B Original Contract Amount:	\$3,721,445.00
Total Original Contract Amount:	\$5,514,457.00
Approved Change Order [Unexecuted]: Close Out #1 [Phase 1A]	-\$31,748.95
Approved Change Order [Unexecuted]: Creek Crossing #1 [Phase 1B]	\$186,500.00
Approved Change Order [Unexecuted]: Creek Crossing #2 [Phase 1B]	\$186,500.00
Credit Contract Line Item 09 [Unexecuted] [Phase 1B]	-\$126,200.00
Credit Contract Line Item 19 [Unexecuted] [Phase 1B]	-\$200,000.00
Approved Change Order [Unexecuted]: [Phase 1C]	\$747,077.00
Total Change Order Amount:	\$762,508.05
Revised Contract Amount [Phase 1A, 1B, 1C]:	\$6,291,636.10

II. CONSTRUCTION MANAGER SUMMARY

This report summarizes construction activities for January 2026 for the Phase 1B and Phase 1C – DWTP Transmission Main Rehabilitation and Replacement Project, including associated Phase 1C investigative, preparatory, and limited pipeline installation work performed to support ongoing and future rehabilitation efforts. During January, construction efforts were primarily concentrated on Phase 1B pipeline rehabilitation activities, with emphasis on pipe bursting operations, pit excavation, CCTV investigation, potholing, pipe fusion, and restoration work along the bike trail and creek crossing alignments. In parallel, Phase 1C activities progressed north of Glenn Ranch Road, consisting of investigative efforts as well as approximately 900 linear feet of pipe bursting installation to advance pipeline replacement and support alignment and sequencing considerations.

TE Roberts, Inc., in coordination with Morrow Trenchless, Performance Pipeline Technologies, and testing agencies, advanced work at multiple station locations simultaneously. Early January activities included excavation of insertion and reception pits, removal of existing CMLC piping, installation of speed shoring, and setup of pipe bursting equipment at several stations between approximately STA 156+78 and STA 188+30. Pipe bursting operations progressed throughout the month, including multiple completed bursts, installation of C900 pipe, and placement of ductile iron fittings with mechanical joint restraints. In several locations, unexpected subsurface conditions were encountered, including existing fittings, thrust blocks, butt straps, and alignment conflicts. These conditions required localized excavation, CCTV investigation, potholing, and field coordination with TCWD staff to determine appropriate corrective actions and sequencing adjustments. CCTV camera investigations were performed at multiple locations to verify pipe alignment, identify fittings, and confirm downstream conditions prior to continued bursting operations. Additional potholing was completed to confirm pipe size, depth, and horizontal offset from the bike trail where parallel pipeline alignments were present, including locations associated with Phase 1C work areas.

Phase 1C activities during January included both investigative and construction-related work, consisting of CCTV inspections, potholing, exploratory excavation, survey verification, and completion of pipe bursting installation totaling approximately 900 linear feet. This work was performed to address verified pipeline conditions, advance replacement of existing infrastructure, and inform alignment selection and sequencing for remaining rehabilitation efforts. Environmental coordination was completed, including site review by a qualified environmental biologist, and designated Phase 1C areas were cleared for construction-related activities. Backfill operations followed completed installations and investigative activities, including placement of sand bedding in the pipe zone, warning tape, native backfill, and mechanical compaction. Third-party geotechnical personnel were present to verify compaction where required. Restoration activities included temporary paving and bike trail surface repairs at multiple locations.

Daily traffic control was implemented and maintained at all active work areas in accordance with approved traffic control plans, with coordination among the Contractor, specialty subcontractors, and City and County inspectors. Despite intermittent delays associated with pipe obstructions and investigative work, January represented continued advancement of Phase 1B construction and initial advancement of Phase 1C installation, with multiple pipe segments installed, testing support completed, and alignment verification progressing toward final completion.

III. ANTICIPATED CONSTRUCTION ACTIVITIES – NEXT REPORTING PERIOD

Based on progress achieved during January, construction activities in February are anticipated to continue at an active pace, with focus on completing remaining Phase 1B, continuing Phase 1C pipeline installation and associated investigative work, and progressing toward final mechanical connections and restoration.

Anticipated construction activities include:

- Ongoing fusion of Fusible C900 pipe at staging areas to support scheduled bursting runs for both Phase 1B and Phase 1C work areas.
- Excavation and preparation of additional insertion and reception pits, including removal of existing piping, installation of shoring systems, and construction of insertion ramps where required.
- Completion of CCTV camera investigations and potholing to verify pipe alignment, identify fittings, valves, and obstructions, and confirm downstream conditions prior to continued bursting, including locations associated with Phase 1C.
- Continued Phase 1C work, consisting of both investigative activities and additional pipe bursting installation, including exploratory excavation, survey verification, and alignment confirmation to support sequencing and constructability planning.
- Installation of ductile iron fittings, couplers, mechanical joint restraints, and corrosion protection at completed burst locations.
- Placement of pipe-zone sand bedding, warning tape, native backfill, and mechanical compaction, with third-party testing and verification as required.
- Completion of overhead pipe installation and bridge crossing work, including welding, fit-up, and inspection of welded connections.
- Ongoing traffic control implementation and environmental compliance, including BMP installation and coordination with City and County inspectors.
- Preparation for upcoming pressure testing, disinfection, and final system commissioning activities as construction progresses.

With multiple work fronts active and Phase 1C installation now underway, February is anticipated to complete Phase 1B construction while continuing to progress Phase 1C pipeline replacement, positioning the project for final installation, testing, and closeout activities.

IV. CHANGE ORDERS

The approved amount of change orders to date is **\$762,508.05**; and Contract Completion Date was extended to March 13, 2026 [from January 5, 2026] due to delay in permitting, miscellaneous procurement items, and the added scope of work for Phase 1C.

V. SCHEDULE

See Appendix A.

VI. PHOTOS

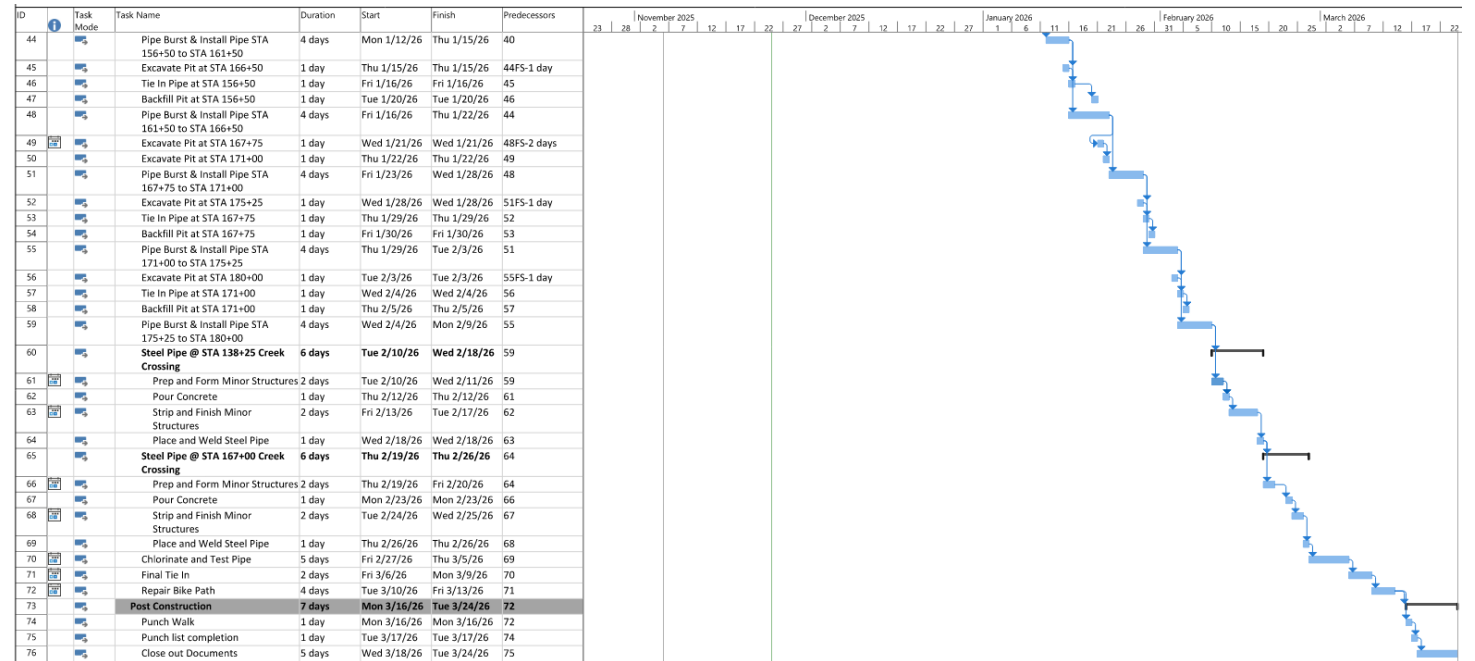
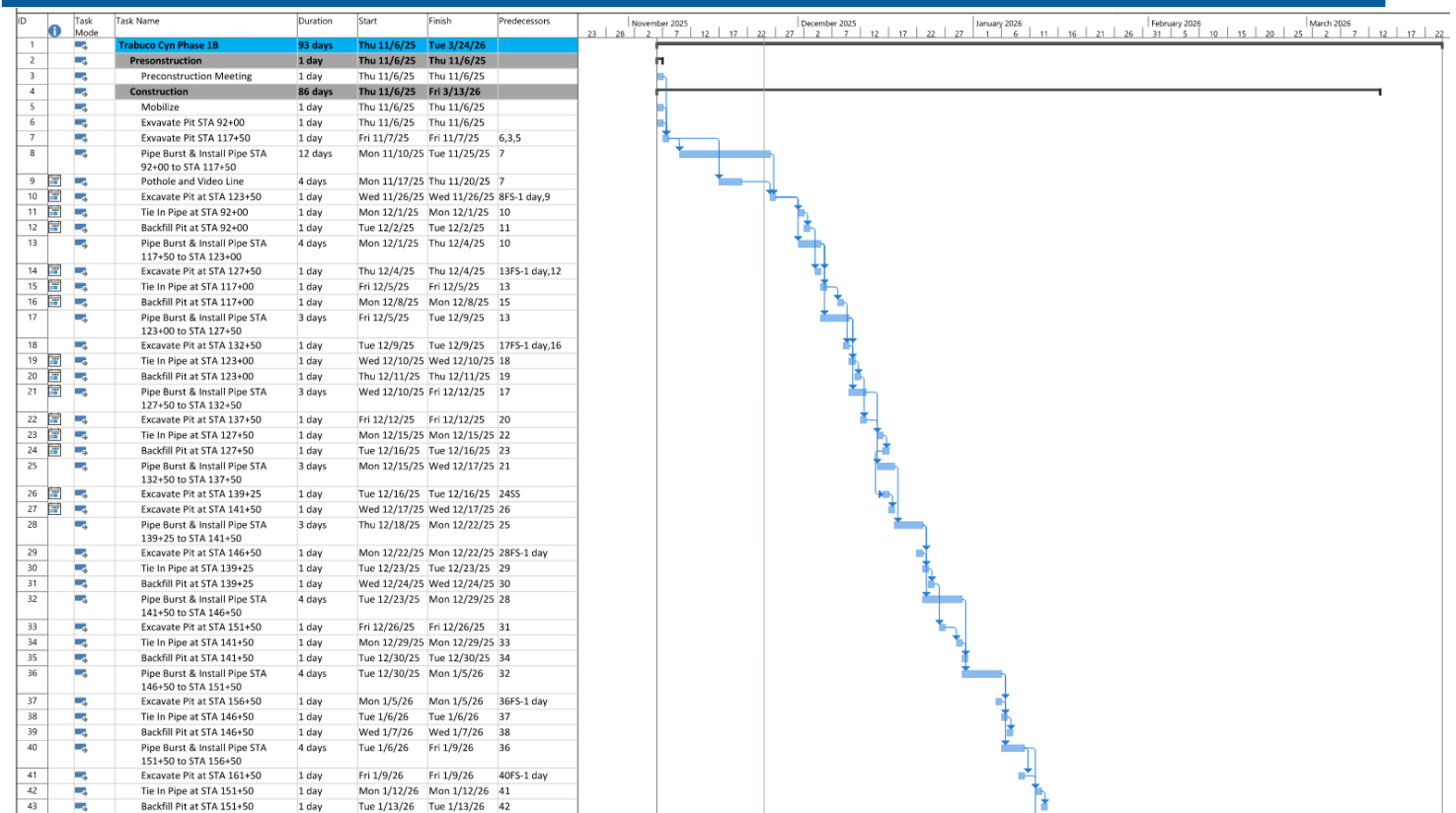
Construction photos documenting TE Roberts' activities and progress during this reporting period are provided in Appendix B.

APPENDIX A

Schedule

Phase 1A/1B - DWTP Transmission Main Rehabilitation and Replacement Project

**Construction Report
January 2026**



APPENDIX B

Construction Photos



Bridge Crossing



Pavement Restoration



Pavement Restoration



Pipe Bursting



Pipe Bursting



Pipe Bursting

January 30, 2026

Trabuco Canyon Water District
Lorrie Lausten, PE
Trabuco Canyon Water District
32003 Dove Canyon Dr
Trabuco Canyon, CA 92679

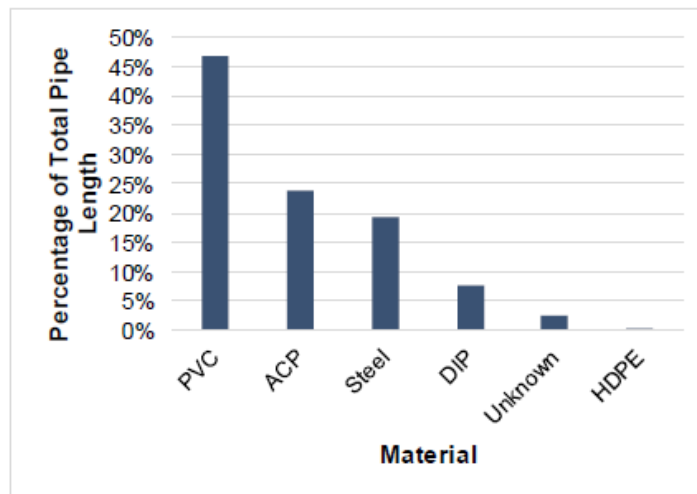
Re: Letter Proposal – Pipelines Condition Assessment and Renewal Projection

Dear Lorrie:

Thank you for the opportunity to submit the following scope of services for Pipelines Condition Assessment and Renewal Projection project. Deliverables from the work include updating the District’s asset register with pipelines and updating the data visualization dashboard to include potable water, non-domestic water, sewer collection system pipelines and sewer force mains.

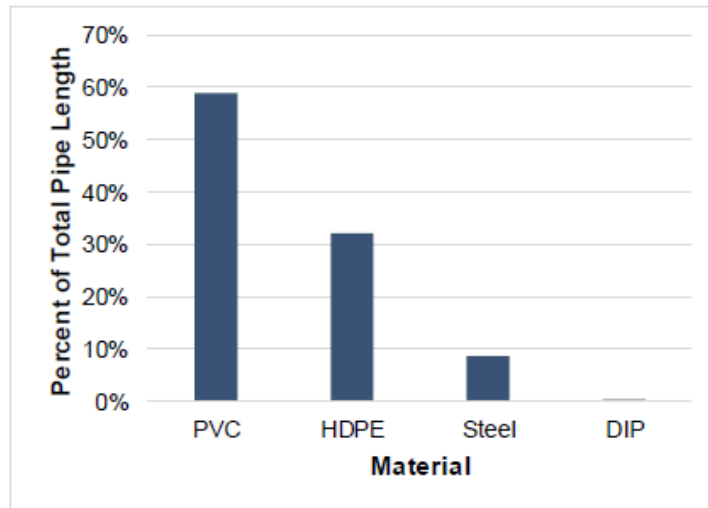
Water Pipeline System Background

Potable water is delivered to the District’s 4,097 service connections through 64 miles of distribution pipeline within 14 pressure zones. Pipeline diameter ranges from less than 4” service connections up to 24”. Approximately 47% of the District’s pipeline is polyvinyl chloride (PVC), 24% is asbestos cement pipe (ACP), 19% is Steel, with the remaining comprising smaller percentages of pipe material as shown below.



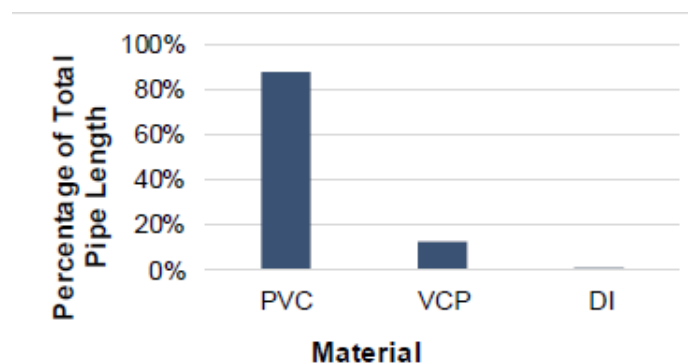
Distribution of Materials - Potable Water Pipelines

Non-domestic water is delivered to 28 service connections through 8 miles of distribution pipeline within 2 pressure zones. Pipeline diameter ranges from less than 4” up to 20”. Approximately 59% of the District’s pipeline is polyvinyl chloride (PVC), 32% (HDPE), with the remaining pipe comprising of Steel or (DIP) as shown below.

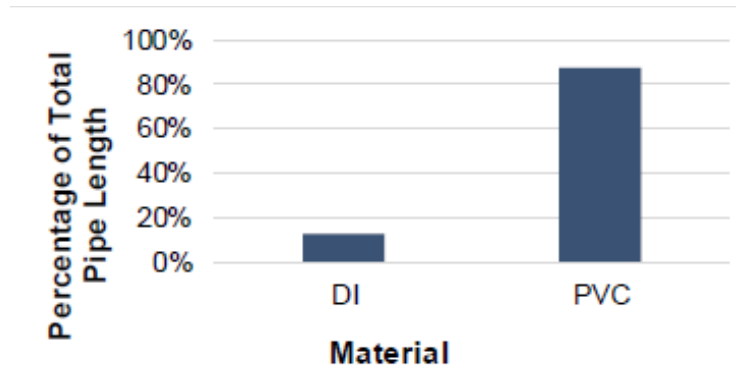


Distribution of Materials – Non-domestic Water Pipelines

Wastewater is collected through 40.3 miles of gravity pipeline and 8.7 miles of force mains. Pipeline diameter ranges from 6” to 18” for gravity mains and 2” up to 14” for force mains. About 87% of the District’s gravity mains are polyvinyl chloride (PVC), 12% Vitrified Clay Pipe (VCP), and the remainder Ductile Iron (DI). Approximately 88% of the District’s force mains are polyvinyl chloride (PVC), and the remaining 12% are (DI).



Distribution of Materials – Sewer Collection System Pipelines



Distribution of Materials – Sewer Force Mains

The District completed an update to its Master Plan in 2022. Significant findings from that project relative to the water distribution system included new and upsize pipe to address fire flow deficiencies. Any pipeline identified in need of replacement should be assessed in the hydraulic model to determine if upsizing the pipe should be considered to optimize or meet future fire flow or system demands.

Scope of Work

The following tasks are included in the scope of this work.

- Task 1: Project Management
- Task 2: Data Request and Review
- Task 3: Desktop Condition Assessment
- Task 4: Consequence of Failure
- Task 5: Risk Assessment
- Task 6: Prioritized CIP and Dashboard Update

Task 1 - Project Management

This task includes all work to ensure the project is completed within the agreed upon scope and fee. The Hazen Project Manager (PM), Sean Pour, will communicate and coordinate on a weekly basis with District PM to provide project updates, follow up on action items, plan upcoming work and stakeholder collaboration, and solicit District feedback. Hazen will prepare and submit a concise monthly status report with each monthly invoice statement.

Deliverables:

- **Project Kick-Off Meeting:** Hazen will facilitate a project kick-off meeting at the start of the project. The purpose will be to introduce project participants and review project scope, deliverables, and schedule.
- **Progress Meetings:** Hazen will conduct monthly coordination meetings with the District's project manager over the duration of the project.

Task 2 - Data Request and Review

Hazen will review pipeline information contained within GIS layers provided by the District, as well as other data collected by the District that can support the desktop condition assessment. This associated data includes break history, repair or replacement of pipeline sections, valve exercising program data, soil condition, and any other available information related to operations and maintenance of the District's pipeline and appurtenances. Data gaps will be identified, and data gap closure procedure recommendations provided to the District. Data gaps will be filled using information provided by the District or through assumptions developed in coordination with the District.

This task will establish a comprehensive data foundation for accurate condition assessment, identifying and addressing information gaps that could impact decision-making quality.

Deliverables:

- Request for Information (RFI)
- Data gap assessment and gap closure recommendations

Assumptions:

- No additional data gathering, such as field inventory or condition assessment, will be completed as part of this task.
- Hazen will use the available data from TCWD and address minor discrepancies. Data gaps will be identified and communicated to TCWD. Hazen will close the gap on install years and agree on a path forward if the remaining data gaps will impact the quality of the desktop condition assessment results (task 3).

Task 3 – Desktop Condition Assessment

Hazen will perform a desktop condition assessment based on available information provided by the District and applying industry best practice provided by Hazen’s conveyance and asset management subject matter experts. The desktop condition assessment will be used to assign a condition score, or likelihood of failure (LoF) and associated remaining useful life (RUL) estimates for pipeline segments. Hazen will assign LoF by identifying cohorts of pipes (see assumptions) that have a higher LoF by performing a statistical analysis to identify correlations between physical attributes (size, material, age, location) and system conditions (pressure zone, soil corrosivity, available pressure data including transients - if available, pipe lining, and failure history). The best available data, and understanding of the degradation of specific pipe materials, will be used to determine condition scoring.

LoF condition scoring will follow the International Infrastructure Management Manual (IIMM) standard and will be consistent with scoring methodology performed for the District’s master plan.

Desktop condition assessment provides critical insights into pipeline infrastructure condition and remaining useful life without the cost and disruption of extensive field inspections, enabling proactive asset management.

Criteria	Weighting	Criteria Scores				
		5	4	3	2	1
Percent of Life Consumed	25%	>65%	>55 and <=65%	>45 and <=55%	>35 and <=45%	<=35%
Pressure (psi)	20%	>100 psi	>80 and <=100 psi	>40 and <=80 psi	>20 and <=40 psi	<=20 psi
Diameter (in)	10%	<8	8	10	12-16	>18
Failure History	5%	Multiple	-	1	-	0
Velocity (fps)	5%	>4	>3 and <=4	>2 and <=3	>1 and <=2	<=1
Groundwater	5%	<=50 ft	-	-	-	>50 ft
Concrete Corrosion (ACP, Concrete)	30%	High	-	Moderate	-	Low
Steel Corrosion (Metallic pipe)		High	-	Moderate	-	Low
Linear Extensibility (ACP, PVC)		Very High	High	Moderate	-	Low

An Example of LoF Scoring Guide for Water Distribution System

Deliverables:

- Asset register with pipe segment (see assumptions), asset attributes, RUL, LoF, and condition scoring (if available).

- Workshop to review findings and solicit feedback from District staff.

Assumptions:

- Hazen will perform a simple correlation between physical attributes and system conditions. This will not include predictive modelling or AI tools.

Task 4 – Consequence of Failure

Hazen will facilitate development of the methodology to assign Consequence of Failure (CoF) scoring to pipeline segments. The methodology will be consistent with the approach developed under the master plan.

CoF scoring formula will be developed that considers the following factors:

- Proximity to critical facilities and customers (schools, hospitals, high demand customers, water bodies)
- Hydraulic Criticality – identify service disruption if pipe segment is out of service (see assumptions).
- Public and traffic impact – Social and economic impact of pipeline repair due to proximity to major roadways, shopping areas, etc.
- Environmental impact – Proximity to environmentally sensitive areas, such as water bodies.
- Flow (diameter as proxy if not available from hydraulic data – see assumptions), material, depth (if available), proximity to major buildings, shutoff
- Fire hazard – Proximity to areas of severe fire hazard zones

Consequence of failure identifies critical assets where failures would have the greatest impact, allowing TCWD to strategically prioritize limited resources toward protecting essential services and high-risk areas.

Criteria	Weighting	Criteria Scores				
		5	4	3	2	1
Affected Hydraulic Impact (gpm)	20%	>172.4	>131.8 and <=172.4	>91.2 and <=131.8	>40.6 and <=91.2	<=40.6
Flow (gpm)	30%	>1,000	>250 and <=1,000	>50 and <=250	>10 and <=50	<=10
Critical Facilities (<100 ft)	20%	Public Facilities (Hospitals, Schools, etc.)	Commercial, Industrial	Multi-Family Residential, Agricultural	Single-Family Residential, Recreational	Other
Public / Traffic Impact	15%	Railroad or Freeway (<150 ft)	Arterial (<50 ft)	Collector (<30 ft)	Residential (<30 ft)	Agricultural Land, No Paving
Proximity to Environmentally Sensitive Lands	10%	Open Space or <250 ft to Water Bodies	-	Parks or >=250 and <500 ft to Water Bodies	-	>=500 ft to Water Bodies
Fire Hazard Severity Zones	5%	Very High	High	Moderate	-	Non-Wildland

An Example of CoF Scoring Guide for Water Distribution System

Deliverables:

- Asset register with CoF scoring assigned to pipeline segments and critical pipeline appurtenances.
- Workshop to review findings and solicit feedback from District staff.

Assumptions:

- Segments and grouping identified in Task 3 will be maintained for the CoF scoring.

Task 5 – Risk Assessment

The risk analysis will incorporate CoF and the percentage of useful life consumed to develop an overall risk score on a 1 to 10 scale. Percent useful life consumed is developed from the LoF scores developed during the desktop condition assessment. For example, a pipeline segment with a CoF score of 8 that has consumed 80% of its useful life would have a calculated risk score of 6.4.

The risk assignments will be used to prioritize capital and operational improvements. A workshop will be conducted with District staff to review risk analysis findings and solicit feedback.

Risk assessment delivers data-driven prioritization of capital investments by combining likelihood and consequence of failure, ensuring the District's dollars are directed toward the highest-risk assets first.

Feet of Pipe		CoF									Total	
		1	2	3	4	5	6	7	8	9		10
PoF	100%											0
	90%			469	649	125						1,243
	80%		38	2,811	13,608	7,605	3,080	2,906				30,048
	70%		3,126	45,344	144,650	49,807	24,332	7,168	3,890			278,317
	60%		2,401	62,569	171,827	76,240	41,047	11,418	1,422	334		367,258
	50%		396	19,072	59,328	51,875	22,925	6,514	2,008			162,118
	40%		483	3,416	7,698	13,381	9,719	6,827	5,312			46,836
	30%			125	1,232	784	905	4	446	786		4,282
	20%			1,307	517	91	43	14				1,972
10%											0	
Total		0	6,444	135,113	399,509	199,908	102,051	34,851	13,078	1,120	0	892,074

An Example of Risk Matrix - PoF vs. CoF and Feet of Pipe

Deliverables:

- Updated asset register with risk scoring
- Workshop to review risk assessment results

Task 6 – Prioritized CIP and Dashboard Update

Hazen will develop CIP recommendations based on the outcome of the risk, useful life, and replacement costing analysis. Hazen will work with TCWD to develop the right window and timeline for the CIP projects. Linear assets will also be included in TCWD’s Power BI dashboard so long-term R&R needs can be identified. High risk assets identified in the desktop risk assessment will be included in the 5-year CIP. Renewal needs will be forecasted based on the asset’s remaining useful life in an update to the dashboard. The CIP may include additional condition assessment programs as well as repair and replacement projects. The recommendations may include various levels of condition assessment, such as pressure monitoring, leak detection for high-risk pipes, or more intrusive technologies for assessing the District's large steel pipes where economically feasible.

As part of this project, the TCWD's Power BI dashboard will be linked to GIS to pull pipeline data into the dashboard, along with the vertical assets already there for the pump stations, lift stations, plants, etc. This will provide TCWD with a full view of what's upcoming for replacement prioritized by risk.

Prioritized CIP and dashboard update provides a clear, actionable roadmap for infrastructure renewal with visual dashboard integration, giving TCWD leadership and staff real-time visibility into asset conditions, replacement priorities, and long-term funding needs.



TCWD Power BI Dashboard for Condition Assessment

Deliverables:

- Updated asset register with recommended replacement year.
- Workshop to review CIP alternatives
- Update Power BI Dashboard with pipelines, including following features
 - COF, LOF, and Risk Scoring
 - Replacement Costs
 - Long range repair and replacement forecast.
- Provide a technical memo that documents the risk-based prioritization methodology, provides recommendations for CIP projects, and recommendations for opportunistic sampling and data collection regarding pipeline asset condition.

Assumptions:

- District will provide adequate ArcGIS Online license to support the data process for incorporating maps and geospatial visualizations in the existing Power BI dashboard
- District will provide appropriate Power BI license to support updated visualizations

Schedule

The work will be completed within 6 months from the Notice to Proceed.

Fee

The work will be completed for a not to exceed amount of \$155,740 based on the fee table below:

Hazen	Hazen and Sawyer						Summary			Grand Total
	Principal In Charge	Project Manager	Technical Advisor QA/QC	GIS Analyst	Senior Associate	Principal Scientist	Labor Hours	Labor Cost	ODC's	
	\$330	\$320	\$320	\$175	\$320	\$200				
Task 1: Project Management										
Kickoff Meeting (virtual, 1 hour)	2	2		4		4	12	\$2,800	\$ -	\$2,800
Progress Reporting, Invoicing, and Meeting Coordination		32					32	\$10,240	\$ -	\$10,240
TASK 1 - SUBTOTAL	2	34	0	4	0	4	44	\$ 13,040	\$ -	\$ 13,040
Task 2: Data Request and Review										
Data Review and Gap Analysis		4		8		8	20	\$4,280	\$ -	\$4,280
Data gap assessment and gap closure recommendations		2	1	56		16	75	\$13,960	\$ -	\$13,960
TASK 2 - SUBTOTAL	0	6	1	64	0	24	95	\$ 18,240	\$ -	\$ 18,240
Task 3: Desktop Condition Assessment										
Desktop Condition Assessment		4	2	16		16	38	\$7,920		\$7,920
Desktop Condition Assessment Workshop (virtual, 2 hours)		4		6		6	16	\$3,530		\$3,530
Updated Asset Register w/ RUL, LoF and Condition Scores		4	2	24		24	54	\$10,920	\$ -	\$10,920
TASK 3 - SUBTOTAL	0	12	4	46	0	46	108	\$ 22,370	\$ -	\$ 22,370
Task 4: Consequence of Failure										
CoF Framework Development		6		20		20	46	\$9,420	\$ -	\$9,420
CoF Results Review Workshop (virtual, 2 hours)		4	2	6		6	18	\$4,170	\$ -	\$4,170
Updated Asset Register w/ CoF Scores		4	2	24		24	54	\$10,920	\$ -	\$10,920
TASK 4 - SUBTOTAL	0	14	4	50	0	50	118	\$ 24,510	\$ -	\$ 24,510
Task 5: Risk Assessment										
Develop Risk Results		2		16		16	34	\$6,640	\$ -	\$6,640
Risk Results Review Workshop (virtual, 2 hours)		2		6		6	14	\$2,890	\$ -	\$2,890
Updated Asset Register w/ Risk Scores		2		12		12	26	\$5,140	\$ -	\$5,140
TASK 5 - SUBTOTAL	0	6	0	34	0	34	74	\$ 14,670	\$ -	\$ 14,670
Task 6: Prioritized CIP and Dashboard Update										
CIP Development		4		12	24	32	72	\$17,460	\$ -	\$17,460
Updated Power BI Dashboard with Pipelines Evaluation Results		8	12	80		24	124	\$25,200	\$ -	\$25,200
Workshop to review CIP alternatives (virtual, 2 hours)	4	4		6		6	20	\$4,850	\$ -	\$4,850
Draft and Final Technical Memorandum		8	12	24		24	68	\$15,400	\$ -	\$15,400
TASK 6 - SUBTOTAL	4	24	24	122	24	86	284	\$ 62,910	\$ -	\$ 62,910
TOTAL FEE (TASK 1-6)	6	96	33	320	24	244	723	\$ 155,740	\$ -	\$ 155,740

Hazen appreciates the opportunity to submit this proposal. We look forward to continuing our partnership with you to develop an impactful and useful Pipelines Condition Assessment and Renewal Projection program. Please contact me at 949-287-3257 or spour@hazenandsawyer.com if you have any questions or would like to discuss any aspect of this scope and fee further.



Sean Pour, PhD, PE
Project Manager



Cindy Miller, PE
Vice President

**TRABUCO CANYON WATER DISTRICT
ENGINEERING/OPERATIONAL COMMITTEE MEETING | FEBRUARY 4, 2026**

OPERATIONAL MATTERS

ITEM 6: WATER SYSTEM UPDATES

The following is a brief report of the water system through **January 2026**.

Projects and Repairs

Water Operations staff performed and/or completed the following tasks and projects:

1. Converted 3” meter to a 2” meter on Flanagan.
2. Finished welding repairs to filter #4 and replaced 16” flow valve at DWTP.
3. Rebuilt bypass valve and added 2 isolation valves at Plano Trabuco vault.
4. Finished coating and painting to pumps and piping at Rose Pump Station.
5. Continued to work with contractors on main transmission line replacement.

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 - 2025

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
<i>Dimension WTP</i>	8%	17%	25%	33%	42%	50%	58%	67%	75%	83%	92%	100%	
SAC Pipeline Meter	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Backwash, AF	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flushwater, AF	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DWTP Effluent (1)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Groundwater, AF													
Trabuco Creek GWTF	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
U.S. Well AF	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Groundwater (2)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Water Purchases, AF													
SMWD Treated Interconnection	21.0	8.9	7.0	31.0	28.4	39.4	35.1	54.8	55.7	21.3	5.1	0.0	307.7
IRWD Treated Interconnections	119.4	90.3	104.7	106.5	126.0	126.8	165.3	161.7	149.5	145.7	111.3	126.7	1,533.9
IRWD Irvine Lake	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Purchases (3)	140.4	99.2	111.7	137.5	154.4	166.2	200.4	216.5	205.2	167.0	116.5	126.7	1,841.6
Total Supply													
Total Supply AF (1,2,3)	140.4	99.2	111.7	137.5	154.4	166.2	200.4	216.5	205.2	167.0	116.5	126.7	1,841.6
% Year - Peak Prod. - 2,449 AF (2018)	6%	10%	14%	20%	26%	33%	41%	50%	58%	65%	70%	75%	75%
AF/Day	3.9	3.3	3.4	3.7	5.0	5.5	6.5	7.0	6.8	5.3	3.9	4.1	4.9
CFS/Day, Avg.	2.0	1.6	1.7	1.9	2.5	2.8	3.2	3.5	3.4	2.7	1.9	2.0	2.4
Reservoir Storage													
Monthly Average, MG	9.1	9.1	9.0	9.0	9.1	9.1	9.1	9.1	9.0	9.0	9.0	9.1	9.1
Monthly Average, AF	27.9	27.9	27.0	27.0	27.9	27.9	27.9	27.9	27.0	27.0	27.0	27.9	27.5
Days of Storage	4.0	4.0	3.0	3.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	4.0	3.6
SYSTEM DEMANDS													
District Operations, AF (1)													
Dimension WTP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Robinson Ranch WWTP	0.040	0.040	0.040	0.080	0.040	0.080	0.040	0.040	0.040	0.040	0.040	0.040	0.560
Supplemental Domestic to RW Res.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
Subtotal	0.040	0.040	0.040	0.080	0.040	0.080	0.040	0.040	0.040	0.040	0.040	0.040	0.56
System Losses, AF (2)													
Flushing	2.30	3.00	2.30	2.30	2.30	2.30	2.30	2.30	1.50	1.5	1.5	2.3	25.90
Sewer Cleaning	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.24
Line Breaks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.0	2.5	0.0	4.50
Subtotal	2.32	3.02	2.32	2.32	2.32	2.32	2.32	2.32	1.52	3.52	4.02	2.32	30.64
Zone Demands, AF (3)													
Topanga Canyon	2.9	Inop.	Inop.	3.0	3.0	3.0	3.1	3.2	3.0	2.9	2.8	2.8	29.70
Falcon Estates	0.40	0.2	0.4	0.7	0.7	0.8	0.9	0.9	0.8	0.8	0.4	0.5	7.48
Rose PRV/The Oaks	0.7	0.7	0.8	0.90	1.2	1.3	1.5	2.3	1.9	1.5	0.9	1.0	14.60
Canyon Creek	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.4	0.3	0.3	0.2	0.2	2.85
Rose Pump Station	0.2	0.3	0.3	0.4	0.4	0.5	0.4	0.4	1.6	2.0	2.0	0.0	8.54
Robinson Ranch	34.5	19.4	20.0	35.7	42.9	54.0	64.8	66.3	51.6	39.3	24.7	25.6	478.7
Dove Canyon	61.7	45.4	49.1	55.4	64.2	64.9	76.6	77.5	74.6	63.9	48.7	51.7	733.7
Subtotal	100.6	66.2	70.8	96.3	112.6	124.7	147.6	151.0	133.8	110.7	79.7	81.8	1,275.6
Total System Demand (1,2,3)	103.0	69.3	73.2	98.7	115.0	127.1	150.0	153.4	135.3	114.2	83.7	84.1	1,306.8

TRABUCO CANYON WATER DISTRICT
MONTHLY WATER SYSTEM OPERATIONS SUMMARY - 2025

System Demands**													
AF/Day	3.9	3.3	3.4	3.7	4.2	5.5	6.5	7.0	6.8	5.3	3.9	4.1	4.8
Daily Average, CFS	2.0	1.6	1.7	1.9	2.1	2.8	3.2	3.5	3.4	2.7	1.9	2.0	2.4
Other Water Deliveries/Purchases													
Ridgeline (DWTP Delivery)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
El Toro (Interconnection Purchase)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Baker WTP (CSC Delivery)	98.6	89.7	90.2	103.7	68.0	88.9	77.6	62.5	65.5	53.5	75.3	54.0	927.5
Portola Hills (Wholesale Purchase)	10.0	7.5	8.2	7.8	9.1	10.6	10.5	13.2	12.2	11.2	11.2	7.9	119.3
Skyridge (Wholesale Purchase)	1.8	1.6	1.6	1.4	1.6	2.0	2.0	2.3	2.3	2.1	2.2	1.6	22.5

* Usage estimated

** Excludes Operational use, losses, and supplement to Recycled Water Reservoir (RW)

**TRABUCO CANYON WATER DISTRICT
ENGINEERING/OPERATIONAL COMMITTEE MEETING | FEBRUARY 4, 2026**

OPERATIONAL MATTERS

ITEM 7: WASTEWATER SYSTEM UPDATES

The following is a brief report of the wastewater system through **January 2026**.

Projects and Repairs

Wastewater Operations staff performed and/or completed the following tasks and projects:

1. Assisted in the inspection and maintenance of the reservoir gate at the WWTP with Myers Diving
2. Installed new 10HP sump pump for EQ basin maintenance cleaning at the WWTP
3. Assisted in the programming of a new VFD for a 100HP pump at Dove Recycle (NDW)) Pump Station
4. Cleaned the well at Dove Creek Dry Season Recovery
5. O’Neill Park line cleaning completed

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	12,000
Total Sewer Line Cleaned (Ft) – Cleaning Cycle	12,000
Cleaning Cycle Period (Mos.) [Start date: 1/1/25]	1
Total Sewer Line Cleaned, %	5%
The Oaks at Trabuco – Pumping Frequency for the Month	13
O’Neill Park Sewer System Status	Ok
O’Neill Park Sewer System Repairs	None
SSMP Quarterly Report – <i>Next Quarterly Report</i>	1Q 2026
SSMP Program Audit – <i>Next Audit Report**</i>	February 2026

**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 - 2025

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	37.1	35.6	41.5	39.4	39.6	37.8	25.2	37.7	37.8	37.4	39.7	40.6	449.3	520.1
Reclaimed Reservoir Level, FT	1274.5	1,265.5	1,270.0	1,271.5	1,271.5	1,270.0	1,264.0	1,258.0	1,257.0	1,253.5	1,252.0	1,259.8	1,265.0	-	-
Reclaimed Reservoir Free Board, FT	25.5	9.0	4.5	3.0	3.0	4.5	10.5	16.5	17.5	21.0	22.5	14.7	9.5	-	-
Reclaimed Reservoir Storage, AF	145.5	94.6	118.8	127.7	127.7	118.8	87.5	61.6	58.0	45.2	41.1	69.1	92.9	-	-
Supplemental Domestic Water Added, AF	N/A	0.0	0.0	0.0	0.0	0.0	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	0.04	0.02	0.00	0.00	0.15	0.29	0.00	0.74	0.30	0.43	0.02	0.02	2.0	24.5%
Dove Canyon Golf Course	106.7	12.49	5.1	4.8	25.1	28.9	31.6	48.0	50.8	30.2	24.1	5.2	5.2	271.4	254.4%
Dove Canyon Master Association	279.3	10.92	3.6	3.6	11.2	16.4	17.2	25.9	32.8	13.8	3.9	17.8	17.8	175.0	62.6%
Robinson Ranch	80.2	1.41	0.4	0.8	2.8	2.7	2.9	3.2	5.4	3.5	2.5	1.9	1.9	29.4	36.7%
Trabuco Highlands	159.7	3.26	27.4	0.2	5.3	6.6	6.0	10.1	7.6	6.3	4.6	1.8	1.8	80.9	50.7%
City of RSM	0.1	0.00	0.02	0.00	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.20	153.8%
Construction Water	N/A	0.00	0.0	0.0	0.0	0.0	0.0	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	0.0	0.0	0.0	0.0	0.0	0.00	0.0%
SMWD	N/A	0.00	0.0	0.0	0.0	4.4	8.1	5.4	6.4	4.0	2.1	0.3	0.3	30.8	N/A
TY Nursery	17.9	0.00	0.00	0.0	0.01	2.6	3.7	6.8	4.6	0.0	0.0	0.0	0.0	17.9	99.9%
TOTAL, AF	653.2	28.1	36.5	9.4	44.3	61.9	69.8	99.5	108.4	58.2	37.6	27.0	27.0	607.6	93.0%
PERCENTAGE OF NDW ALLOCATION/YEAR		4.3%	9.9%	11.3%	18.1%	27.6%	38.3%	53.5%	70.1%	79.0%	84.8%	88.9%	93.0%		
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		0.00	10.19	8.18	0.00	0.00	0.00	0.60	0.46	0.54	1.57	-	7.8	29.29	1.6
Dove Tick Creek Production*	<i>Dry Season</i>	5.5	5.3	5.8	0.0	0.0	0.0	3.4	3.6	2.7	3.2	2.3	2.3	34.1	45.0
	TCWD Portion	5.5	5.3	5.8	0.0	0.0	0.0	1.7	1.8	1.4	1.6	2.3	2.3	27.6	-
	SMWD Portion	0.0	0.0	0.0	0.0	0.0	0.0	1.7	1.8	1.4	1.6	0.0	0.0	6.5	-
Dove Lake Water Pumped		0.0	0.0	0.0	0.0	0.0	0.0	45.1	53.0	18.8	0.0	0.0	0.0	116.9	190.1
Dove Lake Free Board, Ft		10.3	3.2	0.0	0.0	0.0	0.0	4.0	7.5	8.6	7.6	3.1	0.0	-	-
Dove Lake Storage, AF		131.2	309.0	331.0	331.0	331.0	331.0	294.2	210.0	156.4	180.0	308.0	331.0	-	-
Total Rainfall, In.		0.9	2.4	5.2	0.2	0.5	0.3	0.0	0.0	0.2	1.2	4.9	3.7	19.4	16.2

** Based on 5-Year Average Reclaimed Water Reservoir Base Supply & Recycled Water Production

**TRABUCO CANYON WATER DISTRICT
ENGINEERING/OPERATIONAL COMMITTEE MEETING | FEBRUARY 4, 2026**

OPERATIONAL MATTERS

ITEM 8: MAINTENANCE DEPARTMENT UPDATES

The following is a brief report of work completed by Maintenance staff through **January 2026**.

Projects and Repairs

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

Water Operations

1. Prepped and placed 45kw mobile generator at Canyon Creek BPS for planned SCE outage
2. Worked with OC Petroleum to troubleshoot diesel fuel tank system at Saddle Crest BPS

Wastewater Operations

1. Job walk with Ferreira Construction at Heritage LS
2. Job walk with consultants at Dove and Tick Creek dry season stations

District Fleet Upgrades & Other Projects

1. Purchased new chop saw
2. Repaired roads to Shadow Rock dry season station and Porter Ranch
3. Finished upgrades to truck #14 with new 200-gallon potable water system
4. Repairs on skip loader (new seat installed)

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 | FEBRUARY 4, 2026**

REGULATORY AND OTHER MATTERS

ITEM 9: 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): MCKENNEY/PEREA