ENGINEERING/OPERATIONAL COMMITTEE MEETING AGENDA
TRABUCO CANYON WATER DISTRICT
32003 DOVE CANYON DRIVE, TRABUCO CANYON, CA
ADMINISTRATION FACILITY, BOARDROOM
JANUARY 5, 2022 AT 7:00 AM

COMMITTEE MEMBERS
Stephen Dopudja, Committee Chair
Michael Safranski, Committee Member
Ed Mandich, Committee Member Alternate

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

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

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

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

CALL MEETING TO ORDER

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

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

COMMITTEE MEMBER COMMENTS

REPORT FROM THE GENERAL MANAGER

ENGINEERING MATTERS

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

ITEM 1: DISCUSSION AND POSSIBLE ACTION(S) CONCERNING ORANGE COUNTY RESCUE MISSION DOMESTIC WATER SERVICE RELOCATION

RECOMMENDED ACTION:
Approve and recommend the Board of Directors award a Construction Contract to GCI Construction for the Orange County Rescue Mission Domestic Water Service Relocation in the amount of $106,078, with a contingency of $10,000, for a not to exceed amount of $116,078 (Action Calendar)

ITEM 2: DISCUSSION AND POSSIBLE ACTION(S) CONCERNING AMENDMENT NO. 2 TO THE T-MOBILE CELLULAR SITE LEASE

RECOMMENDED ACTION:
Approve and recommend the Board of Directors approve the T-Mobile West LLC Amendment No. 2 to the Site Lease Agreement (Action Calendar).

ITEM 3: DISCUSSION AND POSSIBLE ACTION(S) CONCERNING SADDLEBACK MEADOWS DEVELOPMENT (181 DU'S)

RECOMMENDED ACTION:
Recommend the Board of Directors receive and approve the Sub Area Master Plan (SAMP) for the Saddleback Meadows Development (Action Calendar).

ITEM 4: DISCUSSION AND POSSIBLE ACTION(S) CONCERNING THE 2021 SYSTEMWIDE MASTERPLAN AND CONDITION ASSESSMENT

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

ITEM 5: DISCUSSION AND APPROVAL OF PRESSURE VESSEL INSPECTION & RERATING FOR EMERGENCY USE

RECOMMENDED ACTION:
Recommend the Board of Directors approve a proposal for Pressure Vessel Rerating from Evans Industrial, Inc. in the amount of $35,750 (Action Calendar).

ITEM 6: OTHER ENGINEERING AND OPERATIONS PROJECT UPDATES

1. Golf Club SLS Improvements
2. Saddle Crest Development
3. Other Projects

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

OPERATIONAL MATTERS

PRESENTER(S): GARY KESSLER, WATER SYSTEM SUPERINTENDENT
MICHAEL PEREA, ASSISTANT GENERAL MANAGER
JASON STROUD, MAINTENANCE DEPARTMENT SUPERINTENDENT

ITEM 7: WATER SYSTEM UPDATES

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

ITEM 8: WASTEWATER SYSTEM UPDATES

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

ITEM 9: MAINTENANCE DEPARTMENT UPDATES

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

REGULATORY AND OTHER MATTERS

ITEM 10: 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 | JANUARY 5, 2022

ENGINEERING MATTERS

ITEM 1: DISCUSSION AND POSSIBLE ACTION(S) CONCERNING ORANGE COUNTY RESCUE MISSION DOMESTIC WATER SERVICE RELOCATION

The St. Michael's Abbey site, previously owned by the Norbertine Fathers, has recently been sold to a non-profit group, the Orange County Rescue Mission (Mission). The Mission runs a transitional homeless shelter offering food, shelter, education and work training to those in need. The site consists of approximately 32.4 acres located on the east side of El Toro Road just south of the intersection of Live Oak Canyon Road. The District has an eight-inch water pipeline, two fire hydrants and two services on-site. Staff would like to relocate the District facilities to within the right-of way and quit claim the onsite easement and facilities. As such, Staff has analyzed the water demands and prepared a set of construction plans for the relocations.

In December 2021, District Staff received the following three construction bids for the relocation project:

CONSTRUCTION BIDS	
GCI Construction	$106,078
Ferreira Construction	$106,310
T. E. Roberts Inc.	$138,055

Staff has reviewed the bids and is recommending GCI Construction for the Service Relocation Project at the Orange County Rescue Mission.

FUNDING SOURCE:
General Fund and Developer

FISCAL IMPACT:
$145,000 (including Engineering/Inspection)

ENVIRONMENTAL COMPLIANCE:
Notice of Exemption

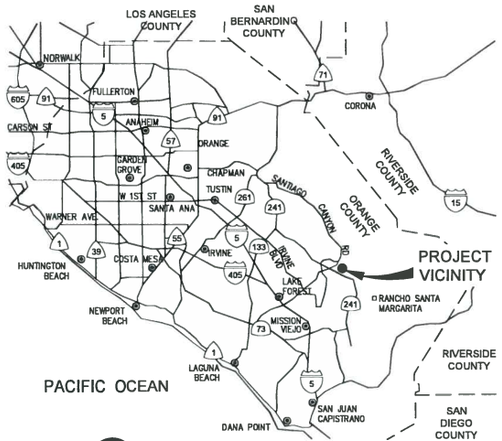
RECOMMENDED ACTION:
Approve and recommend the Board of Directors award a Construction Contract to GCI Construction for the Orange County Rescue Mission Domestic Water Service Relocation in the amount of $106,078, with a contingency of $10,000, for a not to exceed amount of $116,078 (Action Calendar).

EXHIBIT(S):
1. DRAFT Construction Plans

CONTACTS (staff responsible): PALUDI/LAUSTEN

ORANGE COUNTY RESCUE MISSION

NEW DOMESTIC, IRRIGATION AND FIRE WATER SERVICE CONNECTIONS



VICINITY MAP
NOT TO SCALE

PROJECT LOCATION MAP
NOT TO SCALE
NORTH

TRABUCO CANYON WATER DISTRICT

NOVEMBER 2021

INDEX OF SHEETS

APPROVED:
TRABUCO CANYON WATER DISTRICT

FERNANDO PALUDI R.C.E. 55245 DATE
GENERAL MANAGER

LORRAINE S. LAUSTEN R.C.E. 67027 DATE
DISTRICT ENGINEER

ORANGE COUNTY RESCUE MISSION WATER LINE

DWG JN: 728-49

DOMESTIC WATER NOTES:

1. THE DOMESTIC WATER SYSTEM AS SHOWN ON THESE PLANS SHALL BE CONSTRUCTED BY THE CONTRACTOR IN ACCORDANCE WITH TRABUCO CANYON A "DESIGN CRITERIA AND STANDARD DRAWINGS FOR WATER AND SEWER FACILITIES", "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION" (GREEN BOOK), AS LAST REVISED. THE CONTRACTOR SHALL HAVE A COPY OF EACH OF THESE STANDARDS, AS WELL AS A COPY OF THE PROJECT PLANS AND SPECIFICATIONS, ON THE JOB SITE AT ALL TIMES.
2. THE DISTRICT INSPECTOR SHALL BE NOTIFIED AT LEAST 48 HOURS PRIOR TO THE START OF CONSTRUCTION AND ANY SUBSEQUENT REQUIRED INSPECTION. PHONE (949) 858-0277 TO ARRANGE FOR INSPECTION.
3. A PRECONSTRUCTION CONFERENCE WITH REPRESENTATIVES FROM ALL AFFECTED AGENCIES AND THE CONTRACTOR SHALL BE HELD ON THE JOB SITE AT LEAST 48 HOURS PRIOR TO THE START OF CONSTRUCTION.
4. THE CONTRACTOR SHALL OBTAIN ALL CITY AND/OR COUNTY PERMITS PRIOR TO THE START OF CONSTRUCTION.
5. WATER MAINS SHALL BE STAKED FOR LINE AND GRADE OR SHALL BE INSTALLED SUBSEQUENT TO THE INSTALLATION OF THE CURBS BUT PRIOR TO PAVING OF THE STREETS. THE MINIMUM COVER OVER DOMESTIC WATER MAINS SHALL BE 42 INCHES BELOW PAVEMENT FINISHED GRADE.
6. NO VALVE SHALL BE LOCATED WITHIN A GUTTER OR OTHER CONCRETE DRAINAGE DEVICE.
7. ALL FIRE HYDRANT SHALL BE INSTALLED PER THE DISTRICT'S STANDARD DRAWINGS.
8. ALL EXPOSED BURIED METAL APPURTENANCES IN CONTACT WITH THE SOIL OR WATER, INCLUDING PIPE, FLANGES, VALVES, COUPLINGS, ETC., SHALL BE GIVEN TWO (2) COATS OF DEVWRAP 142S PROTECTIVE COATING, OR EQUAL.
9. WARNING TAPE SHALL BE USED ON ALL CONSTANT PRESSURE MAIN LINE PIPING CARRYING POTABLE WATER. TAPE SHALL BE A MINIMUM OF 6 INCHES WIDE AND SHALL RUN CONTINUOUSLY FOR THE ENTIRE LENGTH OF ALL CONSTANT PRESSURE MAIN LINE PIPING. THE TAPE SHALL BE LOCATED 12 INCHES DIRECTLY ABOVE THE TOP OF THE PIPE AND SHALL BE BLUE IN COLOR WITH THE WORDS "CAUTION: WATER LINE BELOW" IMPRINTED IN MINIMUM 1-INCH HIGH LETTERS, BLACK IN COLOR. IMPRINTING SHALL BE CONTINUOUS AND PERMANENT.
10. NO FACILITY IS TO BE BACKFILLED UNTIL INSPECTED BY THE DISTRICT.
11. SHUT DOWN OF EXISTING WATERLINES TO FACILITATE CONNECTION TO EXISTING FACILITIES SHALL BE COORDINATED WITH THE DISTRICT INSPECTOR. NO CONNECTIONS TO THE DISTRICT'S EXISTING WATER SYSTEM SHALL BE MADE UNTIL THE NEW FACILITIES HAVE BEEN SUCCESSFULLY TESTED AND DISINFECTED. CONTRACTOR TO PERFORM ALL CHLORINATION/DECHLORINATION AND BACTRIOLOGICAL SAMPLING PER AWWA STANDARDS. ALL CONNECTIONS TO THE DISTRICT'S WATER SYSTEM SHALL BE MADE IN THE PRESENCE OF THE DISTRICT INSPECTOR.
12. WATER HOUSE CONNECTION LATERALS SHALL BE INSTALLED BEHIND THE CURB PRIOR TO PAVING OF THE STREET. THE SERVICES SHALL BE EXTENDED TO THEIR FINAL LOCATION BY THE DEVELOPER AT A TIME PRIOR TO PRESSURE TESTING OF THE WATER SYSTEM. SEE TCWD STD DRAWING W/1 FOR ADDITIONAL INFORMATION.
13. ALL WATER SERVICES SHALL BE INSTALLED WITH A 5-FOOT HORIZONTAL SEPARATION FROM ANY SEWER LATERAL AND IN ACCORDANCE WITH THE DISTRICT'S REVISED STANDARD DRAWINGS.
14. ALL WATER SERVICES SUPPLIED WITH PRESSURE HIGHER THAN 80 PSI SHALL BE PROVIDED WITH APPROVED PRESSURE REGULATORS SET AT THE MAXIMUM ALLOWABLE CODE PRESSURE.
15. METER BOXES SHALL BE INSTALLED DIRECTLY BEHIND THE CURB WHETHER THE SIDEWALK IS DIRECTLY BEHIND THE CURB OR NOT. METER BOXES INSTALLED BEHIND ROLLED CURB OR WITHIN DRIVEWAYS SHALL HAVE TRAFFIC LIDS.
16. ALL BURIED BOLTS, ANCHOR BOLTS AND NUTS SHALL BE TYPE 316 STAINLESS STEEL AND SHALL BE COATED WITH ANTI-SEIZE COMPOUND NSF 60/61 OR APPROVED EQUAL.
17. THE CONTRACTOR SHALL RAISE ALL VALVE BOXES TO THE FINISHED PAVEMENT GRADE WITHIN 2 DAYS OF COMPLETION OF THE PAVEMENT. IF THE SURFACE COURSE OF PAVEMENT IS NOT COMPLETED WITHIN A REASONABLE AMOUNT OF TIME AFTER THE BASE COURSE OF PAVEMENT IS COMPLETED, THE DEVELOPER SHALL RAISE THE VALVE BOXES TO THE FINISHED GRADE OF THE BASE COURSE SO THAT THE DISTRICT MAY OPERATE THE VALVES. THE DEVELOPER SHALL THEN RAISE ALL VALVE BOXES TO FINAL FINISHED GRADE OF THE PAVEMENT UPON COMPLETION OF THE SURFACE COURSE OF PAVEMENT. THE REQUIRED RAISING OF VALVE BOXES TO FINISHED GRADE OF THE BASE COURSE OF PAVEMENT WILL BE DETERMINED AND SPECIFIED BY THE DISTRICT.
18. BACKFLOW PREVENTERS APPROVED BY THE USC FOUNDATION FOR CROSS CONNECTION CONTROL ARE THE ONLY BACKFLOW PREVENTION DEVICES ACCEPTABLE FOR USE IN THE DISTRICT. THE DISTRICT'S CROSS CONNECTION INSPECTOR SHALL BE NOTIFIED PRIOR TO INSTALLATION OF BACKFLOW DEVICE AT (949) 858-0277.
19. IRRIGATION SYSTEM MUST COMPLY WITH THE DISTRICT'S RULES AND REGULATIONS FOR NONDOMESTIC WATER SERVICE.
20. ALL WATER SYSTEM INFRASTRUCTURE SHALL BE SUITABLE FOR POTABLE WATER SYSTEMS AND SHALL MEET NSF 60/61 STANDARDS AND CALIFORNIA NO LEAD STANDARDS.
21. WATER LINES, LATERALS, AND APPURTENANCES SHALL BE INSTALLED WITH GPS LOCATION WITH 1' ACCURACY. ELECTRONIC FILE, IN AUTOCAD FORMAT, SHALL BE SUBMITTED TO THE DISTRICT PRIOR TO PAVING THE STREETS.
22. TRACER WIRE: COPPER TRACER WIRE SHALL BE INSTALLED AND SECURED TO THE TOP OF ALL PVC PIPE AS IT IS BEING LAID. TRACER WIRE SHALL BE STUBBED UP AT EACH VALVE (BROUGHT INTO VALVE BOX), TO EACH SERVICE (GROUNDED TO CORPORATION STOP), TO ALL APPURTENANCES AND TO ALL HYDRANTS (COILED AROUND BARREL JUST BELOW THE TOP FLANGE WITH 16 INCHES EXCESS). TRACER WIRE SHALL BE SECURED TO THE TOP OF THE PIPE, AT A MINIMUM OF 10-FOOT INTERVALS, WITH PLASTIC ADHESIVE TAPE. THE COPPER WIRE SHALL BE #12 Cu. WITH HMWPE INSULATION.
   THE WIRE SHALL BE ELECTRONICALLY CONTINUOUS THROUGH THE ENTIRE PIPING SYSTEM. ALL SPLICES OF THE WIRE SHALL BE MADE SECURELY AND COVERED THOROUGHLY WITH A DIRECT BURY SPLICE KIT, 3M DBY/DBR OR APPROVED EQUAL. THE CONTRACTOR SHALL SCHEDULE A CONDUCTIVITY TEST (CONDUCED BY THE CITY) ON COMPLETION OF THE WATER MAIN INSTALLATION AND PRIOR TO FINAL PAVEMENT CONSTRUCTION. IF THE CONDUCTIVITY TEST FAILS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAKING THE NECASSARY REPAIRS, UNTIL PASSING RESULTS ARE ACHIEVED. ADDITIONAL COMPENSATION WILL NOT BE ALLOWED THEREFORE.

ABBREVIATIONS

AB	AGGREGATE BASE	NTS	NOT TO SCALE
AC	ASPHALT CONCRETE	OC	ORANGE COUNTY
APPROX.	APPROXIMATE	OCFA	ORANGE COUNTY FIRE AUTHORITY
AV	AIR VAC	PCC	POINT OF COMPOUND CURVE
AWWA	AMERICAN WATER WORKS ASSOCIATION	PRC	POINT OF REVERSE CURVE
BFP	BACKFLOW PREVENTER	PRS	PRESSURE REDUCING STATION
BFV	BUTTERFLY VALVE	PRV	PRESSURE REDUCING VALVE
BO	BLOWOFF ASSEMBLY	P (PL)	PROPERTY LINE
BVC	BEGIN VERTICAL CURVE	PP	POWER POLE
CL	CLASS	PF & RD	PUBLIC FACILITIES AND RESOURCES DEPARTMENT
CMP	CORRUGATED METAL PIPE	PO	PUSH ON
CONT	CONTINUOUS	PT	POINT
CTR	CENTER	PUE	PUBLIC UTILITY EASEMENT
C (CL)	CENTERLINE	PVC	POLYVINYL CHLORIDE
DIA	DIAMETER	PVMT	PAVEMENT
DIP	DUCTILE IRON PIPE	R (RAD)	RADIUS
DTL	DETAIL	RT	RIGHT
DWG	DRAWING	RW	RECLAIMED WATER
E	EAST	R/W	RIGHT-OF-WAY
EC	END CURVE	RWGV	RESILIENT WEDGE GATE VALVE
ECR	END CURVE RETURN	S	SOUTH, SLOPE OR GRADIENT OF PIPELINE
EL	ELEVATION	SD	STORM DRAIN
ELEC	ELECTRIC	SHT	SHEET
EP	EDGE OF PAVEMENT	ST	STREET
EVC	END VERTICAL CURVE	STA	STATION
EXIST (EX.)	EXISTING	STD	STANDARD
FE	FLANGE END	STL	STEEL
FH	FIRE HYDRANT	TCWD	TRABUCO CANYON WATER DISTRICT
FLG	FLANGE	TEL	TELEPHONE
FT	FOOT, FEET	TYP	TYPICAL
FG	FINISHED GRADE	VCP	VITRIFIED CLAY PIPE
FS	FINISHED SURFACE	VERT	VERTICAL
GB	GRADE BREAK	W	WEST
GV	GATE VALVE	WL	WATER LINE
LT	LEFT	WM	WATER METER
MH	MANHOLE		
MIN	MINIMUM		
N	MECHANICAL JOINT		
MJ	NORTH		

LEGEND

SYMBOLS

WM	EXISTING WATER METER
WV	EXISTING WATER VALVE
	EXISTING SURVEY MONUMENT
	EXISTING FIRE HYDRANT
SMH	EXISTING SEWER MANHOLE
WV	PROPOSED WATER VALVE
	PROPOSED FIRE HYDRANT

LINE TYPES

	PROPERTY LINE
	CENTERLINE
C	EXIST. WATER LINE
COM	EXIST. COMMUNICATION LINE
E	EXIST. ELECTRIC LINE
S	EXIST. SEWER LINE
W	EXIST. ELECTRIC LINE
RW	EXIST. RECYCLED WATER LINE
21505	HOUSE ADDRESS NUMBER

ADDITIONAL NOTES:

ALL BENDS 11 1/4° OR GREATER, TEES AND CROSSES SHALL BE EPOXY LINED DUCTILE IRON (CLASS 350) WITH PUSH-ON JOINTS AND THRUST BLOCK PER TCWD STANDARD DWG. NO. W12 UNLESS OTHERWISE NOTED ON PLANS.

DO NOT EXCEED 80% OF MANUFACTURER'S RECOMMENDED DEFLECTION REQUIREMENTS FOR PIPE INSTALLATION.

BASIS OF BEARING:

THE BASIS OF BEARING IS N08°27'04"W, BETWEEN DMC CONTROL POINTS 7 AND 9 LOCATED BY GPS ON 4/13/2018 (JN: 728-38).

BENCH MARK:

ORANGE COUNTY DESIGNATION 3D-162-04

ELEV. = 1193.289 FT. (NAVD88) LEVELED IN 2017

SITE UTILITIES:

ELECTRICITY	SOUTHERN CALIFORNIA EDISON
GAS	SOUTHERN CALIFORNIA GAS CO.
CABLE TV	COX CABLE SERVICES
TELEPHONE	AT&T

SITE KEY NOTES:

A — *NEW PRIVATE WATERLINE TO BE CONSTRUCTED BY OTHERS*

B — *2" REDUCED PRESSURE PRINCIPLE BACKFLOW ASSEMBLY, 2" AND SMALLER PER TCWD STD. DWG. W-7, TO BE INSTALLED BY OTHERS*

C — *EXISTING 8" AC WATERLINE TO BE ABANDONED IN PLACE*

D — *1 1/2" REDUCED PRESSURE PRINCIPLE BACKFLOW ASSEMBLY, 1 1/2" AND SMALLER PER TCWD STD. DWG. W-7, TO BE INSTALLED BY OTHERS*

SITE CONSTRUCTION NOTES:

(1) *CONSTRUCT CUT-IN TEE FOR ACP PER TCWD STD. DWG. W-19c. VALVE TO BE CONSTRUCTED ON 8" LINE ONLY*
(2) *CONSTRUCT THRUST BLOCK PER TCWD STD. DWG. W-16*
(3) *CONSTRUCT 8" PVC, C900 DR14, WATERLINE AND CONSTRUCT WATER TRENCH PER TCWD STD. DWG. W-17*
(4) *CONNECT TO EXISTING 8" AC VALVE USING D.I. FLANGED COUPLING ADAPTER WITH 316 STAINLESS STEEL NUTS, BOLTS AND WASHERS.*
(5) *CONSTRUCT 8" DOUBLE CHECK BACKFLOW ASSEMBLY PER TCWD STD. DWG. W-6*
(6) *CONSTRUCT WATER TRENCH PER TCWD STD. DWG. W-17*
(7) *CONSTRUCT 2" COPPER SERVICE WITH 1.5 INCH METER PER TCWD STD. DWG. W-2a (IRRIGATION) METER TO BE SUPPLIED BY TCWD*
(8) *CONSTRUCT 2" COPPER SERVICE WITH 2 INCH METER PER TCWD STD. DWG. W-2b. (DOMESTIC) METER TO BE SUPPLIED BY TCWD*
(9) *CONSTRUCT 2" SERVICE CONNECTION PER TCWD STD. DWG. W-3a*
(10) *RE-PAVE SURFACE WITH 8" AC*
(11) *CUT AND CAP EXISTING WATERLINE WITH AN MJ CAP*
(12) *ABANDON EXISTING SERVICE BY REMOVING WATER METER AND DELIVER TO TCWD AND CAP EXISTING CORP-STOP AT THE MAIN AND BACKFILL AS REQUIRED.*
(13) *REMOVE EXISTING WATER VALVE*
(14) *INSTALL 11.25° D.I. BEND*

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

DIGALERT
CALL BEFORE YOU DIG — TWO WORKING DAYS BEFORE YOU DIG
TOLL FREE 1-800-227-2600
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

REV.	DATE	BY	DESCRIPTION	APPROVED BY	DATE

DESIGN BY: D.J.M.
REVIEWED BY: D.J.M.

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

APPROVED
TRABUCO CANYON WATER DISTRICT

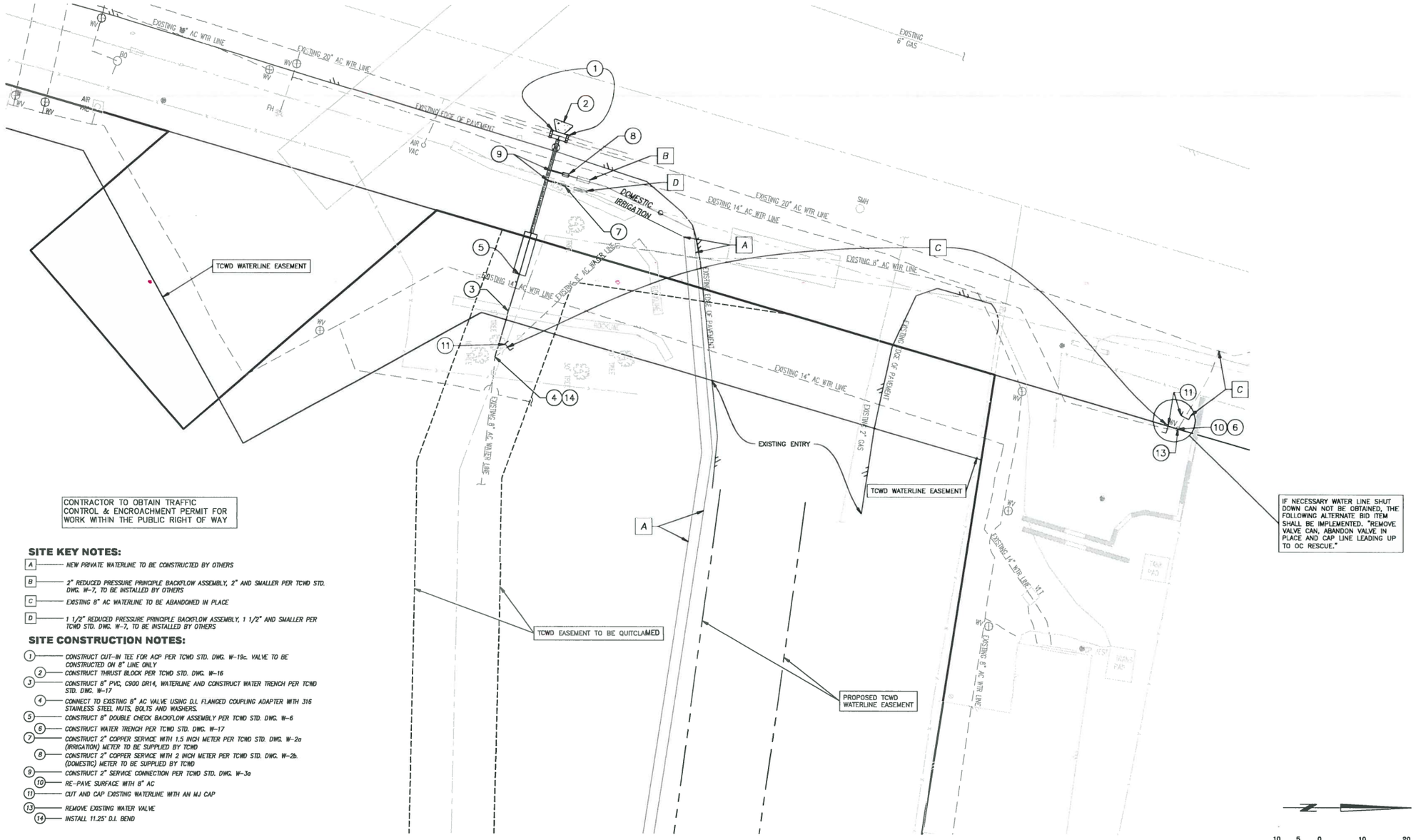
DATE
LORRAINE S. LAUSTEN, P.E. RCE #67027
DISTRICT ENGINEER

TRABUCO CANYON WATER DISTRICT

TRABUCO CANYON WATER DISTRICT
ORANGE COUNTY RESCUE MISSION
WATER LINE
GENERAL NOTES, LEGEND, ABBREVIATIONS, NOTES, BENCH MARK
BASIS OF BEARINGS

SHEET 2 OF 6 SHEETS
DMc JN: 728-49

ORANGE COUNTY RESCUE MISSION WATER LINE



CONTRACTOR TO OBTAIN TRAFFIC CONTROL & ENCROACHMENT PERMIT FOR WORK WITHIN THE PUBLIC RIGHT OF WAY

SITE KEY NOTES:

- A — NEW PRIVATE WATERLINE TO BE CONSTRUCTED BY OTHERS
- B — 2" REDUCED PRESSURE PRINCIPLE BACKFLOW ASSEMBLY, 2" AND SMALLER PER TCWD STD. DWG. W-7, TO BE INSTALLED BY OTHERS
- C — EXISTING 8" AC WATERLINE TO BE ABANDONED IN PLACE
- D — 1 1/2" REDUCED PRESSURE PRINCIPLE BACKFLOW ASSEMBLY, 1 1/2" AND SMALLER PER TCWD STD. DWG. W-7, TO BE INSTALLED BY OTHERS

SITE CONSTRUCTION NOTES:

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9. CONSTRUCT 2" SERVICE CONNECTION PER TCWD STD. DWG. W-3a
10. RE-PAVE SURFACE WITH 8" AC
11. CUT AND CAP EXISTING WATERLINE WITH AN MJ CAP
13. REMOVE EXISTING WATER VALVE
14. INSTALL 11.25° D.I. BEND

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

DIGALERT — CALL BEFORE YOU DIG — TWO WORKING DAYS BEFORE YOU DIG — TOLL FREE 1-800-227-2600 — A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

REV.	DATE	BY	DESCRIPTION	APPROVED BY	DATE

DESIGN BY: D.J.M.
REVIEWED BY: D.J.M.

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

APPROVED
TRABUCO CANYON WATER DISTRICT

DATE

LORRAINE S. LAUSTEN, P.E. RCE #67027
DISTRICT ENGINEER

TRABUCO CANYON WATER DISTRICT

TRABUCO CANYON WATER DISTRICT
ORANGE COUNTY RESCUE MISSION WATER LINE

WATER LINE BLOW-UP

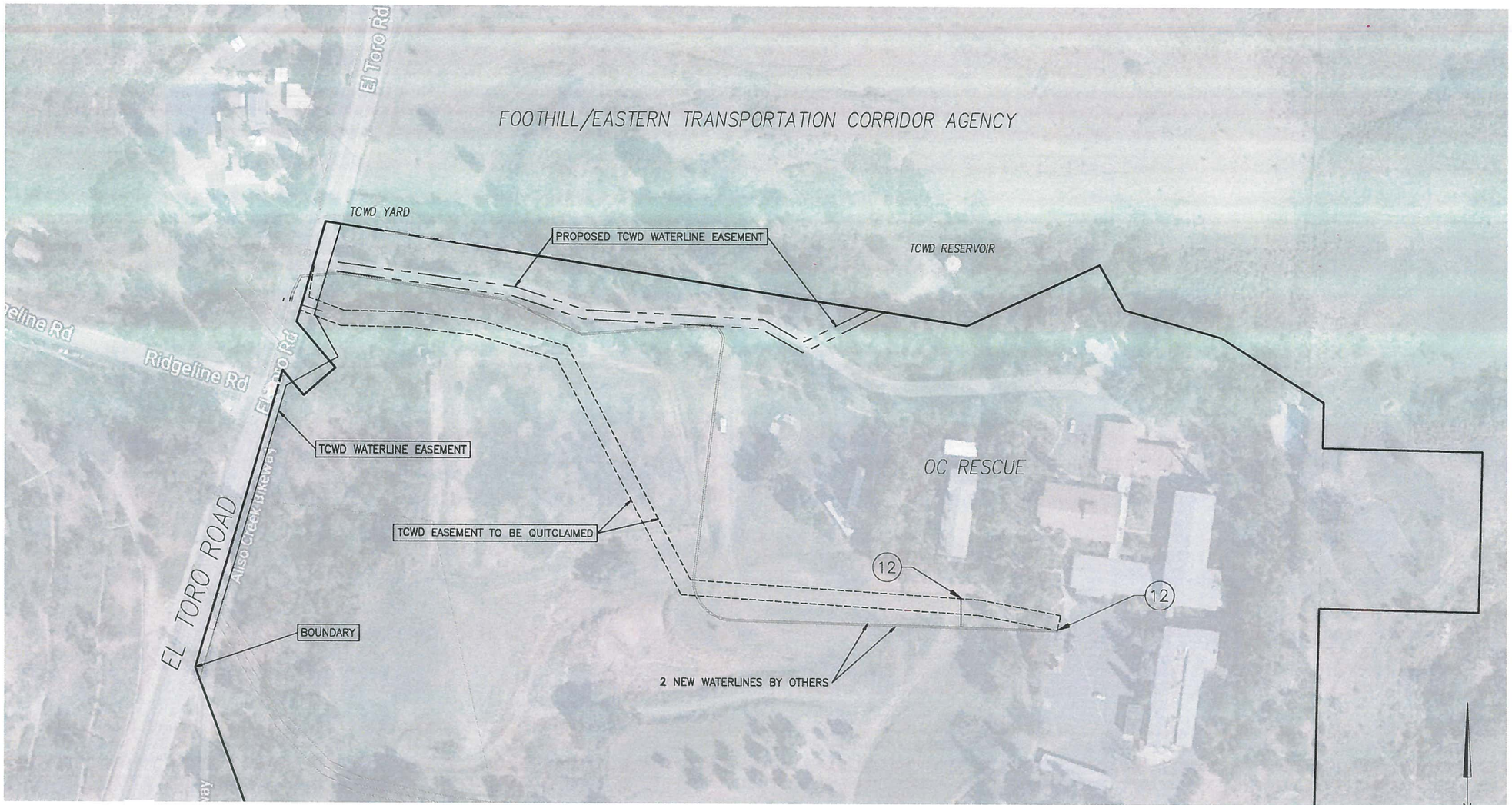
SHEET 3 OF 5 SHEETS

DMc JN 728-49

ORANGE COUNTY RESCUE MISSION WATER LINE

SITE CONSTRUCTION NOTES:

(12) ABANDON EXISTING SERVICE BY REMOVING WATER METER AND DELIVER TO TCWD AND CAP EXISTING CORP-STOP AT THE MAIN AND BACKFILL AS REQUIRED.



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DESIGN BY: D.J.M.

REVIEWED BY: D.J.M.

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

APPROVED
TRABUCO CANYON WATER DISTRICT

LORRAINE S. LAUSTEN, P.E. RCE #67027 DATE
DISTRICT ENGINEER

TRABUCO CANYON WATER DISTRICT

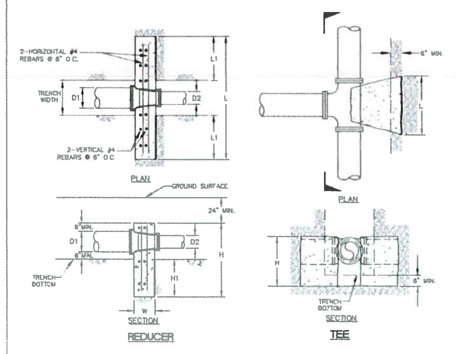
TRABUCO CANYON WATER DISTRICT
ORANGE COUNTY RESCUE MISSION
WATER LINE

WATER LINE OVERVIEW

SHEET 4 OF 6 SHEETS

DMc JN: 728-49

ORANGE COUNTY RESCUE MISSION WATER LINE



PIPE SIZE (IN)	TEE L (IN)	H (IN)	AREA (IN²)	THRUST (LBS)
4	26	13	338	2,828
6	39	20	780	6,364
8	52	26	1,352	11,313
10	64	32	2,048	17,677
12	77	39	3,003	25,455
16	103	52	5,356	45,253
18	115	58	6,670	57,274

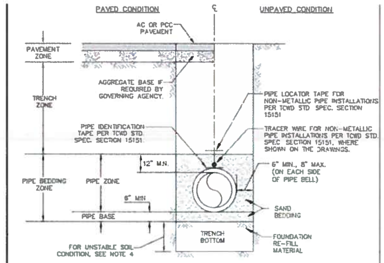
D1xD2 (IN)	REDUCER TRENCH WIDTH* (IN)	L (IN)	H (IN)	H1 (IN)	L1 (IN)	W (IN)	TOTAL AREA INCLD. TRENCH (IN²)	MIN. BEARING AREA** (IN²)	THRUST (LBS)
16X16	36	64	42	10	14	16	2,688	1,494	12,020
18X12	36	86	57	25	25	16	4,902	3,750	31,819
18X10	36	94	62	30	29	16	5,828	4,614	39,597
18X8	36	100	66	34	32	14	6,600	5,382	45,960
16X12	36	72	48	18	18	14	3,456	2,376	19,798
16X10	36	82	54	24	23	14	4,428	3,294	27,576
16X8	36	88	58	28	26	12	5,104	3,966	33,940
12X10	30	52	34	8	11	12	1,768	954	7,778
12X8	30	62	41	15	16	12	2,542	1,762	14,142
12X6	30	68	45	19	19	12	3,060	2,280	19,091
12X4	30	72	48	22	21	10	3,456	2,676	22,627
10X8	30	48	32	8	9	10	1,536	816	6,364
10X6	30	56	37	13	13	10	2,072	1,352	11,313
10X4	30	62	41	17	16	10	2,542	1,822	14,849
8X6	24	42	28	6	9	10	1,176	648	4,950
8X4	24	48	32	10	12	8	1,536	1,008	8,485
6X4	24	38	25	5	7	8	950	470	3,535

* IF A DIFFERENT TRENCH WIDTH IS USED, THE THRUST BLOCK SHALL MAINTAIN THE MIN. BEARING AREA SHOWN.
** BEARING AREA REQUIRED ON UNDISTURBED SOIL OUTSIDE OF TRENCH.

NOTE:
1. SEE SHEET 3 OF 3 FOR ADDITIONAL NOTES.

THRUST BLOCK — APPROVED BY ENGINEERING DEPARTMENT — LORRIE LAUSTEN, P.E. — TCWD STD.DWG. W-16

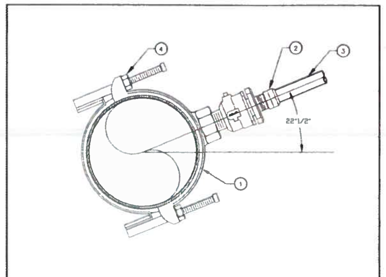
THRUST BLOCK STANDARD
NTS



NOTES:
1. ALL WORK SHALL BE PER TCWD STD. SPEC. SECTION 02223
2. PIPE BASE SHALL BE A MIN. OF 6" IN DEPTH. PIPE BEDDING MATERIAL SHALL BE PER TCWD STD SPEC. SECTION 02223 AND SHALL INCLUDE BOTH PIPE BASE AND PIPE BEDDING ZONE.
3. CONTRACTOR SHALL PROVIDE HAND EXCAVATED "BELL HOLE" FOR EACH PIPE JOINT SO THAT THE WEIGHT OF PIPE DOES NOT BEAR ON THE BELL. CONTRACTOR SHALL RE-FILL AND HAND-TAMP EACH "BELL HOLE" PRIOR TO COMPLETING THE PLACEMENT OF PIPE BEDDING.
4. IF UNSTABLE SOIL IS ENCOUNTERED, THE DISTRICT REPRESENTATIVE SHALL DETERMINE OVEREXCAVATION DEPTH AND FOUNDATION RE-FILL MATERIAL PER TCWD STD. SPEC. SECTION 02223
5. WHERE CONTRACTOR FAILS TO MAINTAIN PROPER TRENCH WIDTH LIMITS, SPECIAL BACKFILL SUCH AS ONE-SACK SLURRY AND BEDDING SHALL BE USED AS DETERMINED IN THE FIELD BY THE DISTRICT REPRESENTATIVE.
6. PIPE IDENTIFICATION TAPE SHALL BE INSTALLED PER TCWD STD. SPEC. SECTION 15151. TAPE SHALL BE FASTENED TO THE PIPE WITH 2" WIDE 10 MIL PIPE WRAP TAPE AT 5' INTERVALS. PIPE WRAP TAPE SHALL BE WRAPPED AROUND THE ENTIRE CIRCUMFERENCE OF THE PIPE.
7. THE MIN. DEPTH OF COVER FROM FINISH GRADE TO THE TOP OF THE PIPELINE SHALL BE AS FOLLOWS UNLESS OTHERWISE APPROVED BY THE DISTRICT ENGINEER:
   DOMESTIC WATER PIPELINE (1" TO 10" DIA.) = 42"
   DOMESTIC WATER PIPELINE (> 10" DIA.) = 48"
   RECYCLED WATER PIPELINE (ALL DIA.) = 60"

WATER TRENCH — APPROVED BY ENGINEERING DEPARTMENT — LORRIE LAUSTEN, P.E. — TCWD STD.DWG. W-17

WATER TRENCH STANDARD
NTS

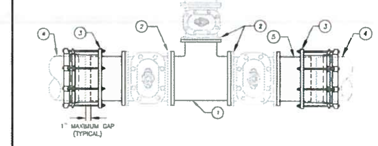


ITEM — MATERIALS
1. 2-PIECE BRONZE SERVICE SADDLE FOR O.D. CONTROLLED P.V.C. PIPE WITH 1" OR 2" F.I.P.T. OUTLET
2. 1" OR 2" BRONZE BALL CORPORATION STOP, M.I.P.T. x COMPRESSION
3. 1" OR 2" COPPER SERVICE PIPE, TYPE "K"
4. 2 EACH-TYPE 316 STAINLESS STEEL SADDLE BOLTS.

NORE:
1. SADDLE CONNECTION MAY USED ON P.V.C. PIPE SIZES UP TO AND INCLUDING 16 INCHES FOR SIZES GREATER THAN 16 INCHES, SERVICE CONNECTIONS AND OTHER APPARATUS SHALL BE CONNECTED VIA DUCTILE IRON TEE FITTINGS WITH FLANGED OUTLET

1 OR 2 INCH SERVICE CONNECTION FOR PVC PIPE — APPROVED BY ENGINEERING DEPARTMENT — LORRIE LAUSTEN, P.E. — TCWD STD.DWG. W-3a

2" WATER SERVICE CONNECTION FOR PVC STANDARD
NTS



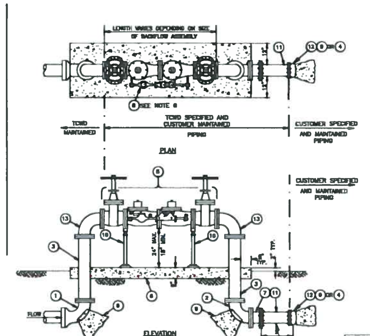
1" MAXIMUM GAP (TYPICAL)

ITEM — MATERIALS
1. D.I. TEE, F.E. X F.E.
2. RW GATE VALVE OR BUTTERFLY VALVE, F.E. X F.E.
3. D.I. FLANGED COUPLING ADAPTER WITH 316 STAINLESS STEEL NUTS, BOLTS AND WASHERS
4. EXISTING ACP.
5. P.V.C. C-900, CL-200 (MINIMUM LENGTH IS 18") PIPE

NOTES:
1. CUT ANY MACHINE-END OFF A.C.P. TO EXISTING ROUGH BARREL.
2. WRAP ALL METALLIC PARTS WITH 8 MIL POLYETHYLENE ENCASEMENT PER TCWD STD. SPEC. SECTION 15056
3. APPLY METAL GUARD WAX WRAP ON ALL EXPOSED NUTS AND BOLTS

CUT-IN TEE FOR ACP — APPROVED BY ENGINEERING DEPARTMENT — LORRIE LAUSTEN, P.E. — TCWD STD.DWG. W-19c

CUT-IN TEE FOR ACP STANDARD
NTS



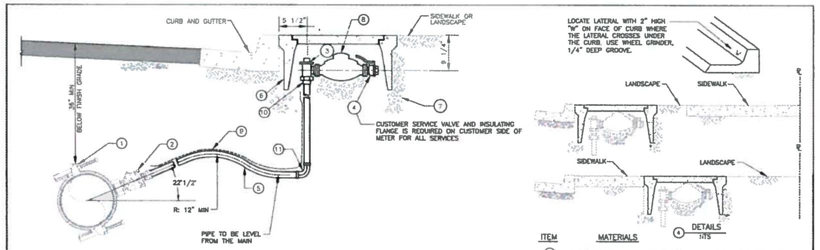
ITEM — MATERIALS
1. D.I. 90° BEND F.E. x M.J.
2. D.I. 90° F.E. x F.E.
3. D.I. SPOOL F.E. x F.E. LENGTH AS REQUIRED.
4. TRANSITION COUPLING. (BY OTHERS, FOR ON-SITE CONNECTION WHEN ON-SITE PIPING EXISTS.)
5. TCWD APPROVED DOUBLE CHECK VALVE BACKFLOW PREVENTION ASSEMBLY WITH RISING STEM RESILIENT WEDGE GATE VALVES. VALVES SHALL BE PROVIDED AS AN INTEGRAL PART OF BACKFLOW ASSEMBLY.
6. 6" THICK P.C.C. SLAB, REINFORCE WITH W.W.F. 1.0 X 1.0
7. F.E. X M.J. ADAPTER WITH RETAINER GLAND.
8. FACTORY INSTALLED BY-PASS METER ASSEMBLY CONSISTING OF APPROVED POSITIVE DISPLACEMENT METER, DOUBLE CHECK VALVE AND ASSOCIATED PIPING. BY-PASS METER TO BE SUPPLIED BY TCWD.
9. THRUST BLOCK PER TCWD STD. DWG. W-16.
10. ADJUSTABLE PIPE SUPPORT FOR ASSEMBLIES 8" DIAMETER AND LARGER PER TCWD STD. DWG. W-24.
11. C-900 P.V.C. PIPE SECTION, CL. 200, 24" LONG.
12. END CAP. M.J. WITH RETAINER GLAND.
13. D.I. 90° BEND F.E. X F.E. (FOR 3" DOUBLE CHECK BACKFLOW ASSEMBLY USE 4" X 3" D.I. 90° REDUCING BEND F.E. X F.E.)

NOTES:
1. BACKFLOW PREVENTORS ARE TO BE INSTALLED AS CLOSE TO THE METER AS POSSIBLE AND LOCATION TO BE DETERMINED BY TCWD INSPECTOR.
2. FIRE DEPARTMENT CONNECTION AND POST-INDICATOR VALVES SHALL NOT BE PART OF THE BACKFLOW ASSEMBLY AND MUST BE INSTALLED ON THE CUSTOMER SELECTED PIPING SIDE.
3. AT NO POINT SHALL ANY PART OF THE BACKFLOW ASSEMBLY DEVICE BE CLOSER THAN 36" [illegible] FROM ANY STRUCTURE, FACE OF CURB, BACK OF SIDE WALK, OR LANDSCAPING.
4. BACKFLOW ASSEMBLY AND TCWD PIPING SHALL BE WITHIN A DEDICATED TCWD EASEMENT OR PUBLIC RIGHT-OF-WAY
5. PLACE BRASS PLUGS IN ALL TEST VALVE OUTLETS.
6. BY-PASS METERS TO BE USED FOR FIRE SYSTEMS ONLY. DO NOT INSTALL BY-PASS METERS WHERE SUPPLY TO DEVISE IS ALREADY METERED.
7. SIZE OF DEVICE MUST MATCH SIZE OF WATER METER.

LINE TO BE EXTENDED AS SHOWN ON PLAN

DOUBLE CHECK BACKFLOW ASSEMBLY — TCWD STD.DWG. W-6

DOUBLE CHECK BACKFLOW ASSEMBLY STANDARD
NTS



NOTES:
1. METER AND BOX SHALL BE PURCHASED FROM TCWD AND WILL BE INSTALLED BY CUSTOMER.
2. SERVICE CONNECTION SHALL NOT BE MADE WITHIN 18" OF VALVE, COUPLING, JOINT OR FITTING.
3. INSTALL CORPORATION STOP WITH KEY SIDEWAYS IN OPEN POSITION.
4. SET TOP OF METER BOX FLUSH WITH LANSCAPE AS SHOWN ON DETAIL 4 HEREON.
5. THE WATER SERVICE SHALL EXTEND PERPENDICULAR TO THE CENTERLINE OF THE STREET FROM THE WATER MAIN TO THE METER STOP.
6. METER BOX SHALL BE SET BEHIND SIDEWALK WHERE SIDEWALK IS ADJACENT TO CURB, OR IN PARKWAY BETWEEN CURB AND SIDEWALK.
7. NO SPLICES WILL BE PERMITTED BETWEEN CORPORATION STEP AND ANGLE METER STOP EXCEPT WHEN SERVICE RUN EXCEEDS 60 FEET, IN WHICH CASE SILVER SOLDER COUPLING WILL BE USED.
8. BACKFLOW PREVENTION SHALL BE INSTALLED PER TCWD STD. W-6 AND PRIOR TO ACTIVATION OF WATER METER.

ITEM — MATERIALS
1. 2" SERVICE SADDLE PER TCWD STD. W-3a, W-3b, W-3c AND W-3d
2. 2" BALL CORPORATION STOP PER TCWD STD. W-3a, W-3b, W-3c AND W-3d.
3. 2" x 2" ANGLE METER STOP WITH LOCKING WING AND F.I.P.T. INLET CONNECTION.
4. 2" CUSTOMER SERVICE INSULATING BALL VALVE METER NUT X F.I.P.T. (SEE NOTE 2).
5. 2" COPPER SERVICE PIPE TYPE "K" SOFT.
6. METER BOX W/READING LID. COMPOSITE POLYMER CONCRETE BOXES AND LIDS PER TCWD SPECIFICATIONS SECTION 03462 (SEE NOTE 1). "TCWD" SHALL BE STAMPED ON INNER LID.
7. 6" THICK BASE OF 3/4" CRUSHED ROCK.
8. METER SHALL BE NEPTUNE T-10 WITH E. CODER (AMP).
9. IDENTIFICATION TAPE PER TCWD STD. SPECIFICATIONS SECTION 15151 TAPE TO COPPER PIPE AT 2' INTERVALS USING 2" WIDE 10-MIL TAPE.
10. WROT COPPER ADAPTER, SWEAT X M.I.P.T.
11. 2" WROT COPPER ELBOW 90° BEND, SWEAT X SWEAT.

2 INCH COPPER SERVICE WITH 2 INCH METER — APPROVED BY ENGINEERING DEPARTMENT — LORRIE LAUSTEN, P.E. — TCWD STD.DWG. W-2b

2" METER STANDARD
NTS

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

DIGALERT — CALL BEFORE YOU DIG — TWO WORKING DAYS BEFORE YOU DIG — TOLL FREE 1-800-227-2600 — A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

REV.	DATE	BY	DESCRIPTION	APPROVED BY	DATE

DESIGN BY: D.L.M.
REVIEWED BY: D.L.M.

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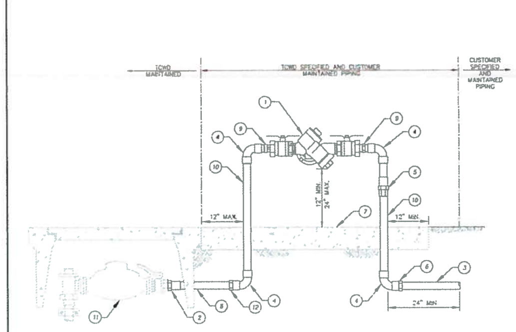
TRABUCO CANYON WATER DISTRICT
LORRAINE S. LAUSTEN, P.E. RCE #67027 — DATE
DISTRICT ENGINEER

TRABUCO CANYON WATER DISTRICT
ORANGE COUNTY RESCUE MISSION
WATER LINE
DETAILS

ORANGE COUNTY RESCUE MISSION WATER LINE



ITEM — MATERIALS

1. 3/4" THROUGH 2" REDUCED PRESSURE BACKFLOW PREVENTOR WITH BALL VALVES.
2. PVC ADAPTER, M.I.P.T. X F.I.P.T.
3. COPPER WATER TUBE, TYPE "K" OR BRASS OR SCH 40 PVC.
4. COPPER OR BRASS 90 DEGREE BEND WITH COPPER SOLDER JOINTS.
5. COPPER OR BRASS UNION WITH COPPER SOLDER OR THREADED JOINTS.
6. BRASS OR COPPER TO PVC ADAPTER.
7. 18" WIDE X 4" THICK CONCRETE PAD, LENGTH VARIES PER ASSEMBLY SIZE.
8. SCH 40 PVC PIPE.
9. BRASS OR COPPER NIPPLE.
10. COPPER WATER TUBE, TYPE "K" OR BRASS.
11. 1" OR 2" SERVICE PER TCWD STD. DWG. W-1 AND W-3.
12. PVC TO BRASS OR COPPER ADAPTER.

NOTES:

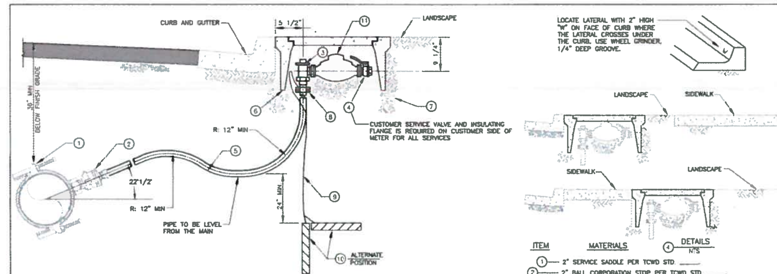
1. PROVIDE AN USC APPROVED BACKFLOW PREVENTION ASSEMBLY.
2. TCWD MAINTENANCE RESPONSIBILITY STOPS AT THE METER. THE CUSTOMER IS RESPONSIBLE TO TEST AND MAINTAIN THE BACKFLOW PREVENTION ASSEMBLY. CERTIFICATION SHALL BE DELIVERED TO TCWD.
3. BACKFLOW CERTIFICATION TESTING IS REQUIRED ANNUALLY AT A MINIMUM BUT MAY BE MORE FREQUENT AS DEEMED NECESSARY BY TCWD. CERTIFICATION TESTING IS REQUIRED IMMEDIATELY AFTER AN ASSEMBLY IS RELOCATED, REPLACED, AND REPAIRED.
4. BACKFLOW PREVENTION ASSEMBLY SIZE SHALL MATCH THE DIAMETER OF THE METER IN ACCORDANCE WITH THE UNIFORM PLUMBING CODE, CHAPTER 6, SECTION 610 AS AMENDED, OR UP TO 1" LARGER.
5. BACKFLOW PREVENTION ASSEMBLY INSTALLATIONS INCLUDING ALL APPURTENACES FOR THE SUPPLY OF DOMESTIC WATER SHALL COMPLY WITH THE REQUIREMENTS OF THE CALIFORNIA LEAD-FREE ACT AB1953.
6. BACKFLOW PREVENTION ASSEMBLY SHALL BE LOCATED AS CLOSE AS PRACTICAL TO THE WATER METER BOX BUT NOT FURTHER THAN 12" UNLESS A VARIANCE IS OBTAINED FROM TCWD PRIOR TO INSTALLATION.
7. NO OUTLETS, TEES, OR CONNECTIONS SHALL BE ALLOWED BETWEEN THE METER AND THE BACKFLOW PREVENTION ASSEMBLY.
8. BACKFLOW PREVENTION ASSEMBLIES SHALL MAINTAIN A VERTICAL CLEARANCE FROM THE LOWEST POINT OF 12" (MIN.) TO 24" (MAX.) ABOVE FINISHED GRADE, WITH SIDE AND TOP CLEARANCES OF 12" (MIN.) FOR ANY OBSTRUCTIONS IN ALL DIRECTIONS.
9. PARALLEL INSTALLATIONS OF THE SAME TYPE OF BACKFLOW PREVENTION ASSEMBLIES ARE RECOMMENDED FOR ALL FACILITIES REQUIRING UNINTERRUPTED WATER SUPPLY, SUCH AS, HOSPITALS AND SCHOOLS.
10. THEFT PREVENTION DEVICES ARE RECOMMENDED FOR BRASS ASSEMBLIES ALLOWING ADEQUATE ACCESS TO THE ASSEMBLY FOR TESTING, MAINTENANCE, AND PROPER DRAINAGE.

REDUCED PRESSURE PRINCIPLE BACKFLOW ASSEMBLY, 2" AND SMALLER

APPROVED BY ENGINEERING DEPARTMENT — LORRIE LAUSTEN, P.E. — DATE — TCWD STD.DWG. W-7 — SHEET 1 OF 1

REDUCED PRESSURE BACKFLOW ASSEMBLY

N.T.S.



NOTES:

1. METER AND BOX SHALL BE PURCHASED FROM TCWD AND WILL BE INSTALLED BY CUSTOMER.
2. SERVICE CONNECTION SHALL NOT BE MADE WITHIN 18" OF VALVE, COUPLING, JOINT OR FITTING.
3. INSTALL CORPORATION STOP WITH KEY SIDEWAYS IN OPEN POSITION.
4. SET TOP OF METER BOX FLUSH WITH LANSCAPE AS SHOWN ON DETAIL 4 HEREON.
5. THE WATER SERVICE SHALL EXTEND PERPENDICULAR TO THE CENTERLINE OF THE STREET FROM THE WATER MAIN TO THE METER STOP.
6. METER BOX SHALL BE SET BEHIND SIDEWALK WHERE SIDEWALK IS ADJACENT TO CURB, OR IN PARKWAY BETWEEN CURB AND SIDEWALK.
7. NO SPLICES WILL BE PERMITTED BETWEEN CORPORATION STEP AND ANGLE METER STOP EXCEPT WHEN SERVICE RUN EXCEEDS 60 FEET, IN WHICH CASE SILVER SOLDER COUPLING WILL BE USED.
8. ANODE LEAD WIRE SHALL BE CLAMPED TO COPPER TUBING. CLAMP SHALL BE DIRECT BURIAL TYPE OF RED BRASS WITH BRASS SCREWS AND SHALL BE TESTED PER TCWD SPECIFICATIONS (SEE TABLE FOR ZINC ANODE SIZES HEREON).
9. BACKFLOW PREVENTION SHALL BE INSTALLED PER TCWD STD. ______ AND PRIOR TO ACTIVATION OF WATERMATE.

ZINC ANODE SIZES FOR 1-INCH COPPER SERVICES

COPPER PIPE LENGTH (FEET)	ZINC ANODE SIZE (INCHES)	ZINC ANODE WEIGHT (lbs)
0 to 15	1.4x1.4x9	5
15 to 45	1.4x1.4x30	15
45 to 90	2.0x2.0x30	30

ITEM — MATERIALS — DETAILS 4 NTS

1. 2" SERVICE SADDLE PER TCWD STD. ______
2. 2" BALL CORPORATION STOP PER TCWD STD. ______
3. 2" x 1 1/2" ANGLE METER STOP WITH LOCKING WING AND F.I.P.T. INLET CONNECTION PER TCWD STD. ______.
4. 2" CUSTOMER SERVICE INSULATING BALL VALVE METER NUT X F.I.P.T. (SEE NOTE 2).
5. 2" COPPER SERVICE PIPE TYPE "K" SOFT.
6. METER BOX W/READING LID. COMPOSITE POLYMER CONCRETE BOXES AND LIDS PER TCWD SPECIFICATIONS SECTION ______ (SEE NOTE 1). "TCWD" SHALL BE STAMPED ON INNER LID.
7. 6" THICK BASE OF 3/4" CRUSHED ROCK.
8. WIRE CLAMP (SEE NOTE 8).
9. AWG NO. 8 SRANDED COPPER ANODE LEAD WIRE, LEAVE 18" OF COILED WIRE IN METER BOX.
10. ZINC ANODE (FOR SIZE OF ANODE SEE TABLE HEREON) AND LEAD WIRE. ANODE TO BE PLACED VERTICALLY OR HORIZONTALLY AT A MINIMUM SEPARATION OF 24" FROM THE COPPER SERVICE.
11. METER SHALL BE NEPTUNE T-10 WITH E. CODER (AMP).
12. IDENTIFICATION TAPE PER TCWD STD. SPECIFICATIONS SECTION ______ TAPE TO COPPER PIPE AT 2' INTERVALS USING 2" WIDE 10-MIL TAPE.
13. WROT COPPER ADAPTER, SWEAT X M.I.P.T.

2" COPPER SERVICE WITH 1 1/2 INCH METER

APPROVED BY ENGINEERING DEPARTMENT — LORRIE LAUSTEN, P.E. — DATE — TCWD STD.DWG. W-2a — SHEET 1 OF 2

1 1/2" METER STANDARD

N.T.S.

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

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DESIGN BY: D.J.M.

REVIEWED BY: D.J.M.

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LORRAINE S. LAUSTEN, P.E. RCE #67027 — DATE
DISTRICT ENGINEER

TRABUCO CANYON WATER DISTRICT
ORANGE COUNTY RESCUE MISSION WATER LINE

DETAILS

SHEET 6 OF 6 SHEETS

DMc JN: 728-49

ORANGE COUNTY RESCUE MISSION WATER LINE

TRABUCO CANYON WATER DISTRICT
ENGINEERING/OPERATIONAL COMMITTEE MEETING | JANUARY 5, 2022

ENGINEERING MATTERS

ITEM 2: DISCUSSION AND POSSIBLE ACTION(S) CONCERNING AMENDENT NO. 2 TO THE T-MOBILE CELLULAR SITE LEASE

Trabuco Canyon Water District (District) owns and operates two domestic water reservoirs (commonly known as the Trabuco Tanks) in the Robinson Ranch community. Since approximately 2005, the District has had an onsite lease with option agreement with T-Mobile USA communications for onsite cellular equipment, and the contractual arrangement has been managed by ATS Communications (ATS) by a separate agreement with the District. Recently, District staff and legal counsel have been working with ATS to review certain terms of the site lease agreement with T-Mobile, which has resulted in a proposed Amendment No. 2 (Exhibit 1).

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

FUNDING SOURCE:
Not applicable.

FISCAL IMPACT:
Potential for increased revenue due to annual rent adjustments.

ENVIRONMENTAL COMPLIANCE:
Not applicable

RECOMMENDED ACTION:
Committee to receive information at the time of the Committee Meeting and recommend the Board of Directors approve the T-Mobile West LLC Amendment No. 2 to the Site Lease Agreement (Action Calendar).

EXHIBIT(S):
1. DRAFT-Amendment No. 2 to Site Lease with Option Agreement

CONTACTS (staff responsible): PALUDI/LAUSTEN

AMENDMENT NO. 2 TO SITE LEASE WITH OPTION

THIS AMENDMENT NO. 2 to SITE LEASE AGREEMENT ("Amendment No. 2") is made and entered into this ____day of _____, 2021,

BY AND BETWEEN — TRABUCO CANYON WATER DISTRICT, a public corporation, hereinafter referred to as "Landlord,"

AND — OMNIPOINT COMMUNICATIONS INC., a subsidiary of T-Mobile USA, Inc., hereinafter referred to as "Tenant."

RECITALS

A. Landlord is the owner of that certain real property legally described in Exhibit "A" commonly known as Trabuco Reservoir located at 21194 Meander Lane, Trabuco Canyon, California 92697 (Assessor's Parcel Number 125-110-022) ("Landlord's Property") related to the Site Lease with Option agreement defined in Recital B below.

B. Landlord and Tenant are parties to that certain Site Lease with Option dated December 29, 2005, as amended by that certain First Amendment to Site Lease with Option dated January 9, 2008, ("First Amendment," and collectively, the "Lease") wherein Landlord leased to Tenant a certain portion of Landlord's Property, including any applicable non-exclusive easements for access and utilities, commonly known as Highland Reservoir for uses permitted under the Lease (the "Premises").

C. Landlord and Tenant have agreed to amend the Lease in order to allow Tenant to expand the use and size of the existing Premises, and to install and operate additional equipment and associated cables on Landlord's Property, as more particularly described in this Amendment No. 2 below.

D. Landlord and Tenant have agreed to amend the Lease to revise the Rent, and make other revisions to the Lease, all as set forth more fully below.

E. Landlord and Tenant agree to enter into this Amendment No. 2 in order to set forth terms and conditions applicable to the Lease as described below.

AGREEMENT

NOW THEREFORE, in consideration of the promises and conditions set forth herein, and for valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the parties agree as follows:

1. **Incorporation of Recitals**. The Recitals set forth above are, by this reference, hereby incorporated into this Amendment No. 2 as if fully set forth in the body hereof.

2. **Defined Terms**. Any capitalized terms used in this Amendment No. 2 that are not defined herein shall have the meanings given those terms in the Lease. Unless the context clearly indicates otherwise, all references to the "Lease" in this Amendment No. 2 shall hereinafter be deemed to refer to the Lease as amended hereby.

3. **Premises.** Section 1 of the Lease is hereby deleted in its entirety and replaced with the following:

   "Landlord owns the real property legally described in Exhibit "A" commonly known as the Trabuco Reservoir Site, with a street address of 21194 Meander Lane, Trabuco Canyon, CA 92697 (Assessor's Parcel Number 125-110-022). Subject to the following terms and conditions, Landlord leases to Tenant that portion of Landlord's Property ("Landlord's Property") only as depicted in Exhibit "B," including any applicable non-exclusive easements for access and utilities, only as depicted on Exhibit B (the "Premises")."

4. Premises. Section 1 (d) of the Lease is hereby added to Section 1 of the Lease:

   "(d) Tenant shall submit to Landlord plans and specifications (the "Plans") for the any proposed modification of the installation (as defined in Exhibit "C," attached hereto), together with the sum of Three Thousand-Five Hundred and no/Dollars ($3,500.00). Landlord shall have the sole right to approve the plans in writing. Landlord's approval must be given or denied within thirty (30) days after submission thereof by Tenant. In the event Landlord objects to Plans, Landlord's objections shall be clearly stated in writing. If Landlord objects to the Plans, Tenant shall have the right either resubmit the Plans in accordance with same approval process as stated above, or (b) terminate this Agreement."

5. **Additional Equipment.** Landlord consents to the installation and operation of additional equipment, and associated cables on Landlord's Property as described in Exhibit "C" and depicted in Exhibit "D" hereto. Exhibits "C" and "D," attached hereto, shall replace Exhibit "B" to the Lease in its entirety. Landlord's execution of this Amendment No. 2 will confirm Landlord's approval of Exhibits "C" and "D".

6. **Rent**. Section 4 of the Lease and Section 1 of the First Amendment are hereby amended and replaced entirely as follows:

   "Tenant's monthly Rent obligations for the Premises on Landlord's Property shall be Two Thousand Five Hundred Fifty Dollars ($2,800.00) per month, commencing on the first (1st) day of the month following the full execution of this Amendment No. 2 (the "Rent Increase Commencement Date"), and continuing thereafter during the Term of the Lease and any Renewal Term thereafter."

7. **Annual Rent Adjustment**. The second sentence of Section 5 of the Lease is hereby amended and replaced as following:

   "Commencing on _____, 2021, and on January 1 of each year during the remaining Renewal Terms, if any, the Rent shall be increased annually by three percent (3%) over the Rent paid during the previous year."

8. **Additional Rent.** Within sixty (60) days of the Effective Date of this Second Amendment, Tenant shall pay Landlord a one-time payment of Twenty Thousand and No/100 Dollars ($20,000.00).

9. **Improvements; Utilities; Access.** Portions of Section 7 of the Lease are amended as follows:

Section 7 (a) is hereby deleted in its entirety and replaced as follows:

"(a) Subject to Landlord's prior review and approval, Tenant shall have the right, at its sole cost and expense, to erect and maintain on the Premises improvements, personal property and facilities necessary to operate its communications system, including, without limitation, radio transmitting and receiving antennas, microwave dishes, equipment shelters and/or cabinets and related cables and utility lines and a location based system, including, without limitation, antenna(s), coaxial cable, base units, location based systems, and other associated equipment (collectively, the '"Antenna Facilities")."

Section 7(b) is amended as follows:

"Notwithstanding the foregoing and except for Section 7(f) below, Tenant shall not install any locking mechanism of any kind on or about the Premises or any property of Landlord, including Landlord's own access system. In the event that Tenant installs any locking mechanism on Landlord's Property, the Premises, or access system, such installation shall be a material breach of this Lease subject to immediate termination of this Lease. In the alternative, Tenant shall pay to Landlord a penalty of Two Thousand Five Hundred and no/dollars ($2,500.00) per occurrence. Tenant shall have no access to Landlord's Property, including the Premises, until payment of such penalty."

Section 7(f) is deleted in its entirety and replaced in full with the following:

"Landlord shall provide access to Tenant, Tenant's employees, agents, contractors and subcontractors to the Premises twenty-four (24) hours a day, seven (7) days a week. Access during normal business hours (i.e., 8:00 AM to 5:00 PM, Monday through Friday, excluding holidays) shall be at no charge to Tenant. At any time other than 8:00 AM to 5:00 PM, Monday through Friday ("After-Hours"), **access shall be for emergency purposes only**. If Tenant requires access After-Hours for non-emergency purposes, Tenant shall reimburse Landlord any cost or expense reasonably associated with Tenant's After-Hour access and/or Tenant's supervised access to Landlord's water tank-top areas ("Restricted Areas").

Tenant shall install, at no cost or expense to Landlord, a keypad lock system. Landlord shall set and re-set any associated code thereto. Tenant may request of Landlord the code for access by Tenant or any vendor, contractor, employee, agent or representative of Tenant by email siteaccess@tcwd.com not less than 24 hours prior to Tenant's requested access. By email Tenant shall provide the following information: (i) entity name requesting access and entity's relationship to Tenant, (ii) anticipated time, date and duration for access, and

(iii) a brief explanation of the scope of work; (iv) proof of insurance coverage for each and every person and/or entity; and, as applicable, (v)notification and accommodation for the use of heavy equipment such as cherry pickers or large vehicles commonly associated with construction activities, if any."

Section 7(g) is hereby added by including the following:

"Tenant shall maintain the Premises and Tenant's Facilities in compliance with all applicable laws, including any applicable conditions of approval referenced above or as amended. At all times throughout the Term and Renewal Term, Tenant shall maintain, repair and secure its equipment and all other personal property and improvements brought onto the Property in clean and safe condition. Tenant shall keep the Premises free of debris, graffiti, or nuisance condition. Tenant shall commence and repair the Premises or damage to Landlord's Property to the extent caused by Tenant's use of the Premises thereon within thirty (30 days following receipt of written request from Landlord, to ensure the Premises are safe, secure and compliant with applicable laws, rules and regulations. Notwithstanding anything to the contrary herein, if Landlord determines in its sole discretion that hazardous conditions are created by the damage, Landlord may require immediate action, or a period of less than thirty (30) days in which repairs must be completed, at Tenant's sole cost and expense. If Landlord elects to complete repairs according to this Section 7, Tenant shall reimburse Landlord for Landlord's associated costs within thirty (30) days of receipt of an invoice detailing such costs. Nothing herein shall require Tenant however to restore or repair any damage to the Premises caused by Landlord, or Landlord's agents, invitees, Tenants, Tenants, contractors, subcontractors and/or employees."

10. **Termination.** Section 8(g) is added by including the following:

"Tenant shall remove all Tenant's Facilities, including, but not limited to, the Antenna Facilities, at its sole cost and expense not later than ninety (90) days after the expiration, cancellation, or termination of the Lease. Tenant shall be responsible for paying Rent until site areas are restored and Tenant shall repair or pay for any damage to Landlord's Property caused by such removal and restore Landlord's Property to the reasonable satisfaction of the Landlord and in a manner acceptable to the General Manager, or the General Manager's designee."

Section 8(h) is hereby added as follows:

"Notwithstanding anything else to the contrary in this Lease, Landlord may terminate this Lease immediately upon Tenant's interference with any activity of Landlord, including, but not limited, to installation of a lock or locking mechanism in any way interfering with Landlord's access to Landlord's Property."

11. **Insurance and Subrogation and Indemnification**. Section 11(a) of the Lease is deleted in its entirety and replaced in full with the following:

"(a) Tenant agrees to maintain in full force and effect a policy or policies of Commercial General Liability insurance written on ISO form CG 00 01 or its equivalent throughout the duration of the Lease. Such insurance shall be in amounts of $2,000,000.00 per occurrence and $5,000,000.00 general aggregate, including contractual liability. Tenant

also agrees to maintain in full force and effect Commercial Automobile Liability coverage in an amount of $1,000,000.00 combined single limit, each accident, covering all owned, hired and non-owned autos. Tenant agrees to maintain Workers' Compensation insurance as required by the state in which the work or Site is located and Employer's Liability insurance with respect to all employees, if any, engaged in the performance of work on the Site in the amount of $1,000,000 per accident for bodily injury; $1,000,000 disease for each employee and $1,000,000 disease-policy limit. Coverage for the Workers' Compensation and Employer's Liability must include a waiver of subrogation endorsement in favor of Landlord.

All insurance required under this Lease shall be primary and non-contributory with any insurance. Tenant shall use commercially reasonable efforts to provide at least thirty (30) days written notice to Landlord of nonrenewal or cancellation of any required coverage that is not replaced. Landlord, its directors, officers, and employees shall be included as additional insureds under Tenant's liability policies as their interests may appear under this Lease. Concurrently with the execution of this Lease, Tenant will provide Landlord with a certificate(s) verifying such insurance and the terms described herein, and a blanket additional insured endorsement and shall provide proof of continuing insurance as required herein on an annual basis thereafter in conjunction with payment of the Annual Rent Adjustment, pursuant to Section 5 of the Lease. Tenant shall use good faith efforts to the extent reasonably practical, to, in accordance with the Lease, that its contractors performing any installation of the Antenna Facilities, including modifications to the Antenna Facilities as applicable or other work on the Premises, will provide reasonable, prudent insurance coverage similar to that required of Tenant in this Section 11, in accordance with the Lease, and shall ensure that all insurance certificates and endorsements required hereunder are provided by its contractors."

12. **Notices**. Section 12 of the Lease is hereby deleted in its entirety and replaced in full with the following:

"Notices. All notices, requests, demands and other communications shall be in writing and are deemed given after deposit in the U.S. mail, certified and postage paid, or via a nationally recognized overnight courier, and shall be effective upon actual receipt or refusal as shown on the shipping receipt to the addresses set forth below. Notices will be addressed to the parties as follows:

Landlord: Trabuco Canyon Water District
32003 Dove Canyon Drive
Dove Canyon, CA 92679
Attn: General Manager
Re: Cellular Leases

With a Copy to: ATS Communications
4195 Chino Hills Parkway, #605
Chino Hills, CA 91709

Tenant: T-Mobile USA, Inc.

12920 SE 38th Street
Bellevue, WA 98006
Attn: Lease Compliance
Site #LA02963A

With a Copy to: Omnipoint Communications, Inc.
3 Imperial Promenade, Suite 1100
Santa Ana, CA 92707
Attn: Lease Administration Manager

Either party hereto may change the address or persons for the giving of notice to it by thirty (30) days' prior written notice to the other as provided herein."

12. **Assignment and Subleasing**. Section 15 of the Lease is hereby deleted in its entirety and replaced with the following:

"(a) This Lease shall not be assigned by Tenant, except with the prior written consent of Landlord that may be withheld for any reason in the Landlord's sole discretion.

(b) Notwithstanding the foregoing, Tenant may, without Landlord's consent but upon at least sixty (60) days prior written notice to Landlord, assign this Lease in its entirety to any entity that acquires all or substantially all of the Tenant's assets in the market as defined by the Federal Communications Commission in which the Landlord's Property is located. Any such assignment shall not be effective unless and until the assignee executes and delivers to Landlord a written assumption of all Tenant's obligations under this Lease.

(c) Sub-leasing is strictly prohibited.

(d) Any attempted or unauthorized assignment or sub-lease shall be automatically void. The acceptance of Rent by Landlord from any person other than Tenant or an authorized assignee shall not be deemed to be a waiver by Landlord of any provision hereof. Consent to one assignment by Landlord shall not be deemed consent by Landlord to any subsequent assignment."

13. **Collocation Incentive Payment.** Section 22 of the First Amendment to the Lease is hereby deleted in its entirety.

14. **Miscellaneous:**

Section 18(k) is hereby added as follows:

(k) Holdover. Tenant will have no right or privilege whatsoever to use or occupy the Premises in any manner or for any purpose after this Lease expires or terminates. If Tenant continues to use or occupy the Premises after this Lease expires or terminates, then this Lease will automatically convert to a month-to-month lease on the same terms and conditions (the "Holdover Term"), except that (1) the Rent will be automatically increased to one hundred ten percent (110%) of the Rent payable in the immediately previous year

(the "Holdover Fee"), and will continue to increase in accordance with Section 7 of this Second Amendment (Annual Rent Adjustment); and (2) either the Landlord or Tenant may terminate such license on thirty (30) calendar days' written notice for any or no reason. Landlord's receipt of any Holdover Fees from Tenant will not be construed to constitute Landlord's consent to such holding over by Tenant or to limit, waive, or impair, in any way, Landlord's rights or remedies under this Lease, at law or equity. Tenant shall indemnify, defend and hold harmless all Indemnified Parties from and against any loss, liability, claim, damage, cause of action, injury, cost or expense (including, without limitation, attorneys' fees and costs) arising out of, in connection with, or relating to Tenant's holding over, except to the extent arising from Landlord's gross negligence or willful misconduct. The foregoing indemnity survives termination or expiration of this Lease.

15. **Continued Effect**. Except as expressly amended hereby, all terms and conditions set forth in the Lease remain unmodified and in full force and effect. Nothing herein shall relieve Tenant of its obligation to comply with any and all applicable laws, and any approvals required to be obtained from any governmental authority having jurisdiction. Unless specified otherwise, any capitalized terms used herein shall have the same meaning prescribed to them in the Lease.

    Signature Authority. The persons who have executed this Amendment No. 2 represent and warrant that they are duly authorized to execute this Amendment No. 2 in their individual or representative capacity as indicated.

IN WITNESS WHEREOF, Landlord and Tenant have executed this Amendment No. 2 to the Site Lease Agreement as of the date first written above.

LANDLORD:	**TENANT**:
TRABUCO CANYON WATER DISTRICT	OMNIPOINT COMMUNICATIONS INC., a subsidiary of T-Mobile USA Inc.
By: _____	By: _____
Name: _____	Name: _____
Title: _____	Title: _____

Approved as to Form:

_____

TCWD General Counsel

EXHIBIT "A"

LEGAL DESCRIPTION OF LANDLORD'S PROPERTY

Landlord's Property of which Premises are a part is legally described as follows:

21194 Meander Lane, Trabuco Canyon, CA 92697 (Assessor's Parcel Number 125-110-022)

EXHIBIT "B"

DEPICTION OF THE PREMISES

EXHIBIT "C"

DESCRIPTION OF FACILITIES TO BE INSTALLED

Description of Premises & Tenant's Facilities Pursuant to Site Lease with Option dated December 29, 2005, as amended by that certain First Amendment to Site Lease with Option dated January 9, 2008:

A. One (1) equipment enclosure measuring approximately 10'-0" x 25'-0" (~250 Sq. Ft.) located within a chain-link fence.

B. Up to four (4) equipment cabinets mounted on a raised concrete equipment pad within equipment enclosures.

C. Up to eight (8) ~6' tank-mounted panel antennas (4 per sector, 2 sectors) mounted behind FRP screening.

D. Two tank-mounted FRP antenna screens measuring approximately 14'-9" x 6'-8" each,

E. One (1) tank-mounted vertical cable tray.

F. Two (2) tank-top horizontal cable trays.

G. Up to one (1) 2' diameter tank-mounted microwave antenna, mounted behind FRP screening.

H. Underground conduits, cables, cable trays, wires, utility equipment and access necessary for the operation of the communications facilities.

Additions and Alterations to Premises & Tenant's Facilities by this Amendment No. 2 to include the following:

1) Remove tank-top cable trays.
2) Remove existing vertical cable tray.
3) Re-route horizontal cable tray at base of tank, mounted using magnetic attachments.
4) Install two (2) new vertical cable trays beneath antenna sectors.
5) Install Up to four (4) tank-mounted remote radio units (RRUS) at antenna level.
6) Install up to two (2) surge suppressor units at the antenna level.
7) Add new fiber cables within existing conduits and cable routes and within three (3) new magnetic tank-mounted vertical cable trays.
8) Remove and replace all epoxy/welded tank-mounted equipment with magnetic attachments.

EXHIBIT "D"

DEPICTION OF FACILITIES TO BE INSTALLED ON PREMISES

TRABUCO CANYON WATER DISTRICT
ENGINEERING/OPERATIONAL COMMITTEE MEETING | JANUARY 5, 2022

ENGINEERING MATTERS

ITEM 3: DISCUSSION AND POSSIBLE ACTION(S) CONCERNING SADDLEBACK MEADOWS DEVELOPMENT (181 DU'S)

The proposed Saddleback Meadows residential development (Development) is located on 222 acres of property within the unincorporated area of southeastern Orange County, California, in the Foothill-Trabuco area. The parcel is being planned and engineered for the California Quartet, LTD, ("CQ") by Hunsaker and Associates ("Hunsaker"). The proposed development has gone through several iterations and modification, and most recently, consisted of 181 detached single-family homes. A Sub-Area Master Plan ("SAMP") for this development was originally prepared by PSOMAS in May 2006. Hunsaker requested that the District prepare an updated SAMP for the Development. Staff has been working with PSOMAS on the updated SAMP and this report is included as Exhibit 1.

The total storage (operational, fire flow and emergency) required for the development is 820,000 gallons. Due to geological constraints, the proposed elevation of the storage is much lower than previous plan, which would create an isolated zone for the Development. The District has considered an alternative option of locating the required storage on an alternative District property, which is included in the updated Draft SAMP.

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

FUNDING SOURCE:
By Developer

FISCAL IMPACT:
By Developer

ENVIRONMENTAL COMPLIANCE:
All Environmental Compliance will be met by the Developer.

RECOMMENDED ACTION:
Recommend the Board of Directors receive and approve the Sub Area Master Plan (SAMP) for the Saddleback Meadows Development (Action Calendar).

EXHIBIT(S):
1. DRAFT-Sub-Area Master Plan

CONTACTS (staff responsible): PALUDI/LAUSTEN

SADDLEBACK MEADOWS SUB AREA MASTER PLAN

December 2021

Prepared for:

TRABUCO CANYON WATER DISTRICT

32003 Dove Canyon Drive

Trabuco, CA 92679

Prepared by:

PSOMAS

5 Hutton Centre Drive, Suite 300

Santa Ana, CA 92707

Project No. 2TRA132500

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TABLES

FIGURES

Appendices

1. Project Overview

1.1 General Description

The water and wastewater improvements detailed within this Sub-Area Master Plan (SAMP) are for the proposed residential development of Saddleback Meadows. A SAMP had previously been prepared for this project in 2006. The development area and number of homes have been reduced substantially since the previous SAMP. The current plan calls for 181 dwelling units and this SAMP is being prepared to determine what will be involved in providing water and sewer service to this proposed plan, assuming it goes through the planning approval process in fairly the same configuration.

Sewer service is relatively straight forward in that the landowner purchased capacity in the El Toro Road/Chiquita Wastewater collection and treatment system many years ago for a previous approved land use plan that contained substantially more dwelling units than is now proposed.

That previous plan had its own proposed potable water reservoir site in the northeast corner of the project at an elevation that was compatible with the District's Harris Grade hydraulic grade line and was sized to serve the much larger proposed demand based on the previous plan. Based on landslide analyses, that reservoir site, which was much higher in elevation than is now available on-site, is not feasible. Therefore, the District previously considered available storage options for the project either on-site or off-site but is now focused on the Harris Grade site. And depending on where the storage is located the water delivery system will require a solution for reliability. The recommendations in this SAMP relative to water supply and storage should therefore be considered preliminary until these issues are resolved.

Improvements include the domestic water transmission and wastewater collection/conveyance facilities, which were developed and sized to be consistent with the current version of the appropriate District's Design Criteria, and the District's 1999 Water, Wastewater, and Reclaimed Water Master Plan (1999 Master Plan).

In addition, planning level capital cost estimates were prepared for the recommended off-site facilities. This SAMP will provide the groundwork for the subsequent detailed design of these facilities.

1.2 Proposed Development

The proposed Saddleback Meadows residential development (Project) is located on 222 acres of property within the unincorporated area of southeastern Orange County, California, in the Foothill-Trabuco area. The parcel is being planned and engineered for the California Quartet, LTD by Hunsaker and Associates. The parcel is situated on the east side of El Toro Road approximately 1,000 feet south of the Live Oak Canyon Road

intersection. Aliso Creek runs north to south just outside the western property boundary. As prepared by the developer, Tentative Tract Map No. 15230 dated November 27, 2019 was used for this analysis and is shown on Figure 1-1.

Primary access to the Project site will be along the proposed roadway of Spine Street that extends east from the existing El Toro Road and ends within a cul-de-sac at the easternmost edge of the development. Additionally, a 20' wide trail easement parallels the north side of Spine Street from El Toro Road and ends at the cul-de-sac.

The Project is within the Foothill/Trabuco Specific Plan (FTSP) area, which was adopted by the County of Orange in 1991. The development contains 181 detached single-family on lots ranging in size from 4,000 to 13,810 square feet (sf), with an average lot size of 6,067 sf. A summary table prepared by Hunsaker and Associates provides the gross and net square footage of each of the 181 lots and is included in Appendix A.

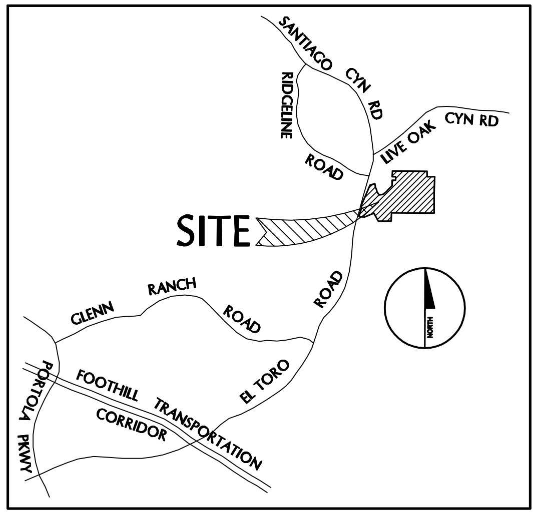
1.3 Urban Water Use Targets

The California Department of Water Resources requires urban water suppliers to prepare and adopt an Urban Water Management Plan (UWMP) every five years. UWMP's are designed to evaluate a retail water supplier's water demand and supplies in order to meet current and future growth within their respective service areas. Since 1999, there have been major legislative changes at the state level which impacts how water is allocated by water purveyors like TCWD. These water conservation-based legislative changes are included in TCWD's recently completed 2020 UWMP.

The most significant piece of water conservation-based legislation to affect retail water suppliers is SBx 7-7, enacted in 2009. SBx 7-7 requires the development of urban water use targets to achieve a twenty percent reduction in per capita daily water use by December 31, 2020. TCWD's methodology for determining its water use target to comply with SBx 7-7 is detailed in the 2020 UWMP. The 2020 water use target for TCWD is 200 gallons per capita per day (gpcd). Actual 2020 water use equaled 159 gpcd, well below the 2020 target of 200 gpcd.

Additionally, TCWD is a member of the Orange County 20 by 2020 Regional Alliance (Regional Alliance) which allows for flexibility in meeting the required per capita water use targets. If the Regional Alliance meets its water use target on a regional basis, then all member agencies are deemed compliant. If the Regional Alliance fails to meet its water use target, then each individual member will have an opportunity to meet their water use targets individually. The Orange County 20 by 2020 Regional Alliance 2020 target is 158 gpcd. The actual 2020 water use in the region was 109 gpcd, meeting the 2020 goal.

VICINITY MAP



LOT SUMMARY TABLE

LOT NUMBER	LAND USE	AREA
1 – 181	RESIDENTIAL LOTS	25.2 ACRES±
A – K	STREETS	10.5 ACRES±
L – V	OPEN SPACE	34.4 ACRES±
W – AA	OPEN SPACE/NATURAL	152.1 ACRES±

2ND REVISED VESTING TENTATIVE TRACT MAP NO. 15230

SHEET 1 OF 1

F:\0007\Planning\GA_Project\TTM\TTM 181\TTM-15230.dwg

Figure 1-1

To meet water use targets, TCWD has implementation the following activities.

- Passive and active conservation activities
- Water conservation program permanent restrictions
- Use of additional recycled water

Water conservation activities include the demand management measures (DMMs) that TCWD implements as a signatory member of the California Water Efficiency Partnership (CWEP), formerly the California Urban Water Conservation Council (CUWCC). DMMs include the development of water conservation programs and the education of TCWD customers on the subject of wise water usage.

TCWD adopted its Water Conservation Ordinance, No. 2008-18 (Ordinance) in January 2009. The Ordinance identifies permanent mandatory water use efficiency measures which contribute to the realization of the 2015 UWMP target levels. The Ordinance and the Water Conservation Program Permanent Provisions can be accessed via the District website at www.tcwd.ca.gov.

TCWD has a long-standing practice of using recycled water, wherever possible, in order to offset the use of drinking water for irrigation purposes. TCWD will meet the reduction target levels through the continued use of recycled water in its service area, and any future developments where recycled water is available, and infrastructure can be installed. Unfortunately, the use of recycled water is not an option for the Saddleback Meadows development. Currently, there are no recycled water distribution facilities available in the area.

1.4 Model Water Efficient Landscape Ordinance

On July 15, 2015, the California Water Commission adopted a Model Water Efficient Landscape Ordinance (MWELO), which sets requirements for any new landscaping or landscaping renovation over 500 square feet. Since the Saddleback Meadows development is subject to this MWELO, the water use requirements for all landscaped areas within the project common areas have been calculated for consistency with the maximum allowable water use limits of this new ordinance. The ordinance also sets water use limits for residential landscapes, however, local agencies do not have the resources to monitor and enforce a homeowner's compliance with the ordinance and, as such, modifications and deferred maintenance by homeowners are common. Therefore, projected water use for residential landscapes has been estimated at what is believed to be more realistic values to account for properties which exceed the water use limits set by the MWELO. Specific requirements under the MWELO are as follows:

- The size threshold of landscapes subject to the ordinance is 500 square feet.

- The maximum applied water allowance (MAWA) is equal to 55% of the reference evapotranspiration (ETo) for residential landscape projects and 45% of ETo for non-residential projects.
- The minimum width of areas that can be overhead irrigations is 10 feet. Areas less than 10 feet in width must be irrigated with subsurface drip or other technology that produces no over spray or runoff.

2. Proposed Domestic Water System

Average-day, maximum-day, and peak-hour demands were estimated for domestic water and Homeowners Association (HOA) irrigation use inside Saddleback Meadows. The development pipelines were added to the District's existing hydraulic model using InfoWater software to analyze various operation and demand scenarios in order to size distribution system pipelines and facilities. The recommended water system facilities for Saddleback Meadows are shown on Figure 2-1A for on-site storage (which is not currently being pursued) and Figure 2-1B for off-site storage and will be explained later in this section.

2.1 Water Use Factors

2.1.1 Average Day Demand

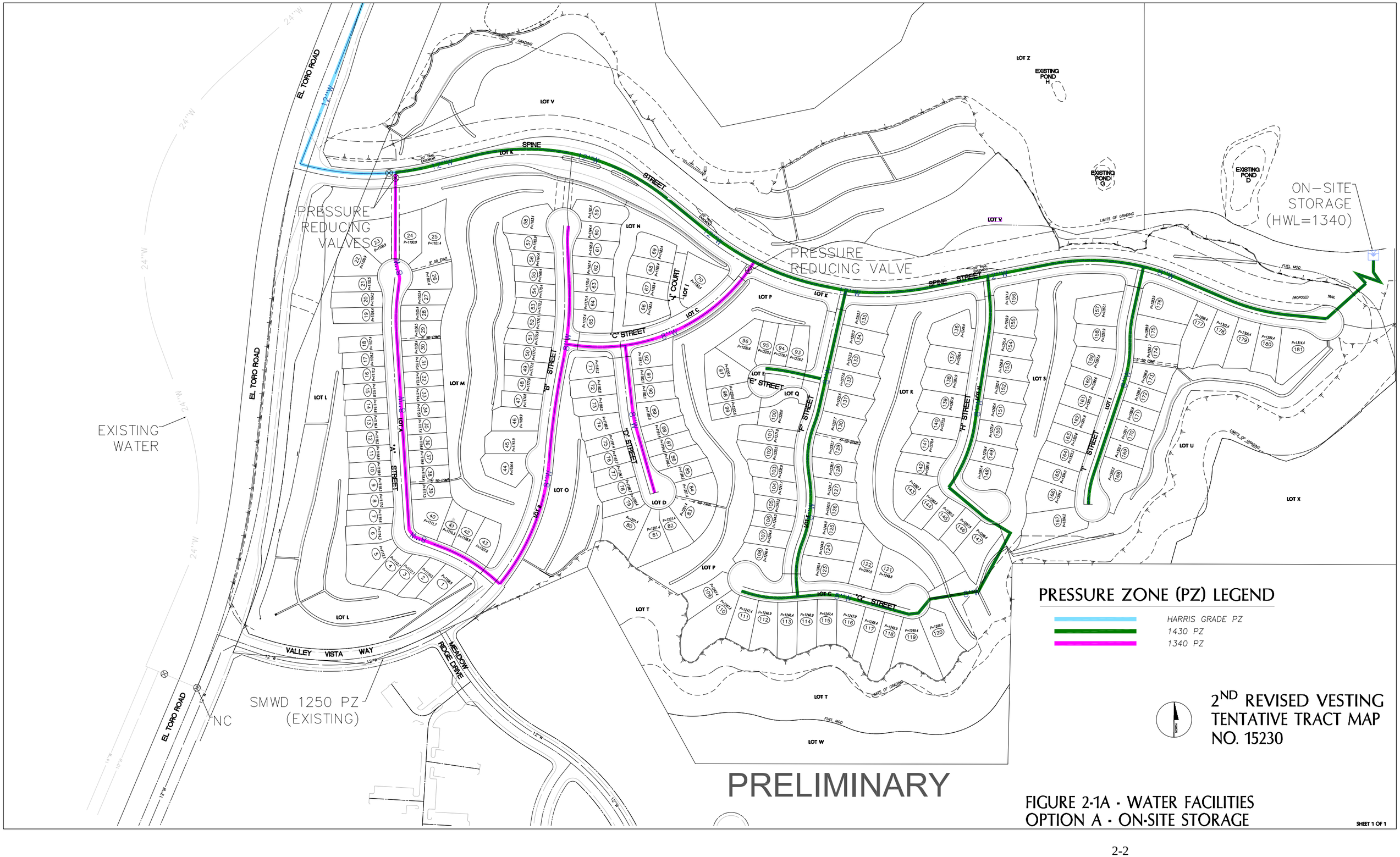
Land use information was provided by the developer's engineer, Hunsaker and Associates, in the form of a proposed land use plan for Tentative Tract Map (TTM) 15230 along with corresponding open space and residential lot square footages. The residential lot data is included in Appendix A and results in an average lot size of 6,067 square feet (sf), with a range of 4,000 to 13,810 sf. Open space areas that are to be irrigated were tabulated by Hunsaker and Associates and are also included in Appendix A. The total irrigated open space area for the project based on this data is equal to 1,414,300 square feet or 32.5 acres. Water demand calculations for the irrigated open space areas are straightforward to estimate as they are required to meet or be lower than the maximum applied water allowance (MAWA) per the State MWELO, which is 45% of the local reference evapotranspiration rate (ET_o). The MAWA will be used to be conservative and that calculation is shown in Table 2-1.

Table 2-1
Irrigation Demand Projections

MAWA Calculation	
Irrigated Area (sf)	1,414,296
ET_o for Irvine CIMIS Station (in)	49.6
MAWA % of Eto for Non-residential	45%
MAWA (gal/yr)(1)	19,571,600
MAWA (gpd)	53,621

(1) MAWA = (0.62) (ET_o) (0.45) (Area, sf)

To develop estimates of the residential project water use for the proposed development, two methodologies were utilized. These methods were applied to a slightly earlier version


EL TORO ROAD
SPINE STREET
LOT K
LOT V
LOT Z
EXISTING POND H
EXISTING POND D
EXISTING POND Q
ON-SITE STORAGE (HWL=1340)
PRESSURE REDUCING VALVES
PRESSURE REDUCING VALVE
LIMITS OF GRADING
FUEL MOD
PROPOSED TRAIL
LOT L
LOT M
LOT N
LOT O
LOT P
LOT Q
LOT R
LOT S
LOT T
LOT U
LOT W
LOT X
'A' STREET
'B' STREET
'C' STREET
'D' STREET
'E' STREET
'F' STREET
'G' STREET
'H' STREET
'I' STREET
'J' COURT
EXISTING WATER
SMWD 1250 PZ (EXISTING)
NC
VALLEY VISTA WAY
MEADOW RIDGE DRIVE
PRESSURE ZONE (PZ) LEGEND
HARRIS GRADE PZ
1430 PZ
1340 PZ
2ND REVISED VESTING TENTATIVE TRACT MAP NO. 15230
PRELIMINARY
FIGURE 2-1A - WATER FACILITIES
OPTION A - ON-SITE STORAGE
SHEET 1 OF 1

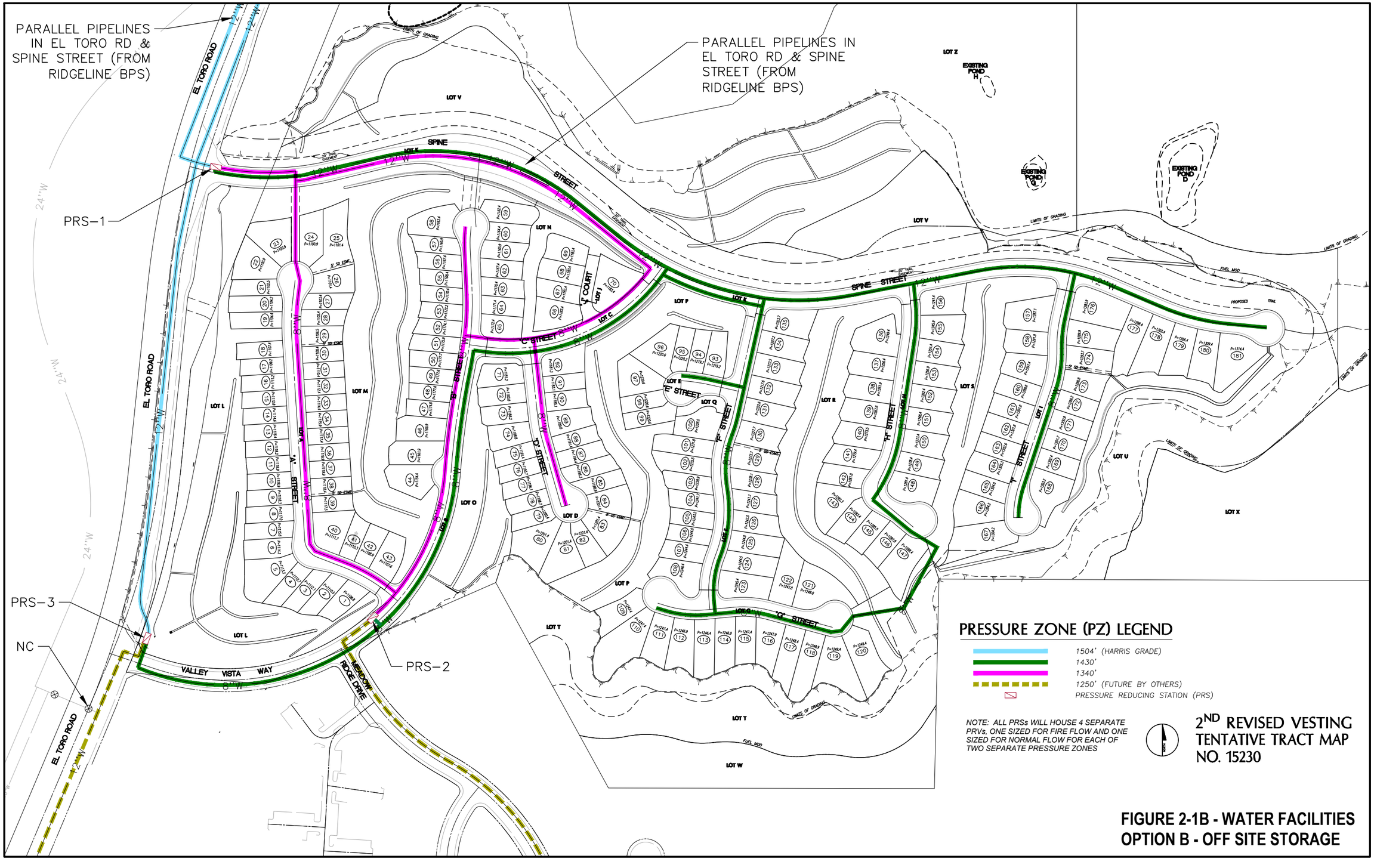


FIGURE 2-1B - WATER FACILITIES
OPTION B - OFF SITE STORAGE

of the TTM, however, the conclusions can still be applied to the latest version. First, an attempt to come up with similar sized lots in other areas of the District was undertaken. Assessor Parcel information on lot size was generated for various lots in Trabuco Highlands, Robinson Ranch and Dove Canyon. Addresses and square footages for lots in these areas were collected until a good sample size (195 residences) was generated with an average lot size similar to the average for the Saddleback Meadows lots. The addresses and square footages for these lots are shown in Appendix B with an average lot size of 6,467 sf, about 6% larger than the Project lots. Maps of these lots are also included in Appendix B. Water meter usage data for calendar years 2017 and 2018 was obtained from the District for the 195 similar lots with an average use of 347 and 358 gpd, respectively in 2017 and 2018, for a two-year average of 352 gpd.

As a check, a second water use methodology was utilized. This method involved generating a typical house footprint in terms of square footage based on home sizes along with typical assumptions for garages, driveways, and hardscapes. This generates a landscape area for each lot and then typical assumptions can be made for plant palettes that will, in turn, generate outside water demand. Adding a reasonable inside water demand per capita and a people per dwelling unit factor was used to generate a total water demand per residence, which was compared to the first method utilized. The previous TTM used for this analysis encompassed the same development area but included less homes, 166 total (versus 181 for the current TTM), on slightly larger lots averaging 6,487 sf. This analysis is detailed in Appendix B with the average outside irrigated area equal to 32% of the average lot area. This same assumption was used for the lots in the revised TTM, on a per lot basis. The resulting average landscape area for all 181 homes is calculated to equal 1,960 sf based on the average lot size of 6,067 sf.

To determine the average water use for irrigation it is assumed that half of each lot's landscape area is turf with a plant factor (PF) of 0.85 and an irrigation efficiency (IE) of 0.7 and the other half is various ground cover and/or shrubs with a PF of 0.4 and an IE of 0.8. The resulting estimated outside irrigation use is equal to 142 gpd/du. Subtracting this value from the average total water use from the meter reads on the similar lot sizes of 352 gpd results in 210 gpd for inside water use. Assuming an average occupancy of 3.3 people per dwelling unit generates an inside water use of 64 gallons per capita per day (gpcd). The State Department of Water Resources has set a goal of 55 gpcd for new home construction so the 352 gpd/du seems to be a reasonable and conservative value for estimating the total residential water demand for the development plan proposed for Saddleback Meadows (at 3.8 people per dwelling unit the use would be exactly 55 gpcd).

Based on the above, the estimated average day demand (ADD) for Saddleback Meadows is summarized in Table 2-2.

Table 2-2
Water Demand Projections

Land Use	ADD (gpd)	ADD (AFY)
Residential	63,712	71.4
Common Area Irrigation (HOA)	53,621	60.1
Total	**117,333**	**131.4**

Residential Use = 352 gpd/du x 181 du

2.1.2 Peak Water Demands

Maximum-day demand is defined as the largest demand day of the year. A Maximum-day demand (MDD) factor is the ratio of maximum-day demand to average-day demand. Based on an analysis of historical District daily water production and water storage, a MDD factor of 1.95 was calculated for domestic water demand and a factor of 2.2 was estimated for HOA irrigation demand in the 1999 Master Plan.

Peak hour demand is the largest hourly demand of the year. A peak-hour demand (PHD) factor is the ratio of peak-hour demand to maximum-day demand. Based on an evaluation of hourly water use in the Dove Canyon pressure zone, a peak-hour demand (PHD) factor of 2.47 was calculated for domestic water demand for the overall District water system in the 1999 Master Plan. Based on a review of irrigation practices in the District, it was estimated in the 1999 Master Plan that HOA irrigation demand typically occurs nightly between the hours of 7 p.m. and 7 a.m., which is a 12-hour irrigation period. Accordingly, a PHD factor of 2.0 was developed for HOA irrigation in the 1999 Master Plan. These MDD factors will be used in this Sub Area Master Plan. The average-day, maximum-day and peak-hour domestic water and HOA irrigation demands for Saddleback Meadows are shown in Table 2-3.

Table 2-3
Average Day, Maximum Day, and Peak Hour Demands

Land Use	Water Demand (GPD)		
	ADD	MDD[1]	PHD[2]
Residential	63,712	124,238	306,869
HOA Irrigation	53,621	117,966	235,932
Total	**117,333**	**242,204**	**542,800**

(1) Residential MDD = 1.95 x ADD and HOA MDD = 2.2 x ADD

(2) Residential PHD = 2.47 x MDD and HOA PHD = 2.0 x MDD

2.1.3 Fire Flow Demand

Based on information provided from David Oatis, the developer's consultant who obtained the information from the Orange County Fire Authority (OCFA), the anticipated fire flow will be 1,125 gpm for a one-hour duration at a minimum residual pressure of 20 psi. This value is based on preliminary home sizes, construction types, sprinkler requirements and "Attachment 23, Table B105.1(2): Minimum Required Fire Flow and Flow Duration for Buildings in OCFA Jurisdiction" from OCFA's Fire Master Plans for Commercial & Residential Development: B-09 dated January 1, 2020. Final fire hydrant locations will be developed by the project civil engineer but are assumed to be at approximate 300-foot spacing. Following finalization of the storage and water delivery option, final fire flow analysis will be conducted using the existing and proposed facilities and final pipe sizing within the tract and off-site will be confirmed.

2.2 Source of Supply

The District's Dimension Water Treatment Plant (DWTP) provides water into the Cooks Reservoir pressure zone for further transmission to the rest of the distribution system. Three high service booster pumps at the DWTP have a combined capacity of 6 cfs and lift water from the clearwell directly into the Cooks Reservoir zone at a hydraulic grade line (HGL) of approximately 1,165 feet, equal to the maximum water level in Cooks Reservoir. Water is boosted from the Cooks Reservoir zone to the Harris Grade pressure zone (1,504' HGL) by the Ridgeline Booster Station. This zone is also connected to three other water systems and two water districts, IRWD (Lake Forest), IRWD (Santiago), and SMWD, through interties. The Ridgeline Booster Station, which was recently re-designed and improvements constructed, now has 3 pumps with a combined capacity of 6 cfs, matching the capacity of the DWTP booster pumps. The Saddleback Meadows project site will connect to the Harris Grade pressure zone served by the Ridgeline Booster Station. The project will therefore be responsible for its pro-rata share of the upgrades to the Ridgeline Booster Station that were recently constructed.

2.3 Water Storage Requirements

The total storage requirements for the project are determined based on the criteria from the 1999 Water Master Plan, which calls for 10 hours of maximum day demand for operational storage, five average days for emergency storage, and fire flow storage. The five average days for emergency storage would be equivalent to 7 days at a 29 percent reduction, which is what Metropolitan Water District considers reasonable (25 to 35 percent) based on water conservation during recent drought periods. Using these criteria and the demand analysis provided, the total storage requirement is as shown in Table 2-4.

Table 2-4
Storage Requirement

Storage Type	Volume (gal)
Operational[1]	100,918
Fire Flow[2]	67,500
Emergency[3]	586,664
Total	**755,082**

(1) 10 hours of Maximum Day Demand
(2) 1,125 gpm fire flow for 1 hour
(3) 5 days of Average Day Demand

The preliminary grading plan provided by the developer's engineer and dated July 11, 2019, showed a reservoir located on-site with a pad elevation of 1,420'. Based on discussions with the developer's representative and engineer, this is as high an elevation as can be reasonably provided based on geotechnical concerns due to potential landslides that would require extensive grading and remediation of the site and be extremely expensive. However, this SAMP analyzed two options. Option A, which is not under consideration, would be to construct on-site storage at an elevation that could supply the upper zone by gravity and Option B would be to contribute to the construction of off-site storage along with a parallel pipeline from the Ridgeline Booster Pump Station to Spine Street and up Spine Street to "F" Street. Without on-site storage, the on- and off-site parallel pipelines are required to provide a second source of supply to the project for reliability/redundancy.

The most feasible alternative available to the District for providing off-site storage, which the developer could contribute to is the existing Harris Grade Reservoir site. The District has also reviewed the District's Porter Ranch property but that is not under consideration. The District has conducted feasibility studies on these alternative sites. After discussions and negotiations, the developer and District have agreed to pursue the off-site storage option at the Harris Grade site through a joint participation agreement.

Hydraulic modeling was performed to determine off-site pipe sizes and verify sufficient water can be delivered to the site under each option.

The "existing" scenario that was preliminarily modeled assumed the following:

1. A 12-inch diameter line is constructed from the Ridgeline Booster Pump Station (RBPS) to the Saddleback Meadows entrance road to serve the development with the buildout demand placed on that location.

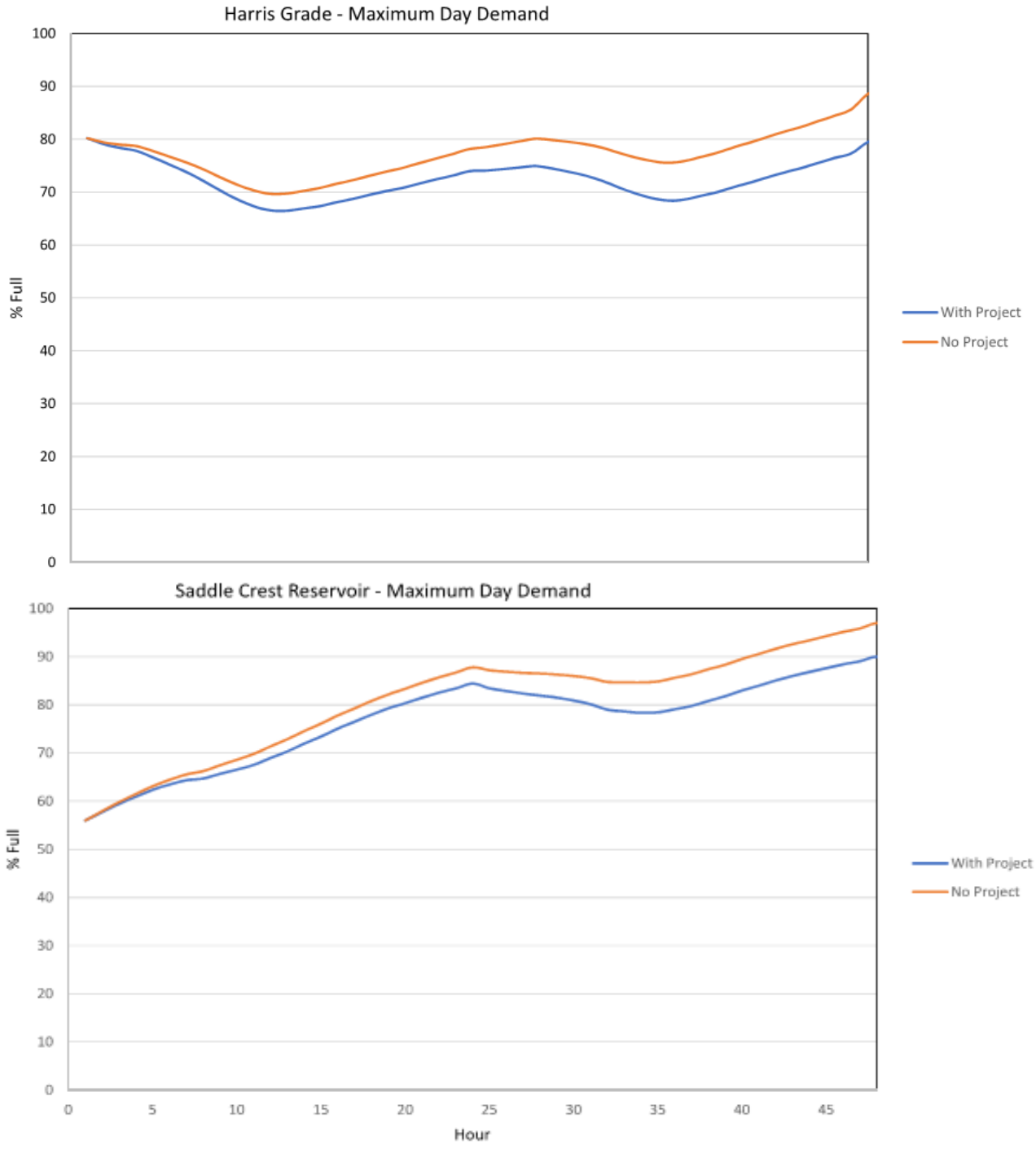
2. Parallel 12-inch pipelines are needed to the entrance to provide redundancy (two sources of supply) and the 12-inch line is continued southerly in El Toro Road to Valley Vista Way to provide this redundancy to the entire project as shown in Figure 2-1B. The parallel system was not included in the model as it is needed for reliability in case one line is down for whatever reason.
3. An 18-inch pipeline is constructed from Cook's Corner along Live Oak Canyon Road to the location where the line branches off to the Harris Grade Reservoirs. This line is needed to reduce head loss from the Ridgeline Booster Pump Station and from Saddle Crest Reservoir to Harris Grade Reservoir.
4. The Saddle Crest Reservoir is on-line along with the buildout demands for the Saddle Crest development.
5. The total District-wide average day demand (ADD) is 1,640 gpm or about 2.36 MGD (10 percent higher than average over past 7 years).
6. The District-wide maximum day demand (MDD) is 2,650 gpm or about 3.81 MGD.
7. All demands are served from the Dimension Water Treatment Plant or from the west (no wells or supply from interconnections), in order to be conservative (worst case).

The average day demand and maximum day demand loading in the hydraulic model were updated to reflect 2018 production data provided by the District and included in Appendix C. The ADD for 2018 equaled 2.36 MGD based on monthly production data. The MDD was estimated using daily production data for Dimension Water Treatment Plant (DWTP) and monthly data for supply from the District's capacity in the South County Pump Station/Santa Margarita Water District (SMWD) System at Plano Trabuco Road (Plano). For the purpose of determining demand, it was assumed that the Plano supply was taken at a constant rate during each month. The maximum day in 2018 occurred in August with the estimated daily production equal to 3.81 MGD, close to the flow capacity from DWTP of 3.9 MGD. This MDD flow rate is assumed to be conservative as it is likely that more water was taken from SMWD during periods of no production from DWTP and less taken during high production from DWTP, rather than distributed equally each day as was assumed.

An extended period simulation was run using the District's hydraulic model and the above assumptions. Figure 2-2 shows percent full for both Harris Grade and Saddle Crest Reservoirs for a 48-hour period during assumed MDD conditions. It shows that the Harris Grade Reservoir levels remain virtually the same with the Saddleback Meadows development demands and gradually increase without the development. The Saddle Crest Reservoir levels increase both with and without the Saddleback Meadows demand added. The RBPS is set to come on and off based on the Harris Grade Reservoir levels and Saddle Crest Reservoir is allowed to fluctuate independently.

The modeled MDD can be sustained with supply from the DWTP both with and without the Saddleback Meadows demand. Additionally, the District could take water from SMWD if higher demand conditions were to occur, which would probably be called for even in the case without the proposed development and its demands.

Figure 2-2
Storage Analysis



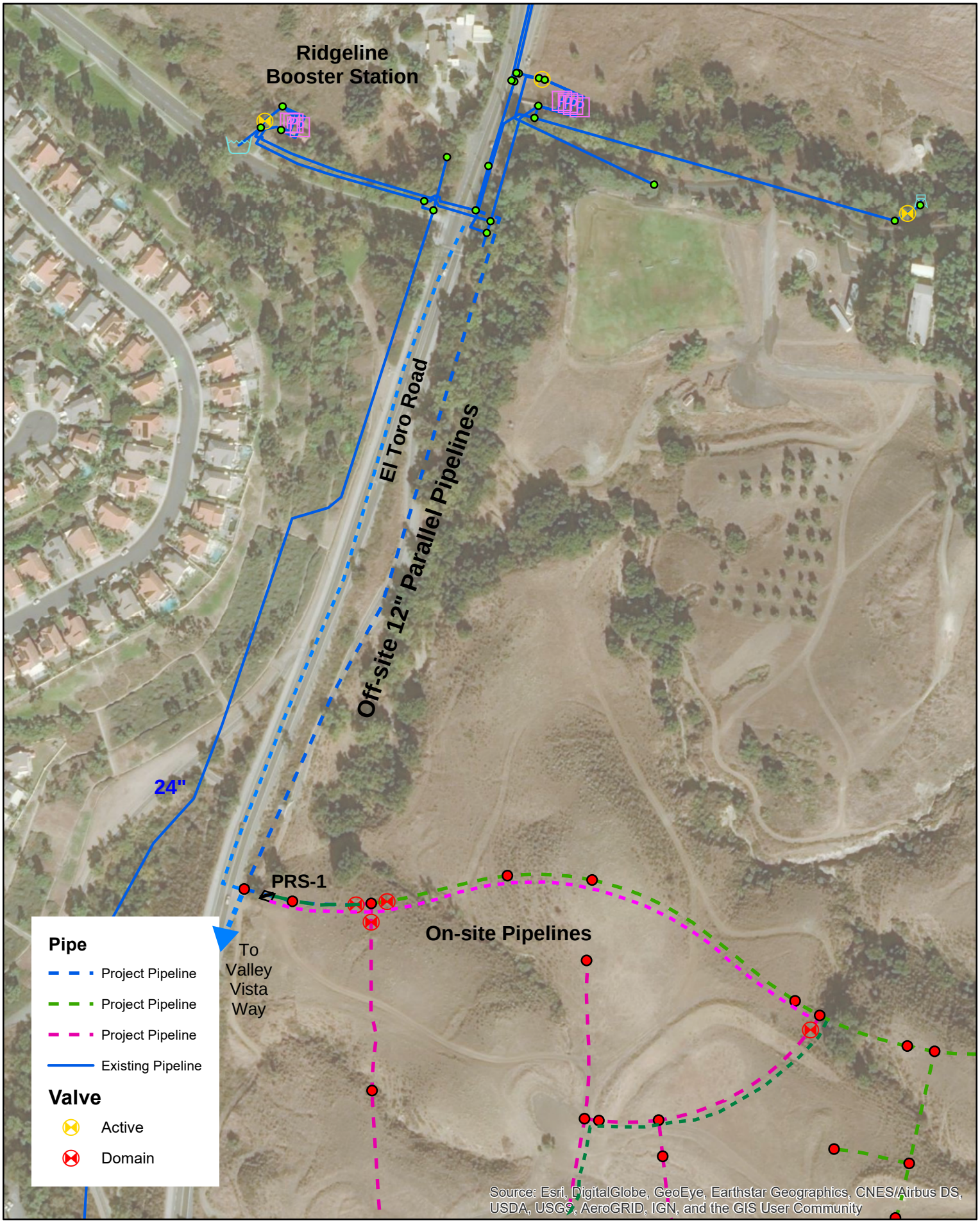
2.4 Computer Modeling and System Layout

Water service to the Saddleback Meadows project can be extended from the existing water lines at the intersection of El Toro Road and Ridgeline Road that are boosted from the Ridgeline Booster Station to the Harris Grade pressure zone. The Harris Grade Reservoirs have a high-water elevation of 1,504 feet. Option B, which is the preferred alternative, requires parallel 12" pipelines to be constructed in El Toro Road from Ridgeline Road to the Project entrance road, then a single 12" pipeline would continue down El Toro Road to Valley Vista Way. These pipelines are illustrated on Figure 2-3. As stated previously, improvements to the Ridgeline Booster Station were recently completed and were on-line prior to the Saddleback Meadows development coming online and are included in model simulations for the Project. Also, a new 18-inch transmission pipeline parallel to the existing 10- and 14-inch lines is proposed to be constructed from Cook's Corner along Live Oak Canyon Road to the location where the line branches off to the Harris Grade Reservoirs. This pipeline is assumed to be in place for Project simulations and would replace the existing 10-inch pipeline along that alignment.

The proposed onsite water facilities were added to the District's existing water system model, which uses InfoWater hydraulic modeling software. The proposed water system facilities are illustrated on Figure 2-1A (on-site storage, which is currently not being pursued) and Figure 2-1B (off-site storage). The proposed system meets the District's looping criteria which states that two water main connections are required for each street unless it is a dead-end street serving 25 or less normal-size residential lots. A pipeline easement will be required between the eastern end of "G" Street and the southern end of "H" Street to connect these two cul-de-sacs, in order to satisfy District looping criteria.

2.4.1 Pressure Zones

Pad elevations within the Saddleback Meadows development range from 1,100 to 1,314 feet above sea level. A proposed pipeline from the Ridgeline Booster Station to the project site along El Toro Road will serve the project from the Harris Grade Reservoir Pressure Zone with a HGL of 1504 feet (full reservoir). In order to provide adequate pressure to customers, a planning guideline of providing a minimum static pressure of 50 psi at the highest service elevation is typically used in the initial layout of the proposed system. This way, a minimum dynamic pressure of 40 psi can be maintained with the reservoir at a lower than full level and during peak hour demand conditions. Adequate flows and pressures must also be achieved under fire flow conditions. Additionally, the District wants to keep distribution pipeline pressures below 150 psi.



PSOMAS

Figure 2-3
Off Site Project Transmission Pipelines

Pressure zone boundaries were set to achieve adequate pressures throughout the proposed development based on model simulations. Two pressure zones are recommended for the site based on the range of lot elevations. The higher pressure zone will serve the higher elevation lots on the easterly portion of the site starting at "F" Street to the cul-de-sac at the eastern end of Spine Street. The lower pressure zone will serve the remaining lots from El Toro Road and east to "C" Street. Both zones will be reduced off of the Harris

Grade Pressure Zone using pressure reducing stations to limit excessive pressures, particularly when the Ridgeline Booster Station is operating. The upper zone is set to a HGL of 1430 feet and the lower zone is set to a HGL of 1340 feet. The recommended locations of the PRV stations and pressure zones are illustrated on Figure 2-1A and B.

2.4.2 Model Simulations and Results

Various operation and demand scenarios were analyzed with the model to size system pipelines and facilities such that performance meets all District criteria as outlined in the TCWD Design Criteria and Standard Drawings for Water and Sewer Facilities, June 2002. The proposed facilities were modeled using ADD, PHD, and MDD plus fire flow assuming the off-site storage option. Fire flows were modeled at 1,125 gpm during maximum day demand conditions as confirmed by OCFA. Sufficient service and fire pressures were modeled using each scenario. The model output and corresponding node diagram are included in Appendix D, including fire flows at each node in the development.

Fire flow demand occurring on the MDD typically controls distribution main sizing. Fire simulations for the highest locations in each pressure zone were evaluated, at the eastern end of Spine Street in the 1430 zone and the southern end of "D" Street in the 1340 zone. Based on model results, a 12-inch distribution pipeline is recommended along Spine Street from El Toro Road to "I" Street with 8-inch distribution pipelines elsewhere within the tract.

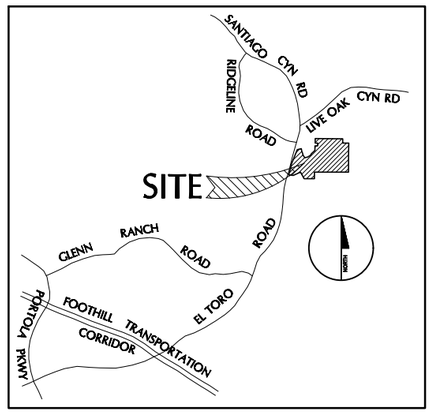
Peak-hour demand for domestic water and HOA irrigation are simulated in the model using a diurnal curve with peak domestic demand occurring in the morning between the hours of 7:00 a.m. and 8:00 a.m. and HOA demand between the hours of 11:00 p.m. and 7:00 a.m., which is an 8-hour irrigation period. Therefore, the combined peak-hour demand for domestic water and HOA irrigation occurs at approximately 7:00 a.m. Model simulation results show sufficient pressure during peak hour demand, above 40 psi, and pipeline velocities less than 8 feet per second.

Per District and uniform plumbing code (UPC) criteria, pressure regulators are required on the customer's side of the meter where static pressures exceed 80 psi at the meter. Based on PRV settings, static pressures above 80 psi occur at the lots along "A" Street in

the lower zone and along “E” and “F” Streets in the upper zone and a single lot on “H” Street. These lots (requiring individual pressure regulators) are highlighted on Figure 2-4.

Upstream of the pressure reducing stations, at the entrance to the project, there are pressures equal to approximately 190 psi, in excess of the maximum desired pressure of 150 psi. These would occur along the 12-inch transmission pipeline serving the project from Ridgeline Booster Station. It is recommended to use higher pressure class for this reach of transmission pipeline. It should be pointed out here again, that the water system layout is preliminary and as with on-site storage, the pressure zone HGLs could be somewhat different.

VICINITY MAP



LOT SUMMARY TABLE

LOT NUMBER	LAND USE	AREA
1 – 181	RESIDENTIAL LOTS	25.2 ACRES±
A – K	STREETS	10.5 ACRES±
L – V	OPEN SPACE	34.4 ACRES±
W – AA	OPEN SPACE/NATURAL	152.1 ACRES±

Highlighted lots require individual pressure regulators per District criteria.

NORTH

2ND REVISED VESTING TENTATIVE TRACT MAP NO. 15230

SHEET 1 OF 1

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Figure 2-4

3. Wastewater System

3.1 Regional Collection, Treatment and Disposal Facilities

Wastewater generated from Saddleback Meadows will be conveyed into the District's existing El Toro Road Collection Zone. This collection zone receives wastewater from the District and SMWD, Wastewater collected in this zone is conveyed through the El Toro Road Collection System, which consists of a 15-inch trunk sewer in El Toro Road, the El Toro Road Sewage Lift Station, and dual force mains in Santa Margarita Parkway, to the SMWD wastewater system.

The District owns 1.78 mgd capacity in the El Toro Road System and 0.428 mgd in the SMWD Chiquita sewage system, which includes collection, treatment at the Chiquita Water Reclamation Plant, and ultimate disposal of treated effluent via the Chiquita Land Outfall and the Serra Ocean Outfall. The total capacity of the El Toro Road system is 1.96 mgd. However, capacity in the SMWD system is currently limited to 1.15 mgd.

3.2 Wastewater Flow Factors

Since all the land uses within the proposed projects are similar residential uses, the only flow factor to be concerned with is the inside water use within the homes that is discharged to the sewer system. Average dry weather wastewater flow (ADWF) in the District was determined to be 270 gpd/du in the 1999 Master Plan, based on calibration of the sewer model. The housing density for Saddleback Meadows is approximately 5 dwelling units per acre after subtracting out the open space within the development boundaries. Based on indoor water use factors from IRWD for this housing density, a wastewater generation of 200 to 225 gpd/du is appropriate. The demand analysis presented in Section 2.1 estimated an indoor use for the Project equal to 210 gpd/du, within this expected range. Also discussed in Section 2.1, the State Department of Water Resources has set a goal of 55 gpcd for indoor water use for new home construction. With an estimated 3.3 persons per du, the indoor use would equal 64 gpcd, making 210 gpd/du conservative when compared to State standards. Applying the more conservative Master Plan factor 270 gpd/du to the 181 dwelling units, results in an average flow of 48,870 gpd or 0.05 mgd. The District owns sewer rights of up to 200,000 gpd of average flow for the benefit of the project.

Peak dry-weather wastewater flows (PDWF) were derived from the formula PDWF = 1.84 x $(ADWF)^{0.92}$, where flow is in cubic feet per second (cfs). The formula, which was originally developed by Los Angeles County Sanitation District, was assessed to be valid in the 1999 Master Plan by comparing the measured peak factors at three District lift stations with the calculated peak flows using this formula. The resulting peak flow for the Project equals 110,550 gpd or 0.11 mgd. The resulting average flow to peak flow factor equals 2.26.

3.3 System Layout

The minimum pipe size for gravity sewers per the District's standards is 8-inches in diameter and the Saddleback Meadows development is not large enough to warrant anything bigger than this. Using the District minimum slope criteria of 0.4 percent, the maximum depth to diameter ratio (d/D) equals 0.32 for the Project peak flow of 0.11 mgd. The District standard for maximum d/D ratio for 8-inch pipeline is equal to 0.50. Therefore, all gravity sewer pipelines constructed for the project site will be 8-inch, except for private lateral sewers.

The proposed sewer system layout is shown in Figure 3-1. The system will collect to Spine Street and cross El Toro Road to connect with the existing 15-inch TCWD trunk sewer just to the west of El Toro Road. The sewer should be designed to meet District criteria; 7 feet minimum depth of cover from finished grade to the top of sewer and manhole spacing not to exceed the maximum of 400 linear feet for 8-inch sewer. The sewers will be constructed of PVC pipe per District criteria, with special requirements for the El Toro Road sewer crossing and any deep sewers.

EXISTING 15" SEWER

EL TORO ROAD

SMWD SEWER

SMWD SEWER

VALLEY VISTA WAY

MEADOW RIDGE DRIVE

SPINE STREET

A STREET

B STREET

C STREET

D STREET

E STREET

F STREET

G STREET

H STREET

J STREET

"J" COURT

LOT A

LOT B

LOT C

LOT D

LOT E

LOT F

LOT G

LOT H

LOT J

LOT L

LOT M

LOT N

LOT O

LOT P

LOT Q

LOT R

LOT S

LOT T

LOT U

LOT V

LOT W

LOT X

LOT Z

EXISTING POND H

EXISTING POND Q

EXISTING POND D

PROPOSED TRAIL

FUEL MOD

LIMITS OF GRADING

LEGEND

PROPOSED 8" SEWER

EXISTING SEWER

2ND REVISED VESTING TENTATIVE TRACT MAP NO. 15230

FIGURE 3-1 - WASTEWATER COLLECTION SYSTEM

SHEET 1 OF 1

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4. Project Costs

The engineer for the developer will be responsible for preparing a cost estimate for all onsite water and wastewater facilities that are to be constructed to serve the project. The developer will be responsible for a pro-rata share of the cost to upgrade the Ridgeline Booster Station and pipeline upgrades between Ridgeline and Harris Grade Reservoirs. The costs will be determined by the District prior to issuance of a will serve letter.

The developer will also be responsible for a contribution toward off-site storage (Option B) for their project's water demands and the ancillary water facilities that accompany that option, as shown on Figure 2-1B (on-site) and Figure 2-3 (off-site). The developer's contribution toward off-site storage is under discussion and will be based on actual construction costs, which have been estimated in recent studies conducted by the District for different sized storage reservoirs including the Harris Grade site. The preferred storage solution, as agreed upon, is the off-site option at the Harris Grade site and the cost sharing is subject to a pending agreement between the developer and District.

The total project water use from Table 2-2 is equal to 117,333 gpd. Dividing by the 181 dwelling units results in an average total development water use of 648 gpd/du. The total water demand of 117,333 gpd divided by the District average equivalent dwelling unit (edu) demand of 459 gpd/edu yields approximately 256 edus for the entire development or 2.54 edu/du.

Water capital improvement charges for up to 715 edus were previously purchased for Tract 15239 (formerly Tract 10692) by a prior owner through an agreement with the District dated September 21, 1988 and have been reserved by the District for this development. This agreement was for Tract 10692, which included 705 dwelling units and 1.7 acres of commercial land. This tract was also included in the original 6 cubic feet per second of water supply capacity from 1988 Water Allocation Report. Therefore, no water capital improvement charges or supplemental water capacity fees are due for this project.

For sewer service, the landowner purchased capacity in the El Toro Road/Santa Margarita Water District Chiquita Wastewater collection and treatment system many years ago for a previous approved land use plan that contained substantially more dwelling units than is now proposed. Therefore, no sewer capacity charges are due for this project.

The planning-level estimated costs for the recommended off-site water and sewer facilities are shown in Table 4-1 and 4-2, respectively. The estimated construction cost includes a 20% contingency. The capital project cost was developed by applying 25% to the construction cost to account for technical, legal, and administrative costs and including permitting costs.

Table 4-1
Off-site Water Facilities Cost[(d)]

Description	Units	Unit Cost	Cost
Storage [(a)]	755,082 gal	TBD	TBD
Ridgeline Pump Station [(b)]	LS	-	$166,500
12" Transmission Pipelines in El Toro Road	4,200 LF	$150/LF	$630,000
12" Butterfly Valve	6	$3,300 EA	$19,800
18" Transmission Pipeline [(c)]	4,500 LF	6% of $300/LF	$81,000
18" Butterfly Valve [(c)]	5	$6,000	$30,000
Subtotal	-	-	TBD
20% Contingency	-		TBD
Construction Cost	-	-	TBD
25% Technical, Legal & Administration	-	-	TBD
Capital Project Cost	-	-	TBD

(a) Storage solution, as agreed upon, is the off-site option at the Harris Grade site and the cost sharing is subject to a pending agreement between the developer and District.
(b) Pro-rata participation in District costs for 6 cfs Ridgeline Booster Station based on Project MDD = 0.37 cfs. District paying 100% of 2 cfs capacity ($0.27 million) and sharing the cost with another developer for the remaining 4 cfs capacity ($1.26 million District portion). Saddleback Meadows cost = 0.37/2 x $0.27 million + 0.37/4 x $1.26 million.

(c) Pro-rata participation in water transmission line from Cook's Corner to Harris Grade Reservoir. Project MDD = 0.37 cfs, Capacity = 6.0 cfs; Therefore, pro rata share = 6.0%

d) Except for Ridgeline Pump Station, all pro-rata participation, unit costs, and therefore total costs are estimates and, as such, should be considered preliminary and subject to change as they will be based on actual costs. For the 12" transmission lines in El Toro Road and 12" butterfly valves, developer is responsible for 100% of cost of design and construction per District standards, review and inspection, and unit costs are provided for estimating purposes only.

Table 4-2
Off-site Sewer Facilities Cost

Description	Units	Unit Cost	Cost
Mobilization	LS		$60,000
8” Sewer [a]	130 LF	$325/LF	$42,250
8" Sewer [b]	150 LF	$150/LF	$22,500
Standard Manholes	2	$5,500/EA	$11,000
Connect to Existing Sewer	LS		$30,000
Subtotal	-		$165,750
20% Contingency	-		$33,150
Construction Cost	-		$198,900
25% Technical, Legal & Administration	-		$49,725
Capital Project Cost	-		$248,625

(a) Jack and bore 8" pipe in steel casing across El Toro Road.
(a) Down slope to connect to existing trunk sewer in trail.
(b) All cost estimates should be considered preliminary and subject to change. While these are titled off-site sewer facilities they are assumed to be constructed as part of subdivision improvements by developer.

APPENDIX A

Saddleback Meadows TTM Lot Statistics

LOT SUMMARY TABLE

Lot No.	Gross SQ.FT.	Net SQ.FT.	Lot No.	Gross SQ.FT.	Net SQ.FT.	Lot No.	Gross SQ.FT.	Net SQ.FT.	Lot No.	Gross SQ.FT.	Net SQ.FT.
1	5,708	5,308	47	4,120	4,120	93	5,119	4,884	139	6,597	5,713
2	4,978	4,721	48	4,113	3,913	94	4,268	4,268	140	6,851	5,925
3	4,941	4,941	49	4,378	4,378	95	4,394	4,394	141	6,007	5,769
4	4,990	4,990	50	4,654	4,654	96	8,241	8,241	142	5,524	5,523
5	9,731	9,731	51	4,816	4,570	97	8,110	8,110	143	8,673	8,410
6	5,523	5,286	52	4,457	4,219	98	4,366	4,366	144	5,676	5,461
7	4,745	4,504	53	4,156	3,939	99	5,262	4,699	145	5,269	5,052
8	4,660	4,430	54	4,125	3,916	100	7,175	6,095	146	5,362	5,362
9	4,462	4,462	55	4,167	3,958	101	6,436	5,640	147	9,545	9,545
10	4,314	4,355	56	4,346	4,346	102	6,196	5,610	148	7,661	6,692
11	4,278	4,278	57	4,606	4,379	103	5,074	4,779	149	5,442	5,211
12	4,274	4,274	58	7,624	7,387	104	4,942	4,500	150	6,054	5,511
13	4,308	4,077	59	6,624	6,411	105	4,311	4,311	151	5,822	5,275
14	4,319	4,100	60	4,623	4,405	106	4,266	4,266	152	6,024	5,261
15	4,313	4,094	61	4,899	4,688	107	4,851	4,308	153	5,950	5,291
16	4,284	4,066	62	4,621	4,421	108	7,502	7,502	154	5,977	5,317
17	4,287	4,069	63	4,720	4,720	109	6,966	6,966	155	6,870	6,207
18	4,531	4,302	64	4,658	4,658	110	13,810	13,810	156	7,167	5,563
19	5,064	5,064	65	5,577	4,810	111	6,950	6,950	157	8,669	6,768
20	5,247	5,118	66	7,332	7,332	112	7,622	7,622	158	5,962	4,860
21	4,692	4,437	67	4,883	4,883	113	7,142	7,142	159	6,799	6,372
22	8,103	7,521	68	5,528	5,528	114	6,465	6,465	160	5,332	5,117
23	8,772	8,772	69	5,984	5,984	115	5,804	5,804	161	5,253	5,253
24	6,977	6,977	70	10,043	7,734	116	7,122	7,122	162	5,275	5,275
25	10,874	10,355	71	5,682	4,837	117	7,412	7,412	163	5,301	5,301
26	5,985	5,760	72	5,453	4,668	118	8,415	8,415	164	5,530	5,530
27	4,601	4,372	73	5,328	4,551	119	11,213	11,213	165	5,720	5,720
28	4,357	4,357	74	5,820	5,024	120	10,069	10,069	166	8,230	8,230
29	4,846	4,346	75	4,140	3,930	121	10,750	10,750	167	11,049	11,049
30	4,000	3,600	76	4,110	3,899	122	8,136	8,136	168	8,771	8,771
31	4,000	3,800	77	4,189	3,974	123	7,597	7,232	169	5,088	4,882
32	4,000	3,800	78	4,186	3,983	124	6,514	6,082	170	5,000	4,800
33	4,000	3,800	79	4,195	4,195	125	6,437	5,954	171	5,000	4,800
34	4,000	3,800	80	9,386	9,386	126	5,796	5,762	172	5,000	4,800
35	4,000	3,800	81	9,052	9,052	127	5,429	5,209	173	6,175	5,972
36	4,000	4,000	82	5,263	5,263	128	5,577	5,352	174	6,765	5,249
37	4,200	4,200	83	7,810	7,279	129	6,549	5,991	175	7,299	5,281
38	4,300	3,600	84	6,199	6,199	130	6,307	5,403	176	10,672	6,445
39	4,021	4,021	85	4,556	4,556	131	6,451	5,753	177	8,864	7,532
40	8,015	7,319	86	5,212	4,835	132	6,749	6,017	178	9,070	7,871
41	4,436	4,209	87	4,764	4,417	133	6,710	5,945	179	7,909	7,055
42	4,573	4,370	88	4,492	4,176	134	6,598	5,802	180	7,749	6,966
43	6,410	6,201	89	5,856	5,095	135	7,404	5,844	181	10,981	10,981
44	7,727	6,146	90	4,641	4,026	136	8,752	7,378			
45	7,267	4,719	91	4,077	3,875	137	6,523	5,679			
46	7,013	5,699	92	6,261	5,587	138	6,504	5,679			

Total Gross	1,098,072	S.F.
Average Gross	6,067	S.F.
Total Net	1,029,210	S.F.
Averae Net	5,686	S.F.

OPEN SPACE AREAS

Lot No.	Use	Area SQ.FT.	Landscaped/Irragated Area SQ.FT.	Trail SQ.FT.
A	Road	46,029	0	0
B	Road	79,028	0	0
C	Road	21,711	0	0
D	Road	21,376	0	0
E	Road	9,005	0	0
F	Road	32,571	0	0
G	Road	31,497	0	0
H	Road	34,247	0	0
I	Road	31,312	0	0
J	Road	4,965	0	0
K	Road	145,055	0	0
L	Landscape/Trail	178,396	169,931	8,465
M	Landscape	173,316	173,316	0
N	Landscape	22,200	22,200	0
O	Landscape	61,359	57,917	0
P	Landscape	102,572	102,572	0
Q	Landscape	3,365	3,365	0
R	Landscape	85,367	85,367	0
S	Landscape	60,167	60,167	0
T	Landscape/Open Space	228,490	30,853	0
U	Landscape/Open Space	196,983	86,638	0
V	Landscape/Open Space/Water Quality/20' Equestrian Trail	385,967	276,482	50,709
W	Open Space	87,942	0	0
X	Open Space	1,754,047	0	0
Y	Open Space	3,522,717	146,801	0
Z	Open Space	1,185,159	198,687	0
AA	Open Space	76,919	0	0

APPENDIX B

Water Demand Support Data

Lot Sizes, Hardscape/Landscape Area and Water Use Calculation

(all areas in square feet (sf), lots sorted smallest to largest)

Lot No.	Lot sf	House	Building Footprint	Garage	Drive-way	Footprint + Garage + D'way	Remainder	Hardscape	Landscape	% Irrigated Area
30	4,500	3,555	1,955	400	440	2,795	1,705	682	1,023	23%
31	4,500	3,555	1,955	400	440	2,795	1,705	682	1,023	23%
32	4,500	3,555	1,955	400	440	2,795	1,705	682	1,023	23%
33	4,500	3,555	1,955	400	440	2,795	1,705	682	1,023	23%
11	4,620	3,555	1,955	400	440	2,795	1,825	730	1,095	24%
55	4,621	3,555	1,955	400	440	2,795	1,826	730	1,095	24%
53	4,623	3,555	1,955	400	440	2,795	1,828	731	1,097	24%
47	4,630	3,555	1,955	400	440	2,795	1,835	734	1,101	24%
57	4,658	3,555	1,955	400	440	2,795	1,863	745	1,118	24%
10	4,668	3,555	1,955	400	440	2,795	1,873	749	1,124	24%
69	4,673	3,555	1,955	400	440	2,795	1,878	751	1,127	24%
84	4,674	3,555	1,955	400	440	2,795	1,879	752	1,127	24%
9	4,701	3,555	1,955	400	440	2,795	1,906	762	1,143	24%
56	4,720	3,555	1,955	400	440	2,795	1,925	770	1,155	24%
41	4,725	3,555	1,955	400	440	2,795	1,930	772	1,158	25%
48	4,728	3,555	1,955	400	440	2,795	1,933	773	1,160	25%
42	4,735	3,555	1,955	400	440	2,795	1,940	776	1,164	25%
95	4,792	3,555	1,955	400	440	2,795	1,997	799	1,198	25%
70	4,794	3,555	1,955	400	440	2,795	1,999	800	1,199	25%
94	4,798	3,555	1,955	400	440	2,795	2,003	801	1,202	25%
46	4,843	3,555	1,955	400	440	2,795	2,048	819	1,229	25%
8	4,849	3,555	1,955	400	440	2,795	2,054	822	1,232	25%
49	4,874	3,555	1,955	400	440	2,795	2,079	832	1,247	26%
60	4,883	3,555	1,955	400	440	2,795	2,088	835	1,253	26%
93	4,889	3,555	1,955	400	440	2,795	2,094	838	1,256	26%
54	4,899	3,555	1,955	400	440	2,795	2,104	842	1,262	26%
43	4,963	3,555	1,955	400	440	2,795	2,168	867	1,301	26%
117	4,970	3,555	1,955	400	440	2,795	2,175	870	1,305	26%
27	5,000	3,555	1,955	400	440	2,795	2,205	882	1,323	26%
92	5,000	3,555	1,955	400	440	2,795	2,205	882	1,323	26%
115	5,060	3,555	1,955	400	440	2,795	2,265	906	1,359	27%
118	5,065	3,555	1,955	400	440	2,795	2,270	908	1,362	27%
6	5,091	3,555	1,955	400	440	2,795	2,296	918	1,377	27%
28	5,100	3,555	1,955	400	440	2,795	2,305	922	1,383	27%
29	5,100	3,555	1,955	400	440	2,795	2,305	922	1,383	27%
88	5,128	3,555	1,955	400	440	2,795	2,333	933	1,400	27%
114	5,148	3,555	1,955	400	440	2,795	2,353	941	1,412	27%
50	5,168	3,555	1,955	400	440	2,795	2,373	949	1,424	28%
12	5,199	3,555	1,955	400	440	2,795	2,404	962	1,442	28%
119	5,199	3,555	1,955	400	440	2,795	2,404	962	1,442	28%
26	5,224	3,555	1,955	400	440	2,795	2,429	972	1,457	28%

Lot Sizes, Hardscape/Landscape Area and Water Use Calculation

(all areas in square feet (sf), lots sorted smallest to largest)

Lot No.	Lot sf	House	Building Footprint	Garage	Drive-way	Footprint + Garage + D'way	Remainder	Hardscape	Landscape	% Irrigated Area
13	5,233	3,555	1,955	400	440	2,795	2,438	975	1,463	28%
14	5,233	3,555	1,955	400	440	2,795	2,438	975	1,463	28%
91	5,257	3,555	1,955	400	440	2,795	2,462	985	1,477	28%
78	5,263	3,555	1,955	400	440	2,795	2,468	987	1,481	28%
81	5,293	3,555	1,955	400	440	2,795	2,498	999	1,499	28%
15	5,300	3,555	1,955	400	440	2,795	2,505	1,002	1,503	28%
68	5,323	3,555	1,955	400	440	2,795	2,528	1,011	1,517	28%
76	5,344	3,555	1,955	400	440	2,795	2,549	1,020	1,529	29%
3	5,345	3,555	1,955	400	440	2,795	2,550	1,020	1,530	29%
45	5,362	3,555	1,955	400	440	2,795	2,567	1,027	1,540	29%
44	5,381	3,555	1,955	400	440	2,795	2,586	1,034	1,551	29%
34	5,383	3,555	1,955	400	440	2,795	2,588	1,035	1,553	29%
2	5,465	3,555	1,955	400	440	2,795	2,670	1,068	1,602	29%
155	5,500	3,555	1,955	400	440	2,795	2,705	1,082	1,623	30%
156	5,500	3,555	1,955	400	440	2,795	2,705	1,082	1,623	30%
157	5,500	3,555	1,955	400	440	2,795	2,705	1,082	1,623	30%
116	5,501	3,555	1,955	400	440	2,795	2,706	1,082	1,623	30%
148	5,503	3,555	1,955	400	440	2,795	2,708	1,083	1,625	30%
149	5,508	3,555	1,955	400	440	2,795	2,713	1,085	1,628	30%
150	5,513	3,555	1,955	400	440	2,795	2,718	1,087	1,631	30%
83	5,515	3,555	1,955	400	440	2,795	2,720	1,088	1,632	30%
80	5,516	3,555	1,955	400	440	2,795	2,721	1,088	1,632	30%
111	5,526	3,555	1,955	400	440	2,795	2,731	1,092	1,638	30%
61	5,528	3,555	1,955	400	440	2,795	2,733	1,093	1,640	30%
58	5,577	3,555	1,955	400	440	2,795	2,782	1,113	1,669	30%
7	5,598	3,555	1,955	400	440	2,795	2,803	1,121	1,682	30%
18	5,603	3,555	1,955	400	440	2,795	2,808	1,123	1,685	30%
87	5,643	3,555	1,955	400	440	2,795	2,848	1,139	1,709	30%
151	5,657	3,555	1,955	400	440	2,795	2,862	1,145	1,717	30%
24	5,704	3,555	1,955	400	440	2,795	2,909	1,164	1,745	31%
103	5,713	3,555	1,955	400	440	2,795	2,918	1,167	1,751	31%
105	5,746	3,555	1,955	400	440	2,795	2,951	1,180	1,770	31%
67	5,760	3,555	1,955	400	440	2,795	2,965	1,186	1,779	31%
21	5,767	3,555	1,955	400	440	2,795	2,972	1,189	1,783	31%
77	5,782	3,555	1,955	400	440	2,795	2,987	1,195	1,792	31%
1	5,785	3,555	1,955	400	440	2,795	2,990	1,196	1,794	31%
121	5,798	3,555	1,955	400	440	2,795	3,003	1,201	1,802	31%
36	5,807	3,555	1,955	400	440	2,795	3,012	1,205	1,807	31%
104	5,839	3,555	1,955	400	440	2,795	3,044	1,218	1,826	31%
17	5,877	3,555	1,955	400	440	2,795	3,082	1,233	1,849	31%
25	5,909	3,555	1,955	400	440	2,795	3,114	1,246	1,868	32%

Lot Sizes, Hardscape/Landscape Area and Water Use Calculation

(all areas in square feet (sf), lots sorted smallest to largest)

Lot No.	Lot sf	House	Building Footprint	Garage	Drive-way	Footprint + Garage + D'way	Remainder	Hardscape	Landscape	% Irrigated Area
125	5,948	3,555	1,955	400	440	2,795	3,153	1,261	1,892	32%
99	5,951	3,555	1,955	400	440	2,795	3,156	1,262	1,893	32%
152	5,965	3,555	1,955	400	440	2,795	3,170	1,268	1,902	32%
62	5,984	3,555	1,955	400	440	2,795	3,189	1,276	1,913	32%
65	6,002	3,555	1,955	400	440	2,795	3,207	1,283	1,924	32%
79	6,032	3,555	1,955	400	440	2,795	3,237	1,295	1,942	32%
120	6,052	3,555	1,955	400	440	2,795	3,257	1,303	1,954	32%
158	6,080	3,555	1,955	400	440	2,795	3,285	1,314	1,971	32%
66	6,115	3,555	1,955	400	440	2,795	3,320	1,328	1,992	33%
97	6,153	3,555	1,955	400	440	2,795	3,358	1,343	2,015	33%
52	6,190	3,555	1,955	400	440	2,795	3,395	1,358	2,037	33%
82	6,261	3,555	1,955	400	440	2,795	3,466	1,386	2,079	33%
101	6,298	3,555	1,955	400	440	2,795	3,503	1,401	2,102	33%
124	6,310	3,555	1,955	400	440	2,795	3,515	1,406	2,109	33%
16	6,327	3,555	1,955	400	440	2,795	3,532	1,413	2,119	33%
135	6,331	3,555	1,955	400	440	2,795	3,536	1,414	2,121	34%
138	6,353	3,555	1,955	400	440	2,795	3,558	1,423	2,135	34%
122	6,395	3,555	1,955	400	440	2,795	3,600	1,440	2,160	34%
112	6,473	3,555	1,955	400	440	2,795	3,678	1,471	2,207	34%
140	6,509	3,555	1,955	400	440	2,795	3,714	1,486	2,228	34%
64	6,518	3,555	1,955	400	440	2,795	3,723	1,489	2,234	34%
139	6,593	3,555	1,955	400	440	2,795	3,798	1,519	2,279	35%
102	6,653	3,555	1,955	400	440	2,795	3,858	1,543	2,315	35%
100	6,697	3,555	1,955	400	440	2,795	3,902	1,561	2,341	35%
113	6,709	3,555	1,955	400	440	2,795	3,914	1,566	2,348	35%
40	6,724	3,555	1,955	400	440	2,795	3,929	1,572	2,357	35%
142	6,774	3,555	1,955	400	440	2,795	3,979	1,592	2,387	35%
129	6,778	3,555	1,955	400	440	2,795	3,983	1,593	2,390	35%
141	6,781	3,555	1,955	400	440	2,795	3,986	1,594	2,391	35%
128	6,823	3,555	1,955	400	440	2,795	4,028	1,611	2,417	35%
123	6,918	3,555	1,955	400	440	2,795	4,123	1,649	2,474	36%
107	6,931	3,555	1,955	400	440	2,795	4,136	1,654	2,481	36%
38	6,932	3,555	1,955	400	440	2,795	4,137	1,655	2,482	36%
143	7,170	3,555	1,955	400	440	2,795	4,375	1,750	2,625	37%
106	7,176	3,555	1,955	400	440	2,795	4,381	1,752	2,628	37%
146	7,177	3,555	1,955	400	440	2,795	4,382	1,753	2,629	37%
85	7,183	3,555	1,955	400	440	2,795	4,388	1,755	2,633	37%
51	7,236	3,555	1,955	400	440	2,795	4,441	1,776	2,664	37%
37	7,271	3,555	1,955	400	440	2,795	4,476	1,790	2,685	37%
90	7,272	3,555	1,955	400	440	2,795	4,477	1,791	2,686	37%
59	7,332	3,555	1,955	400	440	2,795	4,537	1,815	2,722	37%

Lot Sizes, Hardscape/Landscape Area and Water Use Calculation

(all areas in square feet (sf), lots sorted smallest to largest)

Lot No.	Lot sf	House	Building Footprint	Garage	Drive-way	Footprint + Garage + D'way	Remainder	Hardscape	Landscape	% Irrigated Area
75	7,390	3,555	1,955	400	440	2,795	4,595	1,838	2,757	37%
86	7,414	3,555	1,955	400	440	2,795	4,619	1,848	2,771	37%
130	7,424	3,555	1,955	400	440	2,795	4,629	1,852	2,777	37%
96	7,502	4,331	2,382	600	640	3,622	3,880	1,552	2,328	31%
39	7,545	4,331	2,382	600	640	3,622	3,923	1,569	2,354	31%
147	7,551	4,331	2,382	600	640	3,622	3,929	1,572	2,357	31%
126	7,665	4,331	2,382	600	640	3,622	4,043	1,617	2,426	32%
23	7,758	4,331	2,382	600	640	3,622	4,136	1,654	2,482	32%
132	7,770	4,331	2,382	600	640	3,622	4,148	1,659	2,489	32%
5	7,824	4,331	2,382	600	640	3,622	4,202	1,681	2,521	32%
160	7,982	4,331	2,382	600	640	3,622	4,360	1,744	2,616	33%
20	8,016	4,331	2,382	600	640	3,622	4,394	1,758	2,636	33%
71	8,115	4,331	2,382	600	640	3,622	4,493	1,797	2,696	33%
4	8,125	4,331	2,382	600	640	3,622	4,503	1,801	2,702	33%
35	8,125	4,331	2,382	600	640	3,622	4,503	1,801	2,702	33%
127	8,281	4,331	2,382	600	640	3,622	4,659	1,864	2,795	34%
134	8,331	4,331	2,382	600	640	3,622	4,709	1,884	2,825	34%
137	8,333	4,331	2,382	600	640	3,622	4,711	1,884	2,827	34%
144	8,334	4,331	2,382	600	640	3,622	4,712	1,885	2,827	34%
74	8,372	4,331	2,382	600	640	3,622	4,750	1,900	2,850	34%
165	8,378	4,331	2,382	600	640	3,622	4,756	1,902	2,854	34%
131	8,385	4,331	2,382	600	640	3,622	4,763	1,905	2,858	34%
73	8,451	4,331	2,382	600	640	3,622	4,829	1,932	2,897	34%
136	8,465	4,331	2,382	600	640	3,622	4,843	1,937	2,906	34%
164	8,526	4,331	2,382	600	640	3,622	4,904	1,962	2,942	35%
19	8,684	4,331	2,382	600	640	3,622	5,062	2,025	3,037	35%
145	8,702	4,331	2,382	600	640	3,622	5,080	2,032	3,048	35%
159	8,995	4,331	2,382	600	640	3,622	5,373	2,149	3,224	36%
109	9,062	4,331	2,382	600	640	3,622	5,440	2,176	3,264	36%
133	9,191	4,331	2,382	600	640	3,622	5,569	2,228	3,341	36%
110	9,288	4,331	2,382	600	640	3,622	5,666	2,266	3,400	37%
163	9,342	4,331	2,382	600	640	3,622	5,720	2,288	3,432	37%
162	9,363	4,331	2,382	600	640	3,622	5,741	2,296	3,445	37%
154	9,632	4,331	2,382	600	640	3,622	6,010	2,404	3,606	37%
22	9,656	4,331	2,382	600	640	3,622	6,034	2,414	3,620	37%
153	9,949	4,331	2,382	600	640	3,622	6,327	2,531	3,796	38%
63	10,043	4,331	2,382	600	640	3,622	6,421	2,568	3,853	38%
108	10,323	4,331	2,382	600	640	3,622	6,701	2,680	4,021	39%
89	10,651	4,331	2,382	600	640	3,622	7,029	2,812	4,217	40%
161	10,655	4,331	2,382	600	640	3,622	7,033	2,813	4,220	40%
72	10,795	4,331	2,382	600	640	3,622	7,173	2,869	4,304	40%

Lot Sizes, Hardscape/Landscape Area and Water Use Calculation

(all areas in square feet (sf), lots sorted smallest to largest)

Lot No.	Lot sf	House	Building Footprint	Garage	Drive-way	Footprint + Garage + D'way	Remainder	Hardscape	Landscape	% Irrigated Area
166	12,544	4,331	2,382	600	640	3,622	8,922	3,569	5,353	43%
98	14,324	4,331	2,382	600	640	3,622	10,702	4,281	6,421	45%
Total	**1,076,807**								**347,834**	
Average	**6,487**								**2,095**	**32%**

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PSOMAS

Trabuco Highlands Lots

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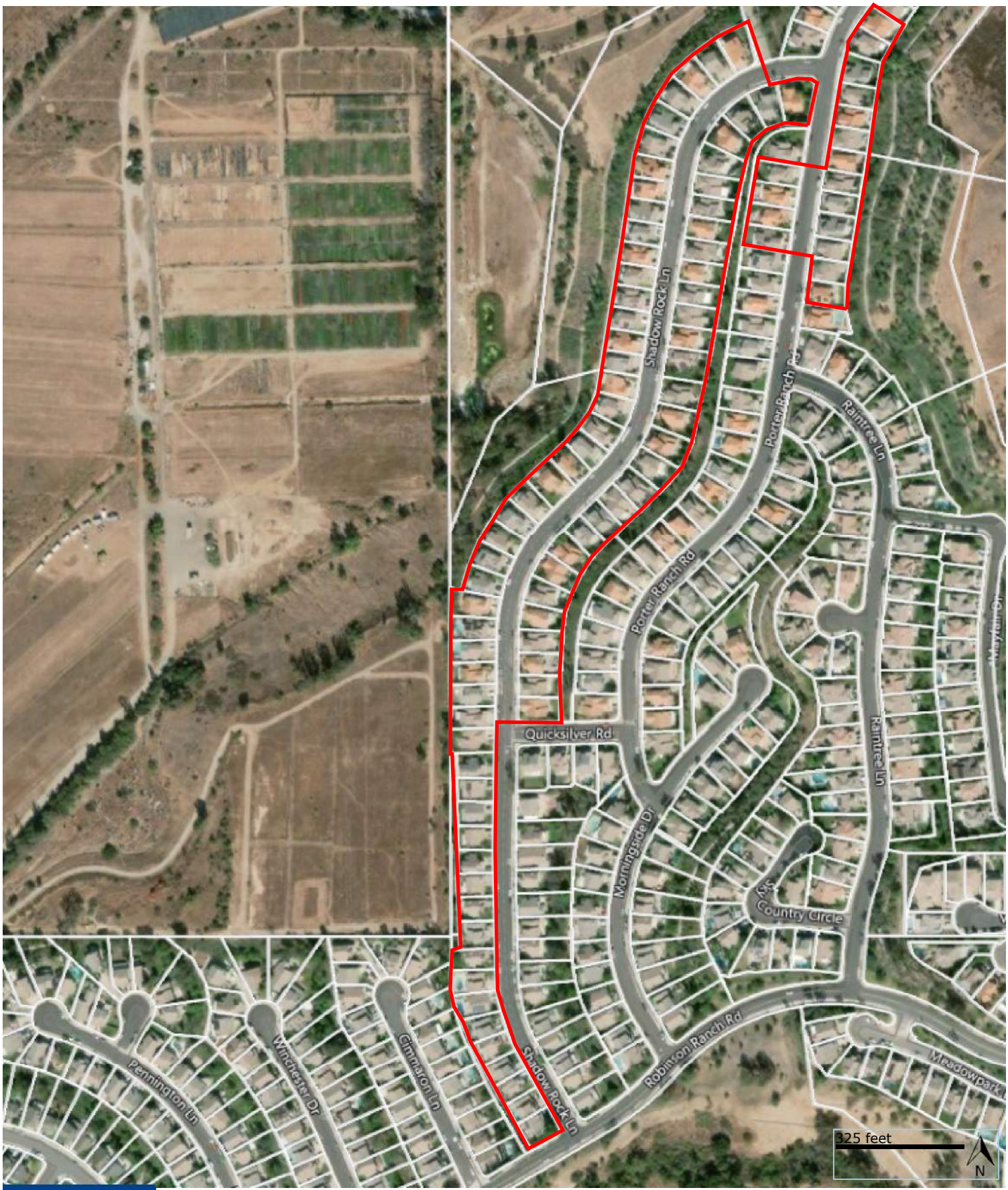
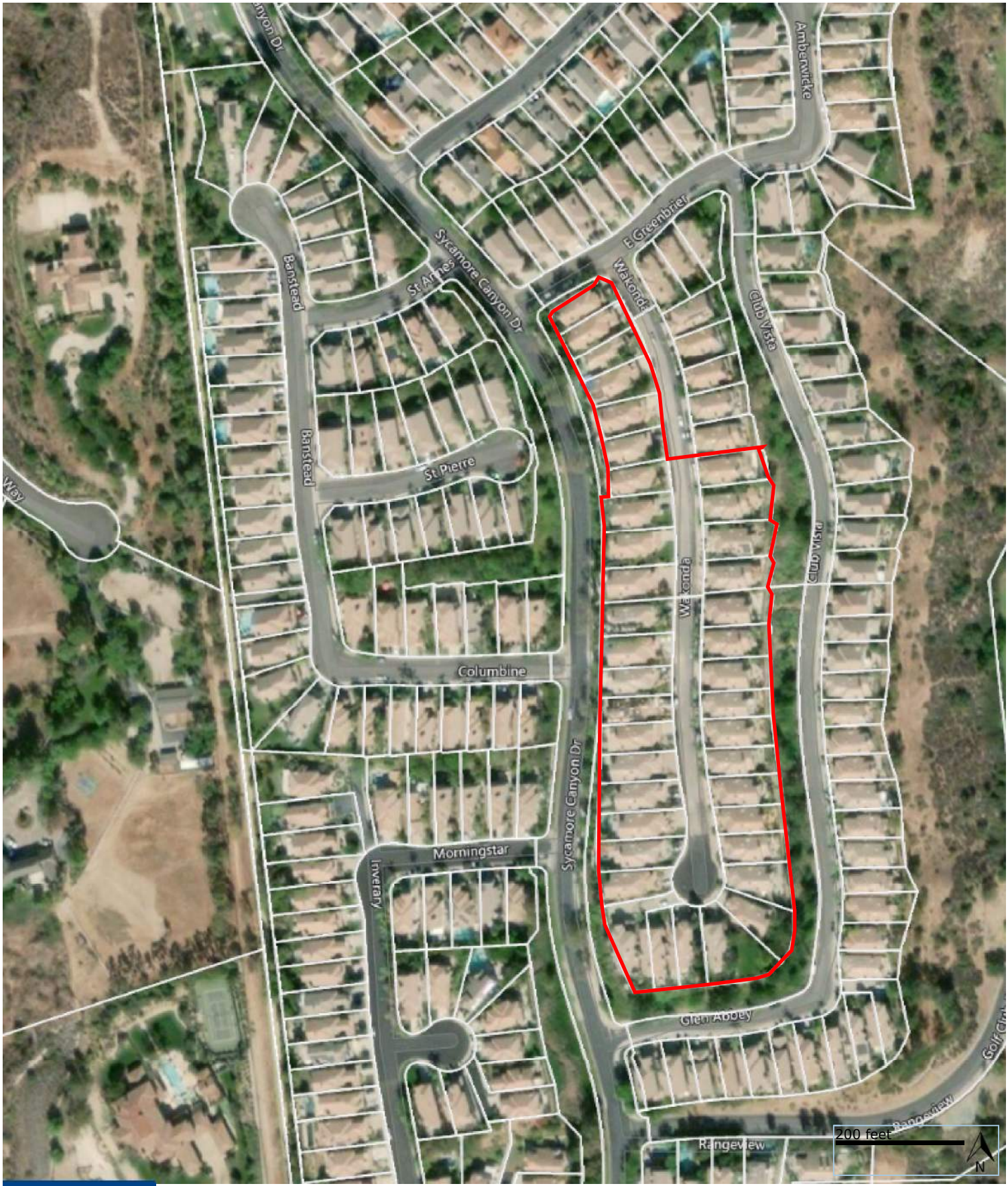


PSOMAS

Robinson Ranch Lots



PSOMAS

Dove Canyon Lots

Similar Lots in Trabuco Highlands, Robinson Ranch and Dove Canyon

Address	Lot Size (sf)	Address	Lot Size (sf)	Address	Lot Size (sf)	Address	Lot Size (sf)	Address	Lot Size (sf)
21381 Birdhollow Dr	7,800	32592 Coppercrest Dr	12,000	20881 Shadow Rock Ln	6,435	20802 Shadow Rock Ln	5,610	1 Wakonda	4,400
21391 Birdhollow Dr	6,864	32602 Coppercrest Dr	7,875	20871 Shadow Rock Ln	6,490	20792 Shadow Rock Ln	5,900	3 Wakonda	4,905
21401 Birdhollow Dr	9,179	32622 Coppercrest Dr	7,519	20861 Shadow Rock Ln	7,200	20782 Shadow Rock Ln	5,650	5 Wakonda	4,815
21411 Birdhollow Dr	6,760	32632 Coppercrest Dr	7,446	20851 Shadow Rock Ln	6,000	20776 Shadow Rock Ln	6,695	9 Wakonda	5,100
21415 Birdhollow Dr	6,552	32642 Coppercrest Dr	7,800	20841 Shadow Rock Ln	6,000	20772 Shadow Rock Ln	6,600	11 Wakonda	5,300
21421 Birdhollow Dr	6,386	32662 Coppercrest Dr	8,000	20831 Shadow Rock Ln	6,000	20762 Shadow Rock Ln	7,280	13 Wakonda	4,704
21423 Birdhollow Dr	6,120	32682 Coppercrest Dr	7,500	20825 Shadow Rock Ln	6,000	20752 Shadow Rock Ln	7,700	15 Wakonda	4,900
21425 Birdhollow Dr	6,300	32692 Coppercrest Dr	6,283	20821 Shadow Rock Ln	6,060	20742 Shadow Rock Ln	7,490	17 Wakonda	5,824
21431 Birdhollow Dr	9,750	32702 Coppercrest Dr	6,313	20811 Shadow Rock Ln	6,060	20732 Shadow Rock Ln	8,800	19 Wakonda	6,384
21433 Birdhollow Dr	9,100	32712 Coppercrest Dr	6,490	20801 Shadow Rock Ln	8,000	20722 Shadow Rock Ln	6,215	21 Wakonda	6,325
21435 Birdhollow Dr	8,400	32722 Coppercrest Dr	6,380	20791 Shadow Rock Ln	5,656	20712 Shadow Rock Ln	6,325	25 Wakonda	5,928
21392 Silvertree Ln	9,800	32732 Coppercrest Dr	6,490	20781 Shadow Rock Ln	6,060	20702 Shadow Rock Ln	6,490	27 Wakonda	5,650
21402 Silvertree Ln	7,952	32742 Coppercrest Dr	5,940	20771 Shadow Rock Ln	6,060	20692 Shadow Rock Ln	6,435	29 Wakonda	4,972
21412 Silvertree Ln	8,008	32752 Coppercrest Dr	5,992	20761 Shadow Rock Ln	6,565	20672 Shadow Rock Ln	6,545	31 Wakonda	5,085
21422 Silvertree Ln	8,176	32756 Coppercrest Dr	6,160	20751 Shadow Rock Ln	6,060	20662 Shadow Rock Ln	6,720	33 Wakonda	5,175
21432 Silvertree Ln	8,880	32762 Coppercrest Dr	6,900	20741 Shadow Rock Ln	5,555	20652 Shadow Rock Ln	6,710	35 Wakonda	5,490
21452 Silvertree Ln	7,952	32766 Coppercrest Dr	7,150	20731 Shadow Rock Ln	5,606	20642 Shadow Rock Ln	6,820	37 Wakonda	5,850
21456 Silvertree Ln	7,840	32772 Coppercrest Dr	10,500	20721 Shadow Rock Ln	5,606	20632 Shadow Rock Ln	7,930	39 Wakonda	6,210
21462 Silvertree Ln	8,151	32780 Coppercrest Dr	8,050	20711 Shadow Rock Ln	5,555	20622 Shadow Rock Ln	7,700	41 Wakonda	5,850
21472 Silvertree Ln	8,140	21091 Shadow Rock Ln	5,225	20701 Shadow Rock Ln	5,555	20612 Shadow Rock Ln	7,280	43 Wakonda	6,100
21476 Silvertree Ln	9,750	21085 Shadow Rock Ln	5,225	20681 Shadow Rock Ln	5,555	20606 Shadow Rock Ln	7,140	45 Wakonda	6,250
21401 Silvertree Ln	11,000	21081 Shadow Rock Ln	5,225	20671 Shadow Rock Ln	5,555	20602 Shadow Rock Ln	8,000	47 Wakonda	4,880
21411 Silvertree Ln	6,890	21071 Shadow Rock Ln	5,225	20661 Shadow Rock Ln	5,555	20702 Porter Ranch Rd	6,300	49 Wakonda	5,490
21421 Silvertree Ln	5,871	21061 Shadow Rock Ln	5,225	20651 Shadow Rock Ln	5,555	20692 Porter Ranch Rd	5,610	46 Wakonda	10,400
21431 Silvertree Ln	6,300	21051 Shadow Rock Ln	5,225	20641 Shadow Rock Ln	5,555	20682 Porter Ranch Rd	5,582	44 Wakonda	7,800
21441 Silvertree Ln	5,936	21041 Shadow Rock Ln	5,775	20635 Shadow Rock Ln	6,565	20662 Porter Ranch Rd	6,181	42 Wakonda	6,300
21451 Silvertree Ln	6,180	21031 Shadow Rock Ln	6,270	20631 Shadow Rock Ln	6,630	20656 Porter Ranch Rd	5,582	40Wakonda	4,725
21455 Silvertree Ln	5,555	21021 Shadow Rock Ln	5,712	20625 Shadow Rock Ln	6,630	20652 Porter Ranch Rd	5,582	38 Wakonda	4,950
21461 Silvertree Ln	5,880	21001 Shadow Rock Ln	6,650	20621 Shadow Rock Ln	6,695	20642 Porter Ranch Rd	5,577	36 Wakonda	5,040
21471 Silvertree Ln	6,600	20991 Shadow Rock Ln	5,795	20615 Shadow Rock Ln	6,760	20632 Porter Ranch Rd	5,577	34 Wakonda	5,085
21475 Silvertree Ln	6,600	20981 Shadow Rock Ln	5,890	20611 Shadow Rock Ln	7,000	20622 Porter Ranch Rd	5,577	32 Wakonda	4,995
21481 Silvertree Ln	7,150	20971 Shadow Rock Ln	5,700	20892 Shadow Rock Ln	6,825	20612 Porter Ranch Rd	5,582	30 Wakonda	4,950
21483 Silvertree Ln	6,825	20961 Shadow Rock Ln	5,700	20882 Shadow Rock Ln	5,995	20592 Porter Ranch Rd	7,000	28 Wakonda	5,500
21485 Silvertree Ln	6,050	20951 Shadow Rock Ln	5,700	20872 Shadow Rock Ln	5,995	20572 Porter Ranch Rd	6,630	26 Wakonda	5,250
21491 Silvertree Ln	6,325	20941 Shadow Rock Ln	5,700	20862 Shadow Rock Ln	6,105	20562 Porter Ranch Rd	5,665	24 Wakonda	5,200
21493 Silvertree Ln	5,940	20931 Shadow Rock Ln	5,700	20842 Shadow Rock Ln	7,150	20651 Porter Ranch Rd	6,600	22 Wakonda	5,565
21495 Silvertree Ln	6,325	20911 Shadow Rock Ln	6,840	20832 Shadow Rock Ln	7,280	20661 Porter Ranch Rd	6,600	20 Wakonda	5,940
21501 Silvertree Ln	6,600	20901 Shadow Rock Ln	6,325	20822 Shadow Rock Ln	7,215	20671 Porter Ranch Rd	6,545	18 Wakonda	5,886
21505 Silvertree Ln	8,000	20891 Shadow Rock Ln	6,380	20812 Shadow Rock Ln	6,825	20681 Porter Ranch Rd	6,545	16 Wakonda	5,040
Averages	7,382		6,571		6,256		6,533		5,595

Average Size (195 Lots) 6,467 sf

APPENDIX C

Storage Analysis Support Data

Production Aug 2018 (gallons)			
Day	**Dimension**	**SMWD (avg)**	**Total**
1	2,623,000	571,845	3,194,845
2	2,967,000	571,845	3,538,845
3	3,069,000	571,845	3,640,845
4	3,081,000	571,845	3,652,845
5	2,107,000	571,845	2,678,845
6	2,221,000	571,845	2,792,845
7	3,077,000	571,845	3,648,845
8	2,721,000	571,845	3,292,845
9	2,522,000	571,845	3,093,845
10	2,628,000	571,845	3,199,845
11	2,673,000	571,845	3,244,845
12	3,241,000	571,845	**3,812,845**
13	2,720,000	571,845	3,291,845
14	663,000	571,845	1,234,845
15	-	571,845	571,845
16	-	571,845	571,845
17	-	571,845	571,845
18	1,939,000	571,845	2,510,845
19	2,840,000	571,845	3,411,845
20	2,943,000	571,845	3,514,845
21	718,000	571,845	1,289,845
22	-	571,845	571,845
23	-	571,845	571,845
24	-	571,845	571,845
25	-	571,845	571,845
26	-	571,845	571,845
27	-	571,845	571,845
28	2,564,000	571,845	3,135,845
29	2,901,000	571,845	3,472,845
30	3,018,000	571,845	3,589,845
31	2,965,000	571,845	3,536,845
Average	1,812,935	571,845	2,384,781

APPENDIX D

Model Output and Node Diagram

Off-site storage option only presented here

0 0.025 0.05 0.1

Miles

SADDLEBACK MEADOW WATER MODEL

TRACT NO 15230
MODEL JUNCTION MAP

AUGUST 2021 | FIGURE 1

JUCTION REPORT AT PEAK HOUR (HOUR=6)

ID	Demand (gpm)	Elevation (ft)	Head (ft)	Pressure (psi)
1250	0.0	1,065.0	1,504.0	190.2
J100	24.8	1,105.2	1,339.8	101.7
J102	0.0	1,177.4	1,339.8	70.4
J104	3.1	1,174.4	1,429.5	110.5
J106	18.3	1,198.5	1,429.5	100.1
J108	29.1	1,086.5	1,339.8	109.8
J112	13.6	1,201.0	1,339.8	60.2
J114	4.9	1,218.7	1,429.5	91.3
J116	6.2	1,215.8	1,429.5	92.6
J118	5.0	1,244.2	1,429.4	80.3
J120	26.0	1,245.4	1,429.4	79.7
J122	5.6	1,247.6	1,429.4	78.8
J124	14.0	1,286.4	1,429.4	62.0
J126	0.0	1,280.7	1,429.5	64.5
J128	39.7	1,238.5	1,429.5	82.7
J130	6.8	1,276.4	1,429.5	66.3
J132	20.4	1,302.7	1,429.4	54.9
J134	28.3	1,314.4	1,429.4	49.9
J180	0.0	1,141.5	1,339.8	85.9
J182	0.0	1,105.0	1,429.6	140.6
J190	0.0	1,181.4	1,339.8	68.7
J192	0.0	1,174.3	1,339.8	71.7
J196	0.0	1,146.7	1,339.8	83.7
J200	0.0	1,193.7	1,339.8	63.3
J202	17.4	1,105.2	1,339.8	101.7
J204	0.0	1,105.2	1,339.8	101.7
J206	0.0	1,097.8	1,339.8	104.9
J208	0.0	1,105.2	1,339.9	101.7
J210	0.0	1,238.4	1,429.5	82.8
J212	0.0	1,246.1	1,429.4	79.4
J214	0.0	1,221.6	1,429.5	90.1
J216	0.0	1,193.0	1,429.5	102.5
J218	0.0	1,168.7	1,429.5	113.0
J220	0.0	1,231.2	1,429.5	85.9
J222	0.0	1,261.6	1,429.5	72.7
J224	0.0	1,312.7	1,429.4	50.6
J94	34.1	1,078.6	1,503.9	184.3
J96	49.3	1,121.2	1,429.6	133.6
J98	4.3	1,173.5	1,339.8	72.1

PIPE REPORT AT PEAK HOUR (HOUR=6)

ID	From Node	To Node	Length (ft)	Diameter (in)	Flow (gpm)	Velocity (ft/s)
70	1460	1250	1,510.7	12	350.8	1.0
P121	1250	J94	262.6	12	350.8	1.0
P123	J182	J96	173.0	12	267.5	0.8
P125	J100	J204	167.7	8	-31.9	0.2
P127	J100	J196	389.7	8	-22.0	0.1
P129	J102	J192	121.5	8	26.3	0.2
P131	J98	J180	321.5	8	0.0	0.0
P133	J96	J218	484.7	12	218.2	0.6
P135	J104	V8018	15.8	8	40.0	0.3
P137	J106	J216	56.4	12	-175.2	0.5
P139	J108	J206	94.2	8	-29.1	0.2
P143	J112	J200	81.1	8	-13.6	0.1
P145	J106	J116	232.8	8	41.0	0.3
P147	J116	J114	155.4	8	4.9	0.0
P149	J116	J214	114.4	8	29.9	0.2
P151	J118	J120	145.2	8	26.0	0.2
P153	J118	J212	177.0	8	-1.0	0.0
P155	J128	J126	554.7	8	20.6	0.1
P157	J126	J124	120.0	8	20.6	0.1
P159	J132	J130	623.2	8	-20.4	0.1
P161	J106	J220	298.2	12	115.9	0.3
P163	J128	J222	244.2	12	55.5	0.2
P165	J130	J224	465.0	8	28.3	0.2
P171	V8018	J102	387.2	8	40.0	0.3
P179	J94	V8020	21.4	12	267.5	0.8
P181	J190	J102	74.0	8	-13.6	0.1
P183	J192	J98	29.4	8	26.3	0.2
P185	J196	J98	252.3	8	-22.0	0.1
P187	J200	J190	228.7	8	-13.6	0.1
P189	J202	J208	311.3	8	-49.3	0.3
P191	J204	J202	323.5	8	-31.9	0.2
P193	J206	J100	61.6	8	-29.1	0.2
P195	J94	V8016	19.1	8	49.3	0.3
P197	J210	J118	115.3	8	29.9	0.2
P199	J212	J122	136.5	8	-1.0	0.0
P201	J214	J210	332.7	8	29.9	0.2
P203	J216	J104	189.1	12	-175.2	0.5
P205	J218	J104	57.9	12	218.2	0.6
P207	J220	J128	66.2	12	115.9	0.3
P209	J222	J130	156.7	12	55.5	0.2
P211	J224	J134	22.4	8	28.3	0.2
P215	J122	J124	295.7	8	-6.6	0.0
P227	V8016	J208	362.4	8	49.3	0.3
P229	V8020	J182	261.5	12	267.5	0.8

VALVE REPORT AT PEAK HOUR (HOUR=6)

ID	Elevation (ft)	Upstream Pressure (psi)	Downstream Pressure (psi)	Flow (gpm)	Velocity (ft/s)	Headloss (ft)
V8016	1078.6	184.3	113.2	49.3	0.3	164.0
V8018	1174.0	110.7	71.9	40.0	0.3	89.7
V8020	1078.6	184.3	152.1	267.5	1.7	74.2

FIRE FLOW REPORT (HOUR=6)

ID	Static Demand (gpm)	Static Pressure (psi)	Static Head (ft)	Fire-Flow Demand (gpm)	Residual Pressure (psi)	Available Hydrant Flow at 20 psi (gpm)
J100	24.8	101.7	1,340	1,125	98.1	6,041
J102	0.0	70.4	1,340	1,125	68.2	5,709
J104	3.1	110.5	1,430	1,125	108.7	6,517
J106	18.3	100.1	1,429	1,125	97.8	5,975
J108	29.1	109.8	1,340	1,125	104.6	5,482
J112	13.6	60.2	1,340	1,125	54.1	3,191
J114	4.9	91.3	1,429	1,125	86.1	4,427
J116	6.2	92.6	1,429	1,125	88.9	5,020
J118	5.0	80.3	1,429	1,125	75.0	4,184
J120	26.0	79.7	1,429	1,125	73.0	3,822
J122	5.6	78.8	1,429	1,125	73.4	4,107
J124	14.0	62.0	1,429	1,125	56.9	3,722
J126	0.0	64.5	1,429	1,125	59.6	3,834
J128	39.7	82.7	1,429	1,125	80.0	5,233
J130	6.8	66.3	1,429	1,125	63.0	4,415
J132	20.4	54.9	1,429	1,125	45.3	2,332
J134	28.3	49.9	1,429	1,125	41.5	2,338
J180	0.0	85.9	1,340	1,125	80.1	4,234
J182	0.0	140.6	1,430	1,125	140.1	8,414
J190	0.0	68.7	1,340	1,125	65.7	5,221
J192	0.0	71.7	1,340	1,125	69.2	5,560
J196	0.0	83.7	1,340	1,125	80.5	5,649
J200	0.0	63.3	1,340	1,125	58.1	3,589
J202	17.4	101.7	1,340	1,125	98.7	6,332
J204	0.0	101.7	1,340	1,125	98.2	6,066
J206	0.0	104.9	1,340	1,125	100.7	5,800
J208	0.0	101.7	1,340	1,125	99.6	6,863
J210	0.0	82.8	1,429	1,125	77.7	4,291
J212	0.0	79.4	1,429	1,125	74.1	4,121
J214	0.0	90.1	1,429	1,125	85.9	4,761
J216	0.0	102.5	1,429	1,125	100.3	6,081
J218	0.0	113.0	1,430	1,125	111.3	6,651
J220	0.0	85.9	1,429	1,125	83.2	5,325
J222	0.0	72.7	1,429	1,125	69.6	4,706
J224	0.0	50.6	1,429	1,125	42.5	2,381
J94	34.1	184.3	1,504	1,125	178.3	9,366
J96	49.3	133.6	1,430	1,125	132.8	7,960
J98	4.3	72.1	1,340	1,125	69.4	5,536

TRABUCO CANYON WATER DISTRICT
ENGINEERING/OPERATIONAL COMMITTEE MEETING | JANUARY 5, 2022

ENGINEERING MATTERS

ITEM 4: DISCUSSION AND POSSIBLE ACTION(S) CONCERNING THE 2021 SYSTEMWIDE MASTERPLAN AND CONDITION ASSESSMENT ENGINEERING MATTERS

In 1999, Trabuco Canyon Water District (District) approved the Water, Wastewater and Recycled Water Master Plan (Master Plan) developed by Montgomery Watson. Since that time, the District has evolved into a fully developed, and nearly a "built out" community. Several of the Capital Improvement Projects (CIP) and recommended actions identified in the 1999 Master Plan have been implemented. The District recognizes the need to update the 1999 Master Plan and develop the tools needed to assist in planning, operating, and maintaining District aging water, non-domestic water systems and sewer infrastructure. As the District's infrastructure ages, it is crucial to identify the needed system improvements with particular attention to the condition and operation of existing reservoirs, pump stations, lift stations, and treatment facilities and allowing sufficient time to plan, finance, and construct the improvements.

At the October 21, 2021 Regular Board Meeting, the Board of Directors authorized the General Manager to execute a contract with Hazen Sawyer (Hazen) for the District's 2021 Systemwide Master Plan and Condition Assessment, for 566,520, with a contingency of $25,000, for a not to exceed amount of $591,520.

Hazen will be discussing the project overview, approach and schedule (Exhibit 1) at the January Engineering/Operations Meeting.

FUNDING SOURCE:
General Fund

FISCAL IMPACT (PROJECT BUDGET):
$591,520

ENVIRONMENTAL COMPLIANCE:
Not Applicable

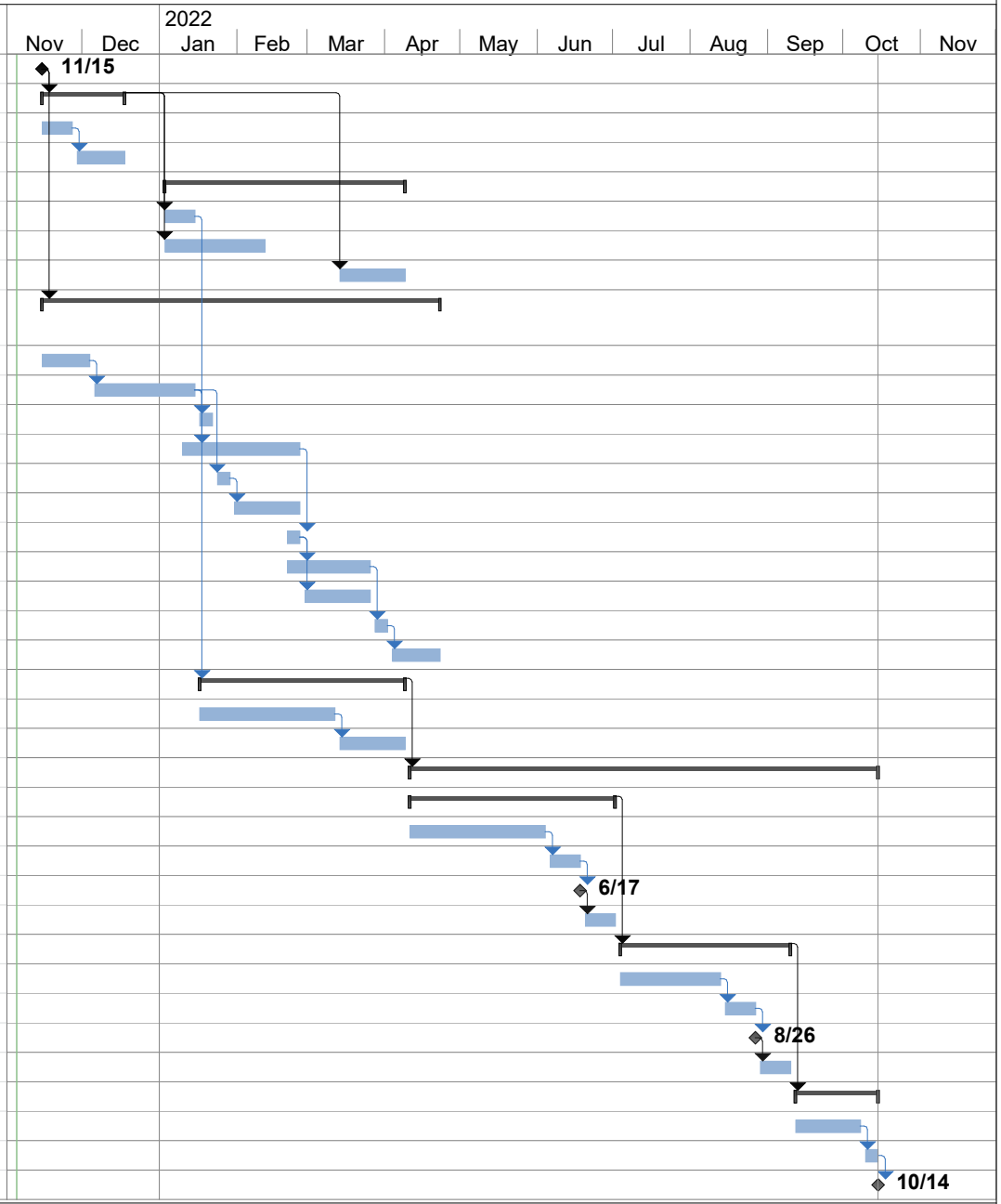
RECOMMENDED ACTION:
Committee to receive project status updates at time of the Committee Meeting.

EXHIBIT(S):
1. Project Schedule

CONTACTS (staff responsible): PEREA/LAUSTEN

Trabuco Canyon Water District
Master Plan and Condition Assessment Study
Project Schedule

ID	Task Name	Duration	Start	Finish
1	**NOTICE TO PROCEED**	**0 days**	**11/15/21**	**11/15/21**
2	**DATA COLLECTION AND REVIEW**	**5 wks**	**11/15/21**	**12/17/21**
3	Data Collection	2 wks	11/15/21	11/26/21
4	Data Review	3 wks	11/29/21	12/17/21
5	**FIELD WORK**	**14 wks**	**1/3/22**	**4/8/22**
6	Hydrant Tests	2 wks	1/3/22	1/14/22
7	Survey Dips	6 wks	1/3/22	2/11/22
8	Flow Monitoring	4 wks	3/14/22	4/8/22
9	**Asset Management / Condition Assessment**	**23 wks**	**11/15/21**	**4/22/22**
10	Data Collection/Review	3 wks	11/15/21	12/3/21
11	Preliminary Asset Inventory	6 wks	12/6/21	1/14/22
12	Data Gap Closure Workshop	1 wk	1/17/22	1/21/22
13	Desktop Condition Assessment	7 wks	1/10/22	2/25/22
14	Field Condition Assessment	1 wk	1/24/22	1/28/22
15	Preliminary Asset Register Updates	4 wks	1/31/22	2/25/22
16	Condition Assessment Workshop	1 wk	2/21/22	2/25/22
17	Condition Assessment Results Delive	5 wks	2/21/22	3/25/22
18	Cost Estimates	4 wks	2/28/22	3/25/22
19	BCE Workshop	1 wk	3/28/22	4/1/22
20	CIP Project Development	3 wks	4/4/22	4/22/22
21	**HYDRAULIC MODELS**	**12 wks**	**1/17/22**	**4/8/22**
22	Build/Update Models	8 wks	1/17/22	3/11/22
23	Model Calibration	4 wks	3/14/22	4/8/22
24	**MASTER PLAN UPDATE REPORT**	**27 wks**	**4/11/22**	**10/14/22**
25	**Draft #1 Final Report**	**12 wks**	**4/11/22**	**7/1/22**
26	Analysis/Report Preparation	8 wks	4/11/22	6/3/22
27	QC Report	2 wks	6/6/22	6/17/22
28	Deliverable to TCWD	0 days	6/17/22	6/17/22
29	TCWD Review	2 wks	6/20/22	7/1/22
30	**Draft #2 Final Report**	**10 wks**	**7/4/22**	**9/9/22**
31	Analysis/Report Preparation	6 wks	7/4/22	8/12/22
32	QC Report	2 wks	8/15/22	8/26/22
33	Deliverable to TCWD	0 days	8/26/22	8/26/22
34	TCWD Review	2 wks	8/29/22	9/9/22
35	**Final Report**	**5 wks**	**9/12/22**	**10/14/22**
36	Report Preparation	4 wks	9/12/22	10/7/22
37	QC Report	1 wk	10/10/22	10/14/22
38	Deliverable to TCWD	0 days	10/14/22	10/14/22



11/5/21

TRABUCO CANYON WATER DISTRICT
ENGINEERING/OPERATIONAL COMMITTEE MEETING | JANUARY 5, 2022

ENGINEERING MATTERS

ITEM 5: DISCUSSION AND APPROVAL OF PRESSURE VESSEL INSPECTION & RERATING FOR EMERGENCY USE

Trabuco Canyon Water District (District) owns and operates eight sewer lift stations in its service area to collect and pump wastewater to treatment facilities. A key component at these stations is the use of an onsite surge tank to provide additional protection to system force mains and to accommodate for pressure variations at pump stations and within the system. During calendar year 2021, the District has experienced significant challenges and issues with surge tanks at both El Toro Sewer Lift Station and Golf Club Sewer Lift Station which resulted in station bypassing for extended periods and delayed mechanical repairs impacted by current supply chain issues.

As a result of the completion of the Bell Canyon Sewer Lift Station Rehabilitation project, that station's existing onsite surge tank was replaced with a new pressure vessel, and as such, the District is in possession of the older surge tank that was removed. It is the opinion of District staff that this surge tank has the potential to be used as an emergency backup pressure vessel that can meet the needs of many of the District's sewer lift stations. District staff recommends the inspection, testing, and if feasible, the re-rating of this equipment in order to serve as an emergency, multi-facility surge tank. District staff has procured a proposal from Evans Industrial, Inc., a pressure vessel service vendor, for this work with each service separated for Committee consideration:

Line Item	Description	Evans Industrial, Inc.
1	Inspection	$ 9,000
2	Engineering	$ 19,200
3	Re-Rating R2 Process	$ 7,550
		$ 35,750

District staff recommends the Board of Directors authorize the General Manager to contract with Evans Industrial, Inc. for this project.

FUNDING SOURCE:
General Fund

FISCAL IMPACT (PROJECT BUDGET):
$35,750

ENVIRONMENTAL COMPLIANCE:
Not Applicable

RECOMMENDED ACTION:
Recommend the Board of Directors approve a proposal for Pressure Vessel Rerating from Evans Industrial, Inc. in the amount of $35,750 (Action Calendar).

EXHIBIT(S):
1. Evans Industrial, Inc. Proposal to Rerate Pressure Vessel

CONTACTS (staff responsible): PALUDI/PEREA/LAUSTEN

Evans Industrial, Inc.
Productivity through Safety
22815 Frampton Ave.
Torrance, CA 90501
TELEPHONE: (888) 311-1341
FACSIMILE: (310) 317-7773
www.evans-industrial.com

December 28, 2021

Trabuco Canyon Water District
32003 Dove Canyon Drive, Trabuco Canyon, CA 92679

Proposal# EI21D044, Rev. 1
Attn: Lorrie Lausten,

In accordance with your request, we are pleased to submit the following Lump Sum proposal.
We propose to furnish labor and equipment, including taxes, insurance, expense items and necessary supervision to perform to the following scope of work; Rerate Pressure Vessel from 150 PSI to 167 PSI, Temperature to remain the same.

Our proposal is based upon on the following parameters:

- Scope of Work
  - Review Drawings, U-1 Form, Inspection History Data and any R-1 Forms.
  - Inspect Vessel with a California State Certified Inspection Company.
    - Non-Destructive Inspection from the exterior.
  - Review Inspection Data.
  - Calculate Vessel in current condition for the new pressure, 167 psi.
  - Prepare Rerate documentation and submit to the State of California for approval.
  - Upon approval from the State of California.
    - Prepare R-2 Form.
    - Review with the State of California.
    - Install new name plate on vessel.
  - Estimated time to complete the rerate is 3 months.
    - The timing and costs are contingent on the drawings, U-1 Form and any inspection data being readily available.

Our Pricing for the above ***scope of work:***

Each Line Item will be invoiced separately, If the engineering determines the vessel is unable to be Rerated, Line Item 3 will not be executed nor invoiced.

Line-Item 1	Inspection	$9,000.00
Line-Item 2	Engineering	$19,200.00
Line-Item 3	R2 Process	$7,550.00
	Total	$35,750.00

Terms & Pricing:

This proposal is valid for 30 days; Terms of payments are net 30 upon received of EII invoicing.
We appreciate the opportunity to work with you on this project. If there are any questions regarding this information or if we can be of further service, please directly call the undersigned below.

Evans Industrial Inc.
Best regards,
Herschel Evans
(310) 850-6020

TRABUCO CANYON WATER DISTRICT
ENGINEERING/OPERATIONAL COMMITTEE MEETING | JANUARY 5, 2022

ENGINEERING MATTERS
ITEM 6: OTHER ENGINEERING AND OPERATIONS PROJECT UPDATES

1. Golf Club SLS Improvements
2. Saddle Crest Development
3. Other Projects

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

EXHIBIT(S):
None

CONTACTS (staff responsible): PALUDI/PEREA/LAUSTEN

TRABUCO CANYON WATER DISTRICT
ENGINEERING/OPERATIONAL COMMITTEE MEETING | JANUARY 5, 2022

OPERATIONAL MATTERS
ITEM 7: WATER SYSTEM UPDATES

The following is a brief report of the water system for **December 2021**.

Projects and Repairs

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

1. Completed Dead End Flushing Program.
2. Painted all exposed piping at the Wells Facility and exterior of the Falcon Pump Station, located in the Canyon Community.
3. Worked with Tesco Controls and Cox Communications to correct the ongoing telemetry issues.
4. Conducted the quarterly Disinfection By-products sampling throughout the distribution system.

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

Monthly Water System Operations Summary

CONTACTS (staff responsible): PALUDI/KESSLER

TRABUCO CANYON WATER DISTRICT
MONTHLY WATER SYSTEM OPERATIONS SUMMARY

2021													
DIMENSION WTP													
	JAN	**FEB**	**MARCH**	**APRIL**	**MAY**	**JUNE**	**JULY**	**AUG**	**SEP**	**OCT**	**NOV**	**DEC**	***TOTAL***
SAC METER AC/FT	160	125	75	176	214	136	0	0	122				
BACKWASH AC/FT	4	4	2.0	6	5	3	0	0	3	5	6		
FLUSHWATER AC/FT	7	6	3.0	9	9	4	0	0	5	9	8		
WTP EFFLUENT AC/FT	175	124	83	176	213	132	0	0	131	228	195		
Wells													
TRABUCO CREEK GWTF	0	0	0	0	0	0	0	0	0	0	0		
US WELL AC/FT	0	0	0	0	0	0	0	0	0	0	0		
0													
SMWD AC/FT	0.12	2	8	0	0	51	122	146	55	0	0		
IRWD AC/FT	0	12.4	53.4	10	0	51	137	131	59	0	0		
TOTAL SUPPLY													
AC/FT	175	138	145	186	213	234	259	277	245	228	195		
CFS DAILY AVERAGE	2.8	2.5	2.3	3.1	3.4	3.9	4.2	4.6	4.1	3.7	3.2		
AC/FT PER DAY	5.6	5.0	4.6	6.2	6.9	7.8	8.4	9.2	8.1	7.4	6.5		
OPERATIONS in GAL.													
WTP DOMESTIC	32,239	27,377	29,845	35,380	41,215	23,936	0	374	27,277	49,817	93,126		
WWTP DOM	17,354	18,176	8,751	7,629	10,322	7,232	7,884	10,913	5,385	3,283	890		
OPERATIONS (AF)													
SUPPLEMENT TO RW	0	0	0	0	0	0	0	0	6	21	0		
0													
FLUSHING (gal.)	0	0	0	0	0	0	0	30,000	25,000	0	0		
SEWER CLEANING (gal.)	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000		
LINE BREAKS (gal.)	100,000	24,000	200,000	50,000	0	0	0	75,000	100,000	100,000	0		
SYSTEM DEMAND **													
CFS DAILY AVERAGE	2.8	2.5	2.3	3.0	3.4	3.9	4.1	4.6	4.1	3.7	3.2		
AC/FT PER DAY	5.6	5.0	4.6	6.2	6.9	7.8	8.4	9.2	8.1	7.3	6.5		
RESERVOIR STORAGE													
MONTHLY AVG (MG)	9.0	8.8	8.4	8.1	8.0	8.6	8.7	8.9	8.8	8.6	8.8		
DAYS OF STORAGE	4	3	3	3	3	3	3	4	4	3	4		
ZONES (AF)													
RIDGELINE PS	127	107	73	127	199	124	0	0	131	212	187		
EL TORO P.S.	18	20	53	10	0	51	137	131	59	0	0		
TOPANGA	2	2	2	3	4	4	4	4	3	3	2		
FALCON	0.3	0.2	2.4	0.7	0.7	0.7	1.2	1.1	1.1	0.6	0.8		
ROSE PRV/ OAKS	1	1	1	Inop.	Inop.	Inop.	1	5	4	3	3		
CANYON CREEK	0.1	0.2	0.2	0.3	0.4	0.3	0.5	0.4	0.5	0.4	0.8		
ROSE P.S.	0.3	0.3	0.2	0.2	0.2	0.2	0.3	0.5	0.3	0.3	0.4		
ROBINSON RANCH	31	31	34	53	63	72	68	60	75	71	59		
DOVE CANYON	61	54	62	75	84	86	95	96	83	84	69		
PORTOLA HILLS	11	10	10	11	12	13	15	14	15	13	11		
* Usage estimated new meter installed					** Excludes Operational use, losses, and supplement to Recycled Water Reservoir (RW)								

TRABUCO CANYON WATER DISTRICT
ENGINEERING/OPERATIONAL COMMITTEE MEETING | JANUARY 5, 2022

OPERATIONAL MATTERS
ITEM 8: WASTEWATER SYSTEM UPDATES

The following is a brief report of the wastewater system for **December 2021.**

Projects and Repairs

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

1. Worked Hydrotech Electric on identifying and repairing the phone lines for SCADA at the Robinson Ranch Wastewater Treatment Plant (WWTP).
2. Worked with the Maintenance Department and Ferreira Construction Golf Club Lift Station Rehabilitation which included repairs of the onsite surge tank, sewer force main, and station bypass structure installation.
3. Performed weed abatement on the emergency spillway at the WWTP reclaimed water reservoir
4. Repaired and re-routed the reclaimed water service connection and meter to the WWTP.
5. Performed deep cleaning of the WWTP Belt Filter Press valves and solenoids.

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*	210,495
Total Sewer Line Cleaned (Ft) – Month	**7,362**
Total Sewer Line Cleaned (Ft) – Cleaning Cycle	96,133
Cleaning Cycle Period (Mos.) [Start date: 8/9/21]	4
Total Sewer Line Cleaned, %	**45%**
The Oaks at Trabuco – Pumping Frequency for the Month	15
O'Neill Park Sewer System Status	Ok
O'Neill Park Sewer System Repairs	None
SSMP Quarterly Report – *Next Quarterly Report*	1Q 2022
SSMP Program Audit – *Next Audit Report***	February 2022

**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
2. SSMP Quarterly Report – 4th Quarter

CONTACTS (staff responsible): PALUDI/PEREA/ULLOA

TRABUCO CANYON WATER DISTRICT | NON-DOMESTIC WATER SYSTEM SUMMARY - 2021

RECYCLED WATER SUPPLY	MAX	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	TOTAL	FIVE YEAR AVG
WWTP Reclaimed Water Production, AF	78.3	50.6	43.9	52.8	42.8	46.2	44.1	47.0	47.0	45.0	46.0	45.8		511.3	550.04
Reclaimed Reservoir Level, FT	1274.5	1,266.0	1,268.5	1,270.8	1,268.9	1,268.2	1,264.0	1,255.2	1,257.5	1,248.0	1,257.5	1,257.5		-	-
Reclaimed Reservoir Free Board, FT	25.5	8.5	6.0	3.7	5.6	6.3	10.5	19.3	17.0	26.5	17.0	17.0		-	-
Reclaimed Reservoir Storage, AF	145.5	96.4	112.5	125.2	115.4	110.4	87.5	51.6	59.5	30.4	59.5	59.5		-	-
Supplemental Domestic Water Added, AF	N/A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.8	22.3	0.0		26.1	72.88

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	0.2	0.2	0.2	0.3	0.3	0.3	0.1	0.1	0.0	0.1	0.2		2.1	25%
Dove Canyon Golf Course	106.7	6.6	7.1	10.6	25.6	37.2	42.2	55.2	46.4	37.2	20.3	21.2		309.5	290%
Dove Canyon Master Association	279.3	5.5	5.7	7.1	16.1	22.3	30.4	31.1	30.6	26.2	10.7	13.8		199.5	71%
Robinson Ranch	80.2	0.9	1.3	1.3	2.4	4.1	4.9	4.7	4.1	3.8	1.7	2.1		31.3	39%
Trabuco Highlands	159.7	3.7	3.0	2.1	6.6	8.8	10.0	11.8	9.7	21.0	3.5	7.0		87.2	55%
City of RSM	0.1	0.00	0.00	0.00	0.30	0.01	0.01	0.02	0.1	0.02	0.0	0.1		0.66	504%
Construction Water	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	N/A
Sakaida Nursery	1.1	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%
SMWD	N/A	0.0	0.0	0.0	6.6	2.8	2.2	1.0	3.9	2.3	0.0	0.0		18.8	N/A
TY Nursery	17.9	0.0	5.8	4.0	6.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0		16.1	90%
TOTAL, AF	**653.2**	**16.8**	**23.1**	**25.3**	**64.1**	**75.6**	**90.0**	**104.0**	**95.0**	**90.5**	**36.4**	**44.5**		**665.2**	**102%**
PERCENTAGE OF NDW ALLOCATION/YEAR		**3%**	**6%**	**10%**	**20%**	**31%**	**45%**	**61%**	**76%**	**89%**	**95%**	**102%**			
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		0.04	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01		0.19	21.22
Dove | Tick Creek Production*	*Dry Season*	0.0	0.0	0.0	7.0	6.8	5.3	4.5	2.1	3.3	3.6	4.3		36.9	102.7
	TCWD Portion	0.0	0.0	0.0	3.5	3.4	2.7	2.2	1.0	1.7	1.8	4.3		20.6	-
	SMWD Portion	0.0	0.0	0.0	3.5	3.4	2.7	2.2	1.0	1.7	1.8	0.0		16.3	-
Dove Lake Water Pumped		0.0	0.0	0.0	11.3	28.5	20.0	24.0	63.5	1.6	0.0	0.0		148.9	201.7
Dove Lake Free Board, Ft		5.6	5.3	3.2	4.1	5.9	7.2	9.0	14.3	14.3	13.7	13.4		-	-
Dove Lake Storage		128.0	131.5	166.4	158.1	117.2	107.0	79.0	28.0	28.0	30.0	36.1		-	-
Total Rainfall, In.		1.7	0.0	1.2	0.0	0.0	0.0	0.0	0.1	0.0	1.0	0.0		4.0	14.5

**** SMWD share of Dove/Tick Pump Station Dry Season Water is 50% of production.***

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

TRABUCO CANYON WATER DISTRICT

Sewer System Management Plan (SSMP) Quarterly Report

Report Date: December 28, 2021
Report Period: Fourth Quarter 2021 - October to December 2021
Prepared By: Oscar Ulloa, Wastewater Operations Chief Plant Operator

District Sub-Section	Santiago/Portola Hills			Dove Canyon			Rancho Cielo/Walden			Robinson Ranch/Trabuco Highlands		
	Total Amount	Amount Completed	% Completed	Total Amount	Amount Completed	% Completed	Total Amount	Amount Completed	% Completed	Total Amount	Amount Completed	% Completed
Sewer Line Cleaned, Feet	44,625	44,625	100%	64,135	51,508	80%	29,865	0	0%	59,170	0	0%
Manholes, Inspected/Cleaned	205	205	100%	212	175	83%	124	0	0%	236	0	0%
Manholes Needing Repair	0	0	0%	0	0	0%	0	0	0%	0	0	0%
Wet Wells, Inspected/Cleaned	2	2	100%	3	3	100%	1	1	100%	2	2	100%
Lift Stations, Inspected/Maintained	2	2	100%	3	3	100%	1	1	100%	2	2	100%
Grease Interceptors Inspected	2	2	100%	2	2	100%	10	10	100%	n/a	n/a	n/a

Note: All Sewage Lift stations are inspected 3-4 times a week

Contract Services	O'Neill Park/OCFA		
	Total Amount	Amount Completed	% Completed
Sewer Line Cleaned, Feet	12,700	0	0%
Manholes, Inspected/Cleaned	95	0	0%
Manholes Needing Repair	0	0	0%
Wet Wells, Inspected/Cleaned	1	1	100%
Lift Stations, Inspected/Maintained	1	1	100%
Grease Interceptors Inspected	0	0	0%

TRABUCO CANYON WATER DISTRICT
ENGINEERING/OPERATIONAL COMMITTEE MEETING | JANUARY 5, 2022

OPERATIONAL MATTERS
ITEM 9: MAINTENANCE DEPARTMENT UPDATES

The following is a brief report of the wastewater system for **December 2021.**

Projects and Repairs

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

1. Continued to work with TESCO Controls on the SCADA upgrades.
2. Began the buildup on the new 2022 F250 service body.
3. Worked with Ferreira Construction at the Golf Club Lift Station to install a force main bypass piping.
4. Inspected the emergency generator at Ridgeline Booster Pump Station and Topanga Booster Pump Station to write up a testing scope of work.

RECOMMENDED ACTION:

Committee to receive system status updates. No action required.

EXHIBITS

None

CONTACTS (staff responsible): PALUDI/STROUD

TRABUCO CANYON WATER DISTRICT
ENGINEERING/OPERATIONAL COMMITTEE MEETING | JANUARY 5, 2022

REGULATORY AND OTHER MATTERS
ITEM 10: OTHER MATTERS/REPORTS

Other Matters/Reports from the General Manager and/or District staff may be provided at the time of the Engineering/Operational Committee Meeting.

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

EXHIBITS
None

CONTACTS (staff responsible): PALUDI