Posting Date: 02-11-2022

NOTICE OF BOARD OF DIRECTORS' REGULAR BI-MONTHLY MEETING

MEETING DATE: 02-15-2022

TIME: Meeting begins at **6:00 p.m. (Public)**
Closed Session begins at or after **6:01 p.m. (Only Board and Staff)**
Open Session for the public begins at **or after 7:00 p.m. (Public)**

LOCATION: This meeting will be held virtually, pursuant to Assembly Bill (AB) 361.

To participate online, go to https://us06web.zoom.us/j/88990655163. You can also participate by phone by calling **1-669-900-6833** and entering the **webinar ID#: 889 9065 5163**.

PARTICIPATION DURING MEETINGS**:** During the public comment periods, the public may comment by clicking the "raise hand" button on the bottom of the Zoom screen; if you are joining by phone and would like to comment, press *9 and we will call on you as appropriate.

EMAILED PUBLIC COMMENTS: You may submit your comments in advance of the meeting by emailing them to BoardComment@MarinWater.org. All emailed comments received by 3 p.m. on the day of the meeting will be provided to the Board of Directors prior to the meeting. All emails will be posted on our website. (**Please do not include personal information in your comment that you do not want published on our website such as phone numbers and home addresses.)**

AGENDA ITEMS	RECOMMENDATIONS
Call to Order and Roll Call at 6:00 p.m.	
Adoption of Agenda	*Approve*
Public Comment – Only on Item on the Closed Session Comments will be limited to three (3) minutes per speaker, and time limits may be reduced by the board president to accommodate the number of speakers and ensure that the meeting is conducted in an efficient manner.	
Convene to Closed Session at after 6:01 p.m. (Only the Board of Directors and staff will participate)	

AGENDA ITEMS	RECOMMENDATIONS
Closed Session Item	
1. Conference with Legal Counsel –Existing Litigation (California Government Code Section § 54956.9) *Coalition of Sensible Taxpayers vs. Marin Municipal Water District* Case No.: CIV 1903160 *(Approximate time 45 minutes)*	
Convene to Open Session at or after 7:00 p.m.	
Closed Session Report Out	
Public Comment - Items Not on the Agenda Members of the public may comment on any items not listed on the agenda during this time. Comments will be limited to three (3) minutes per speaker, and time limits may be reduced by the board president to accommodate the number of speakers and ensure that the meeting is conducted in an efficient manner.	
Directors' and General Manager's Announcements & Committee Reports *(7:10 p.m. – Time Approximate)*	
Consent Calendar *(7:15 p.m. – Time Approximate)* All matters listed on the consent calendar are considered to be routine and will be enacted by a single action of the Board, unless specific items are removed from the consent calendar by the Board during adoption of the agenda for separate discussion and action.	
2. Minutes of the Board of Directors' Regular Bi-Monthly Meeting of February 1, 2022	*Approve*
3. General Manager's Report January 2022	*Approve*
4. Resolution Continuing the Invocation of the District's Emergency Contracting Procedures for the Rehabilitation of the Kastania Pump Station	*Approve*
5. Request to Fill Customer Representative III Position	*Approve*
6. Authorizing the General Manager to Recruit and Hire a Water Resources Director	*Approve*

AGENDA ITEMS	RECOMMENDATIONS
Regular Calendar *(7:20 p.m. – Time Approximate)*	
7. Water Supply Update *(Approximate time 10 minutes)*	*Information*
Public Hearing *(7:30 p.m. – Time Approximate)*	
8. Adopting Ordinance 458 Amending Chapter 13.04 Entitled "Comprehensive Drought Water Conservation and Enforcement Measures" to Title 13 of the Marin Municipal Water District Code Repealing the Prohibition on Overhead Spray Irrigation *(Approximate time 20 minutes)*	*Approve*
Regular Calendar *(7:50 p.m. – Time Approximate)*	
9. Prohibiting Non-Functional Turf in Commercial Sector *(Approximate time 15 minutes)*	*Information*
10. Authorizing the General Manager to Execute a Professional Services Agreement with West Yost, in the Amount of $390,617 including contingency, for Engineering Services in Support of the Peacock Gap Recycled Water Pipeline Project *(Approximate time 10 minutes)*	*Approve*
11. A Resolution Authorizing the General Manager to Execute Amendment No. 3 to Professional Services Agreement No. 5945 with Miller Pacific Engineering Group, in the amount of $38,000, including contingency, for Continued Geotechnical Engineering Services in Support of the Final Design of the Pine Mountain Tunnel Tanks Replacement Project *(Approximate time 10 minutes)*	*Approve*
12. (A) Resolution Certifying Review of the Amended Final Environmental Impact Report for the Oakview Master Plan, Use Permit, and Vesting Tentative Map for the Talus Reserve – Erin Drive Extension and Approving a Pipeline Extension Agreement (B) Resolution Making Determinations with Respect to Fees Contained in the Pipeline Extension Agreement, and (C) Resolution Finding Impending Peril of Gradual Earth Movement Determining and Undertaking Appropriate Action Halt, Stabilize, or Abate Such Peril *(Approximate time 15 minutes)*	*Approve*

AGENDA ITEMS	RECOMMENDATIONS
13. Authorizing the General Manager to Execute an Easement Deed with the County of Marin for the Recycled Water Fill Station Located at the Marin County Civic Center *(Approximate time 5 minutes)*	*Approve*
14. Future Meeting Schedule and Agenda Items *(Approximate time 5 minutes)*	*Information*
Adjournment *(8:50 p.m. – Time Approximate)*	

ADA NOTICE AND HEARING IMPAIRED PROVISIONS:
In accordance with the Americans with Disabilities Act (ADA) and California Law, it is Marin Water's policy to offer its public programs, services, and meetings in a manner that is readily accessible to everyone, including those with disabilities. If you are an individual with a disability and require a copy of a public hearing notice, an agenda, and/or agenda packet in an appropriate alternative format, or if you require other accommodations, please contact Board Secretary Terrie Gillen at 415.945.1448, at least two days in advance of the meeting. Advance notification will enable the Marin Water to make reasonable arrangements to ensure accessibility.

INFORMATION AGENDAS ARE AVAILABLE FOR REVIEW AT THE CIVIC CENTER LIBRARY, CORTE MADERA LIBRARY, FAIRFAX LIBRARY, MILL VALLEY LIBRARY, MARIN WATER OFFICE, AND ON THE MARIN WATER WEBSITE (MARINWATER.ORG)

FUTURE BOARD MEETINGS:

- Wednesday, February 16, 2022
  Communications & Water Efficiency Committee/Board of Directors (Communications & Water Efficiency) Meeting
  9:30 a.m.

- Friday, February 18, 2022
  Operations Committee/Board of Directors (Operations) Meeting
  9:30 a.m.

- Thursday, February 24, 2022
  Finance & Administration Committee/Board of Directors (Finance & Administration) Meeting
  9:30 a.m.

Terrie Gillen
Board Secretary

Item Number: 02
Meeting Date: 02-15-2022
Meeting: Board of Directors

Approval Item

TITLE
Minutes of the Board of Directors' Regular Bi-Monthly Meeting of February 1, 2022

RECOMMENDATION
Approve the adoption of the minutes.

SUMMARY
On February 1, 2022, the board had its regular bi-monthly meeting. The minutes of that meeting are attached.

DISCUSSION
None

FISCAL IMPACT
None

ATTACHMENT(S)
1. Minutes of the Board of Directors' Regular Bi-Monthly Meeting of February 1, 2022

DEPARTMENT OR DIVISION	DIVISION MANAGER	APPROVED
Communications & Public Affairs Department	Terrie Gillen Board Secretary	Ben Horenstein General Manager

Item Number: 02
Attachment: 01

MARIN MUNICIPAL WATER DISTRICT
BOARD OF DIRECTORS

MEETING MINUTES

Tuesday, February 1, 2022

Via teleconference
(In accordance with Assembly Bill (AB) 361)

DIRECTORS PRESENT: Jack Gibson, Cynthia Koehler, Monty Schmitt, and Larry Russell

DIRECTORS ABSENT: Larry Bragman

CALL TO ORDER AND ROLL CALL
President Russell called the meeting to order at 6:32 p.m.

ADOPT AGENDA
On motion made by Director Gibson and seconded by Vice President Schmitt, the board adopted the agenda.

There were no public comments.

The following roll call vote was made.

Ayes: Directors Gibson, Koehler, Schmitt, and Russell
Noes: Director Bragman

PUBLIC COMMENT (ONLY ON CLOSED SESSION ITEM)

There was one (1) public comment.

CONVENE TO CLOSED SESSION

At 6:36 p.m., the Board of Directors convened to closed session. Director Bragman arrived at the Closed Session.

CLOSED SESSION ITEM

1. Conference with Legal Counsel – Existing Litigation
   (California Government Code Section §54956.9(d)(i))

   North Coast Rivers Alliance v Marin Municipal Water District
   Case No.: CIV2104008

The Board of Directors and staff discussed the item.

CONVENE TO OPEN SESSION ON OR AFTER 7:00 PM

The board convened to open session at 7:06 p.m.

CLOSED SESSION REPORT OUT

Also, at 7:06 p.m., President Russell stated that no reportable action was taken.

PUBLIC COMMENT

There were six (6) public comments.

DIRECTORS' AND GENERAL MANAGER'S ANNOUNCEMENTS & COMMITTEE REPORTS

- Director Gibson announced the upcoming North Bay Watershed Association Meeting on February 4th.
- Director Koehler provided a summary of what took place at the Finance & Administration Committee Meeting held on January 27th.
- Director Bragman reported on what took place at the Lagunitas Creek Technical Advisory Committee on January 21st and thanked the staff.

CONSENT CALENDAR (ITEMS 2-6)

Item 2 **Minutes of the Board of Directors' Regular Bi-Monthly Meeting of January 18, 2022**

Item 3 **Resolution Continuing the Invocation of the District's Emergency Contracting Procedures for the Rehabilitation of the Kastania Pump Station (Resolution No. 8674)**

Item 4 **Resolution Certifying Review of the Initial Study/Mitigated Negative Declaration and the Mitigation and Monitoring Program for the 350 Merrydale Road Residential Townhome Development Project and Approve a Pipeline Extension Agreement (Resolution No. 8675)**

Item 5 **Authorizing the General Manager to Execute Third Amendment to Contract No. 5652 to Extend the Contract for One Additional Year with United Site Services of California and Increase the Total Contract Amount for Portable Toilet Rentals and Servicing**

Item 6 **Resolution to Continue Virtual Board and Committee Meetings Pursuant to Assembly Bill (AB) 361 (Resolution No. 8676)**

There were no public comments.

Before the roll call vote was made, Director Bragman discussed with staff if dual plumbing could be added to the pipeline agreement provided in agenda item 4. The board agreed.

There were no public comments.

On motion made by Director Bragman and seconded by Director Gibson, the board adopted the consent calendar along with the change to the pipeline agreement. The following roll call vote was made.

Ayes: Directors Bragman, Gibson, Koehler, Schmitt, and Russell
Noes: None

REGULAR CALENDAR (ITEMS 7-10)

Item 7 Water Supply Update

Director of Operations Paul Sellier presented this item. Conversation between the board and staff ensued.

There were five (5) public comments.

No further board comments were made.

This was an informational item. The board did not take any formal action.

Item 8 Kastania Pump Station Rehabilitation Project Update

Construction Engineering Manager Mark Kasraie and Division Engineering Manager Crystal Yezman brought forth this item. Discussion followed including the board congratulating staff for expeditiously building this project that provides such a significant benefit to our water supply resiliency.

There were no public comments and no further comments from the board.

Item 9 Professional Services Agreement with Jacobs Engineering Group for Engineering Services in Support of the Strategic Water Supply Assessment Project

Water Quality Manager Lucy Croy presented this item. Afterwards, the board deliberated and discussed this matter.

They received seven (7) public comments.

On motion made by Director Gibson and seconded by Director Koehler, the board approved the execution of the Professional Services Agreement with Jacobs Engineering Group. The following roll call vote was made.

Ayes: Directors Bragman, Gibson, Koehler, Schmitt, and Russell
Noes: None

Item 10 Professional Services Agreement with Environmental Science Associates, Inc. for Environmental Review Services Associated with the Emergency Intertie Project

Construction Engineering Manager Kasraie also brought forth this item. Discussion ensued

including possibly waiting another five (5) months to determine the findings from Jacobs Engineering Group (JEG) and how best to communicate to the public what the District is doing if the board approved both this agreement and the agreement with JEG.

There were three (3) public comments.

On motion made by Director Koehler and seconded by Director Gibson, the board approved the execution of the Professional Services Agreement with Environmental Associates, Inc. The following roll call vote was made.

Ayes: Directors Gibson, Koehler, Schmitt, and Russell
Noes: Director Bragman

After this item, which ended past 9:30 p.m., President Russell asked staff to determine how many more agenda items the board would need to review. The board would deliberate on agenda items 11, 12, and 15. Agenda items 13 and 14 would move to other meetings.

PUBLIC HEARING (ITEM 11)

Item 11 2020 Census Data & Adjustment of Director Division Boundaries (Redistricting)

Staff Attorney Jerrad Mills presented this item, including providing a schedule as to when this item would come again before the board and how the public could provide input on the redistricting process.

There were neither comments from the board nor the public.

This was an informational item, so the board did not take any formal action.

REGULAR CALENDARS (ITEMS 12-15)

Item 12 Approve a Resolution Authorizing the General Manager to Negotiate and Execute a Revised Reimbursement Agreement between the City of San Rafael and Marin Municipal Water District for the 3rd Street Pipeline Replacement Project (Resolution No. 8677)

Associate Engineer Jake Miller brought forth this item. There were neither board comments nor public comments.

On motion made by Director Gibson and seconded by Director Bragman, the board approved the resolution. The following roll call vote was made.

Ayes: Directors Bragman, Gibson, Koehler, Schmitt, and Russell
Ayes: None

Item 13 Approve (A) Resolution Certifying Review of the Amended Final Environmental Impact Report for the Oakview Master Plan, Use Permit, and Vesting Tentative Map for the Talus Reserve – Erin Drive Extension and Approving a Pipeline Extension Agreement (B) Resolution Making Determinations with Respect to Fees Contained in the Pipeline Extension Agreement, and (C) Resolution Finding Impending Peril of Gradual Earth Movement Determining and Undertaking Appropriate Action Halt, Stabilize, or Abate Such Peril

This item was tabled to another meeting.

Item 14 Further Discussion of Drought Restrictions

This item was tabled to another meeting.

Item 15 Future Meeting Schedule and Agenda Items

General Manager Ben Horenstein mentioned that there were no changes to the meetings listed on the calendar.

There were no more comments from the board nor from the public.

This being an informational item, the board did not take any formal action.

ADJOURNMENT

There being no further business, the regular bi-monthly Board of Directors' meeting of February 1, 2022, adjourned at 9:59 p.m.

_____

Board Secretary

Item Number: 03
Meeting Date: 02-15-2022
Meeting: Board of Directors

Approval Item

TITLE
General Manager's Report January 2022

RECOMMENDATION
Approve Report

SUMMARY

A. HIGHLIGHTS:

- Received final approval from FEMA and CalOES on Local Hazard Mitigation Plan
- Achieved substantial completion on Kastania Pump Station Project and successfully completed start-up testing
- The daily average net production for the month of January, 2022 was 13.57 MGD compared to a typical summer time peak demand of 35MGD to 36 MGD
- The WQ lab ensured that the water supplied to customers met or surpassed water quality regulations by collecting and analyzing over 197 Total Coliform Rule and treatment plant samples.
- Installed 900+ native plants at eight Lagunitas Creek Winter Habitat Restoration Project sites
- Ongoing Temporary Urgency Change Petition monitoring, fisheries surveys, and agency coordination
- Installed Pit Tag Antenna at Devils Gulch to support annual fisheries monitoring work and developing plans for a second PIT Tag Antenna at the San Geronimo Pump Station
- Broom Maintenance in Pumpkin Ridge, Pine Point, & Lagunitas Meadow. – Approx. 100 Acres
- Started a Doug Fir Thinning Project in Pilot Knob Meadow (PK8) - 26 Acres.
- Completed Annual Forest Fuel Maintenance at Resilient Forest Sites, and Potrero Meadow – 48 Acres.

- PG&E Completed their Annual Vegetation Maintenance under Lines. Work was focused on Peters Dam Area, Filter Plant Rd, Phoenix Lake Area, and Eldridge Grade.

DISCUSSION

B. SUMMARY:

AF = Acre Feet

Mg/L = milligrams per liter

MPN = most probable number

MPY = mils per year

MG = million gallons

NTU = nephelometric turbidity units

1. Water Production:

	FY 2021/22		FY 2020/21	
	(million gallons)	(acre-feet)	(million gallons)	(acre-feet)
Potable				
Total production this FY	3,865	11,862	5,395	16,558
Monthly production, January	422	1,295	486	1,493
Daily average, January	13.61	41.76	15.69	48.16
Recycled				
Total production this FY	119.75	367.50	0.00	0.00
Monthly production, January	4.95	15.19	0.00	0.00
Daily average, January	0.16	0.49	0.00	0.00
Raw Water				
Total production this FY	26.94	82.68	41.23	126.53
Monthly production, January	0.00	0.00	0.00	0.00
Daily average, January	0.00	0.00	0.00	0.00
Imported Water				
Total imported this FY	1,208	3,707	1,467	4,503
Monthly imported, January	121	371	285	875
Reservoir Storage				
Total storage, January	24,803	76,119	14,740	45,236
Storage change during January	1,032	3,167	-157	-482
Stream Releases				
Total releases this FY	1,190	3,652	2,033	6,239
Monthly releases, January	300	921	571	1,751

2. Precipitation:

	FY 2021/22 (in.)	FY 2020/21 (in.)
Alpine	40.79	13.56
Bon Tempe	38.54	10.93
Kent	39.07	11.63
Lagunitas *	43.16	14.57
Nicasio	24.62	7.10
Phoenix	44.84	10.71
Soulajule	26.56	6.64

* Average to date = 29.94 inches

3. Water Quality:

Laboratory:	FY 2021/22	FY 2020/21
Water Quality Complaints:		
Month of Record	8	14
Fiscal Year to Date	96	101
Water Quality Information Phone Calls:		
Month of Record	11	6
Fiscal Year to Date	72	86

The WQ lab ensured that the water supplied met or surpassed water quality regulations by collecting and analyzing 2,112 analyses on lakes, treatment plants and distribution system samples.

Mild steel corrosion rates averaged 1.85 (0.34 – 3.08) MPY. The AWWA has recommended an operating level of <5 MPY with a goal of <1 MPY.

Complaint Flushing: No flushing events were performed for this month on record.

Tank Survey Program: 20 water storage tank sanitary surveys were performed during the month. 7.75 % planned survey program has been completed for calendar year 2022.

Disinfection Program: 395' of new pipeline was disinfected during the month. Performed chlorination's on 18 water storage tanks to ensure compliance with bacteriological water quality regulations.

Tank Water Quality Monitoring Program: Performed 117 water quality-monitoring events on storage tanks for various water quality parameters this month to help ensure compliance with bacteriological water quality regulations.

Summary:

The lab performed 20 sanitary tank surveys, treated 18 tanks for low chlorine, and checked an additional 117 tanks for low chlorine residual in January 2022.

4. Water Treatment:

	San Geronimo		Bon Tempe		Ignacio	
Treatment Results	Average	Monthly Goal	Average	Monthly Goal	Average	Monthly Goal
Turbidity (NTU)	0.05	≤ 0.10	0.03	≤ 0.10	0.04	≤ 0.10
Chlorine residual (mg/L)	2.74	2.75 *	2.50	2.50 *	2.79	2.75 *
Color (units)	0.7	≤ 15	0.5	≤ 15	0.2	≤ 15
pH (units)	7.8	7.8*	7.8	7.8*	8.1	8.1**

* Set monthly by Water Quality Lab
** pH to Ignacio is controlled by SCWA

5. Capital Improvement:

a. San Geronimo Treatment Plant Permanent Emergency Generator Project
Summary: This project involves the installation of two 1.5 MW generators, electrical equipment, fuel storage tanks and site grading all within the community of Woodacre.
- Project Budget: $5,375,600
- Monthly Activities: Final generator yard redesign was completed and the contractor has mobilized back onsite to restart construction activities. Project scheduled to be completed in June 2022.

b. Fire Flow Improvement Program Monterey Ave Pipeline Replacement Project (F18006)
Summary: This project involves the replacement of 7,200 feet of old leak prone, fire flow deficient pipe in the Town of San Anselmo.

- Project Budget: $2,180,000.70
- Monthly Activities: Contractor is currently working on pipeline disinfection and service transfers in preparation for final tie in connections.

c. Southern Marin Pipeline Replacement Project Phase II (D20022)
Summary: This project will install 530 feet of pipe to replace old, undersized fire flow deficient pipe in the City of Belvedere and Town of Tiburon.

- Project Budget: $378,495.50
- Monthly Activities: Contractor installing mainline pipe on Lagoon Rd and along the easement.

d. Berry Lane Pipeline Replacement Project (D21007)
Summary: This project involves the replacement of approximately 350 feet of old leak prone pipe in the Town of Ross.

- Project Budget: $331,333
- Monthly Activities: This project has been completed and is currently finalizing punch list items.

e. Kastania Pump Station Project (D21027)
Summary: This project involves installing 220 feet of pipe and recommission the pump station.

- Project Budget: $1,637,777
- Monthly Activities: Contractor has completed most of the work with the exception of some long lead time items that are still pending delivery and installation. Final delivery of pending items anticipated for February and April 2022.

f. Fire Flow Improvement Program Ridge Road Pipeline Replacement Project (F21002)
Summary: This project involves installing 5,310 feet of old leak prone, fire flow deficient pipe in the Town of Tiburon.

- Project Budget: $2,284,120
- Monthly Activities: Contractor has started installing main line pipe. Contractor has installed approximately 1,100 feet of pipe to date.

6. Other:

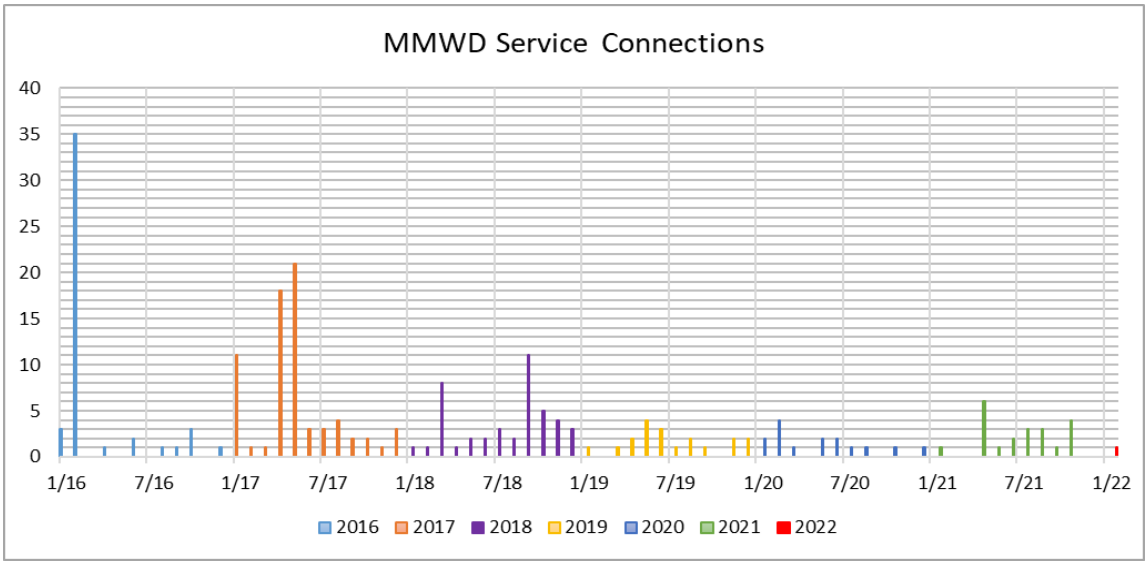
Pipeline Installation	FY2021/22	FY2020/21
Pipe installed during January (feet)	2,826	525
Total pipe installed this fiscal year (feet)	13,119	9,417
Total miles of pipeline within the District	908*	908*

** Reflects adjustment for abandoned pipelines*

Pipe Locates	FY2021/22	FY2020/21
Month of January (feet)	29,965	29,775
Total this fiscal year (feet)	288,417	251,686

Main Line Leaks Repaired:	FY2021/22	FY2020/21
Month of January	13	14
Total this fiscal year	111	105

Services:	FY2021/22	FY2020/21
Service upgrades during January	5	9
Total service upgrades this FY	80	95
Service connections installed during January	1	1
Total active services as of February 1, 2022	60,446	60,475



7. Demand Management:

	Jan-22	FY 21/22 TOTAL	FY 20/21 TOTAL	FY 19/20 TOTAL
WATER-EFFICIENCY PROGRAMS				
Water-Use Site Surveys				
Conservation Assistance Program (CAP) Consultations				
Residential properties resi 1-2 (single-family)	26	592	117	127
Residential properties resi 3-5 (multi-family units)	0	4	5	30
Non-residential properties resi 6-7 (commercial)	0	0	5	3
Dedicated irrigation accounts resi 8-10 (large landscape)	0	1	6	-
Marin Master Gardeners' Marin-Friendly Garden Walks			0	
Residential garden walks	3	74	129	91
CYES Water/Energy Surveys			0	
Residential surveys (on hold due to pandemic)	0	0	0	86
Public Outreach and Education, Customer Service			0	
Public outreach events (number of people attending)	0	0	0	1,150
Public education events (number of participants)	0	0	0	-
Laundry-to-Landscape Graywater webinars (participants)	0	85	397	-
Customer calls/emails admin staff	453	6365	5738	2,230
School Education			0	
School assemblies			0	
Number of activities	0	0	0	15
Number of students reached	0	0	0	6,349
Field trips			0	
Number of activities	0	0	0	11
Number of students reached	0	0	0	91
Classroom presentations			0	
Number of activities	0	0	1	11
Number of students reached	0	0	22	305
Other (e.g. booth events, school gardens)			0	
Number of activities	0	0	0	-
Number of students reached	0	0	0	-
Incentives			0	
Number of HECWs approved	7	137	163	53
Number of Rain Barrel/Cisterns approved	13	50	19	4
"Landscape Your Lawn" Turf Replacments approved	53	271	6	
Number of Laundry-to-Landscape Systems approved	0	26	0	-
Hot water recirculating system rebates	15	90	0	
Pool Cover rebates	8	252	0	
HET rebates	19	49	214	850
Number of Smart Controllers rebates approved	3	40	85	12
Number of Smart Controllers "Flume Direct Distribution" redeemed	39	1412	1140	-
Number of Smart Controllers "Rachio Direct Distribution" approved	6	135	233	-
Advanced Metering Infrastructure (AMI)			0	
AMI leak letters sent to customers (>200 GPD)	49	531	1601	1,384
			0	
ORDINANCES			0	
Water Waste Prevention			0	
No. of properties reporting activity	19	4114	589	147
Landscape Plan Review			0	
Plans submitted	2	25	94	89
Plans exempt	0	1	4	5
Plans completed	1	7	19	23
Plans in workflow (pass & fail)	4	68	154	145
Tier 4 Exemption			0	
Inspections that resulted in a pass	0	0	1	1
Graywater Compliance Form			0	
Applications Received *(as of Dec 2019)*	1	21	106	39
Systems installed	0	3	7	11

8. Watershed Protection:

Leo Cronin Vandalism

Rangers discovered that the portable restroom at the Leo Cronin Parking Lot had been destroyed by a destructive device. This information was shared with the Sheriff's Office, which has an ongoing investigation in the San Geronimo Valley area.

Medical Aid Calls

The Rangers responded to five medical aid calls during the month and all patients were transported to the hospital. Three involved hikers and two involved mountain bikers. The most notable incidents occurred on January 22, when Rangers responded to two separate and simultaneous broken ankles on Cataract Trail requiring both visitors to be carried out.

Marin SAR assisting with one of two carryouts on Cataract Trail on January 22.

Visitation Remained High on Weekends

During the month of January watershed visitation remained high, often resulting in parking lots reaching capacity and popular locations being crowded. On eight occasions Rangers had to restrict parking at Bon Tempe or Lake Lagunitas due to capacity issues.

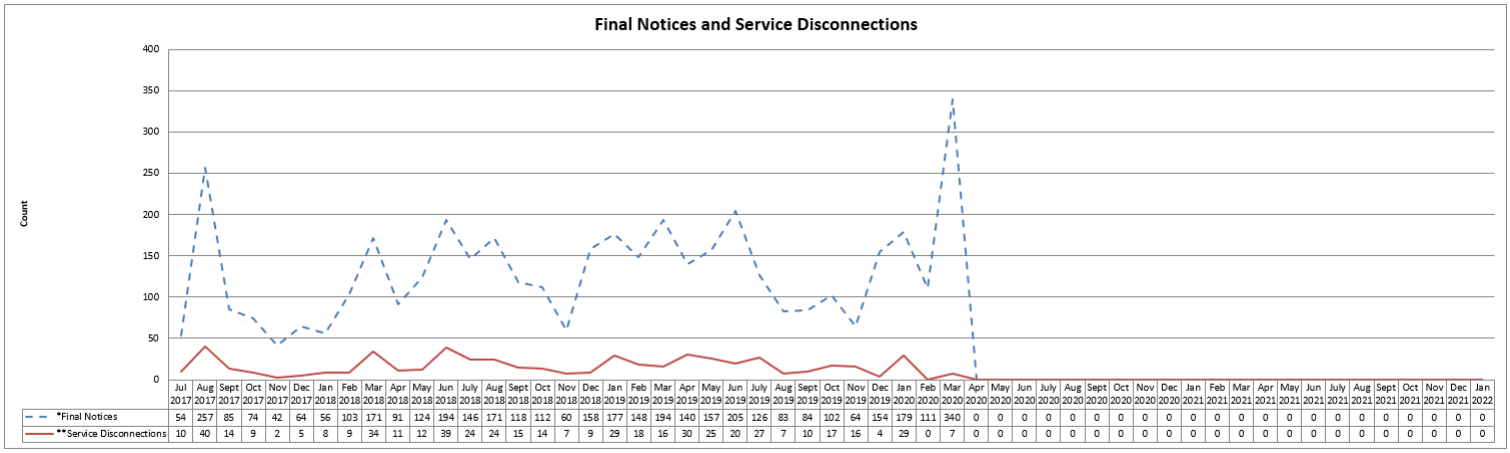
Incidents and Events	474
Visitor Assists	169
Warnings	124
Citations	90
Dam Check	21
Closed Parking Due to Capacity Issues	8
Search and Rescue	7
Assist Watershed Maintenance	5
Medical Aid	5
Complaint: Illegal Bike Use	5
Vandalism	4
Suspicious Circumstance	4
Preventative Search and Rescue	3
Assist Outside Law Enforcement	3
Public Outreach/Interp Activity	3
Misc. Call for Service	3
Misc. Law Enforcement Calls	2
Citizen Complaint: Recreational Impacts	2
Found Property	2
Assist Fire/EMS Dept.	2
Ranger Callout	2
Illegal Trail Work	1
Humane/Animal Call for Service	1
Citizen Complaint: Off Leash Dogs	1
Theft	1
Citizen Complaint: Smoking	1
Assist Other MMWD Work Group	1
Assist Other Agency	1
Citizen Complaint: Misc.	1
Use of Destructive Device	1
Weapons Violations	1

Citations	90
Non-Payment of Parking Fees	63
Parking After Sunset	16
Parking with 6 ft. of Center/Travel Section of Road	5
No Parking	3
Dog off Leash	2
Animal at Large	1

9. Shutoff Notices and Disconnections:

Month	January 2022
Final Notices	0
Service Disconnections	0

* Includes 5 day, 10 day and final notices
**3/13/20 Suspended termination of water service for non-payment due to COVID- 19
*3/24/20 Suspended Late Fees and Final Notices



	Jul 2017	Aug 2017	Sept 2017	Oct 2017	Nov 2017	Dec 2017	Jan 2018	Feb 2018	Mar 2018	Apr 2018	May 2018	Jun 2018	July 2018	Aug 2018	Sept 2018	Oct 2018	Nov 2018	Dec 2018	Jan 2019	Feb 2019	Mar 2019	Apr 2019	May 2019	Jun 2019	July 2019	Aug 2019	Sept 2019	Oct 2019	Nov 2019	Dec 2019	Jan 2020	Feb 2020	Mar 2020	Apr 2020	May 2020	Jun 2020	July 2020	Aug 2020	Sept 2020	Oct 2020	Nov 2020	Dec 2020	Jan 2021	Feb 2021	Mar 2021	Apr 2021	May 2021	Jun 2021	July 2021	Aug 2021	Sept 2021	Oct 2021	Nov 2021	Dec 2021	Jan 2022
*Final Notices	54	257	85	74	42	64	56	103	171	91	124	194	146	171	118	112	60	158	177	148	194	140	157	205	126	83	84	102	64	154	179	111	340	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
**Service Disconnections	10	40	14	9	2	5	8	9	34	11	12	39	24	24	15	14	7	9	29	18	16	30	25	20	27	7	10	17	16	4	29	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

FISCAL IMPACT
None

ATTACHMENT(S)
None

Item Number: 03
Meeting Date: 02-15-2022

DEPARTMENT OR DIVISION	DIVISION MANAGER	APPROVED
Office of the General Manager	_____	
	Ben Horenstein **General Manager**	**Ben Horenstein** **General Manager**

Item Number: 04
Meeting Date: 02-15-2022
Meeting: Board of Directors

Approval Item

TITLE
Continuation of Emergency Contracting Procedures for the Rehabilitation of Kastania Pump Station

RECOMMENDATION
Approve a resolution continuing the invocation of the District's emergency contracting procedures to ensure prompt rehabilitation of the Kastania Pump Station as needed for drought response

SUMMARY
In connection with the 2021 drought, the District is pursuing the rehabilitation and recommissioning of the Kastania Pump Station (KPS Project), which will enable the District operational flexibility to meet its water supply needs when they cannot be met through gravity flow from the North Marin Aqueduct.

On November 2, 2021, the Board of Directors adopted Resolution No. 8656 invoking the District's emergency contracting procedures (Code Section 2.99.055), which allowed the construction contract to be awarded after informal solicitation of bids. District Code Section 2.90.055(c) requires that the Board review the emergency action and determine by a four-fifths vote whether there is a need to continue the emergency action at each subsequent board meeting.

DISCUSSION
The Kastania Pump Station (KPS) is located at 4100 Kastania Road in Petaluma, CA. In 1977, the District designed and built the KPS to increase the flow and pressure in the North Marin Aqueduct and offset the hydraulic impact of increased consumption of imported water by Petaluma and the North Marin Water District (NMWD). KPS pumped water via a 30-inch discharge pipe, which was connected to the North Marin Aqueduct at a point further south on Kastania Road.

The District owned and operated KPS until 1999 when it transferred ownership of the KPS to the Sonoma County Water Agency. Approximately five years later, the California Department of Transportation began planning its Marin-Sonoma Narrows US 101 highway-widening project, which would require portions of the North Marin Aqueduct to be relocated. This led to the development of NMWD's Aqueduct Energy Efficiency Project (AEEP), which installed a new pipeline connecting the existing Kastania Pipeline to an enlarged and relocated North Marin Aqueduct. Upon completion of the AEEP in August 2015, NMWD discontinued operation of the Kastania Pump Station. It has since been out of operation.

In order to preserve the District's water supply, the District is pursuing the rehabilitation and recommissioning of the Kastania Pump Station. On November 2, 2021, the Board of Directors adopted Resolution No. 8656 invoking the District's emergency contracting procedures (Code Section 2.99.055), which allowed the construction contract to be awarded after informal solicitation of bids. In accordance with District Code Section 2.90.055(c), a vote of at least four-fifths of the Directors to continue the emergency action shall take place at every regularly scheduled board meeting thereafter until the action is terminated.

The project is almost complete and the contractor has worked diligently to timely complete the work pursuant to the contract parameters. Despite increased water storage levels, staff believes that completing the project with the current contractor is necessary to avoid increased delay and cost to the District. Therefore, District staff recommend that the Board adopt a resolution continuing the invocation of the District's emergency contracting procedures and authorizing the General Manager to execute necessary contracts to ensure expeditious rehabilitation of the Kastania Pump Station.

FISCAL IMPACT

The total capital cost to complete the Kastania Pump Station Rehabilitation Project is estimated to be $1,637,777. Funding for this project is available within capital reserves.

ATTACHMENT(S)

1. Proposed Resolution – Continuation of District's Emergency Contracting Procedures

DEPARTMENT OR DIVISION	DIVISION MANAGER	APPROVED
Engineering	**Crystal Yezman** **Director of Engineering**	**Ben Horenstein** **General Manager**

MARIN MUNICIPAL WATER DISTRICT

RESOLUTION NO.

A RESOLUTION OF THE BOARD OF DIRECTORS OF THE MARIN MUNICIPAL WATER DISTRICT CONTINUING THE INVOCATION OF THE DISTRICT'S EMERGENCY CONTRACTING PROCEDURES FOR CONSTRUCTION OF THE KASTANIA PUMP STATION REHABILITATION PROJECT

WHEREAS, the District, a special purpose municipal corporation, is authorized by District Code Section 2.90.055 to award construction contracts after waiving competitive bidding requirements in certain limited emergency situations; and

WHEREAS, on November 2, 2021, the District Board of Directors unanimously adopted Resolution 8656 invoking the District's emergency contracting procedures and authorizing the General Manager to execute necessary contracts for the rehabilitation of Kastania Pump Station; and

WHEREAS, rehabilitating the Kastania Pump Station and returning it to service is necessary to improve the operational efficiency of the District's imported water supply, especially during drought when augmenting its water supply and preserving its local supply is essential; and

WHEREAS, the District proposes to rehabilitate and complete minor alterations to the Kastania Pump Station to improve the operational efficiency of the District's imported water supply; and

WHEREAS, the Board of Directors finds that a significant emergency situation continues to exist due to the ongoing drought conditions in Marin County; and

WHEREAS, the delay resulting from a formal competitive solicitation of bids for rehabilitation of the Kastania Pump Station would significantly impair the District's ability to complete the project; and

WHEREAS, the Board of Directors finds that this continued emergency action authorizing the General Manager to execute necessary contracts is required to respond to the emergency need to rehabilitate the Kastania Pump Station and to avoid delay and additional costs to the District that would result in a change of direction at this point.

NOW, THEREFORE, THE BOARD OF DIRECTORS RESOLVES AS FOLLOWS:

Pursuant to District Code Section 2.90.55, this continued action is necessary to ensure expeditious rehabilitation of the Kastania Pump Station in response to the drought emergency and to avoid additional delay and cost to the District.

PASSED AND ADOPTED this 15th day of February, 2022, by the following vote of the Board of Directors.

AYES:

NOES:

ABSENT:

_____
Larry L. Russell
President, Board of Directors

ATTEST:

_____
Terrie Gillen
Board Secretary

Item Number: 05
Meeting Date: 02-15-2022
Meeting: Board of Directors

Approval Item

TITLE
Approval to fill Customer Service Representative III position

RECOMMENDATION
Authorize the General Manager to recruit and hire a Customer Service Representative III in the Administrative Services Division

SUMMARY
Staff is requesting authorization for the General Manager to recruit and hire a Customer Service Representative III to fill an open position, which was vacated due to a retirement on January 28, 2022. The Customer Service Representative III performs a variety of difficult and complex direct customer contact and office support activities supporting the servicing and maintenance of customer accounts for water service and billing. Filling this position will allow Customer Service to address the daily operational needs of the department.

FISCAL IMPACT
Salary and benefits for this position is included in the Administrative Services Division budget for FY 2022. The total annual salary with benefits for the Customer Service Representative III position ranges from $93,214 to $112,573. Filling this position will not increase the total number of FTEs in the Administrative Services Division.

ATTACHMENT(S)
None

DEPARTMENT OR DIVISION	DIVISION MANAGER	APPROVED
Administrative Services	**Charles McBride** **Finance Director**	**Ben Horenstein** **General Manager**

Item Number: 06
Meeting Date: 02-15-2022
Meeting: Board of Directors

Approval Item

TITLE
Approval to Recruit and Hire a Director of Water Resources

RECOMMENDATION
Authorize the General Manager to recruit and hire a Director of Water Resources

SUMMARY
Reclassification of the recently vacated Director of Facilities and Watershed position to that of Director of Water Resources provides an opportunity to refine our organizational structure to provide greater focus, accountability and continuity to the critical area of water supply resiliency.

DISCUSSION
The Water Resources Director position will provide greater focus, continuity and accountability in developing and managing the District's water resources activities that are currently spread out across the organization. The duties of this position will include overall responsibility in several key areas including water quality, water rights, long term water supply planning, and developing and implementing initiatives that address climate change and sustainability.

The recent drought has highlighted the opportunity to enhance the District's long-term focus on the rapidly increasing impacts of climate change to the District's water supply. A key focus for this position will be overseeing the recently authorized Strategic Water Supply Assessment, along with implementation of the roadmap defined by the outcome of this project. Additional responsibilities include: water shortage contingency planning, Urban Water Management Plan, integration of conservation into long term water supply planning, modeling potential impacts of climate change to our water supply, sustainably and GHG monitoring and reduction.

FISCAL IMPACT
The position is budgeted and has an annual salary at Step 5 of $238,236. Filling this position will not increase the number of budgeted Full Time Equivalents (FTEs) for the District because it is reclassifying an existing, vacant position at the same salary level.

ATTACHMENT(S)
None

Item Number: 06
Meeting Date: 02-15-2022

DEPARTMENT OR DIVISION	DIVISION MANAGER	APPROVED
Office of the General Manager	_____	
	Ben Horenstein **General Manager**	**Ben Horenstein** **General Manager**

Item Number: 07
Meeting Date: 02-15-2022
Meeting: Board of Directors

Informational Item

TO: Board of Directors

FROM: Paul Sellier, Operations Director

THROUGH: Ben Horenstein, General Manager

DIVISION NAME: Operations

ITEM: Water Supply Update

SUMMARY
Overall, reservoir storage is 95% of capacity and 115% of the average for this time of year. With reservoirs nearly at capacity the District is well positioned to provide water for both potable and environmental needs in the coming year. Storage level projections indicate that were there no additional rainfall from this point forward, reservoir levels on December 1, 2022, will be between 50,000 AF and 60,000 AF. Staff will provide a brief presentation and discussion on water supply.

FISCAL IMPACT
None

ATTACHMENT(S)
None

Item Number: 08
Meeting Date: 02-15-2022
Meeting: Board of Directors

Public Hearing - Approval Item

TITLE
Adoption of proposed Ordinance No. 458 Amending Chapter 13.04 Entitled "Comprehensive Drought Water Conservation and Enforcement Measures" to Title 13 of the Marin Municipal Water District Code Repealing the Prohibition on Overhead Spray Irrigation

RECOMMENDATION
Adopt proposed Ordinance No. 458 to repeal the prohibition on operating outdoor sprinkler irrigation systems during winter months, and reinstating the three days per week 'Normal Year' rule on irrigation

SUMMARY
Since the adoption of these drought-related restrictions, significant rainfall over the past few months has increased local reservoir storage from historically low levels in October 2021 to 115% of average as of February 3, 2022. Due to this recent rainfall and increased reservoir storage, staff is proposing to repeal the adopted drought-related winter and limited day overhead spray restrictions in favor of reinstating the three day per week irrigation allowed under the District's Normal Year water waste rules.

DISCUSSION
Since October 2021, the District has received substantial rainfall, increasing total reservoir storage to above average levels for this time of year. As of February 3, 2022, total reservoir storage was 76,019 acre-feet (AF), 95% of total capacity and 115% of average for this date, which warrants reconsideration of the drought requirements. Staff will provide the Board a review of drought-related water use restrictions and actions taken over the last year responding to historic drought conditions and recommendations moving forward.

Over the past year, the Board has taken a number of actions to respond to historic drought conditions impacting District operations. As the drought conditions continued in 2021 and the District's water supply decreased to historic low levels, the Board was able to act quickly to adopt a series of urgency ordinance pursuant to Water Code sections 350 et. Seq. and 71640 et. Seq. and under the declared water shortage emergency. A summary of adopted drought restrictions is provided below.

RESOLUTION NO. 8624 –VOLUNTARY CONSERVATION (ADOPTED FEBRUARY 16, 2021)

- Declared initial drought conditions
- Called for district customers to voluntarily reduce their water usage & participate in the district's conservation programs

RESOLUTION NO. 8630—DECLARED WATER SHORTAGE EMERGENCY AND IMPLEMENTING MANDATORY CONSERVATION MEASURES (ADOPTED APRIL 20, 2021)

- Declared a drought emergency due to projected reservoir levels to be below 30,000 AF as of December 1, 2021

ORDINANCE NO. 449 – MANDATORY WATER CONSERVATION MEASURES (ADOPTED APRIL 20, 2021)

Comprehensive list of mandatory water conservation measures, water waste prohibitions and water use restrictions as well as an enforcement program, to address the current drought and water supply shortage[1]:

- Prohibited Nonessential Uses:
    - Washing of sidewalks, walkways, driveways, parking lots, and all other hard surfaced areas by direct hosing
    - Customer leaks
    - Decorative water fountains or pools
    - Irrigation overspray or runoff
    - Excess water runoff flowing onto public right-of-way
    - Garden hose without a shut-off nozzle
    - Landscape irrigation between 9:00 AM and 7:00 PM
    - Application of potable water for irrigation during and within 48 hours after rainfall
    - Irrigation of public street medians
    - Powerwashing of buildings and homes
    - Washing of vehicles, except at commercial carwash facilities
    - Use of private fire lines for any purpose other than fire suppression and necessary testing
    - Golf course irrigation, with potable or raw water of any areas, beyond the greens and tee areas
    - Dust control, compaction, sewer flushing, street cleaning, or any other use which can be met with disinfected tertiary recycled water
- Non-recirculating systems for conveyer carwashes and single pass cooling systems are prohibited for new connections
- Reverse osmosis water purifying systems must be installed with an automatic shutoff unit

ORDINANCE NO. 450 – IRRIGATION LIMITED TO 2 DAYS PER WEEK (ADOPTED MAY 4, 2021)

- Limit overhead sprinkler irrigation systems to two days per week
- Limit drip irrigation to three days per week
- Spot-watering by hand is exempt from any specific day limitations
- Recreational pool and spa covers are required when not in use

[1] Many of these requirements are part of the District's existing water conservation measures and will remain in place even after emergency drought response requirements are rolled back.

ORDINANCE NO. 452 – IRRIGATION LIMITED TO 1 ASSIGNED DAY PER WEEK (ADOPTED JULY 6, 2021)

- Limit overhead sprinkler irrigation systems to one day per week as designated by the District.
- Limit drip irrigation to two days per week;
- Spot-watering by hand is exempt from any specific day limitations.
- Continue to discourage new plantings by customers.

ORDINANCE NO. 453 – POTABLE WATER LANDSCAPE INSTALLATION RESTRICTIONS FOR NEW WATER SERVICE CONNECTIONS (ADOPTED JULY 20, 2021)

- The use of potable water for the installation of any new landscaping is prohibited for all new water service connections until after the termination of the current Water Shortage Emergency
- New water service connection defined as new, additional, expanded or increased-in-size potable water service connections, meters, and service lines approved as of July 21, 2021
- During the Water Shortage Emergency, applications for new water service connections will be approved only if the Applicant acknowledges in writing that either:
    - The proposed project does not include any new landscaping that will be irrigated using potable water, or
    - No new landscaping that will be irrigated with potable water will be installed in connection with the proposed project until after the termination of the Water Shortage Emergency
- Landscaping shall include fountains and ponds.

ORDINANCE NO. 455 – PROHIBIT IRRIGATION DURING WINTER MONTHS & RE-FILLING POOLS (ADOPTED OCTOBER 19, 2021)

- Prohibit overhead sprinkler and drip irrigation December 1st – May 31st
- Limit overhead sprinkler irrigation system to one day per week as designated by the District and drip irrigation to two days per week from June 1st – November 30th
- Spot-watering by hand is exempt from any specific day limitations
- Continue to discourage new plantings by customers
- Prohibit re-filling/filling completely drained pools

With the adoption of proposed Ordinance No. 458, the restrictions to operate outdoor sprinkler irrigation systems (those adopted pursuant to Ordinance Nos. 450, 452 and 455) would be repealed and replaced with the District's normal year irrigations rules, which limits irrigation to three days per week.

CONTINUED WATER WASTE PROHIBITIONS

Upon repeal of the more restrictive irrigation prohibitions the following uses would continue to be prohibited:

- Washing of sidewalks, walkways, driveways, parking lots, homes, buildings and all other hard surfaced areas by direct hosing
- Customer leaks
- Non recirculating decorative water fountains or pools
- Irrigation overspray or runoff
- Excess water runoff flowing onto public right-of-way
- Use of a garden hose without a shut-off nozzle
- Landscape irrigation between 9:00 AM and 7:00 PM
- Application of potable water for irrigation during and within 48 hours after rainfall
- Irrigation of turf in public street medians
- Non-recirculating systems for conveyer carwashes and single pass cooling systems are prohibited for new connections
- Reverse osmosis water purifying systems must be installed with an automatic shutoff unit
- Recreational pool and spa covers are required when not in use
- Potable water landscape installation for new water service connections
- Washing of vehicles, except at commercial carwash facilities
- Use of private fire lines for any purpose other than fire suppression and necessary testing
- Golf course irrigation, with potable or raw water of any areas, beyond the greens and tee areas
- Dust control, compaction, sewer flushing, street cleaning, or any other use which can be met with disinfected tertiary recycled water

FISCAL IMPACT
None

ATTACHMENT(S)
Ordinance No. 458

DEPARTMENT OR DIVISION	DIVISION MANAGER	APPROVED
Water Efficiency	**Crystal Yezman** **Director of Engineering**	**Ben Horenstein** **General Manager**

DRAFT

MARIN MUNICIPAL WATER DISTRICT

ORDINANCE NO. 458

AN ORDINANCE AMENDING CHAPTER 13.04 ENTITLED "COMPREHENSIVE DROUGHT WATER CONSERVATION AND ENFORCEMENT MEASURES" OF TITLE 13 OF THE MARIN MUNICIPAL WATER DISTRICT CODE ENTITLED "WATER SERVICE CONDITIONS AND WATER CONSERVATION MEASURES" REPEALING AND AMENDING CERTAIN WATER USE RESTRICTIONS

BE IT ORDAINED BY THE BOARD OF DIRECTORS OF THE MARIN MUNICIPAL WATER DISTRICT AS FOLLOWS:

SECTION 1. Purpose: The Board of Directors (Board) declared a water shortage emergency on April 20, 2021 pursuant to Water Code sections 350, et seq. and 71640, et seq. as set forth in Board Resolution No. 8630 and subsequently adopted Ordinance Nos. 449, 450, 452, 453, 454 and 455 instituting mandatory water conservation measures for all District customers to preserve the District's water supply during the recent historic drought conditions. Since adopting those water conservation measures, substantial rainfall occurred improving water supply conditions. On January 18, 2022, the Board adopted Ordinance No. 457 rescinding the limits on water use and penalties for water use in excess of those limits. The purpose of this ordinance is to further repeal or amend current water use restrictions in response to improved water supply conditions.

SECTION 2. Section 13.04.020 of the Marin Municipal Water District Code entitled "Drought water waste prohibitions" is hereby amended as follows:

Subsection 13.04.020(1)(N), which currently reads: "*June 1 through November 31, operating outdoor sprinkler irrigation systems delivering overhead spray more than one day within any calendar week, as assigned by the District, and drip irrigation more than two days per week within any calendar week, but excluding hand-watering. December 1 through May 31, operating outdoor sprinkler irrigation systems delivering overhead spray and drip irrigation, but excluding hand-watering. For the purpose of this subsection, "calendar week" means a period running from Monday-Sunday. These irrigation restrictions equally apply to any new landscaping. It is therefore strongly encouraged that all District customers refrain from installing any new landscaping during the current drought conditions as the water user restrictions set forth in this section may not provide sufficient water use necessary for newly planted landscapes to survive."* **is hereby deleted and replaced with the following new subsection:**

13.04.020(1)(N) Operating outdoor irrigation systems using potable water for the purpose of irrigating ornamental landscape areas or turf areas on more than three days within any week of the calendar year. Customers are strongly encouraged to irrigate ornamental landscapes or turf on fewer days and only as required to maintain plant health and replace evapotranspiration loss as defined by the California Irrigation Management Information System.

SECTION 3. Findings of Necessity: The Board of Directors, after considering all of the information and testimony presented at its February 15, 2022 public hearing regarding this ordinance, finds as follows:

I. Historic and Current Water Supply Overview

A. Water is a finite and precious resource.

B. The District's water supply currently remains limited to water captured in its seven reservoirs; water transported from the Russian River via the North Marin aqueduct; and recycled water produced at the Las Gallinas Valley Sanitary District Plant (for a variety of non-potable purposes). About 73% of the District's water supply comes from its reservoirs, 25% from the Russian River through the North Marin aqueduct and 2% from recycled water. Although options to increase the District's water supply are being evaluated, the implementation of any preferred alternative will not be immediate.

C. The water conservation program, including the mandatory water conservation measures already adopted by this Board, is still necessary to conserve additional water for beneficial use and to preserve the District's water supply.

D. On September 16, 2021, one day prior to the posting of agenda packet containing Ordinance No. 454, the District's water storage level was 28,447 acre feet, which was 35.75% of average for that time of year.

E. From July 1, 2021 to February 7, 2022, the District recorded 43.16 inches of rainfall at Lake Lagunitas, which is 95.33% of average for this time of year.

F. As of February 9, 2022 the District's water storage level is 75,766 acre feet, which is 113% of average for this time of year.

G. While continued water conservation is needed to assure water supply availability in the future, recent rainfall events have substantially improved the District's current water supply conditions.

II. Repeal of Limits on Water Use and Associated Penalties

A. On April 20, 2021, pursuant to Board Resolution No. 8630, the District declared a water shortage emergency pursuant to Water Code sections 350, et seq. and 71460, et seq.

B. Based upon projected demand and current storage levels at that time, the District was focused on preserving its remaining water supply to assure sufficient supply given the uncertainty of future weather and water storage.

C. Article X Section 2 of the California Constitution declares that the general welfare requires that water resources be put to beneficial use to the fullest extent of which they are capable and that the waste, unreasonable use or unreasonable method of use of water be prevented, and that conservation of such waters is to be exercised with a view to the reasonable and beneficial use thereof in the interest of the people and the public welfare.

D. California Water Code section 71640 authorizes the District to restrict the use of water during any emergency caused by drought, or other threatened or existing water shortage, and prohibit the wastage of District water or the use of District water during such periods for any purpose other than household uses or such other restricted uses as the District determines to be necessary. The District may also prohibit use of District water during such periods for specific uses which it finds to be nonessential.

E. Pursuant to Water Code section 353 when the Board declares the existence of an emergency condition of water shortage within its service area, it shall thereupon adopt such regulations and restrictions on the delivery of water and the consumption within said area of water supplied for public use as will in the sound discretion of such governing body conserve the water supply for the greatest public benefit with particular regard to domestic use, sanitation, and fire protection.

F. The Board adopted such regulations and restrictions on water use with the adoption of Ordinances 449, 450, 452, 453, 454, and 455 respectively.

G. Given improved reservoir storage levels and water supply conditions, the limits on water use and the penalties for water use in excess of the those limits adopted by Ordinance No. 454 were repealed by the Board on January 18, 2022 with the adoption of Ordinance No. 457.

H. Ordinance No. 458 will rescind the prohibition on outdoor irrigation and permit outdoor irrigation to occur up to three days within any week of the calendar year consistent with the District's normal year water rules.

I. The District will continue to monitor weather conditions and water supply storage levels and continue to take actions to ensure sufficient water supply for District customers given the unpredictability of future rainfall events.

SECTION 6. Environmental Determination: This project has been reviewed for compliance with the California Environmental Quality Act (CEQA) and based upon the above findings and purposes of this ordinance, qualifies for an exemption pursuant to Section 15061(b)(3) of the CEQA Guidelines as there is no possibility that the activity in question may have a significant effect on the environment.

SECTION 7. Severability: If any section, subsection, sentence, clause, phrase, portion or part of this ordinance is for any reason held to be invalid or unconstitutional by any court of competent jurisdiction, such section shall not affect the validity of the remaining portions of this code. The Board of Directors hereby declares that it would have adopted this ordinance and each section, subsection, sentence, clause, phrase, part or portion thereof, irrespective of the fact that any one or

more sections subsections, clauses, phrases, parts or portions be declared invalid or unconstitutional.

SECTION 8. Effective Date: Pursuant to Water Code section 71640, this ordinance shall be effective on the day of its adoption. Within 10 days of adoption, this ordinance, or a summary hereof, shall be published in the Marin Independent Journal pursuant to Section 6061 of the Government Code.

PASSED AND ADOPTED this 15th day of February, 2022, by the following vote of the Board of Directors:

AYES:

NOES:

ABSENT:

Larry L. Russell
President, Board of Directors

ATTEST:

Terrie Gillen
Secretary, Board of Directors

Item Number: 09
Meeting Date: 02-15-2022
Meeting: Board of Directors

Informational Item

TO: Board of Directors

FROM: Crystal Yezman, Director Engineering

THROUGH: Ben Horenstein, General Manager

DIVISION NAME: Engineering Division

ITEM: Prohibiting Non-Functional Turf in Commercial Sector

SUMMARY
A Non-Functional Turf (NFT) Prohibition is intended to prevent use of potable water on installations of turfgrass areas in new and rehabilitated commercial sites and to phase out existing commercial turf areas that provide little or no recreational or community benefit.

DISCUSSION
The NFT Prohibition would be a phased approach beginning with an ordinance prohibiting installation of turf in *new* commercial developments and prohibiting the use of potable water for irrigating existing commercial NFT. The ordinance will coincide with targeted marketing of the turf incentive program to sites with existing commercial NFT. During this first phase, staff will track participation to inform the Board on the progress of converting existing of existing commercial NFT.

New Commercial Development Code to Limit Non-Functional Turf
District code would be developed to ensure new development landscapes on commercial sites are not permitted to install NFT. The Code would align with the following parameters:

- The installation of turf at parks and schools is limited to active or programmed recreation areas such as sport fields would be permitted;
- Turf should not be installed in areas less than 1,500 contiguous square feet, unless approved by the district for specific uses. (ie: day care facilities, veterinarians, etc);
- Turf cannot be installed closer than 10 feet to a street, sidewalk, parking area, or other non-permeable surface;
- Turf cannot be less than 30 feet in any dimension.

The new commercial connection restrictions would apply to Water Service Applications received on or after April 1, 2022. Staff will coordinate with the local land use planning jurisdictions. The code would apply to all new commercial projects with an aggregate landscape area equal to or greater than 500 square feet requiring a building or landscape permit, plan check or design review; and rehabilitated landscape projects with an aggregate landscape area

equal to or greater than 1,000 square feet requiring a building or landscape permit, plan check, or design review.

This non-functional turf prohibition would not apply to homeowner association common areas, churches, multi-family housing, schools or parks. It would apply to municipal/public medians, golf courses, strip malls, retail establishments, etc. Input from the Citizens Advisory Committee will be used to develop recommendations for residential customers.

Converting Existing Commercial NFT

Based on the refined landscape area measurement analysis, the District has approximately 35 acres (1.5M sqft) of existing, well irrigated, non-functional turf in parkways, medians and within commercial sites. Converting these areas to locally appropriate, low water use plant material would result in 164 AF savings each year.

Establishing a clear timeline for conversion of existing non-functional turf will ensure District customers are aware of the incentive offerings available to support voluntary implementation of converting NFT to low water use plant material. Following the proposed 3-year targeted outreach phase, staff will track conversions and participation in the turf incentive programs and provide updates to the Board to determine if enforcement may be needed to further motivate customers. Based on the 35 acres of NFT, staff believes that a 3-year timeframe is appropriate to transition from an incentive driven initiative to a mandate.

Staff recommends the Board consider adopting an ordinance prohibiting the use of potable water on existing NFT. Upon adoption, staff will notify all commercial sites with NFT of the impending mandate of January 1, 2025 and encourage voluntary NFT conversion with the help of the incentive program, which would get phased out over the 3-year transition to the commercial NFT prohibition.

Recognizing local resources will be required to complete these conversions staff would notify local landscape contractors, landscape suppliers and nurseries of the non-functional turf ban. Additionally, staff would propose the incentive for conversion to climate appropriate plant material be as follows: CY 2022-2023: $3/sqft; CY 2024: $1/sqft; CY 2025+: no incentive available for removal of existing NFT.

Variance Process
The NFT prohibition would allow for the currently adopted variance process, District Code 13.02.050, to be utilized where appropriate.

FISCAL IMPACT
The fiscal impact to the District for enacting these limitations would include the incentives for the turf conversions budgeted in the Water Efficiency Program.

ATTACHMENT(S)
None

Item Number: 10
Meeting Date: 02-15-2022
Meeting: Board of Directors

Approval Item

TITLE
Professional Service Agreement with West Yost, for Engineering Services in support of the Peacock Gap Recycled Water Pipeline Project

RECOMMENDATION
Authorize the General Manager to execute Professional Services Agreement MA-5982 with West Yost in the amount of $355,617, with a staff requested contingency of $35,000, for a total not to exceed $390,617, in support of the future Peacock Gap Recycled Water Transmission Pipeline Project

SUMMARY
The Operations Committee reviewed this item on September 17, 2021, and referred it to a future Regular Bi-Monthly Meeting of the Board of Directors with the Operations Committee's recommendation to proceed with planning the project.

The Peacock Gap Recycled Water Transmission Pipeline Project (Project) is in the planning phase and staff advertised a Request for Proposals to hire a qualified consultant to conduct an evaluation of three recycled water transmission pipeline expansion alternatives to the Peacock Gap Area and prepare 30% design drawings for a preferred alternative that could be used for environmental review and documentation prior to the board approving the project for final design.

DISCUSSION
The District owns and operates approximately 24 miles of recycled water transmission and distribution pipeline in the cities and communities of San Rafael, Terra Linda, Santa Venetia, Los Ranchitos and Marinwood. The system provides one million gallons of recycled water per day to customers in the northern area of the distribution system for a range of uses including: irrigation, industrial cooling, and toilet flushing. The District currently has over 300 recycled water service connections within this recycled water distribution area.

The District receives recycled water from our longstanding partner, Las Gallinas Valley Sanitary District (LGVSD) and recently helped fund an expansion of their recycled water facility to increase recycled water output from 3 million gallon per day to 5 million gallons per day.

The District is seeking to expand its recycled water distribution system to the Peacock Gap area of San Rafael to capitalize on the treatment plant's increased potential output. Supplying large consumers, such as the Peacock Gap Golf Club, with recycled water will not only reduce the demand on the District's potable water supply but serve a reliable, renewable resource for the future. Total potable water demand that could be offset through the Peacock Gap expansion is estimated to be up to 350 acre-feet per year.

Phase I of the proposed project will evaluate three recycled water transmission pipeline expansion alternatives to the Peacock Gap Area and assist with the environmental review of the proposed project. The findings of the evaluations shall be detailed in a final report, to include a recommendation of a preferred design route, deliverable to the District. The details of this evaluation report, along with an environmental review and analysis of the proposed project, will position the District to be competitive for grants and is necessary to proceed to Phase II – Design. This information will be brought back to the Board for final consideration and Project approval. The District will reserve the option to continue working with the selected consultant for Phase II work associated with the final design phase of the proposed project to provide services required to develop final plans, specifications, and a construction estimate.

District staff issued a Request for Proposal (RFP) to six (6) consulting firms. Three firms issued competitive responses and their proposals were evaluated according to criteria outlined in the RFP.

The Review Committee consisting of District staff, discussed and compared the proposals of each firm and rated them appropriately. The Review Committee evaluated the consulting firms based on the following criteria: Project Understanding, Project Team, Project Approach, Schedule, Qualifications, Experience, and Budget.

The Review Committee unanimously recommends the District select West Yost based on their expertise in pipeline alternative analysis, project understanding, strong technical skills, experienced project manager and sub consultants. The sub consultants included on the West Yost team for this work are: McMillen Jacobs Associates (Geotechnical Engineering), Panorama Environmental, and W-Trans (Traffic Engineering).

The project will Authorize West Yost for Task 1 – Project Management, Task 2 – Review Existing Records and Task 3 – Preliminary Design Report. The District will reserve the option to execute Task 4 – Environmental Documentation with the consultant which will require staff to return to the Board in the future for approval to proceed with Task 4.

Project Implementation**:**

RFP Advertisement:	September 9, 2021
RFP Deadline:	January 17, 2022
Consultant Selection	January 28, 2022
Professional Services Agreement Award:	February 15, 2022
Report Due:	August 31, 2022

FISCAL IMPACT

Table 1 provides the task breakdown of the contract with West Yost at $355,617, with a staff requested contingency of $35,000, for a total amount not to exceed $390,617. This project is included in the FY 21-22 capital improvement budget.

Table 1
Scope of Work Summary

Task Description	Budget
Task 1 – Project Management: This task includes project management activities including day-to-day administration, progress meetings, and technical reviews throughout the duration of the contract.	$47,672
Task 2 – Review Existing Records: This task includes reviewing existing records and available information as well as conducting field investigations.	$114,273
Task 3 – Preliminary Design Report: This task involves evaluating the routes for design identified in the RFP by comparing environmental documentation costs, benefit of use, estimated construction cost, and schedule to determine a preferred alternative.	$193,672
TOTAL	**$355,617**
Contingency	**$35,000**
Total Authorized Amount	**$390,617**

In summary, District staff request the Board authorize the General Manager to execute a professional services agreement MA-5982 with West Yost in support of the future Peacock Gap Recycled Water Transmission pipeline Project in the amount of $355,617, plus a contingency of $35,000, for a total authorized amount not to exceed $390,617.

ATTACHMENTS

1. Proposed Resolution
2. MA-5982

DEPARTMENT OR DIVISION	DIVISION MANAGER	APPROVED
Engineering	**Crystal Yezman** **Director of Engineering**	**Ben Horenstein** **General Manager**

MARIN MUNICIPAL WATER DISTRICT

RESOLUTION NO.

A RESOLUTION OF THE BOARD OF THE MARIN MUNICIPAL WATER DISTRICT APPROVING PROFESSIONAL SERVICES AGREEMENT MA-5982 IN SUPPORT OF THE PRELIMINARY DESIGN ALTERNATIVE OF THE PEACOCK GAP RECYCLED WATER TRANSMISSION PIPELINE PROJECT

WHEREAS, the District is evaluating how to increase its recycled water transmission system within the Peacock Gap area; and

WHEREAS, on September 9, 2021, District staff issued a Request for Proposals to six different consulting firms to provide proposals on the evaluation of three alternative recycled water transmission system expansion routes in the Peacock Gap area; and

WHEREAS, on September 17, 2021, District staff presented at the Operations Committee and informed the Committee that staff had issued a request for proposals to evaluate three recycled water transmission pipeline expansion alternatives and would return at a regularly scheduled Board meeting for contract award; and

WHEREAS, on January 17, 2022, District staff received three proposals and after evaluation of the proposals determined that West Yost provided the most comprehensive proposal; and

WHEREAS, completion of this phase of analysis will allow the District to proceed with a design of the Peacock Gap Recycled Water Transmission Project.

NOW, THEREFORE, BE IT RESOLVED THE BOARD OF DIRECTORS hereby adopts the foregoing findings and further finds that the proposal submitted by West Yost will provide necessary skill and expertise to provide engineering analysis of the Peacock Gap recycled water system and to evaluate the three alternative routes and identify the preferred route.

BE IT FURTHER RESOLVED, that the General Manager is hereby authorized to execute Professional Services Agreement MA-5982 with West Yost, in the amount of $355,617, with a staff requested contingency of $35,000, for a total not to exceed

amount of $390,617.

PASSED AND ADOPTED this 15th day of February, 2022, by the following vote of the Board of Directors.

AYES:

NOES:

ABSENT:

_____
Larry L. Russell
President, Board of Directors

ATTEST:

_____
Terrie Gillen
Board Secretary

AGREEMENT FOR PROFESSIONAL SERVICES

The following is an agreement between **Marin Municipal Water District**, hereinafter "MMWD", and **West Yost,** hereinafter, "Consultant".

WHEREAS, Consultant is a duly qualified water engineering firm, experienced in preparing planning and design for potable pipeline public works projects.

WHEREAS, in the judgment of the Board of Directors of the MMWD, it is necessary and desirable to employ the services of the Peacock Gap Recycled Water Transmission Pipeline Project.

NOW, **THEREFORE**, in consideration of the mutual covenants contained herein, the parties hereto agree as follows:

PART A-- SPECIFIC PROVISIONS:

1. DESCRIPTION OF SERVICES AND PAYMENT: Except as modified in this agreement, the services to be provided and the payment schedule are:

a. The scope of work covered by this agreement shall be for Tasks 1 through 3 that are included in Attachment A of this agreement.

b. The fee and fee payment for such work shall be as stipulated under the fee schedule included in Attachment A of this agreement and shall not exceed $355,616 in total.

PART B-- GENERAL PROVISIONS

1. ASSIGNMENT/DELEGATION: Except as above, neither party hereto shall assign, sublet or transfer any interest in or duty under this agreement without written consent of the other, and no assignment shall be of any force or effect whatsoever unless and until the other party shall have so consented.

2. STATUS OF CONSULTANT: The parties intend that the Consultant, in performing the services hereinafter specified, shall act as an independent contractor and shall have the control of the work and the manner in which it is performed. The Consultant is not to be considered an agent or employee of MMWD, and is not entitled to participate in any pension plan, insurance, bonus or similar benefits MMWD provides its employees.

3. INDEMNIFICATION: The Consultant hereby agrees that all its work will be performed in accordance with generally accepted professional practices and standards, as well as the requirements of applicable federal, state and local laws, it being understood that acceptance of the Consultant's work by MMWD shall not operate as a waiver or release.

a. Consultant expressly agrees to defend, indemnify and hold harmless MMWD, Its officers and employees from and against any and all loss, liability, expense, claims, suits and damages, including reasonable attorneys' fees, arising out of Consultant's, its associates', employees', subconsultants', or other agents' negligence, recklessness, or willful misconduct, in the operation and/or performance under this Agreement. For any claim that alleges the negligent performance of professional services, Consultant's obligations regarding the defense of any indemnitee shall include only the reimbursement of such indemnitee's reasonable attorney's fees and costs of defense to the extent incurred as a result of Consultant's negligence.

b. With respect to all other than professional services under this agreement, Consultant shall indemnify, hold harmless, release and defend MMWD, its officers, agents and employees from and against any and all actions, claims, damages, disabilities, liabilities and expenses, including reasonable attorney's and expert fees and witness costs that may be asserted by any person or entity, including the Consultant, arising out of or in connection with this agreement and the activities necessary to perform those services and complete the tasks provided for herein, but excluding liabilities due to the sole negligence or willful misconduct of MMWD.

This indemnification is not limited in any way by any limitation on the amount or type of damages or compensation payable by or for the MMWD or its agents under workers' compensation acts, disability benefit acts or other employee benefit acts.

4. PROSECUTION OF WORK: The execution of this agreement shall constitute the Consultant's authority to proceed immediately with the performance of this contract. Performance of the services hereunder shall be completed by December 31, 2022, provided, however, that if the performance is delayed by earthquake, flood, high water or other Act of God or by strike, lockout or similar labor disturbance ("Acts"), the time for the Consultant's performance of this contract shall be extended by a number of days equal to the number of days the Consultant has been delayed by such Acts.

5. METHOD AND PLACE OF GIVING NOTICE, SUBMITTING BILLS AND MAKING PAYMENTS: All notices, bills and payment shall be made in writing and may be given by personal delivery or by mail. Notices, bills and payments sent by mail should be addressed as follows:

MMWD: Marin Municipal Water District
Attn: Zak Talbott
220 Nellen Avenue
Corte Madera, CA 94925

CONSULTANT: West Yost
Attn: Adam Brown
2020 Research Park Drive, Suite 100
David, CA,
Ph.# (530) 756-5905

and when so addressed, shall be deemed given upon deposit in the United States Mail, postage prepaid. In all other instances, notices, bills and payments shall be deemed given at the time of actual delivery. Changes may be made in the names and addresses of the person to whom notices, bills and payments are to be given by giving notice pursuant to this paragraph.

6. MERGER: This writing is intended both as the final expression of the agreement between the parties hereto with respect to the included terms of the agreement, pursuant to California Code of Civil Procedure Section 1856 and as a complete and exclusive statement of the terms of the agreement. No modification of this agreement shall be effective unless and until such modification is evidenced by a writing signed by both parties.

7. SEVERABILITY: Each provision of this agreement is intended to be severable. If any term of any provision shall be determined by a court of competent jurisdiction to be illegal or invalid for any reason whatsoever, such provision shall be severed from this agreement and shall not affect the validity of the remainder of the agreement.

8. TERMINATION: At any time and without cause, the MMWD shall have the right in its sole discretion, to terminate this agreement by giving written notice to the Consultant. In the event of such termination, MMWD shall pay the Consultant for services rendered to the termination date.

In addition, if the Consultant should fail to perform any of its obligations hereunder, within the time and in the manner herein provided, or otherwise violate any of the terms of this agreement, MMWD may terminate this agreement by giving the Consultant written notice of such termination, stating the reason for such termination. In such event, the Consultant shall be entitled to receive as full payment for all services satisfactorily rendered and expenses incurred hereunder, an amount which bears the same ratio to the total fees specified in the agreement as the services satisfactorily rendered hereunder by the Consultant bear to the total services otherwise required to be performed for such total fee, provided, however, that there shall be deducted from such amount the amount of damage, if any, sustained by MMWD by virtue of the breach of the agreement by the Consultant.

9. TRANSFER OF RIGHTS/OWNERSHIP OF DATA: The Consultant assigns to MMWD all rights throughout the work in perpetuity in the nature of copyright, trademark, patent, and right to ideas, in and to all versions of any reports, video tapes, photographs, and documents now or later prepared by the Consultant in connection with this contract.

The Consultant agrees to take such actions as are necessary to protect the rights assigned to MMWD in this agreement, and to refrain from taking any action which would impair those rights. The Consultant's responsibilities under this contract will include, but not be limited to, placing proper notice of copyright on all versions of reports and documents as MMWD may direct, and refraining from disclosing any versions of the reports and documents to any third party without first obtaining written permission of MMWD. The Consultant will not use, or permit another to use, any reports and documents in connection with this or any other project without first obtaining written permission of MMWD.

All materials resulting from the efforts of MMWD and/or the Consultant in connection with this project, including documents, reports, calculations, maps, photographs, video tapes, computer programs, computer printouts, digital data, notes, and any other pertinent data are the exclusive property of MMWD. Reuse of these materials by the Consultant in any manner other than in conjunction with activities authorized by MMWD is prohibited without written permission of MMWD.

If the Consultant is using data provided by the District or by the County of Marin pursuant to its data-sharing agreement with MMWD, the Consultant (Licensee) acknowledges by execution of this Agreement that it has read the disclaimer(s) of liability and warranties regarding use of said shared data, a copy of which is attached to this Agreement as Attachment "D".

10. COST DISCLOSURE: In accordance with Government Code Section 7550, the Consultant agrees to state in a separate portion of any report provided MMWD, the numbers and amounts of all contracts and subcontracts relating to the preparation of the report.

11. NONDISCRIMINATION: The Consultant shall comply with all applicable federal, state and local laws, rules and regulations in regard to nondiscrimination in employment because of race, color, ancestry, national origin, religion, sex, marital status, age, medical condition or physical handicap.

12. EXTRA (CHANGED) WORK: Extra work may be required. The Consultant shall not proceed nor be entitled to reimbursement for extra work unless that work has been authorized, in writing, in advance, by MMWD. The Consultant shall inform the District as soon as it determines work beyond the scope of this agreement may be necessary and/or that the work under this agreement cannot be completed for the amount specified in this agreement. Failure to notify the District shall constitute waiver of the Consultant's right to reimbursement.

13. CONFLICT OF INTEREST: The Consultant covenants that it presently has no interest and shall not acquire any interest, direct or indirect, which would conflict in any manner or degree with the performance of its services hereunder. The Consultant further covenants that in the performance of this contract no person having any such interest shall be employed.

14. INSURANCE: The Consultant shall obtain insurance acceptable to MMWD in a company or companies with a Best's rated carrier of at least “A”. The required documentation of such insurance shall be furnished to MMWD at the time the Consultant returns the executed contract. The Consultant shall not commence work nor shall it allow its employees or

subcontractors or anyone to commence work until all insurance required hereunder has been submitted and approved.

The Consultant shall have and maintain at all times during the life of this agreement, up to the date of acceptance, the following policies of insurance:

a. Workers' Compensation Insurance: Workers' Compensation Insurance to cover its employees, as required by the State of California, and shall require all subcontractors similarly to provide Workers' Compensation Insurance as required by the Labor Code of the State of California for all of the subcontractors' employees. All Workers' Compensation policies shall be endorsed with the following specific language:

> "This policy shall not be canceled without first giving thirty (30) days prior notice to MMWD, Attn: Zak Talbott, by certified mail."

The Workers' Compensation Insurance self-insured deductibles and retentions for both the Consultant and its subcontractors shall not exceed $1,000.

b. Public Liability Insurance: Personal Injury (including bodily injury) and Property Damage Insurance for all activities of the Consultant and its subcontractors arising out of or in connection with this agreement, written on a commercial general liability form which provides coverage at least as broad as ISO Commercial General Liability Occurrence Form CG 00 01 11 85 or 88 or any subsequent revision or equivalent including benefit contractual coverage, completed operations coverage, Consultant's protective coverage, and automobile coverage. The automobile coverage should be at least as broad as ISO Business Auto Form CA001 edition 187 or equivalent including employer's non-ownership liability. All deductibles or self-insured retentions shall not exceed $1,000. Coverage in an amount not less than $1,000,000 combined single limit personal injury, including bodily injury, and property damage for each occurrence is required. Each such policy shall be endorsed with the following language:

1. The Marin Municipal Water District, its officers, agents, employees and volunteers are additional insureds under this policy.

2. The insurance shall be primary as respects the insured shown in the schedule above.

3. The insurance afforded by this policy shall not be canceled except after thirty days prior written notice by certified mail return receipt requested has been given to the MMWD.

4. The referenced policy does not exclude explosion, collapse, underground excavation hazards or removal of lateral support.

5. The inclusion of more than one insured shall not operate to impair the right of one insured against another insured, and the coverage afforded in the policy shall apply as though separate policies had been issued to each insured.

Consultant's policy shall be endorsed with "Attachment B - Additional Insured Endorsement" form.

The General Aggregate Limits of Insurance in the referenced policies apply separately to this project.

c. Professional Liability Insurance: The Consultant shall procure and maintain throughout the term of this agreement, Professional Liability Insurance in an amount not less than $1,000,000. All insurance deductibles or self-insured retentions shall not exceed $1,000. All Professional Liability Insurance policies shall be endorsed with the following specific language:

(i) This policy shall not be canceled without first giving thirty (30) days prior notice to MMWD by certified mail.

d. Documentation: The following documentation of insurance shall be submitted to MMWD:

(i) A Certificate of Insurance for Workers' Compensation Insurance for Consultant. A copy of the required policy endorsements specified in subparagraph a. shall be attached to each such Certificate submitted.

(ii) Certificates of Liability Insurance showing the limits of insurance provided. Copies of the required endorsements specified in subparagraphs b. and c. shall be attached to each Certificate submitted.

15. DISPUTE RESOLUTION: Any dispute or claim in law or equity between District and Consultant arising out of this agreement, if not resolved by informal negotiation between the parties, shall be mediated by referring it to the nearest office of Judicial Arbitration and Mediation Services, Inc. (JAMS) for mediation. Each party shall provide the others with a list of four mediators. The parties shall confer on the list and select a mutually agreeable mediator. Mediation shall consist of an informal, non-binding conference or conferences between the parties and the judge-mediator jointly, then in separate caucuses wherein the judge will seek to guide the parties to a resolution of the case. If the parties cannot agree to a mutually acceptable member from the JAMS panel of retired judges, a list and resumes of available mediators with substantial experience in mediating claims of the type at issue between the parties, numbering one more than there are parties, will be sent to the parties, each of whom

will strike one name leaving the remaining name as the mediator. If more than one name remains, JAMS arbitrations administrator will choose a mediator from the remaining names. The mediation process shall continue until the case is resolved or until such time as the mediator makes a finding that there is no possibility of resolution.

At the sole election of the District, any dispute or claim in law or equity between District and Consultant arising out of this agreement which is not settled through mediation shall be decided by neutral binding arbitration and not by court action, except as provided by California law for judicial review of arbitration proceedings. The arbitration shall be conducted in accordance with the rules of Judicial Arbitration Mediation Services, Inc. (JAMS). The parties to an arbitration may agree in writing to use different rules and/or arbitrators.

16. BILLING AND DOCUMENTATION: The Consultant shall bill MMWD for work on a monthly or agreed upon basis or as articulated in Attachment A and shall include a summary of work for which payment is requested. The summary shall include time and hourly rate of each individual, a narrative description of work accomplished, and an estimate of work completed to date.

17. REASONABLE ASSURANCES: Each party to this agreement undertakes the obligation that the other's expectation of receiving due performance will not be impaired. When reasonable grounds for insecurity arise, with respect to performance of either party, the other may, in writing, demand adequate assurance of due performance and until the requesting party receives such assurance may, if commercially reasonable, suspend any performance for which the agreed return has not been received. "Commercially reasonable" includes not only the conduct of the party with respect to performance under this agreement but also conduct with respect to other agreements with parties to this agreement or others. After receipt of a justified demand, failure to provide within a reasonable time, not to exceed 30 days, such assurance of due performance as is adequate under the circumstances of the particular case is a repudiation of this agreement. Acceptance of any improper delivery, service, or payment does not prejudice the aggrieved party's right to demand adequate assurance of future performance.

WEST YOST

Dated: _____ By _____
Elizabeth T. Drayer, Vice President

MARIN MUNICIPAL WATER DISTRICT

Dated: _____ By _____
Ben Horenstein, General Manager

Rev. 1-30-19

WEST YOST
Water. Engineered.

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Suite 100
Davis CA 95618

530.756.5905 phone
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westyost.com

SCOPE OF SERVICES

The District's Project has been divided into two phases. Phase 1 will involve an alternative analysis, preliminary design, and preliminary design report while Phase 2 will involve performing environmental compliance work and final construction documents. At this time, the District has requested a scope of work and fee estimate for Phase 1 only. It is our understanding that a separate scope of work and fee estimate for Phase 2 will be provided to the District once a preferred alignment is chosen and the preliminary design report is complete.

Per direction from the District, a scope and fee for final environmental compliance (Task 4 per the RFP) is being deferred to Phase 2. As such, this scope only includes Tasks 1 through 3.

Additionally, the District is not requesting a full design-level topographic survey or geotechnical field investigation (e.g., borings) during Phase 1. As such, environmental compliance activities will not be able to begin until a Phase 2 scope and fee are negotiated, and the preferred alignment is designed to a level that can be utilized by Panorama to prepare documents and process permit applications.

Task 1. Project Management

This task includes project management activities including day-to-day administration, progress meetings, and technical reviews throughout the duration of the contract.

Subtask 1.01 – Project Administration

West Yost will monitor the progress of individual tasks, coordinate the completion of work products, and monitor the task budgets and the project schedule. West Yost will develop a project schedule and prepare monthly schedule updates. West Yost will provide monthly invoicing. A brief description of the work completed will be noted on each invoice.

Subtask 1.02 – Project Kickoff Meeting

West Yost will organize and attend a project kickoff meeting with District staff to introduce the team members, review the project scope, and request information. West Yost will prepare and submit a meeting agenda and minutes.

Subtask 1.03 – Biweekly Check-In Meetings

West Yost will attend biweekly progress check-ins with the District. Biweekly meetings are assumed to be one half hour each.

Subtask 1.04 – Board Presentations and Public Outreach

West Yost will attend up to two meetings for a Board presentation or assistance with public outreach. West Yost will participate in the preparation and practice for the two meetings.

Subtask 1.05 – Stakeholder Coordination

The design team will engage in early coordination with project stakeholders including:

- The City of San Rafael (City)
- National Park Service
- Sonoma-Marin Area Rail Transit (SMART)
- Caltrans
- Bay Conservation and Development Commission (BCDC)
- State Water Resources Control Board (SWRCB)

West Yost will attend up to four (4) two-hour meetings with stakeholders. West Yost will complete meeting agendas and minutes.

Task 1 Assumptions

- Kickoff meeting duration is assumed
- All project meetings (excluding Board presentations and stakeholder meetings) are assumed to be held virtually through MS Teams, Zoom, or similar platform.
- The workshop with District staff to review the Draft Preliminary Design Report (PDR) submittal is included in the PDR task in this scope of work.
- Each of two (2) Board presentation and public outreach meetings is assumed to be held in person with a duration of two (2) hours, and all preparations and practice are assumed to be twelve (12) hours in total for each Board meeting.

Task 1 Deliverables

- Monthly status reports on each invoice
- Initial project schedule and monthly schedule updates
- Kickoff and stakeholder meeting agendas and minutes

Task 2 – Review Existing Records

This task includes reviewing existing records and available information as well as conducting field investigations.

Subtask 2.01 – Review Existing Records

The team will study and analyze all available background information, maps, drawings, previous design route alternative data, and reports. The District will provide a link to relevant reports and drawings upon request.

Subtask 2.02 – Utility Coordination and Mapping

At the start of the project, West Yost will send utility coordination letters to known utility companies within the project area to request maps of existing utilities. The utility maps will be used to create a base file for use in the preliminary design plans to help identify conflicts and evaluate the preferred alternative alignment.

Subtask 2.03 – Geotechnical Desktop Study

McMillen Jacobs, as a subconsultant to West Yost, will perform a geotechnical desktop study and complete a technical memorandum (TM) of findings from the study. They will review available maps, reports, and documents, including GeoTracker for existing borings if available. McMillen Jacobs will also perform a field investigation including evaluation of existing soil and bedrock exposures using Schmidt Hammer testing, pocket penetrometer testing, measurements of bedrock discontinuities and orientations, photographs and sampling exposures.

Subtask 2.04 – Environmental Document Review

Panorama Environmental provided preliminary environmental review for the project in 2014 and maintains all their previous records on the project, which their team will review under this subtask. Additional environmental information will be collected and reviewed, including any additional updated project design information and environmental review information within the areas of study (such as from China Camp State Parks, or Caltrans). Data, such as geotechnical and soils data, slope data, and existing traffic data, where available will be collected and reviewed. The information will be cataloged and saved.

Subtask 2.05 – Field Investigation

West Yost will conduct up to two (2) site investigations to assess site conditions, take photos, and document observations. The field walks will also be used to verify existing utility locations.

Task 2 Assumptions

- A topographic survey will not be performed as part of the Phase I scope. Existing utility base map will be solely based on aerial photography. Any topographic survey required for design will be performed as part of the Phase II scope after a preferred alignment is selected.

Task 2 Deliverables

- None. All work generated as part of Task 2 will be submitted as part of the PDR.

Task 3 – Preliminary Design Report

This task involves evaluating the routes for design identified in Attachment B of the RFP by comparing environmental documentation costs, benefit of use, estimated construction cost, and schedule to determine a preferred alternative.

Subtask 3.01 – Alternatives Evaluation

West Yost will develop and conduct an evaluation of each of the three alternatives presented in the RFP and will also identify and evaluate up to two sub-alternative alignments for the South Alignment. Recommendations will be provided focused on the estimated environmental documentation, design, and construction costs; benefit of use; constructability; estimated design, environmental, and construction schedule; and traffic/public impacts. West Yost and team will perform a high-level evaluation of the construction methodologies and constructability including utility conflicts, schedule impacts from right of way conflicts and required permits and regulatory approvals, and pipeline material

selection. Alternatives will be analyzed using a rating matrix and a detailed narrative of each of the three alternatives. West Yost will review the proposed matrix and weightings with the District prior to proceeding with preparation of the draft PDR.

W-Trans, as a subconsultant to West Yost, will provide input on the pros and cons associated with each of the three alternatives relative to traffic and transportation facilities. W-Trans will contribute to estimated construction costs associated with repairing or replacing traffic infrastructure, including striping, signage, and traffic signal equipment.

Subtask 3.02 – Trenchless Assessment

McMillen Jacobs will use the geotechnical desktop study TM completed in Task 2 to provide trenchless recommendations. They will perform high level construction methodology evaluations for multiple trenchless construction methods pertaining to apparent crossings of the alternatives. A trenchless recommendations TM will be completed as part of this task and included in an appendix to the PDR. The recommendations will be incorporated into the PDR.

Subtask 3.03 – Environmental Support

Alternative Screening

Panorama will contribute to the definition of alternatives screening criteria as they relate to the environmental review for the project. Environmental screening criteria are expected to be based on degree of biological, cultural, and traffic impacts and the costs and schedule for CEQA review and permitting (including compensatory mitigation, if needed). Other considerations for the screening criteria may include level of public (or Responsible Agency) concern that could affect the CEQA and permitting processes.

Review and Assessment of Existing Biological Data

Nomad Ecology will review the California Natural Diversity Database (CNDDB) and the District's GIS database, to understand the species that could potentially occur along each alignment. At this phase, Nomad will compare areas where construction could occur (either within roadways or where it could be off the roadways, based on engineering design) to identify the schedule, scope, and costs for the botanical, wetland, and potentially any wildlife species impacts that could occur. Nomad will provide a short memorandum summarizing this information to be presented in the tables on the CEQA process and permitting process, described below. Nomad will provide a map set of the results to show the biological constraints and the focus areas for the survey work for each alternative.

Cultural Resources Records Search and Assessment

A cultural records search was previously conducted in 2014 for this project. Far Western will review the existing data set and maps and request an updated records search from the Northwest Information Center, Rohnert Park. For project routes that were not included in the 2014 request, a formal search will be conducted. The search radius will encompass a 0.25-mile buffer around all project routes. Copies of site records and studies will be obtained.

Far Western will also conduct desktop archival research to understand the historical development of the project routes and sensitivity for historic-era resources within all three alignments. This effort will be

preliminary and will involve the review of available historical maps and photographs from online repositories. This task does not include in-person research.

Far Western will prepare a cultural resources constraints memorandum that will document the records search findings. The memorandum will summarize the results for each route, where appropriate, and will provide recommendations for additional studies that would be needed to comply with CEQA and Section 106 (if applicable, such as for the North Route). The memorandum will include an updated map of resource areas (confidential) and will identify the detailedscope, schedule, and costs for the additional studies needed to complete the CEQA review and permitting for each alternative to be presented in the tables on the CEQA process and permitting process, described as follows.

CEQA Document

Under this task, Panorama will identify the likely CEQA document given the additional review and background information collected, particularly as it relates to the agency input, and the additional biological and cultural resources desktop reviews. Panorama will prepare a brief screening table that identifies each alternative, summarizes the potential environmental effects by CEQA parameter, and identifies whether the impact would be mitigable (helping to determine whether an IS/MND can be prepared or if an Environmental Impact Report [EIR] is needed). The effect by parameter will be characterized as either low, moderate, or high to compare alternatives by parameter, which can be utilized during the alternatives screening. The table, as well as the feedback from the biological and cultural desktop assessments will be used to support the identified CEQA document environmental review process scope, schedule, and budget. The results will be presented in a brief memorandum.

Permitting Narrative

This task will include presenting a narrative that describes the likely permitting requirements by alternative. For each alternative, Panorama will identify in the narrative the permit requirements and application process, the triggers for that permit (and likelihood that it would be needed), the schedule, and the potential range of costs. The results will also be presented in a table.

Subtask 3.04 – Draft Preliminary Design Report

West Yost will prepare a preliminary design report and 30% design plans for the preferred alternative. The PDR will include a summary of existing data, field investigation results, and documentation of the alternatives evaluation. The PDR will include preliminary plans (plan views only) prepared in AutoCAD and plotted at a scale of 1” = 20’. Plans will be prepared using high-resolution aerial imagery. West Yost has the ability to use high-resolution aerial imagery as backgrounds for the preliminary design deliverables. This imagery is accessed through Nearmap. It should be noted that the imagery native files can be sent with our deliverable for an additional cost.

West Yost will organize and attend one workshop with District staff during the review period of the Draft PDR submittal to discuss and review progress and significant action items. West Yost will prepare and submit a meeting agenda, minutes, and a PowerPoint presentation (as applicable).

Subtask 3.05 – Final Preliminary Design Report

West Yost will incorporate District comments from the Draft PDR to revise and submit a Final PDR.

Task 3 Assumptions

- Scope includes potentially four (4) trenchless crossing locations evaluated by McMillen Jacobs
- Design plans (plan view only) will be attached to the PDR.
- Aerial imagery will be incorporated into the preliminary plans in PDF format.
- Geotechnical memo and trenchless assessment memo will be incorporated into the appendix of the PDR.
- West Yost will attend one (1) workshop to review the Draft PDR. The design review workshop is assumed to be one (1) hour held virtually through Microsoft Teams, Zoom, or similar platform.

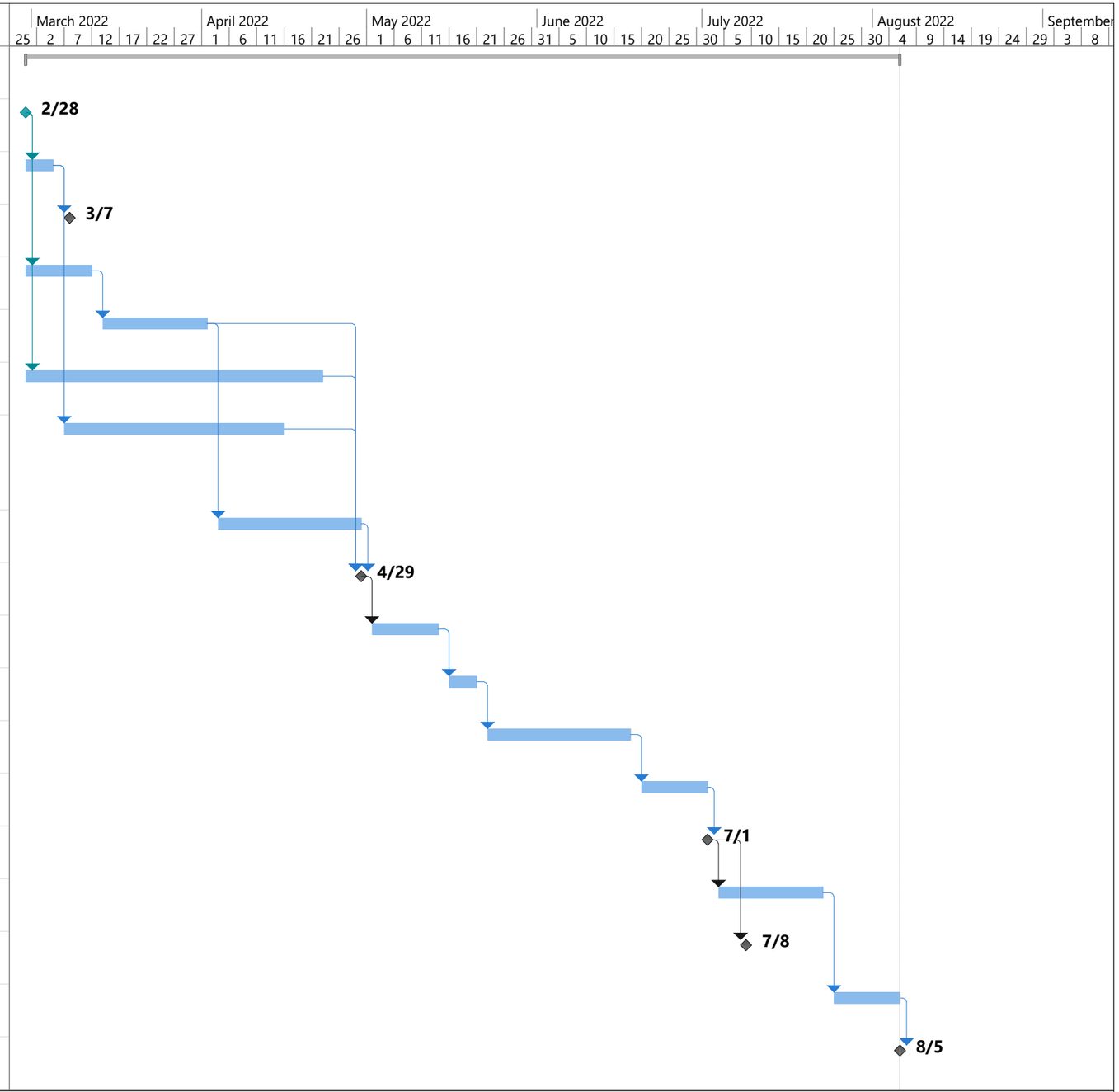
Task 3 Deliverables

- Draft PDR in PDF and Word format containing the work product from all subtasks
- Draft PDR workshop agenda and minutes
- Comment response in Excel and PDF format
- Final PDR in PDF format and native file formats (GIS, AutoCAD, Word, Excel, etc.) of all except aerial imagery.

Fee - Tasks 1–3

West Yost Associates **PROJECT: Peacock Gap Recycled Water Transmission Pipeline**	P/VP $318 E. Drayer	SCM $304 JP Davis	SE/SS/SG II $256 A. Brown	SE/SS/SG I $244 C. Ramirez	SE/SS/SG I $244 K. Tiano	AE/AS/AG II $224 S. Greenwood	ESG II $195	ADM IV $144	QC Team	Labor		ENV	GEO	TRAF	Sub. w/ markup 5%	Total Costs
										Hours	Fee					
Task 1	***Project Management***															
1.01 Project Administration	8		40							48	$ 12,784					$ 12,784
1.02 Project Kickoff Meeting			4	1	1	1				7	$ 1,736					$ 1,736
1.03 Biweekly Check-in Meetings			12	4		4				20	$ 4,944					$ 4,944
1.04 Board Presentations and Public Outreach			40	4		4				48	$ 12,112					$ 12,112
1.05 Stakeholder Coordination			40	24						64	$ 16,096					$ 16,096
Subtotal, Task 1 (hours)	**8**	**0**	**136**	**33**	**1**	**9**	**0**	**0**	**0**	**187**						
Subtotal, Task 1 ($)	**$ 2,544**		**$ 34,816**	**$ 8,052**	**$ 244**	**$ 2,016**					**$ 47,672**					**$ 47,672**
Task 2	***Review Existing Records***															
2.01 Review Existing Records			4	8		16	16			44	$ 9,680					$ 9,680
2.02 Utility Coordination and Mapping				24		80	120	8		232	$ 48,328					$ 48,328
2.03 Geotechnical Desktop Study										0			$ 32,700		$ 34,335	$ 34,335
2.04 Environmental Document Review										0		$ 12,710			$ 13,346	$ 13,346
2.05 Field Investigation				16			24			40	$ 8,584					$ 8,584
Subtotal, Task 2 (hours)	**0**	**0**	**4**	**48**	**0**	**96**	**160**	**8**	**0**	**316**						
Subtotal, Task 2 ($)			**$ 1,024**	**$ 11,712**		**$ 21,504**	**$ 31,200**	**$ 1,152**			**$ 66,592**	**$ 12,710**	**$ 32,700**		**$ 47,681**	**$ 114,273**
Task 3	***Preliminary Design Report***															
3.01 Alternatives Evaluation		24	24	40			16			104	$ 31,408			$ 3,890	$ 4,085	$ 35,493
3.02 Trenchless Assessment										0			$ 39,940		$ 41,937	$ 41,937
3.03 Environmental Support										0		$ 48,726			$ 51,162	$ 51,162
3.04 Draft Preliminary Design Report / Plans			24	40		40	80		16	200	$ 45,552		$ 11,360		$ 11,928	$ 57,480
3.05 Final Preliminary Design Report / Plans			4	8		8	8		4	32	$ 7,600					$ 7,600
Subtotal, Task 3 (hours)	**0**	**24**	**52**	**88**	**0**	**48**	**104**	**0**	**20**	**336**						
Subtotal, Task 3 ($)		**$ 7,296**	**$ 13,312**	**$ 21,472**		**$ 10,752**	**$ 20,280**		**$ 11,448**		**$ 84,560**	**$ 48,726**	**$ 51,300**	**$ 3,890**	**$ 109,112**	**$ 193,672**
TOTAL (hours)	**8**	**24**	**192**	**169**	**1**	**153**	**264**	**8**	**36**	**839**						
TOTAL ($)	**$ 2,544**	**$ 7,296**	**$ 49,152**	**$ 41,236**	**$ 244**	**$ 34,272**	**$ 51,480**	**$ 1,152**	**$ 11,448**		**$ 198,824**	**$ 61,436**	**$ 84,000**	**$ 3,890**	**$ 156,792**	**$ 355,616**

ID	Task Mode	Task Name	Duration	Start	Finish
0		**Peacock Gap RW Predesign**	**115 days**	**Mon 2/28/22**	**Fri 8/5/22**
1		Anticipated NTP	0 days	Mon 2/28/22	Mon 2/28/22
2		Project Initiation	1 wk	Mon 2/28/22	Fri 3/4/22
3		Kickoff Meeting	0 days	Mon 3/7/22	Mon 3/7/22
4		District Gathers/Provides Materials	2 wks	Mon 2/28/22	Fri 3/11/22
5		Team Reviews Existing Records	3 wks	Mon 3/14/22	Fri 4/1/22
6		Utility Coordination and Mapping	8 wks	Mon 2/28/22	Fri 4/22/22
7		Perform Geotechnical Desktop Study and Trenchless Assessments	6 wks	Mon 3/7/22	Fri 4/15/22
8		Attend Stakeholder Meetings	4 wks	Mon 4/4/22	Fri 4/29/22
9		Client Meeting to Begin Setting Alt Criteria	0 days	Fri 4/29/22	Fri 4/29/22
10		Establish Comparison/Weighting Criteria	2 wks	Mon 5/2/22	Fri 5/13/22
11		Select Preferred Alignment	1 wk	Mon 5/16/22	Fri 5/20/22
12		Prepare Draft PDR	4 wks	Mon 5/23/22	Fri 6/17/22
13		Perform Internal QA/QC of Draft PDR	2 wks	Mon 6/20/22	Fri 7/1/22
14		Submit Draft PDR	0 days	Fri 7/1/22	Fri 7/1/22
15		District Reviews Draft PDR	3 wks	Mon 7/4/22	Fri 7/22/22
16		PDR Review Workshop	0 days	Fri 7/8/22	Fri 7/8/22
17		Address District Comments	2 wks	Mon 7/25/22	Fri 8/5/22
18		Submit Final PDR	0 days	Fri 8/5/22	Fri 8/5/22



Project: Peacock Gap RW Prede
Date: Mon 1/31/22

Task	Project Summary	Manual Task	Start-only	Deadline
Split	Inactive Task	Duration-only	Finish-only	Progress
Milestone	Inactive Milestone	Manual Summary Rollup	External Tasks	Manual Progress
Summary	Inactive Summary	Manual Summary	External Milestone	

ATTACHMENT B (To Standard Agreement)

ADDITIONAL INSURED ENDORSEMENT

This endorsement modifies insurance provided under the following:

Commercial General Liability Coverage: Policy# _____

Policy Period _____

Automobile Liability: Policy# _____

Policy Period _____

INSURED: Name _____

Address _____

City/State/Zip _____

SCHEDULE

The Marin Municipal Water District, its officers, officials, agents, employees and volunteers (MMWD).

WHO IS AN INSURED

Is amended to include as an insured the organization shown in the schedule above.

1. The insurance shall be primary concerning the insured shown in the schedule above.
2. The insurance afforded by this policy shall not be cancelled except after thirty days prior written notice by certified mail return receipt requested has been given to the MMWD.
3. The referenced policy does not exclude explosion, collapse, underground excavation hazards or removal of lateral support.
4. The inclusion of more than one insured shall not operate to impair the right of one insured against another insured, and the coverage afforded in the policy shall apply as though separate policies had been issued to each insured.

Authorized Insurance Representative

Signature

Date

Print Name and Title

Rev. 7-25-06

ATTACHMENT C (To Standard Agreement)

COUNTY OF MARIN REQUIREMENTS

(for data provided by County of Marin)

Disclaimer of Liability and Warranties

A. Licensee understands and agrees that it is possible that errors and omissions will occur in data input or programming done by the County and Signatories to provide the Parcel Base Map in the form desired. The Licensee further understands and agrees that it is probable that errors and omissions will occur in record keeping processes, especially when large numbers of records are developed and maintained, and that data may not meet the Licensee's standards as to accuracy or completeness. Notwithstanding, the Licensee agrees to take the data "as is", fully expecting that there may be errors and omissions associated with the data.

B. Licensee further understands and agrees that the County and its Signatories make absolutely no warranty whatsoever, whether expressed or implied, as to the accuracy, thoroughness, value, quality, validity, merchantability, suitability, condition or fitness for a particular purpose of the data or any programming used to obtain the data, nor as to whether the data are error-free, up-to-date, complete or based upon accurate or meaningful facts.

C. Licensee further understands and agrees that it will forever waive any and all rights, claims, causes of action or other recourse that it might otherwise have against the County and its Signatories for any injuries or damages of any type, whether direct, indirect, incidental, consequential or otherwise, resulting from any error or omission in the data or in any programming used to obtain the data, or in any manner arising out of or related to this Agreement or the data provided hereunder. Licensee agrees that the County and its Signatories shall not be liable to Licensee for any liability, claim, loss, damage, injury or expense of any kind caused or alleged to be caused, directly or indirectly, by the inadequacy of data obtained from the County or Signatories, by any deficiency of County or Licensee systems, by any delay or failure to provide any service, or by any other interruption, disruption or loss of Licensee operations.

ATTACHMENT D (To Standard Agreement)

MARIN MUNICIPAL WATER DISTRICT
DATA DISCLAIMER

(for data provided by the District)

Disclaimer of Liability and Warranties

A. All materials provided to Licensee by the District are the exclusive property of the District. Re-use of these materials by the Licensee in any manner other than in conjunction with activities authorized by the District is prohibited without the written permission of the District.

B. Licensee understands and agrees that it is possible that errors and omissions will occur in data input or programming done by the District to provide the data in the form desired. The Licensee further understands and agrees that it is probable that errors and omissions will occur in record keeping processes, especially when large numbers of records are developed and maintained, and that data may not meet the Licensee's standards as to accuracy or completeness. Notwithstanding, the Licensee agrees to take the data "as is", fully expecting that there may be errors and omissions associated with the data.

C. Licensee further understands and agrees that the District makes absolutely no warranty whatsoever, whether expressed or implied, as to the accuracy, thoroughness, value, quality, validity, merchantability, suitability, condition or fitness for a particular purpose of the data or any programming used to obtain the data, nor as to whether the data are error-free, up-to-date, complete or based upon accurate or meaningful facts.

D. Licensee further understands and agrees that it will forever waive any and all rights, claims, causes of action or other recourse that it might otherwise have against the District for any injuries or damages of any type, whether direct, indirect, incidental, consequential or otherwise, resulting from any error or omission in the data or in any programming used to obtain the data, or in any manner arising out of or related to this Agreement or the data provided hereunder. Licensee agrees that the District shall not be liable to Licensee for any liability, claim, loss, damage, injury or expense of any kind caused or alleged to be caused, directly or indirectly, by the inadequacy of data obtained from the District, by any deficiency of District or Licensee systems, by any delay or failure to provide any service, or by any other interruption, disruption or loss of Licensee operations.

Item Number: 11
Meeting Date: 02-15-2022
Meeting: Board of Directors

Approval Item

TITLE

Amendment No. 3 to Professional Services Agreement MA-5945 with Miller Pacific Engineering Group for continued Geotechnical Engineering Services in support of the Final Design of the Pine Mountain Tunnel Tanks Replacement Project

RECOMMENDATION

Approve a resolution authorizing the General Manger to execute Amendment No. 3 to Professional Service Agreement No. 5945 with Miller Pacific Engineering Group, for continued geotechnical engineering services in support of the final design of phase one work for the Pine Mountain Tanks Replacement Project (D21043) in the amount of $33,000, with a staff requested contingency of $5,000, for a total amendment amount of $38,000

SUMMARY

On April 27, 2021, the District entered a Professional Services Agreement MA-5945 with Miller Pacific Engineering Group for the geotechnical engineering services in support of the preliminary design used to prepare the Initial Study/ Mitigated Negative Declaration (IS/MND). This agreement evaluated two potential tank sites for geotechnical feasibility and aid in the selection of a preferred tank site. The initial scope of services for this agreement included the review of information and reports, preliminary site reconnaissance and mapping, subsurface boring sampling, laboratory testing of samples, analysis of potential geotechnical and geologic hazards associated with development of the proposed tank sites, and a preliminary report with recommendations. The preliminary report with recommendations is included as Attachment Number 5. The preliminary report was prepared for only one tank site due to the District determining at the beginning of site reconnaissance that the other tank site was not feasible due to extensive environmental mitigation requirements.

On August 6, 2021, the District executed Amendment No. 1 to MA-5945 to extend the contract completion date that expired on August 1, 2021, to December 31, 2021.

On October 7, 2021, the District executed Amendment No. 2 to MA-5945 with Miller Pacific Engineering Group to provide additional services beyond the original scope of work. The services included both a seismic refraction survey and multi-channel analysis of surface waves surveys. These surveys were used to determine the thickness of overburden rock, characterize the underlying bedrock in terms of depth and rippability and relative strength of the subsurface material. The total cost for this additional work was $12,420 increasing the total not-to-exceed contract amount from $56,000 to $68,420.

Amendment No. 3 will extend the contract completion date that expired December 31, 2021 to August 1, 2022 and will provide continued geotechnical engineering services to support the

final design of phase 1 work as discussed in Attachment Number 3. The phase 1 work performed by Miller Pacific Engineering Group will include slope stability analysis and deformation analysis of the planned retaining wall and tanks under static and seismic conditions, a final design report and preparation of performance specifications and design details for the retaining wall, as well as attendance at meetings and additional consultation. As discussed at the January 4th Board meeting, the completion of the final design of the Pine Mountain Tunnel Project will assist the District with its effort to obtain funding from Department of Water Resources Urban and Multi-benefit Drought Relief Grant Program.

DISCUSSION

The Pine Mountain Tunnel is an 8,700-foot long tunnel built in 1919 to convey and treat water from Alpine Lake to San Rafael and the Ross Valley, now known as the Ross Valley System, which serves 44,000 District customers or roughly 23% of the District's service area. Due to regulatory constraints, the District abandoned the tunnel as a conveyance system in 1971, but retained the tunnel to provide storage (approximately 3 million gallons) and surge protection. The tunnel is severely deteriorated and presents potential water quality issues. The tunnel is leaking at an approximate rate of 6,000 gallons per day. The State Water Resources Control Board (formerly the California Department of Public Health) "considers the tunnel to be a significant potential threat to both reliable water supply and quality." The District is in continuous communication with the State Water Resources Control Board regarding the District's progress for the tunnel's decommissioning and replacement.

As part of the Water System Master Plan, the District and its consultant, conducted a focused evaluation of the storage needed to replace Pine Mountain Tunnel and support the larger Ross Valley system, including a detailed review of the previous studies and assumptions to improve storage capacity and reliability in the Ross Valley system. A sizing study for the Ross Valley system determined the appropriate sizing (estimated at 3 to 4 MG) for the storage needed to replace Pine Mountain Tunnel and elevations to achieve the District's standard criteria for pressure zone sizing. Project siting alternatives were developed, with sites including locations that were previously analyzed as well as new potential storage site locations. The selected location for a storage facility to replace Pine Mountain Tunnel is at Concrete Pipeline Road near drainage culvert No. 5, also known as "CP5". These results were presented to the Operations Committee on May 21, 2021.

The preliminary or 30% design of the Pine Mountain Tunnel Tanks Replacement Project was completed with the support of Miller Pacific Engineering Group's geotechnical engineering services which allowed the environmental consultant to prepare the Draft and Final IS/MND along with the Mitigation Monitoring and Reporting Program (MMRP) required for the District to proceed with the project pursuant to the California Environmental Quality Act. On December 14th the Board of Directors adopted the Final IS/MND and approved the MMRP for the Pine Mountain Tunnel Tanks Replacement Project.

On January 4, 2022, the Board authorized the General Manager to execute an amendment for the final design package and bidding support services of the Pine Mountain Tank Replacement Project. With the Boards authorization to execute the amendment and with final design underway, continued geotechnical engineering services of Miller Pacific Engineering Group are needed to support the final design work.

District staff recommends the Board authorize the General Manager to execute Amendment No. 3 to the Professional Services Agreement No. 5945 with Miller Pacific Engineering Group for continued geotechnical engineering services in support of the final design of phase one work for the Pine Mountain Tanks Replacement Project (D21043) in the amount of $33,000, with a staff requested contingency of $5,000, for a total amendment amount of $38,000.

FISCAL IMPACT

The existing Professional Services Agreement with Miller Pacific Engineering Group is for a total of $68,420. Amendment No. 3 to MA-5945 will increase the existing amount by $33,000 to a new contract amount of $101,420. Staff also request a contingency amount of $5,000 to Amendment No. 3 for a total Amendment No. 3 amount of $38,000 and a new total not to exceed contract amount under MA-5945 of $106,420.

ATTACHMENTS

1. Resolution
2. Amendment No. 3 to MA-5945
3. Misc. Agreement 5945 and Amendments
4. Preliminary Geotechnical Investigation Report

DEPARTMENT	DIVISION MANAGER	APPROVED
Engineering	**Crystal Yezman** **Director of Engineering**	**Ben Horenstein** **General Manager**

MARIN MUNICIPAL WATER DISTRICT

RESOLUTION NO.

A RESOLUTION OF THE BOARD OF THE MARIN MUNICIPAL WATER DISTRICT APPROVING AMENDMENT NO. 3 TO MISCELLANEOUS AGREEMENT NO. 5945 FOR GEOTECHNICAL ENGINEERING SERVICES IN SUPPORT OF THE FINAL DESIGN PHASE ONEWORK FOR THE PINE MOUNTAIN TUNNEL REPLACEMENT PROJECT

WHEREAS, On April 27, 2021, the District entered into Professional Services Agreement MA-5945 with Miller Pacific Engineering Group to provide geotechnical engineering services in support of the preliminary design used to prepare the Initial Study/Mitigated Negative Declaration (IS/MND) along with the Mitigation Monitoring and Reporting Program (MMRP) required for the District to proceed with this project; and

WHEREAS, On August 6, 2021, staff executed Amendment No. 1 to MA-5945 to extend the contract completion date to December 31, 2021; and

WHEREAS, On October 7, 2021, staff executed Amendment No. 2 to MA-5945 to provide additional geophysical services beyond the original scope of work; and

WHEREAS, On December 14th, the Board of Directors adopted the Final IS/MND and approved the MMRP for the Pine Mountain Tunnel Tanks Replacement Project; and

WHEREAS, On January 4th, the Board of Directors authorized the General Manager to execute an amendment for an agreement to commence the final design and bidding of the Pine Mountain Tunnel Replacement Project; and

WHEREAS, Amendment No. 3 to Professional Services Agreement No. 5945 (MA-5945) in the amount of $33,000 with a staff requested contingency of $5,000 for a total amendment amount of $38,000 with Miller Pacific Engineering Group will extend the term of the Agreement to August 1, 2022 and is necessary to complete the final design phase one work for the Pine Mountain Tunnel Tanks Replacement Project; and

WHEREAS, completion of the final design will assist the District pursuing funding from the Department of Water Resources Urban and Multi-benefit Drought Relief Grant Program; and

WHEREAS, completion of the final design will allow the District the option to advertise and start construction on the Pine Mountain Tunnel Tanks Replacement Project as early as July 2022.

NOW, THEREFORE, BE IT RESOLVED THE BOARD OF DIRECTORS hereby adopt the foregoing findings and further finds that the proposal submitted by Miller Pacific Engineering Group will provide necessary skill and expertise to provide geotechnical services to support the final design phase one work of the Pine Mountain Tunnel Tanks Replacement Project under Amendment No. 3 to MA-5945.

BE IT FURTHER RESOLVED, that the General Manager is hereby authorized to execute Amendment No. 3 to Professional Services Agreement MA-5945 in the amount of $33,000, with a staff requested contingency of $5,000, for an additional contract amount not to exceed $38,000.

PASSED AND ADOPTED this 15th day of February, 2022, by the following vote of the Board of Directors.

AYES:

NOES:

ABSENT:

_____
Larry L. Russell
President, Board of Directors

ATTEST:

_____
Terrie Gillen
Board Secretary

AMENDMENT NO. 3 TO
AGREEMENT FOR PROFESSIONAL SERVICES BETWEEN
MARIN MUNICIPAL WATER DISTRICT and MILLER PACIFIC ENGINEERING GROUP
(Miscellaneous Agreement No. 5945)

This Contract Amendment ("Third Amendment") is entered into by and between Marin Municipal Water District ("District") and Miller Pacific Engineering Group ("Consultant").

For good and valuable consideration the receipt and adequacy of which is hereby acknowledged, the parties hereto agree as follows:

Section 1. Recitals:

A. District and Consultant entered into an Agreement for Professional Services dated April 27, 2021 ("Agreement").

B. District and Consultant entered into the First Amendment to extend the term of the Agreement to December 31, 2021

C. District and Consultant entered into a Second Amendment to the Agreement on October 7, 2021 to provide additional geophysical services beyond the original scope as set forth in the Agreement and the First Amendment.

D. The parties desire to enter into a Third Amendment to the Agreement to extend the term of the contract to August 1, 2022 and to provide geotechnical engineering support for phase one of the final design for the Pine Mountain Tunnel Replacement Project.

Section 2. Terms:

A. Amendment to Agreement: This Third Amendment modifies the Agreement, as previously amended. Except for the modifications contained herein, all the terms of the Agreement shall apply.

B. Terms:

1. The term and the completion date for the additional work to be performed under this Third Amendment is hereby extended to August 1, 2022.

2. The following revisions are hereby made to the Agreement, PART A – SPECIFIC PROVISIONS:

   a. Consultant will Provide geotechnical engineering services as described in Attachment A to this Third Amendment, which is made part hereof .
   b. The total cost for the additional scope of work to be performed under this Third Amendment shall not exceed the amount of $33,000, which shall increase the total not-to-exceed amount under the Agreement as previously amended from $68,420 to $101,420.

[SIGNATURES ON NEXT PAGE]

Dated: _____ **MILLER PACIFIC ENGINEERING GROUP**

By _____
Eric Dabanian, GE

Dated: _____ **MARIN MUNICIPAL WATER DISTRICT**

By _____
Ben Horenstein, General Manager

ATTACHMENT A – Additional Scope of Work and Budget

ATTACHMENT A

MILLER PACIFIC ENGINEERING GROUP

February 2, 2022
File: 187-503bpro.doc

Marin Municipal Water District
220 Nellen Avenue
Corte Madera, California 94925

Attn: Mr. Jake Miller

Re: Supplemental Budget Request
Pine Mountain Water Tanks Project
Fairfax, California

Introduction

As requested, following issuance of our draft geotechnical report for the Pine Mountain Water Tanks project, this letter summarizes our request for supplemental budget to support the final design of Phase 1 work, including mass grading and stormwater diversion bid documents prepared by Woodard & Curran. Currently, we are providing geotechnical services per Amendment No. 2 to our Agreement dated October 7, 2001.

Supplemental Services

Our services will include supplemental slope stability analysis, primarily for seismic slope stability and deformation analysis. This analysis includes stability of the 70-foot planned soil nail and shotcrete retaining wall, and two water tanks under static and seismic conditions, and then models soil nail and retaining wall values to determine if the expected seismic displacement can be within acceptable levels. We will prepare a final geotechnical report that will incorporate our slope stability and deformation analysis, recommendations and design criteria. The report will also respond to comments regarding our draft report. Our services will include preparing soil nail wall specifications and details with assistance from Woodard & Curran, so that the contractor's engineer can prepare detailed drawings and supporting calculations. We also include budget for weekly meetings and consultation with the project team.

We will provide our services on a time and expense basis as shown on the attached budget worksheet for a not to exceed budget estimate of $33,000.

We trust that this letter contains the information needed at this time. Should there be any questions or concerns regarding our budget estimate, please do not hesitate to contact us. To indicate your acceptance, please issue an amendment to our agreement.

Very truly yours,
MILLER PACIFIC ENGINEERING GROUP

Eric Dabanian
Geotechnical Engineer No. 2526
(Expires 6/30/23)

Attachment: Cost Estimate Worksheet

MILLER PACIFIC ENGINEERING GROUP
Budget Estimate Worksheet
Pine Mountain Water Tanks
Fairfax, California

Date: 1/14/22
Project Number: 187.503
By: ead

PERSONNEL COST		SAS	MPM	DSC / EAD	BSP	MFJ	RCA	MMT / ZMS	ENE	EIC / MNT RGB / YHS	JTO	AJM	NAR / TWM BPC / GAA	JMO / BDH	KRB / MLT
		Prin 3	Prin 2	Prin 1	AG / AE 2	AG / AE 1	Sr Eng 2	PE / PG 1	SE / SG 3	SE / SG 2	Sr Tech 3	Sr Tech 2	Tech 2	Tech 1	WP
Task	Description	$255	$245	$235	$220	$210	$185	$135	$125	$115	$130	$125	$105	$100	$85
1.0	Respond to WC & DN comments	1		6		2									
2.0	Slope Stability & Deformation Analysis	1		8			40								
3.0	Design Support per WC - update report	1		6			8								
4.0	Soil Nail Wall spec & details	2		6			12								
5.0	Team Meetings, consultation			20		2	2								
	Subtotal Hours	5	0	46	0	4	62	0	0	0	0	0	0	0	0
	Subtotal Dollars	$ 1,275	$ -	$ 10,810	$ -	$ 840	$ 11,470	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

OVERTIME - PREMIUM		Hrs	Unit $	Amt $
Weekday and Saturday	Add	0	$35	$ -
Sunday/ Holiday / Night	Add	0	$45	$ -

Total Personnel Hours: 117 117 **Total Personnel Dollars:** **$ 24,395**

OTHER CHARGES

Item	Quantity	Units	Unit $	Amount $
Vehicle - Time - Field	0	Hours	$ 9.00	$ -
Vehicle - Mileage	0	Miles	$ 0.80	$ -
Nuclear Density Gage	0	Test	$ 8.00	$ -
Sampling or Video Equipment	0	Days	$ 50.00	$ -
Inclinometer	0	Days	$ 160.00	$ -
Inclinometer pipe & Grout @ $10.00 a foot	0	Feet	$ 10.00	$ -
Specialty Software	0	Flat Rate	$ 100.00	$ -
			Total Other Charges:	**$ -**

OUTSIDE AND SUBCONTRACT COSTS

Task	Description	Quantity	Unit	Unit $	Amount $
1.0	Exploration (borings)	0	Hours	$ 260	$ -
2.0	Exploration (CPTs)	0	Day	$ 400	$ -
3.0	Exploration (trenches)	0	Hours	$ 125	$ -
4.0	Lab - TXUU/pp	0	Test	$ 200	$ -
5.0	Lab - R-Value	0	Test	$390	$ -
				Overhead:	**20%**
				Total Outside Cost:	**$ -**

Subtotal:		**$ 24,395**
Contingency:	**20%**	**$ 4,879**
Total Project Costs:		**$ 29,274**
Use for Budget:		**$ 29,500**
Over Budget prior work:		**$3,522**
Total Budget		**$ 33,000**

#REF!

AGREEMENT FOR PROFESSIONAL SERVICES

The following is an agreement between **Marin Municipal Water District**, hereinafter "District", and **Miller Pacific Engineering Group,** hereinafter, "Consultant".

WHEREAS, Consultant is a duly qualified consulting firm, experienced as a geotechnical engineering firm.

WHEREAS, in the judgment of the Board of Directors of the District, it is necessary and desirable to employ the services of the Consultant for the evaluation of subsurface soil and rock conditions in order to provide preliminary conclusions and recommendations regarding geotechnical feasibility to aid in selection of a preferred tank site.

NOW, THEREFORE, in consideration of the mutual covenants contained herein, the parties hereto agree as follows:

PART A-- SPECIFIC PROVISIONS:

1. **DESCRIPTION OF SERVICES AND PAYMENT**: Except as modified in this agreement, the services to be provided and the payment schedule are:

   a. The scope of work covered by this agreement shall be that included in Attachment A of this agreement.

   b. The fee and fee payment for such work shall be as stipulated under the fee schedule included in Attachment B of this agreement and shall not exceed $56,000 in total.

PART B-- GENERAL PROVISIONS

1. **ASSIGNMENT/DELEGATION**: Except as above, neither party hereto shall assign, sublet or transfer any interest in or duty under this agreement without written consent of the other, and no assignment shall be of any force or effect whatsoever unless and until the other party shall have so consented.

2. **STATUS OF CONSULTANT**: The parties intend that the Consultant, in performing the services hereinafter specified, shall act as an independent contractor and shall have the control of the work and the manner in which it is performed. The Consultant is not to be considered an agent or employee of District, and is not entitled to participate in any pension plan, insurance, bonus or similar benefits District provides its employees.

3. **INDEMNIFICATION**: District is relying on professional ability and training of the Consultant as a material inducement to enter into this agreement. The Consultant hereby warrants that all its work will be performed in accordance with generally accepted professional

practices and standards, as well as the requirements of applicable federal, state and local laws, it being understood that acceptance of the Consultant's work by District shall not operate as a waiver or release.

a. Consultant expressly agrees to defend, indemnify and hold harmless District, Its officers, agents, and employees from and against any and all loss, liability, expense, claims, suits and damages, including attorneys' fees, arising out of or pertaining or relating to Consultant's, its associates', employees', subconsultants', or other agents' negligence, recklessness, or willful misconduct, in the operation and/or performance under this Agreement.

b. With respect to all other than professional services under this agreement, Consultant shall indemnify, hold harmless, release and defend District, its officers, agents and employees from and against any and all actions, claims, damages, disabilities, liabilities and expenses, including attorney's and expert fees and witness costs that may be asserted by any person or entity, including the Consultant, arising out of or in connection with this agreement and the activities necessary to perform those services and complete the tasks provided for herein, but excluding liabilities due to the sole negligence or willful misconduct of District.

This indemnification is not limited in any way by any limitation on the amount or type of damages or compensation payable by or for the District or its agents under workers' compensation acts, disability benefit acts or other employee benefit acts.

4. PROSECUTION OF WORK: The execution of this agreement shall constitute the Consultant's authority to proceed immediately with the performance of this contract. Performance of the services hereunder shall be completed by August 1, 2021 provided, however, that if the performance is delayed by earthquake, flood, high water or other Act of God or by strike, lockout or similar labor disturbance ("Acts"), the time for the Consultant's performance of this contract shall be extended by a number of days equal to the number of days the Consultant has been delayed by such Acts.

5. METHOD AND PLACE OF GIVING NOTICE, SUBMITTING BILLS AND MAKING PAYMENTS: All notices, bills and payment shall be made in writing and may be given by personal delivery or by mail. Notices, bills and payments sent by mail should be addressed as follows:

District: Marin Municipal Water District
Attn Elysha Irish
220 Nellen Avenue
Corte Madera CA 94925

CONSULTANT: Miller Pacific Engineering Group
Attn Eric Dabanian
504 Redwood Boulevard, Ste. 220
Novato, CA 94947
Ph.# (415) 382-3444

and when so addressed, shall be deemed given upon deposit in the United States Mail, postage prepaid. In all other instances, notices, bills and payments shall be deemed given at the time of actual delivery. Changes may be made in the names and addresses of the person to whom notices, bills and payments are to be given by giving notice pursuant to this paragraph.

6. MERGER: This writing is intended both as the final expression of the agreement between the parties hereto with respect to the included terms of the agreement, pursuant to California Code of Civil Procedure Section 1856 and as a complete and exclusive statement of the terms of the agreement. No modification of this agreement shall be effective unless and until such modification is evidenced by a writing signed by both parties.

7. SEVERABILITY: Each provision of this agreement is intended to be severable. If any term of any provision shall be determined by a court of competent jurisdiction to be illegal or invalid for any reason whatsoever, such provision shall be severed from this agreement and shall not affect the validity of the remainder of the agreement.

8. TERMINATION: At any time and without cause, the District shall have the right in its sole discretion, to terminate this agreement by giving written notice to the Consultant. In the event of such termination, District shall pay the Consultant for services rendered to the termination date.

In addition, if the Consultant should fail to perform any of its obligations hereunder, within the time and in the manner herein provided, or otherwise violate any of the terms of this agreement, District may terminate this agreement by giving the Consultant written notice of such termination, stating the reason for such termination. In such event, the Consultant shall be entitled to receive as full payment for all services satisfactorily rendered and expenses incurred hereunder, an amount which bears the same ratio to the total fees specified in the agreement as the services satisfactorily rendered hereunder by the Consultant bear to the total services otherwise required to be performed for such total fee, provided, however, that there shall be deducted from such amount the amount of damage, if any, sustained by District by virtue of the breach of the agreement by the Consultant.

9. TRANSFER OF RIGHTS/OWNERSHIP OF DATA: The Consultant assigns to District all rights throughout the work in perpetuity in the nature of copyright, trademark, patent, and right to ideas, in and to all versions of any plans and specifications, reports, video tapes, photographs, and documents now or later prepared by the Consultant in connection with this contract.

The Consultant agrees to take such actions as are necessary to protect the rights assigned to District in this agreement, and to refrain from taking any action which would impair those rights. The Consultant's responsibilities under this contract will include, but not be limited to, placing proper notice of copyright on all versions of plans and specifications, reports and documents as District may direct, and refraining from disclosing any versions of the reports and documents to any third party without first obtaining written permission of District. The Consultant will not use, or permit another to use, any plans and specifications, reports and documents in connection with this or any other project without first obtaining written permission of District.

All materials resulting from the efforts of District and/or the Consultant in connection with this project, including documents, reports, calculations, maps, photographs, video tapes, computer programs, computer printouts, digital data, notes, and any other pertinent data are the exclusive property of District. Reuse of these materials by the Consultant in any manner other than in conjunction with activities authorized by District is prohibited without written permission of District.

If the Consultant is using data provided by the District or by the County of Marin pursuant to its data-sharing agreement with District, the Consultant (Licensee) acknowledges by execution of this Agreement that it has read the disclaimer(s) of liability and warranties regarding use of said shared data, a copy of which is attached to this Agreement as Attachment D.

10. COST DISCLOSURE: In accordance with Government Code Section 7550, the Consultant agrees to state in a separate portion of any report provided District, the numbers and amounts of all contracts and subcontracts relating to the preparation of the report.

11. NONDISCRIMINATION: The Consultant shall comply with all applicable federal, state and local laws, rules and regulations in regard to nondiscrimination in employment because of race, color, ancestry, national origin, religion, sex, marital status, age, medical condition or physical handicap.

12. EXTRA (CHANGED) WORK: Extra work may be required. The Consultant shall not proceed nor be entitled to reimbursement for extra work unless that work has been authorized, in writing, in advance, by District. The Consultant shall inform the District as soon as it determines work beyond the scope of this agreement may be necessary and/or that the work under this agreement cannot be completed for the amount specified in this agreement. Failure to notify the District shall constitute waiver of the Consultant's right to reimbursement.

13. CONFLICT OF INTEREST: The Consultant covenants that it presently has no interest and shall not acquire any interest, direct or indirect, which would conflict in any manner or degree with the performance of its services hereunder. The Consultant further covenants that in the performance of this contract no person having any such interest shall be employed.

14. INSURANCE: The Consultant shall obtain insurance acceptable to District in a company or companies with a Best's rated carrier of at least "A". The required documentation

of such insurance shall be furnished to District at the time the Consultant returns the executed contract. The Consultant shall not commence work nor shall it allow its employees or subcontractors or anyone to commence work until all insurance required hereunder has been submitted and approved.

The Consultant shall have and maintain at all times during the life of this agreement, up to the date of acceptance, the following policies of insurance:

a. Workers' Compensation Insurance: Workers' Compensation Insurance to cover its employees, as required by the State of California, and shall require all subcontractors similarly to provide Workers' Compensation Insurance as required by the Labor Code of the State of California for all of the subcontractors' employees. All Workers' Compensation policies shall be endorsed with the following specific language:

> "This policy shall not be canceled without first giving thirty (30) days prior notice to District, Attn: Elysha Irish, by certified mail."

The Workers' Compensation Insurance self-insured deductibles and retentions for both the Consultant and its subcontractors shall not exceed $1,000.

b. Public Liability Insurance: Personal Injury (including bodily injury) and Property Damage Insurance for all activities of the Consultant and its subcontractors arising out of or in connection with this agreement, written on a commercial general liability form which provides coverage at least as broad as ISO Commercial General Liability Occurrence Form CG 00 01 11 85 or 88 or any subsequent revision or equivalent including benefit contractual coverage, completed operations coverage, Consultant's protective coverage, and automobile coverage. The automobile coverage should be at least as broad as ISO Business Auto Form CA001 edition 187 or equivalent including employer's non-ownership liability. All deductibles or self-insured retentions shall not exceed $1,000. Coverage in an amount not less than $1,000,000 combined single limit personal injury, including bodily injury, and property damage for each occurrence is required. Each such policy shall be endorsed with the following language:

1. The Marin Municipal Water District, its officers, agents, employees and volunteers are additional insureds under this policy.

2. The insurance shall be primary as respects the insured shown in the schedule above.

3. The insurance afforded by this policy shall not be canceled except after thirty days prior written notice by certified mail return receipt requested has been given to the District.

4. The referenced policy does not exclude explosion, collapse, underground excavation hazards or removal of lateral support.

5. The inclusion of more than one insured shall not operate to impair the right of one insured against another insured, and the coverage afforded in the policy shall apply as though separate policies had been issued to each insured.

Consultant's policy shall be endorsed with "Attachment C - Additional Insured Endorsement" form.

The General Aggregate Limits of Insurance in the referenced policies shall be twice occurrence limit.

c. Professional Liability Insurance: The Consultant shall procure and maintain throughout the term of this agreement, Professional Liability Insurance in an amount not less than $1,000,000. All insurance deductibles or self-insured retentions shall not exceed $50,000. All Professional Liability Insurance policies shall be endorsed with the following specific language:

(i) This policy shall not be canceled without first giving thirty (30) days prior notice to District by certified mail.

d. Documentation: The following documentation of insurance shall be submitted to District:

(i) A Certificate of Insurance for Workers' Compensation Insurance for Consultant. A copy of the required policy endorsements specified in subparagraph a. shall be attached to each such Certificate submitted.

(ii) Certificates of Liability Insurance showing the limits of insurance provided. Copies of the required endorsements specified in subparagraphs b. and c. shall be attached to each Certificate submitted.

e. Consultant hereby grants to District a waiver of any right to subrogation which any insurer of said Consultant may acquire against the District by virtue of the payment of any loss under such insurance. Consultant agrees to obtain any endorsement that may be necessary to affect this waiver of subrogation, but this provision applies regardless of whether or not District has received a waiver of subrogation endorsement from the insurer.

15. DISPUTE RESOLUTION: Any dispute or claim in law or equity between District and Consultant arising out of this agreement, if not resolved by informal negotiation between the parties, shall be mediated by referring it to the nearest office of Judicial Arbitration and

Mediation Services, Inc. (JAMS) for mediation. Each party shall provide the others with a list of four mediators. The parties shall confer on the list and select a mutually agreeable mediator. Mediation shall consist of an informal, non-binding conference or conferences between the parties and the judge-mediator jointly, then in separate caucuses wherein the judge will seek to guide the parties to a resolution of the case. If the parties cannot agree to a mutually acceptable member from the JAMS panel of retired judges, a list and resumes of available mediators with substantial experience in mediating claims of the type at issue between the parties, numbering one more than there are parties, will be sent to the parties, each of whom will strike one name leaving the remaining name as the mediator. If more than one name remains, JAMS arbitrations administrator will choose a mediator from the remaining names. The mediation process shall continue until the case is resolved or until such time as the mediator makes a finding that there is no possibility of resolution.

At the sole election of the District, any dispute or claim in law or equity between District and Consultant arising out of this agreement which is not settled through mediation shall be decided by neutral binding arbitration and not by court action, except as provided by California law for judicial review of arbitration proceedings. The arbitration shall be conducted in accordance with the rules of Judicial Arbitration Mediation Services, Inc. (JAMS). The parties to an arbitration may agree in writing to use different rules and/or arbitrators.

16. BILLING AND DOCUMENTATION: The Consultant shall bill District for work on a monthly or agreed upon basis or as articulated in Attachment B and shall include a summary of work for which payment is requested. The summary shall include time and hourly rate of each individual, a narrative description of work accomplished, and an estimate of work completed to date.

17. REASONABLE ASSURANCES: Each party to this agreement undertakes the obligation that the other's expectation of receiving due performance will not be impaired. When reasonable grounds for insecurity arise, with respect to performance of either party, the other may, in writing, demand adequate assurance of due performance and until the requesting party receives such assurance may, if commercially reasonable, suspend any performance for which the agreed return has not been received. "Commercially reasonable" includes not only the conduct of the party with respect to performance under this agreement but also conduct with respect to other agreements with parties to this agreement or others. After receipt of a justified demand, failure to provide within a reasonable time, not to exceed 30 days, such assurance of due performance as is adequate under the circumstances of the particular case is a repudiation of this agreement. Acceptance of any improper delivery, service, or payment does not prejudice the aggrieved party's right to demand adequate assurance of future performance.

MILLER PACIFIC ENGINEERING GROUP

Dated: 4/21/21 By _____
Name

Principal Engineer
Title

MARIN MUNICIPAL WATER DISTRICT

Dated: 4/27/2021 By _____
Bennett Horenstein, General Manager

EI:mp
Rev. 1-30-19

MILLER PACIFIC ENGINEERING GROUP

April 13, 2021
File: 21-11478pro.doc

Marin Municipal Water District
220 Nellen Avenue
Corte Madera, CA 94925-1169

Attn: Ms. Elysha Irish, P.E.

Re: Geotechnical Engineering Services
Concrete Pipe Road CP-5 & CP-18 Tank Sites
Fairfax, California

Introduction

Following our discussions and site reconnaissances, we are pleased to propose our geotechnical engineering services for the potential new water tanks that would be located on Concrete Pipe Road near Sky Oaks Ranger Station in Fairfax. The project involves the evaluation of two tank sites, CP-5, and CP-18, one of which would be selected as the preferred tank site for one 1-million gallon and one 2-million-gallon tank. For preparation of this proposal, we have reviewed provided site plans prepared by Woodard & Curren showing and a draft desk-top study of the sites prepared by Jacobs Engineering[1].

The partially buried tanks would be up to about 106-feet in diameter and would require moderately deep excavations that would likely be supported by soil nail and shotcrete retaining walls adjacent to the uphill sides of the tanks. A moderate sized landslide is located at the CP-5 site and a very large, deep-seated landslide has been mapped at the CP-18 site.

The purpose of our services is to evaluate subsurface soil and rock conditions in order to provide preliminary conclusions and recommendations regarding geotechnical feasibility to aid in selection of the preferred tank site. Geotechnical issues that will impact the project include slope stability, potential hard rock excavation, and retaining wall design.

Based on our understanding of the project we propose the following scope of services for our Geotechnical Investigation and Report.

1) Review of reference geotechnical reports prepared by Herzog Geotechnical (2002), DCM/Joyal Engineering (2004), and Jacobs (2021), available geologic and geotechnical data and published maps, and aerial photographs of the project site. The photographs will allow for interpretation of site conditions and identification of potential landslides/creep zones that may or may not be visible from the ground surface.

2) Our engineering geologist will perform a site reconnaissance to map features within the project area and upslope areas including landslide areas, and those features identified in the aerial photos. We will mark planned boring locations and notify Underground Service Alert (USA) to mark utilities.

[1] Jacobs Engineering, "Draft Memorandum, Ross Valley Marin Municipal Water District Tank Siting Assessment, MMWD Ross Valley System Evaluation", March 29, 2021.

3) Explore subsurface conditions with a combination of track-mounted and portable drilling equipment. CP-5 borings would evaluate depth of slide debris, lateral extents of hard chert bedrock and soil/rock conditions within the fire road and at Sky Oaks Road. CP-18 borings would include several shallow borings to determine rock depth, one or two moderately deep (30 to 50-feet) borings within the tank pads and one boring within the fire road. All borings would extend into bedrock and select borings located within the tank pads would extend about 10 feet below the anticipated depth of excavation for the tank pads. Some borings in hard rock areas would either be cored to assess rock quality and excavation difficulty or utilize air rotary drilling. We will collect soil and rock samples during exploration and deliver them to our laboratory for testing.

4) Laboratory testing to determine the engineering properties of the soil. Testing is expected to include moisture content, dry density, and shear strength. Rock core samples (if collected) will be further examined in the laboratory.

5) Based on our field and lab data, we will analyze potential geotechnical and geologic hazards associated with development of the proposed water tank sites and landslide stabilization. We will summarize the results of our investigation and prepare preliminary recommendations in a report that will include:

- Brief summary of the geologic setting and seismicity.
- Summary of the results of our subsurface exploration, including probable subsurface soil conditions and depth to bedrock;
- Geologic hazards evaluation and preliminary recommended mitigation measures;
- Geotechnical feasibility of site development;
- Preliminary recommendations for cut slopes, soil nail and shotcrete retaining walls, and other types of retaining walls;
- General discussion of slope stability considerations, including global slope stability for deep excavations/tall retaining walls, and recommendations for further study;
- Preliminary recommended foundation system, including discussion of mat slabs, drilled piers, and spread footings;
- Expected groundwater and excavation conditions, including opinion of whether blasting will be necessary;

The report will also include site plans showing our approximate boring locations, logs of our borings, geologic cross sections through the tank areas, and summaries of our laboratory testing.

Supplemental Services

Supplemental services may include consultation during selection of the preferred tank site, additional subsurface exploration to further evaluate specific landslides or hard rock areas, and preparation of a design-level geotechnical report for the selected tank site. During construction, we can provide consultation, inspection and testing to confirm the construction work is performed in accordance with the contract document and intent of the design.

April 13, 2021

Fee Proposal

We propose our services on a time and expense basis in accordance with the attached budget estimate sheet and our Schedule of Charges.

Geotechnical Investigation Report ..... Time & Expense, Estimate $50,000-$57,000

Supplemental Services ..... Budgets to be developed when additional details are known

Schedule

We are pleased to have the opportunity to work with you on this project. If you have any questions concerning this proposal, please call us. When you wish us to proceed, please issue a professional services agreement. We anticipate completing our Geotechnical Investigation Report 8 to 10 weeks after receiving authorization to proceed.

Yours very truly,
MILLER PACIFIC ENGINEERING GROUP

Eric Dabanian
Geotechnical Engineer No. 2526
(Expires 6/30/21)

Attachments: Schedule of Charges
Budget Estimate Worksheet

MILLER PACIFIC ENGINEERING GROUP

MILLER PACIFIC ENGINEERING GROUP
a California corporation

SCHEDULE OF CHARGES
PROFESSIONAL ENGINEERING AND TESTING SERVICES

Professional and Technical Personnel	Hourly Rate
Staff Engineer/Geologist – Level 1-3	$105 - $115 - $125
Project Engineer/Geologist – Level 1-3	$135 - $145 - $155
Senior Engineer/Geologist – Level 1-3	$175 - $185 - $195
Associate Engineer/Geologist – Level 1-3	$210 - $220 - $230
Principal Level 1-3	$235 - $245 - $255
Project Assistant/Word Processor	$85
Technician Level 1-3	$100 - $105 - $110
Senior Technician Level 1-3	$120 - $125 - $130
Prevailing Wage	$150

Other Inside Charges	
Mileage	$ 0.80 per mile
Vehicle (Field)	$9 per hour
Nuclear Density Gage	$8 per test
Inclinometer	$160 per day / $90 per half day
Laser Level/Floor Level Equipment	$25 per day
Sampling and Video Equipment	$50 per day / $30 half day

Outside Services ..... Cost + 20%

Exploration, drilling equipment and instrumentation, in-situ monitoring, specialized laboratory testing, per diem, shipping, courier/delivery services, outside reproduction, and other services and supplies not normally provided.

*NOTES:

1. Field site visits and travel time are normal hourly rates, portal to portal.
2. Overtime – Weekday — add $35
   Overtime – Weekend/Holiday/Night — add $45*
   *(4 or 8 hour-minimums)
3. Rates are for normal Geotechnical Engineering and Geological services. Rates for depositions and testimony are $510 per hour for Principal; $460 per hour for Associate; and $410 per hour for Senior. All other personnel are $305 per hour. These fees are due and payable at the time of service.
4. Schedule of charges is effective as of January 2021. It is subject to revision annually and at other times without notice.
5.

MILLER PACIFIC ENGINEERING GROUP
Budget Estimate Worksheet
MMWD - Concrete Pipe Road Water Tanks CP-5 and CP-18
Marin County, California

Date: 4/19/21
Project Number: 2021-11478
By: MFJ

PERSONNEL COST

Task	Description	SAS	MPM	DSC / EAD	BSP	MFJ	RCA	NGK	MMT / ZMS	ENE	EIC / MNT RGB	JTO	AJM	NAR / TWM BPC / GAA	JMO	KRB / MLT
		Prin 3 $255	Prin 2 $245	Prin 1 $235	AG / AE 2 $220	AG / AE 1 $210	Sr Eng 2 $185	Sr Eng 1 $175	PE / PG 1 $135	SE / SG 3 $125	SE / SG 2 $115	Sr Tech 3 $130	Sr Tech 2 $125	Tech 2 $105	Tech 1 $100	WP $85
1.0	Background Review			8		8										
2.0	Site Recon/USA/Mapping			4		10										
3.0	Permitting										8					
4.0	Drilling										4					
5.0	Lab										65					
6.0	Report			6		6								6		
7.0	CAD					4										
8.0	Review/Format			2		2					10					2
	Subtotal Hours	0	0	20	0	30	0	0	0	0	87	0	0	6	0	2
	Subtotal Dollars	$ -	$ -	$ 4,700	$ -	$ 6,300	$ -	$ -	$ -	$ -	$ 10,005	$ -	$ -	$ 630	$ -	$ 170

OVERTIME - PREMIUM		Hrs	Unit $	Amt $
Weekday and Saturday	Add	0	$35	$ -
Sunday/ Holiday / Night	Add	0	$45	$ -

Total Personnel Hours: 145

Total Personnel Dollars: $ 21,805

OTHER CHARGES

Item	Quantity	Units	Unit $	Amount $
Vehicle - Time - Field	65	Hours	$ 9.00	$ 585
Vehicle - Mileage	375	Miles	$ 0.80	$ 300
Nuclear Density Gage	0	Test	$ 8.00	$ -
Sampling or Video Equipment	7	Days	$ 50.00	$ 350
Inclinometer	0	Days	$ 150.00	$ -
Inclinometer pipe & Grout @ $10.00 a foot	0	Feet	$ 10.00	$ -
Specialty Software	0	Flat Rate	$ 100.00	$ -

Total Other Charges: $ 1,235

OUTSIDE AND SUBCONTRACT COSTS

Task	Description	Quantity	Unit	Unit $	Amount $
1.0	Exploration (De Novo Mobilization)	1	Each	$ 1,500	$ 1,500
1a	Exploration (De Novo Remobilization)	1	Each	$ 750	$ 750
2.0	Exploration (De Novo Hydraulic Portable or DN-2000 Track-mounted Auger/Air Rotary/Diamond Core Rig)	50	Hours	$ 400	$ 20,000
3.0	Soil Boring Permit	1	Each	$ 800	$ 800

Overhead: 20%
Total Outside Cost: $ 27,650

Subtotal:		$ 50,700
Contingency:	10%	$ 5,070
Total Project Costs:		$ 55,770
Use for Budget:		$ 56,000

Rev: 1/21

NOTES:

1. Assumes all work subject to California Prevailing Wage.
2. Assumes (4 to 5) days of work at CP-18, including mobilization of drill rig to upper edge of proposed building pad, drilling at least one moderately-deep (estimated 30-50 feet) boring, and drilling several shallow borings to determine rock depth.
3. Assumes (2 to 3) days of work at CP-5, including use of track-mounted rig for drilling deeper boring at Sky Oaks Road above building area, and use of either portable or track equipment for drilling of several shallower borings to determine depth of slide debris and lateral extents of hard chert bedrock.
4. Assumes MPEG will acquire Marin EHS soil boring permit, but all other permits, fees, rights of entry, and similar arrangements will be made by others.
5. "Contingency" includes provisions for limited site resotarion.erosion control labor and materials if needed/requested.

AMENDMENT NO. 1 TO
AGREEMENT FOR PROFESSIONAL SERVICES
BETWEEN MARIN MUNICIPAL WATER DISTRICT and
Miller Pacific Engineering Group
(Miscellaneous Agreement No. 5945)

This Contract Amendment ("Third Amendment") is entered into by and between Marin Municipal Water District ("District") and Miller Pacific Engineering Group ("Consultant").

For good and valuable consideration the receipt and adequacy of which is hereby acknowledged, the parties hereto agree as follows:

Section 1. Recitals:

A. District and Service Provider entered into an Agreement for Professional Services dated April 27, 2021 ("Agreement"), which expires on August 1, 2021.

B. The parties desire to enter into this First Amendment to the Agreement to extend the contract completion date to December 31, 2021.

Section 2. Terms:

A. Amendment to Contract: This First Amendment modifies the Contract. Except for the modifications contained herein, all the terms of the Contract shall apply.

B. Terms:

1. Part B – General Provisions- Section 4 - entitled "Prosecution of Work" subsection is hereby amended to read as follows:

The execution of this agreement shall constitute the Consultant's authority to proceed immediately with the performance of this contract. Performance of the services hereunder shall be completed by December 31, 2021 provided, however, that if the performance is delayed by earthquake, flood, high water or other Act of God or by strike, lockout or similar labor disturbance ("Acts"), the time for the Consultant's performance of this contract shall be extended by a number of days equal to the number of days the Consultant has been delayed by such Acts.

Dated: 8/4/21

MILLER PACIFIC

By

Dated: 08/06/2021

MARIN MUNICIPAL WATER DISTRICT

By

Crystal Yezman, Director of Engineering

AMENDMENT NO. 2 TO
AGREEMENT FOR PROFESSIONAL SERVICES BETWEEN
MARIN MUNICIPAL WATER DISTRICT and MILLER PACIFIC ENGINEERING GROUP
(Miscellaneous Agreement No. 5945)

This Contract Amendment ("Second Amendment") is entered into by and between Marin Municipal Water District ("District") and Miller Pacific Engineering Group ("Consultant").

For good and valuable consideration the receipt and adequacy of which is hereby acknowledged, the parties hereto agree as follows:

Section 1. Recitals:

A. District and Consultant entered into an Agreement for Professional Services dated April 27, 2021 ("Agreement"), which originally expired August 1, 2021. The term of the Agreement was extended to December 31, 2021 by Amendment No. 1.

B. The parties desire to enter into a Second amendment to the Agreement to provide additional services beyond the original scope of work and Amendment No. 1.

Section 2. Terms:

A. Amendment to Agreement: This Second Amendment modifies the Agreement. Except for the modifications contained herein, all the terms of the Agreement shall apply.

B. Terms:

1. Add the following to PART A – SPECIFIC PROVISIONS:

   a. Provide geophysical services as described in Attachment A in the amount of $10,350, plus prime consultant markup of 20%; for a budget increase of 12,420. Please see markup discussed in email Attachment B.
   b. The total cost of Amendment No. 2 is a not-too-exceed amount of $12,420, which shall increase the total not-too-exceed contract amount from $56,000 to $68,420.
   c. The term of Amendment No. 2 terminates on December 31, 2021 in accordance with Amendment No. 1.

Dated: 9-29-21

MILLER PACIFIC ENGINEERING GROUP

By _____
Eric Dabanian, GE

Dated: 10/7/2021

MARIN MUNICIPAL WATER DISTRICT

By _____
Ben Horenstein, General Manager

ATTACHMENT A

NORCAL GEOPHYSICAL CONSULTANTS INC.
A Terracon COMPANY

September 13, 2021

MILLER PACIFIC ENGINEERING GROUP
504 Redwood Boulevard, Suite 220
Novato, CA 94947

Subject: Proposed Geophysical Surveys
Vacant Property
MMWD Concrete Pipe Road Water Tanks
Fairfax, California

Attn: Mr. Mike Jewett:

NORCAL Geophysical Consultants, Inc., a Terracon company, is pleased to submit this proposal for providing geophysical services at the above-referenced location. This proposal includes our understanding of the project, our planned work scope and associated fees, and our terms and conditions associated with the performance of this work. We appreciate your consideration and look forward to working with you.

1.0 QUALIFICATIONS

NORCAL Geophysical, a Terracon Company in Cotati, California, offers state-of-the-art geophysical services to government and private sector clients throughout the U.S. Since its inception in 1983 NORCAL has sustained a planned, strong rate of growth both in breadth of services and the skills of our professional staff. We currently employ six CA Professional Geophysicists and an experienced support staff. Our geophysicists have over 100 years of accumulated experience that includes numerous geophysical surveys at wind and solar farms, industrial sites, oil refineries, proposed developments, military installations, dams, levees, quarries, landfills and disposal sites, airports, and high technology facilities, among others.

2.0 PROJECT DESCRIPTION AND PURPOSE

The subject property is located between Sky Oaks and Concrete Pipe Roads in Fairfax, CA. The terrain is mildly steep and covered with grass and trees. You have indicated that bedrock consists of sandstone and chert, and that the chert outcrops to the south. Since this parcel will be excavated in support of the construction of two above-ground water storage tanks, you would like us to conduct both seismic refraction (SR) and multi-channel analysis of surface waves (MASW) surveys at the subject property. The SR survey will be performed to obtain seismic P-wave velocity data to determine the thickness of overburden and characterize the underlying bedrock in terms of depth and rippability. The MASW survey will be performed to measure (S-) wave velocities with depth to provide information regarding the relative strength of the subsurface materials.

3.0 SCOPE OF WORK

3.1 SEISMIC REFRACTION (SR) SURVEY

The SR method is used to determine the seismic velocity of compressional P-waves in subsurface materials. The seismic velocity of P-waves in fill, sediments, and rock are dependent on physical properties such as compaction, density, hardness, and induration. However, other factors such as bedding, fracturing, and saturation also affect seismic velocity. Typically, low velocities are indicative of loose soil, poorly compacted fill material, and poorly to semi-consolidated sediments. Higher velocities are indicative of consolidated or dense sediments, highly compacted fill, saturated material and moderate to highly weathered and fractured bedrock. The highest velocities are measured in unweathered rock with few fractures.

Based on a site map that you provided, you would like us to perform the seismic refraction (SR) survey along three separate transects approximately 155-to 275-ft long. One will be oriented south to north and cross the proposed locations of both tanks. The remaining two will be oriented west to east or northwest to southeast across each planned tank pad, respectively. Consequently, we will use a Geometrics ***Geode*** 24-channel seismic system connected to a collinear array of 24-geophones distributed at 6- to 7-ft intervals. This will result in SR spread lengths of 150- to 175-ft. The longest line oriented south to north will be comprised of two overlapping spreads. The two remaining lines will be single spreads. Seismic compressional (P) waves will be produced by multiple impacts against a strike plate placed on the ground surface using a 16 lb. sledge hammer. The repeated impacts will enhance the signal to noise ratio and will minimize background vibrations. Seismic energy will be produced at five-shot points along each spread; one at either end of the spread and three evenly distributed within the interior. Based on the 150- to 175-ft long spread lengths, the SR will characterize variations in the P-wave velocities of the material within the upper 30- to 35-ft. However, the actual depth of detection is dependent upon the specific lithologic site conditions.

3.2 MASW SURVEY

The MASW method is used to determine variations in the shear (S-) wave velocity of subsurface materials. When seismic waves are generated at or near the ground surface, both body and surface waves are generated. Surface waves have the unique property of being dispersive. That is, their velocity varies with frequency. By conducting a spectral analysis of these parameters, a 1D model of S-wave velocity versus depth can be computed. Since S-wave velocity is directly proportional to shear modulus, this provides a direct indication in the variation of stiffness (or rigidity) of subsurface materials.

The MASW survey will be conducted along the two west-east trending transects using the same equipment and seismic source that will be used for the SR survey. 24-geophones will be distributed at 6- to 7-ft intervals along each line. This will result in spread lengths of 138- to 161-ft. and a possible depth of detection of 70- to 100-ft. Surface waves will be generated at each end of the spread offset 6- to 14-ft from the first geophone.

3.3 DELIVERABLES

Following the field survey, we will process the SR data using the computer program ***SeisImager*** which is distributed by ***Geometrics, Inc.*** The processed data will be presented on color contoured 2D cross-sections (profiles) illustrating the distribution of seismic P-wave velocity versus depth and distance beneath each transect. We will review the velocity contour configurations and velocity values to provide our interpretation regarding the thickness of overburden and character of the underlying bedrock.

For the MASW data, we will perform additional computer processing using the computer program ***Surfseis 5.0***, developed by the Kansas Geological Survey. This program will invert the MASW data to generate a 1-D shear (S-) wave velocity versus depth plot at the center point of the respective geophone array. Based on the velocity configurations, an interpretation can be made regarding the variability of the S-wave velocities with depth. A brief report will describe the methods, procedures and results, and will include the interpreted 2-D velocity profiles and 1-D MASW soundings.

4.0 ADDITIONAL FACTORS

4.1 SITE LOGISTICS AND ACCESS

We assume that the geophysical work can be performed during the normal work week. We will rely on Miller Pacific to provide access, site liaison and brush clearance, if necessary, along each line before our arrival.

4.2 LIMITATIONS

It should be noted that, as with any geophysical testing method, the processes rely on measured responses to provide indications of physical conditions in the field. Responses can be affected by on-site conditions beyond the control of the operator, such as, but not limited to, seismic noise, cultural features (e.g., fences, power lines, buried metallic objects), soil types, soil moisture, and/or groundwater table depth. Interpretation is based on a combination of known factors combined with the experience of the operator and the geophysicist evaluating the results.

4.3 SCHEDULE

We can generally begin the field exploration program within two to four weeks after receipt of a signed task order, if site and weather conditions permit. We estimate the final geophysical report can be completed within about two to three weeks after the field survey is completed. In situations where information is needed prior to submittal of our final report, we can provide draft profiles and verbal information or recommendations for specific project requirements after we have completed our field program and preliminary processing.

5.0 COMPENSATION

Based on the length of the transects, number of spreads and access, we anticipate that the field survey will take 1.5 days to complete. Estimated NORCAL costs are as follows:

Mobilization/Preparation/Vehicle (two) --- $1,600;
Field Survey/Equipment --- 1.5 days @ $3,200/day --- $4,800;
SR Data Processing --- 3 transects @ $600/transect --- $1,800;
MASW Data Processing --- 2 soundings @ $600/sounding --- $1,200;
Report Preparation --- $950;
ESTIMATED TOTAL --- $10,350

These costs are based on obtaining SR data along three transects comprising four spreads, and MASW along the two east trending transects. Should it be necessary to reduce or expand our services beyond those outlined in this proposal, costs will be adjusted according to the unit rates listed above.

6.0 SAFETY

We are committed to performing our work safely. Our field activities on this project will be conducted under the guidance of a site-specific safety plan that takes into account the information that we know about this site as it relates to safety and potential safety hazards. We will conduct this investigation under the safety guidelines presented in the Terracon Safety and Health Manual.

7.0 STANDARD CARE

The scope of NORCAL's services for this project will consist of using geophysical methods to characterize the subsurface. The accuracy of our findings will be subject to specific site conditions and limitations inherent to the techniques used. We will perform our services in a manner consistent with the standard of care ordinarily exercised by members of the profession currently employing similar methods. No warranty, with respect to the performance of services or products delivered under this agreement, expressed or implied, is made by NORCAL.

Please let me know if you have questions or need additional information. We appreciate the opportunity to respond to Miller Pacific regarding our geophysical services and look forward to working with you.

Sincerely,
NORCAL Geophysical Consultants, a Terracon Company

David Hagin PGp No. 1033
Senior Geophysicist

Donald Kirker PGp No. 997
Office Manager

ATTACHMENT B

Jake Miller

From: Eric A. Dabanian <EDabanian@millerpac.com>
Sent: Monday, September 20, 2021 2:30 PM
To: Alex Anaya; Elysha Irish; Michael Jewett
Cc: Xavier Irias; Jake Miller
Subject: RE: CP 5 and CP 18 field explorations

Hello all –

I just spoke with Jake to discuss the seismic refraction study and to confirm the estimated cost of the survey which is $10,350 x 1.2 (our markup) or $12,420. This work was not covered under our original agreement with the District. We do have sufficient budget left under our original agreement to complete our geotechnical investigation report. After our report is issued we will work with the team to determine additional scope and budget(s) for supplemental services, including additional consultation, meetings, plan review, possible soil nail and shotcrete retaining wall design work, and construction services.

Eric Dabanian, GE
Miller Pacific Engineering Group
504 Redwood Blvd, Suite 220
Novato CA 94947
415-382-3444

From: Eric A. Dabanian
Sent: Tuesday, September 14, 2021 3:56 PM
To: Alex Anaya <aanaya@marinwater.org>; Elysha Irish <eirish@marinwater.org>; Michael Jewett <mjewett@millerpac.com>
Cc: Xavier Irias <XIrias@woodardcurran.com>; Jake Miller <jmiller@marinwater.org>
Subject: RE: CP 5 and CP 18 field explorations

Hello Alex & Elysha,

We have been consulting with Xavier and his team regarding the option of having a subcontractor perform seismic refraction surveys at the site which will provide us with supplemental information regarding bedrock strength and rippability. We all agree this study would be beneficial since the data will allow us to refine the location of the contact between hard rock (chert) and shale/sandstone at the south end of the site. In addition, contractors bidding the project will be provided with a data report that will include color contoured sections they can use in determining likely equipment required to perform the excavation work, including areas that will require hard rock excavation. I've attached their proposal for your review. We do not have budget to perform the geophysical survey under our currently authorized contract with the District and request an additional budget of about $8 to $10K for us to complete the work and the outstanding tasks required to complete our geotechnical investigation report.

Eric Dabanian, GE
Miller Pacific Engineering Group
504 Redwood Blvd, Suite 220
Novato CA 94947

Item Number: 11
Attachment: 04

MILLER PACIFIC ENGINEERING GROUP

PRELIMINARY GEOTECHNICAL INVESTIGATION
MARIN MUNICIPAL WATER DISTRICT
CONCRETE PIPE ROAD WATER TANKS
FAIRFAX, CALIFORNIA

November 16, 2021

Job No. 187.503

Prepared For:
Marin Municipal Water District
220 Nellen Avenue
Corte Madera, California 94925-1169

Attn: Ms. Elysha Irish, P.E.

CERTIFICATION

This document is an instrument of service, prepared by or under the direction of the undersigned professionals, in accordance with the current ordinary standard of care. The service specifically excludes the investigation of polychlorinated byphenols, radon, asbestos, or any other hazardous materials. The document is for the sole use of the client and consultants on this project. No other use is authorized. If the project changes, or more than two years have passed since issuance of this report, the findings and recommendations must be updated.

MILLER PACIFIC ENGINEERING GROUP
(a California corporation)

Draft

Mike Jewett
Engineering Geologist No. 2610
(Expires 1/31/23)

Draft

Eric Dabanian
Geotechnical Engineer No. 2526
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MILLER PACIFIC ENGINEERING GROUP

PRELIMINARY GEOTECHNICAL INVESTIGATION
MARIN MUNICIPAL WATER DISTRICT
CONCRETE PIPE ROAD WATER TANKS
FAIRFAX, CALIFORNIA

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PRELIMINARY GEOTECHNICAL INVESTIGATION
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1.0 INTRODUCTION

This draft report presents the results of our preliminary geotechnical investigation for the Marin Municipal Water District's (MMWD) proposed Concrete Pipe Road CP-5 water tank project. As shown on the Site Location Map, Figure 1, the proposed tank site is located between Concrete Pipe Road and Sky Oaks Road, just south of Fairfax, California in unincorporated Marin County.

Our geotechnical investigation was performed in accordance with our Agreement for Professional Services dated April 21, 2021. The purpose of our preliminary investigation was to explore subsurface conditions and to develop preliminary geotechnical recommendations and criteria for design and construction of the proposed improvements. The scope of our services includes:

- Reviewing published geologic and geotechnical background information and historic aerial photography.
- Documentation of existing conditions and mapping of site surface geology.
- Exploring subsurface conditions with six soil borings located within the general development area.
- Performance of seismic surface-wave and refraction surveys of the development area;
- Laboratory testing to estimate pertinent engineering properties of the soils encountered during our subsurface exploration.
- Evaluating relevant geologic hazards including seismic shaking, slope instability, and other hazards.
- Engineering analyses to develop preliminary geotechnical recommendations and design criteria related to site grading, seismic design, foundations, retaining walls, and other geotechnical items.
- Consultation with the project design team (MMWD and Woodard-Curran), and
- Preparation of this draft report summarizing the subsurface exploration and laboratory testing programs, evaluation of relevant geologic hazards, and geotechnical recommendations and design criteria.

This report completes our Phase 1 services for the project. Subsequent phases of work may include design-level investigation with supplemental subsurface exploration and/or laboratory testing, supplemental slope stability analysis, geotechnical plan review, and observation and testing of geotechnical-related work items during construction.

2.0 PROJECT DESCRIPTION

The project generally includes constructing a pair of new, two-million-gallon water tanks on a steeply-sloping site along the upslope side of Concrete Pipe Road near Fairfax. While detailed plans have not yet been developed, planned pad grades will likely be around +500 feet, near the current elevation of Concrete Pipe Road. The new water tanks will likely be on the order of about 100-feet in diameter apiece, and as such new cuts up to about 70-feet deep will be required to accommodate the tank pad.

Based on our discussions with the design team, we understand the new tanks will be of reinforced concrete construction, and that ancillary improvements will generally be limited to new underground utilities, asphalt paving, and other minor improvements. A new soil-nail and shotcrete retaining wall up to about 70-feet high will be constructed to support the cut on the upslope side of the tank pad. We understand that the space between the upslope side of the tanks and the soil nail wall will likely be backfilled with excavation spoils up to 20-feet thick. A Site Plan showing the approximate extents of the planned improvements is presented on Figure 2.

3.0 SITE CONDITIONS

3.1 Regional Geology

The project site lies within the Coast Ranges geomorphic province of California. Regional topography within the Coast Ranges province is characterized by northwest-southeast trending mountain ridges and intervening valleys that parallel the major geologic structures, including the San Andreas Fault System. The province is also generally characterized by abundant landsliding and erosion, owing in part to its typically high levels of precipitation and seismic activity.

The oldest rocks in the region are the sedimentary, igneous, and metamorphic rocks of the Jurassic-Cretaceous age (190- to 65-million years old) Franciscan Complex. Within Marin County, a variety of sedimentary and volcanic rocks of Tertiary (1.8- to 65-million years old) and Quaternary (less than 1.8-million years old) age locally overlie the basement rocks of the Franciscan Complex. Tectonic deformation and erosion during late Tertiary and Quaternary time (the last several million years) formed the prominent coastal ridges and intervening valleys typical of the Coast Ranges province. The youngest geologic units in the region are Quaternary age (last 1.8 million years) sedimentary deposits, including alluvial deposits which partially fill most of the valleys and colluvial deposits which typically blanket the lower portions of surrounding slopes.

Regional geologic mapping (Rice, Smith, and Strand; 1976) indicates that the project site and surrounding areas are generally underlain by Franciscan “mélange” bedrock, which is defined as a tectonic mixture of resistant rock types (primarily sandstone, greenstone, chert, and serpentinite) embedded in a matrix of pervasively sheared shale. Outcrops of sandstone are indicated above Sky Oaks Road west of the site, and chert is shown occupying the topographic “nose” near the south end of the building pad.

Slopes at the north and south ends of the site are shown as being underlain by colluvial soils, which typically consist of poorly-sorted clay, silt, sand, and rock fragments derived of underlying bedrock and transported slowly downslope via gravity and natural weathering processes. The central part of the site is shown as being occupied by a debris-flow landslide originating above Sky Oaks Road, extending downslope across Sky Oaks and down to at least Concrete Pipe Road. The map area does not cover slopes below Concrete Pipe Road, so the downslope extent of the slide is not indicated. A landslide too small to be accurately shown at the map scale is indicated on the cut slope above Sky Oaks Road. A Regional Geologic Map and descriptions of the mapped geologic units are shown on Figure 3.

We also reviewed reconnaissance landslide mapping (Wentworth and Frizzell, 1975) which, notably and in disagreement with the 1976 map, does not indicate the presence of any landslides within the site, although a relatively large landslide is shown to the southeast. It should be noted that the reconnaissance maps were prepared on the primary basis of aerial photo interpretation and not site-specific observations.

3.2 Seismicity

The project site is located within the seismically active San Francisco Bay Area and will therefore experience the effects of future earthquakes. Earthquakes are the product of the build-up and sudden release of strain along a “fault” or zone of weakness in the earth's crust. Stored energy may be released as soon as it is generated, or it may be accumulated and stored for long periods of time. Individual releases may be so small that they are detected only by sensitive instruments, or they may be violent enough to cause destruction over vast areas.

Faults are seldom single cracks in the earth's crust but are typically comprised of localized shear zones which link together to form larger fault zones. Within the Bay Area, faults are concentrated along the San Andreas Fault zone. The movement between rock formations along either side of a fault may be horizontal, vertical, or a combination and is radiated outward in the form of energy waves. The amplitude and frequency of earthquake ground motions partially depends on the material through which it is moving. The earthquake force is transmitted through hard rock in short, rapid vibrations, while this energy becomes a long, high-amplitude motion when moving through soft ground materials, such as Bay Mud.

3.2.1 Regional Active Faults

The California Geological Survey (previously known as the California Division of Mines and Geology), defines a “Holocene-active fault” as one that has had surface displacement within Holocene time (the last 11,700 years). CGS further defines a “pre-Holocene fault” as a fault whose recency of past movement is older than 11,700 years. Similarly, an “age-undetermined fault” is defined as a fault whose age of most recent movement is not known or is unconstrained by dating methods or limitations in stratigraphic resolution. CGS has mapped various faults in the region as part of their Fault Activity Map of California (CGS, 2010). Many of these faults are shown in relation to the project site on the attached Active Fault Map, Figure 4.

The nearest known Holocene-active faults are the San Andreas and Rodgers Creek Faults which are located approximately 9.3 kilometers (5.8 miles) southwest and 19.9 kilometers (12.4 miles) to the northeast of the site, respectively. Mapping by the California Geological Survey also shows the Burdell Mountain Fault approximately 15.9 kilometers (9.9 miles) northeast of the site. The Burdell Mountain Fault is characterized as a Quaternary fault; however, there is no documentation of latest historic activity and as such, the fault is not currently considered "Holocene active".

3.2.2 Historic Fault Activity

Numerous earthquakes have occurred in the region within historic times. The results of our computer database search indicate that at least eight earthquakes (Richter Magnitude 5.0 or larger) have occurred within 100 kilometers (62 miles) of the site between 1900 and 2018. The approximate locations of these earthquakes are shown on the Historic Earthquake Map, Figure 5.

3.2.3 Probability of Future Earthquakes

The site will likely experience moderate to strong ground shaking from future earthquakes originating on any of several active faults in the San Francisco Bay region. The historical records do not directly indicate either the maximum credible earthquake or the probability of such a future event. To evaluate earthquake probabilities in California, the USGS has assembled a group of researchers into the "Working Group on California Earthquake Probabilities" (USGS 2003, 2008; Field, et al. 2015) to estimate the probabilities of earthquakes on active faults. These studies have been published cooperatively by the USGS, CGS, and Southern California Earthquake Center (SCEC) as the Uniform California Earthquake Rupture Forecast, Versions 1, 2, and 3. In these studies, potential seismic sources were analyzed considering fault geometry, geologic slip rates, geodetic strain rates, historic activity, micro-seismicity, and other factors to arrive at estimates of earthquakes of various magnitudes on a variety of faults in California.

Conclusions from the most recent UCERF3 and USGS indicate the highest probability of an earthquake with a magnitude greater than 6.7 originating on any of the active faults in the San Francisco Bay region by 2043 is assigned to the Hayward/Rodgers Creek Fault system. The Hayward Fault is located approximately 19.9 kilometers (12.4 miles) northeast of the site and is assigned a probability of 33 percent. The San Andreas Fault, 9.3 kilometers (5.8 miles) southwest of the site, is the nearest known active fault to the site and is assigned a 22 percent probability of an earthquake with a magnitude greater than 6.7 by 2043. Additional studies by the USGS regarding the probability of large earthquakes in the Bay Area are ongoing. These current evaluations include data from additional active faults and updated geological data.

3.3 Historic Aerial Photographs

We reviewed historic aerial photographs from the UCSB Library's Framefinder website (2021) and from www.historicaerials.com. Photos we reviewed spanned the time period between 1946 and 2005, and were flown at scales between 1:12,000 and 1:54,000. The existing Sky Oaks Road and Concrete Pipe Road alignments are in place as of 1946. In general, canopy cover at the site is substantial and precludes observation of any subsequent changes at ground level. Notably, the existing graded access road at the south end of the site appears to be visible as of 1952. No evidence of significant historic landsliding was observed in the photographs.

3.4 Surface Conditions

We performed several site reconnaissance visits in the spring and summer of 2021 to observe and document surface conditions within the project area. The project site is comprised primarily of east-facing slopes, typically inclined between about 1.5:1 (horizontal:vertical) and 2:1, sited on the west (downslope) side of Sky Oaks Road, and along the east (upslope) side of Concrete Pipe Road. Above the central, swale part of the building area, an apparent fill slope underlying the outboard edge of Sky Oaks Road is about 10-feet high and inclined between about 1.5:1 and 2:1. Surface elevations range from a maximum of about +650 feet along Sky Oaks Road southwest of the building envelope to a minimum of about +495 feet along Concrete Pipe Road at the east edge of the site.

The site is currently undeveloped with the exception of a short, graded access road extending from Concrete Pipe Road at the southeast corner of the site up to a point near the middle of the planned southern tank pad. Above the access road, a series of apparent old quarry cuts rise about 50 vertical feet at inclinations near vertical, and expose very hard, very strong, medium-bedded chert bedrock. Outcrops of sheared and weathered sandstone are visible in cut slopes along the uphill side of Sky Oaks Road, and in similar uphill cuts along Concrete Pipe Road to the north of the site, although no other surface bedrock exposures were observed within the actual development area. Apart from the prominent chert outcrop, the development area typically exposes dense silty sand soil with abundant angular fragments of shale and sandstone rock.

Existing vegetation consists primarily of mature oak, bay, and madrone trees, with relatively limited ground cover. During our reconnaissance, we observed evidence of surface erosion, manifested in the form of prominent rills and gullies in the central, swale part of the site, some of which are up to about 2-feet deep and appear to result from culvert discharge along Sky Oaks Road. Evidence of apparent historic fill slope settlement was also observed in the form of semi-circular cracks along the outboard edge of the asphalt surface on Sky Oaks Road. However, and in contrast to regional mapping, we did not observe any evidence indicative of historic or incipient (developing) landsliding within or near the site, such as fresh or eroded scarps, tension cracks, debris piles, or other evidence.

3.5 Subsurface Exploration and Laboratory Testing

Subsurface exploration for the project included performance of six soil borings for examination of earth materials and collection of samples for laboratory testing. We also performed geophysical surveys to refine contact relations and verify shear-wave velocities.

3.5.1 Soil Borings

Soil borings were excavated on August 2, 3, 4, 18, and 19, 2021 at the locations shown on Figure 2. Borings were excavated by use of track-mounted drilling equipment to maximum explored depths ranging from about 25- to 71-feet below the ground surface. The borings were logged by our Field Geologist and samples were obtained for classification and laboratory testing. Brief descriptions of the terms and methodology used in classifying earth materials are shown on the Soil and Rock Classification Charts, Figures A-1 and A-2, respectively. Exploratory Boring Logs are shown on Figures A-3 through A-18.

Boring 1 was drilled along the outboard edge of Sky Oaks Road to the northwest of the planned tank pad and near the crest of the east-trending topographic "nose" that defines the north edge of the site. Boring 1 encountered a pavement section comprised of 8-inches of asphalt concrete over 4-inches of aggregate baserock. Beneath the pavement section, fill, colluvial, and residual soils composed of stiff silty sand and gravel extended to a depth of about 7-feet. Between 7- and 8-feet, material transitions to friable, highly to completely weathered sandstone and shale bedrock. Variably-weathered and interbedded sandstone and shale were encountered through the maximum explored depth of about 71-feet, and effective sampler refusal was noted at depths below about 25-feet.

Boring 2 was drilled along the outboard edge of Sky Oaks Road, west of the tank pad and close to the axis of the east-trending swale that forms the central part of the site. Boring 2 encountered a pavement section including 12-inches of asphalt over 4-inches of baserock, which was underlain by about 7-feet of loose fill soils comprised of silty sand with gravel. Highly to completely weathered, friable sandstone and shale was encountered at a depth of about 8-feet, and evidence of shearing and secondary mineralization was noted at depths of about 25- to 30-feet. Bedrock become notably stronger and harder at a depth of about 35-feet, and effective sampler refusal was encountered at each interval between 35-feet and the maximum explored depth of just over 60-feet.

Boring 3 was drilled in the west-central part of the building pad and encountered about 3-feet of dense silty sand colluvium over highly weathered shale bedrock. Shale was noted to exhibit evidence of shearing at depths between about 20- and 25-feet, with minor secondary mineralization noted at about 25-feet. Bedrock became notably harder and stronger at a depth of about 45-feet, and effective sampler refusal was encountered between 45- and 61.5-feet, where the boring was terminated just below the planned pad elevation.

Boring 4 was drilled near the middle of the proposed tank pad and encountered about 8-feet of dense silty sand and silty gravel colluvial soils. Highly weathered, weak to moderately strong sandstone bedrock was encountered at a depth of about 8-feet, and shale was encountered at about 16-feet. Shale was observed to be hard and strong, with sampler refusal noted between 20-feet and the maximum explored depth of just over 33-feet.

Boring 5 was drilled in the east-central part of the site, along the upslope edge of Concrete Pipe Road. Boring 5 encountered about 3-feet of dense silty sand colluvium over highly weathered, interbedded sandstone and shale. Moderately strong shale was encountered at a depth of about 17-feet and observed through the maximum explored depth of about 31.5-feet. A zone of crushed, saturated shale was noted at a depth of about 25-feet.

Boring 6 was drilled near the southeast corner of the development area, at the base of the graded access road. Boring 6 encountered about 2-feet of dense silty sand colluvium over friable, completely weathered shale bedrock. Shale was observed to generally grade harder and stronger with depth, and localized zones of chlorite and secondary mica minerals were observed at depths below about 20-feet. Boring 6 was terminated at a maximum explored depth of 26-feet.

3.5.2 Geotechnical Laboratory Testing

Laboratory testing of soil samples from the exploratory borings included determination of moisture content, dry density, percentage of particles passing the no. 200 (75-µm) sieve, unconfined compressive strength, and corrosivity. Moisture, density, sieve, and strength test results are presented on the Boring Logs, and corrosivity results are shown on Figure A-19. The subsurface exploration and laboratory testing program is discussed in greater detail in Appendix A.

3.5.3 Geophysical Surveys

Field geophysical surveys were conducted on October 11 and 12, 2021, and included subsurface seismic refraction (SR) surveys along each of the three transects depicted on Figure 2. SR surveying was performed for the purpose of determining P-wave velocity to assist in clarifying contact relations between chert and sandstone/shale bedrock units and assessing material rippability. In general, SR surveying indicates that the materials above the planned tank pad have P-wave velocities ranging from about 1,500 ft/sec (457 m/s) to a maximum of about 8,000 feet/sec (2,400 m/s).

Multi-channel analysis of surface waves (MASW) was performed at each of the two points indicated on Figure 2. MASW surveying was performed to measure S-wave velocities for the purpose of defining the Site Class and Vs_{30} value for project seismic design. The results of our MASW surveying indicate that subsurface materials below the planned tank pad have shear-wave velocities between about 1,400 ft/sec (427 m/s) and 2,400 ft/sec (730 m/s). More detailed discussion and graphic results of our geophysical surveying is provided in Appendix B.

3.6 Interpreted Subsurface Conditions

The results of our surface mapping, subsurface exploration, and geophysical surveys - in contrast to regional mapping described above - indicate that the proposed building area is, aside from that portion at the south end extending across the prominent and visible chert outcrop, underlain by shallow Franciscan sandstone and shale bedrock. Chert was not encountered in any of our borings, and the results of our surface mapping and geophysical surveying indicate that the

contact between the hard chert to the south and the less durable sandstone and shale to the north dips steeply to the north and northeast. As such, the majority of the proposed excavation will encounter variably-weathered sandstone and shale, while relatively challenging excavation conditions in hard chert will be limited to a small area in the southeast corner of the tank pad.

No evidence indicative of weak materials or significant structural discontinuities (such as landslide or fault planes) is apparent, although we note that "intra-formational" contacts between the various constituents of the Franciscan Complex (in this case, shale, sandstone, and chert) are, by definition, fault contacts. Therefore, although these faults are interpreted as "not active", it is possible that localized zones of weaker rock exist, within the sandstone/shale unit and at the contact between the hard chert and weaker rocks.

3.7 Groundwater

Groundwater was encountered at a depth of 56-feet in Boring 1, and 27-feet in Boring 5, but was not encountered in our other borings. However, because the borings were not left open for an extended period of time, a stabilization depth to groundwater may not have been observed. Based on our experience with similar projects in the area, significant quantities of groundwater are generally not expected at the site. However, localized zones of elevated or "perched" groundwater are likely to exist, and most commonly will form along prominent shear or fault zones, old slide planes, fractures, and other areas where increased void space exists. We note that in Borings 1 and 5, groundwater appears to be associated with zones of crushed rock at depths of about 56-feet and 25-feet, respectively. Notably, an absence of groundwater encountered in other borings indicates that such aquifers are not laterally extensive and, as such, difficult to predict in terms of lateral extents.

Based on our exploration and experience, we judge that small amounts of "perched" groundwater are likely to locally exist year-round along old fault/shear/fracture zones, as well as within a few feet of the soil/bedrock contact. Groundwater will likely be higher during the winter months and following periods of heavy rain and may emerge as springs or seeps where natural or man-made slopes intersect these locally "perched" aquifers.

4.0 GEOLOGIC HAZARDS

This section summarizes our review of commonly considered geologic hazards, discusses their potential impacts on the proposed improvements, and identifies conceptual mitigation options. The primary geologic hazards which could affect the proposed development are strong seismic ground shaking, erosion, and potential slope instability. Other geologic hazards are judged relatively insignificant with regard to the proposed project. Each geologic hazard considered is discussed in further detail in the following paragraph.

4.1 Fault Surface Rupture

Under the Alquist-Priolo Earthquake Fault Zoning Act, the California Division of Mines and Geology (now known as the California Geological Survey) produced 1:24,000 scale maps showing known active and potentially active faults and defining zones within which special fault studies are required. The San Andreas Fault, 9.3 kilometers (5.8 miles) southwest of the site, is the nearest known active fault to the site. The site is not located within an Alquist-Priolo Special Studies Zone, and no evidence indicative of active or historic faulting was observed within or in close proximity to the site. It should be noted that the interpreted shear/fault zones encountered during our exploration and discussed previously are interpreted as "intraformational" faults related to emplacement of the Franciscan Complex Cretaceous and Tertiary time and are not considered to be significant or active seismogenic sources. We therefore judge the potential for fault surface rupture in the development area is low.

Evaluation: *Less than significant.*
Recommendations: *No geotechnical mitigation measures are required.*

4.2 Seismic Shaking

The site will likely experience seismic ground shaking similar to other areas in the seismically active Bay Area. The intensity of ground shaking will depend on the characteristics of the causative fault, distance from the fault, the earthquake magnitude and duration, and site-specific geologic conditions. Estimates of peak ground accelerations are based on either deterministic or probabilistic methods.

4.2.1 Deterministic Seismic Analysis

Deterministic methods use empirical attenuation relations that provide approximate estimates of median peak ground accelerations. A summary of the active faults that could most significantly affect the planning area, their maximum credible magnitude, closest distance to the center of the planning area, and probable peak ground accelerations are summarized in Table 1. The calculated accelerations should only be considered as reasonable estimates. Many factors (e.g., soil conditions, orientation to the fault, etc.) can influence the actual ground surface accelerations.

Table 1 – Deterministic Peak Ground Accelerations for Active Faults

Fault	Moment Magnitude for Characteristic Earthquake[1]	Closest Estimated Distance (km)[1,2]	Median Peak Ground Acceleration (g)[3,4]	Median PGA +1 Std Dev (g)[3,4]
San Andreas	8.0	9.3	0.38	0.69
San Gregorio	7.4	10.4	0.31	0.56
Hayward/Rodgers Creek	7.6	19.9	0.22	0.39
West Napa	7.0	38.0	0.09	0.17

1) USGS Earthquake Scenario Map (BSSC 2014), https://usgs.maps.arcgis.com/apps/webappviewer/index.html?id=14d2f75c7c4f4619936dac0d14e1e468
2) Google Earth, 2021
3) Abrahamson, Silva & Kamai, Boore, Stewart, Seyhan & Atkinson, Campbell & Bozorgnia, and Chiou & Youngs 2014 NGA models
4) Values determined using Vs_{30} = 1,900 ft/sec (580 m/s) based on seismic refraction profile and shear-wave measurements discussed in Section 3.5.3.

4.2.2 Probabilistic Seismic Analysis

Probabilistic Seismic Hazard Analysis analyzes all possible earthquake scenarios while incorporating the probability of each individual event to occur. The probability is determined in the form of the recurrence interval which is the average time for a specific earthquake acceleration to be exceeded. The design earthquake is not solely dependent on the fault with the closest distance to the site and/or the largest magnitude, but rather the probability of given seismic events occurring on both known and unknown faults.

We calculated the peak ground acceleration for two separate probabilistic conditions; the two percent chance of exceedance in 50 years (2,475-year statistical return period) and the ten percent chance of exceedance in 50 years (475-year statistical return period). The peak ground acceleration values were calculated utilizing the USGS Unified Hazard Tool (USGS, 2018). The results of the probabilistic analyses are presented below in Table 2.

Table 2 – Probabilistic Peak Ground Accelerations for Active Faults

Probability of Exceedance	Statistical Return Period	Magnitude	Peak Ground Acceleration (g)
2% in 50 years	2,475 years	7.9	0.81
10% in 50 years	475 years	7.7	0.43

1) USGS Unified Hazard Tool (Dynamic:Conterminous US 2014, (Update, v4.2.0), accessed on October 6, 2021

The potential for strong seismic shaking at the project site is high. The San Andreas and Hayward/Rodgers Creek Fault systems are the closest and most likely sources of significant seismic shaking. Significant effects of strong seismic shaking could include lurching and ground cracking, slope instability, and/or damage to structures and other improvements.

Evaluation: *Less than significant with geotechnical mitigation measures.*
Recommendations: *Minimum mitigation includes designing new structures in accordance with the provisions of the most recent version of the California Building Code, appropriate American Water Works Association (AWWA) standard or subsequent codes in effect when final design occurs. Recommended seismic design coefficients and spectral accelerations are presented in Section 5.1 of this report.*

4.3 Liquefaction and Related Effects

Liquefaction refers to the sudden, temporary loss of soil strength during strong ground shaking. The strength loss occurs as a result of the build-up of excess pore water pressures and subsequent reduction of effective stress. While liquefaction most commonly occurs in saturated, loose, granular deposits, recent studies indicate that it can also occur in materials with relatively high fines content provided the fines exhibit lower plasticity. The effects of liquefaction can vary from cyclic softening resulting in limited strain potential to flow failure which cause large settlements and lateral ground movements.

The project site is underlain by weathered Franciscan bedrock at planned subgrade elevation, and conditions conducive to liquefaction were not encountered during our exploration. As such, we judge the risk of liquefaction at the site is essentially nil.

Evaluation: *Less than significant.*
Recommendations: *No geotechnical mitigation measures are required.*

4.4 Seismic Densification

Seismic ground shaking can induce settlement of unsaturated, loose, granular soils. Settlement occurs as the loose soil particles rearrange into a denser configuration when subjected to seismic ground shaking. Varying degrees of settlement can occur throughout a deposit, resulting in differential settlement of structures founded on such deposits. Considering the planned excavations will expose bedrock throughout the building pad, we judge the likelihood of seismically-induced settlement is nil.

Evaluation: *Less than significant.*
Recommendations: *No geotechnical mitigation measures are required.*

4.5 Expansive Soil

Expansive soils will shrink and swell with fluctuations in moisture content and are capable of exerting significant expansion pressures on building foundations, interior floor slabs and exterior flatwork. Distress from expansive soil movement can include cracking of brittle wall coverings (stucco, plaster, drywall, etc.), racked door and/or window frames, uneven floors, and cracked slabs. Flatwork, pavements, and concrete slabs-on-grade are particularly vulnerable to distress due to their low bearing pressures.

Based on our subsurface exploration, the building pad will expose Franciscan sandstone and shale bedrock, which is generally non-expansive. Therefore, we judge the risk of expansive soil affecting the proposed improvements is relatively low.

Evaluation: *Less than significant with mitigation.*

Mitigation: *Soils should be moisture conditioned to slightly above the optimum moisture content during site grading and maintained at this moisture content until imported aggregate base and/or surface paving is completed to "seal" in the higher moisture content and therefore reduce future expansive potential.*

4.6 Settlement

Significant settlement can occur when new loads are placed over soft, compressible clays (e.g., Bay Mud) or loose soils. Based on our subsurface exploration, the planned excavations will expose firm Franciscan bedrock. Therefore, we judge that the risk of damage due to settlement is generally low.

Evaluation: *Less than significant.*

Recommendations: *No geotechnical mitigation measures are required.*

4.7 Slope Instability/Landslides

Slope instability generally occurs on relatively steep slopes and/or on slopes underlain by weak materials. The project site generally consists of natural slopes inclined between about 1.5:1 (H:V) and 2:1, while cut slopes along Concrete Pipe Road locally range to about 15-feet high at inclinations slightly flatter than 1:1. Based on our site reconnaissance and subsurface exploration, bedrock is relatively shallow throughout the site.

While geologic mapping shows the ravines within and southeast of the site are mapped as large, debris flow-type landslides, we did not observe any significant fresh or relic scarps, cracking, or other evidence that would suggest active or recent slope movement or large-scale instability within or around the proposed tank locations. The planned excavation for the tank pad will remove the weight of the existing rock and soil from the slope which will require tall retaining walls to maintain slope stability.

We have performed preliminary slope-stability analyses for static and pseudo-static (seismic) conditions in order to evaluate factors of safety against slope instability using the computer program Slide V6.008, developed by RocScience (2011). Our analyses were performed using the geologic cross-section shown on Figure 2 where a 70-foot-high soil nail and shotcrete retaining wall is planned adjacent to the west side of the northern tank. Supplemental slope-stability analyses should be performed as part of a future design-level study using additional cross-sections, including a section through the southern tank. Soil and rock material properties were developed on the basis of our laboratory test results and engineering judgment. For "pseudo-static" or "seismic" conditions, we evaluated slope stability using a site modified peak ground acceleration (PGAm) of 0.79 g, a building code value based on ASCE7-16 using Site Class C material. The results of our slope stability analyses are presented on Figures 6-10.

Our first analysis considers existing conditions. For this analysis groundwater is modeled at a depth of 10-feet which is typical for the area throughout most of the year based on our experience. This analysis indicates the site has an existing static factor of safety against instability of approximately 1.7 as shown on Figure 6. We then calculated the factor of safety under seismic accelerations which is below 1.0, which indicates slope deformations will likely occur under strong ground shaking as shown on Figure 7.

Our next analysis models the planned excavation adjacent to the northern tank supported by a 70-foot-high soil nail and shotcrete retaining wall. We modeled the soil nails as 60-foot long and spaced 5-feet on center in each direction with a typical retaining wall backdrain that will draw down the groundwater upslope from the wall. Our analysis indicates static factors of safety of 1.9 for a circular failure surface and 1.8 for a non-circular failure surface as shown on Figures 8 and 9. We then calculated the factor of safety under seismic accelerations which are below 1.0, which indicates slope deformations will likely occur under strong ground shaking as shown on Figure 10.

We evaluated slope deformations using procedures outlined by Bray and Travasarou (2007). The analyses use a Magnitude 8.0 earthquake centered on the San Andreas Fault and a yield acceleration calculated using our cross section. Based on the conditions assumed, the calculated seismic induced displacements range from about 2 to 6 inches, as shown on Figure 10.

The risk of damage to the new tanks due to slope instability is generally low to moderate, while the risk of damage due to slope instability is higher during a seismic event. Site grading currently consists primarily of excavations to develop a large pad for the tanks. If grading plans change, we should be consulted to evaluate potential impacts to slope stability.

Evaluation: *Less than significant with mitigation.*

Mitigation: *As a minimum, mitigation measures should include founding the tank on a level pad that exposes firm bedrock, design and construction of soil nail and shotcrete retaining walls using top-down construction with a maximum unsupported vertical cut of 5-feet, and completing site grading, all in accordance with recommendations provided Section 5.2.*

4.8 Erosion

Sandy soils on most slopes or clayey soils on steep slopes are susceptible to erosion when exposed to concentrated surface water flow. The potential for erosion is increased when established vegetation is disturbed or removed during normal construction activity.

Construction of the proposed improvements will require extensive site disturbance and grading which, if not properly addressed during design and construction, could lead to concentrated surface water flows and increased erosion. Considering the sloping terrain that surrounds the project site, and the disturbance to existing vegetation and drainage patterns that may result from site grading, we judge the risk of damage to improvements due to erosion is moderate to high.

Evaluation: *Less than significant with mitigation.*

Mitigation: *Mitigation measures include designing a site drainage system to collect surface water and discharge it into the natural drainage swales well away from the development area. The project Civil Engineer is responsible for designing the site drainage system. An erosion control plan should be developed prior to construction per the current guidelines of the California Stormwater Quality Association's Best Management Practice Handbook.*

4.9 Flooding

The proposed tank site is located at an elevation of about 500 feet above sea level and is not mapped within a FEMA 100- or 500-year flood zone. Therefore, large scale flooding is not considered a significant hazard at the project site. The project Civil Engineer or Architect is responsible for site drainage and should evaluate the maximum credible rainfall event and size the storm drain system to prevent localized flooding.

Evaluation: *Less than significant with mitigation.*

Mitigation: *The project Civil Engineer or Architect should evaluate the risk of localized flooding and provide appropriate storm drain design.*

4.10 Corrosive Soils

Corrosive soil can damage buried metallic structures, cause concrete spalling, and deteriorate rebar reinforcement. Laboratory testing was performed on representative samples of the near-surface site soils to evaluate pH, electrical resistivity, chloride, and sulfate contents. These laboratory test results are presented on Figures A-19.

The results of our corrosivity testing indicate the upper soil layers have a pH of 6.1 a chloride concentration of 30 parts per million (ppm), and sulfate concentration of 111 ppm. Per Caltrans Corrosion Guidelines (2018) a soil is considered corrosive if the pH level is less than 5.5, the chloride concentration is greater than 500 ppm, and/or the sulfate concentration is 1,500 ppm or greater. Therefore, based on the results of the corrosion testing, corrosive soil is not considered a significant geologic hazard at the project site for a majority of the project site.

Evaluation: *No significant impact.*
Mitigation: *No mitigation measures are required.*

5.0 CONCLUSIONS AND RECOMMENDATIONS

Based on our review of available geologic and geotechnical data, the results of our preliminary subsurface exploration and geophysical surveying, and our experience with similar projects, we conclude that the proposed project is feasible from a geotechnical standpoint. Primary geotechnical considerations will include ensuring that site grading is completed in a manner that is appropriate for the hillside setting, including shoring and excavation sequencing for the tall shotcrete and soil nail retaining walls, evaluating underlying bedrock for potential "hard rock" excavation conditions, site access, providing appropriate foundation support for the new tanks, providing appropriate surface drainage as to minimize the potential for erosion and slope instability, and designing the structures to resist strong seismic ground shaking. Additional discussion and conclusions and recommendations addressing these and other considerations are presented in the following sections.

5.1 Site Grading

Significant grading, consisting primarily of excavation up to about 70-feet deep and fills up to about 20-feet thick, will be required for the project. We recommend that all site grading be performed in accordance with the criteria and recommendations presented in the following sections.

5.1.1 Site Preparation

Clear any debris and organic material from areas to be graded. Debris, rocks larger than six inches, and vegetation are not suitable for structural fill and should be removed from the site. Trees that are located within the building areas should be removed and the root systems excavated.

5.1.2 Excavation

Site grading is expected to consist primarily of excavation to create a level pad for the new tanks. Cuts of up to about 70 feet in height are anticipated to achieve the planned building pad elevation near +500 feet. Site excavations will generally encounter a thin mantle of dense silty to sandy soil over sandstone and shale bedrock of variable weathering, strength, and hardness. In the central part of the site, colluvial soils range up to about 8-feet thick. Bedrock encountered in our borings typically graded harder and stronger within about 15- to 25-feet of the existing ground surface. Harder chert bedrock will be encountered in the southwestern corner of the southern tank footprint.

Based on our subsurface exploration, we judge that the majority of the site excavation (including most areas above elevation +510-feet), can be reasonably be performed with typical equipment, such as medium-size dozers and excavators. The results of our seismic refraction surveys indicate that subsurface materials within the planned building pad and above elevation +500 have P-wave seismic velocities ranging up to about 7,000 ft/sec. These materials are indicated to be "rippable" to "marginally" rippable with a Caterpillar D8 dozer and "rippable" with a D9 or larger dozer Caterpillar, 2018). Based on our exploration, we anticipate that the lowermost 10-feet of the excavation (between elevations +500 and +510-feet), especially in the southwest corner of the site, will encounter harder chert rock that may require specialized hard rock techniques or

equipment to excavate (e.g., jackhammers or hydraulic breakers). Therefore, we recommend inclusion of a line item and clear definition for “hard rock excavation” in the project bid documents. If hard rock is encountered during construction which prohibits excavation to the required depths, we should be consulted to observe conditions and revise our recommendations and/or design criteria as appropriate. Reducing planned excavation depths will also reduce the potential for hard rock excavation and resulting costs.

5.1.3 Temporary and Permanent Cut Slopes

All temporary excavations and cut slopes exceeding 5-feet high, such as will be needed while retaining walls are constructed and/or backfilled, must either be braced, shored, or sloped in accordance with OSHA regulations. Temporary cut slopes in onsite fill, colluvial, and residual soils should be inclined no steeper than 1.5:1 based on an OSHA Type “C” soil profile. Temporary slopes in weathered bedrock may be inclined at 0.5:1 where less than 12-feet high and could be steeper if conditions permit. Temporary slopes in rock that exceed 12-feet high should be no steeper than ¾:1. Geologic inspection during excavation will be required to confirm bedrock cuts steeper than 0.5:1 where cuts exceed 5 feet high.

Although generally not anticipated, any new permanent cut slopes in soil and rock materials should be inclined no steeper 2:1 and 1.5:1, respectively. Cut slopes in hard chert may be inclined at 1.1, or where less than 12-feet high, may be as steep as 0.75:1. Minor sloughing and raveling of cut slopes is common in hillside terrain due to the natural weathering process. Therefore, periodic maintenance to remove debris and repair small sloughs should be anticipated and budgeted for in the future. Alternatively, soil nails and Tecco mesh or shotcrete could be applied to reduce the risk of occasional raveling and associated maintenance. Cut slopes will be less prone to creep, raveling, and erosion if flatter (ideally at 2:1 or flatter) slopes are used. Permanent soil cut slopes should be planted immediately following construction to reduce sloughing and erosion.

5.1.4 Fill Slopes

Fills up to about 20-feet in thickness are currently planned between the tanks and the soil nail and shotcrete retaining walls. We do not anticipate any other significant fills as part of the project, and we recommend that any new fill thicknesses be kept to a minimum to the extent possible to minimize new loads on the sloping terrain. Where required, fill slopes should be constructed no steeper than 2:1 with a level keyway excavated into firm soil or rock along the downhill side of the slope. Steeper fill slopes could be constructed provided the slopes are reinforced with geogrid.

Additionally, subdrains should be incorporated to reduce the potential for hydrostatic forces behind the fill. A schematic detail of fill slope construction is shown on Figure 11. The actual depth and extent of keyways, benches, and subdrains should be determined by the Geotechnical Engineer during site grading. Permanent fill slopes should be planted following construction to reduce sloughing and erosion.

5.1.5 Fill Materials, Placement and Compaction

All fill materials should consist of non-expansive materials that are free of organic matter, have a Liquid Limit of less than 45 (ASTM D 4318), a Plasticity Index of less than 20 (ASTM D 4318), and a minimum R-value of 20 (California Test 301). The fill material should contain no more than 50 percent of particles passing a No. 200 sieve and should have a maximum particle size of 4 inches. Spoils from onsite excavations are likely suitable for re-use as fill provided, they can be processed to meet the aforementioned criteria – note that deeper excavations into zones of hard rock may yield significant "bony" or oversize material that requires substantial processing for re-use as fill. Any imported fill material needs to be tested to determine its suitability.

Where fills or other structural improvements are planned on flat ground, the subgrade surface should be scarified to a depth of eight inches, moisture conditioned to slightly above the optimum moisture content, and compacted to at least 90 percent relative compaction. Scarification and recompaction is not required where bedrock is exposed at subgrade. Relative compaction refers to the in-place dry density of soil expressed as a percentage of the maximum dry density, as determined by ASTM D1557. Subgrade preparation should extend a minimum of five feet beyond the planned tank pad in all directions. The subgrade should be firm and unyielding when proof-rolled with heavy, rubber-tired construction equipment. If soft, wet, or otherwise unsuitable materials are encountered at subgrade elevation during construction, we will provide supplemental recommendations to address the specific condition.

Fill materials should be moisture conditioned to just above the optimum moisture content prior to compaction. Properly moisture conditioned fill materials should subsequently be placed in loose, horizontal lifts of eight inches-thick or less and uniformly compacted to at least 90 percent relative compaction. Where fill thicknesses are greater than five feet, fill materials should be compacted to at least 92 percent relative compaction. In pavement areas, the upper 12 inches of fill should be compacted to at least 95 percent relative compaction. The maximum dry density and optimum moisture content of fill materials should be determined in accordance with ASTM D1557.

5.2 Seismic Design

Minimum mitigation of ground shaking includes seismic design of new structures in conformance with the provisions of the most recent edition of the California Building Code, appropriate American Water Works Association (AWWA) standard(s), ASCE 7-16 or subsequent codes in effect when final design occurs.

The magnitude and character of these ground motions will depend on the particular earthquake and the site response characteristics. Based on the subsurface conditions encountered in our borings, shear-wave velocities measured in-situ via MASW geophysical methods, and proximity of several nearby faults, we recommend the coefficients and site values shown in Table 3 be used to calculate the design base shear of the new construction. These criteria should be checked for updates during the structural design of the tanks.

Table 3 – ASCE 7-16 Seismic Design Criteria

Parameter	Design Value
Site Class	C
Site Latitude	37.9712°N
Site Longitude	-122.6042°W
Site Coefficient, F_a	1.2
Site Coefficient, F_V	1.4
Spectral Response (short), S_S	1.52 g
Spectral Response (1-sec), S_1	0.614 g
Spectral Response (short), SM_s	1.824
Spectral Response (1-sec), SM_1	0.859
Design Spectral Response (short), SD_s	1.216
Design Spectral Response (1-sec), SD_1	0.573
MCE_G[2] PGA adjusted for Site Class, PGAm	0.792

Reference: SEAOC/OSHPD Seismic DesignMaps Web Tool, https://seismicmaps.org/, accessed October 29, 2021.

5.3 Foundation Design

Based on our subsurface exploration, we anticipate the planned excavations will expose firm sandstone and shale bedrock at the building pad elevation. Therefore, we judge the new tanks may be supported on a shallow foundation system consisting of a continuous ring footing below the perimeter of the new tank. Ground anchors may also be required to resist seismic loads. Design criteria for new foundations is provided in Table 4 below.

Table 4 – Foundation Design Criteria

Parameter	Design Value
Minimum Embedment[1]	24 inches
Minimum Width[2]	18 inches
Allowable Bearing Pressure[2,3]	4,000 psf
Base Friction Coefficient	0.35
Lateral Passive Resistance[4]	450 pcf
Ultimate Bond Stress for Rock Anchors	2,500 psf

Notes:

(1) All footings to bear uniformly on weathered bedrock.

(2) Design shallow foundations to similar bearing pressures (i.e., size footing widths to maintain relatively uniform bearing loads).

(3) Increase design values by 1/3 for total design loads including seismic.

(4) Equivalent fluid pressure, not to exceed 2,500 psf. Neglect upper 6 inches unless confined by concrete.

5.4 Retaining Wall Design

Retaining walls will be required to support the planned excavations. While various wall types are feasible, a soil nail and shotcrete may be a relatively efficient system given the anticipated "top-down" construction sequence for the new tank pad. Other wall systems may be appropriate for shorter walls, including conventional concrete walls or soldier pile walls. Mechanically-stabilized earth walls may also be considered in areas (if and) where new fills are planned, provided that the walls are keyed into firm soil or bedrock.

The retaining walls should be designed to resist lateral pressures from earth, seismic and other surcharge loads. Design criteria for conventional concrete or solider pile walls is provided in Table 5 while criteria for soil nail walls is presented in Table 6. Retaining walls that can slightly deflect at the top can be designed using the unrestrained criteria shown below. Walls that are structurally connected and not allowed to deflect (e.g., tied-back walls) are restrained and are commonly designed using a uniform "at-rest" earth pressure distribution rather than an equivalent fluid pressure.

Table 5 – Active Earth Pressure for Retaining Wall Design

Backfill Inclination[1]	Unrestrained[2,3]	Restrained[3,4]
Level	40 pcf	25 x H psf
3:1	45 pcf	30 x H psf
2:1	50 pcf	35 x H psf

Notes:

(1) Interpolate earth pressures for intermediate slopes
(2) Equivalent fluid pressure
(3) Wall design should account for a seismic surcharge of 15 x H (in psf) in addition to active pressure
(4) Rectangular distribution, H is wall height in feet

Table 6 – Soil Nail Retaining Wall Design Criteria

Soil/Rock Type[1]	Unit Weight	Friction Angle	Cohesion	Ultimate Bond Strength
Silty/Clayey Sand	125 pcf	30 degrees	250 psf	500 psf
Sandstone/Shale	135 pcf	40 degrees	1,000 psf	2,500 psf

Notes:

(1) For design, assume soil will be encountered within the upper five feet and rock will be encountered at depths greater than five feet.
(2) Seismic loads for soil nail walls should be determined in accordance with Section 6.8 of FHWA GEC 007 (FHWA, 2015) and adjusted as applicable for wall heights greater than 20 feet.

Wall drainage is required for all retaining walls taller than 3 feet. Wall drainage should consist of Caltrans Class 1B permeable material within filter fabric or Caltrans Class 2 permeable material. A composite drainage panel such as Miradrain 6000 (or approved equivalent) could also be used. The drainage should be collected in a 4-inch perforated PVC drain line at the base of the wall and discharged to an appropriate discharge location. The permeable material should extend at least 12 inches from the back of the wall and be continuous from the bottom of the wall to within 12 inches of the ground surface. A typical wall backdrain detail is presented on Figure 12.

5.5 New Pavements

We have calculated thicknesses for asphalt pavements for the new access road in accordance with Caltrans procedures for flexible pavement design. Asphalt-concrete pavements are appropriate in areas where the roadway inclinations are less than about 15 percent. Our calculations assume an R-value of 30 for subgrade materials (bedrock) and a range of Traffic Indices from 3.0 to 6.0 depending on the expected traffic loads for a twenty-year design life. In general, areas expected to experience loading from heavy vehicles should be designed using the higher Traffic Index, while more lightly-loaded areas can utilize a thinner pavement section based on the lower Traffic Index. The recommended pavement sections are presented in Table 7.

Table 7 – Preliminary Asphalt-Concrete Pavement Sections

Traffic Index[1]	Asphalt Concrete (inches)	Aggregate Base (inches)
3.0	2.0	4.0
4.0	2.5	6.0
5.0	3.0	8.0

(1) Traffic Index for final pavement design to be determined by the project Civil Engineer.

In pavement areas, the upper 12 inches of subgrade should be compacted to at least 95 percent relative compaction. The aggregate base and asphalt-concrete should conform to the most recent version of Caltrans Standard Specifications and should be compacted to at least 95 percent relative compaction. Additionally, the subgrade and aggregate base should be firm and unyielding under heavy, rubber-tired construction equipment. If heavier truck traffic or "superior" performance is desired, the thickness of the aggregate base and asphalt may be increased.

6.0 SUPPLEMENTAL GEOTECHNICAL SERVICES

As project design continues, we recommend additional slope stability analysis should be performed, and additional subsurface exploration may be performed to better define subsurface conditions. As project plans are nearing completion, we should review them to confirm that the intent of our geotechnical recommendations has been incorporated. We can also consult with project team to supplement or clarify geotechnical recommendations, if needed. During construction, we should be present intermittently to observe foundation excavations, retaining wall construction, fill placement and other geotechnical-related work items. The purpose of our observation and testing is to confirm that site conditions are as anticipated, to adjust our recommendations and design criteria if needed, and to confirm that the Contractor's work is performed in accordance with the project plans and specifications.

7.0 LIMITATIONS

This report has been prepared in accordance with generally accepted geotechnical engineering practices in Marin County at the time the report was prepared. This report has been prepared for the exclusive use of the project Owner and/or their assignees specifically for this project. No other warranty, expressed or implied, is made. Our evaluations and recommendations are based on the data obtained during our subsurface exploration program and our experience with soils in this geographic area.

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SITE COORDINATES
LAT. 37.9715°
LON. -122.6042°

SITE LOCATION

N.T.S.

NORTH

REFERENCE: Google Earth, 2021

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FILENAME: 187.503 standard figures.dwg

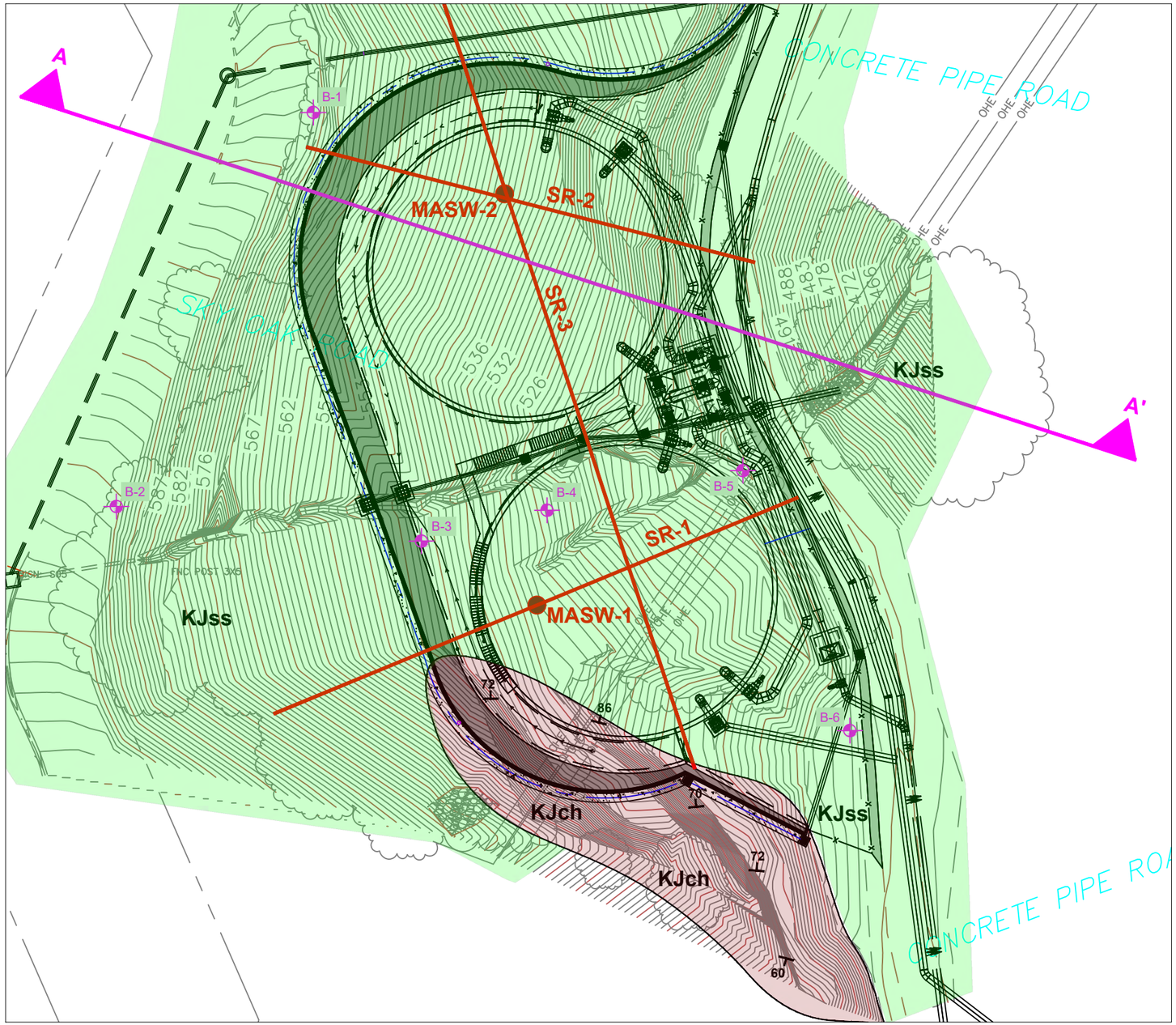
SITE LOCATION MAP

Marin Municipal Water District
Concrete Pipe Road Water Tanks
Marin County, California

Project No. 187.503 Date: 11/17/2021

Drawn RGB
Checked

1
FIGURE



LEGEND AND KEY TO MAP SYMBOLS

KJss — **SANDSTONE AND SHALE (JURASSIC-CRETACEOUS)**
Predominantly thin laminar shale, locally highly sheared, typically dark gray, varies from friable to hard and strong. Sandstone is typically light to medium brown, fine-grained, closely fractured arkose, with lesser hard, strong graywacke.

KJch — **META-CHERT (JURASSIC-CRETACEOUS)**
Typically dark brown, locally pale green-blue, hard, strong, moderately fractured, thin- to medium-bedded, with +/-10% very thin shale interbeds..

Geologic Contact

Boring by Miller Pacific, 2021

Seismic Refraction Line

MASW Sounding

72 **Strike and Dip of Bedding**

Slope Stability Cross Section

N

SITE PLAN AND GEOLOGIC MAP

SCALE

0 20 40 80 FEET

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FILE: 187.503SitePlan.dwg

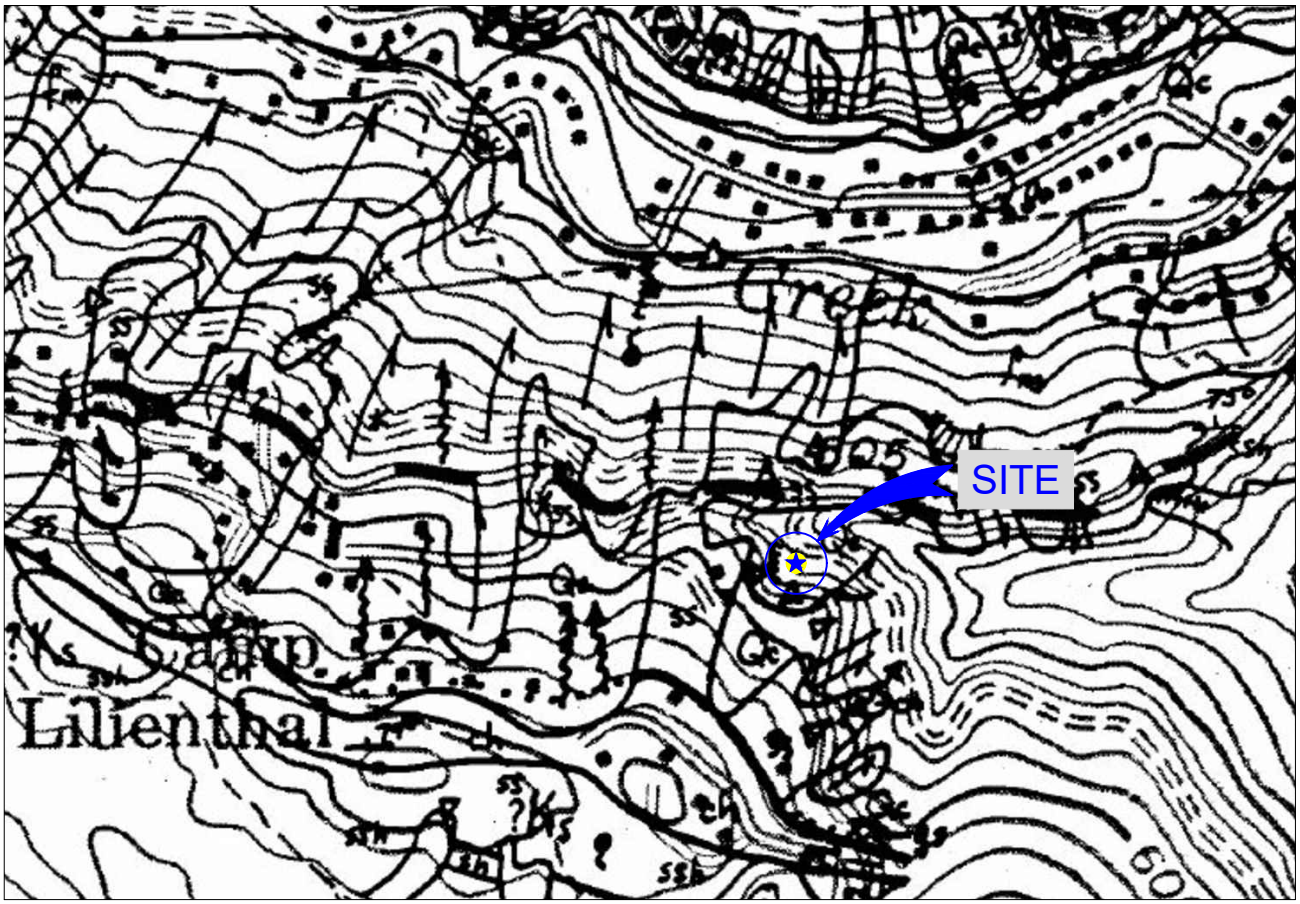
SITE PLAN AND GEOLOGIC MAP

Marin Municipal Water District
Concrete Pipe Road Water Tanks
Marin County, California

Project No. 187.503 Date: 10/28/21

Drawn MFJ
Checked MFJ

2
FIGURE



REGIONAL GEOLOGIC MAP

(NOT TO SCALE)

NORTH

LEGEND

Qa — **Alluvium -** Unconsolidated deposits of clay, silt, sand, and gravel underlying the bottom lands of the main stream valleys, consisting of materials transported and deposited by the streams.

Qc — **Colluvium -** Unconsolidated and unsorted soil material and weathered rock fragments accumulated on or at the base of slopes by natural gravitational or slope wash processes.

fm — **Franciscan Melange -** A tectonic mixture consisting of small to large masses of resistant rock types embedded in a matrix of pervasively sheared or pulverized rock material.

Fault - Shown solid where fault traces are located with confidence, dashed where approximately located in bedrock areas, and dotted where assumed to be located. Queried where considerable doubt exists as to the location of the concealed trace.

Creep - Slopes exhibiting evidence of continuous or intermittent downslope creep of surface zone.

Landslides - Predominantly deposits of unconsolidated and unsorted soil and rock debris that have moved downslope en masse or in increments by flow or creep processes.

Reference: Smith, Theodore C., Rice, Salem J., Strand, Rudolph G. (1976), "Geology of the Upper Ross Valley and the Western Part of the San Rafael Area, Marin County, California" California Geological Division of Mines and Geology, Scale 1:12,000.

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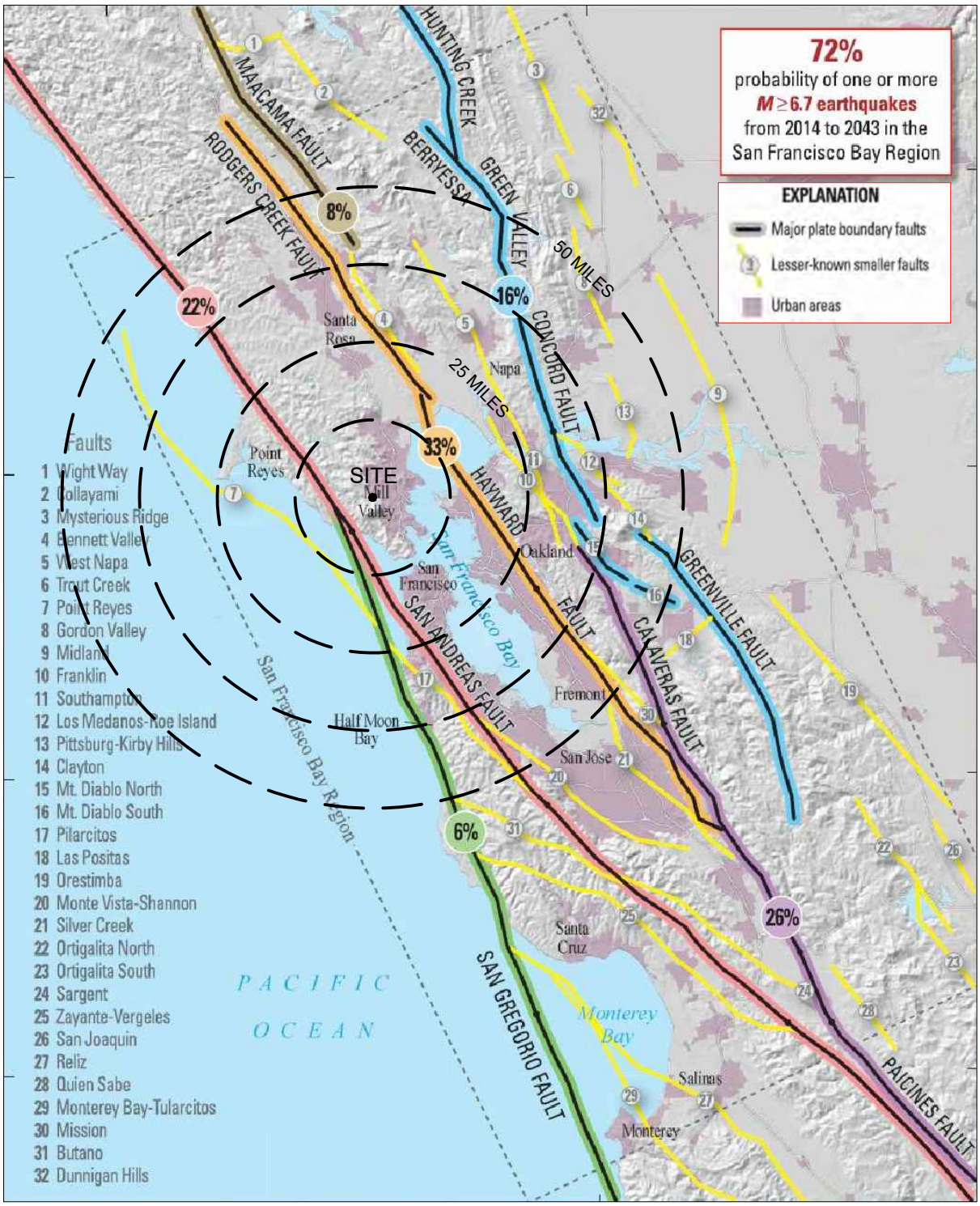
REGIONAL GEOLOGIC MAP

Marin Municipal Water District
Concrete Pipe Road Water Tanks
Marin County, California

Project No. 187.503 Date: 11/17/2021

Drawn RGB
Checked

3
FIGURE



SITE COORDINATES
LAT. 37.9715°
LON. -122.6042°

SCALE
0 12.5 25 50 MILES

NORTH

DATA SOURCE:
1) U.S. Geological Survey, U.S. Department of the Interior, "Earthquake Outlook for the San Francisco Bay Region 2014-2043", Map of Known Active Faults in the San Francisco Bay Region, Fact Sheet 2016-3020, Revised August 2016 (ver. 1.1).

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ACTIVE FAULTS MAP

Marin Municipal Water District
Concrete Pipe Road Water Tanks
Marin County, California

Project No. 187.503 Date: 11/17/2021

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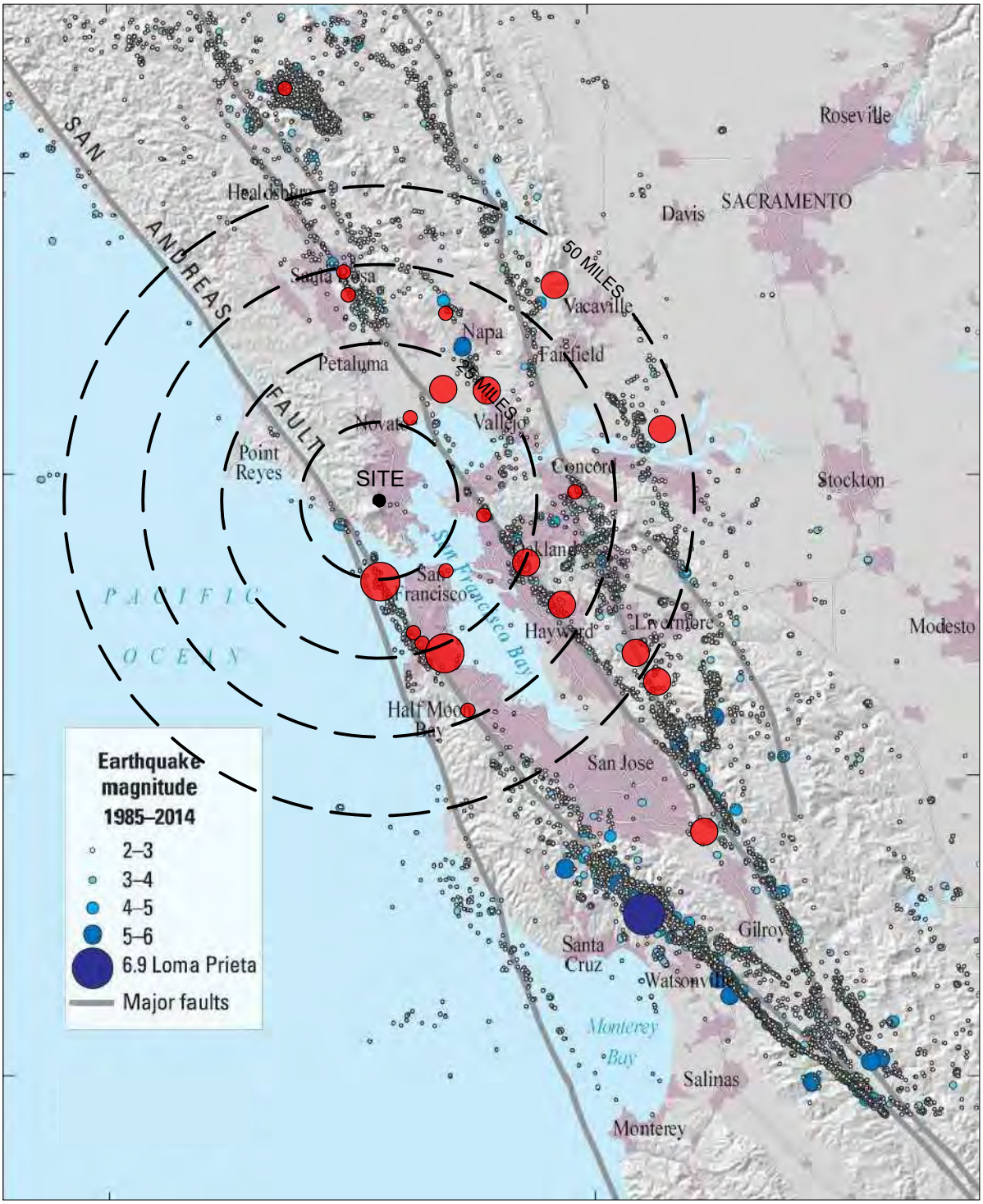
4
FIGURE



SITE COORDINATES
LAT. 37.9715°
LON. -122.6042°

SCALE
0 12.5 25 50 MILES

NORTH

LEGEND & DATA SOURCE:

See legend above. U.S. Geological Survey, U.S. Department of the Interior, "Earthquake Outlook for the San Francisco Bay Region 2014-2043", Map of Known Active Faults in the San Francisco Bay Region, Fact Sheet 2016-3020, Revised August 2016 (ver. 1.1). Large circles indicate earthquakes M>7.0, medium circles indicate 6.0<M<7.0 and small circles indicate 5.0<M<6.0 .U.S. Geological Survey, Earthquake Catalog Search, https://earthquake.usgs.gov/earthquakes/search/. Earthquakes between 1830 and 2021.

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FILENAME: 187.503 standard figures.dwg

HISTORIC EARTHQUAKES MAP

Marin Municipal Water District
Concrete Pipe Road Water Tanks
Marin County, California

Project No. 187.503 Date: 11/17/2021

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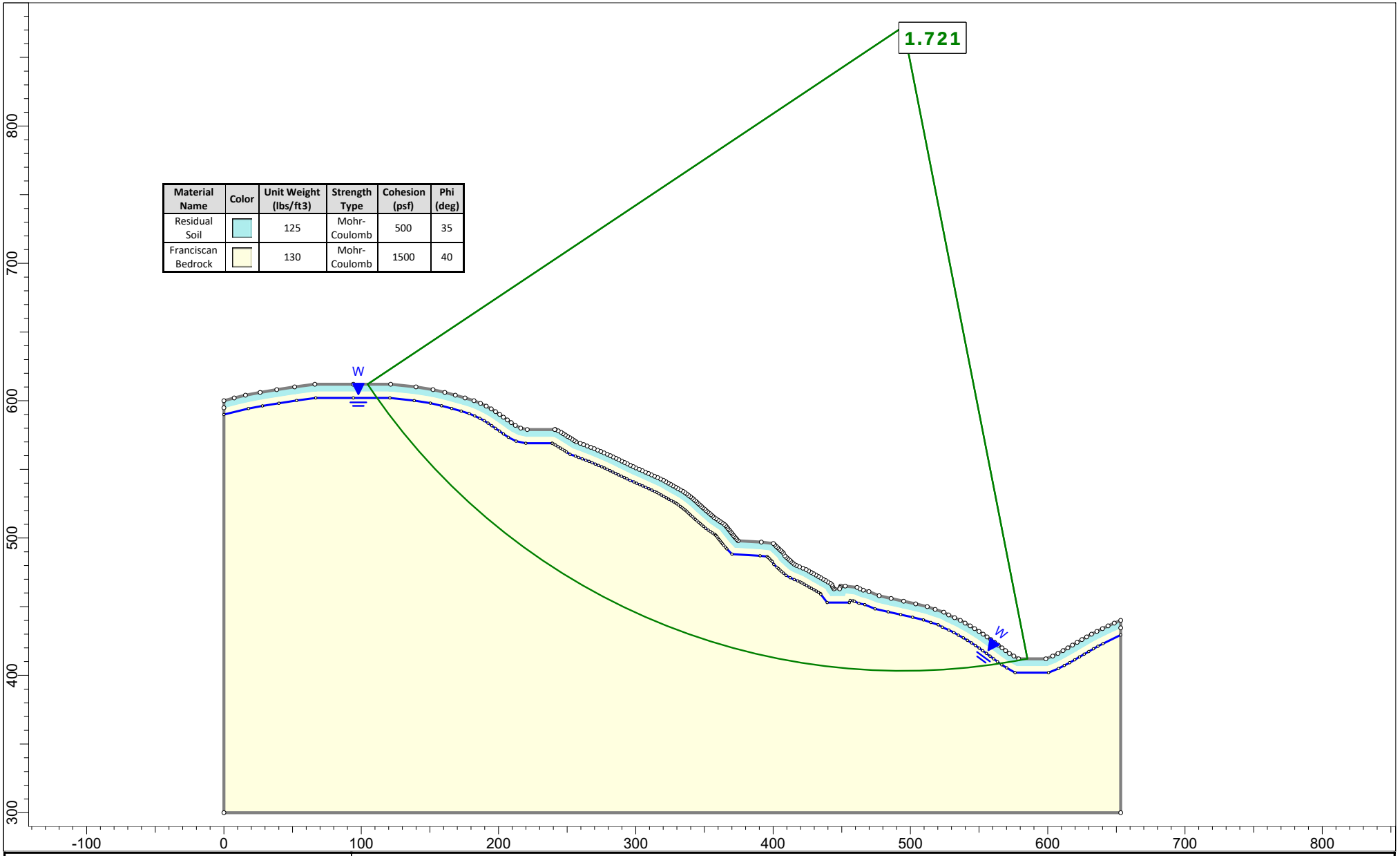
5
FIGURE



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)
Residual Soil		125	Mohr-Coulomb	500	35
Franciscan Bedrock		130	Mohr-Coulomb	1500	40

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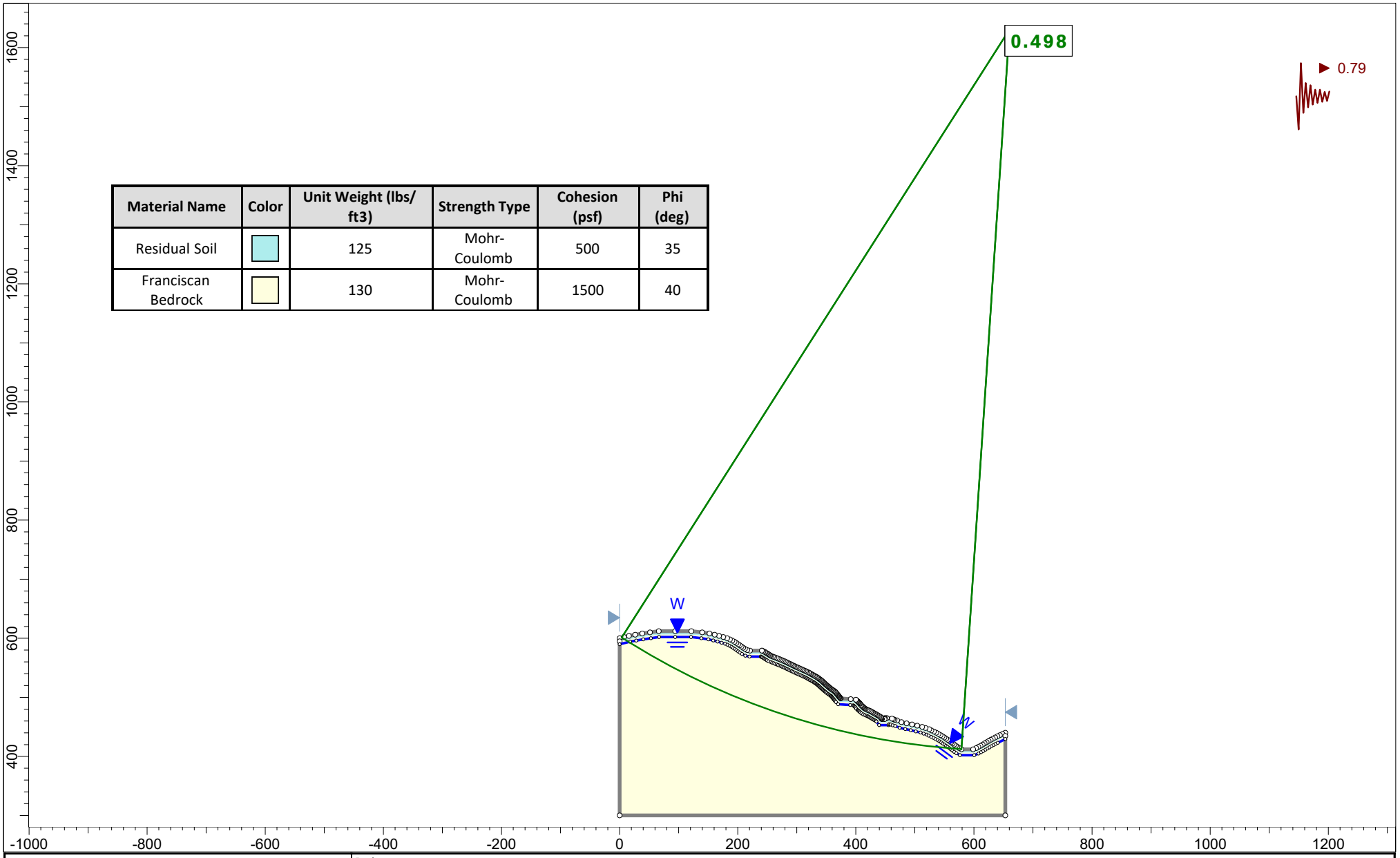
SLIDEINTERPRET 9.019

Project	MMWD Concrete Pipe Road CP-5 Tanks		
Analysis Description	Case 01 - Existing Conditions		
Drawn By	RCA	*Company*	Miller Pacific
Date	10/14/2021, 7:45:22 AM	*File Name*	Case 01.slmd

FIGURE 6

Material Name	Color	Unit Weight (lbs/ ft3)	Strength Type	Cohesion (psf)	Phi (deg)
Residual Soil		125	Mohr-Coulomb	500	35
Franciscan Bedrock		130	Mohr-Coulomb	1500	40



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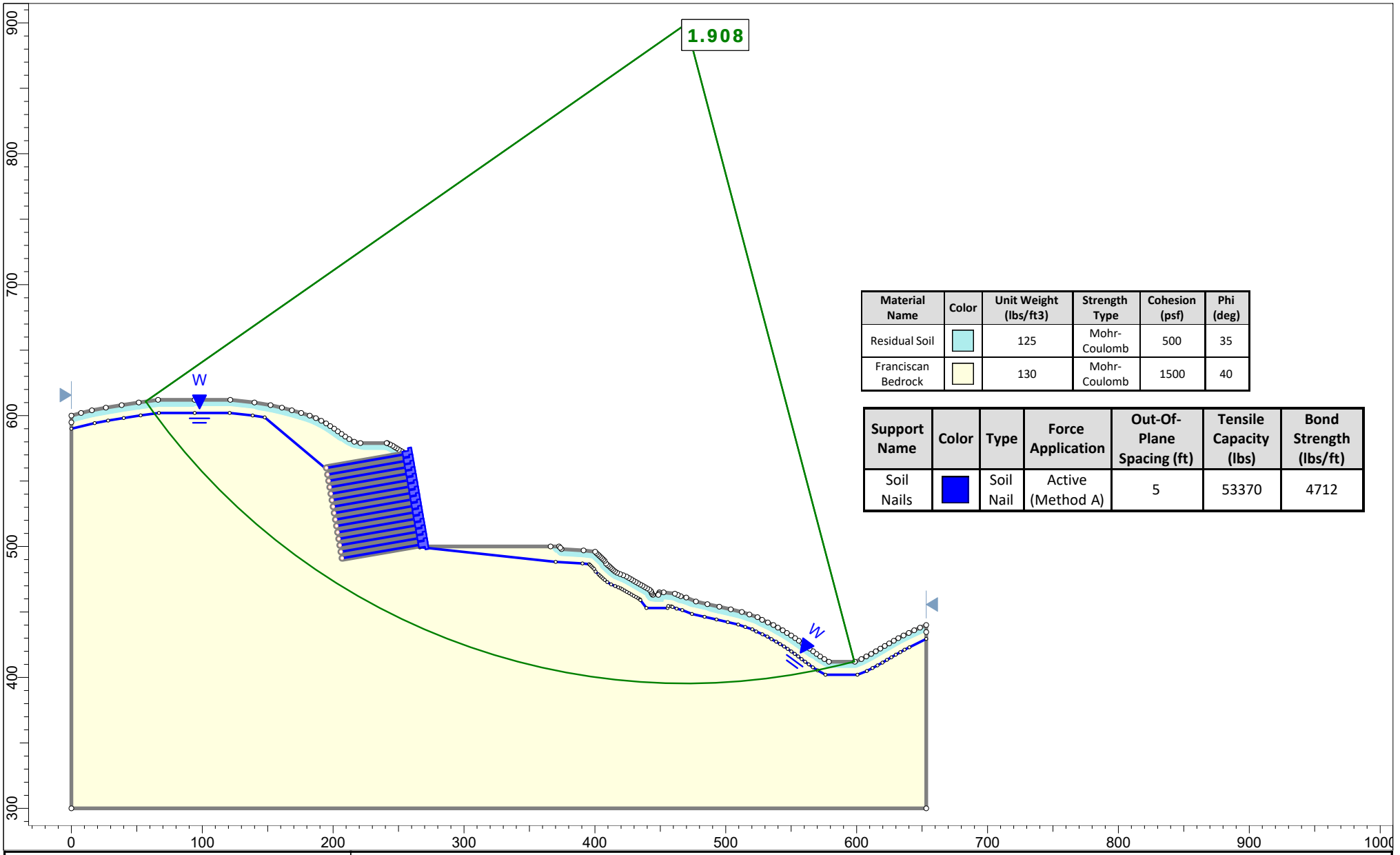
SLIDEINTERPRET 9.019

Project	MMWD Concrete Pipe Road CP-5 Tanks
Analysis Description	Case 17 - Existing Conditions, PGAm Site Clas C
Drawn By	RCA
Company	Miller Pacific
Date	11/10/2021, 7:55:22 AM
File Name	Case 17.slmd

FIGURE 7



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)
Residual Soil		125	Mohr-Coulomb	500	35
Franciscan Bedrock		130	Mohr-Coulomb	1500	40

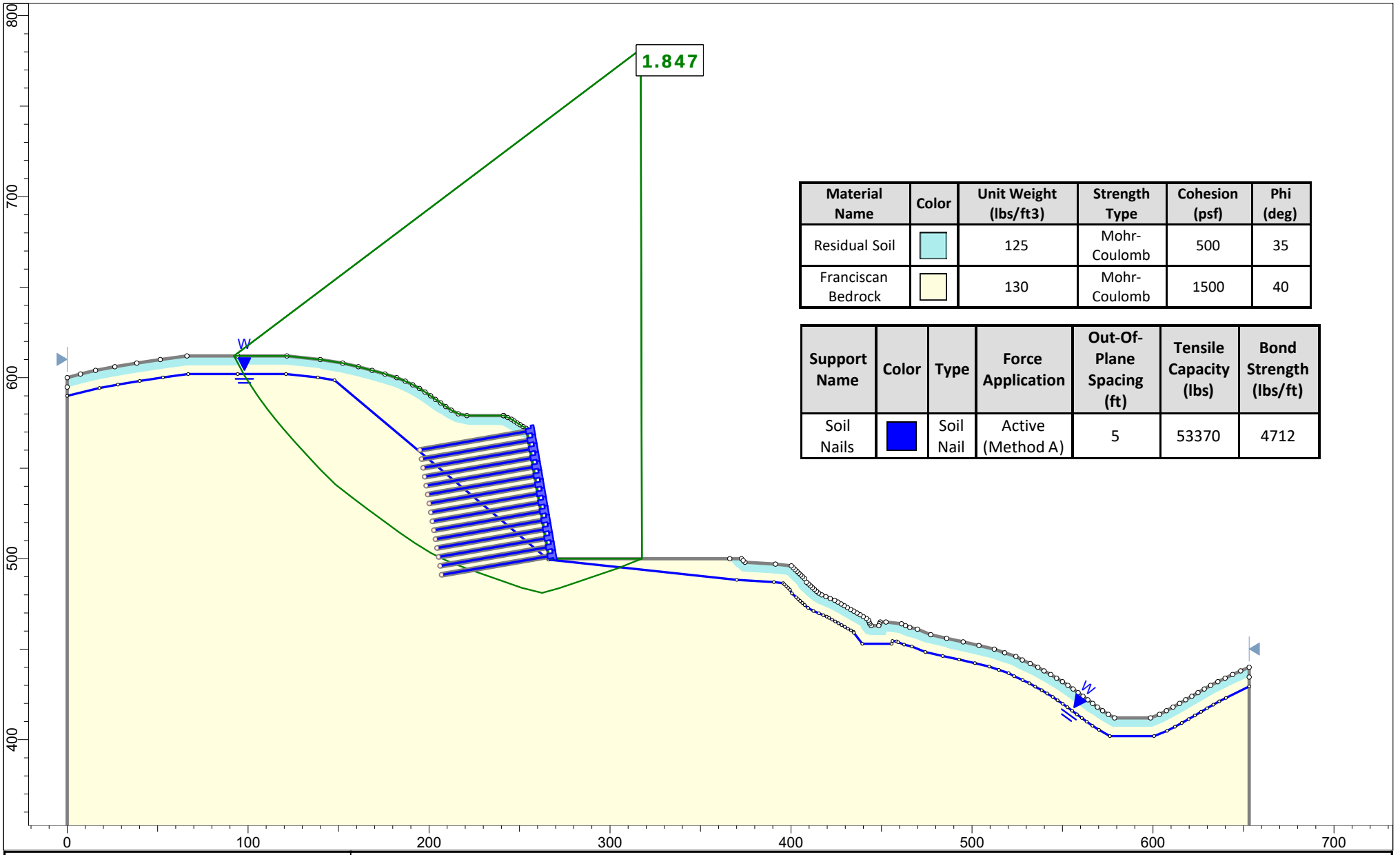
Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Bond Strength (lbs/ft)
Soil Nails		Soil Nail	Active (Method A)	5	53370	4712

MPEG MILLER PACIFIC ENGINEERING GROUP

SLIDEINTERPRET 9.019

Project	MMWD Concrete Pipe Road CP-5 Tanks		
Analysis Description	Case 15 - 60-ft-long Soil Nails, GW 40 deg		
Drawn By	RCA	Company	Miller Pacific
Date	10/19/2021	File Name	Case 15.slmd

FIGURE 8



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)
Residual Soil		125	Mohr-Coulomb	500	35
Franciscan Bedrock		130	Mohr-Coulomb	1500	40

Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Bond Strength (lbs/ft)
Soil Nails		Soil Nail	Active (Method A)	5	53370	4712

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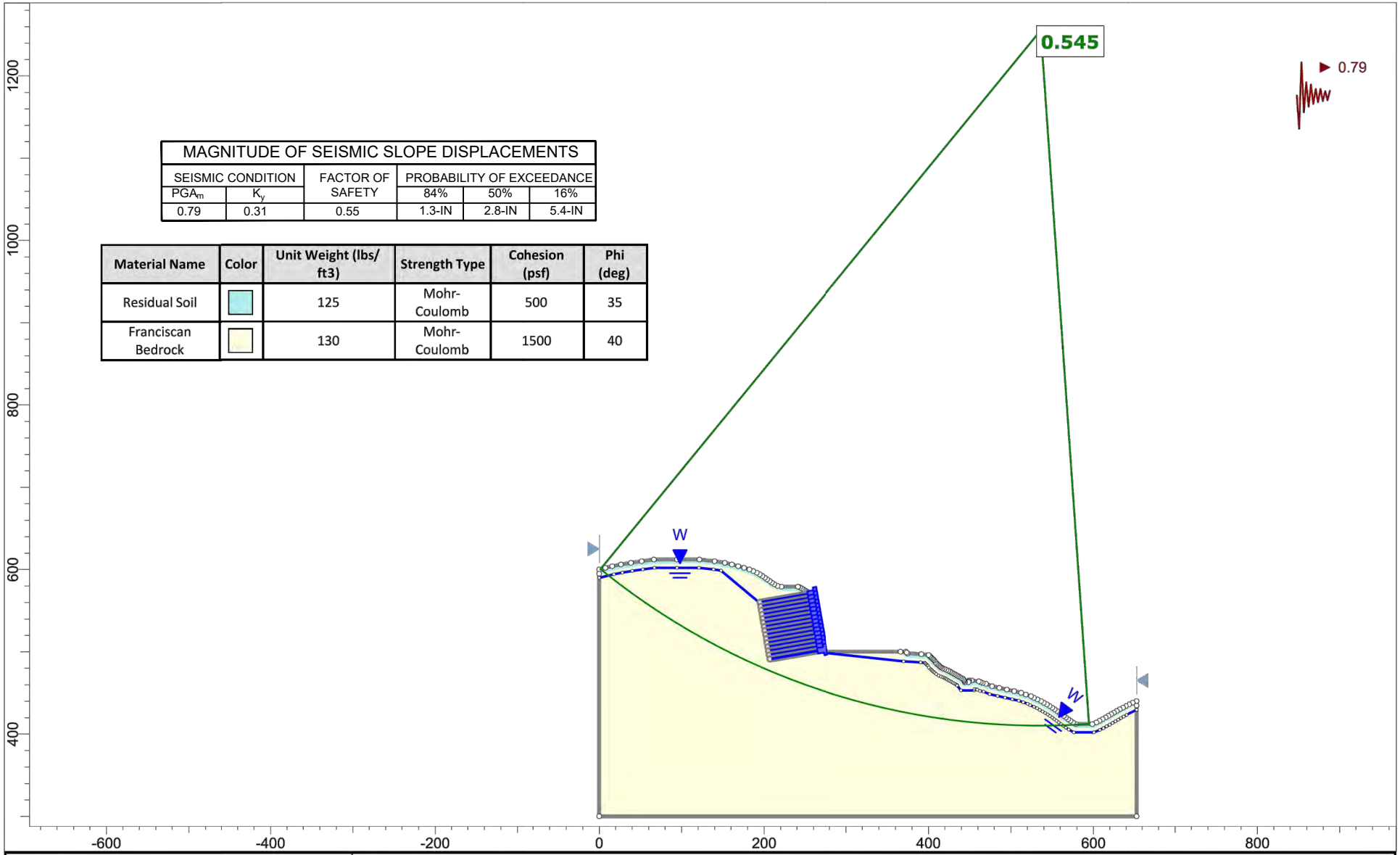
SLIDEINTERPRET 9.019

Project	MMWD Concrete Pipe Road CP-5 Tanks
Analysis Description	Case 16 - 60-ft-long Soil Nails, GW 40 deg, Cuckoo Search
Drawn By	RCA
Company	Miller Pacific
Date	10/19/2021
File Name	Case 16.slmd

FIGURE 9



MAGNITUDE OF SEISMIC SLOPE DISPLACEMENTS					
SEISMIC CONDITION		FACTOR OF SAFETY	PROBABILITY OF EXCEEDANCE		
PGA_m	K_y		84%	50%	16%
0.79	0.31	0.55	1.3-IN	2.8-IN	5.4-IN

Material Name	Color	Unit Weight (lbs/ ft3)	Strength Type	Cohesion (psf)	Phi (deg)
Residual Soil		125	Mohr-Coulomb	500	35
Franciscan Bedrock		130	Mohr-Coulomb	1500	40

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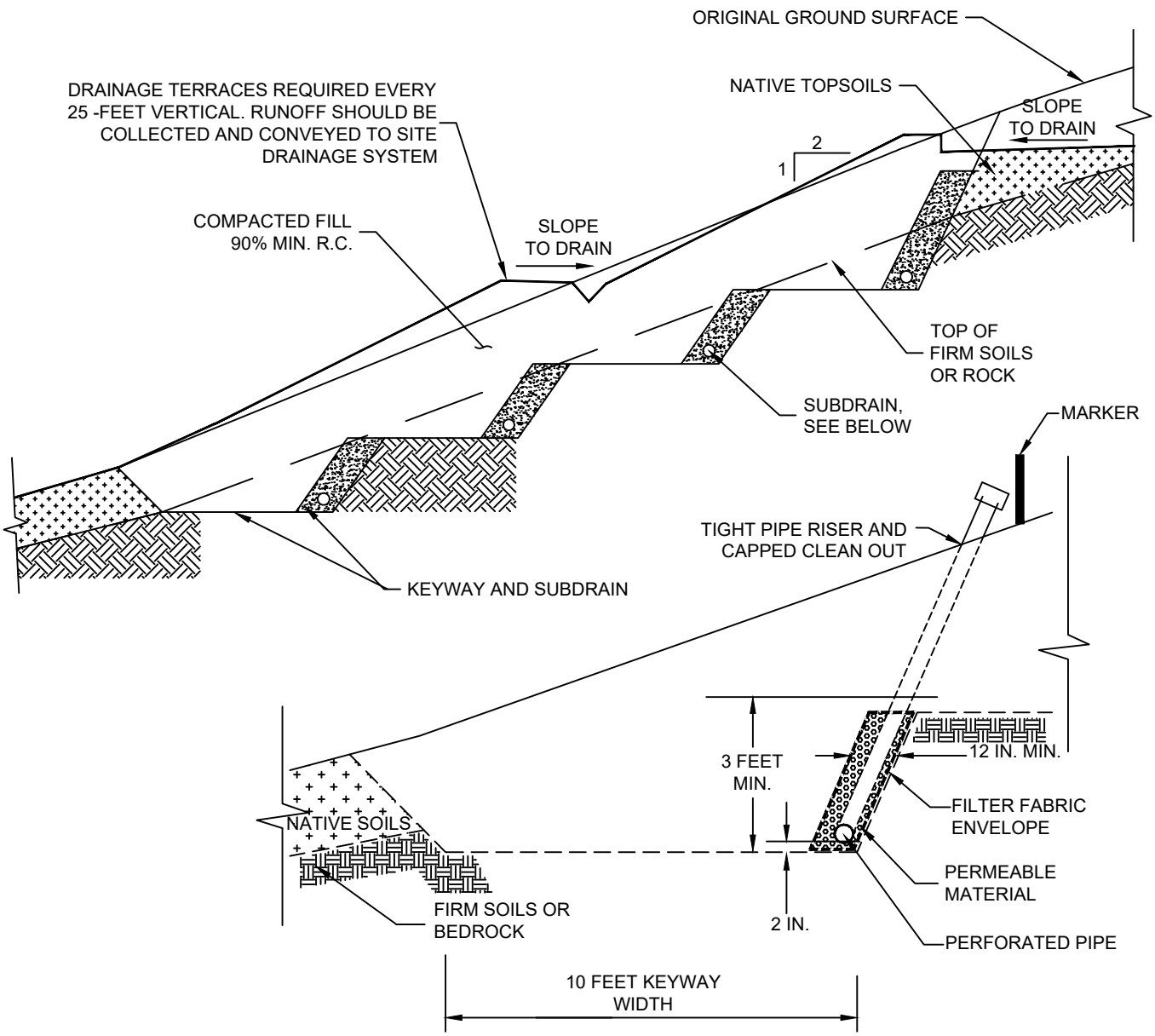
SLIDEINTERPRET 9.019

Project	MMWD Concrete Pipe Road CP-5 Tanks		
Analysis Description	Case 18 - 60-ft-long Soil Nails, PGAm Site Class C, GW 40 deg		
Drawn By	RCA	*Company*	Miller Pacific
Date	11/10/21	*File Name*	Case 18.slmd

FIGURE 10



NOTES:

1. Subdrain drainage should consist of clean, free draining 3/4 inch crushed rock (Class 1B Permeable Material) wrapped in filter fabric (Mirafi 140N or equivalent) or Class 2 Permeable Material.

2. Perforated pipe shall be SCH 40 or SDR 35 for depths less than 20 feet. Use SCH 80 or SDR 23.5 perforated pipe for depths greater than 20 feet. Place pipe perforations down and slope at 1% to a gravity outlet, with tight pipe to gravity discharge.

3. Clean outs should be installed at the upslope end and at significant direction changes of the perforated pipe. Additionally, all angled connectors shall be long bend sweep connections.

4. All work and materials shall conform with Section 68, of the latest edition of the Caltrans Standard Specifications.

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FILENAME: Hillside Fill Construction.dwg

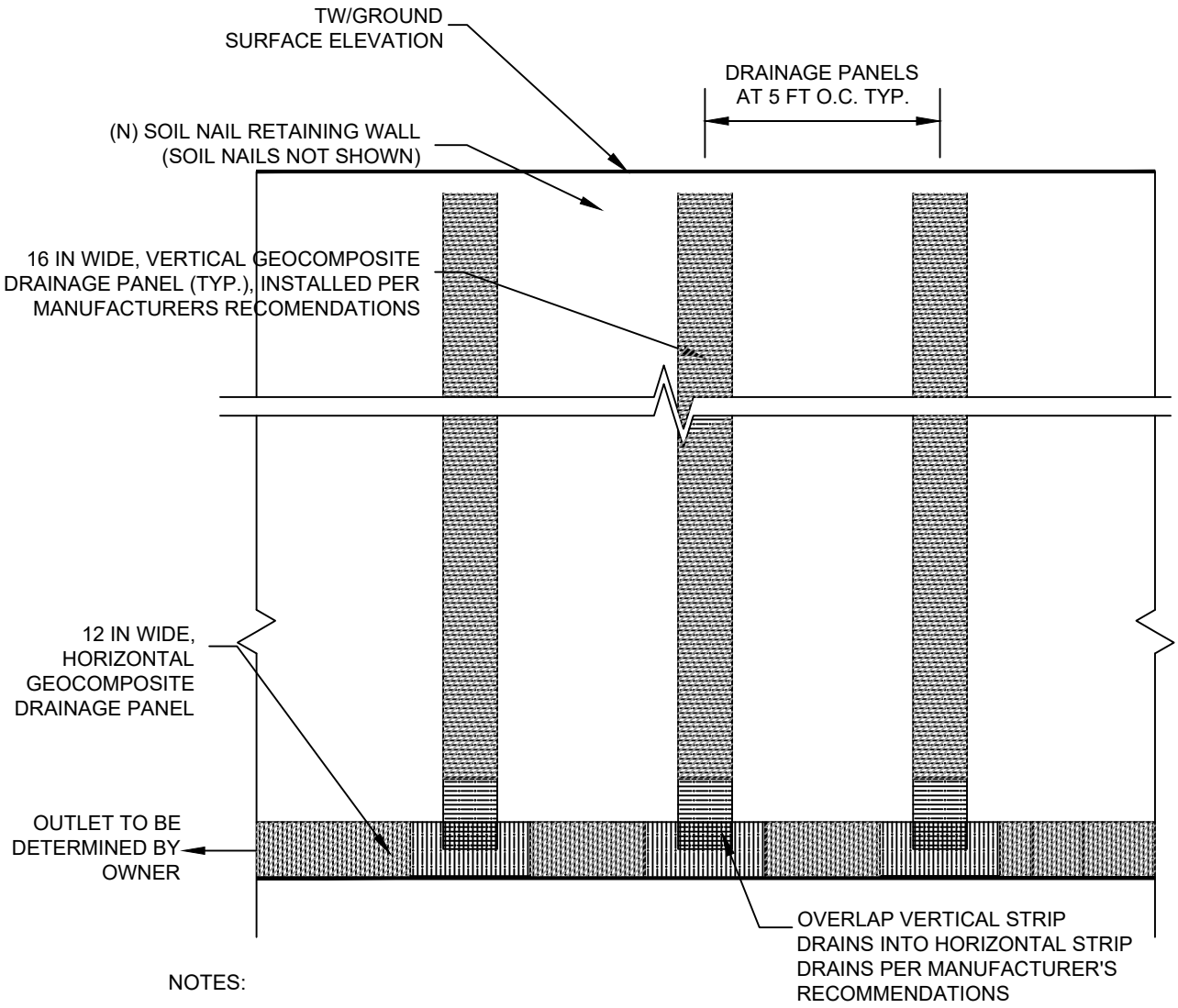
SCHEMATIC HILLSIDE FILL DETAIL

MMWD Concrete Pipe Road Tanks
Marin County, California

Drawn RGB
Checked

Project No. 187.503 Date: 11/16/2021

11
FIGURE



NOTES:

1. Perforated pipe shall be SCH 40 or SDR 35 for depths less than 20 feet. Use SCH 80 or SDR 23.5 perforated pipe for depths greater than 20 feet. Place pipe perforations down and slope at 1% to a gravity outlet. Alternatively, drainage can be outlet through 3" diameter weep holes spaced approximately 20' apart.

2. Clean outs should be installed at the upslope end and at significant direction changes of the perforated pipe. Additionally, all angled connectors shall be long bend sweep connections.

3. During compaction, the contractor should use appropriate methods (such as temporary bracing and/or light compaction equipment) to avoid over-stressing the walls. Walls shall be completely backfilled prior to construction in front of or above the retaining wall.

4. Refer to the geotechnical report for lateral soil pressures and discussion of shoring and excavation sequencing.

5. All work and materials shall conform with Section 68, of the latest edition of the Caltrans Standard Specifications.

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FILENAME: Wall Backdrain AND FIG 10.dwg

SOIL NAIL WALL BACKDRAIN

MMWD Concrete Pipe Road Tanks
Marin County, California

Drawn RGB
Checked

Project No. 187.503 Date: 11/16/2021

12
FIGURE

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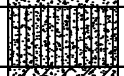
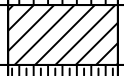
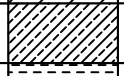
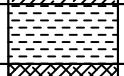
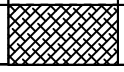
APPENDIX A

Subsurface Exploration & Laboratory Testing

MAJOR DIVISIONS		SYMBOL		DESCRIPTION
COARSE GRAINED SOILS over 50% sand and gravel	CLEAN GRAVEL	GW		Well-graded gravels or gravel-sand mixtures, little or no fines
		GP		Poorly-graded gravels or gravel-sand mixtures, little or no fines
	GRAVEL with fines	GM		Silty gravels, gravel-sand-silt mixtures
		GC		Clayey gravels, gravel-sand-clay mixtures
	CLEAN SAND	SW		Well-graded sands or gravelly sands, little or no fines
		SP		Poorly-graded sands or gravelly sands, little or no fines
	SAND with fines	SM		Silty sands, sand-silt mixtures
		SC		Clayey sands, sand-clay mixtures
FINE GRAINED SOILS over 50% silt and clay	SILT AND CLAY liquid limit <50%	ML		Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
		CL		Inorganic clays of low to medium plasticity, gravely clays, sandy clays, silty clays, lean clays
		OL		Organic silts and organic silt-clays of low plasticity
	SILT AND CLAY liquid limit >50%	MH		Inorganic silts, micaceous or diatomaceous fine sands or silts, elastic silts
		CH		Inorganic clays of high plasticity, fat clays
		OH		Organic clays of medium to high plasticity
HIGHLY ORGANIC SOILS		PT		Peat, muck, and other highly organic soils
ROCK				Undifferentiated as to type or composition

KEY TO BORING AND TEST PIT SYMBOLS

CLASSIFICATION TESTS

PI	PLASTICITY INDEX
LL	LIQUID LIMIT
SA	SIEVE ANALYSIS
HYD	HYDROMETER ANALYSIS
P200	PERCENT PASSING NO. 200 SIEVE
P4	PERCENT PASSING NO. 4 SIEVE

SAMPLER TYPE

- MODIFIED CALIFORNIA
- STANDARD PENETRATION TEST
- THIN-WALLED / FIXED PISTON
- HAND SAMPLER
- ROCK CORE
- X DISTURBED OR BULK SAMPLE

NOTE: Test boring and test pit logs are an interpretation of conditions encountered at the excavation location during the time of exploration. Subsurface rock, soil or water conditions may vary in different locations within the project site and with the passage of time. Boundaries between differing soil or rock descriptions are approximate and may indicate a gradual transition.

STRENGTH TESTS

UC	LABORATORY UNCONFINED COMPRESSION
TXCU	CONSOLIDATED UNDRAINED TRIAXIAL
TXUU	UNCONSOLIDATED UNDRAINED TRIAXIAL
	UC, CU, UU = 1/2 Deviator Stress
DS (2.0)	DRAINED DIRECT SHEAR (NORMAL PRESSURE, ksf)

SAMPLER DRIVING RESISTANCE

Modified California and Standard Penetration Test samplers are driven 18 inches with a 140-pound hammer falling 30 inches per blow. Blows for the initial 6-inch drive seat the sampler. Blows for the final 12-inch drive are recorded onto the logs. Sampler refusal is defined as 50 blows during a 6-inch drive. Examples of blow records are as follows:

25	sampler driven 12 inches with 25 blows after initial 6-inch drive
85/7"	sampler driven 7 inches with 85 blows after initial 6-inch drive
50/3"	sampler driven 3 inches with 50 blows during initial 6-inch drive or beginning of final 12-inch drive

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FILENAME: 187.503 BL.dwg

SOIL CLASSIFICATION CHART

MMWD Concrete Pipe Road Tanks
Marin County, California

Project No. 187.503 Date: 8/11/2021

Drawn EIC
Checked

A-1
FIGURE

FRACTURING AND BEDDING

Fracture Classification	Spacing	Bedding Classification
Crushed	less than 3/4 inch	Laminated
Intensely fractured	3/4 to 2-1/2 inches	Very thinly bedded
Closely fractured	2-1/2 to 8 inches	Thinly bedded
Moderately fractured	8 to 24 inches	Medium bedded
Widely fractured	2 to 6 feet	Thickly bedded
Very widely fractured	greater than 6 feet	Very thickly bedded

HARDNESS

Low	Carved or gouged with a knife
Moderate	Easily scratched with a knife, friable
Hard	Difficult to scratch, knife scratch leaves dust trace
Very hard	Rock scratches metal

STRENGTH

Friable	Crumbles by rubbing with fingers
Weak	Crumbles under light hammer blows
Moderate	Indentations <1/8 inch with moderate blow with pick end of rock hammer
Strong	Withstands few heavy hammer blows, yields large fragments
Very strong	Withstands many heavy hammer blows, yields dust, small fragments

WEATHERING

Complete	Minerals decomposed to soil, but fabric and structure preserved
High	Rock decomposition, thorough discoloration, all fractures are extensively coated with clay, oxides or carbonates
Moderate	Fracture surfaces coated with weathering minerals, moderate or localized discoloration
Slight	A few stained fractures, slight discoloration, no mineral decomposition, no affect on cementation
Fresh	Rock unaffected by weathering, no change with depth, rings under hammer impact

NOTE: Test boring and test pit logs are an interpretation of conditions encountered at the location and time of exploration. Subsurface rock, soil and water conditions may differ in other locations and with the passage of time.

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ROCK CLASSIFICATION CHART

MMWD Concrete Pipe Road Tanks
Marin County, California

Drawn EIC
Checked

Project No. 187.503 Date: 8/11/2021

A-2
FIGURE

BORING 1

EQUIPMENT: Track-mounted Hydraulic Drill Rig with 4.0-inch Solid Flight Auger
DATE: 8/18/2021
ELEVATION: 580 - feet*
*REFERENCE: MarinMap LIDAR, 2019

DEPTH meters	DEPTH feet	SAMPLE	SYMBOL (4)		BLOWS / FOOT (1)	DRY UNIT WEIGHT pcf (2)	MOISTURE CONTENT (%)	SHEAR STRENGTH psf (3)	OTHER TEST DATA	OTHER TEST DATA
0	0			8.0" Asphalt Concrete over 4.0" Aggregate Base						
				Sandy SILT with Gravels (ML) Light-medium orange-tan, dry, stiff, low plasticity, ~20-25% angular sandstone gravels, ~20-25% very fine to coarse sand. [Fill/Colluvium]	15	90	9.2		P200 50.8	
1	5			grades light-medium yellow-orange-tan						
2				Sandstone with Shale Light-medium orange-gray-tan, low hardness, friable, high to complete weathering, fractured/jointed, very-fine grained. [Bedrock]	64	115	6.6			
3	10									
4				same as above with minor shale interbedding	89/10"	132	12.1	UC 4475		
5	15									
6	20									

▽ Water level encountered during drilling
▼ Water level measured after drilling

NOTES: (1) UNCORRECTED FIELD BLOW COUNTS
(2) METRIC EQUIVALENT DRY UNIT WEIGHT kN/m^3 = 0.1571 x DRY UNIT WEIGHT (pcf)
(3) METRIC EQUIVALENT STRENGTH (kPa) = 0.0479 x STRENGTH (psf)
(4) GRAPHIC SYMBOLS ARE ILLUSTRATIVE ONLY

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FILENAME: 187.503 BL.dwg

BORING LOG

MMWD Concrete Pipe Road Tanks
Marin County, California

Drawn EIC
Checked

Project No. 187.503 Date: 9/27/2021

A-3
FIGURE

BORING 1 (CONTINUED)

DEPTH meters	DEPTH feet	SAMPLE	SYMBOL (4)		BLOWS / FOOT (1)	DRY UNIT WEIGHT pcf (2)	MOISTURE CONTENT (%)	SHEAR STRENGTH psf (3)	OTHER TEST DATA	OTHER TEST DATA
6	20			medium brown-gray, friable, sheared shale with interbedded sandstone	91/9.5"	130	7.7	UC 2075		
7	25			medium tan-brown sandstone grades hard and strong	50/5"	127	7.5			
9	30			medium-dark gray-brown sandstone with gray-black shale interbedding	50/5"	125	7.7			
10	35									
11										
12	40									

▽ Water level encountered during drilling

▼ Water level measured after drilling

NOTES: (1) UNCORRECTED FIELD BLOW COUNTS
(2) METRIC EQUIVALENT DRY UNIT WEIGHT kN/m^3= 0.1571 x DRY UNIT WEIGHT (pcf)
(3) METRIC EQUIVALENT STRENGTH (kPa) = 0.0479 x STRENGTH (psf)
(4) GRAPHIC SYMBOLS ARE ILLUSTRATIVE ONLY

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BORING LOG

MMWD Concrete Pipe Road Tanks
Marin County, California

Drawn EIC
Checked

Project No. 187.503 Date: 9/27/2021

A-4
FIGURE

BORING 1 (CONTINUED)

DEPTH meters / feet	SAMPLE	SYMBOL (4)		BLOWS / FOOT (1)	DRY UNIT WEIGHT pcf (2)	MOISTURE CONTENT (%)	SHEAR STRENGTH psf (3)	OTHER TEST DATA	OTHER TEST DATA
40									
	☒		poor recovery	50/1"					
13									
45									
14									
	☒		medium gray, very hard, very strong, and fresh sandstone	50/2"					
15 50									
16									
55									
17 ▽	☒		sandstone is weak to friable with free water on sampler	50/2"					
18 60			driller notes very hard drilling at 60.0-ft						

▽ Water level encountered during drilling

▼ Water level measured after drilling

NOTES: (1) UNCORRECTED FIELD BLOW COUNTS
(2) METRIC EQUIVALENT DRY UNIT WEIGHT kN/m^3 = 0.1571 x DRY UNIT WEIGHT (pcf)
(3) METRIC EQUIVALENT STRENGTH (kPa) = 0.0479 x STRENGTH (psf)
(4) GRAPHIC SYMBOLS ARE ILLUSTRATIVE ONLY

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A-5
FIGURE

BORING 1 (CONTINUED)

DEPTH meters	DEPTH feet	SAMPLE	SYMBOL (4)		BLOWS / FOOT (1)	DRY UNIT WEIGHT pcf (2)	MOISTURE CONTENT (%)	SHEAR STRENGTH psf (3)	OTHER TEST DATA	OTHER TEST DATA
	60									
				black, fresh, weak to moderate strength, hard, laminated shale with free water coating rock.	50/3.5"					
	65									
7										
8										
				same as above	50/6"					
9	70									
				Boring terminated at 71-feet. Groundwater encountered at 56-feet during exploration.						
10										
	75									
11										
12										
	80									

▽ Water level encountered during drilling

▼ Water level measured after drilling

NOTES: (1) UNCORRECTED FIELD BLOW COUNTS
(2) METRIC EQUIVALENT DRY UNIT WEIGHT kN/m^3= 0.1571 x DRY UNIT WEIGHT (pcf)
(3) METRIC EQUIVALENT STRENGTH (kPa) = 0.0479 x STRENGTH (psf)
(4) GRAPHIC SYMBOLS ARE ILLUSTRATIVE ONLY

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A-6
FIGURE

BORING 2

EQUIPMENT: Track-mounted Hydraulic Drill Rig with 4.0-inch Solid Flight Auger
DATE: 8/19/2021
ELEVATION: 587 - feet*
*REFERENCE: MarinMap LIDAR, 2019

DEPTH meters / feet	SAMPLE	SYMBOL (4)		BLOWS / FOOT (1)	DRY UNIT WEIGHT pcf (2)	MOISTURE CONTENT (%)	SHEAR STRENGTH psf (3)	OTHER TEST DATA	OTHER TEST DATA
0 – 0			12.0" Asphalt Concrete over 4.0" Aggregate Base						
			Silty SAND with Gravel (SM) Medium orange-brown, dry, loose, very fine to coarse sand, 40-45% low plasticity silt, ~5-15% angular sandstone gravels. [Fill/Colluvium]	5	93	9.1		P200 42.8	
1 – 5									
2				33	121	5.9			
			Sandstone with Shale Light-medium orange-gray-tan, low hardness, friable, high to complete weathering, fractured/jointed, very-fine grained. [Bedrock]						
3 – 10									
4									
			same as above	69	123	8.7	UC 2050		
15									
5									
6 – 20									

▽ Water level encountered during drilling
▼ Water level measured after drilling

NOTES: (1) UNCORRECTED FIELD BLOW COUNTS
(2) METRIC EQUIVALENT DRY UNIT WEIGHT kN/m^3 = 0.1571 x DRY UNIT WEIGHT (pcf)
(3) METRIC EQUIVALENT STRENGTH (kPa) = 0.0479 x STRENGTH (psf)
(4) GRAPHIC SYMBOLS ARE ILLUSTRATIVE ONLY

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Project No. 187.503 Date: 9/27/2021

A-7
FIGURE

BORING 2 (CONTINUED)

DEPTH meters / feet	SAMPLE	SYMBOL (4)		BLOWS / FOOT (1)	DRY UNIT WEIGHT pcf (2)	MOISTURE CONTENT (%)	SHEAR STRENGTH psf (3)	OTHER TEST DATA	OTHER TEST DATA
20									
			green-gray-brown, friable, sheared shale with white, waxy mineralization towards bottom of sample	65	117	13.9	UC 2375		
7									
25									
8									
			completely weathered, friable, sheared, gray-brown shale	64	119	11.1	UC 2300		
9									
30									
10									
35									
11			shale grades medium gray, slightly harder and stronger	85/10"	124	11.8	UC 3600		
12									
40									

▽ Water level encountered during drilling

▼ Water level measured after drilling

NOTES: (1) UNCORRECTED FIELD BLOW COUNTS
(2) METRIC EQUIVALENT DRY UNIT WEIGHT kN/m^3= 0.1571 x DRY UNIT WEIGHT (pcf)
(3) METRIC EQUIVALENT STRENGTH (kPa) = 0.0479 x STRENGTH (psf)
(4) GRAPHIC SYMBOLS ARE ILLUSTRATIVE ONLY

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Project No. 187.503 Date: 9/27/2021

A-8
FIGURE

BORING 2 (CONTINUED)

DEPTH meters / feet	SAMPLE	SYMBOL (4)		BLOWS / FOOT (1)	DRY UNIT WEIGHT pcf (2)	MOISTURE CONTENT (%)	SHEAR STRENGTH psf (3)	OTHER TEST DATA	OTHER TEST DATA
40									
	☒		no recovery, cuttings appear to be very hard and very strong shale	50/2"					
13									
45									
14									
	☒		shale grades less weathered, some quartz veining present	50/2"					
15									
50									
16									
55	☒		poor sample recovery	50/1"					
17									
18			laminated gray-black shale, low hardess, friable						
60			Boring terminated at 60-feet 10-inches. No groundwater encountered during exploration.	50/4"					

▽ Water level encountered during drilling

▼ Water level measured after drilling

NOTES: (1) UNCORRECTED FIELD BLOW COUNTS
(2) METRIC EQUIVALENT DRY UNIT WEIGHT kN/m^3 = 0.1571 x DRY UNIT WEIGHT (pcf)
(3) METRIC EQUIVALENT STRENGTH (kPa) = 0.0479 x STRENGTH (psf)
(4) GRAPHIC SYMBOLS ARE ILLUSTRATIVE ONLY

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Project No. 187.503 Date: 9/27/2021

A-9
FIGURE

BORING 3

EQUIPMENT: Track-mounted Hydraulic Drill Rig with 4.0-inch Solid Flight Auger
DATE: 8/3/2021
ELEVATION: 555 - feet*
*REFERENCE: MarinMap LIDAR, 2019

DEPTH meters / feet	SAMPLE	SYMBOL (4)		BLOWS / FOOT (1)	DRY UNIT WEIGHT pcf (2)	MOISTURE CONTENT (%)	SHEAR STRENGTH psf (3)	OTHER TEST DATA	OTHER TEST DATA
0 / 0			Silty SAND with Gravel (SM) Medium brown, dry to slightly moist, dense, fine to coarse sand, ~15-25% low plasticity silt, ~15-20% angular gravels. [Colluvium]	36	119	7.1			
1			Shale Medium to dark gray, low hardness, friable, highly weathered, laminated. [Bedrock]						
5				67	123	8.6	UC 2450		
2 / 10			shale grades moderately hard and moderately strong	50/6"					
3 / 15			same as above	50/6"	130	9.4	UC 4875		
4 / 20			shale appears slightly more sheared with few harder nodules	88/11"	130	9.2	UC 4475		
5									
6									

▽ Water level encountered during drilling
▼ Water level measured after drilling

NOTES: (1) UNCORRECTED FIELD BLOW COUNTS
(2) METRIC EQUIVALENT DRY UNIT WEIGHT kN/m^3 = 0.1571 x DRY UNIT WEIGHT (pcf)
(3) METRIC EQUIVALENT STRENGTH (kPa) = 0.0479 x STRENGTH (psf)
(4) GRAPHIC SYMBOLS ARE ILLUSTRATIVE ONLY

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BORING LOG

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Marin County, California

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Project No. 187.503 Date: 9/27/2021

A-10
FIGURE

BORING 3 (CONTINUED)

DEPTH meters	DEPTH feet	SAMPLE	SYMBOL (4)		BLOWS / FOOT (1)	DRY UNIT WEIGHT pcf (2)	MOISTURE CONTENT (%)	SHEAR STRENGTH psf (3)	OTHER TEST DATA	OTHER TEST DATA
	20			shale appears slightly more sheared with few harder nodules	88/11"	130	9.2	UC 4475		
	25			shale grades green and appears chloritized	65	94	21.0	UC 850		
	30			medium-dark gray shale	81/11.5"	123	12.2	UC 2450		
	35			same as above	50/6"	132	7.9	UC 1375		
7										
8										
9										
10										
11										
12										

▽ Water level encountered during drilling

▼ Water level measured after drilling

NOTES: (1) UNCORRECTED FIELD BLOW COUNTS
(2) METRIC EQUIVALENT DRY UNIT WEIGHT kN/m^3= 0.1571 x DRY UNIT WEIGHT (pcf)
(3) METRIC EQUIVALENT STRENGTH (kPa) = 0.0479 x STRENGTH (psf)
(4) GRAPHIC SYMBOLS ARE ILLUSTRATIVE ONLY

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Project No. 187.503 Date: 9/27/2021

A-11
FIGURE

BORING 3 (CONTINUED)

DEPTH meters	DEPTH feet	SAMPLE	SYMBOL (4)		BLOWS / FOOT (1)	DRY UNIT WEIGHT pcf (2)	MOISTURE CONTENT (%)	SHEAR STRENGTH psf (3)	OTHER TEST DATA	OTHER TEST DATA
	40									
				same as above	98/10"	132	8.7	UC 2600		
	13									
	45			poor sample recovery, grades harder and stronger	50/4"					
	14									
	15									
	50			same as above	82					
	16									
	55			shale appears crushed with an increase in moisture	96/11"					
	17									
	18									
	60			harder nodules in sheared shale matrix						
				Boring terminated at 61.5-feet. No groundwater observed upon completion.	66					

▽ Water level encountered during drilling

▼ Water level measured after drilling

NOTES: (1) UNCORRECTED FIELD BLOW COUNTS
(2) METRIC EQUIVALENT DRY UNIT WEIGHT kN/m^3 = 0.1571 x DRY UNIT WEIGHT (pcf)
(3) METRIC EQUIVALENT STRENGTH (kPa) = 0.0479 x STRENGTH (psf)
(4) GRAPHIC SYMBOLS ARE ILLUSTRATIVE ONLY

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Project No. 187.503 Date: 9/27/2021

A-12
FIGURE

BORING 4

EQUIPMENT: Track-mounted Hydraulic Drill Rig with 4.0-inch Solid Flight Auger
DATE: 8/4/2021
ELEVATION: 525 - feet*
*REFERENCE: MarinMap LIDAR, 2019

DEPTH meters	DEPTH feet	SAMPLE	SYMBOL (4)		BLOWS / FOOT (1)	DRY UNIT WEIGHT pcf (2)	MOISTURE CONTENT (%)	SHEAR STRENGTH psf (3)	OTHER TEST DATA	OTHER TEST DATA
0	0			Silty SAND with Gravel (SM) Medium brown, dry, dense, fine to very coarse sand, ~15-25% low plasticity silt, ~15-25% angular gravels. [Colluvium]						
1	5			Silty GRAVEL with Sand (GM) Medium brown, dry, dense, angular sandstone gravels up to 1.5" Ø, ~25-25% fine to very coarse sand, ~10-15% low plasticity silt. [Colluvium]	55	124	7.0			
2					50/5"	120	4.1			
3	10			Sandstone Medium to dark brown, moderately hard, weak to moderately strong, highly fractured, highly weathered. [Bedrock]						
4				sandstone as above	50/5"	106	7.2			
	15									
5				Shale Medium to dark gray, hard, strong, laminated, highly weathered. [Bedrock]	50/5"	117	8.4			
6	20									

▽ Water level encountered during drilling
▼ Water level measured after drilling

NOTES: (1) UNCORRECTED FIELD BLOW COUNTS
(2) METRIC EQUIVALENT DRY UNIT WEIGHT kN/m^3 = 0.1571 x DRY UNIT WEIGHT (pcf)
(3) METRIC EQUIVALENT STRENGTH (kPa) = 0.0479 x STRENGTH (psf)
(4) GRAPHIC SYMBOLS ARE ILLUSTRATIVE ONLY

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A-13
FIGURE

BORING 4 (CONTINUED)

DEPTH meters	DEPTH feet	SAMPLE	SYMBOL (4)		BLOWS / FOOT (1)	DRY UNIT WEIGHT pcf (2)	MOISTURE CONTENT (%)	SHEAR STRENGTH psf (3)	OTHER TEST DATA	OTHER TEST DATA
6	20									
				no sample recovery, shale rock chips in cuttings	50/0.5"					
7										
	25									
8										
				shale bedrock as above	50/3.5" 50/4"					
9	30									
10				shale with some green chloritization present	50/2"					
				Boring terminated at 33-feet 2-inches. No groundwater observed upon completion.						
	35									
11										
12	40									

▽ Water level encountered during drilling

▼ Water level measured after drilling

NOTES: (1) UNCORRECTED FIELD BLOW COUNTS
(2) METRIC EQUIVALENT DRY UNIT WEIGHT kN/m^3= 0.1571 x DRY UNIT WEIGHT (pcf)
(3) METRIC EQUIVALENT STRENGTH (kPa) = 0.0479 x STRENGTH (psf)
(4) GRAPHIC SYMBOLS ARE ILLUSTRATIVE ONLY

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A-14
FIGURE

BORING 5

EQUIPMENT: Track-mounted Hydraulic Drill Rig with 4.0-inch Solid Flight Auger
DATE: 8/2/2021
ELEVATION: 497 - feet*
*REFERENCE: MarinMap LIDAR, 2019

DEPTH meters / feet	SAMPLE	SYMBOL (4)		BLOWS / FOOT (1)	DRY UNIT WEIGHT pcf (2)	MOISTURE CONTENT (%)	SHEAR STRENGTH psf (3)	OTHER TEST DATA	OTHER TEST DATA
0 – 0			Silty SAND with Gravel (SM) Medium brown, dry, dense, fine to very coarse sand, ~25-30% angular gravels, ~15-20% low plasticity silt. [Colluvium]	47	111	13.7			
1			Sandstone with shale Medium to dark brown, moderate hardness, weak to moderate strength, highly weathered, fine grained sandstone interbedded with medium gray-black, low hardness, friable, highly weathered, laminated shale. [Bedrock]	99/10.5"	129	7.3	UC 1825		
5 – 2									
10 – 3			predominately sandstone as above	50/3"					
4									
15 – 5			same as above	50/3"					
			Shale Medium gray-black, hard, moderately strong, slightly weathered, laminated. [Bedrock]						
6 – 20				50/5"					

▽ Water level encountered during drilling
▼ Water level measured after drilling

NOTES: (1) UNCORRECTED FIELD BLOW COUNTS
(2) METRIC EQUIVALENT DRY UNIT WEIGHT kN/m^3 = 0.1571 x DRY UNIT WEIGHT (pcf)
(3) METRIC EQUIVALENT STRENGTH (kPa) = 0.0479 x STRENGTH (psf)
(4) GRAPHIC SYMBOLS ARE ILLUSTRATIVE ONLY

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BORING LOG

MMWD Concrete Pipe Road Tanks
Marin County, California

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Project No. 187.503 Date: 9/27/2021

A-15
FIGURE

BORING 5 (CONTINUED)

DEPTH meters	DEPTH feet	SAMPLE	SYMBOL (4)		BLOWS / FOOT (1)	DRY UNIT WEIGHT pcf (2)	MOISTURE CONTENT (%)	SHEAR STRENGTH psf (3)	OTHER TEST DATA	OTHER TEST DATA
	20			Shale Medium gray-black, hard, moderately strong, slightly weathered, laminated. [Bedrock]	50/5"					
7										
	25			shale bedrock is completely saturated	22					
8										
9	30			decreased moisture in shale, only damp	84	130	9.2	UC 375		
				Boring terminated at 31.5-feet. Groundwater measured at 27-feet two hours after completion.						
10										
	35									
11										
12	40									

▽ Water level encountered during drilling

▼ Water level measured after drilling

NOTES: (1) UNCORRECTED FIELD BLOW COUNTS
(2) METRIC EQUIVALENT DRY UNIT WEIGHT kN/m^3= 0.1571 x DRY UNIT WEIGHT (pcf)
(3) METRIC EQUIVALENT STRENGTH (kPa) = 0.0479 x STRENGTH (psf)
(4) GRAPHIC SYMBOLS ARE ILLUSTRATIVE ONLY

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BORING LOG

MMWD Concrete Pipe Road Tanks
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Project No. 187.503 Date: 9/27/2021

A-16
FIGURE

BORING 6

EQUIPMENT: Track-mounted Hydraulic Drill Rig with 4.0-inch Solid Flight Auger
DATE: 8/2/2021
ELEVATION: 498 - feet*
*REFERENCE: MarinMap LIDAR, 2019

DEPTH meters / feet	SAMPLE	SYMBOL (4)		BLOWS / FOOT (1)	DRY UNIT WEIGHT pcf (2)	MOISTURE CONTENT (%)	SHEAR STRENGTH psf (3)	OTHER TEST DATA	OTHER TEST DATA
0 / 0			Silty SAND with Gravel (SM) Medium brown, dry, dense, fine to very coarse sand, ~20-25% low plasticity silt, ~15-25% angular gravels. [Colluvium]	42					
1			Shale Medium gray, low hardness, friable, completely weathered. [Bedrock]						
5 / 2			shale grades hard, strong, and less weathered	50/6"					
3 / 10			same as above	50/3"					
4									
15 / 5			60° fracture present in sample separating green-gray shale and black-gray shale	50/3"					
6 / 20			shale alternates between black-gray and chloritized green-gray, abundant mica minerals	58					

▽ Water level encountered during drilling
▼ Water level measured after drilling

NOTES: (1) UNCORRECTED FIELD BLOW COUNTS
(2) METRIC EQUIVALENT DRY UNIT WEIGHT kN/m^3 = 0.1571 x DRY UNIT WEIGHT (pcf)
(3) METRIC EQUIVALENT STRENGTH (kPa) = 0.0479 x STRENGTH (psf)
(4) GRAPHIC SYMBOLS ARE ILLUSTRATIVE ONLY

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Project No. 187.503 Date: 9/27/2021

A-17
FIGURE

BORING 6 (CONTINUED)

DEPTH meters	DEPTH feet	SAMPLE	SYMBOL (4)		BLOWS / FOOT (1)	DRY UNIT WEIGHT pcf (2)	MOISTURE CONTENT (%)	SHEAR STRENGTH psf (3)	OTHER TEST DATA	OTHER TEST DATA
	20			shale alternates between black-gray and chloritized green-gray, abundant mica minerals	58					
7										
	25			same as above	50/5.5"	136	6.3	UC 2675		
8				Boring terminated at 25-feet 11.5-inches No groundwater observed upon completion.						
9	30									
10										
	35									
11										
12	40									

▽ Water level encountered during drilling

▼ Water level measured after drilling

NOTES: (1) UNCORRECTED FIELD BLOW COUNTS
(2) METRIC EQUIVALENT DRY UNIT WEIGHT kN/m^3= 0.1571 x DRY UNIT WEIGHT (pcf)
(3) METRIC EQUIVALENT STRENGTH (kPa) = 0.0479 x STRENGTH (psf)
(4) GRAPHIC SYMBOLS ARE ILLUSTRATIVE ONLY

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Marin County, California

Project No. 187.503 Date: 9/27/2021

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A-18
FIGURE

MILLER PACIFIC ENGINEERING GROUP

APPENDIX B

Seismic Refraction Survey

GEOPHYSICAL REPORT

Miller Pacific MMWD Concrete Pipe Road Tank SR Survey
Concrete Pipe Road
Fairfax, Marin County, California

November 8, 2021
NORCAL Project No. NS215116
Miller Pacific Project No. 187.503

Prepared for:

Miller Pacific Engineering Group
504 Redwood Boulevard, Suite 220
Novato, California 94947

Prepared by:

NORCAL Geophysical Consultants, Inc. 321 Blodgett St. #A Cotati, CA 94931
P (707) 796-7170 F (707) 796-7175 norcalgeophysical.com

Miller Pacific Engineering Group
504 Redwood Boulevard, Suite 220
Novato, California 94947

Attn: Mr. Michael Jewett, C.E.G.
Telephone: (415) 382-3444
E-mail: MJewett@millerpac.com

Re: Geophysical Report
Miller Pacific MMWD Concrete Pipe Road Tank SR Survey
Concrete Pipe Road
Fairfax, Marin County, California
NS215116

Dear Mr. Jewett:

NORCAL Geophysical Consultants, Inc. (NORCAL), a Terracon Company is pleased to submit the Geophysical Report for the above-referenced site.

This report presents the findings of a geophysical survey performed by NORCAL Geophysical Consultants, Inc. for Miller Pacific Engineering Group (Miller Pacific) at the MMWD Concrete Pipe Road project located along Concrete Pipe Road in Fairfax, Marin County, California. The survey was authorized under Master Services Agreement PNS215116 for Professional Services dated September 27, 2021. The field work was performed during the period of October 12 - 13, 2021 by NORCAL Staff Geophysicist J. Sage Wagner III and Senior Geophysical Technician Travis W. Black, under direction of California Professional Geophysicist Donald J. Kirker (PGp No. 997). Miller Pacific Associate Geologist, Michael Jewett, C.E.G., provided site orientation and logistical support.

We appreciate the opportunity to provide our geophysical services for Miller Pacific. Please contact either of the undersigned at (707) 796-7170 if you have questions regarding the information provided in the report.

Respectfully,

NORCAL Geophysical Consultants, Inc

Prepared by:

J. Sage Wagner III
Project Manager
Staff Geophysicist

Approved by:

Donald J. Kirker
Authorized Project Reviewer / SME
CA Professional Geophysicist, PGp 997

PROFESSIONAL GEOPHYSICIST
DONALD KIRKER
No. 997
11-8-2021
STATE OF CALIFORNIA

cc: Mr. Michael Jewett, C.E.G., MJewett@millerpac.com
Mr. Eric Dabanian, EDabanian@millerpac.com

1.0 INTRODUCTION

This report presents the results of a geophysical survey consisting of three (3) seismic refraction (SR) profiles and two (2) multichannel analysis of surface waves (MASW) soundings. The survey was performed to provide information to aid in the design of two proposed above-ground water tanks at the MMWD Concrete Pipe Road project located to the south of Concrete Pipe Road in Fairfax, Marin County, California.

A site base map, provided as **Appendix A, Plate 1 – Site Location Map**, shows the site vicinity and the location of the SR profiles and the MASW soundings. The SR profiles and MASW soundings are designated as Line SR-1 thru SR-3 and MASW-1 and MASW-2, respectively. Soil boring locations are shown on Miller Pacific's Figure 1 Geologic Map, not provided in this report. The locations of the geophysical survey are shown on satellite imagery, with each SR profile shown as a red line and each MASW sounding as red diamonds. A text description of the site conditions, which includes pertinent site-specific information, current ground cover, topography and local geology, is summarized in Section 2.0, below.

2.0 SITE DESCRIPTION

The following description of site conditions is derived from our site visit and a review of publicly available geologic and topographic maps.

Item	Description
Site information	The project site, the MMWD Concrete Pipe Road project, is located 15 miles northeast of Fairfax and to the west of Concrete Pipe Road and east of Sky Oak Road. The approximate coordinates of the site are: 37.971536 N, -122.604387 W.
Current ground cover	The geophysical locations were collected across a steep hillside which contained brush and drainage gullies. The soil at the surface consisted of dry, silty-sand with some organic material (roots).
Existing topography	Based on client provided elevation data, the terrain in the area of investigation varies from flat to steep and ranges in elevation from about 484- to 563-ft above mean sea level.
Site geology	Available geologic maps (i.e. Jennings, C.W., with modifications by Gutierrez, C., Bryant, W., Saucedo, G., and Wills, C., 2010, Geologic map of California: California Geological Survey, Geologic Data Map No. 2, scale 1: 750,000.) indicate that the site is underlain by Cretaceous-Jurassic marine sedimentary and metasedimentary rocks, which includes a mélange of fragmented and sheared Franciscan Complex rocks. The site is approximately 1 mile from several Pre-Quaternary faults.

3.0 SCOPE OF WORK

As a part of a larger geotechnical investigation related to the MMWD Concrete Pipe Road project, NORCAL collected three SR profiles and two MASW soundings at the site. The locations of the seismic lines relate to six soil borings that are being investigated by Miller Pacific for the design of two above-ground water tanks. The purpose of the of the SR and MASW surveys were to measure compressional (P-) and shear (S-) wave velocities, respectively. The purpose was also to provide our interpretation regarding the thickness of overburden and the depth to competent substrata. The SR and MASW surveys were designed to image the upper 40 and 100 feet (ft) below grade surface (bgs), respectively. The P-wave velocity and the S-wave velocity will be herein referred to as Vp and Vs, respectively.

4.0 SEISMIC SURVEY

4.1 SEISMIC REFRACTION RESULTS

The SR results are illustrated by the color contoured seismic velocity cross-sections (profiles) shown on **Appendix A, Plate 2A thru 2C – Seismic Refraction Profiles**. On these profiles, the vertical axis represents elevation in feet (NAVD88) and the horizontal axis represents distance in feet along the profile, referred to herein as Station. Seismic P-wave velocity (Vp) in feet per second (ft/s) is represented by labeled contours and by color shading between the contours. The relationship between color and Vp is represented by the color scale shown below the profile. The solid black line along the top of the contoured portion of the profile represents the ground surface during the time of the seismic survey.

The Vp values measured by the seismic refraction survey range from approximately 750 ft/s near the surface to about 9,500 ft/s at depth and are considered low to high Vp ranges. A detailed description of the Vp ranges are below.

- Low Vp ranges from 750 to 3,500 ft/s and are represented by light orange to yellow shading. Vp values in this range typically represent surficial soils or highly weathered rock. A thin, low Vp surficial layer is observed in the SR profiles and ranges from less than one foot to approximately 13-ft in thickness. The low Vp surficial layer caps the top of the moderate Vp layer and likely represents surficial soils.
- Moderate Vp ranges from about 3,500 to 8,000 ft/s and are represented by green to blue shading. Vp values in this range tend to indicate more consolidated, cemented and/or saturated sediments and/or weathered rock. A thicker, moderate, subsurface Vp layer observed in the SR profiles ranges from approximately 12- to 25-ft in thickness.
- High Vp range from approximately 8,000 to greater than 9,500 ft/s and are represented by purple shading. Seismic velocities in this range are interpreted to represent bedrock in various degrees of weathering, where the degree of weathering and/or fracturing decreases with increased Vp. The high Vp measured at the site represents the bottom of

the seismic velocity model and corroborates the local geology and probably represent a moderately to partly weathered shale, sandstone and/or chert.

4.2 RIPPABILITY ASSESSMENT

Seismic P-wave velocity can be used to assess the rippability of rock materials based on empirical data. Charts relating Vp to excavation characteristics have been developed from field tests by others. These charts list different types of ripping equipment and their relative ease of excavation of several types of rock with varying Vp.

Caterpillar Tractor Company publishes a performance manual that lists ripper performance charts for the D8, D9, D10 and D11 series tractors. Although the equipment to be used may vary from the models listed, the charts may still provide a relative guide to aid in characterizing rippability. The information presented in Table A is taken from the ripper performance charts contained in the Caterpillar Performance Handbook (Caterpillar, Edition 48, June 2018) for the tractors listed above. As local bedrock is mapped as Cretaceous-Jurassic metasedimentary rocks, we have selected the values presented for equipment operating in slate.

Table A : *Seismic P-Wave Velocity and General Rippability in Slate Rock*

Equipment Model	Rippable Velocity (ft/s)	Marginal Velocity (ft/s)	Non-Rippable Velocity (ft/s)
D8R/D8T	<6,500	6,500 to 8,000	>8,000
D9R/D9T	<7,250	7,250 to 9,250	>9,250
D10R/D10T2	<8,000	8,000 to 9,875	>9,875
D11R/D11T	<8,750	8,750 to 11,000	>11,000
D11T CD	<8,750	8,750 to 11,000	>11,000

Caterpillar, Edition 48, June 2018

Table A may be a useful aid in selection of the appropriate equipment for excavation. Depending on the selected equipment and the depth of excavation, marginal to non-rippable conditions may be encountered in some locations, as indicated by the seismic profiles.

This information should only be used as a general guide to rippability. Many factors other than seismic velocity also contribute to rock rippability. These factors include rock jointing and fracture patterns, the experience of the equipment operator, and the equipment and excavation methods selected.

4.3 MASW SOUNDING RESULTS

The MASW results are illustrated as Vs versus depth plots in **Appendix A, Plate 3A thru 3B – MASW Sounding**. On these depth plots, the vertical axis represents depth in feet bgs and the horizontal axis represents Vs data. Seismic S-wave velocity (Vs) data were processed to the

upper 100 ft in the MASW soundings. The interval Vs values across the site range from a minimum of 630 ft/s to a maximum of 2,400 ft/s.

The standard method of reporting MASW data is to consider the location of the 1D S-wave velocity (Vs) vs. depth model as the center point of the MASW spread. However, this does not mean that the measured velocity values represent materials solely beneath that location. In fact, the subsurface conditions underlying the entire length of the array, and for several tens of feet to either side, contribute to the measured velocity values.

4.3.1 MASW / SR Correlation

Generally, we note a good correlation between the Vp values measured by the SR survey and the Vs values measured by the MASW survey, noting that Vs values are typically between ½ to ¼ of the Vp values for most earth materials. In addition, Vs tends to increase with increasing depth; however, slight velocity inversions were modeled at the site. It is our interpretation that these features may be due to variations of stiffness (or rigidity) of subsurface materials at the respective location.

5.0 SUMMARY OF FINDING

For a more comprehensive description of the SR and MASW methodology, our data acquisition and analysis procedures, and the instrumentation we used for the geophysical survey, please see **Appendix B: Geophysical Methods**. The findings described below are based on the workflow described in Appendix B and our local experience interpreting the data. These findings can be summarized as follows:

- The Vp values measured across the site ranges from 750 to 9,500 ft/s. SR profiles demonstrate a thin, low Vp layer with Vp values within the range of 750 to 3,500 ft/s. The low Vp layer overlies a thicker moderate Vp layer with Vp values within the range of 3,500 to 8,000 ft/s. The moderate Vp layer ranges from 12- to 25-ft in thickness. The high Vp measured at the site represents the bottom of the seismic velocity model and corroborates the local geology and probably represent a moderately to partly weathered shale, sandstone and/or chert.
- The interval Vs values across the site range from a minimum of 630 ft/s to a maximum of 2,400 ft/s.
- Seismic velocities (Vp, Vs) from SR profiles and MASW soundings appear to correlate with soil borings investigated by others, as well as our local experience interpreting the site geology.

APPENDIX A – Report Plates

Plate 1 – Site Location Map
Plate 2A – Seismic Refraction Profile – SR-1
Plate 2B – Seismic Refraction Profile – SR-2
Plate 2C – Seismic Refraction Profile – SR-3
Plate 3A – MASW Sounding – MASW-1
Plate 3B – MASW Sounding – MASW-2

VICINITY MAP

N

SCALE

0 20 40 80

(1 inch = 40 feet)

LEGEND

	SEISMIC REFRACTION LINE
	MASW SOUNDING LOCATION

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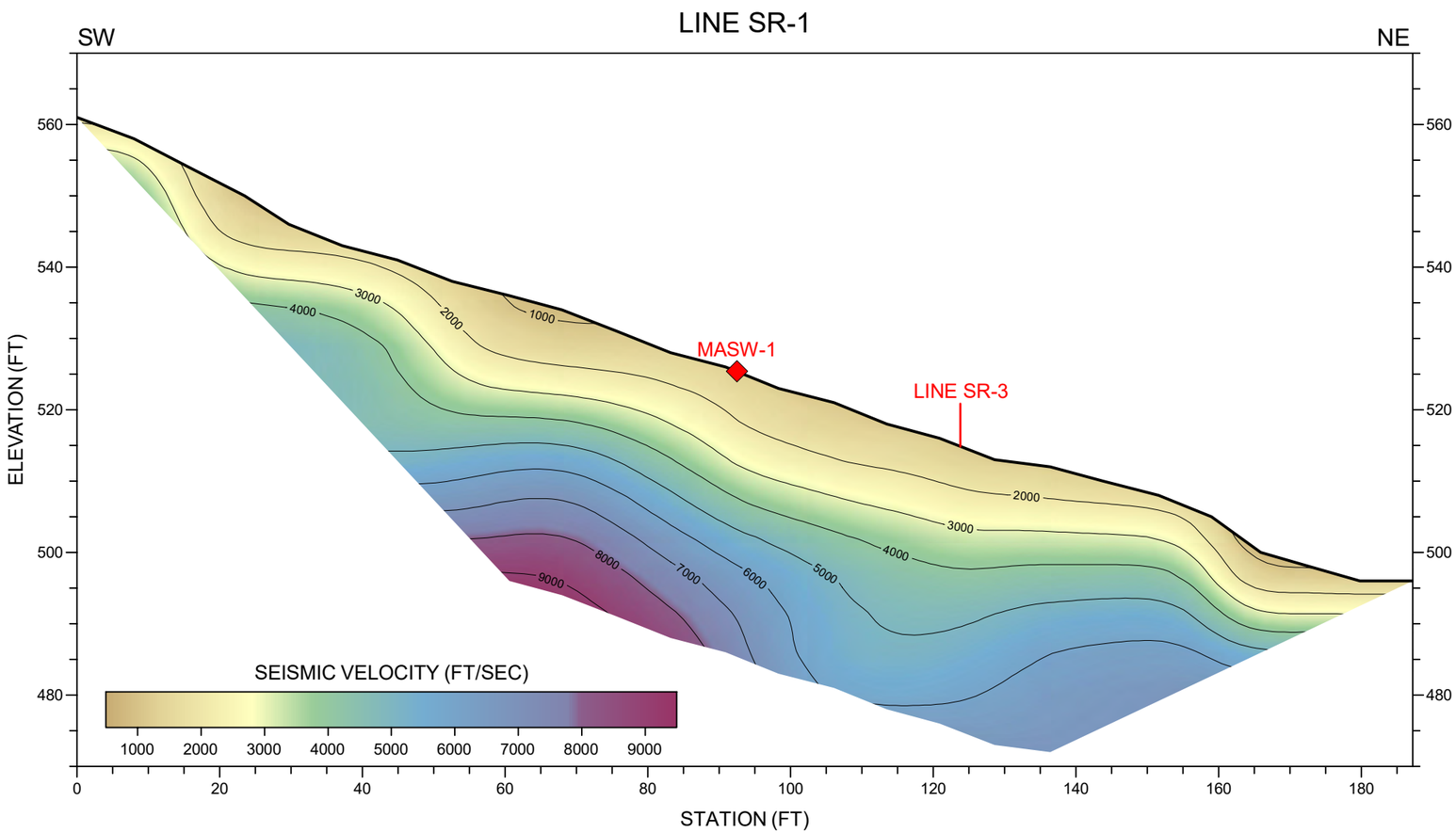
SITE LOCATION MAP
SEISMIC SURVEY
CONCRETE PIPE ROAD

LOCATION: FAIRFAX, CALIFORNIA

CLIENT: MILLER PACIFIC ENGINEERING GROUP

JOB #. NS215116	DATE: OCTOBER 2021	PLATE 1
DRAWN BY: G.RANDALL	APPROVED BY: DJK	

Donald J. Kirker 10/27/2021



SCALE
0 10 20 40
(1 inch = 20 feet)

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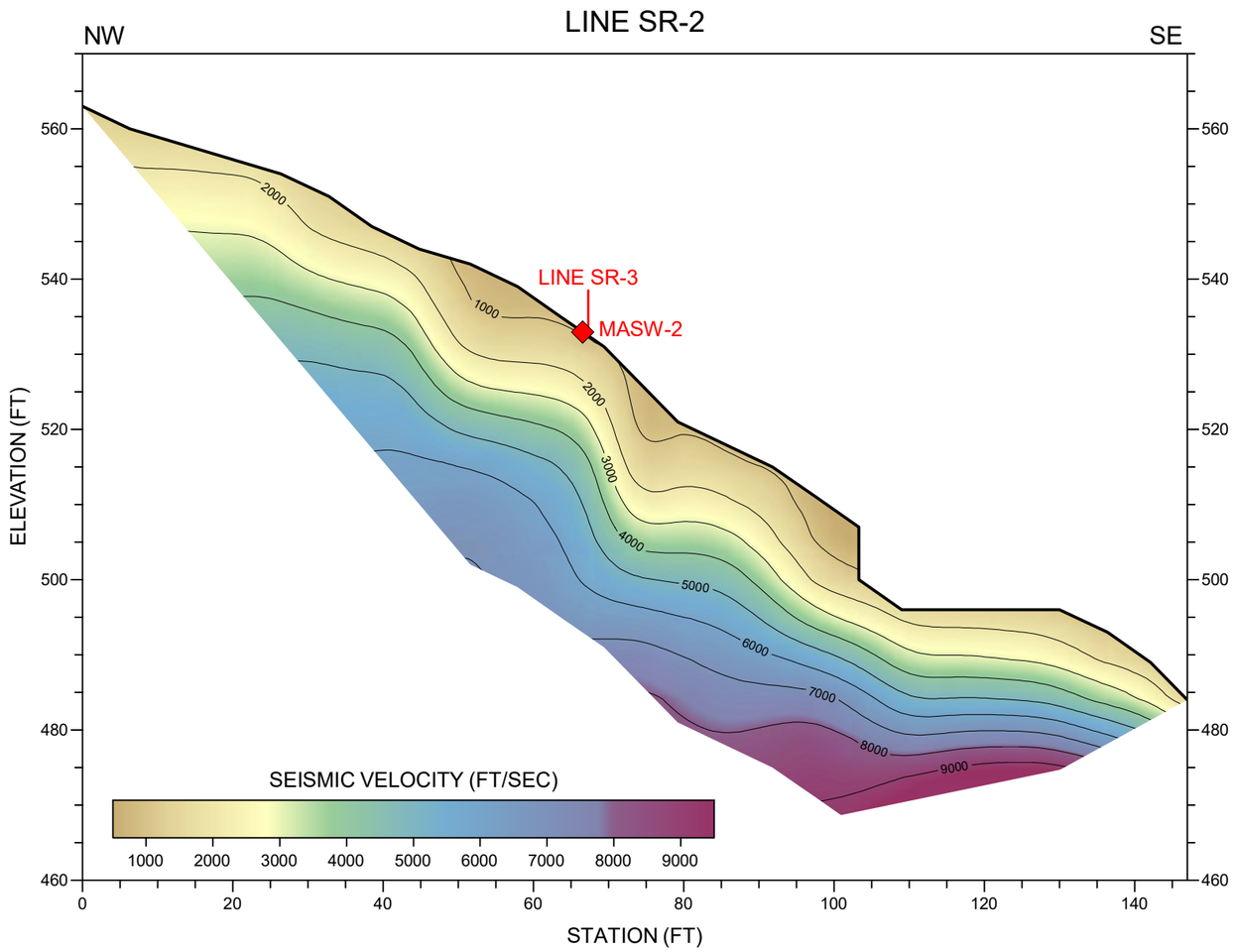
SEISMIC REFRACTION PROFILES
LINE SR-1
CONCRETE PIPE ROAD

LOCATION: FAIRFAX, CALIFORNIA
CLIENT: MILLER PACIFIC ENGINEERING GROUP
JOB #: NS215116 | DATE: OCTOBER 2021
DRAWN BY: G.RANDALL | APPROVED BY: DJK
Donald J. Kirker 10/27/2021

PLATE 2A



SCALE
0 10 20 40
(1 inch = 20 feet)

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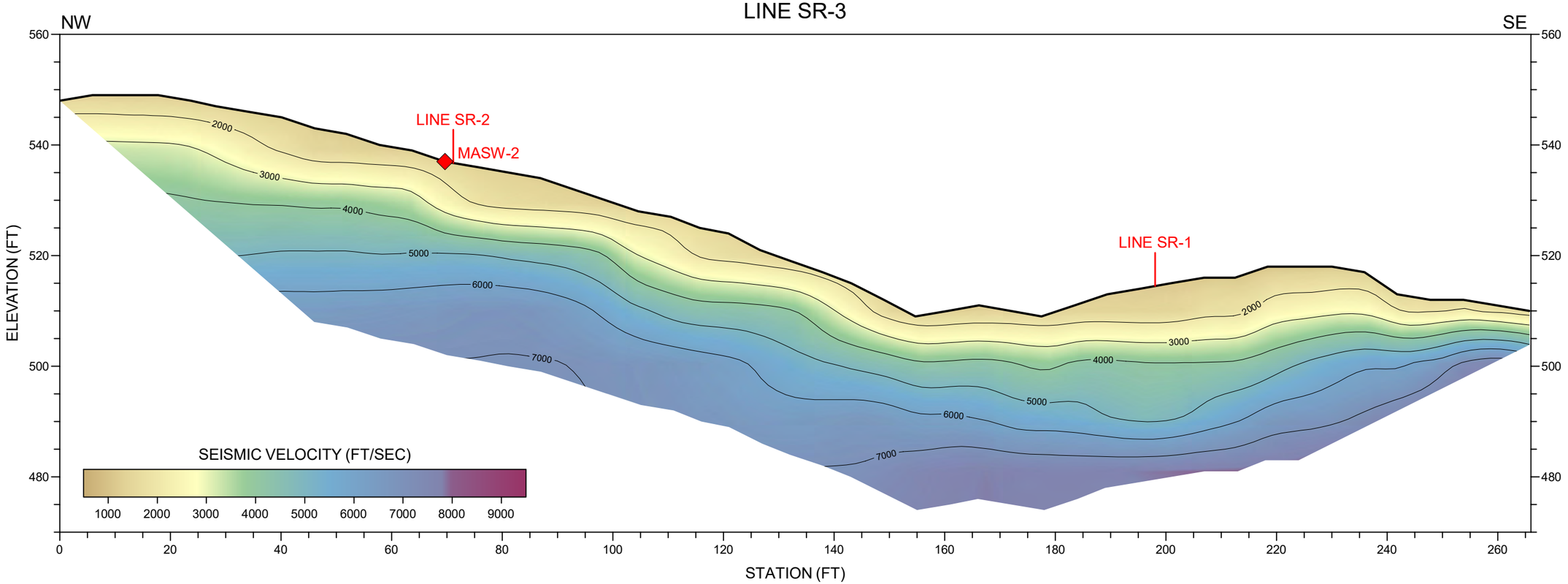
SEISMIC REFRACTION PROFILES
LINE SR-2
CONCRETE PIPE ROAD

LOCATION: FAIRFAX, CALIFORNIA
CLIENT: MILLER PACIFIC ENGINEERING GROUP
JOB #: NS215116 | DATE: OCTOBER 2021
DRAWN BY: G.RANDALL | APPROVED BY: DJK
Donald J. Kirker 10/27/2021

PLATE 2B

LINE SR-3



SCALE
0 10 20 40
(1 inch = 20 feet)

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SEISMIC REFRACTION PROFILES
LINE SR-3
CONCRETE PIPE ROAD

LOCATION: FAIRFAX, CALIFORNIA
CLIENT: MILLER PACIFIC ENGINEERING GROUP
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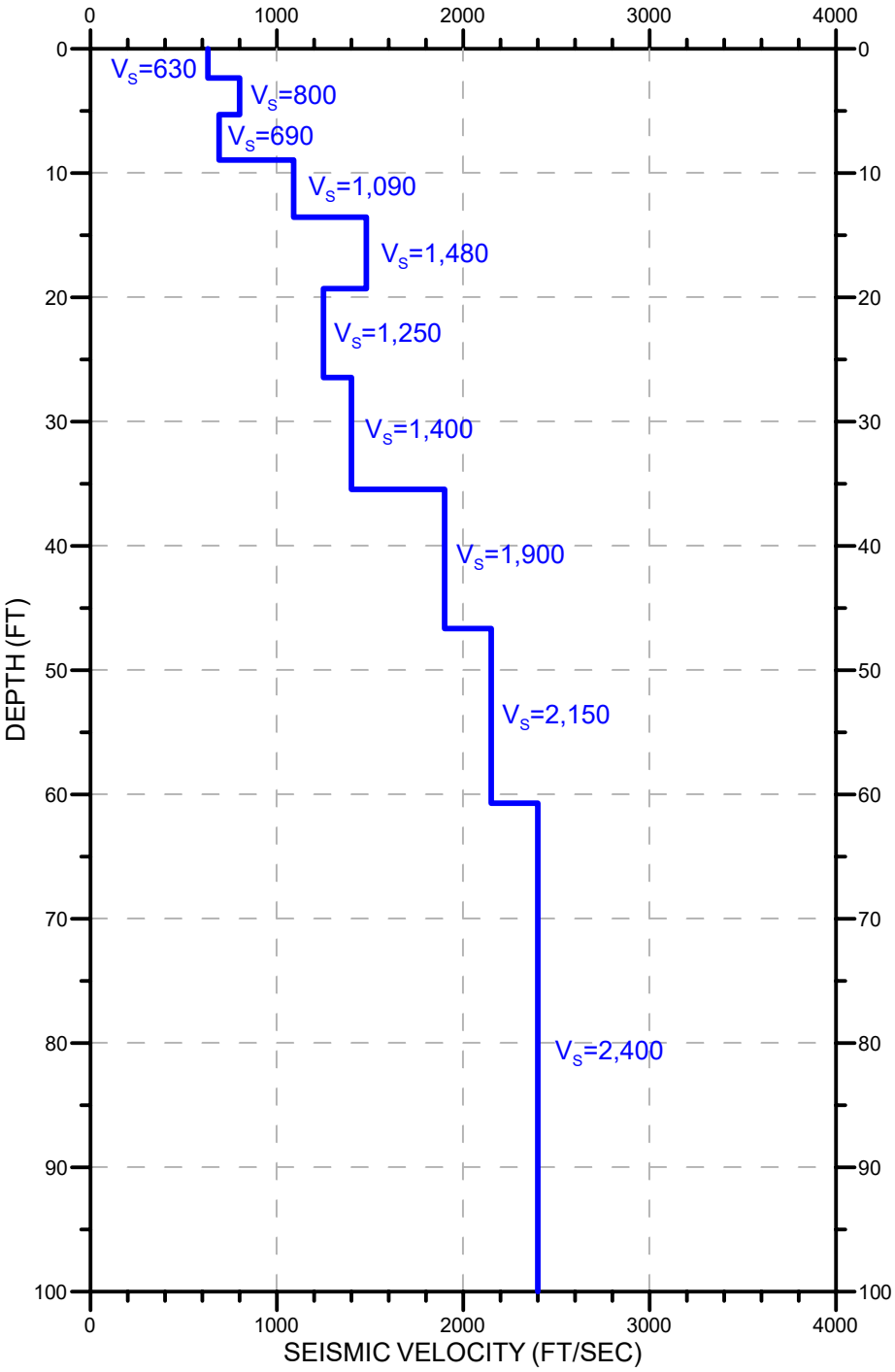
Donald J. Kirker 10/27/2021

PLATE 2C

S-WAVE VELOCITY - MASW-1



LEGEND

———	S-WAVE VELOCITY (MASW)

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MASW SOUNDING
MASW-1
CONCRETE PIPE ROAD

LOCATION: FAIRFAX, CALIFORNIA

CLIENT: MILLER PACIFIC ENGINEERING GROUP

JOB #: NS215116	DATE: OCTOBER 2021	PLATE
DRAWN BY: G.RANDALL	APPROVED BY: DJK	3A

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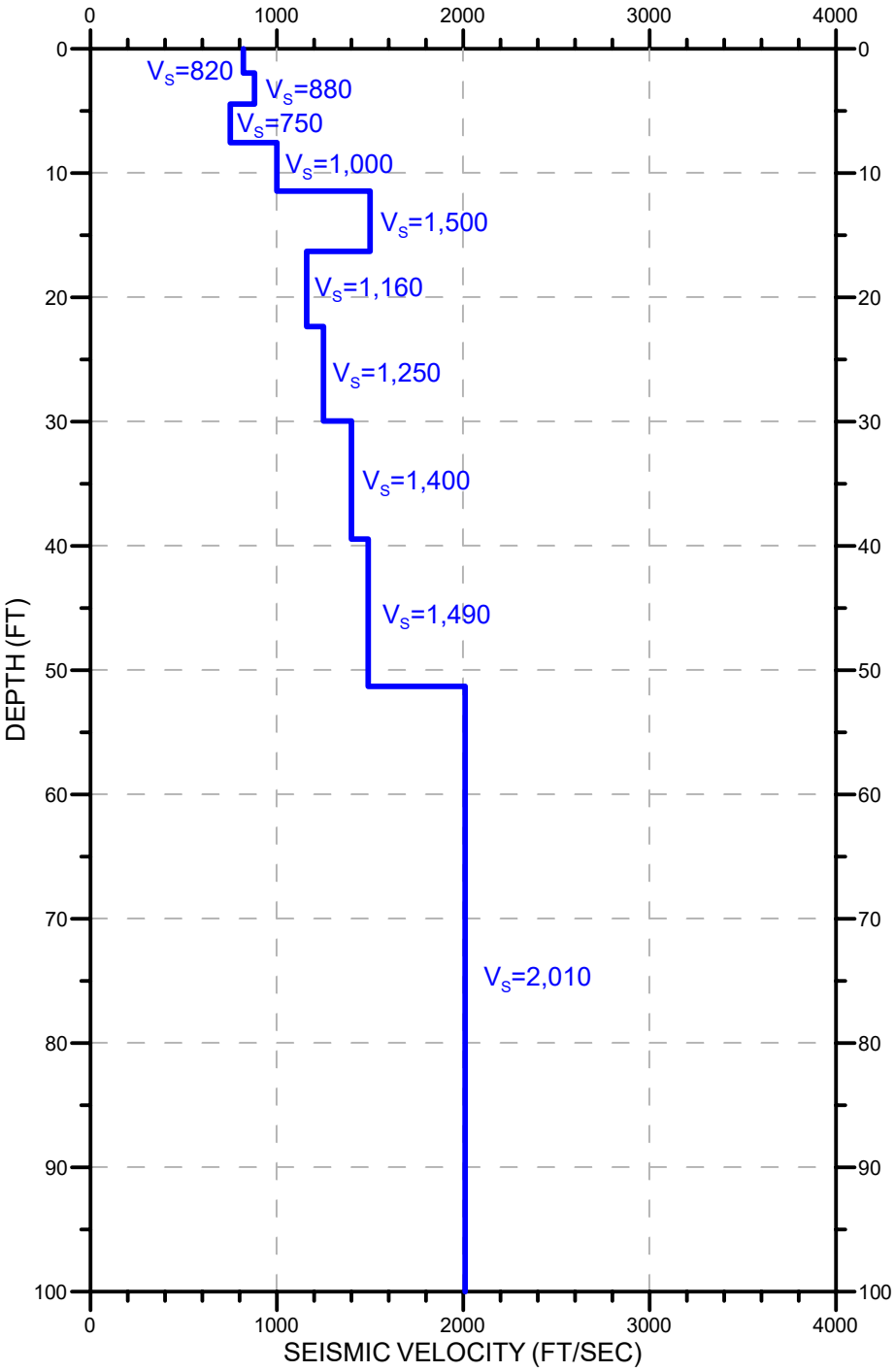
S-WAVE VELOCITY - MASW-2



LEGEND

———	S-WAVE VELOCITY (MASW)

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MASW SOUNDING
MASW-2
CONCRETE PIPE ROAD

LOCATION: FAIRFAX, CALIFORNIA

CLIENT: MILLER PACIFIC ENGINEERING GROUP

JOB #: NS215116	DATE: OCTOBER 2021
DRAWN BY: G.RANDALL	APPROVED BY: DJK

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PLATE
3B

APPENDIX B – Geophysical Methods

Seismic Refraction (SR) Survey
1-D Multi-Channel Analysis of Surface Waves (MASW)

Seismic Refraction (SR) Survey

Glossary of relevant geophysical terminology.

Term	Definition
Geophone	A device that measures ground movement
Seismic Line	A traverse along which seismic data are acquired; may consist of one or more spreads
Seismic Refraction (SR)	A technique for measuring P-wave velocities along a traverse (line) to produce a Vp cross-section (profile)
Multichannel Analysis of Surface Waves (MASW)	A technique for measuring S-wave velocities versus depth to produce a Vs sounding
P-wave Velocity (Vp)	The propagation velocity of primary (compressional) seismic waves in the earth, which relates to the density and elastic properties of the subsurface
S-wave Velocity (Vs)	The propagation velocity of secondary (shear) seismic waves in the earth, which relates to the density and stiffness (rigidity) of the subsurface
Profile	A cross-section depicting variations in P-wave velocities beneath a portion of a line
Sounding	A graph depicting variations in S-wave velocities versus depth beneath the center point of a spread
Spread	A collinear array of geophones

METHODOLOGY

The seismic refraction method provides information regarding the seismic velocity structure of the subsurface. An impulsive (mechanical or explosive) source is used to produce compressional (P) wave seismic energy at the surface. The P-waves propagate into the earth and are refracted along interfaces caused by an increase in velocity. A portion of the P-wave energy is typically re-radiated back to the surface where it is detected by sensors (geophones) that are coupled to the ground surface in a collinear array (spread). The detected signals are recorded on a multi-channel seismograph and are analyzed to determine the shot point-to-geophone travel times. These data can be used along with the corresponding shot point-to-geophone distances and elevation data to determine the depth, thickness, and velocity of subsurface seismic layers. Profiles depicting the variations in P-wave velocities are produced by a mathematical iterative process. The data density is higher near the center of the profile and reduced near the ends of the profile.

DATA ACQUISITION

We collected SR data along the seismic spreads as shown on Plate 1. Miller Pacific determined the location of each spread. We acquired the SR data using arrays of 24 geophones and several shot points. The geophones were distributed at equidistant intervals for each array. Shot-points were placed off each end of the geophone arrays as well as equally distributed within the arrays.

INSTRUMENTATION

The seismic waveforms produced at each shot point were recorded using a Geometrics ***Geode*** 24-channel engineering distributed array seismograph, as pictured in Figure 1, and ***R.T. Clark Geophones*** with a natural frequency of 4.5 Hz. The geophones were coupled to the ground surface by a metal spike affixed to the bottom of each geophone case. Seismic energy was produced at each shot point by multiple impacts with a 16-pound sledge hammer against a metal strike plate placed on the ground surface. The seismic waveforms were digitized, processed and amplified by the Geode, transmitted via a ruggedized Ethernet cable to a field computer and algebraically summed (stacked) until sufficient signal to noise ratio was achieved. The data were displayed on the computer's LCD screen in the form of seismograms, analyzed for quality assurance and archived for subsequent processing. These images were subsequently used to determine the time required for P-waves to travel from each shot point to each geophone in the array.

Figure 1: *Geometrics Geode 24-channel engineering distributed array seismograph.*

DATA ANALYSIS

The seismic refraction data were processed using the software package ***SeisImager,*** written by Oyo Corporation (Japan) and distributed by Geometrics Inc. This package consists of two programs titled ***Pickwin,*** Version 5.1.1.2 (2013) and ***Plotrefa*****,** Version 3.0.0.6 (2014). For each

seismic line we used ***Pickwin*** to view the seismic records and identify first arriving P-wave energy at each geophone and to determine the shot point to geophone travel time associated with each arrival. We then used ***Plotrefa*** to assign elevations to each geophone and to plot the shot point to geophone travel times versus their distance (Station) along the line. A sample Time versus Depth (T-D) graph is shown in Figure 2.

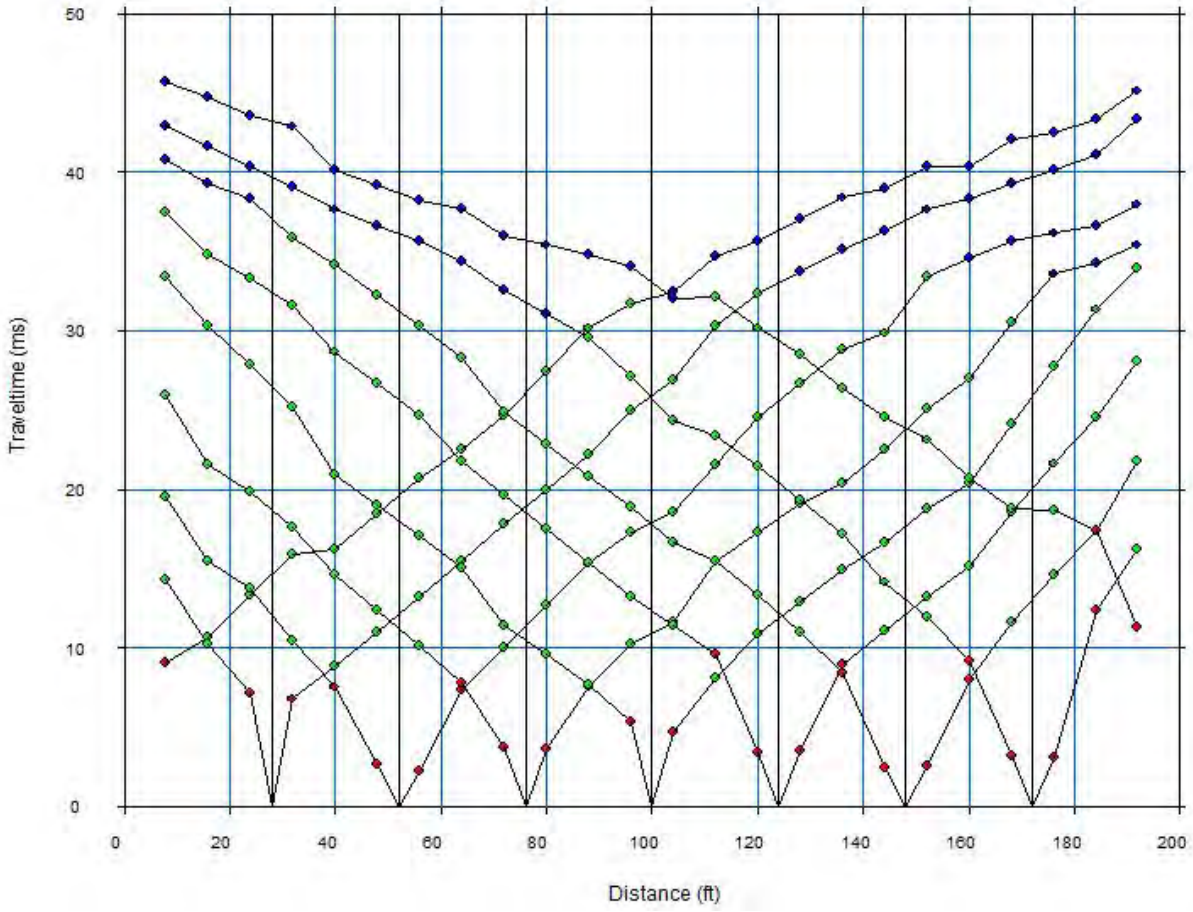

Figure 2: *Sample SR Time-Distance Graph. Red circles represent layer 1 (V1), green circles represent V2 and blue circles represent V3.*

After examining the T-D graph we assigned velocity layers (1-3) to each travel time and then computed a 2D model using ***Plotrefa's*** time-term routine. This resulted in 2D layered cross-sections (profiles) illustrating seismic velocity versus depth. A sample 2D time-term model is shown in Figure 3.

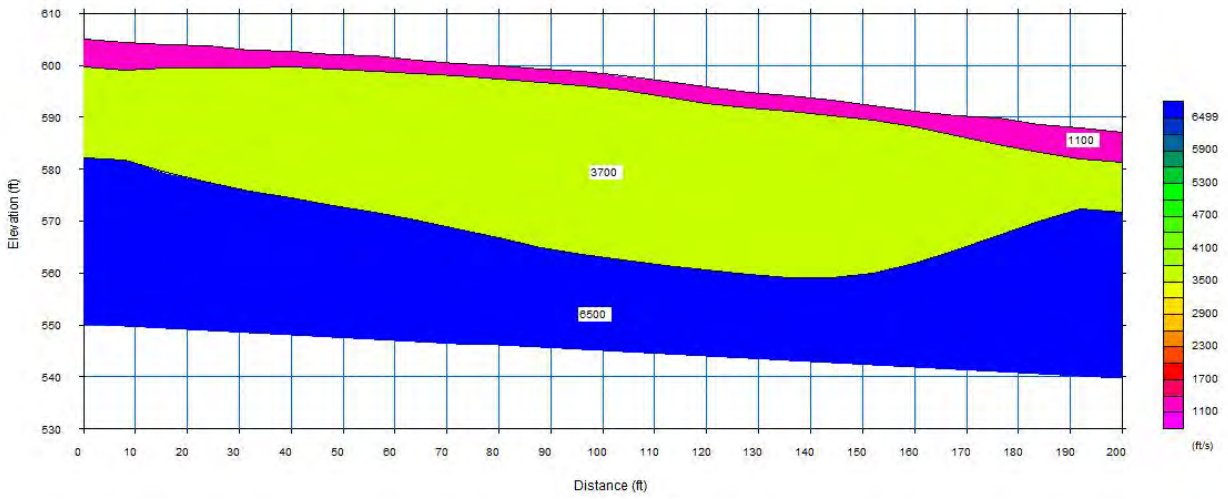

Figure 3: *Sample Time-Term Seismic Velocity Model. Velocities are labeled and indicated by the color bar on the right.*

Finally, we used the time term model as input to ***Plotrefa's*** tomographic routine. This routine divided the input model into cells according to the geophone spacing and depth range and assigned a velocity to each cell. It then used a ray tracing routine to compute synthetic travel times through the model from each shot point to every geophone. The synthetic travel times were compared with the observed travel times to determine the goodness of fit. If the fit was not within certain assigned parameters, the program then adjusted the velocity in each cell and reran the ray tracing. This procedure was repeated through as many as 20 iterations in order to achieve the optimum fit between observed and synthetic travel times. A sample tomographic model is shown in Figure 4.

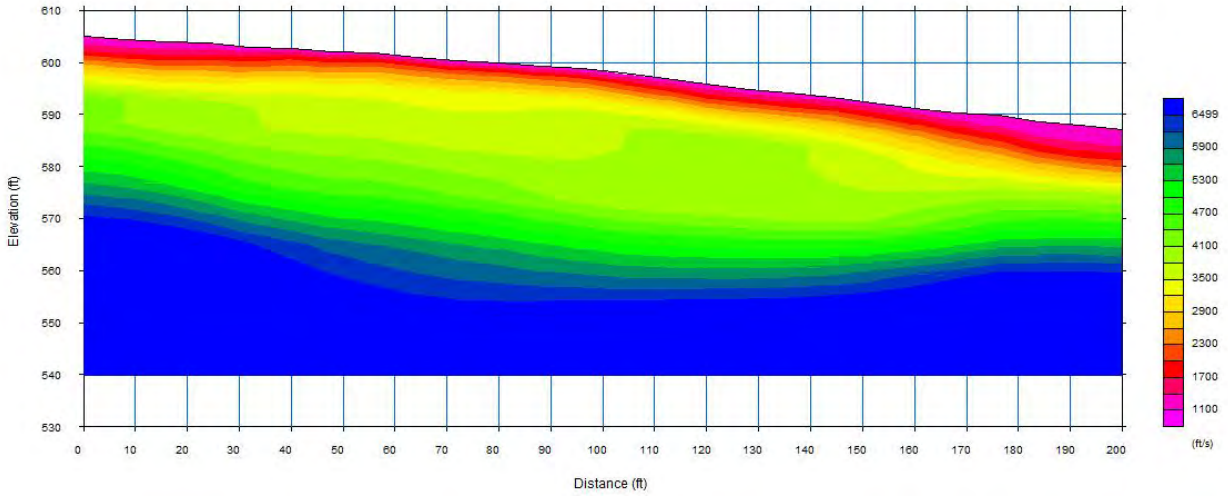

Figure 4: *Sample tomographic Inverted Seismic Velocity Model. Velocities indicated by color bar on right.*

Once the tomographic processing was complete, we used the computer program ***Surfer 21.2.192*** by Golden Software to construct a color contoured 2D cross-section (profile) illustrating the results for each seismic line.

INTERPRETATION

The SR profile described above is a model of the subsurface based on P-wave velocities. How these velocities and their subsurface distribution relate to geology is a matter of interpretation. This interpretation can be based on experience and a general knowledge of the local geology. However, the best results are achieved when the models can be correlated with subsurface information provided by other means such as onsite observations, borehole geological and/or geophysical logs, trench logs or projections based on mapped surface geology. This type of information is referred to as “ground truth.”

In any case, the resulting seismic velocity profile represents a model of the subsurface that must be interpreted by the best means available. Thus, the interpreted profile is conceptual in nature, and is not expected to represent an exact depiction of the subsurface.

LIMITATIONS

Based on the physical properties of refraction (Snell’s Law), for a seismic wave to be refracted back toward the surface the seismic velocity of the upper layer must be less than the velocity of the lower layer. When higher velocities overlie lower velocities, often referred to as a velocity inversion, the seismic energy will be refracted downward and the lower layer will not be detected at the surface. As a result, the calculated depths of any deeper higher velocity layers may be over-estimated. Furthermore, some layers may be truncated, or too thin to detect. These are referred to as “hidden layers”.

If the seismic source used for the survey does not produce sufficient energy to propagate through the entire spread at detectable levels, the first arriving P-waves at each geophone may not be visible on the seismic records. Additionally, extraneous seismic energy sources such as wind, traffic or nearby machinery may create “noise” on the recorded waveforms that may mask the first arrivals.

In noisy conditions many “stacks” may be necessary to achieve an acceptable signal to noise ratio. Stacking consists of superposition of waveforms such that the stacked shot energy builds with successive shots whereas the noise tends to cancel itself out due to its random nature.

Another common external noise source is overhead power lines. If the cable is laid out parallel to the lines electrical noise may be induced in the cable. Possible internal noise sources may be faulty geophone connections due to dirt or moisture or use of an unsuppressed power supply.

Finally, seismic refraction processing algorithms assume that the seismic velocity layers are isotropic. That is, that the velocity is uniform within the length and breadth of each layer. Another

assumption is that the velocity distribution does not change in a direction transverse to the seismic line. In other words, that there is true 2D symmetry. If these conditions are not met, the actual subsurface conditions will vary from those represented by the seismic model.

1-D Multi-Channel Analysis of Surface Waves (MASW)

METHODOLOGY

When seismic energy is generated at or near the ground surface, both body and surface waves are produced. Body waves expand omni-directionally throughout the subsurface. They consist of both compressional (P) and shear (S) waves. Surface waves (e.g., Rayleigh, Love, etc.) radiate along the ground surface at velocities that are proportional to shear wave velocity (Vs). Rayleigh waves are characterized by retrograde elliptical particle motion, and travel at approximately 0.9 times the velocity of S-waves.

If a vertical impact source is used, approximately two-thirds of the seismic energy that is produced is in the form of ground roll. As a result, surface waves are typically the most prominent signal on multi-channel seismic records. In addition, surface waves have dispersion properties that body waves lack. That is, different wavelengths have different penetration depths and, therefore, propagate at different velocities. By analyzing the dispersion of surface waves, it is possible to obtain an Vs versus depth plot. Since Vs is directly proportional to shear modulus, this provides a direct indication in the variation of stiffness (or rigidity) of subsurface materials with depth.

Surface waves can be recorded and analyzed using a method referred to as Seismic Multichannel Analysis of Surface Waves (MASW). This method is used to collect surface wave data using a fixed array of geophones and shot points. This is referred to as a sounding and results in a 1D model depicting variation in Vs versus depth beneath the center of the array. However, the subsurface conditions underlying the entire length of the array, and for several tens of feet to either side, contribute to the measured velocity values. The method requires an energy source that is capable of producing ground roll and geophones that are capable of detecting low frequencies (<10 Hz) signals.

DATA ACQUISITION

Each MASW sounding was configured using a seismic array consisting of four shot points and 24-geophones distributed at equidistant intervals in a collinear array. The array configuration for 6-ft intervals is depicted in Figure 5 of this appendix, shown below.

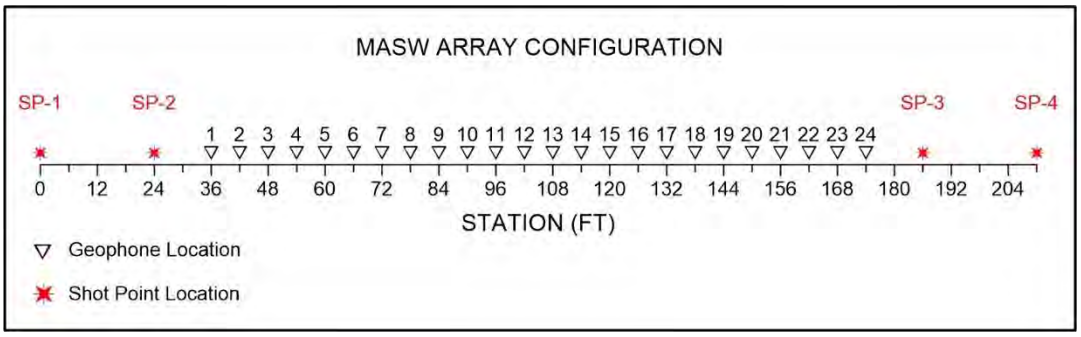

Figure 5: Example *MASW Array Configuration*

Seismic energy was produced at each shot point using a 16-pound sledgehammer striking an aluminum/polyurethane plate on the ground surface. The resulting seismic waveforms were detected by an array of 24 ***R.T. Clark Geophones*** with a natural frequency of 4.5 Hz. and recorded using a Geometrics ***Geode*** 24-channel distributed array engineering seismograph. The seismic waveforms were digitized, processed and amplified by the Geode and transmitted via a ruggedized Ethernet cable to a field computer. The recorded data were archived for subsequent processing and displayed on the computer screen in the form of seismograms for quality assurance purposes.

DATA ANALYSIS

The seismic wave-traces (shot gathers) recorded at each shot point were analyzed using the computer program ***SURFSEIS*** developed by the Kansas Geological Survey (Version 6.3, 2017). This interactive program converts the data acquired from all four shot points in a given sounding into a dispersion curve representing phase velocity versus frequency. This curve is then inverted to produce a 1D model indicating Vs versus depth. The steps involved in this procedure are as follows:

1) The shot gathers are converted to KGS format.
2) Stations are assigned to the geophone and shot point locations.
3) The resulting records are viewed to determine their overall quality. If necessary, portions of the records are muted to remove interference from refractions, reflections and higher mode events.
4) For each formatted (and/or muted) record, the program produces what is referred to as an “overtone plot”. This is a colored cross-section indicating phase velocity versus frequency and amplitude. The vertical axis represents phase velocity (increasing upward); the horizontal axis represents frequency (increasing to the right); and signal amplitude is indicated by various colors, with the hottest colors (orange to red to dark brown) representing the greatest signal to noise ratio. Typically, the strongest signals align in a curved pattern with a symmetry similar to a “hockey stick” where the blade is pointing

upward at the lower end of the frequency spectrum (higher velocity at greater depth) and the handle projects to the right in the direction of increasing frequencies indicating lower velocities.

5) The overtone plots compiled from the four shot points are reviewed to determine their overall quality and the best among them (possibly all) are merged to form a single overtone. This enhances the overall signal to noise ratio of the survey and incorporates data from both ends of the spread (if feasible).
6) The resulting overtone plot is used as a guide in deriving a dispersion curve representing phase velocity versus frequency. This is done by fitting the curve along the center of the hockey stick where the signal to noise ratio is highest.
7) The resulting dispersion curve is inverted through an iterative process to compute a 1D model representing Vs versus depth.

Item Number: 12
Meeting Date: 02-15-2022
Meeting: Board of Directors

Approval Item

TITLE
Certify Review of the Amended Final Environmental Impact Report for the Oakview Master Plan, Use Permit, and Vesting Tentative Map for the Talus Reserve – Erin Drive Extension and Approve a Pipeline Extension Agreement – Erin Drive, San Rafael – Talus Reserve

RECOMMENDATION
1) Adopt a Resolution Certifying Review of the amended Final Environmental Impact Report for the Oakview Master Plan, Use Permit, and Vesting Tentative Map for the Talus Reserve – Erin Drive Extension and approving a Pipeline Extension Agreement for the project with the Applicant, Talus, LLC,
2) Adopt a Resolution Making Determinations with Respect to Fees Contained in the Pipeline Extension Agreement
3) Adopt a Resolution Finding Impending Peril of Gradual Earth Movement and Determining and Undertaking Appropriate Action to Halt, Stabilize, or Abate Such Peril

SUMMARY
An extension of the District's existing facilities is required to serve a new 28-lot residential development located in the Marinwood neighborhood of San Rafael. Both potable and recycled water mains, services and hydrants are proposed to be installed for the development within a newly created section of Erin Drive.

DISCUSSION
This item was previously reviewed at the January 18, 2022, meeting of the Board of Directors. Prior to consideration of the recommended actions, staff was directed to research and report back on the possibility of requiring recycled water fire hydrants, rather than potable water hydrants and to contact the State Water Resources Control Board regarding possible exemption to California Title 22 Section 60313, which prohibits the delivery of recycled water for dual plumbing for single family residences. Staff has done additional research into these issues and will report on those findings.

On January 11, 2005, the Board of Supervisors approved the Oakview Master Plan. After the Board's approval, a Parcel Map was recorded creating the subject property, a property to be developed as an assisted living facility, a parcel reserved for Caltrans to build an intersection, and an open space parcel that was dedicated to the Marinwood Community Services District for ongoing public use.

On March 9, 2009, the Marin County Planning Commission approved the Oakview Vesting Tentative Map and Precise Development Plan, which authorized the subdivision of land to develop 28 single family residences. This decision is final, and the Tentative Map is now vested.

Twenty-eight (28) new single family dwellings and 5 detached accessory dwelling units will be constructed and accessed from the end of Erin Drive via an extension of Erin Drive into the subdivision.

The Marinwood Community Service District Fire Department has set the fire flow requirement for the project at 1,500 gallons per minute (gpm) with 20 psi residual pressure. Water service and fire protection for the project will require the installation of approximately 1,840' of 8" water main (potable), 1,860' of 4" water main (recycled), 6-6" potable hydrants, 1-6" recycled hydrant, 33-1" potable services and 29 recycled services (28-5/8" and 1-1"). The purchase of 9.59 acre-feet of water entitlement, 7.50 acre-feet for the residential units and 2.09 acre-feet for the common area landscaping, is also required (see Attachment 1).

Staff has prepared a Pipeline Extension Agreement for the proposed project that will require the installation of necessary infrastructure, including the installation of individual recycled services for each residential lot to be used for landscape irrigation, all consistent with District standards and the MMRP adopted for the project. A separate recycled service will provide irrigation water for common areas.

ENVIRONMENTAL REVIEW

The District is a Responsible Agency as defined in §15381 of the Guidelines for Implementation of the California Environmental Quality Act with respect to the proposed Pipeline Extension Agreement (PEA) for the Talus Reserve – Erin Drive Extension project. The District has discretionary authority to approve or deny the PEA, which constitutes a project under CEQA (§15378), and is therefore subject to environmental compliance. Prior to reaching a decision on the PEA, the board must consider the environmental effects of the project as shown in the project's Environmental Impact Report (EIR) and make findings pursuant to CEQA Guidelines section 15091.

BACKGROUND:

Marin County, as lead agency, commissioned preparation of an EIR for the then proposed project – the Oakview Master Plan, Use Permit, and Vesting Tentative Map. As part of the proposed subdivision of a larger 106-acre property, the Master Plan included development of 94,400 square feet of office space (in two buildings) and 28 single family residential units. In 2003, the project sponsor revised the development proposal to replace the office development with an assisted-living facility; this change in the development proposal did not affect the single-family residential development. The amended development proposal and findings of the amended Final EIR were presented at a public meeting held on December 6, 2004. At that meeting, the Marin County Planning Commission recommended approval of the amended Oakview project. The Marin County Board of Supervisors certified the amended Final EIR, adopted a Mitigation, Monitoring and Reporting Program for the project, which as implemented was found adequate to mitigate all environmental impacts to less than significant,

and approved the amended Oakview project pursuant to Resolution 2005-05 on January 11, 2005. The Notice of Determination was posted from January 19 to February 18, 2005.

The 28-unit residential development was evaluated as a project component in the amended Oakview EIR. It is this portion of the project, which is the subject of the application for a PEA. The amended Oakview EIR addressed the issue of water supply and relied upon the District's affirmation that the District "…will provide water service to the site." The attached memorandum prepared by Environmental Science Associates provides a review of the project's CEQA documentation and determined that the current project, as presented in the PEA application, is consistent with that previously evaluated under CEQA (Attachment 4).

CEQA FINDINGS:

Section 15096(h) of the Guidelines states "The Responsible Agency shall make the findings required by Section 15091 for each significant effect of the project and shall make the findings in Section 15093 if necessary."

Based on review of the project's existing CEQA documentation (Attachment 3) by staff and the District's environmental consultant, no impacts were identified as potentially significant that are associated with water demand/supply or fireflow adequacy.

RECOMMENDATION AND FILING OF NOTICE OF DETERMINATION:

Staff and the District's environmental consultant have reviewed the amended Oakview EIR for the project and have determined that the EIR and the MMRP adequately address all potentially significant environmental impacts associated with the extension of water and fireflow to the project site and that all potentially significant environmental impacts through the adopted MMRP and the project conditions will be mitigated to less than significant. On that basis, the District's Operation Committee referred this item to the board on November 19, 2021. Staff now recommends that the Board 1) adopt a Resolution Certifying Review of the amended Final Environmental Impact Report for the Oakview Master Plan, Use Permit, and Vesting Tentative Map for the Talus Reserve – Erin Drive Extension and approving a Pipeline Extension Agreement for the project with the Applicant, Talus, LLC; 2)adopt a Resolution Making Determinations with Respect to Fees Contained in the Pipeline Extension Agreement; and 3) adopt a Resolution Finding Impending Peril of Gradual Earth Movement and Determining and Undertaking Appropriate Action to Halt, Stabilize, or Abate Such Peril.

Section 15096(h) of the Guidelines states "The Responsible Agency should file a Notice of Determination in the same manner as a Lead Agency under Section 15075 or 15094 except that the Responsible Agency does not need to state that the EIR or Negative Declaration complies with CEQA. The Responsible Agency should state that it considered the EIR or Negative Declaration as prepared by a Lead Agency." If the Board approves the Talus, LLC PEA, staff will file a Notice of Determination pursuant to 15096(i) with the Marin County Clerk.

FISCAL IMPACT
None

ATTACHMENT(S)
1. Subdivision Overview
2. Draft Pipeline Extension Agreement
3. Final Environmental Impact Report
4. Memorandum, *Review of CEQA Documentation for the Talus Reserve – Erin Drive Project*
5. Vicinity Map
6. Site Map
7. Proposed Resolution – Fees Contained in Pipeline Extension Agreement
8. Proposed Resolution – Finding Impending Peril of Gradual Earth Movement and Determining and Undertaking Appropriate Action to Halt, Stabilize, or Abate Such Peril
9. Proposed Resolution - Certifying Review of the amended Final Environmental Impact Report for the Oakview Master Plan, Use Permit, and Vesting Tentative Map for the Talus Reserve – Erin Drive Extension and approving a Pipeline Extension Agreement for the project with the Applicant, Talus, LLC

DEPARTMENT	DIVISION MANAGER	APPROVED
Engineering	**Crystal Yezman** **Director of Engineering**	**Ben Horenstein** **General Manager**

Item Number: 12
Attachment: 01

SUBDIVISION OVERVIEW:

APPLICANT: Robert Parish

TYPE OF DEVELOPMENT: Subdivision – 28 SFD's and 5 detached ADU's

FIRE DEPARTMENT: Marinwood CSDFD

FIRE MARSHALL: Bob Sinnott of SRFD obo Marinwood CSDFD

FIRE FLOW REQUIRED: 1,500gpm

PIPING: 1,840' of 8", 1,860' of 4" recycled

HYDRANTS: 6-6", 1-6" recycled **Calculated Flow:** 2,600+gpm **Residual:** 20 psi

SERVICES: 33-1" potable & 29 (28-5/8" & 1-1") recycled for landscape irrigation

SYSTEM: Lucas Valley **Elevation:** 347'

ELEVATION OF PROPERTY: Min: 70' Max: 200'

PRESSURE: Max: 115psi Min: 60psi

ESTIMATED ANNUAL CONSUMPTION: 0.25af/SFD + 0.10af/ADU + 2.09af for irrigation**: 9.59AF**

EXISTING HISTORICAL ENTITLEMENT: 0.0

LEAD AGENCY: County of Marin

TENTATIVE MAP APPROVED: March 9, 2009

CEQA: FEIR

MARIN MUNICIPAL WATER DISTRICT
PIPELINE EXTENSION AGREEMENT

(MMWD – LUCAS VALLEY-TALUS LLC)
ERIN DRIVE, SAN RAFAEL – TALUS RESERVE

THIS AGREEMENT is made and entered into this 18th day January, 2022, by and between **MARIN MUNICIPAL WATER DISTRICT,** hereinafter called "District"; and **LUCAS VALLEY-TALUS LLC**, hereinafter called "Applicant" as follows:

For valuable consideration, receipt of which is hereby acknowledged, the parties agree as follows:

Section A. Recitals

1. Applicant has requested a pipeline extension to provide water service to Assessor's Parcel No. 164-270-07 as shown on a map entitled, "Assessor's Map Book 164, Page 27, Scale 1"=400', dated May 27, 2009."

2. District has determined that service to said project will require the installation of 1,840' of 8" pipe, 1,860' of 4" pipe, 7-6" hydrants, 34-1" services and 28-5/8" services and other facilities as set forth in plans prepared therefor.

3. Prior to final approval by the City or County of a Subdivision Map, Precise Development Plan, Parcel Map or other land use application and recordation of a final map for the project, the Applicant shall enter into an agreement with the District and complete financial arrangements for water to each lot, unit or parcel of the project;

4. District has determined that the above mentioned replacement lies within the boundaries of Marinwood Community Services District Fire Department.

Section B. General Provisions

1. **Installation According to District Plans and Specifications**: The pipeline extension applied for and all work done in connection therewith shall be done under the supervision of and to the satisfaction of District, and shall be installed in accordance with detailed plans and specifications or supplemental plans as they may be prepared from time to time therefor by District, in addition to the Mitigation Monitoring and Reporting Program for Applicant's project. District shall have absolute discretion in determining the kind and quality of the work and materials. As the work progresses, District reserves and shall have the right to amend and adapt plans and specifications to meet conditions as they develop. Any extra costs arising from any such revision of plans will be charged to and paid for by Applicant.

ATTENTION IS CALLED TO THE STANDARD SPECIFICATIONS OF DISTRICT WHICH ARE REFERRED TO AND ARE INCORPORATED HEREIN BY REFERENCE AS THOUGH SET FORTH AT LENGTH. APPLICANT AND CONTRACTOR AGREE THAT ALL WORK SHALL BE DONE ACCORDING TO THE PROVISIONS OF THE STANDARD SPECIFICATIONS AND THAT APPLICANT, CONTRACTOR OR HIS SUBCONTRACTORS ARE FULLY BOUND TO ALL PROVISIONS OF THE STANDARD SPECIFICATIONS.

2. **Financial Arrangements**: Prior to issuing written certification to the City, County or State that financial arrangements have been made for construction of the required water facilities, the Applicant shall complete such arrangements with the District in accordance with Paragraph 6.

3. **Construction Scheduling:** Prior to release or delivery of any materials by the District or scheduling of construction inspection by the District, the Applicant shall:

a. Deliver to the District prints of the utility plans approved by the City or County to enable the District to prepare final water facilities contract drawings.

b. Grant or cause to be granted to the District without cost and in form satisfactory to the District, title to all real property and rights-of-way required by Paragraph 10.

c. Deliver to the District a written construction schedule to ensure timely withdrawal of guaranteed funds for ordering of materials to be furnished by the District and scheduling of inspection or construction.

4. **Method of Performance of Work**: Work done under this agreement shall be performed as hereinafter indicated:

Items of Work:

Water mains to be installed by.....A
Fire hydrants to be installed by .....A
Service connections to be installed by .....A

Methods of Doing Work:

(A) Private contract to be let by Applicant or performed by Applicant's own forces.

(B) Public contract to be let by District or performed by District's own forces.

5. **Estimated Cost of Work**: The estimated cost of the pipeline replacement applied for as determined by District is as follows:

	Column 1: Materials,Fees, and Charges	**Column 2: Installation Costs**	**Column 3: Total**
Pipeline Installation	$79,700	$291,000	$370,700
Hydrant Installation	$34,200	$54,000	$88,200
Service Installation	$46,650	$200,650	$247,300
Recycled Pipeline Installation	$23,815	$298,500	$322,315
Recycled Hydrant Installation	$11,400	$9,000	$20,400
Recycled Service Installation	$31,523	$186,615	$218,138
District Labor & Equipment	$205,900	$0	$205,900
Connection Fee	$359,117	$0	$359,117
TOTAL	$792,305	$1,039,765	$1,832,070

Said cost estimates are made solely for the convenience of District in determining required deposits, bonds, and guarantees. District makes no representations whatever, and assumes no responsibility whatever, regarding the accuracy of said estimates.

6. **Financial Arrangements to Be Made by the Applicant** shall consist of the following:

Materials, Fees and Charges

The Applicant shall pay to the District the total estimated cost of Materials, Fees and Charges set forth in Paragraph 5, Column 1, $792,305.

Installation Costs

Under Method A: Applicant agrees to hire a private contractor to install the facilities, and therefore, shall provide financial guarantees satisfactory to the District in the form of a performance bond in the amount of $1,039,765 guaranteeing installation of the facilities and furnishing of bulk material. Applicant's contractor shall furnish a maintenance bond in the amount of $259,941 guaranteeing the cost of maintaining, repairing, or replacing the facilities during the first two (2) years following completion of all facilities and acceptance by the District.

In addition, the Contractor shall furnish the following insurance requirements:

a. Workers' Compensation Insurance.

b. Public Liability - combined single limit of not less than $1,000,000.

c. Policy shall specifically name Marin Municipal Water District, its officers, officials, agents, employees and volunteers as an additional insured and shall provide that said coverage is primary to any insurance carried by the District.

d. A policy statement indicating that there shall be not less than 30 days written notice prior to cancellation.

The Applicant or Contractor may substitute a check written to the District in lieu of a performance or maintenance bond.

7. **Review of Estimates**: All estimated costs set forth in this agreement shall be subject to periodic review and revision at the District's discretion. In the event the Applicant has not completed financial arrangements with the District in accordance with Paragraph 6 within 6 months from the date of this agreement, all estimated fees, costs and charges set forth in Paragraph 5 shall be reviewed and revised if necessary. In the event Applicant has not secured final land use approval for the project from the City or County, recorded a final map and diligently commenced construction of improvements required by those agencies and the District prior to expiration of one year from the date of this agreement, the District may, at its option, either retract financial certifications issued to City, County and State agencies and terminate this agreement or require amendment of this agreement and revision of all costs contained herein. The Applicant shall pay any balance due upon demand or furnish a guarantee of such payment satisfactory to the District.

8. **Extensions of Time**: All extensions of time granted by the City or County for the Applicant to comply with conditions of land use approval or to construct improvements pursuant to a subdivision improvement agreement shall require concurrent extensions of this agreement and shall be cause for review and revision of all water facilities costs set forth in Paragraph 5 hereof. The Applicant shall apply to the District for extension of this agreement prior to approval of the Applicant's request for such extensions by either the City or the County.

9. **Delay or Failure to Complete**: If the District determines that there has been undue delay in completion of any work to be performed by Method A, or a failure to complete the same within a reasonable time, it may demand that Applicant forthwith

either complete all such work or pay to District the District's estimate of the entire amount required to complete all such work. District's determination upon the question of undue delay or failure to complete shall be final and binding upon Applicant. If Applicant fails to comply with said demand within a reasonable time, District may take possession of all parts of the project and may complete it at the expense and for the account of Applicant.

10. **Property and Rights-of-Way**: Applicant must furnish District all necessary and suitable real property and rights-of-way required by Chapter 11.40 of the Marin Municipal Water District Code at least 30 days prior to start of construction, as follows:

> **"A deed from the fee owner(s) to District granting a pipeline and access right-of-way over the route of all facilities not falling within publicly dedicated and accepted streets. If, for any reason, such deed cannot be obtained, District will accept a final court decree (to be obtained at Applicant's sole cost and expense) establishing such pipeline and access right-of-way".**

11. **Changes in Estimated Costs - Additional Deposits**: At any time or times prior to completion of installation of the facilities, whether or not the plans and specifications have been changed, District may revise its estimate of any item of estimated cost payable by Applicant to District. If a revised estimate is greater than the amount previously paid, Applicant must pay the excess to District within 30 days after District requests an additional deposit. If the revised estimate is less than the amount previously paid, District will credit the difference to any account then owed by Applicant, or if no such account exists, will refund said difference to Applicant as provided in Paragraph 14.

12. **No Work to be Done Prior to Compliance**: No work shall be performed nor installation made prior to Applicant's delivery to District of all fees, charges, deposits, bonds, and guarantees required by Paragraph 6 nor prior to Applicant's furnishing to District all property and rights-of-way required by Paragraph 10, nor after 30 days has elapsed from District's request for additional deposit pursuant to Paragraph 11 unless said additional deposit has been made.

13. **Termination for Failure to Deliver Deposits, Bonds, Etc**.: Failure to deliver to District any fees, charges, deposit, bond, guarantee, property, or right-of-way, required by Paragraph 6 or 10 within the times set forth in said paragraphs, or failure to commence installation of facilities within the time set forth in Paragraphs 7 and 20, shall constitute a material breach of this agreement for which this agreement may be terminated by District without prior notice.

14. **Payment of Actual Costs:** Upon completion of installation of the facilities, District will determine the actual amount of its costs and expenses thereby incurred. If

the actual amount exceeds the estimate previously paid, Applicant will pay to District the amount of such excess promptly upon demand. If the actual amount is less than the estimate previously paid, District will, upon completion and acceptance of the facilities, credit any excess money to any account then owed by Applicant or refund it. District's determination of such costs and expenses shall be final and binding provided that such determination shall be made upon the basis of generally accepted accounting principles consistently applied and shall be free of arithmetical error. In the event a performance bond or certificate of deposit is being held, it likewise will be released to Applicant upon acceptance of the work by District to the extent that it has not been used or required.

15. **No Interest on Deposits**: No interest shall accrue to or be paid to Applicant for any funds deposited with District pursuant to this agreement except insofar as required by Government Code 53079.

16. **Right to Approve Contractor**: In the event installation is to be made or work done under Method A, District reserves the right to approve or disapprove of the contractor or forces to be used; and no installation may be made except by those approved by District.

17. **Applicant's Responsibility**: Applicant shall take all responsibility for work under this agreement; shall bear all cost or loss resulting to him or to District on account of the nature or character of the work, through timeliness with which Applicant's contractor pursues the work, or because of the nature of the ground in or on which the work is done is different from what is assumed or expected, or on account of the weather, flood, earthquake, landslide, subsidence, unforeseen difficulties, accidents, or any other causes; and Applicant shall assume the defense of, and indemnify and save harmless District and its officers, agents, and employees from all claims of any kind arising from the approval of, letting of bids for the performance of work under this agreement, and the District's approval of this Agreement for the benefit of Applicant, including, but not limited to, any challenges under the California Environmental Quality Act, claims for personal injury, death, property damage, loss of use, and loss of business, and including all such claims as may be asserted by officers, agents or employees of Applicant, his contractor or subcontractors, District, or third parties.

Applicant agrees to provide in any contract entered into with any other party for the performance of work under this agreement, that all work be done pursuant to terms of the Standard Specifications of District, and in compliance with the mitigation measures set forth in the approved Mitigation Monitoring and Reporting Progam and that such other party indemnify and save harmless District and its officers, agents, and employees from all claims of any kind arising from performance of said contract or this agreement, including claims for personal injury, death, property damage, loss of use and loss of business, and including all such claims as may be asserted by officers, agents, or employees of Applicant, his contractor or subcontractors, District, or third parties for failure to so provide in any contract let by Applicant.

Applicant agrees to comply with that section of the Standard Specifications requiring public liability insurance which is primary and underlying to District's insurance and specifically naming District as an additional insured.

Before work is commenced, Applicant shall furnish District with a certificate of insurance demonstrating compliance with the worker's compensation insurance and public liability insurance requirements set forth in the Standard Specifications.

18. **Prevailing Wages**: Pursuant to Section 1770 et seq of the Labor Code of the State of California, the Contractor and all subcontractors under him shall pay not less than the prevailing wage rate. The Contractor shall forfeit to the District a penalty, $25 for each laborer, workman, or mechanic employed for each calendar day or portion thereof such laborer, workman, or mechanic is paid less than the prevailing wage rate for any work done under this contract by him or by any subcontractor under him. Contractor shall submit to the District completed certified payrolls on a weekly basis.

19. **Grade Established**: No work shall be performed or installation made until street subgrades have been established and until curbs and gutters have been installed.

20. **Commencement of Installation**: Applicant must commence installation of the facilities provided for herein within one year after execution of this agreement. Applicant shall give notice to District at least two work days before initially commencing work under this agreement. District shall be notified when work is stopped and when it is started again.

21. **Furnishing of Materials**: All materials will be supplied by District at District's Corporation Yard or Pipe Yard and at replacement cost. Risk of loss of, or damage to materials shall pass to Applicant at the time and place of delivery. Replacement cost will be based on the "moving average unit price" method employed by District.

22. **Inspection by District**: District shall provide an inspector to inspect the installation of facilities. The cost of inspection shall be charged against the job. No part of the facilities installed by Applicant shall be covered or obstructed until same has been inspected and approved by the District inspector.

23. **Acceptance**: District assumes no obligation as to maintenance of the facilities included in this agreement until such time as they are formally accepted. Applicant will be notified in writing of acceptance of the work at such time as all facilities are satisfactorily installed in accordance with the plans and specifications and all paving work is completed. Any cost incurred by District necessitated by emergency or other repairs prior to final acceptance by District will be charged against Applicant.

24. **Title**: Immediately upon acceptance, all right, title and interest in the pipeline extension and all other facilities herein mentioned shall vest in District.

25. **Fire Hydrants**: All fire hydrants will be turned over to the local public agency having control of public fire protection in the area, to be operated and maintained by it the same as other hydrants in the area.

26. **Area Not to be Served Before Acceptance**: Nothing herein contained and no temporary service from any facility herein provided for and no installation provided for herein shall be construed as an agreement or undertaking on the part of District to serve Applicant's property prior to the time this contract shall have been performed in its entirety by Applicant and the facilities shall have been accepted by District.

27. **No Refunds**: No refunds will be made from the sale of the water from this extension.

28. **Dispute Resolution**: Any dispute or claim in law or equity between District and Applicant or Contractor arising out of this agreement, if not resolved by informal negotiation between the parties, shall be mediated by referring it to the nearest office of Judicial Arbitration and Mediation Services, Inc. (JAMS) for mediation. Mediation shall consist of an informal, non-binding conference or conferences between the parties and the judge-mediator jointly, then in separate caucuses wherein the judge will seek to guide the parties to a resolution of the case. If the parties cannot agree to a mutually acceptable member from the JAMS panel of retired judges, a list and resumes of available mediators numbering one more than there are parties will be sent to the parties, each of whom will strike one name leaving the remaining name as the mediator. If more than one name remains, JAMS arbitrations administrator will choose a mediator from the remaining names. The mediation process shall continue until the case is resolved or until such time as the mediator makes a finding that there is no possibility of resolution.

At the sole election of the District, any dispute or claim in law or equity between District and Applicant or Contractor arising out of this agreement which is not settled through mediation shall be decided by neutral binding arbitration and not by court action, except as provided by California law for judicial review of arbitration proceedings. The arbitration shall be conducted in accordance with the rules of Judicial Arbitration and Mediation Services, Inc. The parties to an arbitration may agree in writing to use different rules and/or arbitrators.

This provision is intended to be severable. If this provision is determined by a court of competent jurisdiction to be illegal or invalid for any reason whatsoever, it shall be severed from this agreement and shall not affect the validity of the remainder of the agreement.

29. **Merger**: This writing is intended both as the final expression of the agreement between the parties hereto with respect to the included terms of the agreement, pursuant to California Code of Civil Procedure Section 1856, and as a complete and exclusive statement of the terms of the agreement. No modification of this agreement shall be effective unless and until such modification is evidenced by a writing signed by both parties.

30. **Attorney's Fees**: In the event of legal action by District to collect any sums due from Applicant hereunder, the prevailing party shall be entitled to reasonable attorney's fees to be set by the court.

31. **Interest on Unpaid Accounts**: Any monies owed the District shall begin accruing interest sixty days after the first billing date. Said interest will be the rate District earns on its investments plus one percent, but shall in no event exceed 10% per annum.

32. **Time of the Essence**: Time is of the essence.

33. **Non-Transferable**: This agreement applies only to the parcel(s) of land hereinabove described and may not be transferred to any other parcel(s) of land.

34. **Deadline to Activate Service**: The service connections covered under this agreement must be put to the use for which application was made within eight years of the completion of the facilities installed pursuant to this agreement. If activation is not achieved in the time specified, the District will cause the service to be abandoned and will refund the connection fees, less the cost of abandoning the service, to the owner of record or his designee.

35. **Water Conservation**: Applicant shall install high-efficiency toilets not to exceed 1.28 gallons per flush, showerheads that use not more than 2.0 gallons of water per minute, kitchen and lavatory faucets that use not more than 1.5 gallons of water per minute, and pressure-reducing valves set to maintain a maximum of 60 p.s.i. static pressure at the regulator outlet. Drought-tolerant landscaping and drip irrigation shall be used except where demonstrated to be infeasible. Applicant shall install a recycled irrigation system designed to deliver recycled water for irrigation for the common areas and individual parcel landscaping within the project. All water conservation measures shall comply with the provisions of District rules and regulations in effect at the time water service is granted.

36. **Landscaping**: Final landscape and irrigation plans must be submitted and reviewed by District for compliance with District's current landscape water conservation ordinance. All plans must pass ordinance review before water service is granted to any portion of this project.

37. **System Protection**: Applicant shall install and maintain backflow protection on water services if deemed necessary by District.

38. **High Pressure**: Water service to said project will be granted only under the District's "High Pressure Application".

39. **Service Connections**: The individual service connections under this agreement will be granted under the District's rules and regulations in effect at the time service is granted.

40. **Satisfaction of District**: Whenever, in this agreement, the satisfaction of District must be met and District or its Board of Directors makes a determination in good faith of satisfaction or dissatisfaction, such determination shall be final and binding upon all parties hereto.

LUCAS VALLEY-TALUS LLC
2000 CROW CANYON PL STE 350
SAN RAMON CA 94583

By_____
Name and Title

MARIN MUNICIPAL WATER DISTRICT

By_____
President, Board of Directors

By_____
Secretary

ESA

180 Grand Avenue
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memorandum

date	October 27, 2021
to	Mr. Joseph Eischens, Marin Municipal Water District
from	Jill Hamilton Dave Davis, AICP
subject	Review of CEQA Documentation for the Talus Reserve – Erin Drive Project

Attachments

1. Vicinity Map
2. Project Maps from the Final EIR Amendment to the *Oakview Master Plan Tentative Map Amendment to the Final Environmental Impact Report*
3. Site Plan for the Currently Proposed Talus Reserve-Erin Drive Project

Summary

This memorandum concerns environmental documents for the former Oakview Master Plan project in Marin County near Lucas Valley Road and U.S. Highway 101. Lucas Valley – Talus, LLC is moving forward with a portion of the Master Plan, the Talus Reserve – Erin Drive Project, and is seeking to secure a pipeline extension agreement (PEA) and water service from Marin Municipal Water District (MMWD or District). The County of Marin approved the Master Plan, of which the Talus Reserve – Erin Drive Project is a part. Water service and fire protection for the development will require a pipeline extension from MMWD's existing facilities in Erin Drive and Gallinas Drive.

ESA has reviewed the project's EIR and associated approval documents and contacted the Marin County Planning Department and Department of Public Works as a part of our evaluation. This memorandum includes background information on the project, compliance documentation prepared pursuant to the California Environmental Quality Act (CEQA), and approval actions for the project; and review of CEQA and project approval documentation completed for the project with a focus on the specific actions to be taken by MMWD.

MMWD is a Responsible Agency as defined in the CEQA Guidelines with respect to the proposed Pipeline Extension Agreement (PEA) for the Talus Reserve – Erin Drive Project. The District has discretionary authority to approve or deny the PEA, which constitutes a project under CEQA (§15378), and is therefore subject to environmental compliance. Prior to reaching a decision on the PEA, the Board must consider the environmental effects of the project as shown in the project's EIR documentation.

Assuming all adopted mitigation measures and conditions of approval assigned to the project by Marin County are implemented, there would be no significant impacts attributable to the Talus Reserve -- Erin Drive Project

associated with issuance of a PEA for a pipeline extension from MMWD's existing facilities in Erin Drive and Gallinas Drive.

Attachment 1 presents a vicinity map for the Talus Reserve – Erin Drive Project.

Project History and CEQA Background

- In 1999, an application to subdivide a property located at 200 Lucas Valley Road, identified as Assessor's Parcel No. 164-270-03 and located at the northwestern quadrant of the U.S. Highway 101 (US 101)/Lucas Valley Road interchange, was submitted to Marin County, referred to as the Oakview Project Master Plan (Oakview Project or Master Plan). This initial version of the Oakview Project included subdividing the 106.3-acre property into two parcels. Parcel 1 would include 15.3 acres reserved for eventual site development with a maximum of 28 detached single-family residences, 1.8 acres of public right of way and 34.8 acres of open space for a total of 51.9 acres. Parcel 2 would consist of 20.1 acres reserved for eventual development of a maximum of 94,400 square feet of administrative/office development, 9.0 acres reserved for future interchanges improvements to US 101, and 34.3 acres of open space for a total of 54.4 acres.

- On March 28, 2001, the County published a Draft EIR for the Oakview Project and circulated it for review to the State Clearinghouse, state and local agencies and special districts including MMWD, surrounding property owners, and other interested groups and individuals.

- The project sponsors subsequently agreed to submit project design options to address comments received on the Draft EIR.

- In June 2002, the project sponsors submitted design options, including an optional design for an assisted living residential use in lieu of the proposed office use that is intended to be compatible with the residential land use designation in the City of San Rafael's General Plan and proposed as an option to affordable housing; and an optional wetlands restoration plan that includes off site wetlands restoration. On June 27, 2002, the County distributed for review the Final EIR and Response to Comments. **Attachment 2** presents project site maps from the Final EIR. In response to comments received on the Final EIR the Marin County Planning Commission directed staff to provide additional information pertaining to cumulative impact analysis.

- In December 2002, the Community Development Agency prepared a Final EIR Response to Comments Amendment providing responses to all of the issues raised on the Final EIR. The Final EIR Response to Comments Amendment was distributed to the State Clearinghouse, state and local agencies and special districts including MMWD, and other interested groups and individuals.

- In April 2003 and June 2004, the project sponsor submitted a revised application and letter request amending the Master Plan. The revised Project subdivided the 106.3-acre property into two lots for future residential and assisted living development. Lot 1 reserves 15.3 acres of a maximum of 28 detached single-family residential lots, 1.8 acres of public right-of-way, 34.2 acres of open space, and 0.6 acres for freeway interchange improvements for a total of 51.9 acres. Lot 2 reserves 11.0 acres for a maximum 94,400 square foot assisted living facility, 34.6 acres of open space, and 8.8 acres for freeway interchange improvements, for a total of 54.4 acres. The residential component of the Master Plan designates an area for the future development of a 28-unit residential subdivision that would be accessed by a public roadway extension to Erin Drive. The Master Plan includes standards for the future residences (e.g., proposed building envelopes, maximum floor area of 4,500 square feet per home). The assisted living component of the Master Plan would provide for future development of a maximum 150-unit retirement community. The assisted living

community would be accessed Marinwood Avenue. A second amendment to the Final EIR was prepared for the revised Project.

- On January 11, 2005, the Marin County Board of Supervisors certified the EIR for the Oakview Project Master Plan and Land Division (Tentative Map) as complete and adequate and adopting the MMRP. On the same date, the Board of Supervisors adopted an ordinance modifying the Project and adopting conditions of Project approval. The conditions of project approval include the requirement that the applicant obtain approval of a pipeline extension agreement with MMWD to extend water service to the property. The Project was approved based on a residential density of 0.97 units per acres, based on 103 residential units including 28 single family residential units and 75 independent assisted living units. After the Board's approval, a parcel map was recorded creating the subject property, a property to be developed as an assisted living facility, a parcel reserved for Caltrans to build an intersection, and an open space parcel that was dedicated to the Marinwood Community Services District for ongoing public use. As part of the ordinance approving the Oakview Master Plan, the Board of Supervisors adopted a number of conditions of approval. With regard to MMWD and the provision of water service to future development of the residential component of the Master Plan on Parcel 1, the ordinance requires that the applicant must demonstrate compliance with the following conditions:

    - The landscape plan for the area of land west of the Erin Street extension shall consist of trees that are planted outside of the existing public utility easement and tree types where the drip line at maturity will not extend into the public utility easement.

    - The landscape plan shall incorporate predominantly fire-resistive, native, and drought tolerant plant species.

- On January 19, 2005 a Notice of Determination was filed with the Marin County Clerk.

- On March 9, 2009, the Marin County Planning Commission approved the Oakview Vesting Tentative Map and Precise Development Plan, which authorized the subdivision of land to develop 28 single family residences.

Review of CEQA Documents Completed for the Project with respect to the Pipeline Extension Agreement

This section is based on review of the following documents:

- *Oakview Master Plan Use Permit Vesting Tentative Map Final Environmental Impact Report.* County of Marin, June 2002. Includes Draft EIR and Final EIR.

- *Oakview Master Plan Use Permit Vesting Tentative Map Final Environmental Impact Report Response to Comments Amendment.* County of Marin, December 2002.

- *Oakview Master Plan Tentative Map Amendment to the Final Environmental Impact Report*. County of Marin, November 2002

- Resolution No. 2005-05 Approving an Amendment to and Certifying the Oakview Final Environmental Impact Report, 200 Lucas Valley Road, San Rafael, Assessor's Parcel 164-270-03.

- Board of Supervisors packet containing, letter from the Marin County Community Development Agency to the Marin County Board of Supervisors and including the proposed resolution approving an amendment to and Certifying the Oakview Final Environmental Impact Report, the MMRP, proposed ordinance approving the Oakview Master Plan, and proposed resolution approving the Oakview Land Division.

- *Notice of Determination for the Oakview Master Plan Use Permit Vesting Tentative Map.* Marin County, January 19, 2005.

Consistency of Talus Reserve – Erin Drive Project with Project Evaluated in CEQA Documentation. Lucas Valley – Talus, LLC, is currently moving forward with a portion of the Master Plan: The Talus Reserve – Erin Drive Project (refer to **Attachment 3**). The Talus Reserve – Erin Drive Project involves the construction of 28 single-family residential units along a proposed extension of Erin Drive from Gallinas Drive. Consistent with the ordinance approving the project, the maximum allowable building area is as follows:

- For the land covered by Lots 1 through 12 the maximum allowable building area shall not exceed 3,000 square feet per residential unit. The maximum enclosed building area may be increased to 3,500 square feet if a second unit with no interior connection to the main unit is constructed.

- The maximum allowable building area for the land area that is covered by Lots 13 to 28 shall not exceed 3,500 square feet. The maximum enclosed building area may be increased to 4,000 square feet if a second unit with no interior connection to the main unit is constructed.

As currently planned and as shown in Attachment 3 of this memorandum, the Talus Reserve – Erin Drive Project appears to reflect the residential development proposed in the northern portion of Master Plan project site that was evaluated as part of the EIR and approved by Marin County.

Water Service. Regarding water service, the EIR concluded that no new water facilities (other than the pipeline extension) would be necessary and that MMWD had sufficient supplies to serve the project, and that the project would not add to cumulative water service impacts. The EIR states the following regarding the Master Plan as described in the Draft EIR:

> *The existing water system would need to be expanded to serve proposed development at the project site. Existing MMWD facilities near the site would be able to serve to an elevation of 210 feet. No homes or fixtures within homes are expected above this level. No new water facilities would be required, except for tie-ins to the existing water distribution system in the area.*
>
> *The project is estimated to result in an increased demand of about 20 acre-feet 9 of water per year. This estimate does not include water used for landscape irrigation as well as for non-potable uses in the commercial buildings. The MMWD ~will require use of recycled water (available from the main running adjacent to the site under Lucas Valley Road) for irrigation. Irrigation consumption cannot be determined until submittal of landscaping plans which would occur after Master Plan review. The MMWD has an involved process to determine water availability for a specific site. MMWD developed its overall water supply plan based on current zoning throughout its service area and, to be conservative, assumed maximum buildout of all parcels in the district. MMWD then estimated water demand for the year 2025, developed a water supply plan based on the expected demand, and obtained a firm water supply for the water demand through 2025. This process assumed project site development. MMWD water supplies are adequate to serve the project. Therefore, project-generated water demand would be a less-than-significant impact. The MMWD estimated that the 28 housing units would use approximately 0.38 acre-foot a year each for a total of 10.64 acre-feet a year. Commercial development would use approximately 0.10 acre-foot per 1,000 square feet of building area or about 9.4 acre-feet a year for the 94,400 square feet of commercial space proposed.*

MMWD submitted a comment letter on the Draft EIR.[1] MMWD's letter indicated that it had a few minor comments relating to aged data cited in the EIR (e.g., references to ordinances that had been superseded). The Final EIR contains revisions to the Draft EIR addressing MMWD's comments.

On the basis of the analysis presented in the EIR, the ordinance approving the revised Master Plan found that MMWD has sufficient water supplies for domestic and fire protection purposes to service the proposed development.

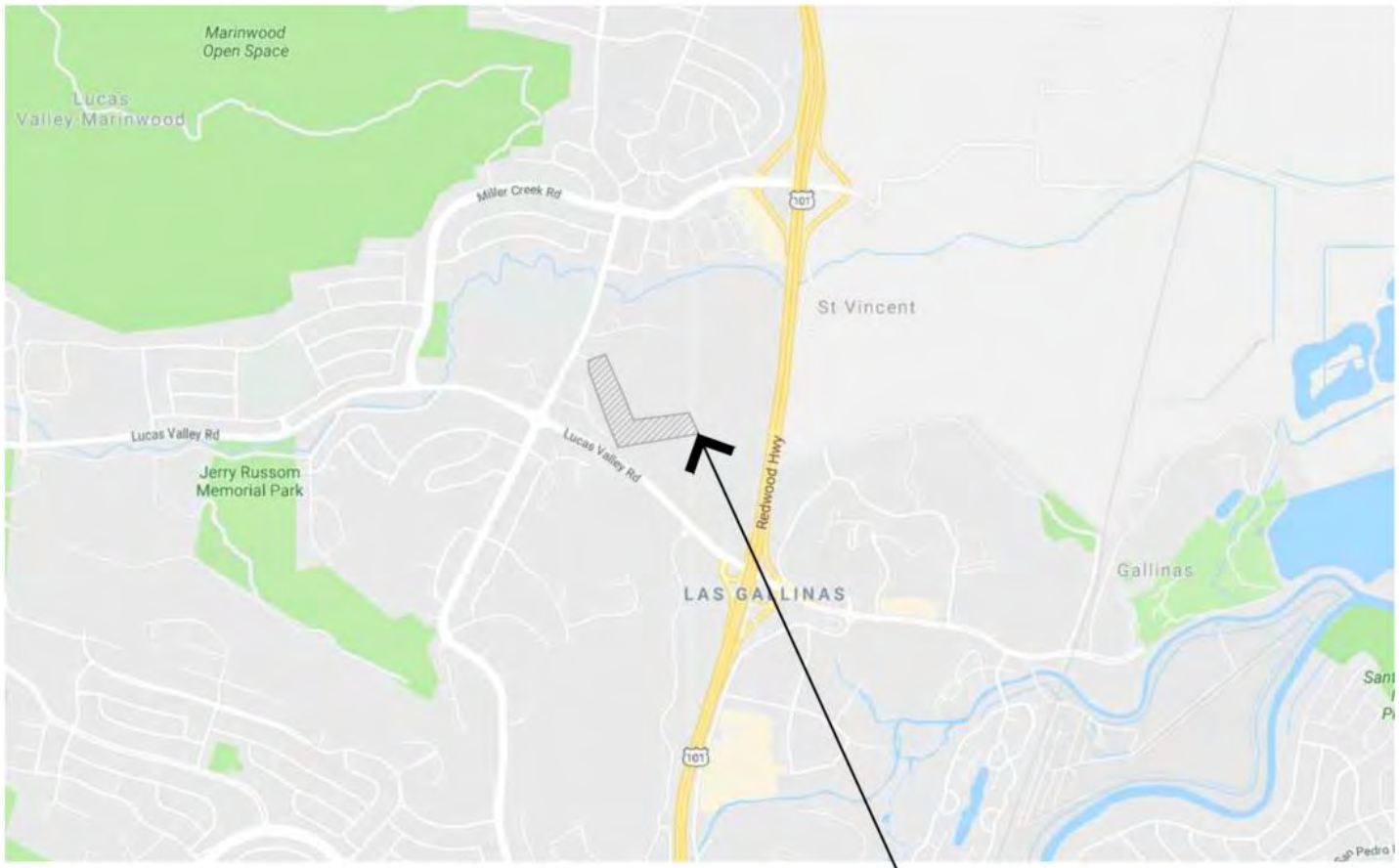
Significant Impacts. As documented in the Notice of Determination filed for the Project and elsewhere, the County Board of Supervisors determined that the Project in its approved form would not have a significant effect on the environment, and that mitigation measures identified in the EIR were made a condition of approval for the Project. The project itself evolved through the CEQA and project approval processes to address environmental and community concerns. The MMRP adopted for the project contains mitigation measures to mitigate significant impacts in the following topical areas: geotechnical issues, hydrology and drainage, water quality, biological resources, visual and aesthetic quality, air quality, noise, public services (related to wildland-building fire exposure), and transportation and circulation.

Assuming all adopted mitigation measures and conditions of approval assigned to the project by Marin County are implemented, there would be no significant impacts attributable to the Talus Reserve -- Erin Drive Project associated with issuance of a PEA for a pipeline extension from MMWD's existing facilities in Erin Drive and Gallinas Drive.

1 Refer to Letter 4 in the *Oakview Master Plan Use Permit Vesting Tentative Map Final Environmental Impact Report,* June 2002 [pdf page 437].

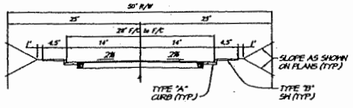
ATTACHMENT 1: VICINITY MAP

LOCATION MAP



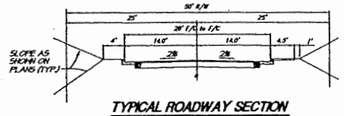
PROJECT SITE

ATTACHMENT 2: PROJECT MAPS FROM FINAL EIR AMENDMENT



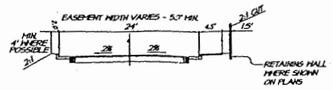
TYPICAL ROADWAY SECTION

ERIN DRIVE -BULB TO END
SCALE: 1" = 10'



TYPICAL ROADWAY SECTION

ERIN DRIVE -TO BULB
SCALE: 1" = 10'



TYPICAL ROADWAY SECTION

ROADWAY "C"
SCALE: 1" = 10'

MITIGATION ALTERNATIVE
GRADING AND DRAINAGE PLAN

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GRAPHIC SCALE

GEOTECHNICAL LEGEND:

- Qc — COLLUVIAL SOILS
- Qls — LANDSLIDE DEPOSIT (KLEINFELDER)
- Ks — CRETACEOUS SEDIMENTS
- ~~~ — ZONE OF SURFACE SEEPAGE (HERZOG)
- — GULLEY EROSION
- DF — DEBRIS FLOW (HERZOG)
- C — POTENTIAL BEDROCK LANDSLIDE AREA C (KLEINFELDER)
- D — POTENTIAL BEDROCK LANDSLIDE AREA D (KLEINFELDER)

NOTE: GEOLOGIC FEATURES AS DESCRIBED IN GEOTECHNICAL REPORT BY RONALD HERZOG & ASSOC. DATED MARCH 21, 1985; IN GEOTECHNICAL REPORT BY KLEINFELDER INC., DATED NOVEMBER 14, 1997, AND MODIFIED AS A RESULT OF RECENT RECONNAISSANCE CONDUCTED ON DECEMBER 17, 1999.

LEGEND:

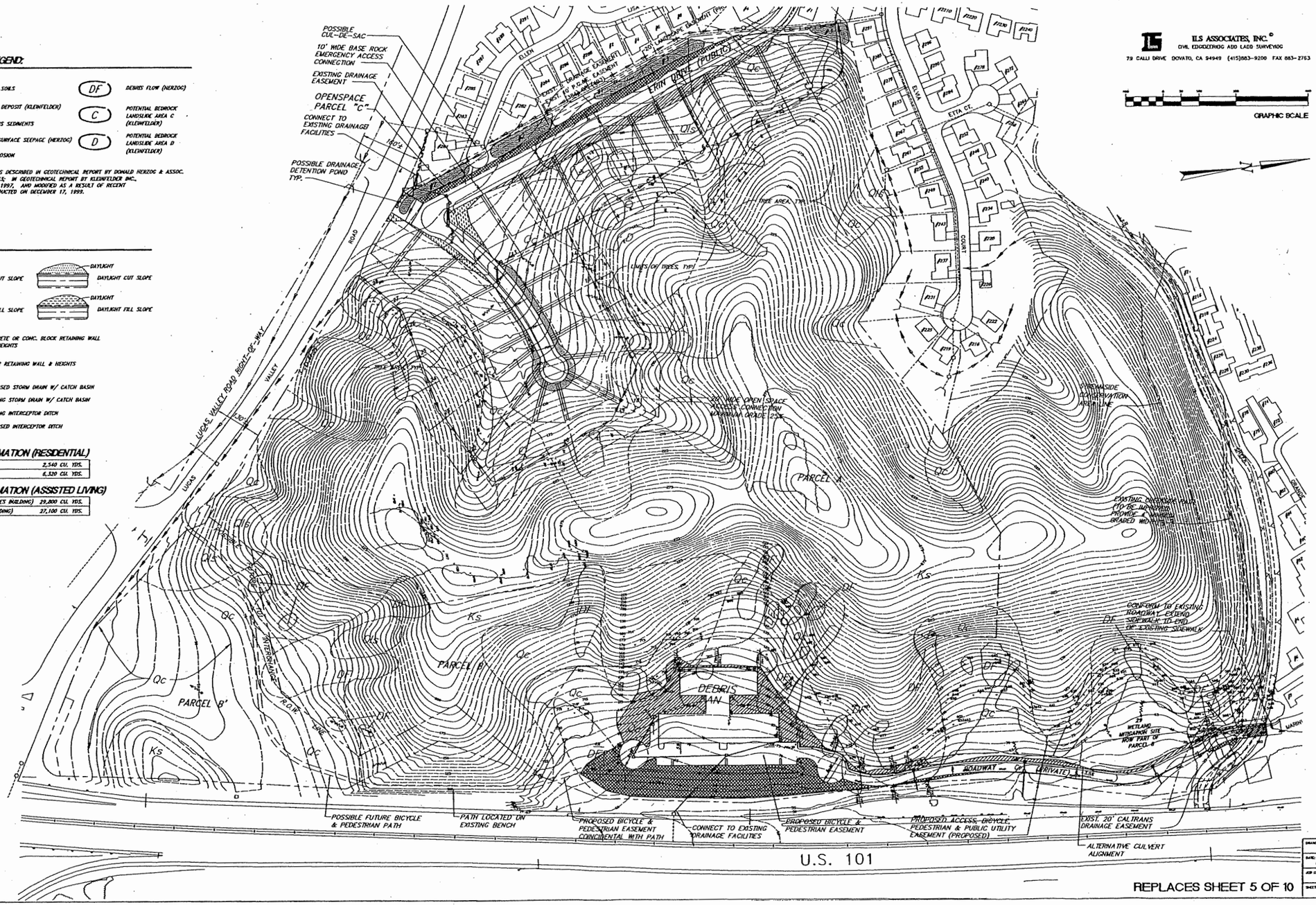
- 2:1 CUT SLOPE
- DAYLIGHT CUT SLOPE
- 2:1 FILL SLOPE
- DAYLIGHT FILL SLOPE
- CONCRETE OR CONC. BLOCK RETAINING WALL AND HEIGHTS
- TIMBER RETAINING WALL & HEIGHTS
- PROPOSED STORM DRAIN W/ CATCH BASIN
- EXISTING STORM DRAIN W/ CATCH BASIN
- EXISTING INTERCEPTOR DITCH
- PROPOSED INTERCEPTOR DITCH

EARTHWORK ESTIMATION (RESIDENTIAL)

TOTAL EXCAVATION	2,540 CU. YDS.
TOTAL FILL	6,320 CU. YDS.

EARTHWORK ESTIMATION (ASSSISTED LIVING)

TOTAL EXCAVATION (INCLUDES BUILDING)	29,800 CU. YDS.
TOTAL FILL (INCLUDES BUILDING)	27,100 CU. YDS.



A.P.N. 164-270-03
FIELD BOOK NO. 168
DWG. FILE: N:\PROJ\5140\DWG\TREE8

DRAWN	A.J.P.
DATE	06/26/03
JOB NO.	5140
SHEET NO.	3 OF 7

REPLACES SHEET 5 OF 10

MITIGATION ALTERNATIVE
ALTERNATIVE ACCESS
RESIDENTIAL AREA LAYOUT

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GRAPHIC SCALE

NOTE:
WHERE CLUSTER IS INDICATED, ONE MAIN TRUNK EXISTS ABOVE GROUND WITH MULTIPLE TRUNKS LESS THAN 6" GROWING OUT OF THE MAIN TRUNK. SIZE OF CLUSTER EQUALS MAIN TRUNK SIZE AT GROUND. WHERE MULTIPLE TRUNKS ARE INDICATED, ONE MAIN TRUNK EXISTS ABOVE GROUND WITH MULTIPLE TRUNKS, 6" OR GREATER AS LISTED, GROWING OUT OF MAIN TRUNK.

TREE INVENTORY

1	20" OAK	56	34" OAK	340	12",24" OAKS
2	2-8",2-13" OAKS	57	2-12",14" OAK	341	6",10" BAYS
3	2-16",7",9",10" OAKS	58	24",30",36" OAK	342	14" BAY
4	20" OAK	59	10",12" OAKS	343	12" BAY
5	14" BAY, 2-6" OAKS	60	12" OAK	758	6",10",3-12" OAKS
6	2-12" OAKS	61	14" OAK	783	6" BAY
7	10" OAK	62	18" OAK	784	6" OAK
8	2-3" BAYS, 12",13" OAKS	63	24" OAK	787	6",8",10",12" OAKS
9	16" OAK	64	24" OAK	788	8" OAK
10	2-7" OAKS	65	24" OAK	791	12" OAK
11	6-7" OAKS	66	24" OAK	792	2-12",16" OAKS
12	3",5",11" OAKS	67	2-6",12" OAKS	793	20" OAK
13	12" OAK	68	10",2-12" OAKS	799	12",20" OAKS
14	13" OAK	72	30" BAY CLUSTER	800	2-8" OAKS
15		73	14" OAK	801	6" OAK
16	8" OAK	74	24" OAK	849	8" OAK
17	9" OAK	147	16" OAK	850	2-12" OAKS
18	2-6" OAKS	148	2-16",12" OAK	858	8",12" OAKS
19	8",14" BAY	149	14" BAY	859	12" OAK
20	8" OAK	150	10" BAY	862	16" OAK
21	11" OAK	151	12" OAK	867	2-16",12",20",18",2-14",8" OAKS
22	12",26" OAK, 2 BAYS	152	6",14" BAYS	907	8" OAK
23	6",9" BAY	219	10" OAK	908	6" OAK
24	28" BAY	228	12" OAK	909	8" OAK
25	7",8" OAK	229	8",12" OAKS	910	10" OAK
26	8" OAK	230	10" OAK	911	20" OAK
27	7" OAK	231	14",18" OAKS	912	12" OAK
28	21" OAK	252	8" OAK	929	2-10",20" OAKS
29	8",11",2-5" OAKS	253	10" OAK	930	6",8" BAYS
30	16" OAK	274	26" BAY CLUSTER	931	8" OAK
31	4",8",16" OAKS	275	8" BAY	932	10" OAK
32	7",14" OAKS	276	10" BAY		
33	12" OAK	277	2-16",12",16" OAKS		
34	10" OAK	278	12",26" BAYS		
37	18" OAK	281	6",12" OAK		
38	2-8",8",12",16" OAKS	282	10" BAY		
42	36" OAK	283	16",18" OAKS		
43	28" OAK	288	2-10",12",14" oaks		
44	7",14",26" OAK	289	10" OAK		
45	2-13",2-14",15",17",19",30" OAKS	303	8",20" OAKS		
46	4",4-6",8" OAKS	304	10",12",14",18" OAKS		
47	2-14",18" OAKS	305	10" OAK		
48	22",27" OAKS	308	12" BAY		
49	16",26" OAKS	338	10" BAY		
55	24" OAK	339	14" OAK		

TREES TO BE REMOVED - TOTAL NO. 0

DRAWN	A.J.P.
DATE	06/26/03
JOB NO.	5140
SHEET NO.	4 OF 7

REPLACES SHEET 6 OF 10

A.P.N.169-270-03
FIELD BOOK NO. 166
DWG. FILE: N:\PROJ\5140\DWG\TREEB

MITIGATION ALTERNATIVE
CONCEPTUAL LANDSCAPE PLAN

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GRAPHIC SCALE

LEGEND:

A EXISTING TREE COVER

MAJOR PORTIONS OF THE SITE ARE COVERED WITH EXISTING MATURE, NATIVE CALIFORNIA TREES, CONSISTING ALMOST EXCLUSIVELY OF CALIFORNIA BAY (UMBELLULARIA CALIFORNICA), COAST LIVE OAK (QUERCUS AGRIFOLIA), AND CALIFORNIA WHITE OAK (QUERCUS LOBATA). THERE ARE ALSO SOME OCCASIONAL, RANDOM CALIFORNIA BUCKEYE (AESCULUS CALIFORNICA), BIG LEAF MAPLE (ACER MACROPHYLLUM), AND BLACK OAK (QUERCUS KELLOGGII). A FAIRLY TREE SURVEY HAS BEEN PREPARED THAT SPECIFICALLY LOCATES AND IDENTIFIES EXISTING TREES THAT ARE IN THE GENERAL AREA OF, OR COULD BE AFFECTED BY, THE PROPOSED NEW CONSTRUCTION. DATA FROM THE TREE SURVEY IS DETAILED ON SHEET.

B STREET TREES

A FORMAL, IMMEDIATE STREET TREE PROGRAM WILL BE INITIATED ALONG THE NEW PUBLIC STREETS IN THE RESIDENTIAL AREA. THESE STREET TREES WILL BE MEDIUM HEIGHT, DEEP ROOTING, CANOPY-TYPE TREE SUCH AS MOLLY OAK (QUERCUS LOBATA) OR SCARLET OAK (QUERCUS COCCINEA) THAT WILL COMPLIMENT THE EXISTING OAK/BAY ENVIRONMENT. TREES WILL BE SPACED AT APPROXIMATELY 40'-45' ON CENTER. INSTALLATION OF THESE STREET TREES WILL BE THE RESPONSIBILITY OF THE INDIVIDUAL LOT OWNERS, AND WILL BE REQUIRED AS PART OF THEIR FRONT YARD LANDSCAPING.

C SCREEN/BUFFER PLANTING

TO PROVIDE SCREENING AND BUFFERING FOR THE EXISTING HOMES ON ELLEN DRIVE AND LISA COURT, RANDOM, INFORMAL CLUSTERS OF DROUGHT TOLERANT NATIVE TREES AND SHRUBS WILL BE PLANTED IN A 20' WIDE LANDSCAPE EASEMENT (HATCHED) AND DESIGNED SUCH AS BISHOP PINE (PINUS MURICATA), EVERGREEN OAK (LITHOCARPUS DENSIFLORUS) AND CHINESE PISTACHE (PISTACHIA CHINENSIS) WILL BE COMBINED WITH TREE-SHRUBS SUCH AS CAROLINA LAUREL CHERRY (PRUNUS CAROLINIANA) AND PACIFIC WAX MYRTLE (MYRICA CALIFORNICA), AND MEDIUM HEIGHT SHRUBS SUCH AS CALIFORNIA LILAC (CEANOTHUS SPP.), TOYON (HETEROMELES ARBUTIFOLIA) AND MANZANITA (ARCTOSTAPHYLOS SPP.).

ALL OF THESE PLANTINGS WILL B WATERED WITH A "DRIP" AND/OR "BUBBLER" IRRIGATION SYSTEM.

D ENTRY AREA LANDSCAPING

SPECIAL LANDSCAPING TREATMENT WILL BE PROVIDED AT THE ENTRY TO THE SUBDIVISION, EXTENDING FOR A MODERATE DISTANCE ALONG THE NORTH SIDE OF THE LUCAS VALLEY ROAD FRONTAGE. THIS LANDSCAPING WILL BE ARRANGED TO VISUALLY STRUCTURE THE ENTRY ZONE, AND TO HELP SCREEN AND BUFFER THE HOMES ALONG LUCAS VALLEY ROAD. EVERGREEN AND DECIDUOUS TREES SUCH AS TANBARK OAK (LITHOCARPUS DENSIFLORES) AND CHINESE PISTACHIA (PISTACHIA CHINENSIS) WILL BE COMBINED WITH TREE-SHRUBS SUCH AS CALIFORNIA LAUREL CHERRY (PRUNUS CAROLINIANA) AND PACIFIC WAX MYRTLE (MYRICA CALIFORNICA), MEDIUM HEIGHT SHRUBS SUCH AS CALIFORNIA LILAC (CEANOTHUS SPP.), TOYON (HETEROMELES ARBUTIFOLIA) AND MANZANITA (ARCTOSTAPHYLOS "HOWARD MCMINN"), AND GROUND COVERS SUCH AS DWARF COYOTE BRUSH (BACCHARIS PILULARIS "PIGEON POINT") AND CALIFORNIA LILAC (CEANOTHUS "ANCHOR BAY").

ALL PLANTINGS WILL BE WATERED WITH A "DRIP" AND/OR "BUBBLER" IRRIGATION SYSTEM.

E ADMINISTRATIVE/PROFESSIONAL LANDSCAPING

IT IS INTENDED THAT THE MATURE, EXISTING TREES ON THE SITE REMAIN AS THE DOMINANT LANDSCAPE FABRIC, WITH ALL NEW PLANTINGS DESIGNED TO COMPLIMENT AND REINFORCE THEIR PRESENCE. BUILDINGS, ROADS, PARKING LOTS, AND RELATED IMPROVEMENTS HAVE BEEN SITED SO AS TO CREATE MINIMAL DISTURBANCE TO THESE EXISTING TREES. THE TWO OFFICE BUILDINGS HAVE BEEN LOCATED IN OPEN AREAS, AND NESTLED COMFORTABLY AGAINST THE EXISTING TREE LINE. PARKING LOTS ARE FURTHER REMOVED FROM THE EXISTING TREES, AGAINST THE FREEWAY.

E1 BECAUSE OF THE RELATIONSHIP OF THE BUILDINGS TO THE EXISTING WOODLANDS, NEW LANDSCAPING AROUND THE BUILDINGS WILL RESEMBLE A REAL SENSE OF RESTRAINT, IN TERMS OF TYPES AND DENSITY OF PLANTINGS. FOUNDATION PLANTINGS WILL DEPEND LARGELY ON THE FINAL GRADING AT THE PERIMETERS OF THE BUILDINGS, BUT ON THE SLOPES AWAY FROM THE BUILDINGS, CLUSTERS OF NATIVE OAKS (QUERCUS AGRIFOLIA) WILL BE PLANTED TO AUGMENT THE EXISTING BAY/OAK ENVIRONMENT. OTHER TREES OFFERING SEASONAL COLOR SUCH AS WESTERN REDBUD (CERCIS OCCIDENTALIS) AND CHAMAEYELE (MALUS SPP.) WILL BE USED SPARINGLY AS ACCENTS. GRADING AROUND THE PERIMETER OF THE BUILDINGS WILL ALSO BE A CRITICAL ELEMENT IN DETERMINING THE TYPES OF GROUND COVERS TO BE USED. THE ENTRY COURT AREAS OFFER AN OPPORTUNITY TO DEVELOP A MORE ORNAMENTAL LANDSCAPE THEME.

E2 THE PARKING LOT AREAS WILL DEMAND A HIGHER INTENSITY OF NEW LANDSCAPING IN ORDER TO REDUCE THEIR APPARENT MASS AND TO SOFTEN THEIR IMPACT ON THE SITE, AS WELL AS TO CREATE SHADE AND VISUAL APPEAL. GENEROUS QUANTITIES OF DEEP ROOTING, DECIDUOUS, CANOPY-TYPE TREES SUCH AS RED OAK (QUERCUS RUBRA), EUROPEAN HACK BERRY (CELTIS AUSTRALIS), AND CHINESE PISTACHIA (PISTACHIA CHINENSIS) WILL BE INSTALLED IN PLANTER STRIPS AND PLANTER ISLANDS WITHIN THE PARKING LOTS. OTHER TREES OFFERING SEASONAL COLOR WILL BE USED SPARINGLY AS ACCENTS.

E3 LANDSCAPING ALONG THE FREEWAY BOUNDARY CONSISTS LARGELY OF SLOPE PLANTINGS DESIGNED FOR EROSION CONTROL AND LIGHT TO MODERATE SCREENING. GROUND COVERS SUCH AS COYOTE BRUSH (BACCHARIS PILULARIS) AND FT. RICHES CEANOTHUS (CEANOTHUS GLORIOSUS), AND SHRUBS SUCH AS CALIFORNIA LILAC (CEANOTHUS SPP.) AND TOYON (HETEROMELES ARBUTIFOLIA) WILL STABILIZE THE SLOPES, WHILE INFORMAL CLUSTERS OF CALIFORNIA LIVE OAK (QUERCUS AGRIFOLIA), EMBARK OAK (LITHOCARPUS DENSIFLORES) AND BISHOP PINE (PINUS MURICATA) PROVIDE SOME LIGHT SCREENING AND SOFTENING OF THE SLOPE LINES, WHILE REINFORCING THE BASIC PALETTE.

ALL PLANTINGS WILL BE WATERED WITH AN AUTOMATICALLY CONTROLLED IRRIGATION SYSTEM COMPRISED OF A COMBINATION OF SPRAY, BUBBLER, AND DRIP CIRCUITS.

F EXISTING CREEKSIDE PATHWAY

THERE IS AN INFORMAL PATHWAY/TRAIL ALONG THE NOVELT WOODED MILLER CREEK CORRIDOR THAT IS PRESENTLY OVERGROWN AND LARGELY UNUSED. THIS TRAIL WILL BE CLEARED AND IMPROVED, AND MILLER CREEK WILL BE DESIGNATED AS A STREAM CONSERVATION AREA (SCA). IT IS ANTICIPATED THAT DISTURBANCE TO EXISTING RIPARIAN VEGETATION WILL BE MINIMAL, AND THE NATURAL CHARACTER OF THE SITE WILL BE MAINTAINED.

G FUTURE BICYCLE PATH

PROVISIONS HAVE BEEN MADE FOR A FUTURE BICYCLE PATH ROUTE, PROVIDING A CRITICAL LINK IN THE COUNTY WIDE BIKE NETWORK. FINAL LOCATION AND ALIGNMENT WILL BE DEVELOPED THROUGH CONSULTATION WITH MARIN COUNTY PLANNING.

TREE PROTECTION PLAN

FOR THE MOST PART, THE PROPOSED NEW IMPROVEMENTS HAVE BEEN LOCATED ON OPEN AREAS OF THE SITE, WELL CLEAR OF THE EXISTING TREE LINES. AS PART OF THE FINAL LANDSCAPE VEGETATION PLAN, SPECIFIC PROTECTION GUIDELINES WILL BE ESTABLISHED TO PROVIDE FOR THE PROTECTION OF THE EXISTING TREES DURING CONSTRUCTION. AS PART OF THIS PROCESS, ALL EXISTING TREES TO BE SAVED WILL BE IDENTIFIED AND MARKED PRIOR TO CONSTRUCTION, AND WILL BE PROTECTED DURING THE CONSTRUCTION PROCESS. SPECIFIC DETAILS OF THE TREE PROTECTION PLAN WILL BE PREPARED AS PART OF THE PRECISE PLAN.

UNDESIRABLE PLANT SPECIES

IN ORDER TO RETAIN, AS MUCH AS POSSIBLE, THE "MAGIC" FLAVOR OF THE SITE, CERTAIN UNDESIRABLE, NON-NATIVE PLANTS SUCH AS EUCALYPTUS, ACACIA, BROOM, PAMPAS GRASS, MONTEREY PINE, ETC. WILL BE DISCOURAGED AND/OR PROHIBITED. A DEFINITIVE LIST OF THESE UNSUITABLE PLANTS WILL BE PREPARED AS PART OF THE PRECISE PLAN. ADDITIONALLY, AN ERADICATION PLAN WILL BE IMPLEMENTED TO CONTROL THE ESTABLISHMENT AND SPREAD OF BROOM.

REVEGETATION OF SEASONAL GRASSES

ALTHOUGH MUCH OF EXISTING GRASSLANDS ON THE SITE HAVE BEEN DISTURBED BY INTENSIVE CATTLE GRAZING, STANDS OF PERENNIAL BUNCHGRASS REMAIN, DOMINATED BY PURPLE NEEDLEGRASS AND CALIFORNIA OATGRASS. LOSSES OF THESE SEASONAL GRASS AREAS CAUSED BY THE PROPOSED IMPROVEMENTS WILL BE MITIGATED BY PLANTING NEW STANDS OF PERENNIAL BUNCHGRASSES ON THE UNDEVELOPED OPEN SLOPES OF PARCELS A AND B, AT THE EDGES OF THE TREE LINE. REPLACEMENT WILL BE AT A 1:1 RATIO.

OPEN SPACE MANAGEMENT AND MAINTENANCE

THE OPEN SPACE AREAS THAT ARE DELINEATED AS PARCEL "A" AND PARCEL "B" WILL BE OFFERED FOR DEDICATION TO THE MARIN COUNTY COMMUNITY SERVICES DISTRICT (MCSD) OR THE MARIN COUNTY OPEN SPACE DISTRICT. ACCESS TO, AND MANAGEMENT OF, THESE UPON SPACE AREAS WILL BE REGULATED AND CONTROLLED ACCORDING TO THE ADOPTED POLICIES OF THE OPEN SPACE DISTRICT GUIDELINES.

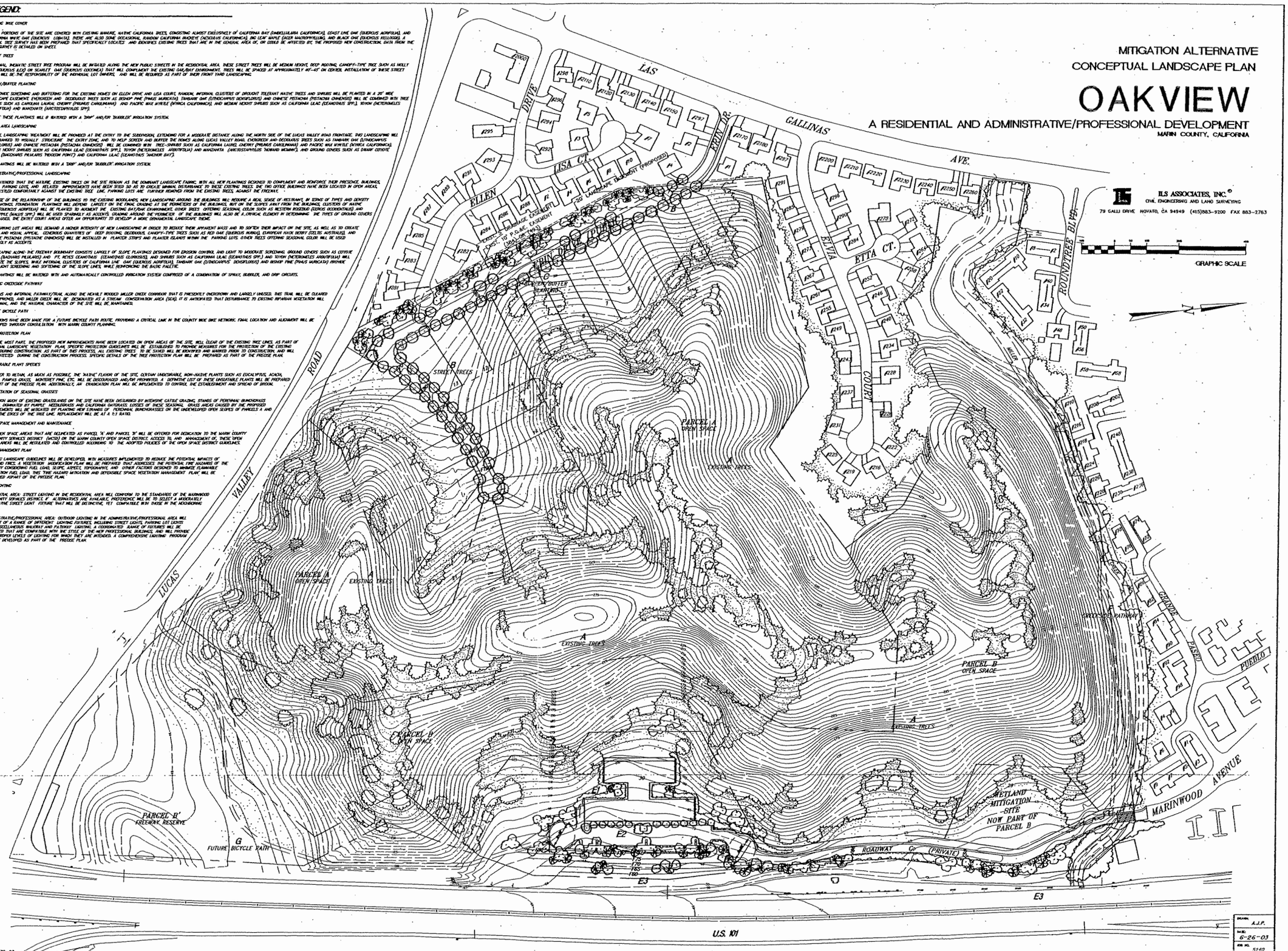
FIRE MANAGEMENT PLAN

SPECIFIC LANDSCAPE GUIDELINES WILL BE DEVELOPED, WITH MEASURES IMPLEMENTED TO REDUCE THE POTENTIAL IMPACTS OF WILDLAND FIRES. A VEGETATION MODIFICATION PLAN WILL BE PREPARED THAT ADDRESSES THE POTENTIAL FIRE HAZARDS OF THE SITE BY CONSIDERING FUEL LOAD, SLOPE, ASPECT, TOPOGRAPHIC, AND OTHER FACTORS DESIGNED TO MINIMIZE FLAMMABLE VEGETATION FUEL LOAD. THIS "FIRE HAZARD MITIGATION AND DEFENSIBLE SPACE VEGETATION MANAGEMENT PLAN" WILL BE PREPARED ASPART OF THE PRECISE PLAN.

SITE LIGHTING

RESIDENTIAL AREA: STREET LIGHTING IN THE RESIDENTIAL AREA WILL CONFORM TO THE STANDARDS OF THE MARINWOOD COMMUNITY SERVICES DISTRICT. IF ALTERNATIVES ARE AVAILABLE, PREFERENCE WILL BE TO SELECT A MODERATELY DECORATIVE STREET LIGHT FIXTURE THAT WILL BE DISTINCTIVE, YET COMPATIBLE WITH THOSE IN THE NEIGHBORING AREAS.

ADMINISTRATIVE/PROFESSIONAL AREA: OUTDOOR LIGHTING IN THE ADMINISTRATIVE/PROFESSIONAL AREA WILL CONSIST OF A RANGE OF DIFFERENT LIGHTING FIXTURES, INCLUDING STREET LIGHTS, PARKING LOT LIGHTS AND MISCELLANEOUS WALKWAY AND PATHWAY LIGHTING. A COORDINATED RANGE OF FIXTURES WILL BE SELECTED THAT ARE COMPATIBLE WITH THE STYLE OF THE NEW PROFESSIONAL BUILDINGS, AND WILL PROVIDE THE PROPER LEVELS OF LIGHTING FOR WHICH THEY ARE INTENDED. A COMPREHENSIVE LIGHTING PROGRAM WILL BE DEVELOPED AS PART OF THE PRECISE PLAN.



A.P.N. 164-270-03
FIELD BOOK NO. 186

DRAWN: A.J.P.
DATE: 6-26-03
JOB NO. 5110

REPLACES SHEET 2 OF 2

ATTACHMENT 3: SITE PLAN FOR CURRENTLY PROPOSED TALUS RESERVE-ERIN DRIVE PROJECT

GRASSLAND RESTORATION & ENHANCEMENT NOTES

PROTECTION MEASURES:

1. THE PROPOSED PROJECT SHALL LIMIT IMPACTS TO NATIVE GRASSLAND TO THAT WITHIN GRADED AREAS. THE FOLLOWING MEASURES SHALL BE IMPLEMENTED TO ENSURE THAT IMPACTS ARE MINIMIZED:
2. A TEMPORARY CONSTRUCTION FENCE SHALL SEPARATE AREAS PROPOSED FOR GRADING FROM AREAS DOMINATED BY NATIVE GRASSLANDS
3. LANDSCAPE TREES SHALL NOT BE PLACED IN AREAS DOMINATED BY NATIVE GRASSLAND.

REESTABLISHMENT MEASURES:

1. A QUALIFIED BIOLOGIST SPECIALIZING IN RESTORATION WILL IMPLEMENT THE GRASSLAND RESTORATION AND ENHANCEMENT PLAN.
2. NATIVE GRASSLANDS AREAS WILL BE RESTORED ON-SITE TO MITIGATE FOR IMPACTS ON NATIVE GRASSES, AS REQUIRED BY CONDITION #34. THE REPLACEMENT RATIO WILL BE 1:1, WITH REPLACEMENT PROVIDED ON A PER ACRE BASIS FOR EACH COVER CLASS LOST.

IMPLEMENTATION:

1. AFTER THE SEED BED IS PREPARED, THE SITES WILL BE IRRIGATED TO INITIATE WEED GROWTH. THE IRRIGATION WILL BE INITIATED DURING SEPTEMBER OR EARLY OCTOBER AND WILL BE REPEATED 8 TIMES, OR AS NECESSARY, OVER A 3-4 WEEK PERIOD, TO GERMINATE THE SEED SEEDS. THE WEED SEEDLINGS WILL BE TREATED WITH A SUITABLE HERBICIDE. IRRIGATION WILL BE REPEATED IN ORDER TO GERMINATE A SECOND CROP OF SEED SEEDLINGS, WHICH WILL SUBSEQUENTLY BE TREATED WITH AN HERBICIDE.
2. A HYDRO SEED MIX CONSISTING OF NASSELLA PULCHRA, FESTUCA RURBA, JUCNUS PATENS, JUNCUS TENUIS, JUNCUS XIPHOIDES, LEYMUS TRICOIDES, AND NATIVE WILDFLOWERS WILL BE PLANTED IN THE MITIGATION AREA. SEED WILL BE PURCHASED FROM A SUITABLE GROWER.
3. SEED WILL BE SOWN AT APPROXIMATELY 20 POUNDS PER ACRE. SEED WILL BE SPREAD BY HAND OR WITH A SEED DRILL OR OTHER TYPE OF MECHANIZED EQUIPMENT. SEED WILL BE SOWN TWO WEEKS OR MORE AFTER THE SECOND CROP OF SEEDS HAS BEEN TREATED WITH AN HERBICIDE.
4. EROSION CONTROL NETTING WILL BE PLACED ON THE STEEPLY SLOPING SEEDED AREAS.
5. THE PLANTED AREA WILL BE IRRIGATED AT LEAST ONCE A WEEK, EITHER Y HAND OR BY TRUCK WATERING, UNTIL THE WINTER RAINS PROVIDE SUFFICIENT MOISTURE. IF THE RAINFALL IS LOW, THEN IRRIGATION WILL PROVIDE SUFFICIENT WATER. THE PLANTS WILL BE IRRIGATED FOR A MINIMUM OF TWO YEARS. IRRIGATION WILL OCCUR ONCE A WEEK DURING SUMMER.
6. CONTROLLING WEEDS WILL BE THE MAJOR MAINTENANCE ACTIVITY. WEEDS WILL BE CONTROLLED BY USE OF SELECTIVE HERBICIDES, CAREFULLY TIMED MOWING BEFORE MARCH OR AFTER JUNE, AND BY HAND.

SCHEDULE

DURING SEPTEMBER OR OCTOBER, THE PLANTING AREAS WILL BE IRRIGATED TO GERMINATE WEED SEEDS.

2. DURING OCTOBER, HERBICIDE WILL BE APPLIED TO WEED SEEDLINGS.
3. DURING OCTOBER OR EARLY NOVEMBER, IRRIGATION WILL AGAIN BE APPLIED TO THE PLANTING AREAS.
4. DURING MID TO LATE NOVEMBER, HERBICIDE WILL BE APPLIED TO THE SECOND CROP OF SEEDLINGS.
5. DURING LATE NOVEMBER TO EARLY DECEMBER, THE HYDRO SEED MIX WILL BE APPLIED TO THE SECOND CROP OF SEED SEEDLINGS.
6. AFTER SEED HAS BEEN SOWN, EROSION CONTROL NETTING WILL BE APPLIED TO STEEPER PLANTING AREAS.
7. IRRIGATION WILL BE APPLIED DURING THE RAINY SEASON AS NEEDED AND WILL BE APPLIED DURING THE DRY SEASON WEEKLY FOR TWO YEARS.
8. THE PLANTING AREAS WILL BE MONITORED FOR FIVE YEARS FROM THE DATE OF PLANTING.

MAINTENANCE & LONG TERM MANAGEMENT

1. WEED REMOVAL IS ANTICIPATED TO BE NEEDED THROUGHOUT THE 5 YEAR MONITORING PERIOD. IT WILL BE ESPECIALLY IMPORTANT TO REMOVE WEEDS WHILE THE COVER OF THE NATIVE GRASSLAND PLANTING IS LOW. AFTER THE COVER OF NATIVE GRASSES HAS INCREASED, IT WILL BE MORE DIFFICULT FOR WEEDS TO COMPETE AND REMOVAL MAY BE NECESSARY BUT NOT AS CRITICAL AS DURING THE EARLY YEARS OF PLANTING. PARCELS A, B, & C OPEN SPACE SHALL BE HOA MAINTAINED.

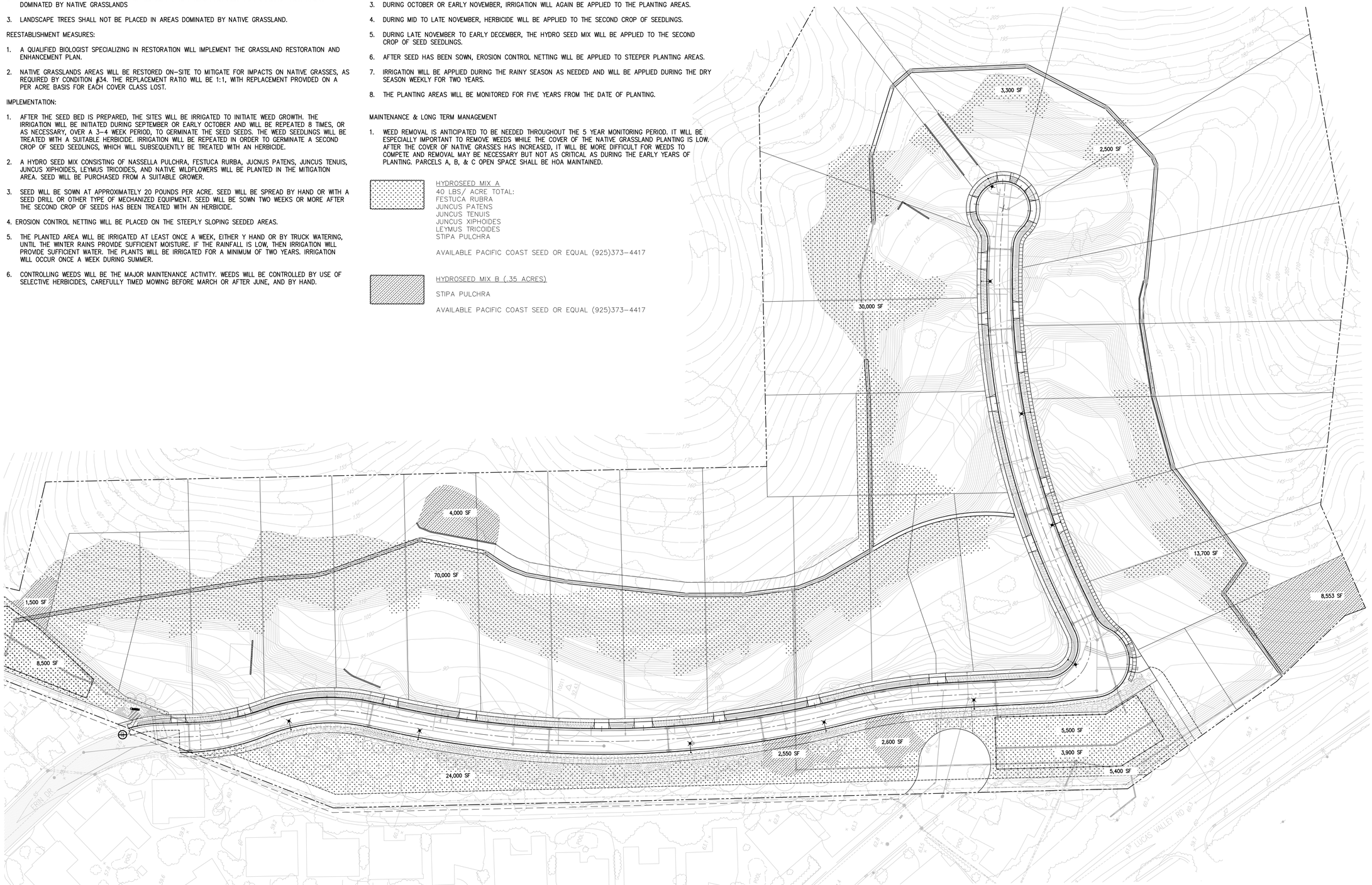
HYDROSEED MIX A
40 LBS/ ACRE TOTAL:
FESTUCA RUBRA
JUNCUS PATENS
JUNCUS TENUIS
JUNCUS XIPHOIDES
LEYMUS TRICOIDES
STIPA PULCHRA

AVAILABLE PACIFIC COAST SEED OR EQUAL (925)373-4417

HYDROSEED MIX B (.35 ACRES)

STIPA PULCHRA

AVAILABLE PACIFIC COAST SEED OR EQUAL (925)373-4417



PATH: P:\MARIN COUNTY\OAKVIEW (P5634)\ACAD\SHEETS_DG-P-OAKVIEW.DWG
PLOT DATE: 4/29/2020 2:02 PM

GATES +ASSOCIATES
LANDSCAPE ARCHITECTURE
LAND PLANNING · URBAN DESIGN
2671 CROW CANYON RD. SAN RAMON, CA 94583
T 925.736.8176 www.dgates.com

TALUS RESERVE COMMON AREA LANDSCAPE

SAN RAFAEL
CALIFORNIA

LAFFERTY COMMUNITIES

ISSUE:	DESCRIPTION:	DATE:
1	1ST CD SUBMITTAL	10/30/2019
2	FINAL MAP SUBMITTAL	04/02/2020
3	TREE REMOVAL PERMIT	04/29/2020

NOT FOR CONSTRUCTION

REGISTERED LANDSCAPE ARCHITECT · CASE · No. 6202 · STATE OF CALIFORNIA
Signature
6/30/2020
Renewal Date

PROJECT NUMBER:	5634
DRAWN:	DB
CHECK:	KC
DATE:	04/29/2020
SCALE:	1" = 20'

0 10' 20' 40'
0" 1/2" 1" 2"

GRASSLAND RESTORATION AND ENHANCEMENT PLAN

L2.5

STORM DRAIN STRUCTURE SCHEDULE

STRUCTURE	DESCRIPTION	STANDARD DETAIL
CB: 1-23 (23 TOTAL)	COUNTY OF MARIN TYPE "D" CATCH BASIN	DWG. NO. 240
CB: 1-6 AND 9-23 (21 TOTAL)	GALLERY INLET TOP: SEE NOTE 1 BELOW	DWG. NO. 255
SDMH: 1-2 (2 TOTAL)	COUNTY OF MARIN TYPE "A" MANHOLE	DWG. NO. 205
SD OUTFALL (3 TOTAL)	STORM DRAIN OUTFALL TO STORMWATER TREATMENT	SEE DETAIL SHEET IP-15
SD OUTFALL (1 TOTAL)	OVERFLOW OUTFALL	-

NOTE:
1. GALLERY INLET CATCH BASINS ARE REQUIRED WHEN GUTTER SLOPE EXCEEDS 3%.

PIPE SCHEDULE

PIPE	DESCRIPTION
WATER	
8" W	1,850 LF DUCTILE IRON PIPE (DIP) WITH RESTRAINED JOINTS
8" RW	150 LF DUCTILE IRON PIPE (DIP) WITH RESTRAINED JOINTS
SANITARY SEWER	
8" SS	1,725 LF HDPE SDR 17
STORM DRAIN	
12" SD	1,740 LF HDPE ADS HP STORM OR APPROVED EQUAL

SANITARY SEWER STRUCTURE SCHEDULE

STRUCTURE	DESCRIPTION	STANDARD DETAIL
SSMH: M003.35, M042.01, M042.03, M042.19, SSMH 1-4 & 6-15 (18 TOTAL)	LAS GALLINAS VALLEY SANITARY DISTRICT STANDARD MAIN MANHOLE	SD 1.1 (SEE DETAILS SHEET IP-4)
SS LATERALS: 28 TOTAL	LAS GALLINAS VALLEY SANITARY DISTRICT LOWER LATERAL	SEE DETAILS SHEET IP-5

WATER STRUCTURE SCHEDULE

STRUCTURE	DESCRIPTION	STANDARD DETAIL
FH: 1-7 (7 TOTAL)	MAKE: CLOW MODEL: 950 RESIDENTIAL	MARIN MUNICIPAL WATER DISTRICT STD NO. 03
WM: 28 TOTAL	MARIN MUNICIPAL WATER DISTRICT STANDARD WATER SERVICE	MARIN MUNICIPAL WATER DISTRICT STD NO. 01
RECYCLED WM: 1 TOTAL	MARIN MUNICIPAL WATER DISTRICT NEW RECYCLED WATER SERVICE	MARIN MUNICIPAL WATER DISTRICT STD NO. 01R

DATE: 8/3/2021
DRAWN BY: DAJ
PROJ. ENGR: DAJ
PROJ. MGR: DAJ

NO.	BY	DATE	REVISIONS

REGISTERED PROFESSIONAL ENGINEER · DANIEL A. JOHNSON · 83178 · CIVIL · STATE OF CALIFORNIA

cbg
CIVIL ENGINEERS · SURVEYORS · PLANNERS
SAN RAMON · (925) 866-0322
SACRAMENTO · (916) 375-1877
www.CBANDG.COM

APN: 164-270-07

IMPROVEMENT PLANS
UTILITY MAP & SCHEDULE

TALUS RESERVE
CALIFORNIA
COUNTY OF MARIN

SHEET NUMBER
IP-6
OF 16

Marin Map

164-270-07

Item Number: 12
Attachment: 05

Legend

- Parcel Note
  - easement
  - centerline
- Parcel
- Condominium Common Area
- Mobile Home Pad
- City
- Community
- Marin County Legal Boundary
- Other Bay Area County
- Stream - Perennial (NHD)

Notes

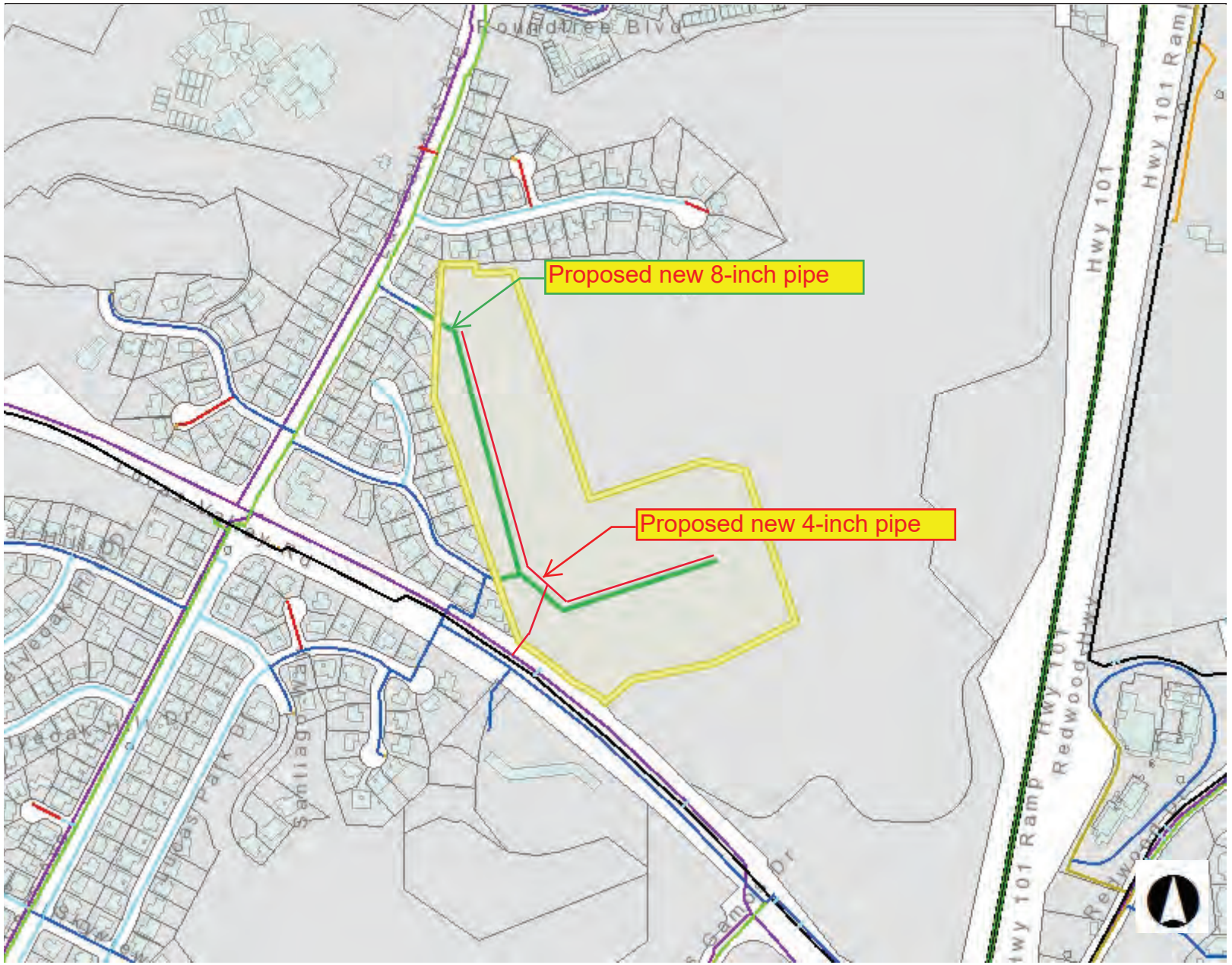
1,611.9 0 805.97 1,611.9 Feet

NAD_1983_HARN_StatePlane_California_III_FIPS_0403_Feet

MARIN MUNICIPAL WATER DISTRICT

Erin Drive-SR Talus Reserve

Item Number: 12
Attachment: 06



977.0 0 488.51 977.0 Feet

Legend

- Water Quality Test Stations
- Non-System Facilities
  - <all other values>
  - Pump
  - Tank
  - Dam
- Potable Pump Stations
- Potable Tanks
  - Error/Null Values
  - Storage Tanks
  - Pressure Tanks
- Potable Treatment Plants
- Potable Pipes
  - Error/Null Values
  - 0.50 - 3.00
  - 4.00 - 5.00
  - 6.00
  - 8.00
  - 10.00 -12.00
  - 14.00 - 20.00
  - 21.00 - up
- Potable Virtual Edge
- Recycled Pump Stations
- Recycled Tanks
  - Error/Null Values
  - Storage Tanks

Notes

MARIN MUNICIPAL WATER DISTRICT

RESOLUTION NO.

RESOLUTION OF THE BOARD OF DIRECTORS OF THE MARIN MUNICIPAL WATER DISTRICT MAKING DETERMINATIONS WITH RESPECT TO FEES CONTAINED IN PIPELINE EXTENSION AGREEMENT

WHEREAS, APPLICANT has applied to the District for a Pipeline Extension Agreement to serve Erin Drive, San Rafael – Talus Reserve Assessor's Parcel No. 164-270-07; and

WHEREAS, a study, entitled, "Erin Drive, San Rafael – Talus Reserve", was prepared by staff and dated August 3, 2021, has been conducted of the impacts of this development on the District's existing services and facilities in the San Rafael area along with an analysis of new, improved or expanded District facilities and improvements as required or appropriate to serve said development, and said study set forth the relationship between this development, those services or facilities, and the estimated cost of those improvements; and

WHEREAS, the Study finds as follows:

a. The purpose of the fees set forth in paragraph 5 of the proposed pipeline extension agreement for the Talus Reserve project between the District and Lucas Valley-Talus LLC (PEA) is to pay for all required water facilities directly related to providing service to Erin Drive, San Rafael – Talus Reserve and to reimburse the District for constructing, or provide funding to construct, the necessary water supply, treatment, transmission, and terminal storage facilities for subject project due to increased water supply and system capacity demands on the existing District facilities;

b. The fee specified in paragraph 5 of the PEA shall be used to finance the following facilities: 1,840' of 8" pipe, 1,860' of 4" pipe, 7-6" hydrants, 34-1" services and 28-5/8" services, payment for constructed water supply improvements at Soulajule, Kent and the Intertie; and a variety of major system improvements being constructed according to the project listing used in developing the connection fees;

c. It is appropriate and necessary for the properties to be served by the pipeline extension agreement to provide for the facilities and improvements listed in Paragraph a. above, which have not been constructed, or have been constructed, but to which new development has not contributed its fair share;

d. The facts and evidence presented establish that there is a reasonable relationship between the need for the described public facilities and the development which will be served pursuant to the PEA for which the corresponding fee is charged; and there is a reasonable relationship between the fees' use and the type of development for which the fee

is charged, as these reasonable relationships are in more detail described in the study referred to above;

e. The cost estimates set forth in the PEA are reasonable cost estimates for constructing these facilities, and the fees expected to be collected will not exceed the total of these costs.

NOW, THEREFORE, **BE IT RESOLVED**, that the Board of Directors of the Marin Municipal Water District has reviewed the Study and adopts all of the findings set forth above; and

BE IT FURTHER RESOLVED, that the fees to be collected pursuant to paragraph 5 of the PEA shall be used solely to pay for the described public facilities to be constructed by the District, for reimbursing the District for the development's fair share of those capital improvements already constructed by the District, or to reimburse other developers who have constructed public facilities described in the pipeline extension agreement where those facilities were beyond that needed to mitigate the impacts of the other developer's project or projects.

PASSED AND ADOPTED this 15th day of February, 2022, by the following vote of the Board of Directors.

AYES:

NOES:

ABSENT:

Larry L. Russell
President, Board of Directors

ATTEST:

Terrie Gillen
Board Secretary

MARIN MUNICIPAL WATER DISTRICT

RESOLUTION NO.

RESOLUTION OF THE BOARD OF DIRECTORS FINDING IMPENDING PERIL OF GRADUAL EARTH MOVEMENT AND DETERMINING AND UNDERTAKING APPROPRIATE ACTION TO HALT, STABILIZE, OR ABATE SUCH PERIL

BE IT RESOLVED BY THE BOARD OF DIRECTORS OF THE MARIN MUNICIPAL WATER DISTRICT AS FOLLOWS:

1. The Board of Directors has examined the information contained in the agenda packet for this item, and based thereon finds, pursuant to Government Code Subsection 865 et.seq., that an impending peril of gradual earth movement exists on property in Marin County described as follows:

Assessor's Parcel No. **164-270-07**

2. The Board of Directors determines that the following remedial action by the District to halt, stabilize, or abate such impending peril is appropriate as a condition to the provisions of water service to said property and undertakes to see that such remedial action is carried out as a condition to provision of water service to said property:

Installation of welded steel pipe

PASSED AND ADOPTED on the 15th day of February, 2022, by the following vote of the Board of Directors.

AYES:

NOES:

ABSENT:

_____
Larry L. Russell
President, Board of Directors

ATTEST:

_____
Terrie Gillen
Board Secretary

MARIN MUNICIPAL WATER DISTRICT

RESOLUTION NO.

A RESOLUTION OF THE BOARD OF DIRECTORS OF THE MARIN MUNICIPAL WATER DISTRICT CERTIFYING REVIEW OF THE AMENDED FINAL ENVIRONMENTAL IMPACT REPORT FOR THE OAKVIEW MASTER PLAN, USE PERMIT, AND VESTING TENTATIVE MAP FOR THE TALUS RESERVE – ERIN DRIVE EXTENSION AND APPROVING A PIPELINE EXTENSION AGREEMENT WITH TALUS, LLC

WHEREAS, the Marin Municipal Water District received an application for water service and fire protection for the Talus Reserve subdivision at the Erin Drive extension, located within the County of Marin, which would requires a pipeline extension and accompanying agreement (Pipeline Extension Agreement or PEA) between the District and Talus, LLC; and

WHEREAS, the County of Marin certified an amended Final Environmental Impact Report (Final EIR) for the Oakview Master Plan, Use Permit, and Vesting Tentative Map for the Talus Reserve- Erin Drive Extension Project (Project) pursuant to the California Environmental Quality Act (CEQA) and approved the Project on January 11, 2005, as set forth in County Board of Supervisors Resolution No. 2005-05 and adopted a Mitigation Monitoring and Reporting Program (MMRP) for the project; and

WHEREAS, a Notice of Determination was filed for the Project on January 19, 2005, to February 18, 2005; and

WHEREAS, District staff and its environmental consultant have reviewed the Final EIR for the Project, as well as the MMRP adopted for the Project, and have prepared an analysis, which determined that the proposed pipeline extension and PEA are consistent with the Final EIR and if approved by the Board would not result in any environmental impacts that would not be mitigated to less than significant with the implementation of the MMRP and Project conditions.

NOW, THEREFORE, THE BOARD OF DIRECTORS RESOLVES AS FOLLOWS:

1. The Board, acting as a Responsible Agency as defined by the California Environmental Quality Act and Guidelines, hereby certifies its review of amended Final Environmental Impact Report (Final EIR) for the Oakview Master Plan, Use Permit, and Vesting Tentative Map for the Talus Reserve- Erin Drive Extension Project (Project) pursuant to the California Environmental Quality Act.

2. The Board finds that the Final EIR is adequate for its purposes related to consideration of the Pipeline Extension Agreement for the Talus reserve subdivision, which is a component of the Project.

3. The MMRP adopted for the Project and the conditions of approval assigned to the project by the County of Marin have no adverse impact on water service for the project as designed by District staff.

4. The Board finds, in its independent judgment that with the adopted Project conditions and the mitigation measures and set forth in the MMRP adopted by the County of Marin, any potential environmental impacts have been reduced to less than significant.

5. The Board hereby further approves the proposed Talus Pipeline Extension and a Pipeline Extension Agreement in substantially the form attached to the staff report for this item.

PASSED AND ADOPTED this 15th day of February, 2022, by the following vote of the Board of Directors.

AYES:

NOES:

ABSENT:

_____

Larry L. Russell
President, Board of Directors

ATTEST:

_____

Terrie Gillen
Board Secretary

Item Number: 13
Meeting Date: 02-15-2022
Meeting: Board of Directors

Approval Item

TITLE
Grant of Permanent Easement from the County of Marin for the Civic Center Recycled Water Fill Station

RECOMMENDATION
Staff recommends that the Board of Directors authorize the General Manager to execute the Easement Deed for the recycled water fill station located at the Marin County Civic Center.

DISCUSSION
In response to the recent historic drought conditions in the District's service area, on June 15, 2021, the County of Marin (County) and the District executed a Right of Entry Agreement (Agreement). The Agreement permitted the District to construct underground recycled water facilities consisting of one six (6) inch diameter welded steel pipeline and associated facilities necessary for the delivery of recycled water to consumers at the County Civic Center. Given the drought conditions at the time and the urgency to get the recycled water fill station operational, the County and the District agreed that no property interests would be granted when executing the Agreement. Instead, any property rights and interests would be later addressed in a separate written instrument.

The County agreed to grant the District a permanent easement (Easement) for the recycled water fill station facilities located that County Civic Center upon the terms set forth in the Easement Deed. On January 11, 2022 the County Board of Supervisors approved County Resolution No. 2022-06, authorizing the execution of the Easement Deed by the President of the Board of Supervisors. The location of the easement is shown in Attachment A, and a copy of the partially executed Easement Deed is attached as Attachment B.

The Board's authorization for the General Manager to execute the Easement Deed will secure the District's property rights and interests for the recycled water fill station facilities, which will be allowed to remain in place. Future operations of the fill station will continue to be addressed through right of entry agreements between the County and the District.

EASEMENT CHARACTERISTICS

- Length 392 linear feet
- Easement Area 7,956 square feet

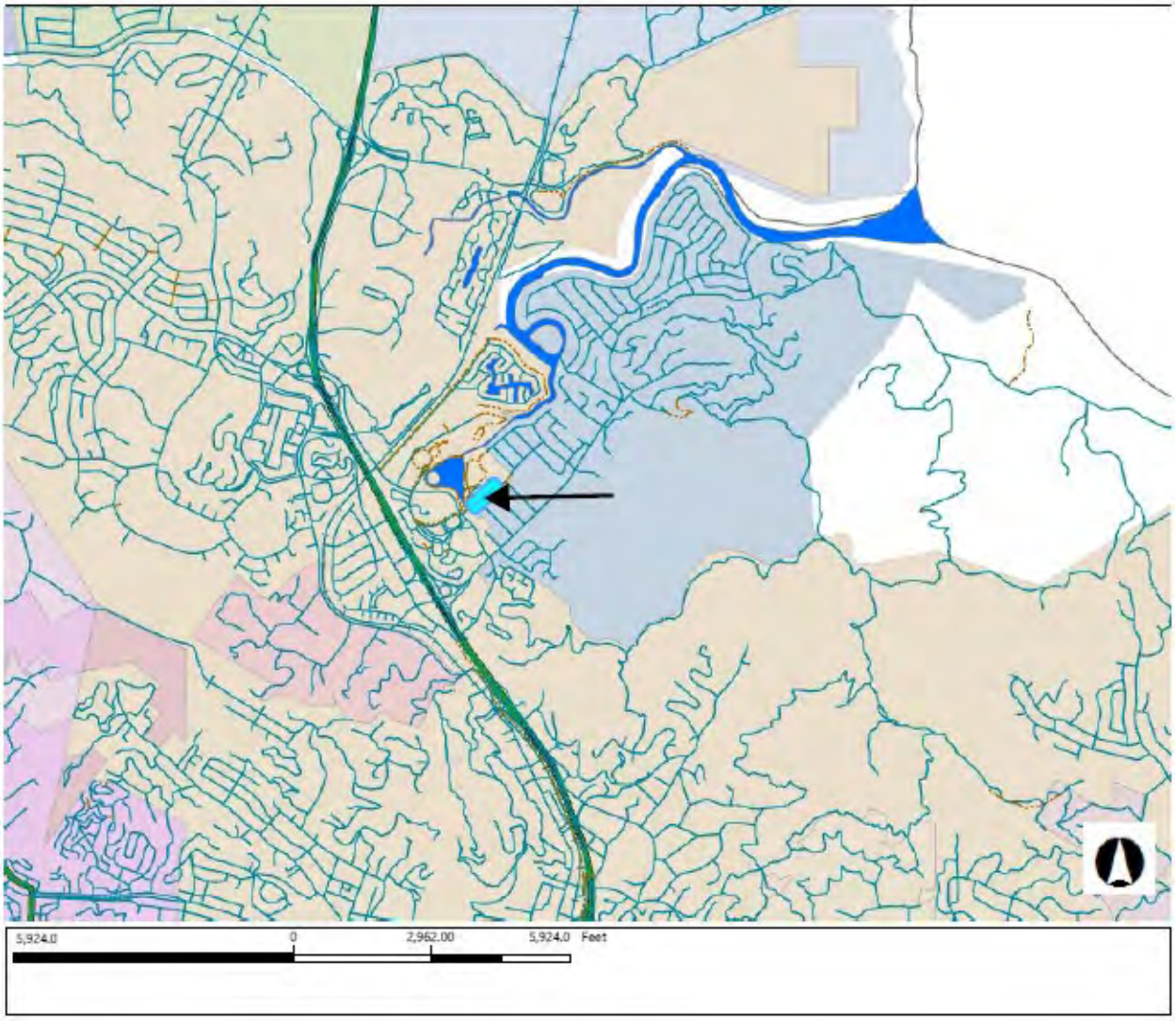
FISCAL IMPACT
None

ATTACHMENT(S)

- Attachment A - Location Map
- Attachment B - Partially executed Easement Deed and Resolution 2022-06

DEPARTMENT OR DIVISION	DIVISION MANAGER	APPROVED
Engineering	**Crystal Yezman** **Director of Engineering**	**Ben Horenstein** **General Manager**

ATTACHMENT A - LOCATION MAP



ATTACHMENT B

Recording for the Benefit of MMWD
No Fee, Govt. Code 27383.
Value less than $100.00

Recording Requested By:
Stanley Graham
Marin Municipal Water District
Recording for the Benefit of MMWD,

When recorded return to:
Stanley Graham
Marin Municipal Water District
220 Nellen Avenue
Corte Madera CA 94925-1169
APNs 179-270-12, 179-270-16

EASEMENT DEED

THIS EASEMENT DEED ("Agreement"), is made and entered into as of this 11 day of January, 2022, by and between the County of Marin, a political subdivision of the State of California ("County" or "Grantor"), and the Marin Municipal Water District, a municipal corporation ("District" or "Grantee").

For valuable consideration, receipt of which is hereby acknowledged, the parties agree as follows:

Section 1. Recitals:

A. County is the owner of that real property commonly known as the "Marin County Civic Center" in the County of Marin, State of California consisting of several Assessor Parcel Numbers (APN), of which the subject of this easement agreement affects APN 179-270-12 and APN 179-270-16 (Property).

B. On June 15, 2021, the County and District executed a Right of Entry Agreement to permit District to construct underground recycled water facilities consisting of one six-inch (6") diameter welded steel pipeline and appurtenances associated with the transmission and delivery of recycled water for the operation of a consumer recycled water fill station (Facilities).

C. County desires to convey a non-exclusive easement through a portion of the Property to the District for the Facilities.

Resolution No 2022- 06 authorizing the County to enter into and execute this Easement Deed to Marin Municipal Water District is attached hereto.

Section 2. Grant of Easement:

A. County hereby grants the District, its successors, and assigns a non-exclusive easement for the Facilities, as described in Exhibit A and shown on Exhibit B, incorporated herein as if fully set forth ("Easement").

B. The Easement described in Section 2(A) shall be held subject to the following terms and conditions:

i. The Easement granted herein is non-exclusive. The District is granted the right to maintain, repair, remove, and replace existing Facilities as may be necessary in connection with the transmission and the delivery of recycled water, including reasonable ingress and egress.

ii. The County's rights over the non-exclusive Easement subject to this agreement shall take precedence over District Facilities within the Easement and that if future development of County's property requires relocation of District Facilities, then District shall relocate said Facilities within 180 calendar days of the request by County, or as extended by mutual written agreement of the parties, which consent by County shall not unreasonably be withheld, at the District's sole expense and at no expense to County.

iii. The District is under no obligation to install or to maintain any additional paving or other surfacing on the Easement, unless it is a condition of improving District access to repair, replace, maintain, or to use the installations in the Easement.

Section 3. Damages to the Property:

If any portion of the Property is damaged as a result of the District's use of the Property or leakage or other failure of any part of the underlying District pipelines or Facilities, or by reason of the District, its officers', agents', employees' and/ or contractors' actions in gaining access to the Easement, District Facilities, or underlying pipelines for purposes of repair, maintenance, connection, or for any other purpose, then the District shall assume the loss and pay for the reasonable repair of such damage taking into consideration issues of depreciation and betterment. Depreciation shall be calculated based upon the useful life of the property that was damaged or destroyed. (E.g. if the property had a fifty year useful life and was destroyed by District in year 25, it shall pay half the cost of repair.)

If the District undertakes any repair on any portion of the Property, the District's work shall conform to applicable standards of the construction industry. The District shall replace or repair any portion of the Property, damaged by the District or by the District's Facilities, and shall

restore the Property, as reasonably as possible, to the conditions that previously existed taking into consideration issues of depreciation and betterment.

Section 4. Damages to the District Improvements:

Damage to Districts' Facilities directly caused by County employees, contractors or agents maintained in the Easement shall be the responsibility of County and County agrees to and will pay for costs of repairs to the District's Facilities, taking into consideration issues of depreciation and betterment. Depreciation shall be calculated based upon the useful life of the Facilities that were damaged or destroyed. However, any damage to the Facilities by other causes shall not be the responsibility of the County and the County has no duty to protect District's Facilities from such damage.

Section 5. Hold Harmless:

District shall hold harmless, indemnify and defend the County, its directors, officers, agents, employees and volunteers from any and all claims, lawsuits, liabilities, losses and damages of every kind including, but not limited to, facility damages, personal injuries, arising from, resulting from or in any way related to District's, its employees', and its contractors' negligent or intentional acts, errors and omissions in connection with this Agreement, including the installation, maintenance, operation and repairs of the Facilities.

Section 5.1 Duty to Defend; Notice of Loss: District acknowledges and agrees that its obligation to defend County under Section 5: (a) is an immediate obligation, independent of its other obligations hereunder; and (b) applies to any Loss which falls within the scope of Section 5 The County shall give District prompt notice of any Loss under Section 5 and District shall have the right to defend, settle and compromise any such Loss; provided, however, subject to prior approval of District and its applicable insurers, which approval shall not be unreasonably withheld, the County shall have the right to retain its own counsel at the expense of District if representation of County by the counsel retained by District would be inappropriate due to conflicts of interest between County and District. .

Section 6. Representation:

This Agreement is executed voluntarily by each of the parties hereto, all of whom have had the opportunity to obtain legal advice by independent counsel of their choice as to the content and effect of this Agreement.

Section 7. Authorization:

Each signatory to this Agreement warrants that he or she has full authority to execute this Agreement on behalf of and thus bind the individual, or entity represented.

Section 8. Entire Agreement:

This Agreement contains the entire agreement and understanding between the parties.

Section 9. Binding on Successors:

This Agreement shall bind and inure to the benefit of the respective successors, assigns, legatees, heirs, executors, administrators and estates of each of the parties; provided, that County and each succeeding owner of the property and the Easement granted herein shall have no liability hereunder with respect to matters arising from and after the date when they cease to be owner of the Property and said Easement.

Section 10. Paragraph Headings:

Paragraph headings are used for reference purposes only and are not intended to describe, interpret, define or limit the scope or extent of this Agreement or any of its provisions.

Section 11. Governing Law:

This Agreement shall be governed by and construed in accordance with the laws of the State of California.

Section 12. Counterparts:

This Agreement may be executed in any number of counterparts, each of which shall be an original, but all of which taken together, shall constitute one instrument.

Section 13. Facsimile Signatures:

The parties agree that this Agreement, documents ancillary to this Agreement and related documents to be entered into in connection with this Agreement will be considered signed when the signature of a party is delivered by facsimile transmission. Such facsimile signature shall be treated in all respects as having the same effect as an original signature.

Section 14. No Presumption Regarding Drafter:

The parties acknowledge and agree that the terms and provisions of this Agreement have been negotiated and discussed between the parties and their attorneys, and this Agreement reflects their mutual agreement regarding the same. Because of the nature of such negotiations and discussions, it would be inappropriate to deem any party to be the drafter of this Agreement, and therefore no presumption for or against validity or as to any interpretation hereto, based upon the identity of the drafter shall be applicable in interpreting or enforcing this Agreement.

OWNER: COUNTY OF MARIN

Dated: JAN. 11TH, 2022 By: KATIE RICE

Attest: President, Board of Supervisors

Deputy Clerk

Approved as to form:

County Counsel

DISTRICT: MARIN MUNICIPAL WATER DISTRICT

Dated: _____ By: _____
Ben Horenstein
General Manager

Attest: _____
Secretary

Approved as to form:

_____
District General Counsel

Attachments:
Exhibit A – Legal Description
Exhibits B – Record Drawing

MMWD Seal:

EXHIBIT A

Legal Description
20 Foot Marin Municipal Water District Pipeline Easement
Lands of the County of Marin "Marin Civic Center"
City of San Rafael, County of Marin, State of California
APN 179-270-12, 16

A 20 foot strip of land for municipal pipeline purposes over a portion of the lands of the County of Marin, said lands lying situate in the City of San Rafael, County of Marin, State of California, said lands of the County of Marin being in the vicinity of the "Marin Civic Center", said 20 foot pipeline easement lying within a portion of the undedicated roadway known as Armory Drive, said 20 foot pipeline easement lying 14.00 feet northerly, westerly, northwesterly, and 6.00 feet southerly, easterly, and southeasterly of the following described line:

Commencing at the southwesterly terminus of the Madison Avenue centerline course North 45° 20' 51" East, a distance of 582.70 feet as shown on the Record of Survey titled, "North San Pedro Road and the Golf Links Tract", recorded on January 4, 1973, and filed in Book 11 of Surveys, at pg. 61, Marin County Records, said southwesterly terminus being referenced by a standard street monument;

Thence, South 77° 00' 35" West, a distance of 129.87 feet to the **Point of Beginning** of the 20 foot Marin Municipal Water District pipeline easement;

Thence, North 84° 02' 49" West, a distance of 54.03 feet;

Thence, North 70° 39' 24" West, a distance of 99.82 feet;

Thence, South 8° 36' 47" West, a distance of 66.12 feet to the beginning of a tangent curve to the right, concave northwesterly, having a radius of 208.484 feet;

Thence, proceeding along said curve to the right, an arc length of 124.748 feet through a delta of 34° 17' 00";

Thence, South 42° 53' 47" West, a distance of 47.07 feet to the **Termination** of said 20 foot pipeline easement at the northeasterly line of Civic Center Drive.

The sidelines of said 20 foot pipeline easement are to be lengthened or shortened to terminate at the northeasterly line of said Civic Center Drive.

The easement described above encompasses an area of 7,956 square feet.

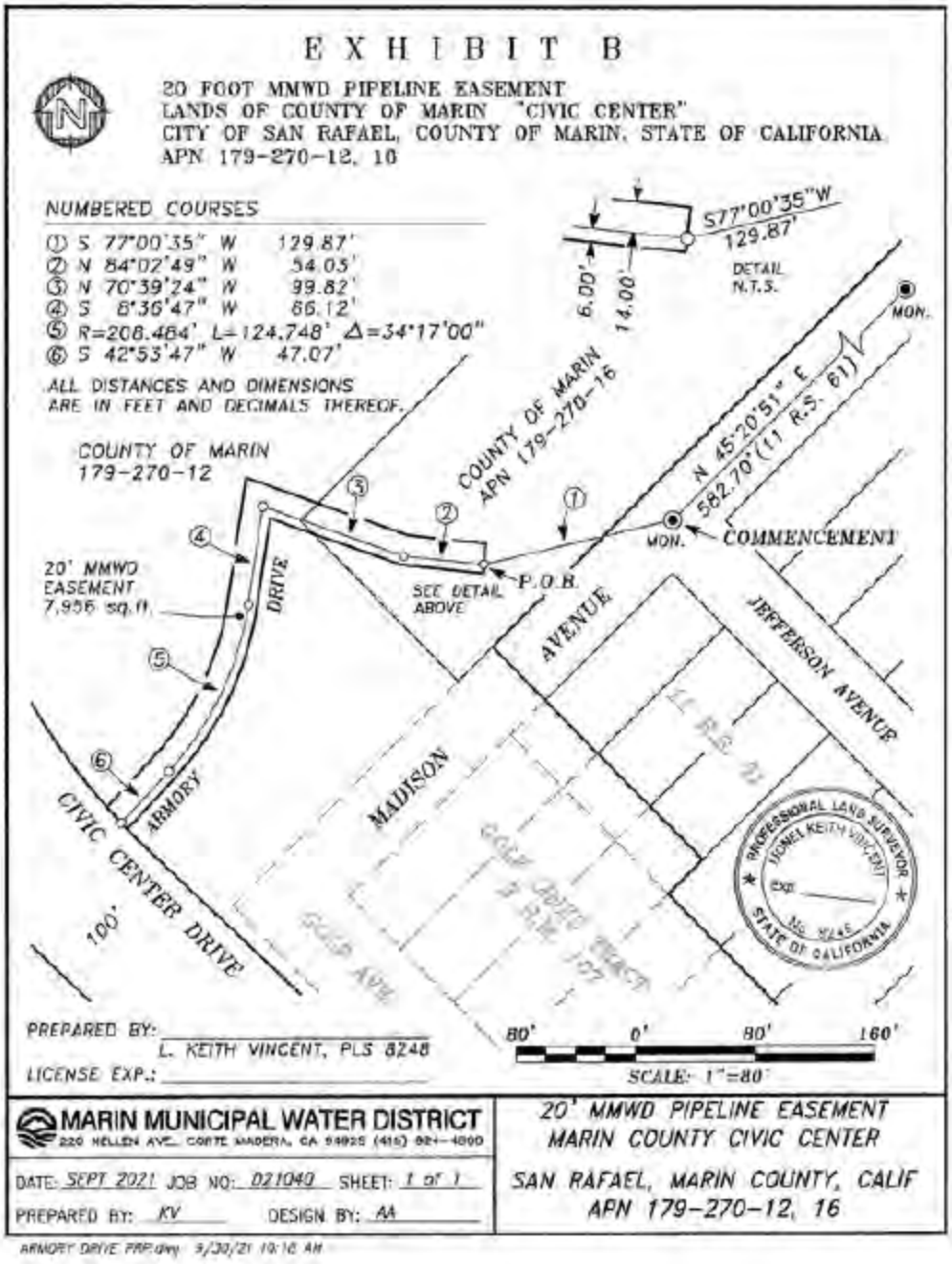
Attached hereto is a plat (Exhibit B) to accompany Legal Description, and by this reference made a part hereof.

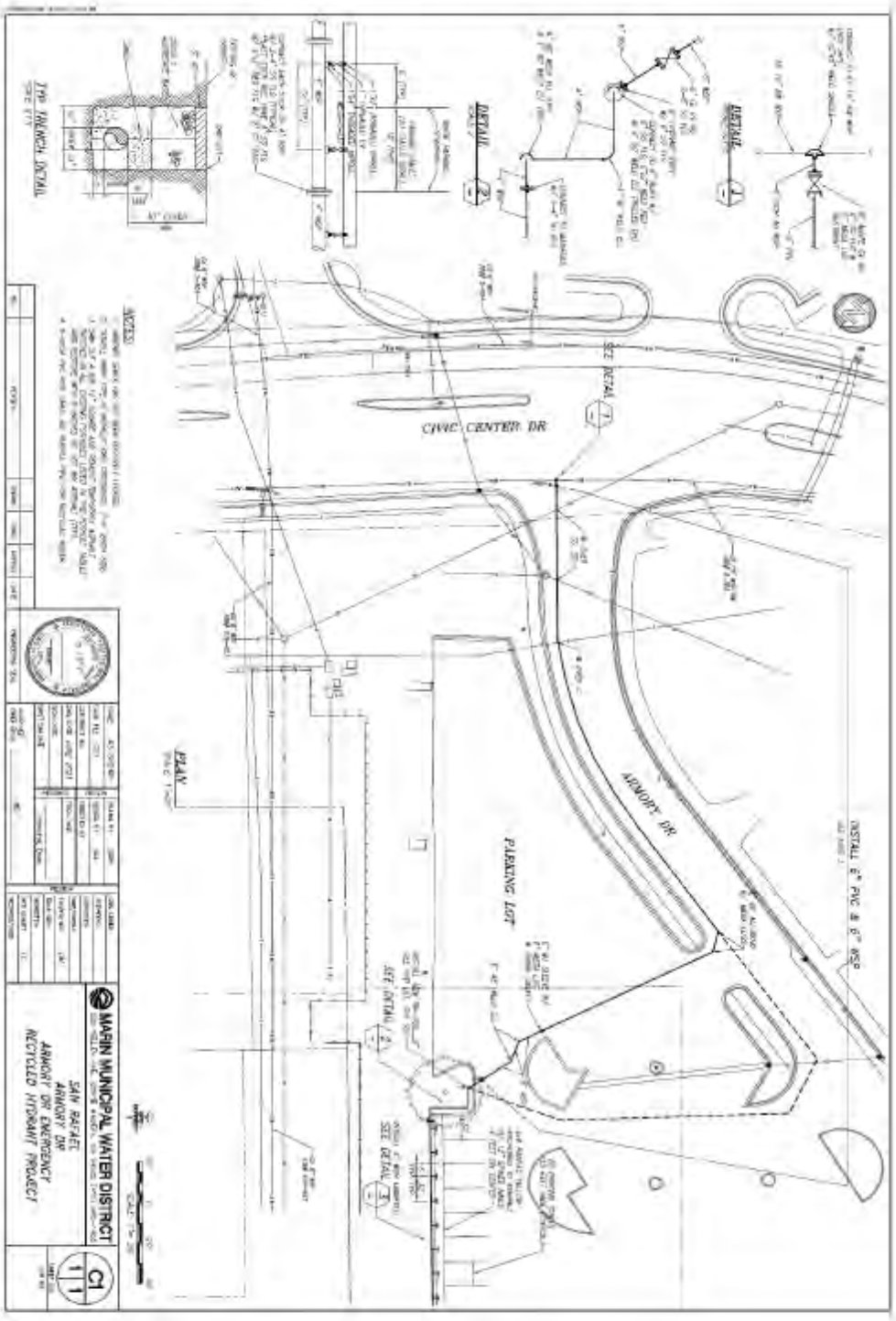
End of Legal Description

This Legal Description was prepared by Lionel Keith Vincent: _____

PLS 8248
License Expires: 12/31/21

EXHIBIT B
RECORD DRAWING




CIVIC CENTER DR
ARMORY DR
PARKING LOT
MARIN MUNICIPAL WATER DISTRICT
SAN RAFAEL
ARMORY DR EMERGENCY
RECYCLED HYDRANT PROJECT
C1

CALIFORNIA ALL-PURPOSE ACKNOWLEDGMENT **CIVIL CODE § 1189**

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

State of California)
County of Marin)

On January 12, 2022 before me, Crystal Martinez,
Date *Here Insert Name and Title of the Officer*

personally appeared Katie Rice
Name(s) of Signer(s)

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

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

WITNESS my hand and official seal.

CRYSTAL SEMARA MARTINEZ
Notary Public - California
Marin County
Commission # 2361557
My Comm. Expires Jun 16, 2025

Signature _____
Signature of Notary Public

Place Notary Seal Above

OPTIONAL

Though this section is optional, completing this information can deter alteration of the document or fraudulent reattachment of this form to an unintended document.

Description of Attached Document
Title or Type of Document: Easement Deed MMWD Document Date: January 11, 2022
Number of Pages: 8 Signer(s) Other Than Named Above: _____

Capacity(ies) Claimed by Signer(s)

Signer's Name: Katie Rice	Signer's Name: _____
☐ Corporate Officer — Title(s): BOS President	☐ Corporate Officer — Title(s): _____
☐ Partner — ☐ Limited ☐ General	☐ Partner — ☐ Limited ☐ General
☐ Individual ☐ Attorney in Fact	☐ Individual ☐ Attorney in Fact
☐ Trustee ☐ Guardian or Conservator	☐ Trustee ☐ Guardian or Conservator
☐ Other: _____	☐ Other: _____
Signer Is Representing: Marin County Board of Supervisors	Signer Is Representing: _____

RESOLUTION NO. 2022-06
RESOLUTION OF THE MARIN COUNTY BOARD OF SUPERVISORS AUTHORIZING EXECUTION OF EASEMENT DEED TO MARIN MUNICIPAL WATER DISTRICT

WHEREAS, the County of Marin (County) owns certain real property commonly known as the Marin County Civic Center Campus including Assessor Parcel Nos. 179-270-12 & 16 comprising the "Jury Parking Lot" located along Civic Center Drive, San Rafael; and.

WHEREAS, County and Marin Municipal Water District (District), in response to the drought beginning in 2021 agreed to provide to the public, recycled water via a dispensing station for landscape watering as a method to reduce potable water usage by District customers; and

WHEREAS, County and District identified the Jury Parking Lot as a viable location for the recycled water dispensing station and the facility was implemented on a temporary basis during the summer and fall of 2021; and

WHEREAS, County and District desire to provide for ongoing recycled water dispensing and District has requested that County grant a permanent easement to District for its recycled water facilities located in the Jury Parking Lot; and

WHEREAS, pursuant to California Government Code §25526.6 the Marin County Board of Supervisors, may grant or otherwise convey an easement to Marin Municipal Water District upon a finding that the conveyance is in the public interest and that the easement will not substantially conflict or interfere with the use of the property by the County; and

WHEREAS, County staff had determined that it is in the best interest of the public to convey said easement to the District and the easement will not substantially conflict or interfere with the use of the property by the County.

NOW, THEREFORE, BE IT RESOLVED that the Board of Supervisors finds that the conveyance of said easement is in the public interest and will not substantially conflict or interfere with the use of the property by the County.

FURTHER, BE IT RESOLVED that the President of this Board of Supervisors is hereby authorized to sign said Easement Deed on behalf of the County of Marin.

PASSED AND ADOPTED at a regular meeting of the Board of Supervisors of the County of Marin held on this 11th day of January 2022, by the following vote:

AYES: SUPERVISORS Dennis Rodoni, Judy Arnold, Damon Connolly, Stephanie Moulton-Peters, Katie Rice

NOES: NONE

ABSENT: NONE

PRESIDENT, BOARD OF SUPERVISORS

ATTEST:

DEPUTY CLERK

Item Number: 14
Meeting Date: 02-15-2022
Meeting: Board of Directors

Informational Item

TO: Board of Directors

FROM: Terrie Gillen, Board Secretary

THROUGH: Ben Horenstein, General Manager

DIVISION NAME: Communications & Public Affairs Department

ITEM: Future Meeting Schedule and Agenda Items

SUMMARY
Review of the upcoming Board of Directors and Committee meetings

DISCUSSION
Below are the upcoming meetings of the Board of Directors and/or Committees:

Internal Meetings

- Wednesday, February 16, 2022
  Communications & Water Efficiency Committee/Board of Directors (Communications & Water Efficiency) Meeting
  9:30 a.m.

- Friday, February 18, 2022
  Operations Committee/Board of Directors (Operations) Meeting
  9:30 a.m.

- Thursday, February 24, 2022
  Finance & Administration Committee/Board of Directors (Finance & Administration) Meeting
  9:30 a.m.

External Meetings

- Monday, February 28 , 2022
  North Bay Water Reuse Authority Board Meeting
  9:30 a.m.

- Friday, March 4, 2022
  North Bay Watershed Association Meeting
  9:30 a.m.

FISCAL IMPACT
None

ATTACHMENT(S)
None