USLRGMA

Location: Yuima MWD Board Room
34928 Valley Center Rd.
Pauma Valley, CA 92061
Date: April 18, 2023
Time: 3:00 p.m.

Upper San Luis Rey Groundwater Management Authority

Greg Kamin – Chairman
Roland Simpson – Treasurer
Steve Wehr - Director
Tim Lyall – Vice Chairman
Rich Stehly – Director
Bill Pankey – Director
Michael Perricone- Secretary
Chuck Bandy – Director
Eric Steinlicht - Director

I. Call to order

II. Pledge of Allegiance

III. Roll Call

IV. Approval of the Agenda

V. Public Comment

VI. Consent Calendar

a) Approval of Minutes from March 21, 2023

b) Approval of Accounts Paid and Payables

c) Acceptance of Monthly Financial Reports – March 2023

VII. Action Discussion

a) Presentation: County of San Diego Groundwater Regulation Update.

Background: The County of San Diego is proposing an update to its groundwater regulations for consistency with SGMA, CEQA and a recent judgement in the Borrego Springs Subbasin. Leanne Crow from the County will be presenting the information.

b) Resolution Recommending Yuima Municipal Water District to Approve the Plans and Specifications, and Other Contract Documents for and Authorizing the Advertisement of Invitation for Bids for the Pauma Valley Upper Subbasin Monitoring Well.

Background: As the lead agency of the Groundwater Management Authority, Yuima Municipal Water District holds a grant for data collection in the Pauma Valley Subbasin. As part of the grant workplan and in accordance with the Management Actions and Projects of the adopted Groundwater Sustainability Plan, the Board wishes to install a monitoring well to expand data collection of groundwater use in the subbasin. Administration is asking the Board to review the monitoring well technical

documentation for recommendation to Yuima to approve the plans and specs of the monitoring well and authorize invitations for bids on the project.

Recommendation: That, should the Board agree, they adopt the resolution as presented.

VIII. Information and Reports

Special Committee Reports

At the March Board meeting the select Board members were assigned to two special committees. This item is reserved on the agenda for discussion on committee activities.

Administrator Report

Rate Study Project: The Administration and Rate Consultant is working with Geoscience and other entities to gather information for the rate study. Geoscience is working on providing shape files that reflect the following: the location of wells, estimated pumping based on land use for wells with no record, land use information (if available), and any additional estimates of the spatial distribution of pumping. Chairman Kamin is working on gathering crop data from the larger beneficial users of the subbasin to assist in determining the most accurate and up to date data in relation to groundwater use in the subbasin.

Annual Audit: The Administration has been delayed in obtaining quotes for audit services. This information will be available at the May meeting. Typically audits are conducted in the fall so this delay will not have a detrimental effect on performing the audit as required.

IX. Other Business

Miscellaneous Groundwater news

Next Regular Meeting, Tuesday, May 16, 2023

X. Adjournment

MINUTES OF THE REGULAR MEETING
OF THE BOARD OF DIRECTORS OF
UPPER SAN LUIS REY GROUNDWATER MANAGEMENT AUTHORITY

Date: March 21, 2023
Time: 3:00 p.m.

Call to Order

The Regular Meeting of the Board of Directors of the Upper San Luis Rey Groundwater Management Authority was held at the offices of the Yuima Municipal Water District at 34928 Valley Center Rd., Valley Center, California on Tuesday, the 21st day of March, 2023. The meeting was called to order at 3:05 p.m. and the Pledge of Allegiance was performed.

Roll Call – Determination of Quorum

Administrator Reeh conducted the roll-call and a quorum of the Board was established.

Directors In Attendance

Greg Kamin	Tim Lyall	Rich Stehly
Roland Simpson	Rich Stehly	Eric Steinlicht
Steve Wehr		

Director Simpson arrived at 3:07 p.m.

Others In Attendance

Amy Reeh - Administrator

Approval of the Agenda

There were no changes to the agenda. Secretary Perricone motioned to approve the agenda and was seconded by Director Wehr. The motion was passed by the following roll-call vote, to wit:

AYES: Kamin, Simpson, Wehr, Lyall, Stehly, Perricone, Steinlicht
NOES: None
ABSTAIN: None
ABSENT: Pankey, Bandy

Public Comment

There were no public comments.

Consent Calendar

With motion being offered by Director Wehr and seconded by Vice-Chair Lyall, Consent Calendar items including the Minutes of the February 21, 2023 meeting, the Accounts Paid and Payable and Monthly Financial Reports for February 2023 were approved by the following roll-call vote, to wit:

AYES: Kamin, Simpson, Wehr, Lyall, Stehly, Perricone, Steinlicht
NOES: None
ABSTAIN: None
ABSENT: Pankey, Bandy

Action Discussion

Rate Development Presentation

SCI Consulting gave a presentation on the contracted rate development study. The Board discussed timelines and scheduling.

Required Annual Audit.

Administrator rate discussed the requirement to conduct an annual audit due to the status of the Authority now being a public agency. The Board directed the Administrator to obtain quotes for services from reputable audit entities and bring those quotes to the Board for a decision.

Approval of Purchase Order for SCI Consulting, Inc. to complete the contracted rate study.

In accordance with the Authority's Purchasing Policy and upon motion being offered by Director Wehr and seconded by Vie-Chair Lyall, the purchase order for SCI Consulting, Inc. was approved and carried unanimously by the following roll-call vote, to wit:

AYES: Kamin, Simpson, Wehr, Lyall, Stehly, Perricone, Steinlicht
NOES: None
ABSTAIN: None
ABSENT: Pankey, Bandy

Discussion: Workgroup Assignments

In accordance with the Authority's Groundwater Sustainability Plan, Chair Kamin would like to begin assigning Directors to specific workgroups. The following assignments were made:

Interactive Tribal Workgroup: Directors Kamin, Wehr and Perricone

Drought Resilience Workgroup: Directors Lyall, Simpson and Stehly

Closed Session

A closed session was not held during the meeting.

Other Business

Next Regular Meeting, Tuesday, April 18, 2023.

Adjournment

The meeting of the Board of Directors of the Upper San Luis Rey Groundwater Management Authority was adjourned at 4:45 p.m. until the next meeting on April 18, 2023 at 3:00 p.m.

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Michael Perricone, Secretary

_____

Greg Kamin, Chairman

Upper San Luis Rey Groundwater Management Authority
Check Detail
July 2022 through March 2023

Num	Date	Name	Item	Paid Amount
	12/31/2022	**Monthly Service Charge**		
				-3.00
TOTAL				-3.00
	01/31/2023			
				-3.00
TOTAL				-3.00
	02/28/2023			
				-3.00
TOTAL				-3.00
	03/31/2023			
				-3.00
TOTAL				-3.00
Bnk F...	**11/30/2022**	**Monthly Service Charge**		
				-13.00
TOTAL				-13.00
misc	**03/31/2023**	**Deposit adjustment**		
				-0.01
TOTAL				-0.01
1000	**11/18/2022**	**Association of California Water Agencies**		
				-232.09
TOTAL				-232.09
1001	**12/02/2022**	**Best, Best & Krieger**		
947244	10/11/2022			-8,430.00
947245	10/11/2022			-980.00
949247	11/02/2022			-2,144.00
949246	11/02/2022			-595.00
951829	12/02/2022			-35.00
951830	12/02/2022			-7,627.00
TOTAL				-19,811.00
1002	**12/02/2022**	**Rutan & Tucker, LLP**		
943553	11/04/2022			-2,415.00
945225	11/18/2022			-3,604.97
946851	12/07/2022			-1,435.00
946938	12/08/2022			-1,294.87
TOTAL				-8,749.84

Upper San Luis Rey Groundwater Management Authority
Check Detail
July 2022 through March 2023

Num	Date	Name	Item	Paid Amount
1003	**01/13/2023**	**Juan Gonzalez**		
				-840.00
TOTAL				-840.00
1004	**01/13/2023**	**ACWA / JPIA**		
				-1,405.00
TOTAL				-1,405.00
1005	**02/09/2023**	**Yuima Municipal Water District**		
10202...	10/18/2022			-302,339.59
TOTAL				-302,339.59
1006	**03/21/2023**	**Best, Best & Krieger**		
945078	09/13/2022			-8,712.00
TOTAL				-8,712.00
1007	**03/21/2023**	**Yuima Municipal Water District**		
102022	09/15/2022			-6,900.00
				-503.70
112022	10/14/2022			-1,150.00
				-225.26
122022	11/14/2022			-1,150.00
				-55.20
012023	12/15/2022			-1,150.00
				-2,223.82
022023	01/13/2023			-1,150.00
				-668.01
TOTAL				-15,175.99

Upper San Luis Rey Groundwater Management Authority
Balance Sheet
As of March 31, 2023

	Mar 31, 23
ASSETS	
Current Assets	
Checking/Savings	
10000 · General Checking	1,719.60
Total Checking/Savings	1,719.60
Accounts Receivable	
11400 · Accounts Receivable - Members	39,328.18
Total Accounts Receivable	39,328.18
Total Current Assets	41,047.78
TOTAL ASSETS	**41,047.78**
LIABILITIES & EQUITY	
Liabilities	
Current Liabilities	
Accounts Payable	
20000 · Accounts Payable	39,860.18
Total Accounts Payable	39,860.18
Total Current Liabilities	39,860.18
Total Liabilities	39,860.18
Equity	
Net Income	1,187.60
Total Equity	1,187.60
TOTAL LIABILITIES & EQUITY	**41,047.78**

Upper San Luis Rey Groundwater Management Authority
Profit & Loss
July 2022 through March 2023

	Jul '22 - Mar 23
Income	
40000 · Member Agency Contributions	398,288.30
40800 · Miscellaneous Income	50.00
Total Income	398,338.30
Gross Profit	398,338.30
Expense	
60000 · Yuima Management Fee	13,800.00
60001 · Yuima Non-Contract Expense	334,836.27
60100 · Bank Service Charges	25.01
60200 · Insurance Expense	1,405.00
60300 · Legal Expense	46,012.33
60600 · Membership Fees	232.09
60900 · Professional Services	840.00
Total Expense	397,150.70
Net Income	**1,187.60**

Upper San Luis Rey Groundwater Management Authority
Profit & Loss Budget vs. Actual
July 2022 through March 2023

	Jul '22 - Mar 23	Budget
Income		
40000 · Member Agency Contributions	398,288.30	406,081.68
40100 · Grant Funds	0.00	25,200.00
40500 · Assessments - Groundwater	0.00	0.00
40800 · Miscellaneous Income	50.00	
Total Income	398,338.30	431,281.68
Gross Profit	398,338.30	431,281.68
Expense		
60000 · Yuima Management Fee	13,800.00	10,350.00
60001 · Yuima Non-Contract Expense	334,836.27	309,839.59
60100 · Bank Service Charges	25.01	35.00
60200 · Insurance Expense	1,405.00	
60300 · Legal Expense	46,012.33	70,000.00
60600 · Membership Fees	232.09	232.09
60900 · Professional Services	840.00	15,625.00
60901 · Prof. Services - GSPConsultant	0.00	0.00
60902 · Prof. Services - Rate Study	0.00	25,200.00
Total Expense	397,150.70	431,281.68
Net Income	**1,187.60**	**0.00**

Upper San Luis Rey Groundwater Management Authority
General Ledger
As of March 31, 2023

Type	Date	Num	Name	Memo	Split	Amount	Balance
10000 · General Checking							0.00
Deposit	09/27/2022		Opening Deposit	Opening Dde...	40800 · Miscell...	50.00	50.00
Deposit	11/14/2022			Deposit	-SPLIT-	184,893.06	184,943.06
Check	11/18/2022	1000	Association of Califo...	2022/2023 M...	60600 · Memb...	-232.09	184,710.97
Check	11/30/2022	Bnk Fee	Monthly Service Ch...		60100 · Bank ...	-13.00	184,697.97
Bill Pmt -Check	12/02/2022	1001	Best, Best & Krieger		20000 · Accou...	-19,811.00	164,886.97
Bill Pmt -Check	12/02/2022	1002	Rutan & Tucker, LLP		20000 · Accou...	-8,749.84	156,137.13
Deposit	12/06/2022			Deposit	-SPLIT-	117,446.53	273,583.66
Check	12/31/2022		Monthly Service Ch...	Service Charge	60100 · Bank ...	-3.00	273,580.66
Check	01/13/2023	1003	Juan Gonzalez	Prop 1 Round...	60900 · Profes...	-840.00	272,740.66
Check	01/13/2023	1004	ACWA / JPIA	Annual Premi...	60200 · Insura...	-1,405.00	271,335.66
Check	01/31/2023			Service Charge	60100 · Bank ...	-3.00	271,332.66
Deposit	02/08/2023			Deposit	-SPLIT-	34,660.12	305,992.78
Bill Pmt -Check	02/09/2023	1005	Yuima Municipal Wa...	Member Shar...	20000 · Accou...	-302,339.59	3,653.19
Check	02/28/2023			Service Charge	60100 · Bank ...	-3.00	3,650.19
Deposit	03/01/2023			Deposit	12000 · Undep...	6,274.90	9,925.09
Deposit	03/21/2023			Deposit	-SPLIT-	15,685.51	25,610.60
Bill Pmt -Check	03/21/2023	1006	Best, Best & Krieger	August Speci...	20000 · Accou...	-8,712.00	16,898.60
Bill Pmt -Check	03/21/2023	1007	Yuima Municipal Wa...		20000 · Accou...	-15,175.99	1,722.61
Check	03/31/2023	misc	Deposit adjustment	deposit poste...	60100 · Bank ...	-0.01	1,722.60
Check	03/31/2023			Service Charge	60100 · Bank ...	-3.00	1,719.60
Total 10000 · General Checking						1,719.60	1,719.60
11000 · Accounts Receivable - Grants							0.00
Total 11000 · Accounts Receivable - Grants							0.00
11400 · Accounts Receivable - Members							0.00
Invoice	10/17/2022	100	Pauma Valley Com...		40000 · Memb...	92,446.53	92,446.53
Invoice	10/17/2022	101	Pauma Municipal W...		40000 · Memb...	92,446.53	184,893.06
Invoice	10/17/2022	102	Yuima MWD		40000 · Memb...	92,446.53	277,339.59
Invoice	10/17/2022	103	USLRRCD		40000 · Memb...	25,000.00	302,339.59
Payment	11/14/2022		Yuima MWD		12000 · Undep...	-92,446.53	209,893.06
Payment	11/14/2022		Pauma Valley Com...		12000 · Undep...	-92,446.53	117,446.53
Payment	12/06/2022		USLRRCD		12000 · Undep...	-25,000.00	92,446.53
Payment	12/06/2022		Pauma Municipal W...		12000 · Undep...	-92,446.53	0.00
Invoice	12/07/2022	104	Pauma Valley Com...		40000 · Memb...	9,461.74	9,461.74
Invoice	12/07/2022	105	Pauma Municipal W...		40000 · Memb...	9,461.74	18,923.48
Invoice	12/07/2022	106	Yuima MWD		40000 · Memb...	9,461.74	28,385.22
Payment	12/15/2022	71429	Yuima MWD		12000 · Undep...	-9,461.74	18,923.48
Payment	01/05/2023	39433	Pauma Valley Com...		12000 · Undep...	-9,461.74	9,461.74
Invoice	01/13/2023	107	Pauma Valley Com...		40000 · Memb...	6,274.90	15,736.64
Invoice	01/13/2023	108	Pauma Municipal W...		40000 · Memb...	6,274.90	22,011.54
Invoice	01/13/2023	109	Yuima MWD		40000 · Memb...	6,274.90	28,286.44
Payment	02/08/2023	1082	Pauma Municipal W...		12000 · Undep...	-6,274.90	22,011.54
Payment	02/08/2023	1081	Pauma Municipal W...		12000 · Undep...	-9,461.74	12,549.80
Payment	02/14/2023		Yuima MWD		12000 · Undep...	-6,274.90	6,274.90
Invoice	02/15/2023	110	Pauma Valley Com...		40000 · Memb...	5,228.50	11,503.40
Invoice	02/15/2023	111	Pauma Municipal W...		40000 · Memb...	5,228.50	16,731.90

Upper San Luis Rey Groundwater Management Authority
General Ledger
As of March 31, 2023

Type	Date	Num	Name	Memo	Split	Amount	Balance
Invoice	02/15/2023	112	Yuima MWD		40000 · Memb...	5,228.51	21,960.41
Payment	03/07/2023	71556	Yuima MWD		12000 · Undep...	-5,228.51	16,731.90
Payment	03/16/2023	1083	Pauma Municipal W...		12000 · Undep...	-5,228.50	11,503.40
Payment	03/16/2023	39727	Pauma Valley Com...		12000 · Undep...	-5,228.50	6,274.90
Invoice	03/16/2023	113	Pauma Valley Com...		40000 · Memb...	11,017.76	17,292.66
Invoice	03/16/2023	114	Pauma Municipal W...		40000 · Memb...	11,017.76	28,310.42
Invoice	03/16/2023	115	Yuima MWD		40000 · Memb...	11,017.76	39,328.18
Total 11400 · Accounts Receivable - Members						39,328.18	39,328.18
12000 · Undeposited Funds							0.00
Payment	11/14/2022		Yuima MWD		11400 · Accou...	92,446.53	92,446.53
Deposit	11/14/2022		Pauma Municipal W...	Deposit	10000 · Gener...	-92,446.53	0.00
Deposit	11/14/2022		Yuima MWD	Deposit	10000 · Gener...	-92,446.53	-92,446.53
Payment	11/14/2022		Pauma Valley Com...		11400 · Accou...	92,446.53	0.00
Payment	12/06/2022		Pauma Municipal W...		11400 · Accou...	92,446.53	92,446.53
Payment	12/06/2022		USLRRCD		11400 · Accou...	25,000.00	117,446.53
Deposit	12/06/2022		Pauma Valley Com...	Deposit	10000 · Gener...	-92,446.53	25,000.00
Deposit	12/06/2022		USLRRCD	Deposit	10000 · Gener...	-25,000.00	0.00
Payment	12/15/2022	71429	Yuima MWD		11400 · Accou...	9,461.74	9,461.74
Payment	01/05/2023	39433	Pauma Valley Com...		11400 · Accou...	9,461.74	18,923.48
Payment	02/08/2023	1081	Pauma Municipal W...		11400 · Accou...	9,461.74	28,385.22
Payment	02/08/2023	1082	Pauma Municipal W...		11400 · Accou...	6,274.90	34,660.12
Deposit	02/08/2023	71429	Yuima MWD	Deposit	10000 · Gener...	-9,461.74	25,198.38
Deposit	02/08/2023	39433	Pauma Valley Com...	Deposit	10000 · Gener...	-9,461.74	15,736.64
Deposit	02/08/2023	1081	Pauma Municipal W...	Deposit	10000 · Gener...	-9,461.74	6,274.90
Deposit	02/08/2023	1082	Pauma Municipal W...	Deposit	10000 · Gener...	-6,274.90	0.00
Payment	02/14/2023		Yuima MWD		11400 · Accou...	6,274.90	6,274.90
Deposit	03/01/2023		Yuima MWD	Deposit	10000 · Gener...	-6,274.90	0.00
Payment	03/07/2023	71556	Yuima MWD		11400 · Accou...	5,228.51	5,228.51
Payment	03/16/2023	1083	Pauma Municipal W...		11400 · Accou...	5,228.50	10,457.01
Payment	03/16/2023	39727	Pauma Valley Com...		11400 · Accou...	5,228.50	15,685.51
Deposit	03/21/2023	71556	Yuima MWD	Deposit	10000 · Gener...	-5,228.51	10,457.00
Deposit	03/21/2023	1083	Pauma Municipal W...	Deposit	10000 · Gener...	-5,228.50	5,228.50
Deposit	03/21/2023	39727	Pauma Valley Com...	Deposit	10000 · Gener...	-5,228.50	0.00
Total 12000 · Undeposited Funds						0.00	0.00
12100 · Inventory Asset							0.00
Total 12100 · Inventory Asset							0.00
17760 · Inventory							0.00
Total 17760 · Inventory							0.00
15000 · Land							0.00
Total 15000 · Land							0.00
15100 · Wells							0.00
Total 15100 · Wells							0.00

Upper San Luis Rey Groundwater Management Authority
General Ledger
As of March 31, 2023

Type	Date	Num	Name	Memo	Split	Amount	Balance
15200 · Pumps							0.00
Total 15200 · Pumps							0.00
15300 · Meters							0.00
Total 15300 · Meters							0.00
15400 · Equipment							0.00
Total 15400 · Equipment							0.00
17100 · Accum. Depreciation - Wells							0.00
Total 17100 · Accum. Depreciation - Wells							0.00
17200 · Accum. Depreciation - Pumps							0.00
Total 17200 · Accum. Depreciation - Pumps							0.00
17300 · Accum. Depreciation - Meters							0.00
Total 17300 · Accum. Depreciation - Meters							0.00
17400 · Accum. Depreciation - Equipment							0.00
Total 17400 · Accum. Depreciation - Equipment							0.00
20000 · Accounts Payable							0.00
Bill	09/13/2022	945078	Best, Best & Krieger	August Speci...	60300 · Legal ...	-8,712.00	-8,712.00
Bill	09/15/2022	102022	Yuima Municipal Wa...	Management ...	-SPLIT-	-7,403.70	-16,115.70
Bill	10/11/2022	947244	Best, Best & Krieger	Special Litigat...	60300 · Legal ...	-8,430.00	-24,545.70
Bill	10/11/2022	947245	Best, Best & Krieger	General Coun...	60300 · Legal ...	-980.00	-25,525.70
Bill	10/14/2022	112022	Yuima Municipal Wa...	November Ma...	-SPLIT-	-1,375.26	-26,900.96
Bill	10/18/2022	10202...	Yuima Municipal Wa...	Member Shar...	60001 · Yuima ...	-302,339.59	-329,240.55
Bill	11/02/2022	949247	Best, Best & Krieger	Special Litigat...	60300 · Legal ...	-2,144.00	-331,384.55
Bill	11/02/2022	949246	Best, Best & Krieger	General Coun...	60300 · Legal ...	-595.00	-331,979.55
Bill	11/04/2022	943553	Rutan & Tucker, LLP	General Coun...	60300 · Legal ...	-2,415.00	-334,394.55
Bill	11/14/2022	122022	Yuima Municipal Wa...	December Ma...	-SPLIT-	-1,205.20	-335,599.75
Bill	11/18/2022	945225	Rutan & Tucker, LLP	Special Litigat...	60300 · Legal ...	-3,604.97	-339,204.72
Bill	12/02/2022	951829	Best, Best & Krieger	General Coun...	60300 · Legal ...	-35.00	-339,239.72
Bill	12/02/2022	951830	Best, Best & Krieger	Special Litigat...	60300 · Legal ...	-7,627.00	-346,866.72
Bill Pmt -Check	12/02/2022	1001	Best, Best & Krieger		10000 · Gener...	19,811.00	-327,055.72
Bill Pmt -Check	12/02/2022	1002	Rutan & Tucker, LLP		10000 · Gener...	8,749.84	-318,305.88
Bill	12/07/2022	946851	Rutan & Tucker, LLP	General Coun...	60300 · Legal ...	-1,435.00	-319,740.88
Bill	12/08/2022	946938	Rutan & Tucker, LLP	Special Litigat...	60300 · Legal ...	-1,294.87	-321,035.75
Bill	12/15/2022	012023	Yuima Municipal Wa...	Jan 2023 cont...	-SPLIT-	-3,373.82	-324,409.57
Bill	01/11/2023	954963	Best, Best & Krieger	Special Litigat...	60300 · Legal ...	-3,056.00	-327,465.57
Bill	01/11/2023	954962	Best, Best & Krieger	General	60300 · Legal ...	-1,163.00	-328,628.57
Bill	01/13/2023	022023	Yuima Municipal Wa...	February Con...	-SPLIT-	-1,818.01	-330,446.58
Bill	02/02/2023	956492	Best, Best & Krieger	Rate Structur...	60300 · Legal ...	-2,848.00	-333,294.58
Bill	02/08/2023	951349	Rutan & Tucker, LLP	General Coun...	60300 · Legal ...	-840.00	-334,134.58
Bill	02/08/2023	951341	Rutan & Tucker, LLP	Special Litigat...	60300 · Legal ...	-62.49	-334,197.07
Bill Pmt -Check	02/09/2023	1005	Yuima Municipal Wa...	Member Shar...	10000 · Gener...	302,339.59	-31,857.48
Bill	02/15/2023	32023	Yuima Municipal Wa...		-SPLIT-	-23,969.69	-55,827.17
Bill	02/21/2023	032023	Yuima Municipal Wa...		-SPLIT-	-4,649.10	-60,476.27
Bill	03/02/2023	958861	Best, Best & Krieger	General Coun...	60300 · Legal ...	-175.00	-60,651.27

Upper San Luis Rey Groundwater Management Authority
General Ledger
As of March 31, 2023

Type	Date	Num	Name	Memo	Split	Amount	Balance
Bill	03/02/2023	958862	Best, Best & Krieger	Special Litigat...	60300 · Legal ...	-70.00	-60,721.27
Bill	03/15/2023	42023	Yuima Municipal Wa...		-SPLIT-	-2,501.90	-63,223.17
Bill Pmt -Check	03/21/2023	1006	Best, Best & Krieger	August Speci...	10000 · Gener...	8,712.00	-54,511.17
Bill Pmt -Check	03/21/2023	1007	Yuima Municipal Wa...		10000 · Gener...	15,175.99	-39,335.18
Bill	03/24/2023	955531	Rutan & Tucker, LLP		60300 · Legal ...	-525.00	-39,860.18
Total 20000 · Accounts Payable						-39,860.18	-39,860.18
24000 · Payroll Liabilities							0.00
Total 24000 · Payroll Liabilities							0.00
30000 · Opening Balance Equity							0.00
Total 30000 · Opening Balance Equity							0.00
32000 · Retained Earnings							0.00
Total 32000 · Retained Earnings							0.00
40000 · Member Agency Contributions							0.00
Invoice	10/17/2022	100	Pauma Valley Com...	Member Shar...	11400 · Accou...	-92,446.53	-92,446.53
Invoice	10/17/2022	101	Pauma Municipal W...	Member Shar...	11400 · Accou...	-92,446.53	-184,893.06
Invoice	10/17/2022	102	Yuima MWD	Member Shar...	11400 · Accou...	-92,446.53	-277,339.59
Invoice	10/17/2022	103	USLRRCD	Member Shar...	11400 · Accou...	-25,000.00	-302,339.59
Invoice	12/07/2022	104	Pauma Valley Com...	Member Shar...	11400 · Accou...	-9,461.74	-311,801.33
Invoice	12/07/2022	105	Pauma Municipal W...	JPA Initial Fu...	11400 · Accou...	-9,461.74	-321,263.07
Invoice	12/07/2022	106	Yuima MWD	JPA Initial Fu...	11400 · Accou...	-9,461.74	-330,724.81
Invoice	01/13/2023	107	Pauma Valley Com...	Member Shar...	11400 · Accou...	-6,274.90	-336,999.71
Invoice	01/13/2023	108	Pauma Municipal W...	Member Shar...	11400 · Accou...	-6,274.90	-343,274.61
Invoice	01/13/2023	109	Yuima MWD		11400 · Accou...	-6,274.90	-349,549.51
Invoice	02/15/2023	110	Pauma Valley Com...	USLRGMA M...	11400 · Accou...	-5,228.50	-354,778.01
Invoice	02/15/2023	111	Pauma Municipal W...	Member Cont...	11400 · Accou...	-5,228.50	-360,006.51
Invoice	02/15/2023	112	Yuima MWD	Member Cont...	11400 · Accou...	-5,228.51	-365,235.02
Invoice	03/16/2023	113	Pauma Valley Com...	Member Cont...	11400 · Accou...	-11,017.76	-376,252.78
Invoice	03/16/2023	114	Pauma Municipal W...	Member Cont...	11400 · Accou...	-11,017.76	-387,270.54
Invoice	03/16/2023	115	Yuima MWD	Member Cont...	11400 · Accou...	-11,017.76	-398,288.30
Total 40000 · Member Agency Contributions						-398,288.30	-398,288.30
40100 · Grant Funds							0.00
Total 40100 · Grant Funds							0.00
40500 · Assessments - Groundwater							0.00
Total 40500 · Assessments - Groundwater							0.00
40600 · Interest Earned							0.00
Total 40600 · Interest Earned							0.00
40700 · Delinquent Assessment Fee							0.00
Total 40700 · Delinquent Assessment Fee							0.00

Upper San Luis Rey Groundwater Management Authority
General Ledger
As of March 31, 2023

Type	Date	Num	Name	Memo	Split	Amount	Balance
40800 · Miscellaneous Income							0.00
Deposit	09/27/2022		Opening Deposit	Opening Dde...	10000 · Gener...	-50.00	-50.00
Total 40800 · Miscellaneous Income						-50.00	-50.00
40900 · Well Permit Processing Fee							0.00
Total 40900 · Well Permit Processing Fee							0.00
40901 · Undesirable Results Eval. Fee							0.00
Total 40901 · Undesirable Results Eval. Fee							0.00
50000 · Cost of Goods Sold							0.00
Total 50000 · Cost of Goods Sold							0.00
60000 · Yuima Management Fee							0.00
Bill	09/15/2022	102022	Yuima Municipal Wa...	Management ...	20000 · Accou...	6,900.00	6,900.00
Bill	10/14/2022	112022	Yuima Municipal Wa...	November Ma...	20000 · Accou...	1,150.00	8,050.00
Bill	11/14/2022	122022	Yuima Municipal Wa...	December Ma...	20000 · Accou...	1,150.00	9,200.00
Bill	12/15/2022	012023	Yuima Municipal Wa...	January Contr...	20000 · Accou...	1,150.00	10,350.00
Bill	01/13/2023	022023	Yuima Municipal Wa...	February Con...	20000 · Accou...	1,150.00	11,500.00
Bill	02/15/2023	32023	Yuima Municipal Wa...	March Manag...	20000 · Accou...	1,150.00	12,650.00
Bill	02/21/2023	032023	Yuima Municipal Wa...		20000 · Accou...	0.00	12,650.00
Bill	03/15/2023	42023	Yuima Municipal Wa...		20000 · Accou...	1,150.00	13,800.00
Total 60000 · Yuima Management Fee						13,800.00	13,800.00
60001 · Yuima Non-Contract Expense							0.00
Bill	09/15/2022	102022	Yuima Municipal Wa...	Reimb. Expen...	20000 · Accou...	503.70	503.70
Bill	10/14/2022	112022	Yuima Municipal Wa...	+ Reimb Expe...	20000 · Accou...	225.26	728.96
Bill	10/18/2022	10202...	Yuima Municipal Wa...	Member Shar...	20000 · Accou...	302,339.59	303,068.55
Bill	11/14/2022	122022	Yuima Municipal Wa...	Google Email ...	20000 · Accou...	55.20	303,123.75
Bill	12/15/2022	012023	Yuima Municipal Wa...	Non Contract ...	20000 · Accou...	2,223.82	305,347.57
Bill	01/13/2023	022023	Yuima Municipal Wa...	Dec / Jan We...	20000 · Accou...	668.01	306,015.58
Bill	02/15/2023	32023	Yuima Municipal Wa...	March Non-C...	20000 · Accou...	22,819.69	328,835.27
Bill	02/21/2023	032023	Yuima Municipal Wa...	Hours Exceed...	20000 · Accou...	4,649.10	333,484.37
Bill	03/15/2023	42023	Yuima Municipal Wa...		20000 · Accou...	1,351.90	334,836.27
Total 60001 · Yuima Non-Contract Expense						334,836.27	334,836.27
60100 · Bank Service Charges							0.00
Check	11/30/2022	Bnk Fee	Monthly Service Ch...		10000 · Gener...	13.00	13.00
Check	12/31/2022		Monthly Service Ch...	Service Charge	10000 · Gener...	3.00	16.00
Check	01/31/2023			Service Charge	10000 · Gener...	3.00	19.00
Check	02/28/2023			Service Charge	10000 · Gener...	3.00	22.00
Check	03/31/2023	misc	Deposit adjustment	deposit poste...	10000 · Gener...	0.01	22.01
Check	03/31/2023			Service Charge	10000 · Gener...	3.00	25.01
Total 60100 · Bank Service Charges						25.01	25.01

Upper San Luis Rey Groundwater Management Authority
General Ledger
As of March 31, 2023

Type	Date	Num	Name	Memo	Split	Amount	Balance
60200 · Insurance Expense							0.00
Check	01/13/2023	1004	ACWA / JPIA	Annual Premi...	10000 · Gener...	1,405.00	1,405.00
Total 60200 · Insurance Expense						1,405.00	1,405.00
60300 · Legal Expense							0.00
Bill	09/13/2022	945078	Best, Best & Krieger	August Speci...	20000 · Accou...	8,712.00	8,712.00
Bill	10/11/2022	947244	Best, Best & Krieger	Special Litigat...	20000 · Accou...	8,430.00	17,142.00
Bill	10/11/2022	947245	Best, Best & Krieger	General Coun...	20000 · Accou...	980.00	18,122.00
Bill	11/02/2022	949247	Best, Best & Krieger	Special Litigat...	20000 · Accou...	2,144.00	20,266.00
Bill	11/02/2022	949246	Best, Best & Krieger	General Coun...	20000 · Accou...	595.00	20,861.00
Bill	11/04/2022	943553	Rutan & Tucker, LLP	General Coun...	20000 · Accou...	2,415.00	23,276.00
Bill	11/18/2022	945225	Rutan & Tucker, LLP	Special Litigat...	20000 · Accou...	3,604.97	26,880.97
Bill	12/02/2022	951829	Best, Best & Krieger	General Coun...	20000 · Accou...	35.00	26,915.97
Bill	12/02/2022	951830	Best, Best & Krieger	Special Litigat...	20000 · Accou...	7,627.00	34,542.97
Bill	12/07/2022	946851	Rutan & Tucker, LLP	General Coun...	20000 · Accou...	1,435.00	35,977.97
Bill	12/08/2022	946938	Rutan & Tucker, LLP	Special Litigat...	20000 · Accou...	1,294.87	37,272.84
Bill	01/11/2023	954963	Best, Best & Krieger	Special Litigat...	20000 · Accou...	3,056.00	40,328.84
Bill	01/11/2023	954962	Best, Best & Krieger	General	20000 · Accou...	1,163.00	41,491.84
Bill	02/02/2023	956492	Best, Best & Krieger	Rate Structur...	20000 · Accou...	2,848.00	44,339.84
Bill	02/08/2023	951349	Rutan & Tucker, LLP	General Coun...	20000 · Accou...	840.00	45,179.84
Bill	02/08/2023	951341	Rutan & Tucker, LLP	Special Litigat...	20000 · Accou...	62.49	45,242.33
Bill	03/02/2023	958861	Best, Best & Krieger	General Coun...	20000 · Accou...	175.00	45,417.33
Bill	03/02/2023	958862	Best, Best & Krieger	Special Litigat...	20000 · Accou...	70.00	45,487.33
Bill	03/24/2023	955531	Rutan & Tucker, LLP	Well Permit A...	20000 · Accou...	525.00	46,012.33
Total 60300 · Legal Expense						46,012.33	46,012.33
60400 · Audit Expense							0.00
Total 60400 · Audit Expense							0.00
60500 · General & Administrative							0.00
Total 60500 · General & Administrative							0.00
60600 · Membership Fees							0.00
Check	11/18/2022	1000	Association of Califo...	2022/2023 M...	10000 · Gener...	232.09	232.09
Total 60600 · Membership Fees						232.09	232.09
60700 · Permits & Licenses Expense							0.00
Total 60700 · Permits & Licenses Expense							0.00
60800 · Micellaneous Expense							0.00
Total 60800 · Micellaneous Expense							0.00
60900 · Professional Services							0.00
Check	01/13/2023	1003	Juan Gonzalez	Prop 1 Round...	10000 · Gener...	840.00	840.00
Total 60900 · Professional Services						840.00	840.00

Upper San Luis Rey Groundwater Management Authority
General Ledger
As of March 31, 2023

Type	Date	Num	Name	Memo	Split	Amount	Balance
60901 · Prof. Services - GSPConsultant							0.00
Total 60901 · Prof. Services - GSPConsultant							0.00
60902 · Prof. Services - Rate Study							0.00
Total 60902 · Prof. Services - Rate Study							0.00
60903 · Prof. Services - Engineering							0.00
Total 60903 · Prof. Services - Engineering							0.00
60904 · Prof. Services - GW Monitoring							0.00
Total 60904 · Prof. Services - GW Monitoring							0.00
61000 · Depreciation Expense							0.00
Total 61000 · Depreciation Expense							0.00
66000 · Payroll Expenses							0.00
Total 66000 · Payroll Expenses							0.00
No accnt							0.00
Total no accnt							0.00
TOTAL						**0.00**	**0.00**

Upper San Luis Rey Groundwater Management Authority
Deposit Detail
July 2022 through March 2023

Type	Date	Name	Account	Amount
Deposit	**09/27/2022**	**Opening Deposit**	**10000 · General Ch...**	**50.00**
			40800 · Miscellaneo...	-50.00
TOTAL				-50.00
Deposit	**11/14/2022**		**10000 · General Ch...**	**184,893.06**
Payment	12/06/2022	Pauma Municipal Water D...	12000 · Undeposite...	-92,446.53
Payment	11/14/2022	Yuima MWD	12000 · Undeposite...	-92,446.53
TOTAL				-184,893.06
Deposit	**12/06/2022**		**10000 · General Ch...**	**117,446.53**
Payment	11/14/2022	Pauma Valley Community...	12000 · Undeposite...	-92,446.53
Payment	12/06/2022	USLRRCD	12000 · Undeposite...	-25,000.00
TOTAL				-117,446.53
Deposit	**02/08/2023**		**10000 · General Ch...**	**34,660.12**
Payment	12/15/2022	Yuima MWD	12000 · Undeposite...	-9,461.74
Payment	01/05/2023	Pauma Valley Community...	12000 · Undeposite...	-9,461.74
Payment	02/08/2023	Pauma Municipal Water D...	12000 · Undeposite...	-9,461.74
Payment	02/08/2023	Pauma Municipal Water D...	12000 · Undeposite...	-6,274.90
TOTAL				-34,660.12
Deposit	**03/01/2023**		**10000 · General Ch...**	**6,274.90**
Payment	02/14/2023	Yuima MWD	12000 · Undeposite...	-6,274.90
TOTAL				-6,274.90
Deposit	**03/21/2023**		**10000 · General Ch...**	**15,685.51**
Payment	03/07/2023	Yuima MWD	12000 · Undeposite...	-5,228.51
Payment	03/16/2023	Pauma Municipal Water D...	12000 · Undeposite...	-5,228.50
Payment	03/16/2023	Pauma Valley Community...	12000 · Undeposite...	-5,228.50
TOTAL				-15,685.51

Upper San Luis Rey Groundwater Management Authority
A/P Aging Summary
As of March 31, 2023

	Current	1 - 30	31 - 60	61 - 90	> 90	TOTAL
Best, Best & Krieger	0.00	3,093.00	0.00	4,219.00	0.00	7,312.00
Rutan & Tucker, LLP	525.00	902.49	0.00	0.00	0.00	1,427.49
Yuima Municipal Water District	0.00	7,151.00	23,969.69	0.00	0.00	31,120.69
TOTAL	**525.00**	**11,146.49**	**23,969.69**	**4,219.00**	**0.00**	**39,860.18**

Upper San Luis Rey Groundwater Management Authority
A/R Aging Summary
As of March 31, 2023

	Current	1 - 30	31 - 60	61 - 90	91 - 120	> 120	TOTAL
Pauma Municipal Water District	0.00	11,017.76	0.00	0.00	0.00	0.00	11,017.76
Pauma Valley Community Services District	0.00	11,017.76	0.00	6,274.90	0.00	0.00	17,292.66
Yuima MWD	0.00	11,017.76	0.00	0.00	0.00	0.00	11,017.76
TOTAL	**0.00**	**33,053.28**	**0.00**	**6,274.90**	**0.00**	**0.00**	**39,328.18**

Groundwater Ordinance Amendment; and Focused Updates to California Environmental Quality Act Guidelines – Groundwater Resources

This project involves amending the County's Groundwater Ordinance and completing focused updates to the County California Environmental Quality Act (CEQA) Guidelines for Groundwater Resources (County Groundwater Guidelines). This action is intended to ensure consistency and compliance with California's 2015 Sustainable Groundwater Management Act (SGMA), revisions to the State's CEQA Guidelines, and a Superior Court of California (Court) judgment. While changes to the Groundwater Ordinance are specific to the Borrego Springs Groundwater Subbasin (Borrego Basin), changes to the County Groundwater Guidelines are primarily focused on the three SGMA-mandated basins in the San Diego region, which include Borrego Basin, Upper San Luis Rey Valley Groundwater Subbasin (SLR Basin), and San Pasqual Valley Groundwater Basin (San Pasqual Basin).

Groundwater Ordinance

Given that groundwater rights in the Borrego Basin have been adjudicated, the Groundwater Ordinance is being amended to reflect the Borrego Springs Subbasin Groundwater Rights Adjudication (2021 Judgment). The Groundwater Ordinance will now reflect that future water use is subject to the 2021 Judgment, which requires all groundwater users within the Borrego Basin to have groundwater rights. Therefore, all projects within the Borrego Basin must demonstrate the ability to obtain water rights prior to approval of projects subject to the Groundwater Ordinance.

County Groundwater Guidelines

The focused updates to the County Groundwater Guidelines will reference SGMA and the State's 2018 revised CEQA Guidelines, which address a project's impacts to groundwater. Since the current version of the County Groundwater Guidelines already considers groundwater sustainability when determining a project's environmental impact, the updated County Groundwater Guidelines will not change how a project is evaluated but reference the recent regulatory changes and the 2021 Judgment. The County Groundwater Guidelines would require projects within a SGMA-mandated basin to evaluate whether they are consistent with an adopted Groundwater Sustainability Plan. Additionally, the requirement for groundwater investigations will now require a California Professional Geologist to prepare and sign reports in lieu of the current two-step requirement of being a California Professional Geologist and being a consultant on the County CEQA Consultants list (CEQA List) for groundwater resources. This is consistent with other similar County Guidelines.

The County's current Groundwater Ordinance:
https://www.sandiegocounty.gov/dplu/docs/GROUNDWATER-ORD.pdf

The County's current CEQA Guidelines – Groundwater Resources:
https://www.sandiegocounty.gov/dplu/docs/GRWTR-Guidelines.pdf

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The County's current Groundwater Ordinance:
https://www.sandiegocounty.gov/dplu/docs/GROUNDWATER-ORD.pdf

The County's current CEQA Guidelines – Groundwater Resources:
https://www.sandiegocounty.gov/dplu/docs/GRWTR-Guidelines.pdf

(Underline indicates addition)
(~~Strikeout~~ indicates deletion)

ORDINANCE NO. _____(N.S.)
AN ORDINANCE AMENDING THE SAN DIEGO COUNTY ADMINISTRATIVE CODE ARTICLE 10249 SECTIONS 67.720 AND 67.750, RELATING TO GROUNDWATER

The Board of Supervisors of the County of San Diego ordains as follows:

Section I. The Board of Supervisors intends by this ordinance to comply with Judgment Findings and Order for California Superior Court Case No. 37-2020-00005776; *Borrego Water District v. All Persons who claim a right to extract Groundwater in the Borrego Valley Groundwater Subbasin No. 7.024-01, et al.*

Section 2. Section 67.720 of the San Diego County Administrative Code is hereby amended to read as follows:

SEC. 67.720. (Borrego Valley)

The following provisions apply to Projects that would extract or use groundwater resources in the Borrego Springs Subbasin. This area is identified in *California's Groundwater (Bulletin 118)* as basin No. 7-024.01 (California Department of Water Resources. 2020 update). ~~Valley Exemption Area. This area is shown on the map entitled "Groundwater Limitations Map", approved by the Board of Supervisors on May 5, 2004 (Item 15), on file with the Clerk of the Board of Supervisors.~~

Water rights in the Borrego Springs Subbasin have been adjudicated. The adjudication of groundwater pumping rights in the Borrego Springs Subbasin was approved by the Superior Court of California on April 8, 2021: *Borrego Water District v. All Persons Who Claim a Right to Extract Groundwater in the Borrego Valley Groundwater Subbasin No. 7.024 Whether Based on Appropriation, Overlying Right, or Other Basis of Right, and/or Who Claim a Right to Use of Storage Space in the Subbasin; et al.* (Case No. 37-2020-00005776) [Judgment].

All future water use will be subject to the Judgment and governed by the Borrego Springs Watermaster (Watermaster). The Watermaster, with oversight from the Superior Court of California, is the entity responsible for managing groundwater resources in the Borrego Springs Subbasin and tasked with ensuring water is allocated according to established water rights. Water production in the Borrego Springs Subbasin is authorized and constrained in accordance with all terms and provisions contained in the Judgment and contained in Watermaster Rules and Regulations (adopted and amended from time to time in order to implement the terms of the Judgment). The Judgment assigns Baseline Pumping Allocations (BPAs) to specific parcels which become the basis for annual pumping allowances to ensure sustainable groundwater management of the basin.

A. A Project listed in Section 67.711 proposing to use groundwater resources shall obtain adequate BPA for all water uses in accordance with the requirements of the Watermaster Board. Prior to approval of a Project, the applicant shall demonstrate to the satisfaction of the Director the ability to obtain necessary BPA. ~~A Project listed in Section 67.711 that will extract or use at least one acre-foot (325,851 gallons) of groundwater per year shall include one or more groundwater use reduction measures listed in subsection B below.~~

The groundwater use reduction measures shall fully offset the amount of groundwater that the proposed project will use and shall result in "no net increase" in the amount of groundwater extracted from the Borrego Valley Exemption Area. The groundwater use reduction measures shall be implemented within the Borrego Valley Exemption Area as shown on the "Groundwater Limitations Map."

B. One or more of the following groundwater use reduction measures may be used:

1. In accordance with the following provisions, grant an easement to the County of San Diego on off-site land that is being actively irrigated:

a) The easement shall permanently and completely prohibit the use, extraction, storage, distribution or diversion of groundwater on the property subject to the easement, except for:

i. The use of a maximum of one acre-foot of groundwater per year for a single-family residence; or

ii. A subsequent project on the land subject to the easement that would require discretionary approval by the County if groundwater use reduction measures are implemented that fully offset the amount of groundwater that the proposed project would use. Groundwater use reduction measures that may be used for these projects include the measures listed in subsections 67.720.B.1 (this subsection) and 67.720.B.2.

b) The amount and evidence of historic groundwater use and the terms and conditions of the easement shall be subject to the approval of the Director. Evidence of historic groundwater use on the land subject to the easement may include, but is not limited to, a survey by a California Professional Land Surveyor or Professional Engineer, historical aerial photographs, and a written description of the historical water use.

c) The use of the water on the land subject to the easement shall have started by January 1, 2008 and shall have continued at least to the date the proposed easement is submitted to the Department of Planning and Development Services.

d) The quantity of water available for offset shall be based on the total groundwater consumptive use for each vegetation type on the land subject to the easement as determined by the values in the following table:

Vegetation Type	Groundwater Consumptive Use Per Acre (acre-feet/acre/year)
Citrus (all types)	4.9
Nursery plants	4.5

~~Palms (all types)~~	~~3.7~~
~~Tamarisk~~	~~1.7~~
~~Turf (warm season)~~	~~5.1~~
~~Turf (winter cool/ summer warm)~~	~~5.6~~
~~Potatoes~~	~~0.8~~

~~To determine the groundwater consumptive use for each vegetation type within the easement area, the acreage of irrigated land for a particular vegetation type is multiplied by the "Groundwater Consumptive Use Per Acre" as listed in the table above. The "Groundwater Consumptive Use Per Acre" value for any vegetation types not listed in the table above shall be determined by the Director.~~

~~e) Submit the easement to the Department of Planning and Development Services for review, approval and recordation.~~

~~2. Water credits issued by the Borrego Water District that comply with the Memorandum of Agreement between the Borrego Water District and the County of San Diego regarding Water Credits and any amendments thereto, on file with the Clerk of the Board of Supervisors.~~

~~3. Provide evidence to the satisfaction of the Director that all (or a portion of) the on-site water use occurring prior to the date of permit application will be permanently eliminated as a result of the Project.~~

~~4. Any other legally enforceable mechanism that achieves permanent water savings, subject to approval by the Director.~~

Section 3. Section 67.750 of the San Diego County Administrative Code is hereby amended to read as follows:

SEC. 67.750. (Exemptions).

(a) - (c) [no changes].

(d) Projects within the Borrego Springs Subbasin are exempt from minimum parcel sizes imposed by Section 67.722.A.

Section 4. This ordinance shall take effect and be in force thirty days after its passage, and before the expiration of fifteen days after its passage, a summary hereof shall be published once with the names of the members of this Board voting for and against it in the San Diego Daily Transcript, a newspaper of general circulation published in the County of San Diego.

APPROVED AS TO FORM AND LEGALITY
Claudia G. Silva, County Counsel
BY: xxx, Senior Deputy County Counsel

RESOLUTION NO. _____

RESOLUTION RECOMMENDING YUIMA MUNICIPAL WATER DISTRICT TO APPROVE PLANS AND SPECIFICATIONS AND OTHER CONTRACT DOCUMENTS AND RECOMMENDING THE ADVERTISMENT OF INVITATION FOR BIDS FOR MONITORING WELL INACCORDANCE WITH THE GROUNDWATER SUSTAINABIITY PLAN

A. WHEREAS, in August 2014, the California Legislature passed, and in September 2014 the Governor signed, legislation creating the Sustainable Groundwater Management Act ("SGMA") "to provide local groundwater sustainability agencies with the authority and technical and financial assistance necessary to sustainably manage groundwater" (Wat. Code, § 10720, (d)); and

B. WHEREAS, SGMA requires sustainable management through the development of groundwater sustainability plans ("GSPs"), which can be a single plan developed by one or more groundwater sustainability agency ("GSA") or multiple coordinated plans within a basin or subbasin (Wat. Code, § 10727); and

C. WHEREAS, SGMA requires that a GSA, created via a memorandum of understanding, joint powers agreement, or other legally enforceable agreement, manage groundwater in all basins designated by the Department of Water Resources ("DWR") as a medium or high priority, including the medium priority Upper San Luis Rey Groundwater Subbasin (designated basin number 9-007.01); and

D. WHEREAS, Upper San Luis Rey Groundwater Management Authority was formed for the purposes of sustainably managing groundwater in the Upper San Luis Rey Groundwater Subbasin, within its jurisdictional boundaries, pursuant to the requirements of SGMA; and

E. WHEREAS, Upper San Luis Rey Groundwater Management Authority, through Yuima Municipal Water District as the lead agency for the GSA, has the authority to draft, adopt, and implement a GSP for the entire Subbasin upon the recommendation of the Upper San Luis Rey Groundwater Management Authority Executive Team. (Wat. Code, § 10725 et seq.); and

F. WHEREAS, the Upper San Luis Rey Groundwater Management Authority has coordinated with stakeholders and beneficial users in the Upper San Luis Rey Groundwater Subbasin through public GSA meetings, the GSA's stakeholder outreach plan, and stakeholder outreach meetings and has provided notice to the County of San Diego per the requirements of SGMA; and

G. WHEREAS, the Upper San Luis Rey Groundwater Management Authority developed the draft of the Upper San Luis Rey GSP and adopted the GSP on January 21, 2022

H. WHEREAS, the Executive Team of the Upper San Luis Rey Groundwater management Authority is tasked with reviewing all major decisions related to development, approval and implementation of a GSP prior to recommending approval to the Yuima Municipal Water District, the agency tasked by the amended MOU with administration of the GSP; and

I. WHEREAS, the GSP Management Actions contains a directive to expand the monitoring network of the subbasin.

NOW, THEREFORE, BE IT RESOLVED that the Executive Team of the Upper San Luis Rey Groundwater Management Authority finds as follows:

1. Pauma Valley GSA, through its Executive Team, hereby approves the Plans and Specifications and for the Pauma Valley Upper Subbasin Monitoring Well and recommends Yuima Municipal Water District authorize the advertisement of invitations for bids for said well.

PASSED, APPROVED, AND ADOPTED this 18th day of April, 2022 by the following vote:

AYES:

NAYS:

ABSTAIN:

ABSENT:

_____
Greg Kamin, Chairman

ATTEST:

_____
Michael Perricone, Secretary

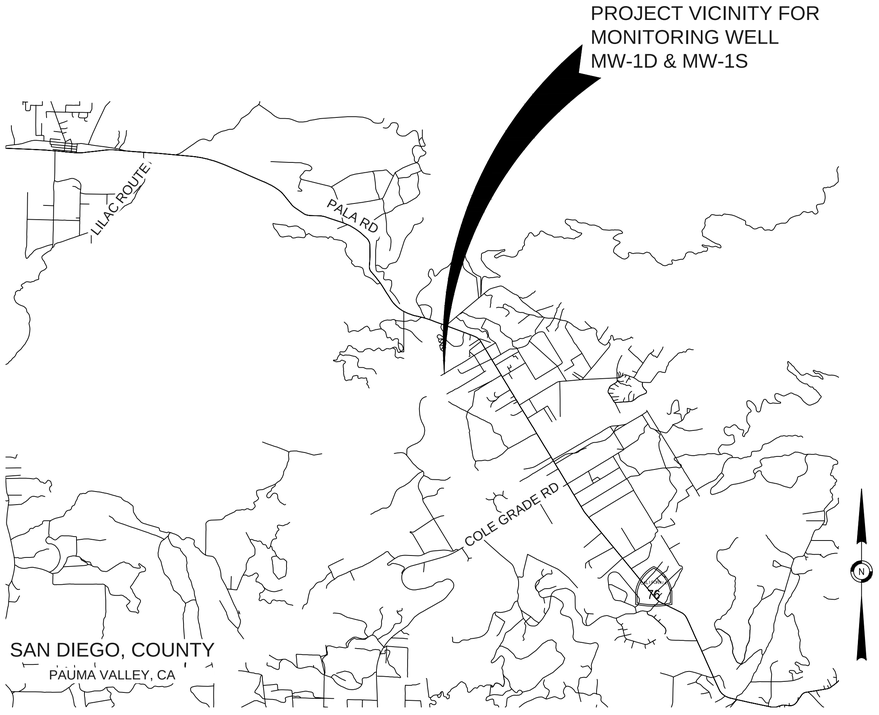
YUIMA MUNICIPAL WATER DISTRICT

PLANS FOR DRILLING, CONSTRUCTION, DEVELOPMENT AND TESTING
UPPER SAN LUIS REY (USLR)
MONITORING WELL MW-1D (DEEP) & MW-1S (SHALLOW)

APRIL 2023

SHEET NO.	TITLE
1	PROJECT LOCATION MAP/SHEET INDEX
2	GENERAL NOTES
3	SITE PLAN - MW-1D (DEEP) AND MW-1S (SHALLOW)
4	WELL PROFILE AND CONSTRUCTION DETAILS
5	WELL CONSTRUCTION DETAILS

DRAFT



VICINITY MAP
NOT TO SCALE

WELL SITE LOCATION MAP OF MONITORING WELL
MW-1D & MW-1S
NOT TO SCALE

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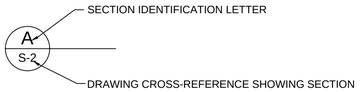
GENERAL NOTES

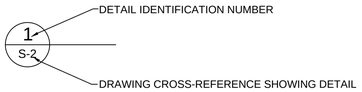
1. ALL WORK SHALL BE IN ACCORDANCE WITH: (i) THE PROJECT CONTRACT DOCUMENTS; (ii) THE STANDARD DRAWINGS AND TECHNICAL PROVISIONS OF IMPERIAL IRRIGATION DISTRICT (THE OWNER); (iii) THE LATEST EDITION OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION; (iv) ALL APPLICABLE AMERICAN WATER WORKS ASSOCIATION (AWWA) STANDARDS FOR MONITORING WELLS, PIPELINES, AND OTHER PERTINENT FACILITIES; (v) THE CALIFORNIA DEPARTMENT OF WATER RESOURCES WELL STANDARDS (BULLETIN 74-90 AND 74-81); (vi) ALL APPLICABLE REQUIREMENTS OF THE CALIFORNIA DEPARTMENT OF PUBLIC HEALTH. IN THE EVENT OF A DISCREPANCY, THE MOST STRINGENT REQUIREMENT SHALL PREVAIL.
2. THE CONTRACTOR SHALL NOTIFY THE OWNER AT LEAST SEVEN (7) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.
3. THE CONTRACTOR SHALL HAVE COPIES OF THE PLANS, SPECIFICATIONS AND PERMITS FOR THIS PROJECT ON SITE AT ALL TIMES. THE CONTRACTOR SHALL BE FAMILIAR WITH ALL APPLICABLE STANDARDS, SPECIFICATIONS, AND PERMITS.
4. THE ACTUAL FIELD CONDITIONS MAY VARY FROM THOSE SHOWN ON PLAN AND PROFILE DRAWINGS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ACTUAL ABOVE GROUND AND UNDERGROUND CONDITIONS PRIOR TO THE START OF CONSTRUCTION.
5. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY RESPECTIVE UTILITIES AND UNDERGROUND SERVICE ALERT TO DETERMINE THE EXACT FIELD LOCATION OF EXISTING UTILITIES. CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT AT LEAST 48 HOURS IN ADVANCE OF ANY DIGGING. UNDERGROUND SERVICE ALERT NO. IS 1-800-227-2600.
6. THE OWNER DOES NOT WARRANT THAT ALL UTILITIES ARE SHOWN, THAT UTILITIES SHOWN EXIST, OR THAT UTILITIES SHOWN ARE IN THE LOCATIONS INDICATED. THE EXISTENCE AND LOCATION OF ALL UNDERGROUND UTILITIES, PIPES, AND STRUCTURES SHOWN ON PLANS WERE OBTAINED FROM A SEARCH OF AVAILABLE RECORDS. APPROVAL OF THE PLANS BY THE OWNER OR THE GEOHYDROLOGIST DOES NOT CONSTITUTE A REPRESENTATION AS TO THE ACCURACY, COMPLETENESS, OR EXISTENCE OF UNDERGROUND UTILITIES OR STRUCTURES.
7. THE CONTRACTOR SHALL PERFORM A UTILITY SEARCH FOR THE PROJECT AREA. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE TRUE LOCATION AND DEPTH OF ALL UTILITIES AND SERVICE CONNECTIONS. THE CONTRACTOR SHALL ALSO DETERMINE THE TYPE OF MATERIAL AND CONDITION OF ANY UTILITY, WHICH MAY BE EFFECTED BY THE WORK.
8. THE CONTRACTOR SHALL USE EXTREME CAUTION SO AS NOT TO DISTURB EXISTING UTILITIES AND PIPELINES OR UNNECESSARILY DAMAGE SURROUNDING VEGETATION. CONTRACTOR SHALL REROUTE, REPLACE OR EXTEND OR OTHERWISE ALTER EXISTING UNDERGROUND UTILITIES AND CONDUITS, WHICH ARE DISTURBED AS PART OF THIS WORK TO THE ULTIMATE SATISFACTION OF THE OWNER AT NO ADDITIONAL COST UNLESS APPROVED OTHERWISE IN ADVANCE.
9. WORK SHOWN OR INDICATED ON THESE PLANS, OR CALLED FOR IN THE SPECIFICATIONS, BUT NOT INCLUDED AS PAY QUANTITY ITEMS, SHALL BE CONSIDERED INCIDENTAL WORK. THE COST FOR THIS WORK SHALL BE INCLUDED IN THE CONTRACTOR'S BID FOR PAY QUANTITY ITEMS.
10. ALL EXCESS EXCAVATED SOIL AND MATERIALS SHALL BE DISPOSED OF IN A PROPER AND LEGAL MANNER BY THE CONTRACTOR. ALL DISTURBED SURFACE AREAS SHALL BE SHAPED TO FACILITATE DRAINAGE AND AVOID PONDING AND SHALL BE RESTORED TO NEAR NATURAL OR PRE-CONSTRUCTION CONDITIONS..
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGE TO EXISTING UTILITIES, PAVEMENT, CURBS, TREES, LANDSCAPING, AND IRRIGATION SYSTEMS AND WILL BE REQUIRED TO REPAIR OR REPLACE ANY DAMAGE CAUSED FROM CONSTRUCTION ACTIVITIES TO THE SATISFACTION OF THE OWNER OR RESPONSIBLE UTILITY, UNLESS OTHERWISE NOTED ON THE CONSTRUCTION DRAWINGS.
12. THE WORK SITE AND EXTERIOR SHALL BE MAINTAINED IN A NEAT, CLEAN, HAZARD FREE, ORDERLY STATE DURING CONSTRUCTION. THE SITE SHALL BE CLEANED UPON REQUEST BY THE OWNER.
13. THE CONTRACTOR SHALL MAINTAIN SANITARY FACILITIES FOR WORKERS ON SITE.
14. CONTRACTOR AGREES TO ASSUME RESPONSIBILITY FOR SITE CONDITIONS, TO ENSURE THE SAFETY OF ALL PERSONS AND PROPERTY AFFECTED BY THEIR WORK, AND THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS.
15. CONTRACTOR AGREES TO ENSURE THAT ALL WORK IS PERFORMED IN A MANNER, WHICH MINIMIZES DISTURBANCE TO THE OWNER'S ONGOING ACTIVITIES AT THE SITE. CONTRACTOR SHALL ENFORCE STRICT DISCIPLINE AND GOOD ORDER AMONG ITS EMPLOYEES AT ALL TIMES. CONTRACTOR SHALL NOT EMPLOY ANY PERSON UNFIT OR UNSKILLED IN A PROJECT ASSIGNED TO HIM/HER.
16. THE CONTRACTOR SHALL MINIMIZE NOISE (PER THE REQUIREMENTS OF APPLICABLE NOISE STUDIES) AS A RESULT OF CONSTRUCTION ACTIVITIES INCLUDING LOADING AND UNLOADING OPERATIONS AND NOT DROP HEAVY OBJECTS.
17. CONTRACTOR SHALL USE BEST MANAGEMENT PRACTICES (BMPs) FOR CONTAINING WATER. CONSTRUCTION SITES SHALL BE MAINTAINED IN SUCH A CONDITION THAT AN UNANTICIPATED STORM DOES NOT CARRY WASTES OR POLLUTANTS OFF THE SITE.
18. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS DURING DRILLING, CONSTRUCTION, AND DEVELOPMENT TO ENSURE THAT THERE ARE NO ADVERSE RISKS TO PEOPLE OR ANIMALS IN ADJACENT AREAS.
19. THESE CONTRACT DOCUMENTS HAVE BEEN PREPARED BY OR UNDER THE DIRECTION OF A DESIGN PROFESSIONAL LICENSED BY THE STATE OF CALIFORNIA AND ARE BASED ON THE MOST RECENT AVAILABLE INFORMATION REGARDING SITE CONDITIONS, DRILLING AND DEVELOPMENT METHODS, AND MATERIALS TO BE USED. HOWEVER, SHOULD THE CONTRACTOR TAKE EXCEPTION TO ANY PART OF THESE SPECIFICATIONS OR WELL DESIGN, THE CONTRACTOR SHALL NOTIFY THE OWNER IN WRITING PRIOR TO CONTINUING THE WORK.

DRAWING DETAIL AND SECTION CROSS-REFERENCE:

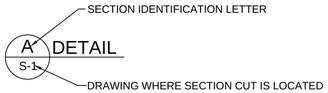
SECTION CUT DESIGNATION AT CROSS-REFERENCE



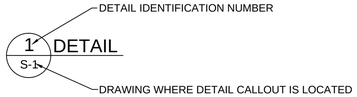
DETAIL CALLOUT AT CROSS-REFERENCE



SECTION IDENTIFICATION



DETAIL IDENTIFICATION



CIVIL LEGEND:

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
X	C - COMMUNICATION MANHOLE D - STORM DRAIN MANHOLE E - ELECTRICAL MANHOLE G - NATURAL GAS MANHOLE S - SEWER MANHOLE T - TELEPHONE MANHOLE W - WATER MANHOLE		PROPERTY LINE INDICATOR
			EASEMENT LINE
			SOUND PANELS
			MASONRY WALL
			SURFACE DRAINAGE
		EL	EXISTING CONTOUR
	FIRE HYDRANT		UNDISTURBED EARTH
W	UTILITY-WATER REGULATOR VALVE		SELECT COMPACT FILL
TM	PRECAST CONCRETE, MANHOLE, TRANSFORMER VAULT		FINE POROUS FILL
	WELL		TOP OF SLOPE
			TOE OF SLOPE
25	INTERSTATE ROUTE		
66	U.S. ROUTE		SITE PIPING UTILITIES
50	STATE ROUTE	OH	OVERHEAD LINES
		W	WATER
		X	FENCE
		CTV	CABLE TV
		E	ELECTRICAL

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REV.	DATE	BY	DESCRIPTION
1			
2			
3			
4			

LINE IS 2 INCHES AT FULL SCALE (IF NOT 2" - SCALE ACCORDINGLY)

DESIGNED: AA
DRAWN: JFF
CHECKED: TW
DATE: APR-23

CITY ENGINEER:
_____ _____
_____, P.E. DATE
R.C.E. NO. _____ EXP. DATE: _____
PREPARED UNDER THE SUPERVISION OF:
_____ 4/12/23
TERRY WATKINS DATE
C.H.G. NO. 1038 EXP. DATE: 3/31/24

YUIMA MUNICIPAL WATER DISTRICT

PLANS FOR DRILLING, CONSTRUCTION, DEVELOPMENT, AND TESTING
USLR MONITORING WELL
MW-1D (DEEP) & MW-1S (SHALLOW)

GENERAL NOTES

DRAWING NO. 2

SHEET NO. 2 OF 5

DRAWING NOTES

- APPROXIMATE LOCATION OF PROPOSED MONITORING WELL
- FIRE HYDRANT
- WORK SITE FOOTPRINT
- ROAD CROSSING
- ACCESS ROAD
- (OPTIONAL) WATER CONVEYANCE LINE WITH (3) ROAD CROSSINGS.

110' 0 110' 220'

SCALE: 1" = 110'

NOT FOR CONSTRUCTION

X:\Projects\CAD\Preliminary Design\Yuima Municipal Water District\MW-1\Drawings\YWMD MW-1_Preliminary Design.dwg, 3/31/2023

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Yuima Municipal Water District

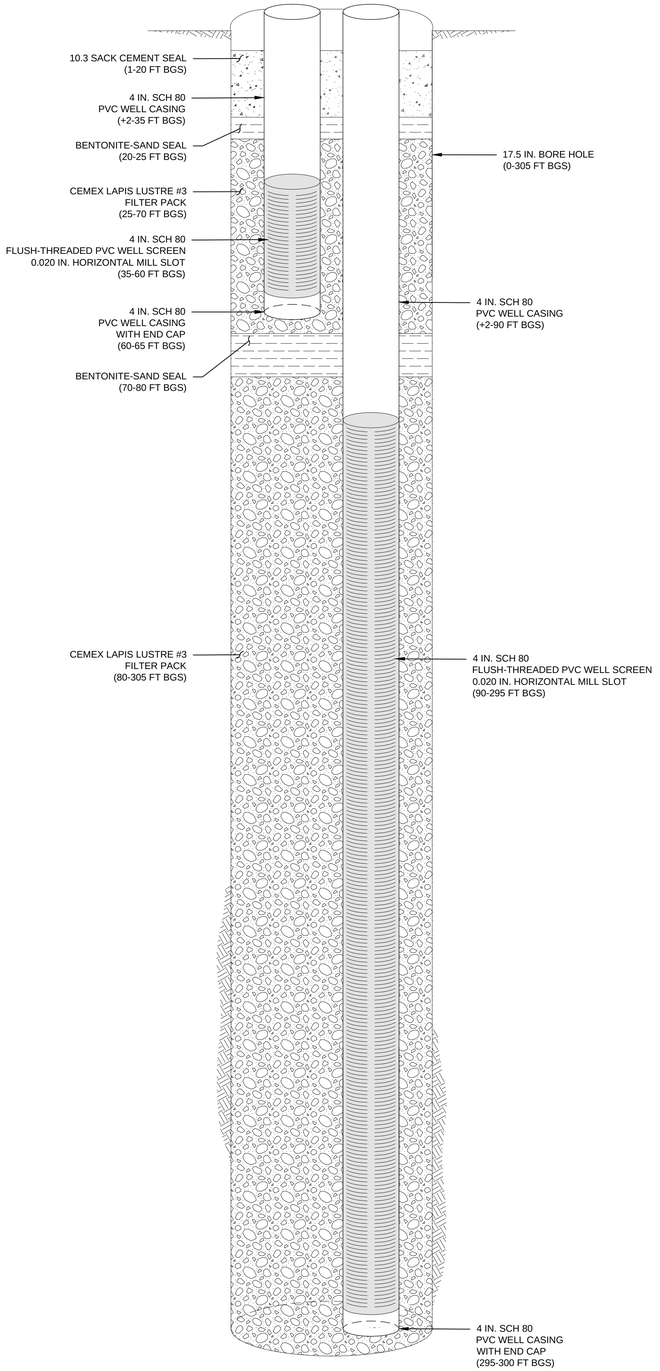
YUIMA MUNICIPAL WATER DISTRICT

PLANS FOR DRILLING, CONSTRUCTION, DEVELOPMENT, AND TESTING
USLR MONITORING WELL
MW-1D (DEEP) & MW-1S (SHALLOW)

SITE PLAN - MW-1D (DEEP) AND MW-1S (SHALLOW)

DRAWING NO. 3

SHEET NO. 3 OF 5



MONITORING WELL MW-1D (DEEP) & MW-1S (SHALLOW)

WELL INFORMATION				
OWNER	YUIMA MUNICIPAL WATER DISTRICT			
WELL NAME	USLR MW-1S (SHALLOW)		USLR MW-1D (DEEP)	
WELL LOCATION	APPROXIMATELY 2,400 FT WEST OF INTERSECTION HWY 76 AND DIRT ROAD NORTH OF PALA RD.			
LATITUDE (NAD83)	33.333957			
LONGITUDE (NAD83)	-117.013166			
LAND SURFACE ELEVATION (FT)	698			
WELL USE	MONITORING WELL			
CASING AND SCREEN SCHEDULE				
	CASING	SCREEN	CASING	SCREEN
MATERIAL	SCH. 80 PVC		SCH. 80 PVC	
NOMINAL DIAMETER (IN.)	4		4	
OUTSIDE DIAMETER (IN.)	4.50		4.50	
INSIDE DIAMETER (IN.)	3.826		3.826	
WALL THICKNESS (IN.)	0.337		0.337	
TOTAL INSTALLED LENGTH (FT)	42	25	97	205
INSTALLED INTERVALS (FT BGS) AND LENGTH (FT)				
INTERVAL 1	+2 - 35 FT BGS (37 FT TOTAL)	35 - 60 FT BGS (25 FT TOTAL)	+2 - 90 FT BGS (92 FT TOTAL)	90 - 295 FT BGS (205 FT TOTAL)
INTERVAL 2	60 - 65 FT BGS (5 FT TOTAL)	-	295 - 300 FT BGS (5 FT TOTAL)	-
SCREEN PERFORATION TYPE	-	HORRIZONTAL MILL SLOT	-	HORRIZONTAL MILL SLOT
PERFORATION OPENING (IN.)	-	0.020	-	0.020
CONNECTION TYPE	FLUSH THREADED		FLUSH THREADED	
CASING BOTTOM CAP	THREADED CAP	-	THREADED CAP	-
CENTRALIZER MATERIAL	STAINLESS STEEL			
CENTRILIZER ANGULAR SPACING	90°			
CENTRILIZER VERTICAL SPACING	ABOVE AND BELOW SCREEN			
BOREHOLE				
	PILOT BOREHOLE		FINAL BOREHOLE	
DRILL BIT TYPE	TRI-CONE			
DRILLING METHOD	DUAL TUBE		MUD ROTARY	
DRILLING FLUID COMPOSITION	AIR		BENTONITE	
DIAMETER (IN.)	6		17.5	
TOTAL DEPTH (FT BGS)	300			
GROUTING AND SEALING				
DEPTH (FT BGS)		MATERIAL		
1 - 20		10.3 SACK CEMENT		
20 - 25		BENTONITE-SAND		
70 - 80		BENTONITE-SAND		
FILTER PACK DESIGN				
MATERIAL		CEMEX LAPIS LUSTRE #3 SAND		
FLUID USED FOR FILTER PACK PLACEMENT		POTABLE WATER		
FILTER PACK INTERVAL FOR MW-1S (FT BGS)		25 - 70		
FILTER PACK INTERVAL FOR MW-1D (FT BGS)		80 - 305		

ABBREVIATIONS LIST:

AGS ABOVE GROUND SURFACE
BGS BELOW GROUND SURFACE
ID INSIDE DIAMETER
OD OUTSIDE DIAMETER

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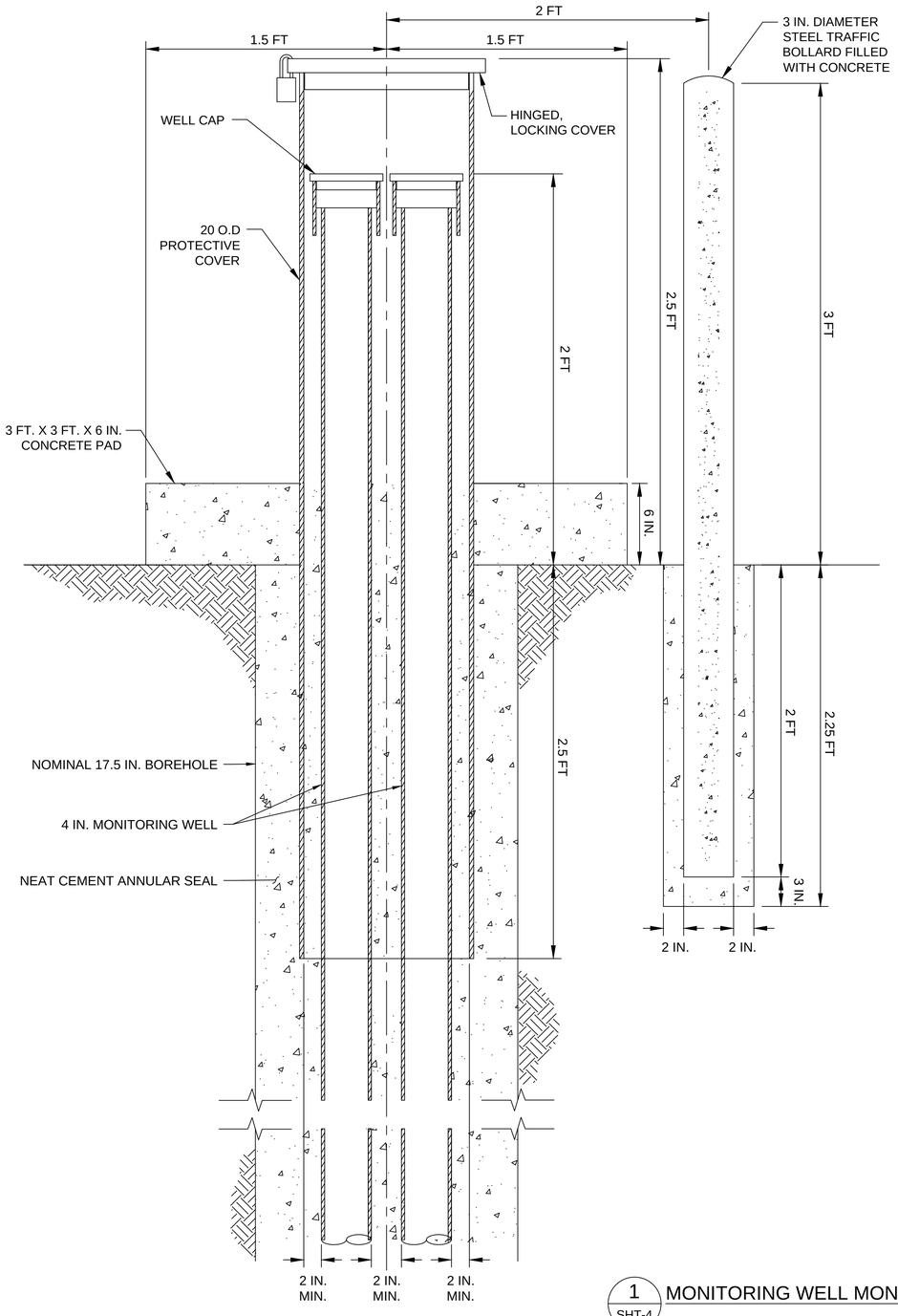
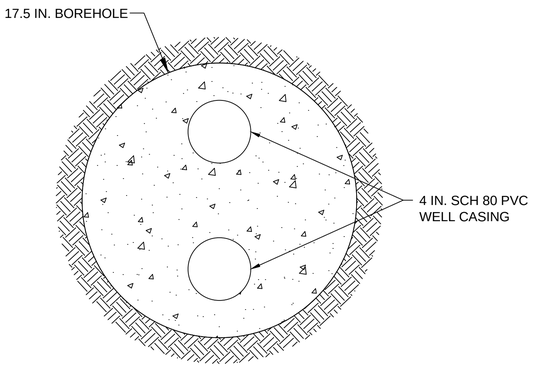
YUIMA MUNICIPAL WATER DISTRICT
PLANS FOR DRILLING, CONSTRUCTION, DEVELOPMENT, AND TESTING
USLR MONITORING WELL
MW-1D (DEEP) & MW-1S (SHALLOW)

WELL PROFILE AND CONSTRUCTION DETAILS

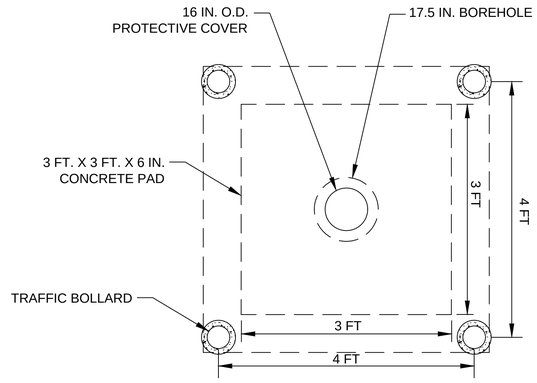
DRAWING NO. 4
SHEET NO. 4 OF 5



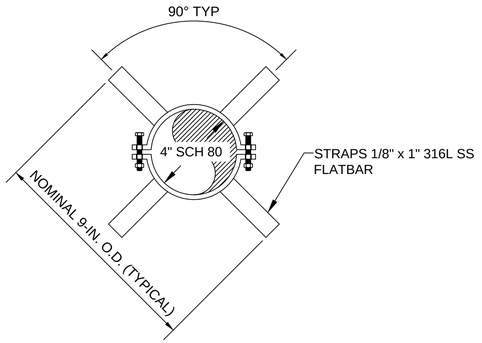
PROFILE



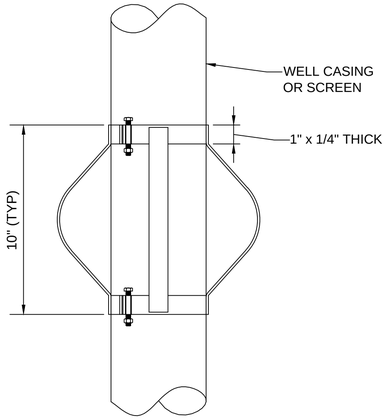
A SHT-4 SECTION: WELL CASING POSITIONS

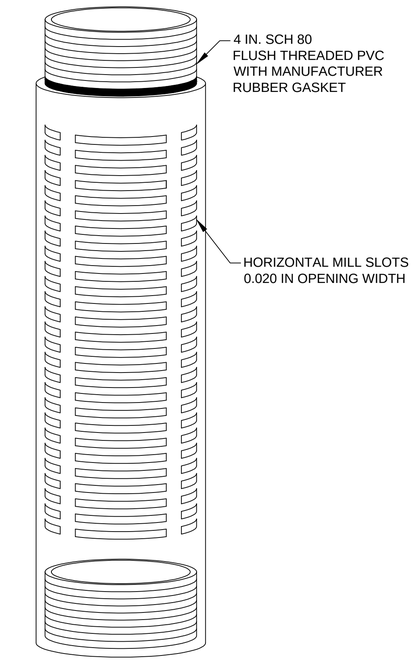


PLAN



2 SHT-4 MONITORING WELL CENTRALIZER





3 SHT-4 HORIZONTAL PVC SCREEN

1 SHT-4 MONITORING WELL MONUMENT WELLHEAD DETAIL

ABBREVIATIONS LIST:

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BGS	BELOW GROUND SURFACE
ID	INSIDE DIAMETER
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YUIMA MUNICIPAL WATER DISTRICT

PLANS FOR DRILLING, CONSTRUCTION, DEVELOPMENT, AND TESTING USLR MONITORING WELL MW-1D (DEEP) & MW-1S (SHALLOW)

WELL CONSTRUCTION DETAILS

DRAWING NO. 5

SHEET NO. 5 OF 5

BID SCHEDULE

DRILLING, CONSTRUCTION, AND DEVELOPMENT OF NESTED MONITORING WELL

Item No.	Description	Qty	Unit	Unit Price	Total Item Price
1	Mobilization and demobilization of all equipment to project area staging location, including site preparation, drilling permits as required, cleanup, and restoration of each site.	1	ls	lump sum	
2	Containment and proper disposal of all drill cuttings, drilling fluid, and groundwater waste, as specified.	1	wells	per well	
3	Drill nominal 6 inch diameter dual-tube reverse air rotary borehole, collect formation samples at 5 ft intervals.	305	ft	per foot	
4	Condition borehole with mud or water prior to performing geophysical logs; provide geophysical borehole logs as specified.	1	sets	per set	
5	Ream 6 inch dual-wall borehole to 17.5 inch diameter using mud rotary drilling method, as specified.	305	ft	per foot	
6	Furnish and install 4 in. diameter sch 80 PVC casing and screen as nested-completion monitoring well, as specified.	369	ft	per foot	
7	Furnish and install filter pack and annular seals, as specified.	305	ft	per foot	
8	Perform initial development of 4 in. sch 80 diameter monitoring wells by swabbing and airlifting, as specified.	40	hr	per hour	
9	Perform final development of 4 in. sch 80 diameter monitoring wells by pumping and surging, as specified.	48	hr	per hour	
10	Collect water quality samples from each well following development	2	sets	per set	
11	Furnish and install monument style protective well covers as wellhead completions, as specified.	1	wells	per well	
				TOTAL PRICE (Items 1 - 11):	

Contractor: _____

YUIMA MUNICIPAL WATER DISTRICT

NESTED MONITORING WELL

Design Documents

GENERAL PROJECT REQUIREMENTS AND TECHNICAL SPECIFICATIONS

DRAFT

April 2023

THESE TECHNICAL SPECIFICATIONS HAVE BEEN PREPARED BY OR UNDER THE DIRECTION OF THE FOLLOWING DESIGN PROFESSIONAL LICENSED BY THE STATE OF CALIFORNIA AND ARE BASED ON THE MOST RECENT AVAILABLE INFORMATION REGARDING SITE CONDITIONS, DRILLING AND TESTING METHODS, AND MATERIALS TO BE USED. HOWEVER, SHOULD THE CONTRACTOR TAKE EXCEPTION TO ANY PART OF THESE SPECIFICATIONS OR WELL DESIGN, AND IS NOT PREPARED TO FOLLOW THE SPECIFICATIONS AS INCLUDED HEREIN, THE CONTRACTOR SHALL NOTIFY CITY OF OCEANSIDE (OWNER) OR OWNER'S REPRESENTATIVE IN WRITING BEFORE MOBILIZING TO THE SITE.

_____

Lauren Wicks, PG
Project Geohydrologist

_____

Terry A. Watkins, PG, CHG
Senior Geohydrologist

YUIMA MUNICIPAL WATER DISTRCT
NESTED MONITORING WELL

GENERAL PROJECT REQUIREMENTS AND TECHNICAL SPECIFICATIONS

TABLE OF CONTENTS

GENERAL PROJECT REQUIREMENTS

DIVISION 1

DIVISION 2

TABLES

APPENDICES

LTR.	DESCRIPTION
A	LITHOLOGIC BOREHOLE LOGS

PROJECT PLAN SHEETS

SHEET	DESCRIPTION
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SECTION 01090 – REFERENCE STANDARDS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Applicable Publications: Whenever in these specifications references are made to published specifications, codes, standards, or other requirements, it shall be understood that wherever no date is specified, only the latest specifications, standards, or requirements of the respective issuing agencies which have been published as of the date that the Project is advertised for bids shall apply; except to the extent that said standards or requirements may be in conflict with applicable laws, ordinances, or governing codes. No requirements set forth herein or shown on the drawings shall be waived because of any provision of, or omission from, said standards or requirements. When a reference standard is specified, comply with requirements and recommendations stated in that standard, except when they are modified by the Contract Documents, or when applicable laws, ordinances, rules, regulations or codes establish stricter standards. The latest provisions of applicable standards shall apply to the work.

B. Reference standards include, but are not necessarily limited to, the following:

1. American Association of State Highway and Transportation Officials (AASHTO)
2. American Concrete Institute (ACI)
3. American Institute of Steel Construction (AISC)
4. American Iron and Steel Institute (AISI)
5. American National Standards Institute (ANSI)
6. American Society of Mechanical Engineers (ASME)
7. American Society for Testing and Materials (ASTM)
8. American Water Works Association (AWWA)
9. American Welding Society (AWS)
10. Concrete Reinforcing Steel Institute (CRSI)
11. Institute of Electrical and Electronics Engineers (IEEE)
12. National Electrical Manufacturer's Association (NEMA)
13. National Fire Protection Association (NFPA)
14. Occupational Safety and Health Administration (OSHA)
15. Prestressed Concrete Institute (PCI)
16. Standard Specifications for Public Works Construction (SSPWC or Greenbook)
17. State of California, Department of Transportation Standard Specifications (Caltrans)
18. All other applicable standards listed in the Specifications, and the standards of utility service companies, where applicable.

1.2 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

A. Without limiting the generality of other requirements of the specifications, all work specified herein shall conform to or exceed the requirements of all applicable codes and the applicable requirements of the following documents to the extent that the provisions of such documents are not in conflict with the requirements of these Specifications nor the applicable codes.

B. References herein to "Building Code" or UBC shall mean the Uniform Building Code of the International Conference of Building Officials (ICBO). The latest edition of the code as approved and used by the local OWNER as of the date of award, as adopted by the OWNER having jurisdiction, shall apply to the work herein, including all addenda, modifications, amendments, or other lawful changes thereto.

C. References herein to “SSPWC” or “Greenbook” shall mean the “Standard Specifications for Public Works Construction”, Parts 2 and 3 only, unless other Parts are specifically listed in the Contract Documents, latest edition, including the County of San Diego Regional Amendments.

D. References herein to “SDRSD” shall mean San Diego Regional Standard Drawings, latest edition.

E. References herein to "Cal-OSHA" shall mean State of California, Department of Industrial Relations, Construction Safety Orders, as amended to date, and all changes and amendments thereto which are effective as of the date of construction.

F. References herein to "OSHA Regulations for Construction" shall mean Title 29, Part 1926, Construction Safety and Health Regulations, Code of Federal Regulations (OSHA), including all changes and amendments thereto.

G. References herein to "OSHA Standards" shall mean Title 29, Part 1910, Occupational Safety and Health Standards, Code of Federal Regulations (OSHA), including all changes and amendments thereto.

H. No provisions of any referenced standard specification, manual or code, whether or not specifically incorporated by reference in the Contract Documents, shall be effective to change the duties and responsibilities of the OWNER, Engineer, or CONTRACTOR from those set forth in the Contract Documents. Nor shall they be effective to assign to the Engineer any duty of authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of the Contract Documents.

I. In case of conflict between codes, reference standards, drawings and the other Contract Documents, the most stringent requirements shall govern. All conflict shall be brought to the attention of the OWNER for clarification and directions prior to ordering or providing any materials or labor. The CONTRACTOR shall bid the most stringent requirements.

J. Applicable Standard Specifications: The CONTRACTOR shall construct the work specified herein in accordance with the requirements of the Contract Documents and the referenced portions of those referenced codes, standards, and specifications listed herein.

1.3 TRADE NAMES AND ALTERNATIVES

A. For convenience in designation in the Contract Documents, materials to be incorporated in the work may be designated under a trade name or the name of a manufacturer and its catalog information. The use of alternative material which is equivalent in quality and of the required characteristics for the purpose intended will be permitted, subject to the following requirements:

1. The CONTRACTOR shall submit a written request for substitution in accordance with the Front End Specifications.
2. The burden of proof as to the quality and suitability of such alternative equipment, products, or other materials shall be upon the CONTRACTOR.

3. The OWNER will be the sole judge as to the comparative quality and suitability of such alternative equipment, products, or other materials and its decision shall be final.

B. Wherever in the Contract Documents the name or the name and address of a manufacturer or distributor is given for a product or other material, or if any other source of a product or material is indicated therefor, such information is given for the convenience of the CONTRACTOR only, and no limit, restriction, or direction is indicated or intended thereby, nor is the accuracy or reliability of such information guaranteed. It shall be the responsibility of the CONTRACTOR to determine the accurate identity and location of any such manufacturer, distributor, or other source of any product or material called for in the Contract Documents.

PART 2 – MATERIALS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01110 - SUMMARY OF WORK

PART 1 - PROJECT INFORMATION

1.1 WORK OF THIS SECTION

A. The purpose of this Section is to provide a summary of the general requirements of these technical specifications for the drilling, construction, development, and testing of a nested monitoring well for Yuima Municipal Water District (YMWD), hereafter referred to as the OWNER. The nested monitoring well shall be referred to as Upper San Luis Rey (USLR) MW-1D (Deep) and MW-1S (Shallow) (MW-1). MW-1 shall be located approximately 2,400 feet west of intersection Highway 76 and dirt road north of Pala Road within the unincorporated community of Pauma Valley, California (see Sheets 1 through 5 of the Project Plan Sheets). The nested monitoring well shall be constructed as specified herein. General construction and completion details of the nested monitoring well are shown on Sheets 4 and 5 of the Project Plan Sheets. Final designs may vary according to specific conditions encountered. The exact location of the well will be provided at the pre-construction meeting.

B. A mandatory pre-bid meeting will be held at the time and date specified in the Notice Inviting Bids. The mandatory pre-bid meeting will allow potential bidders the opportunity to view the well site and to ask questions. The Scope of the Work encompassed by these specifications consists of furnishing all plant, labor, equipment, appliances, and materials in addition to performing all operations in connection with the drilling, sampling, construction, development, and testing of the nested monitoring well.

C. The well shall be drilled using the dual tube reverse air rotary method with mud rotary capability. The sequence of construction shall be continuous and consecutive, with final development and testing to commence within 10 days of completion of initial development (by airlifting and swabbing).

D. All work is to be complete, and in strict accordance with these specifications and the attached Project Plan Sheets unless otherwise modified by the OWNER or GEOHYDROLOGIST.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Section 01090 - Reference Standards
B. Section 01380 - Pre-Construction Video Recording and Photographs
C. Section 01500 - Temporary Facilities and Controls (Mobilization)
D. Section 01561 - Temporary Noise Barriers
E. Section 01562 - Temporary Fencing
F. Section 01572 - Traffic Control

G. Section 01573 - Temporary Erosion and Sediment Control
H. Section 01574 - Clearing and Waste Management (Disposal of Cuttings)
I. Section 01700 - Project Closeout
J. Section 01710 - Clean-Up
K. Section 02520 - Nested Monitoring Well

PART 2 - MATERIALS

2.1 MATERIALS (NOT USED)

PART 3 - EXECUTION

3.1 INTRODUCTION

A. This nested monitoring well will be constructed as part of the ongoing efforts of YMWD to help fill data gaps within the basin – therefore increasing hydrogeologic understanding and providing important information on specific conditions for Groundwater Sustainability Plan monitoring and reporting.

B. Construction of the monitoring well will occur as detailed in these technical specifications. The Project to be executed by the CONTRACTOR entails drilling, constructing, and developing the monitoring well. The drilling method that is specified herein is the dual tube reverse air rotary drilling with mud rotary capability.

3.2 DEFINITIONS

A.	OWNER:	Yuima Municipal Water District
B.	County:	San Diego
C.	GEOHYDROLOGIST:	Geoscience Support Services, Inc.
D.	Certified Laboratory:	Clinical Laboratory of San Bernardino, Inc.

E. Standard Specifications:

1. California Department of Water Resources (DWR) Water Well Standards: State of California (Bulletin 74-81) and California Well Standards (Bulletin 74 90), or latest revision.

2. American Water Works Association (AWWA) Standard for Water Wells (AWWA A100-20), or latest revision.

3.3 CONTRACT COMPLETION AND CONSTRUCTION SCHEDULE

A. All work associated with drilling, construction, and development of the nested monitoring well shall be complete with the final invoice submitted by June 31, 2023. The CONTRACTOR shall submit a detailed construction schedule within one week of Notice to Proceed, shall maintain the construction schedule throughout the course of the project, shall provide updated schedules on a monthly basis, and upon the request of the GEOHYDROLOGIST.

3.4 SITE PREPARATION

A. The CONTRACTOR shall be responsible for all site preparations which may be required for drilling and construction of the well at the location specified by the OWNER. Site preparation may include, but is not limited to, installation of temporary fencing, provision of piping for construction water, provision of piping for water generated during aquifer testing, and disposal of waste fluids.

3.5 LOCATIONS, DEPTHS, AND WELL DIMENSIONS

A. The Work is to be performed within Rancho Estates access road area or designated areas as shown on the Drawings and described in these specifications. All work shall be performed by CONTRACTOR within these boundaries. CONTRACTOR shall be responsible for determining the exact locations (i.e., utilities, site boundaries, site layouts, etc.).

B. CONTRACTOR shall drill the nested monitoring well at the location indicated on the attached construction drawings (see Sheets 1 to 3 of the Project Plan Sheets). The exact location of the well shall be marked in the field by OWNER or owner's representative prior to mobilization of the drilling equipment.

C. For the purpose of these specifications CONTRACTOR may assume a nested monitoring well consisting of one (1) shallow and one (1) deep completion. For bidding purposes, CONTRACTOR may assume an approximate total pilot borehole depth of 305 ft. However, it should be recognized that the boreholes may be drilled to greater or lesser depths as determined by the OWNER and GEOHYDROLOGIST upon review of actual conditions encountered. Details of the site layout and preliminary design details are shown on Sheets 3 to 5 of the Project Plan Sheets.

D. CONTRACTOR shall satisfy themself by personal investigation of all local conditions affecting its work. If conditions exist that affect their work, CONTRACTOR shall either modify its operation accordingly, or shall supply in writing the conditions that cannot be modified. Neither information contained in these specifications, nor that derived from maps or plans, or from OWNER, its representatives or employees, shall relieve CONTRACTOR from any responsibility either specified herein, or from fulfilling any and all terms and requirements of its contract.

E. The borehole shall be drilled using at least two separate drilling passes. The first (pilot) pass shall be drilled by the dual tube reverse air rotary method using a nominal 6-inch diameter drill bit. Once the drilling, sampling, and geophysical borehole logging are completed and the final monitoring construction details are finalized by GEOHYDROLOGIST and OWNER, the pilot borehole shall be enlarged (reamed by the direct mud rotary method) to the anticipated depth of 305 ft bgs. The reamed borehole shall be 17.5 inches in diameter to the total depth of the borehole. However, the final completion depth and borehole diameters shall be as specified by the GEOHYDROLOGIST based on the formation samples and geophysical logs.

F. The general well dimensions and completion depths are as shown on the conceptual well profile and construction details (see Sheets 4 and 5 of the Project Plan Sheets) and shall be as specified herein. However, any of the various depths indicated herein may be increased or decreased by the GEOHYDROLOGIST, with the OWNER's approval, in accordance with formations encountered during drilling, and based upon the results of geophysical borehole logging. In the event that drilling is authorized or ordered to depths shallower or deeper than specified herein, a corresponding adjustment shall be made to the bid line item quantity and the total cost adjusted at the unit bid rate of the contract.

3.6 LOCAL CONDITIONS, HYDROGEOLOGY

A. The proposed monitoring well is located within the Upper San Luis Rey Valley in the Pauma Subbasin of the San Luis Rey Groundwater Basin. The primary groundwater aquifer within the Upper San Luis Rey River Valley-Pauma Sub-basin is the unconsolidated alluvium which overlies bedrock formations. Alluvial sediments in valleys are generally thickest under the San Luis Rey River. In Pauma Valley, sediments may be up to 600 ft in localized areas of the northeast portion of the subbasin (Layne, 2010).

B. In general, unconsolidated alluvial sediments encountered within the Pauma Sub-basin are typical of sediments associated with a meandering stream system such as the San Luis Rey River. The main geologic units found in the Upper San Luis Rey River Valley

Groundwater Subbasin include (from oldest to youngest): bedrock, older alluvium, localized lakebed deposits, alluvial fan deposits, and younger alluvium.

C. Well completion reports (Driller's Logs) for nearby wells are included in Appendix A. However, the CONTRACTOR shall be aware of drilling conditions in the area. The OWNER does not guarantee the accuracy of the lithologic logs, or guarantee that they are indicative of conditions to be encountered during drilling. The information contained in said logs shall not relieve the CONTRACTOR of their responsibility to perform the work.

3.7 PERMITS, CERTIFICATION, LICENSES, LAWS AND ORDINANCES

A. CONTRACTOR shall, at their own expense, procure all necessary permits, certificates, and licenses required of them by law for the execution of the work, including San Diego County Department of Environmental Health Well Construction Permits.

B. The CONTRACTOR shall comply with all federal, state, and local laws, ordinances, or rules and regulations relating to the performance of the work.

C. The CONTRACTOR shall notify USA of Southern California at least two (2) working days prior to beginning work at the site. The CONTRACTOR shall coordinate all site activities with utility companies as necessary during the course of the work.

D. The CONTRACTOR shall be required to abide by any and all necessary permits from regulatory and governmental agencies, including encroachment permits for conveyance of water to the site location, if necessary.

E. All equipment used by the CONTRACTOR and his subcontractors during execution of the Work shall be appropriately permitted and/or registered with the California Air Resources Board (CARB) and Southern California Air Quality Management District (SCAQMD). Proof of these requirements shall be submitted to the GEOHYDROLOGIST and OWNER prior to mobilization.

F. CONTRACTOR shall hold all other necessary certificates and licenses required by law for the execution of this work. CONTRACTOR shall comply with all federal, state and local laws, ordinances, or rules and regulations relating to the performance of the work and shall have a valid State of California C-57 Water Well Drilling CONTRACTOR License.

G. Upon completion of all work, a State of California Department of Water Resources (DWR) Well Report shall be completed and submitted to the required agencies for each monitoring well. A completed and signed copy of the Report shall be provided to OWNER and GEOHYDROLOGIST, in addition to DWR and the San Diego County Department of Environmental Health.

3.8 DISCHARGE REQUIREMENTS

A. All waste fluids generated during drilling, construction, and well development shall be temporarily contained and hauled offsite to an approved disposal facility. It shall be the CONTRACTOR's responsibility to haul all waste fluids and deliver to a facility and to acquire any required encroachment or haul permits and/or right-of-entry to safely deliver the waste fluids to the disposal facility. Its also the responsibility of the CONTRACTOR to provide for and maintain all road and driveway crossings, and to provide traffic control to the satisfaction of the Pauma Valley, San Diego County or any other regulatory agency.

B. Prior to disposal, wastewater shall be pumped into a series of covered and locked temporary holding tanks that have been placed on the site. Water pumped from these tanks shall be then hauled offsite to an approved facility and shall be disposed of in such a manner that no damage to property occurs or that there is no creation of a nuisance.

3.9 BOUNDARY OF WORK

A. The OWNER will provide land or rights-of-way for the Work specified in this contract and will make suitable provisions for ingress and egress. The CONTRACTOR shall not enter on or occupy with personnel, tools, equipment, or material, any ground outside the specified area of the properties of Rancho Estates without the written consent of the owner of such ground. Other contractors and employees or agents of Rancho Estates may for any necessary purposes enter upon the work site and premises used by the CONTRACTOR.

3.10 PROTECTION OF THE SITE AND DISPOSAL OF WASTEWATER

A. The CONTRACTOR shall provide a copy of his Spill Prevention Plan prior to the start of Work. Drilling activities shall be conducted in such a way as to prevent the introduction of pollutants to the ground surface or off-site drainages during construction. Accordingly, any equipment and/or materials brought to the project area must be managed in accordance with the following procedures:

1. Plastic sheeting that is bermed or drip pans will be used to catch leaks and residual material in hoses and spigots under all stationary equipment. The plastic sheeting or drip pans will be checked daily and emptied or replaced as needed by reusing the substance or disposing of it properly at the CONTRACTOR's expense.
2. Spilled hazardous materials will be contained immediately using sand, dirt, and/or absorbent materials. Such spills will be cleaned up promptly along with the contaminant material and will be disposed of properly at the CONTRACTOR's expense.
3. Outdoor storage of all fuels, oils, solvents, cleaners and other liquid materials shall be within secondary containment. The areas should be covered, as necessary, to prevent storm water accumulation in the containment.
4. Bentonite, cement, and any other powdered product shall be stored on pallets and away from any drainage path. The storage area should be covered and protected, if necessary, to prevent pollution runoff by wind or storm water.
5. Chemicals, bagged material, or drums shall be stored on pallets within secondary containment.

B. Waste products generated during the drilling/construction work must be managed in accordance with the following procedures:

1. Containerized waste will not be allowed to overflow. Any waste that requires storage in containers shall be removed from the project areas on a regular basis and disposed of at an approved facility at the CONTRACTOR's expense.
2. Cleaning of the drilling rigs, tremie pipe and any other equipment shall be conducted within a fully contained area within the well drilling pad work area only. Any deviation from these locations must be approved by the GEOHYDROLOGIST.
3. Waste bentonite or cement must be removed from the project areas prior to completion of the Work.

C. The use and maintenance of drilling rigs and support vehicles shall be in accordance with the following procedures:

1. Vehicles or equipment that can be moved to a commercial fueling station must be fueled offsite.
2. If the vehicles or equipment cannot be filled at a commercial fueling station, fueling will be performed on site at designated areas. During fueling operations, drip pans or bermed plastic sheeting will be used to catch leaks. "Topping off" of fuel tanks is not allowed.

3. Maintenance of vehicles will be performed within designated areas to be approved by the OWNER. Drip pans will be used during maintenance activities to catch any leaks.

4. Daily inspections of drilling rigs and support vehicles and equipment will be made to check for leaks. Any leaks detected shall be reported to the GEOHYDROLOGIST and fixed immediately.

5. All CONTRACTOR employees and subcontractors shall be educated in the proper handling and storage of construction materials used during the project.

6. All spills shall be soaked up using absorbent materials and disposed of properly at the CONTRACTOR's expense. Washing down or burial of spills is not allowed. Any spill, no matter how small, is to be reported to the GEOHYDROLOGIST.

7. If required, steam cleaning of the drilling rigs and support equipment must be carried out within designated areas. The cleaning areas shall be bermed or otherwise contained to prevent runoff to storm drains. All wastewater generated from cleaning equipment must be containerized and disposed of at the CONTRACTOR's expense. Any soap used during cleaning must be phosphate-free and biodegradable.

D. Except as otherwise provided herein, the CONTRACTOR shall protect all pipelines, trees and, as much as possible, shrubbery during the progress of the Work, and shall remove from the site all drilling debris and unused materials, and shall, upon completion of the Work, restore the site as near as possible to its original condition.

E. Disposal of all waste water and drill cuttings shall be by such manner and to such locations that nuisance or damage to environment, structures, roads, or utilities or interference with other construction projects will be prevented. All costs incurred in the disposal of waste water and removal of drill cuttings shall be at the CONTRACTOR's expense.

3.11 SITE SECURITY

A. The CONTRACTOR shall make adequate provision for the protection of the work areas and the boreholes/well against fire, theft, and vandalism, and for the protection of the public against exposure to injury. The CONTRACTOR shall bear the responsibility for protection of all equipment and material at the worksite.

B. To prevent intrusion by unauthorized persons, temporary openings and gates in existing fences shall be protected. During those times when no work is being performed

at the site, the CONTRACTOR may provide temporary closures and/or guard service to protect the site, for the CONTRACTOR's own benefit, and at his own expense. All openings in the enclosures shall be closed when not immediately in use.

3.12 WATER SOURCE

A. The CONTRACTOR can tie into or fill up water tanks at a nearby hydrant for their water source. The CONTRACTOR shall supply the means to convey the water from the source to the project site.

B. The cost for obtaining construction meters, including applicable deposits and fees shall be paid by the CONTRACTOR. The cost of water used during the project will be paid by the CONTRACTOR. Additionally, CONTRACTOR shall provide a backflow prevention device connected in line with the water source and has been certified within the past six months' time. Certification for these devices shall be submitted to GEOHYDROLOGIST prior to use.

C. The CONTRACTOR shall pay for and construct all facilities necessary to furnish water for use during well construction activities. The water shall be kept free from contamination and shall conform to the requirements of the State and local authorities for potable water. The CONTRACTOR shall install and maintain all necessary supply connections and piping, including road and driveway crossings, only at locations and in manners as approved by the OWNER. The CONTRACTOR shall procure any and all permits required of them to convey water from the source to the project site, including encroachment permits. All water shall be carefully conserved. Before final acceptance of the project, all temporary connections, hoses, and piping installed by the CONTRACTOR shall be removed.

3.13 NOISE CONTROL

A. Operations shall be performed in a manner to minimize unnecessary noise generation and disturbance to persons living or working nearby, and to the general public.

B. All noise control measures shall be included in the CONTRACTOR's bid price for noise mitigation, and shall include (but are not limited to):

1. Locating equipment in positions which will direct the greatest noise emissions away from residential areas;
2. Equipping all internal combustion engines with critical residential silencers (mufflers);
3. Wrapping the mast with insulated sound blankets (which will additionally shield nearby residences from nighttime lighting);

4. Conducting operations in the most effective manner that will minimize noise generation, while being consistent with the prosecution of the Contract in a timely and economic manner; and
5. CONTRACTOR shall comply with the San Diego County Noise Ordinance, which include but are not limited to the following:
    a. Requires that between the hours of 7:00 a.m and 7:00 p.m, no construction noise should be in excess of 75 dBA when measured at the boundary line of the property where the noise source is located for an 8 hour average, or on any occupied property where the noise is being received.

3.14 DUST CONTROL

A. In order to control dust at the well site, the CONTRACTOR shall take whatever steps are required to prevent abnormal dust conditions from being caused by its operations in connection with the execution of the work, or on any unpaved road which the CONTRACTOR or any of its subcontractors are using, excavation or fill areas, demolition operations or other activities. This may include agency notifications, monitoring, testing, reporting, and implementation of control measures.

B. Dust control at the well site shall be accomplished by dampening with water, providing a cover of gravel (or other acceptable material) on the active working areas of the site, modification of operations, or any other means acceptable to agencies having jurisdiction.

C. The CONTRACTOR shall place rumble ramps or apply gravel to surfaces in the work areas to prevent tracking dirt and mud onto paved roadways at or near the work site.

3.15 HOURS OF WORK

A. Work shall be performed during daylight hours only in order to reduce disturbance to surrounding residences. No work shall be performed on holidays observed by the OWNER, unless other arrangements are made and approved at least 48 hours in advance by the GEOHYDROLOGIST. Major holidays include:

1. Memorial Day;
2. Independence Day;
3. Labor Day;
4. Veterans Day;
5. Day of and day after Thanksgiving; and

6. Time period from Christmas Eve to New Year's Day.

3.16 SITE COMMUNICATIONS

A. At all times the CONTRACTOR shall have at the drilling location the means for communicating (i.e., cellular telephones) between all workers at the site, their office, the OWNER, and the GEOHYDROLOGIST. Two-way radios are not an acceptable form of communication. The telephone numbers of such devices shall be provided to the OWNER and GEOHYDROLOGIST before the start of Work so that the CONTRACTOR's personnel are available at all times for status updates. Telephones with a vibrating mode shall be made available to crew members so that the incoming calls may be detected above the noise at the work site.

B. Emergency (24 hours/day) telephone numbers of all key CONTRACTOR personnel involved with the project shall be provided to the GEOHYDROLOGIST at the time of the pre-construction meeting.

3.17 COMPETENT WORKERS

A. The CONTRACTOR shall employ only sober, competent workers for the execution of the Work, and all such work shall be performed under the direct supervision of experienced well drillers satisfactory to the GEOHYDROLOGIST. During periods of standby or waiting, the CONTRACTOR must provide trained and experienced staff, approved by the GEOHYDROLOGIST, to monitor and maintain the fluid levels in the borehole.

B. No changes in personnel will be allowed without approval of the OWNER. Approval may be granted provided the qualifications and experience of the replacement worker are equivalent or better than the initial worker.

3.18 SUPERVISION BY CONTRACTOR

A. The CONTRACTOR shall provide efficient supervision using its best skill and attention and shall provide and keep on the Work at all times during its progress a competent onsite supervisor and any necessary assistants, all of whom within reason shall be satisfactory to the GEOHYDROLOGIST. In accordance with generally accepted construction practices, the CONTRACTOR shall be solely and completely responsible for conditions of the jobsite, including safety of all persons and property during the performance of the work, and the CONTRACTOR shall fully comply with all Federal, State, and local laws, rules, regulations, orders, and ordinances relating to the safety

of workers and others. The CONTRACTOR alone shall be responsible for the safety, efficiency, and adequacy of his plant, appliances, and methods, and for any damage which may result from their failure or their improper construction, maintenance, or operation.

3.19 "LOST" BOREHOLES AND BOREHOLE DESTRUCTION

A. Boreholes that the CONTRACTOR is not able to complete prior to reaching design or specified depth, due to defective workmanship, unsuitable materials introduced to the borehole, excessive borehole caving, misaligned borehole, or faulty equipment, will be considered a "lost" borehole and will not be paid for by the OWNER. If a borehole is determined to be lost, the CONTRACTOR shall drill another borehole to the specified depth, near the lost borehole at the exact location to be specified by the OWNER. No payment will be made for subsequent moving, setting up, installation of conductor casing or re-drilling of the borehole. In addition, the CONTRACTOR will not be compensated for standby time, nor for extra hours incurred during ensuing discussions should this situation occur.

B. All "lost" boreholes shall be destroyed by backfilling with either high-viscosity bentonite slurry, or a bentonite-cement mixture. Any casing shall be removed to a depth of at least 5 ft bgs, as per San Diego County Department of Public Health requirements. The site shall be cleaned and restored as directed by the OWNER. No payment will be made for the backfilling, removal of casing, site cleaning or restoration of lost boreholes.

3.20 SITE SANITATION FACILITIES

A. The CONTRACTOR shall provide all necessary sanitary facilities (i.e., privy accommodations) for the use of employees prior to commencement of work at the site. These facilities shall be maintained and cleaned at least twice per week and kept in a sanitary condition (i.e., well-stocked with an adequate supply of toilet paper, etc.). The CONTRACTOR shall provide an alcohol-based hand sanitizer or a portable hand washing sink attached to a small holding tank for clean water and a soap dispenser. The CONTRACTOR shall provide for his employees an adequate supply of clean, potable drinking water, dispensed through approved sanitary facilities.

B. The CONTRACTOR shall obey and enforce such sanitary regulations as may be prescribed by the California Department of Public Health and other government entities having jurisdiction.

C. At the completion of the Work at the site, the CONTRACTOR shall remove all rubbish, excess materials, temporary structures and equipment from the site and shall leave the site in a neat and presentable condition as approved by the OWNER.

3.21 CONSTRUCTION INSPECTION

A. The CONTRACTOR will be required to contact the GEOHYDROLOGIST at various stages of construction for the purpose of job inspection. No work will be performed by the CONTRACTOR until such inspection has been made by the GEOHYDROLOGIST. A list of the required inspections is shown below. The CONTRACTOR will notify the GEOHYDROLOGIST at least twenty-four (24) hours prior to each of the required inspections to assure that a representative will be available to conduct the inspection. The following is a list of inspection items which may be required. Inspection and approval of each item by the GEOHYDROLOGIST is required before proceeding to subsequent stages.

	Description	**Inspection Item**
1.	Pre-Mobilization	Pre-Mobilization Submittals
2.	Mobilization	Equipment (Drilling Equipment and Accessories)
3.	Construction Materials	Sanitary Facilities Drilling Fluid Additives Casings and Screens Filter Pack Annular Seals
4.	Pilot & Reamed Borehole Drilling	Mud Properties Geophysical Borehole Logs
5.	Construction Process	Casing Assembly Installation Installation of Filter Pack and Sealing Materials
6.	Well Development	Development Tools Pumping Equipment Discharge Assembly/Containment Airlifting and Swabbing Procedure

7.	Final	Wellhead Construction Site Clean Up DWR Well Completion Report

3.22 REQUIREMENTS PRIOR TO MOBILIZATION

A. The following are required to be submitted by the CONTRACTOR to the GEOHYDROLOGIST and approved prior to any site mobilization (including conductor casing installation).

1. Construction Schedule (to be submitted within one week of Notice to Proceed);
2. Well Drilling Permit from San Diego County Department of Environmental Health;
3. Noise Abatement Plan to be submitted to the GEOHYDROLOGIST and OWNER at least ten (10) days prior to mobilization;
4. Proof of Dig Alert notification (i.e., ticket number);
5. Proof of compliance with California Air Resources Board (CARB) and South Coast Air Quality Management District (SCAQMD) requirements for motorized equipment.
6. Spill Prevention Plan to be submitted to the GEOHYDROLOGIST at least ten (10) days prior to mobilization;
7. Site layouts showing proposed location and orientation of CONTRACTORs equipment;
8. CONTRACTOR's proposed drilling program as detailed in Section 02520; and
9. San Diego County excavation and/or truck route permit, if applicable.
10. Certification of backflow prevention device (performed in-situ).

B. The CONTRACTOR may only start mobilization to the well site once all the submittals relating to the site have been approved by both the OWNER and GEOHYDROLOGIST.

END OF SECTION

SECTION 01380 – PRE-CONSTRUCTION VIDEO RECORDING AND PHOTOGRAPHS

PART 1 - GENERAL

1.1 WORK OF THIS SECTION

A. After survey and utility mark out, and prior to any construction, the CONTRACTOR shall photograph and video existing site conditions with audio included.

B. The CONTRACTOR shall retain a professional photographer and/or videographer to perform the specified services or provide evidence to the OWNER of the staff's ability to perform some or all of the services specified. The OWNER shall have the final determination and discretion as to the suitability of the photographer/videographer.

C. The CONTRACTOR shall obtain the OWNER's approval prior to taking the first series of photographs or videos of each specified type.

D. The OWNER shall be present during photographing and video recording of pre-construction site conditions.

1.2 SUBMITTALS

A. At the completion of the survey the CONTRACTOR shall present the OWNER with a report. The report shall include the following as a minimum:

1. One copy of the digital video recordings.
2. One copy of each digital photograph.
3. Redlined plans showing areas of damaged paving or other damaged surface improvements.
4. Written summary of potential "problem areas" and the CONTRACTOR's recommendations to address these problem areas.

B. Documentation (including report) of existing conditions shall be completed and submitted to the OWNER within fifteen (15) days of the Notice to Proceed but after survey and mark out. The CONTRACTOR will not be allowed to begin construction activities until the final report has been submitted to and accepted by the OWNER.

PART 2 - MATERIALS

2.1 VIDEO RECORDING EQUIPMENT

A. The CONTRACTOR's video capability, equipment, and operators shall conform to the following minimum criteria:

1. High resolution and clarity provided by 3CCD “high-definition” format.
2. Video shall include audio.
3. Video shall be automatically dated and timed.
4. The video camera shall be equipped with a zoom lens.
5. The system shall have cataloging and storage capacity.
6. The system shall have on- and off-road mobility.
7. The videographer subcontracted or provided by the CONTRCATOR shall have at least one (1) year of professional industrial televising experience.

2.2 PRE-CONSTRUCTION PHOTOGRAPIC EQUIPMENT

A. The CONTRACTOR’s photographic capability, equipment, and operators shall conform to the following minimum criteria:

1. The camera shall be a single lens reflex type and shall utilize digital media.
2. The camera shall utilize an automatic focus, f-stop, and flash system with manual override to promote quality photography.
3. The camera shall be capable of imprinting an inalterable date on the digital film.
4. The camera shall have a minimum of 5.0-megapixel resolution.
5. The photographer subcontracted or provided by the CONTRACTOR shall have at least one (1) year of professional industrial photographic experience.

PART 3 - EXECUTION

3.1 VIDEO RECORDING OF PRE-CONSTRUCTION CONDITIONS

A. The CONTRACTOR shall video record all existing surface conditions in the Work area prior to the start of any construction activities. Important features that shall be video recorded include but are not limited to:

1. Existing and proposed site.
2. Property lines.
3. Right-of-way, easement, and temporary access area conditions.
4. Utility markings.
5. Survey conditions.
6. Adjacent property conditions.
7. Access road, sidewalk, median, curb, and gutter conditions.

8. Landscaping, planting, and irrigation conditions.
9. Safety conditions.
10. Other unusual conditions or equipment/facility installations.
11. Signing and striping.
12. Areas of existing damage or other potential “problem areas”.

B. All video recordings of pre-construction surface conditions shall be performed in the presence of the OWNER.

C. The CONTRACTOR shall make all arrangements for video recording, including coordination with the OWNER.

D. Video records including documentation shall be submitted per section 1.2 of this Specification.

E. The CONTRACTOR shall not be entitled to any additional working days due to video recording activities, including securing video recording services, taping, and editing activities, or submitting video records to and obtaining acceptance from the OWNER.

3.2 PRE-CONSTRUCTION PHOTOGRAPHS

A. The CONTRACTOR shall take a sufficient number of pre-construction photographs (as directed by the OWNER) necessary to resolve any disputes that may arise regarding the considerations prior to and subsequent to construction. Photographs of the same general types of features as described under Video Recording of Pre-Construction Conditions shall be taken. All photographs shall be digitally imprinted with an unalterable date designation.

B. If a dispute arises where no pre-construction photographs were taken, the disputed area shall be restored to the extent directed by the OWNER and to the satisfaction of the OWNER.

C. The CONTRACTOR shall furnish one set of digital prints of the pre-construction photographs to the OWNER, and shall make other photographs available for review in settling any disputes that may arise.

D. The OWNER may, at its option, take additional pre-construction photographs that may be used to settle disputes, but will not be required to make these photographs available to the CONTRACTOR.

E. All photographs of pre-construction conditions shall be taken in the presence of the OWNER.

F. The CONTRACTOR shall make all arrangements for pre-construction photographs including coordination with the OWNER.

G. Pre-construction photographs including documentation shall be submitted per section 1.2 of this Specification.

H. The CONTRACTOR shall not be entitled to any additional working days due to pre-construction photographing activities, including securing photographic services, or submitting pre-construction photographs to and obtaining acceptance from the OWNER.

END OF SECTION

SECTION 01500 - TEMPORARY FACILITIES AND CONTROLS (MOBILIZATION)

PART 1 - GENERAL

1.1 WORK OF THIS SECTION

A. Mobilization and demobilization encompass payment and performance bonds and insurance, including all prerequisite preparation, specialized tooling, installation of all temporary facilities required to operate equipment and provide for personnel. The nested monitoring well location and associated construction drawings are shown on the Project Plan Sheets.

B. Included under this item shall be compensation for providing sanitary and other facilities as set forth in these Technical Specifications, access and obtaining the required permits and licenses.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Section 01090 - Reference Standards
B. Section 01110 - Summary of Work
C. Section 01380 - Pre-Construction Video Recording and Photographs
D. Section 01561 - Temporary Noise Barriers
E. Section 01562 - Temporary Fencing
F. Section 01572 - Traffic Control
G. Section 01573 - Temporary Erosion and Sedimentary Control
H. Section 01574 - Clearing and Waste Management (Disposal of Cuttings)
I. Section 01700 - Project Closeout
J. Section 01710 - Clean-Up
K. Section 02520 - Nested Monitoring Well

PART 2 - MATERIALS

2.1 GENERAL

A. CONTRACTOR shall provide a dual tube reverse air rotary drilling unit with mud rotary capabilities complete with all tools, temporary drill pipe, accessories, power, lighting, water, and any other equipment necessary for the completion of the Work. The nested monitoring well shall be drilled in accordance with these technical specifications.

2.2 PERSONNEL AND EQUIPMENT

A. CONTRACTOR shall provide experienced personnel necessary to conduct an efficient and safe drilling operation. Prior to mobilizing, all equipment supplied by CONTRACTOR shall be certified to be suitable for the specific drilling operation. The

replacement of any equipment later found to be unsuitable shall be at CONTRACTOR expense.

2.3 INSPECTION

A. All equipment intended for use in the drilling, construction, and development of the nested monitoring well shall be inspected by GEOHYDROLOGIST prior to mobilization to ensure that the equipment intended for use is adequate and acceptable for the Work.

2.4 MSDS SHEET

A. All "pipe dope" used in the performance of the Work must comply with environmental standards and shall be inert. Material Safety Data Sheets (MSDS) for all controlled materials used in the performance of the Work shall be provided to GEOHYDROLOGIST prior to the start of the Work.

2.5 REQUIRED DRILLING METHOD

A. The monitoring well shall be drilled using the dual tube reverse air rotary method with mud rotary capabilities. The wells shall be filter packed using the latest technology for drilling, construction, and development of monitoring wells.

PART 3 - EXECUTION

3.1 WATER SOURCE

A. The CONTRACTOR can tie into or fill up water tanks at a nearby hydrant for their water source. The CONTRACTOR shall supply the means to convey the water from the source to the project site or store water.

B. The CONTRACTOR shall obtain a construction meter and a backflow prevention device from the OWNER. The CONTRACTOR shall provide the receipt for the deposit for the construction meters. The CONTRACTOR shall be responsible for the cost of all water used during the Work.

C. The CONTRACTOR shall pay for and construct all facilities necessary to furnish water for use during well construction activities. The water shall be kept free from contamination and shall conform to the requirements of the State and local authorities for potable water. The CONTRACTOR shall install and maintain all necessary supply connections and piping, including road and driveway crossings, only at locations and in manners as approved by the OWNER. The CONTRACTOR shall procure any and all permits required of them to convey water from the source to the project site, including encroachment permits. All water shall be carefully conserved. Before final

acceptance of the project, all temporary connections, hoses, and piping installed by the CONTRACTOR shall be removed.

3.2 ELECTRICITY

A. CONTRACTOR shall provide, at their cost, all temporary electrical power required for construction, general and security lighting, and all other purposes. CONTRACTOR shall provide all power required during well drilling, well construction, and well development.

B. CONTRACTOR shall ensure that all noise ordinances and mitigation requirements are met when using generator-supplied power. CONTRACTOR shall provide adequate job site power generation facilities conforming to applicable noise ordinances, codes and safety regulations.

3.3 LIGHTING

A. When necessary for nighttime work, CONTRACTOR shall provide temporary lighting in all work areas sufficient to maintain an adequate level of light during nighttime working hours. All nighttime lighting shall comply with any Pauma Valley and County regulations.

3.4 SITE SANITATION

A. CONTRACTOR shall provide all necessary sanitary facilities (i.e., chemical toilets) for the use by employees during work at the site. Sanitary facilities shall be located as close as possible to the work site in order to minimize disturbance of roads, shall be maintained and cleaned at least twice per week, shall be kept in a clean condition and adequately supplied with chemicals and adequate supply of toilet paper, etc. CONTRACTOR shall provide an alcohol-based hand sanitizer, or a portable hand-washing sink attached to a small holding tank for clean water and a soap dispenser. CONTRACTOR shall provide for an adequate supply of clean, potable drinking water, dispensed through approved sanitary facilities.

B. CONTRACTOR shall obey and enforce such sanitary regulations as may be prescribed by the State Department of Public Health and other government entities having jurisdiction.

3.5 TRAFFIC CONTROL

A. When moving equipment on public roadways, CONTRACTOR shall provide a flagman at points of vehicular ingress and egress to control the movement of traffic near the site in a manner and to the extent required by applicable county and city ordinances, and/or regulations, and as acceptable to site owners. Flagman shall wear a brightly-colored

reflective safety vest at all times when directing traffic. Traffic barricades shall be placed in accordance with the latest edition of the Work Area Traffic Control Handbook (2016 WATCH manual, 13th edition) that is approved and endorsed by the Institute of Transportation Engineers, American Public Works Association, and City Traffic Engineers.

3.6 NUISANCE WATER

A. It is anticipated that nuisance water, such as drilling water, rainfall, irrigation water, perched groundwater or surface runoff may be encountered within the construction site during the period of construction under this Contract. The CONTRACTOR shall always protect the Work from damage by such waters and shall take all due measures to prevent delays in progress of work caused by such nuisance waters. CONTRACTOR shall dispose of nuisance water at their own expense and without adverse effects upon OWNER property or any other property. All discharges shall comply with the appropriate discharge requirements.

3.7 WATER DISPOSAL

A. The effluent produced by drilling and development of the nested monitoring well shall not be discharged into the river, access roads, or near-by land. All waste fluids generated during drilling, construction, and well development shall be temporarily contained and hauled offsite to an approved disposal facility. It shall be the CONTRACTOR's responsibility to haul all waste fluids and deliver to a facility and to acquire any required encroachment or haul permits and/or right-of-entry to safely deliver the waste fluids to the disposal facility. It's also the responsibility of the CONTRACTOR to provide for and maintain all road and driveway crossings, and to provide traffic control to the satisfaction of the Pauma Valley, San Diego County or any other regulatory agency.

B. Prior to disposal, wastewater shall be pumped into a series of covered and locked temporary holding tanks that have been placed on the site. Water pumped from these tanks shall be then hauled offsite to an approved facility and shall be disposed of in such a manner that no damage to property occurs or that there is no creation of a nuisance.

3.8 PROTECTION AND RESTORATION OF EXISTING FACILITIES

A. CONTRACTOR shall be responsible for the protection of public and private properties at and adjacent to the Work and shall exercise due caution to avoid damage to such properties. CONTRACTOR shall repair or replace all existing improvements that are damaged or removed as a result of his operations. Such improvements include but are not limited to curbs, gutters, sidewalks, pavements, utility installations, structures,

lawns, sprinkler systems, trees, and bushes. Repair and replacements shall be at least equal to existing improvements and shall match them in finish and dimension.

END OF SECTION

SECTION 01561 - TEMPORARY NOISE BARRIERS

PART 1 - GENERAL

1.1 WORK OF THIS SECTION

1.2 DESCRIPTION

A. Because of the proximity of the drilling sites to residential and agricultural areas, sound attenuation will be recommended to mitigate noise generated by the drilling equipment during well drilling.

1.3 RELATED WORK SPECIFIED ELSEWHERE

A. Section 01110 - Summary of Work
B. Section 01500 - Temporary Facilities and Controls (Mobilization)
C. Section 01700 - Project Closeout
D. Section 01710 - Clean-Up
E. Section 02520 - Nested Monitoring Well

PART 2 - MATERIALS

A. Drilling activities shall be performed in a manner to minimize unnecessary noise generation and disturbance to nearby residents, and to the general public, while meeting local noise abatement ordinances.

B. The cost of noise control measures shall be included in the bid. The measures to be used in suppression of noise shall include (but are not limited to):

1. Equipping all internal combustion engines with critical hospital-quiet silencers (mufflers);
2. Placing noise attenuating barriers or sound panels around the drilling rig power unit and the air compressor;
3. Shielding noise-producing equipment from nearby sensitive areas by erecting sound barriers located adjacent to noise generating equipment, as necessary;
4. Placing equipment in locations to direct the greatest noise emissions away from these areas;
5. Wrapping the mast with insulated sound blankets; and
6. Conducting operations in the most effective manner that will minimize noise generation, while being consistent with the prosecution of the Contract in a timely and economic manner.

PART 3 - EXECUTION

A. Impacts due to noise on the adjacent residents shall be kept to a minimum at all times, and noise level requirements shall be strictly enforced.

B. Drilling activities shall be performed in a manner to minimize unnecessary noise generation and disturbance to nearby residents, and to the general public, while meeting local noise abatement ordinances.

C. Base ambient noise, or background noise, is defined as the composite of sounds from sources both near and distant. CONTRACTOR shall measure ambient noise levels at the property line during both drilling and non-drilling activities.

D. Section 36.408 of the San Diego County Noise Ordinance requires that between the hours of 7:00 a.m. and 7:00 p.m., no construction noise should be in excess of 75 dBA when measured at the boundary line of the property where the noise source is located for an 8 hour average, or on any occupied property where the noise is being received.

E. In the event that unacceptable noise levels persist, GEOHYDROLOGIST shall direct CONTRACTOR to cease operations until CONTRACTOR implements appropriate mitigation measures and acceptable noise levels are obtained.

F. Prior to commencing actual drilling, CONTRACTOR shall demonstrate onsite compliance by collecting actual noise level measurements during equipment operation. Noise level measurements shall be made using a hand-held noise level meter meeting ANSI Standard S1.4 1971 for Type 1 and Type 2 sound level meters or other instrument that will provide equivalent data. Measurements shall be made at 50 ft intervals along the work area perimeter, or as directed by the GEOHYDROLOGIST, and the measurements with the time and date will be noted on a drawing of the site layout.

END OF SECTION

SECTION 01562 - TEMPORARY FENCING

PART 1 - GENERAL

1.1 WORK OF THIS SECTION

1.2 DESCRIPTION

A. CONTRACTOR is required to enclose the drilling sites and equipment staging areas with temporary chain link construction fencing, including posting safety signs and other appropriate warnings throughout the work area.

1.3 RELATED WORK SPECIFIED ELSEWHERE

A. Section 01110 - Summary of Work
B. Section 01500 - Temporary Facilities and Controls (Mobilization)
C. Section 01700 - Project Closeout
D. Section 01710 - Clean-Up
E. Section 02520 - Monitoring Well

PART 2 - MATERIALS

2.2 MATERIALS

A. CONTRACTOR shall enclose each work site and associated staging areas with a temporary 8-ft high (minimum) chain link construction fence with attached privacy panels. The area enclosed with temporary fencing shall include a 24 ft wide lockable gate.

B. The location of the staging area shall be determined by the OWNER.

C. Materials and components shall be first quality items specifically manufactured for the intended application.

PART 3 - EXECUTION

3.1 TEMPORARY FENCING

A. CONTRACTOR shall bear the responsibility for protection of all equipment and material at the worksite.

B. CONTRACTOR shall provide an 8-ft high temporary fence that surrounds the site for protection of the public and workers against exposure to injury.

C. The chain link fence shall have green mesh privacy panels to reduce visibility of work occurring at the site. p

D. The temporary fencing shall have lockable gates and shall be installed in a manner acceptable to OWNER.

E. The fences and gates shall be adequate to protect work areas and temporary facilities against acts of theft, trespass, violence or vandalism. In locations where the probability of such acts of theft and vandalism is reasonably expected, this fencing requirement shall be enforced to include the enclosure of all equipment, well construction materials, temporary offices and storage areas.

F. CONTRACTOR shall bear the responsibility for protection of equipment and materials at the worksite.

G. To prevent intrusion by unauthorized persons, temporary openings and gates in existing fences shall be kept locked during the times that CONTRACTOR's personnel are not on site.

H. During times when no work is being performed at the site, CONTRACTOR shall provide temporary closures, signage, and/or guard services to protect the site.

I. All openings in the enclosure shall be temporary and shall be kept closed when not immediately in use.

END OF SECTION

SECTION 01572 - TRAFFIC CONTROL

PART 1 - GENERAL

1.1 WORK OF THIS SECTION

1.2 DESCRIPTION

A. Because of the distance of the drilling site to roads and public areas, traffic control plans will not be required to mitigate traffic disturbance around the drilling equipment during well drilling. Traffic control may be necessary to convey water from the water source to the project area.

1.3 RELATED WORK SPECIFIED ELSEWHERE

A. Section 01110 - Summary of Work
B. Section 01500 - Temporary Facilities and Controls (Mobilization)
C. Section 01700 - Project Closeout
D. Section 01710 - Clean-Up
E. Section 02520 - Nested Monitoring Well

PART 1 - MATERIALS

A. If necessary, the CONTRACTOR is required to submit, pay for, and obtain approved Traffic Control Plans and permits.

PART 2 - EXECUTION

A. If necessary, the CONTRACTOR shall develop and provide a Traffic Control Plan for the project site. CONTRACTOR shall at all times maintain open lane(s) for traffic, maintain ingress/egress to the residential driveways and commercial driveways. Traffic control requirements may be modified by Pauma Valley or as conditions warrant. CONTRACTOR shall modify traffic control, as required by the Pauma Valley or by the OWNER, at no additional cost to OWNER.

B. Throughout each work period, CONTRACTOR shall inspect traffic control (signs, barricades, arrow boards, and delineators) and shall maintain same in accordance with said permit. Street closures are not allowed.

C. When moving equipment on public roadways, CONTRACTOR shall provide a flagman at points of vehicular ingress and egress to control the movement of traffic near the site in a manner and to the extent required by applicable county and city ordinances, and/or regulations, and as acceptable to site owners. Flagman shall wear a brightly-colored reflective safety vest at all times when directing traffic. Traffic barricades shall be placed in accordance with the latest edition of the Work Area Traffic Control Handbook (2016 WATCH manual, 13th edition, and all Pauma Valley requirements) that is approved and endorsed by the Institute of Transportation ENGINEERs, American Public Works Association, and City Traffic ENGINEERs.

END OF SECTION

SECTION 01573 - TEMPORARY EROSION AND SEDIMENT CONTROL

PART 1 - GENERAL

1.1 WORK OF THIS SECTION

1.2 DESCRIPTION

A. Provide all work and take all measures necessary to control soil erosion resulting from construction operations; prevent flow of sediment or fluid from construction site; contain construction materials (including any excavation and backfill) within protected working areas; dispose of water generated during drilling and development; and comply with all applicable permit and any environmental mitigation requirements.

B. Appropriate erosion control devices including plastic sheeting, sandbags, silt fencing and straw waddles shall be used to control run off of fluids during construction.

C. Prior to any equipment being mobilized to the monitoring well drilling sites, a containment area will be constructed with a plastic liner and containment system to completely cover the active portion of the drilling location so that accidental spills are contained.

D. Water generated during drilling and development shall be discharged to an adequately sized baffled storage tanks for temporary holding before being removed from the site to an approved disposal facility.

E. CONTRACTOR shall conform to all provisions of these technical specifications.

F. If necessary, the CONTRACTOR shall not damage any property to convey the hydrant water.

G. CONTRACTOR shall furnish all necessary equipment to convey discharge to the approved disposal facility.

1.3 RELATED WORK SPECIFIED ELSEWHERE

A. Section 01110 – Summary of Work
B. Section 02520 – Monitoring Well

PART 2 - MATERIALS

2.2 MATERIALS

A. Erosion control devices shall include K-rails, plastic sheeting, sandbags, and straw wattles, or any other device necessary to contain fluids generated at the site.

B. Erosion control management shall include storage tanks, meters, and valves, to adequately control and divert flow as required to the vessel transporting wastewater to the approved disposal facility.

PART 3 - EXECUTION

3.1 EROSION CONTROL

A. CONTRACTOR shall install erosion control measures and devices to prevent worksite storm runoff or fluids from leaving the site. Under no circumstances shall water from any source related to the Work or storm runoff be allowed to leave any site other than through proper disposal means. At the end of the Work, CONTRACTOR shall properly dispose of all erosion control devices in an acceptable location.

3.2 TRACKING OF MUD AND SOIL ONTO IMPROVED ROADWAYS

A. Disturbance to natural surfaces shall be limited to the area strictly required for the project. If work activities occur in wet weather conditions, CONTRACTOR shall prevent tracking mud onto paved roadways when leaving the work site. If additional measures are necessary, CONTRACTOR shall be compensated at fixed cost-plus markup for delivery and materials.

B. The utmost care shall be taken to avoid tracking mud from the work sites and onto paved roadways. Any mud or dirt that is tracked onto paved roadways shall be immediately cleaned up by CONTRACTOR using dry methods (such as sweeping using a broom, or by scraping using a shovel). Soil shall be prevented from entering the storm drain system. Under no circumstances shall water from any source related to the Work or storm runoff be allowed to leave either site other than by proper disposal methods.

3.3 CONTROL OF WASTE FLUIDS

A. All waste fluids generated during the drilling, construction, and development process shall be hauled offsite and disposed of at an approved facility.

B. Prior to hauling offsite, all fluids shall be initially conveyed to a storage tank. CONTRACTOR shall determine the actual number and configuration of tanks necessary to contain and adequately treat fluids generated at the site. The purpose for the tanks is to allow suspended sediment to separate from fluids prior to discharge to the discharge pipeline.

C. Sampling ports shall be made available at the point of discharge (to containment vessel) to allow for water quality sampling. All discharges shall be closely monitored for quantity and quality with all meter readings recorded on CONTRACTOR daily report for the site. Daily field reports and field measurements shall be submitted to GEOHYDROLOGIST daily.

D. All costs incurred in the disposal of discharged water, including collection of water quality samples and their analysis for permit compliance purposes, as well as the delivery of the samples to a certified laboratory shall be at CONTRACTORS expense.

E. Under no circumstances shall water from any source related to the Work or storm runoff be allowed to leave the site as surface runoff. If necessary, CONTRACTOR shall use sandbags, earthen berms, straw wattles, and other devices to form barriers for the prevention of runoff. The CONTRACTOR shall provide temporary percolation areas, basins, or devices within the construction impact area for the disposal of storm runoff.

F. Rainwater collected from the plastic liner system will be considered to be wastewater and, prior to disposal, wastewater shall be pumped into a series of on-site temporary holding tanks or basins. Wastewater stored in these temporary holding tanks shall be hauled off-site for proper disposal at the CONTRACTOR's expense.

G. Disposal of all wastewater and drill cuttings shall be in such manner and to such locations that nuisance or damage to environment, structures, roads, utilities, or interference with other construction projects will be prevented.

H. CONTRACTOR shall be responsible for collection or analysis of water quality samples during discharge events.

I. All field data collected by CONTRACTOR during each discharge event (to containment vessel) shall be recorded on CONTRACTOR daily reports, as well as on any specified OWNER forms.

END OF SECTION

SECTION 01574 - CLEARING AND WASTE MANAGEMENT (DISPOSAL OF CUTTINGS)

PART 1 - GENERAL

1.1 WORK OF THIS SECTION

1.2 DESCRIPTION

A. All soil cuttings and fluids generated during the drilling process shall be fully contained prior to transport and disposal at an offsite facility.

1.3 RELATED WORK SPECIFIED ELSEWHERE

A. Section 01110 – Summary of Work
B. Section 02520 – Nested Monitoring Well

PART 2 - MATERIALS (NOT USED)

PART 3 - EXECUTION

3.1 DISPOSAL OF DRILL CUTTINGS

A. Onsite storage of uncontained soil cuttings and fluids generated during the drilling process will not be allowed. Drill cuttings will be collected in lined bins, backhoe bucket, or approved equal. The cuttings will be transferred to lined “roll-off” bins for transport from the site and disposal. All soil cuttings and fluids shall be contained in the immediate area of the borehole, and shall be removed daily, or more frequently, as determined by the GEOHYDROLOGIST, such that a nuisance is not created. The drilling CONTRACTOR shall be responsible for any and all costs incurred in the disposal of soil cuttings and fluids.

B. The Contractor shall be responsible for testing and disposal of drill cuttings generated during borehole drilling, as required by the disposal facility accepting the wastes. Disposal shall include the collection and laboratory analysis of soil samples. A minimum of one sample of the cuttings shall be collected from the pilot borehole. All soil samples shall be submitted to a State of California certified laboratory for volatile organic analysis by EPA Method 8260, total petroleum hydrocarbons by EPA Method 8015, and total threshold limit concentration (TTLC) metals by EPA Method 6010. Additional analyses may be required by the waste disposal facility. The Contractor shall submit the results of the analyses to the Geohydrologist prior to disposal of cuttings. Disposal of cuttings found to be non-hazardous and all related costs shall be the responsibility of the Contractor. Non-hazardous drill cuttings shall be disposed of offsite at a facility approved by the OWNER or GEOHYDROLOGIST. The contractor must submit dump tickets and copies of the results of any analyses required by the facility.

3.2 CONTAMINATED MATERIALS

A. Although contaminated soils are not anticipated, in the case that soil cuttings show indications of contamination (including staining or odor), they shall be stored in ANSI-approved 55-gallon steel drums until lab analytical results verify the nature and concentration of the contamination. OWNER and GEOHYDROLOGIST must be notified immediately upon discovery of contaminated soils. CONTRACTOR will be required to stop work if so instructed by OWNER to wait on laboratory analysis of the potentially contaminated soils. CONTRACTOR shall not be responsible for disposal of contaminated soils that are not the result of his activity.

B. Generation of hazardous materials by the CONTRACTOR during the course of Work caused by his negligence (e.g., oil, and/or hydraulic spills or leaks) shall be cleaned, removed, and properly disposed at the CONTRACTOR's expense. Any materials suspected of contamination due to CONTRACTOR negligence shall be submitted by the CONTRACTOR to a California State-certified laboratory for analysis at the CONTRACTOR 's expense. The sample shall be analyzed by approved state and/or federal methods to determine if the sample contains hazardous materials. The OWNER reserves the right to request additional testing if the methods requested by the CONTRACTOR are insufficient to determine the types of potentially hazardous materials present. Tests must be run within 24 working hours of suspected contamination. Test results must be available within five (5) working days. During this time any and all suspected contaminated materials must be contained separately at the site. Any sample which contains levels of contaminants in excess of state or federal disposal standards shall be properly disposed of by the CONTRACTOR in accordance with applicable regulations within 48 working hours of receiving test results. This shall include preparation of a hazardous materials disposal manifest by the CONTRACTOR. The CONTRACTOR, not the OWNER, shall be listed as the generator of the hazardous waste (i.e., as a result of CONTRACTOR negligence) on all manifests. The CONTRACTOR shall provide the OWNER with a copy of the initial manifest and the final manifest received at the disposal site.

3.3 NON-HAZARDOUS MATERIALS

A. Disposal of cuttings found to be non-hazardous and all related costs shall be the responsibility of CONTRACTOR. Non-hazardous drill cuttings shall be disposed of offsite at a licensed disposal facility approved by the OWNER.

END OF SECTION

SECTION 01700 – PROJECT CLOSEOUT

PART 1 – GENERAL

1.1 DESCRIPTION

A. The CONTRACTOR shall thoroughly clean the project site, as described in Section 01710, prior to final acceptance of the work by the OWNER.
B. The CONTRACTOR shall conduct Performance Tests for each element of the work as described in the individual sections. Where no performance test is specified, the CONTRACTOR shall demonstrate satisfactory performance for a period of one week prior to final acceptance.
C. The CONTRACTOR shall establish dates for equipment testing and acceptance periods. The times shall be within the Contract time.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Section 01110 - Summary of Work
B. Section 01380 - Pre-Construction Video Recording and Photographs
C. Section 01574 - Clearing and Waste Management (Disposal of Cuttings)
D. Section 01700 - Project Closeout
E. Section 02520 - Nested Monitoring Well

1.3 WALKTHROUGH

A. A walkthrough shall be performed by OWNER.

1.4 FINAL SUBMITTALS

A. The CONTRACTOR, prior to requesting final payment, shall obtain and submit the following items to the OWNER:

1. Project completion Report
2. Written guarantees, where required.
3. Operating manuals, technical manuals, and instructions (six (6) sets of all documents). Manuals shall include at a minimum operations and maintenance manuals for each piece of equipment (or set of equipment).
4. Maintenance stock items; spare parts, special tools.
5. As built drawings.
6. Releases from all parties who are entitled to claims against the subject project, property, or improvement pursuant to the provisions of law.
7. Monument survey showing record locations of monuments or benchmarks disturbed and reset by CONTRACTOR.

PART 2 – MATERIALS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01710 – CLEAN-UP

PART 1 – GENERAL

1.1 DESCRIPTION

A. CONTRACTOR shall execute clean-up during progress of the work, at completion of the work in accordance with Section 01700 Project Closeout, and as required by General Provisions for the areas covered by Contract, adjacent properties, and public access roads.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Section 01110 - Summary of Work
B. Section 01380 - Pre-Construction Video Recording and Photographs
C. Section 01574 - Clearing and Waste Management (Disposal of Cuttings)
D. Section 01700 - Project Closeout
E. Section 02520 - Nested Monitoring Well

1.3 CLEAN-UP

A. Requirements of Regulatory Agencies:

1. In addition to the requirements herein, the CONTRACTOR shall maintain the cleanliness of the work and surrounding premises within the work limits so as to comply with federal, state, and local fire and safety laws, ordinances, codes and regulations.
2. The CONTRACTOR shall comply with all federal, state and local anti-pollution laws, ordinances, codes and regulations when disposing of waste materials, debris and rubbish.

B. Scheduling of Cleaning and Disposal Operations:

1. The CONTRACTOR shall schedule all clean-up and disposal operations so that dust, wash water or other contaminants generated during such operations do not damage or mar painted or finished surfaces.
2. The CONTRACTOR shall prevent accumulation of dust, dirt, debris, rubbish and waste materials on or within the work or on the premises surrounding the work.

C. Waste Disposal:

1. The CONTRACTOR shall legally dispose of all waste materials, surplus materials, debris and rubbish off the site.
2. The CONTRACTOR shall not burn or bury rubbish and waste materials on site.
3. The CONTRACTOR shall not dispose of volatile or hazardous wastes such as mineral spirits, oil, or paint thinner in storm or sanitary drains.
4. The CONTRACTOR shall not discharge wastes into streams or waterways.

D. Materials:

1. The CONTRACTOR shall use only cleaning materials recommended by manufacturer of surface to be cleaned.
2. The CONTRACTOR shall use each type of cleaning material on only those surfaces recommended by the cleaning material manufacturer.
3. The CONTRACTOR shall use only materials, which will not create hazards to health or property.

E. During Construction:

1. Clean up and Dust Control. Throughout all phases of construction, including suspension of work, and until final acceptance, the CONTRACTOR shall keep the site clean and free from rubbish and debris. The CONTRACTOR shall also abate dust nuisance by cleaning, sweeping and sprinkling with water, or other means as necessary. The use of water resulting in mud on public streets will not be permitted as a substitute for sweeping or other methods.
2. The CONTRACTOR shall furnish and operate a motorized vacuum sweeper with spray nozzles at least once each workday for the purposes of keeping paved areas acceptably clean wherever construction activity, including restoration, is incomplete.
3. The CONTRACTOR shall provide suitable containers for storage of waste materials, debris and rubbish until time of disposal.
4. The CONTRACTOR shall dispose of waste, debris and rubbish off site at legal disposal areas.

F. When Project is Completed:

1. The CONTRACTOR shall remove and dispose of all excess or waste materials, debris, rubbish, and temporary facilities from the site, structures and all facilities.
2. The CONTRACTOR shall repair pavement, roads, sod, and all other areas affected by construction operations and restore them to original condition or to minimum condition specified by the OWNER.
3. The CONTRACTOR shall remove splatter, grease, stains, fingerprints, dirt, dust, labels, tags, packing materials and other foreign items or substances from interior and exterior surfaces, equipment, signs and lettering.
4. The CONTRACTOR shall repair, patch and touch up chipped, scratched, dented or otherwise marred surfaces to match specified finish.
5. The CONTRACTOR shall remove paint, clean and restore all equipment and material nameplates, labels and other identification markings.
6. The CONTRACTOR shall clean all floors, slabs, pavements, and ground surfaces.
7. The CONTRACTOR shall maintain cleaning until acceptance and occupation by OWNER.

PART 2 – MATERIALS (NOT USED)
PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 02520 – NESTED MONITORING WELL

PART 1 GENERAL

1.1 WORK OF THIS SECTION

A. Summary of Work - The work to be performed shall be as shown and specified in the Technical Specifications and on the Project Plan Sheets and generally described as supplying all labor, equipment, materials and forces necessary to complete the Work.

B. Well installation and testing, consists of drilling, construction, and development of the nested monitoring well (deep and shallow completions). The nested wells shall be located in Pauma Valley, California (see Sheet 1 and 3 the Project Plan Sheets). The nested monitoring well will be constructed on Rancho Estate's right of way access. Existing and required structures and equipment will present work area constraints, therefore, careful planning is necessary to complete the work within a reasonable timeframe.

C. The nested monitoring well shall be drilled using the dual tube reverse air rotary method with mud rotary capabilities method to an estimated target depth of 305 feet below ground surface (bgs). Actual well depth and footages will vary, depending on observed field conditions. The wells shall be constructed using 4-inch diameter Schedule 80 PVC well casings, 4-inch diameter Schedule 80 PVC 0.020 in. horizontal mill slotted well screens. The borehole drilling and well construction activities will be a daylight operation over a 5-day work week for critical tasks (i.e. well drilling, well construction, and pump development). However, there may be instances where a work week is extended to 7 days to avoid open borehole collapse in the middle of well construction. Initial and final well development will be during daylight hours only to minimize impact to surrounding residences.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Section 01090 - Reference Standards
B. Section 01380 - Pre-Construction Video Recording and Photographs
C. Section 01500 - Temporary Facilities and Controls (Mobilization)
D. Section 01561 - Temporary Noise Barriers
E. Section 01562 - Temporary Fencing
F. Section 01572 - Traffic Control
G. Section 01573 - Temporary Erosion and Sedimentary Control
H. Section 01574 - Clearing and Waste Management (Disposal of Cuttings)
I. Section 01700 - Project Closeout
J. Section 01710 - Clean-Up

PART 2 MATERIALS

2.1 MATERIALS

A. The CONTRACTOR shall provide all necessary equipment, materials, and labor to complete specified work.

B. The CONTRACTOR shall provide a dual tube reverse air rotary drilling unit with mud rotary capability, complete with all tools, accessories, power, lighting, water, and any other equipment necessary for the completion of the Work. The CONTRACTOR shall provide experienced personnel necessary to conduct efficient and safe drilling operations. Prior to the beginning of drilling operations, all equipment supplied by the CONTRACTOR shall be certified by the CONTRACTOR to be suitable for the specified drilling operation. The replacement of any equipment later found to be unsuitable shall be at the CONTRACTOR's expense.

C. All equipment intended for use in the drilling, construction, and development, of the nested monitoring well shall be inspected by the GEOHYDROLOGIST prior to mobilization to ensure that the equipment intended for use is adequate and acceptable for the Work.

D. All "pipe dope" used in the performance of the Work must comply with environmental standards and shall be inert. A Material Safety Data Sheet (MSDS) for all controlled materials used in the performance of the Work shall be provided to the GEOHYDROLOGIST prior to the start of the Work. In addition, any additives used in the drilling process shall conform to NSF/ANSI Standard 60, covering the health effects of the products and additives.

PART 3 EXECUTION

3.1 DUAL TUBE REVERSE AIR ROTARY METHOD

A. The first pass shall be drilled using the dual tube reverse air rotary drilling method. Air and water mist shall be the only circulating medium utilized throughout the drilling process. In the event that the addition of a large quantity of water is required to continue drilling, the total amount of water used shall be tracked with an inline flow meter (such as from a fire hydrant meter) and documented for presentation to the GEOHYDROLOGIST at the completion of drilling. The water source shall be approved by the GEOHYDROLOGIST and OWNER prior to drilling.

B. All soil cuttings and fluids generated during the drilling process shall be contained in the immediate area of the borehole. Although contaminated soils are not anticipated, if

soil cuttings show indications of contamination (staining or odor), they shall be stored in ANSI-approved 55-gallon steel drums until lab analysis can be obtained to verify the nature and concentration of the contamination. At the completion of drilling, soil cuttings shall be removed from the drilling site.

3.2 DRILLING EQUIPMENT – DUAL TUBE REVERSE AIR ROTARY DRILLING METHOD

A. The CONTRACTOR shall furnish with his bid a complete list of equipment which he proposes to use in the drilling of the boreholes. After award of the Contract, the Work shall not proceed until the GEOHYDROLOGIST approves the proposed construction method and is satisfied that the listed equipment is adequate for the Work and will be at the site when needed. All equipment must be in good working condition and approved by the GEOHYDROLOGIST.

The list of equipment accompanying the bid shall include the following:

1. Rated maximum safe mast, substructure and draw-works capacity[1].
2. Approximate mast height.
3. Total available rig horsepower.
4. Available rotary table horsepower.
5. Type and size of required cyclone.
6. Available air compressor specifications[2].

The CONTRACTOR shall also submit their proposed drilling program including:

1. Type(s) of drill bits.
2. Diameter, total length, and number of drill collars (including total weight).
3. Size and type of drill pipe (the use of flanged drill pipe will not be accepted).
4. Air compressor size.
5. Specifications for proposed drilling fluid compounds and/or additives, if necessary.

Work cannot begin with any item on the above list absent from the drill rig or not functioning according to specification. No delays or work stoppages will be tolerated. The CONTRACTOR shall be held responsible, and payment may be withheld for damages done to the well due to any cause of negligence or faulty operation.

[1] The minimum acceptable pull-back capacity of the draw-works shall be 50,000 lbs.
[2] The minimum acceptable capacity of the air compressor shall be 350 psi and 950 cubic feet per minute (cfm).

3.3 DIRECT MUD ROTARY DRILLING METHOD

A. The second pass shall for the nested monitoring well borehole shall be drilling using the direct mud rotary drilling method. Details regarding monitoring well construction are provided in Section 3.12.

3.4 DRILLING EQUIPMENT – DIRECT MUD ROTARY

A. The CONTRACTOR shall furnish with his bid a complete list of equipment that they propose to use in the performance of the Work. After award of the Contract, the Work shall not proceed until the GEOHYDROLOGIST approves the proposed construction method and is satisfied that the listed equipment is adequate for the Work and will be at the site when needed. The CONTRACTOR must provide for continuous operations from the time drilling is commenced, to completion of development and final testing. All equipment must be in good working condition and approved by the GEOHYDROLOGIST.

In addition to the items listed in Section 3.2, the list of direct rotary drilling equipment accompanying the bid shall also include the following:

1. Size and type of mud pump(s).
2. Type and capacity of portable fluid reservoirs.
3. Type and size required shale shakers and desanding/desilting equipment.
4. Pump curve for the submersible test pump to be used for well develop.

The CONTRACTOR shall also submit their proposed drilling program including:

5. Type or types of drill bits.
6. Diameter, total length, and number of drill collars (including total weight).
7. Size and type of drill pipe (the use of flanged drill pipe will not be accepted).
8. Rotary speeds.
9. Fluid circulation rate.
10. Specification for proposed drilling fluid compounds and/or additives, if necessary.
11. Air compressor size to be used for initial development by airlifting and swabbing.
12. Specifications and drawings for tools to be used for initial development by airlifting and swabbing.

The drilling rig shall be equipped with the following operating accessory equipment:

13. Weight indicator.

14. Approved equipment for measuring mud properties.

15. Sample collection box, or approved method of collecting formation samples.

No delays or work stoppages will be tolerated. The CONTRACTOR shall be held responsible, and payment may be withheld for damages done to the well due to any cause of negligence or faulty operation.

3.5 CIRCULATION RESERVOIRS – PORTABLE FLUID TANKS

A. The CONTRACTOR shall provide adequate baffled or divided drilling fluid reservoirs with solids control equipment, in the form of shale shakers and desanders/desilters. Such equipment will allow the removal of drill cuttings from the fluid before recirculation to the borehole. The consistency of the drilling fluid shall be such that fine drill cuttings and sand will settle out in the reservoir. In addition to using a shaker table, desilters and desanders, the drilling fluid reservoir shall be cleaned continuously, to minimize the sand content of the return fluid. The use of in the ground pits will not be accepted. The CONTRACTOR shall provide a sample collection box, or other such approved device, for the collection of representative formation samples.

3.6 DRILLING FLUID

A. Unless otherwise approved by the GEOHYDROLOGIST, water and bentonite gel alone shall be employed as the circulating medium. The drilling mud used shall be manufactured by Baroid®, or as otherwise approved by the GEOHYDROLOGST.

B. If “loss of circulation” or other drilling problems require the addition of other materials, such material may be added only with the prior approval of the GEOHYDROLOGST. Procedure must be adopted to endure the removal of all loss of circulation additives during the development process.

C. The weight, viscosity, wall cake thickness, 30-minute water loss, and sand content of the drilling fluid shall be measured and recorded a minimum of every four hours during drilling or borehole circulation, whenever conditions appear to have changed, or if difficulties arise. Therefore, as a minimum, the CONTRACTOR shall have on site at all times a viscosity funnel, mud scale, sand content test kit, pH test strips, and filter press with compatible CO_2 cartridges or an air compressor capable of 100 psi, all of which is in proper working order. The CONTRACTOR shall remain vigilant regarding his mud control at all times. The sand content of the fluid returning to the borehole shall be maintained at 1% (by volume) or less at all times.

D. Drilling fluid additives, if approved for use, shall have such properties as to be adequate to form a thin but effective filter cake to coat the walls of the borehole, to prevent water loss, to support the borehole wall to prevent caving, and to permit the recovery of representative samples of drill cuttings (formation materials). If there is a conflict between adjusting the drilling fluid properties for the ease of drilling, or maintaining the proper drilling fluid properties for the protection of the aquifer, the protection of the aquifer shall prevail. The CONTRACTOR shall make every effort to prevent the penetration of mud filtrate into the potential aquifers to be screened.

E. The circulating fluid for direct rotary drilling shall not exceed the following parameters at any time, however, lower mud properties (than those listed below) should be used whenever safely achievable:

1. Weight – 8.5 to 9.0 pounds per gallon normal range. 9.5 pounds per gallon, maximum
2. Funnel Viscosity – 28 to 35 seconds normal range. 38 seconds, maximum.
3. Sand Content of Fluid Entering Borehole – less than 1% by volume, maximum.
4. pH – 7.0 to 9.0 units.
5. 30 Minute Water Loss – 12 cubic centimeters. 15 cubic centimeters maximum.
6. Filter Cake – 2/32 inches, maximum. The wall cake should be slick and non-gritty, and easily removed from the filter press paper.

F. The drilling mud pit shall be contained, above the ground, and shall be equipped with appropriate desilter/desanding cones. The mud pit shall have a sufficient volume that is at least three times the theoretical volume of the final borehole. The use of in-the-ground pits will not be allowed.

G. Depending on borehole conditions encountered during drilling, and if directed by the Geohydrologist, the drilling fluid shall be thinned and conditioned after the pilot borehole has been reamed, until the drilling fluids have the following properties:

7. Weight – 8.5 pounds per gallon, maximum.
8. Funnel Viscosity – 29 seconds, maximum.
9. Sand Content of Fluid Entering the Borehole – 1% by volume, maximum.

H. The CONTRACTOR shall measure and record drilling fluid properties at a maximum of four-hour intervals, with approved on site equipment, to demonstrate compliance with drilling fluid requirements.

I. In the event that the CONTRACTOR cannot attain these properties during any phase of the drilling process or if the CONTRACTOR does not maintain proper drilling fluid control to the satisfaction of the GEOHYDROLOGIST during drilling, logging, casing, and filter packing, the CONTRACTOR shall, at his own expense, obtain the services of a qualified drilling fluid engineer to assist in performing all the necessary operations needed to bring the drilling fluid under proper control.

J. In the event that the specified drilling fluid properties are violated within the formation to be screened, or if loss of circulation materials are used, the CONTRACTOR shall, at his own expense, obtain the services of a qualified drilling fluid engineer to develop a chemical treatment program (using dispersing agents) to be used in conjunction with the well development process to remove these materials from the aquifer.

3.7 DRILLING PROBLEMS

A. If fluid loss is noticed during drilling or when conditioning monitoring wells (mud rotary method), immediate action should be taken. Maintaining a stable, open borehole during geophysical logging and testing may require carrying the filtrate loss at a level lower than would normally be required. Solids control equipment will be required to minimize the loss of circulation, stuck pipe, and slow penetration rates (e.g. shale shaker with desanders/desilters). In addition to the solids control equipment, adequate fluid reservoir volume is recommended to help control the build-up of solids.

B. Regardless of the drilling method, the CONTRACTOR is required to make themself aware of local drilling conditions, and is required to be prepared with the proper drilling bits and necessary associated equipment. The CONTRACTOR will not be compensated for lost holes, or lost time, due to “twisting off” or “hard rock” conditions encountered downhole.

3.8 “LOST” BOREHOLES AND BOREHOLE DESTRUCTION

A. Boreholes (both pilot borehole and enlarged or reamed borehole) that the CONTRACTOR is not able to complete prior to reaching design or specified depth, due to defective workmanship, unsuitable materials introduced to the borehole, excessive borehole caving, misaligned borehole, or faulty equipment, will be considered a "lost" borehole and will not be paid for by the OWNER. Examples where "lost" boreholes apply include, but are not limited to, failure to achieve geophysical borehole logging, and failure to complete borehole enlargement to design depth (i.e., reaming pass) due to caving. If a borehole is determined to be lost, the CONTRACTOR shall drill another borehole to the specified depth, near the lost borehole at the exact location to be specified by the OWNER. No payment will be made for subsequent moving, setting up, installation of conductor casing or re-drilling of the borehole. In addition, the

CONTRACTOR will not be compensated for standby time, nor for extra hours incurred during ensuing discussions should this situation occur.

B. The criteria by which the GEOHYDROLOGIST determines that a borehole is lost (resulting in the need to abandon and destroy a borehole) could include situations where the near-well zone permeability has been compromised due to addition of excessive amounts of low permeability materials (e.g., bentonite gel[3]) introduced to the borehole for such purposes as to control borehole stability, or to control loss-of-circulation conditions (e.g., Magma-Fiber®[4]). Additionally, the determination that a borehole is lost may be based on deviation from the mud property parameters defined in Section 3.6 of these technical specifications, and if this deviation has been determined to have caused irreversible damage to the near-well zone and aquifer. "Excessive amount" shall be defined by industry standards.

C. The final decision that a borehole is considered lost shall be a consensus between the OWNER, GEOHYDROLOGIST, and a qualified and certified mud engineer that is agreed upon prior to that start of drilling and construction by both the GEOHYDROLOGSIT and the CONTRACTOR.

D. All "lost" boreholes shall be destroyed by backfilling with either high-viscosity bentonite slurry, or a bentonite-cement mixture. Any casing shall be removed to a depth of at least 5 ft bgs, as per San Diego County requirements. The site shall be cleaned and restored as directed by the OWNER. No payment will be made for the backfilling, removal of casing, site cleaning or restoration of lost boreholes.

3.9 TESTING AND DISPOSAL OF DRILL CUTTINGS

A. Onsite storage of uncontained soil cuttings and fluids generated during the drilling process will not be allowed. All soil cuttings and fluids shall be contained in the immediate area of the borehole, and shall be removed daily, or more frequently, as determined by the GEOHYDROLOGIST, such that a nuisance is not created. The drilling CONTRACTOR shall be responsible for any and all costs incurred in the disposal of soil cuttings and fluids.

B. The CONTRACTOR shall be responsible for testing and disposal of drill cuttings generated during borehole drilling, as required by the disposal facility accepting the wastes. Disposal shall include the collection and laboratory analysis of soil samples. A minimum of one sample of the drilling fluid and cuttings shall be collected from the pilot borehole and from the conductor borehole. All soil samples shall be submitted to a

[3] Bentonite gel refers to processed drilling fluid additives that are highly water retentive (high-yielding) sodium bentonite (i.e., montmorillonite) materials providing viscosity, fluid-loss control and gelling characteristics.
[4] Magma Fiber is also known in the industry as acid wool or N-Seal.

State of California certified laboratory for volatile organic analysis by EPA Method 8260, total petroleum hydrocarbons by EPA Method 8015, and total threshold limit concentration (TTLC) metals by EPA Method 6010. Additional analyses may be required by the waste disposal facility. The CONTRACTOR shall submit the results of the analyses to the GEOHYDROLOGIST prior to disposal of cuttings. Disposal of cuttings found to be non-hazardous and all related costs shall be the responsibility of the CONTRACTOR. Non-hazardous drill cuttings shall be disposed of offsite at a facility approved by the OWNER or GEOHYDROLOGIST. The contractor must submit dump tickets and copies of the results of any analyses required by the facility.

C. Although contaminated soils are not anticipated, if soil cuttings show indications of contamination (staining or odor), they shall be stored in ANSI approved 55-gallon steel drums until lab analysis can be obtained to verify the nature and concentration of the contamination. The OWNER and GEOHYDROLOGIST must be notified immediately upon discovery of potentially contaminated soils. The CONTRACTOR will be required to stop work if so, instructed by the OWNER or GEOHYDROLOGIST to accommodate laboratory analysis, if needed, of the potentially contaminated soils.

D. Generation of hazardous materials by the CONTRACTOR during the course of Work caused by his negligence (e.g., oil, and/or hydraulic spills or leaks) shall be cleaned, removed, and properly disposed at the CONTRACTOR’s expense. Any materials suspected of contamination due to CONTRACTOR negligence shall be submitted by the CONTRACTOR to a California State-certified laboratory for analysis at the CONTRACTOR's expense. The sample shall be analyzed by approved state and/or federal methods to determine if the sample contains hazardous materials. The OWNER reserves the right to request additional testing if the methods requested by the CONTRACTOR are insufficient to determine the types of potentially hazardous materials present. Tests must be run within 24 working hours of suspected contamination. Test results must be available within five (5) working days. During this time any and all suspected contaminated materials must be contained separately at the site. Any sample which contains levels of contaminants in excess of state or federal disposal standards shall be properly disposed of by the CONTRACTOR in accordance with applicable regulations within 48 working hours of receiving test results. This shall include preparation of a hazardous materials disposal manifest by the CONTRACTOR. The CONTRACTOR, not the OWNER, shall be listed as the generator of the hazardous waste (i.e., as a result of CONTRACTOR negligence) on all manifests. The

CONTRACTOR shall provide the OWNER with a copy of the initial manifest and the final manifest received at the disposal site.

E. All fluids that must be disposed of or destroyed must be disposed of at a facility approved by the OWNER or GEOHYDROLOGIST. The contractor must submit dump tickets and copies of the results of any analyses required by the facility.

3.10 SAMPLE COLLECTION

A. Samples of drill cuttings will be obtained by the CONTRACTOR during the initial pilot borehole drilling by the dual tube reverse air rotary drilling method, and under the supervision of the GEOHYDROLOGSIT, for each 5 ft interval of drilling. Grab samples will be collected from the cyclone and will be placed in large (gallon-size) heavy-duty plastic “zip-lock” bags (i.e., one-gallon freezer bags) and appropriately labeled with indelible black ink with the Owner’s name, well/boring number, and the top and bottom of the depth interval sampled. When the character of the drill cuttings indicates changes in formation, samples shall be taken at shorter intervals. The CONTRACTOR shall obtain formation samples from a formation sampling device approved by the GEOHYDROLOGST. An accurate depth record and tally of all tubing, drill pipe, casing, and screen in the hole, stored on the pipe rack, or stacked in the derrick, shall be kept current at all times.

3.11 RECORDS – DRILLER’S LOG AND SAMPLES

A. The CONTRACTOR shall keep an accurate (and legible) up-to-date log of his operations at all times on a standard American Petroleum Institute (API) form with fields for the activities performed and materials used during each shift of drilling, well construction, and development. In addition to the drilling rate, the CONTRACTOR shall record the type, character, and depth of materials encountered, thickness of strata, water level depths, and any additional information that may be helpful in interpreting the drilling log (e.g., fluid loss or gain). All measurements for depths shall be referenced to the existing ground surface at the well site. These daily logs shall be scanned and emailed to the OWNER and GEOHYDROLOGIST on a daily basis. Upon completion of drilling the well, copies of the driller's formation log and any other pertinent notes shall be furnished to the GEOHYDROLOGIST.

3.12 WELL CONSTRUCTION SEQUENCE

A. The location of the center point of the nested monitoring well will be staked by the OWNER or OWNER’S Representative. It shall be the Contractor's responsibility to request survey staking at least five (5) working days in advance of the commencement of well drilling. No well drilling shall take place prior to staking of the center point of the

well. The CONTRACTOR shall be responsible for preserving field stakes as set by the survey crew.

B. The pilot borehole shall be drilled using the dual tube reverse air rotary drilling method. Upon reaching total depth of the pilot borehole (at approximately 305 ft bgs; see Sheet 4), the borehole shall be reamed using the direct rotary drilling method. Prior to the beginning of the drilling operation, all equipment supplied by the CONTRACTOR shall be inspected by the GEOHYDROLOGIST to be suitable for the specified drilling operation. The replacement of any equipment later found to be unsuitable shall be at the CONTRACTOR'S expense.

C. The construction sequence of the nested monitoring well shall include, but shall not be limited to the following:

1. Mobilizing a dual tube reverse air rotary drilling rig and associated to the drilling site (including reservoirs for fluid containment and solids control equipment).
2. Drilling a nominal 6-inch diameter dual tube borehole to approximate total depth of 305 ft bgs using the reverse circulation air rotary drilling rig. Soil samples will be collected at 5-ft intervals from the ground surface to the total depth of the borehole.
3. Filling and conditioning the borehole with mud or water prior to performing geophysical logs.
4. Performing geophysical logs of the pilot borehole as specified.
5. Reaming the nominal 6-inch diameter pilot borehole to 17.5-inch diameter borehole using the direct rotary drilling method.
6. Conditioning and cleaning the borehole, if necessary, prior to installing well casing, as specified.
7. Installing 4-inch diameter schedule 80 PVC casing and horizontal slot well screen to the appropriate depths as directed by the GEOHYDROLOGIST.
8. Installing the filter pack material and annular seals in the annular space between the screen or casing and borehole wall as directed by the GEOHYDROLOGST.
9. Installing a cement-bentonite grout in the annular space between the casing and borehole wall from 20 ft bgs to 1 ft bgs.
10. Performing initial development by airlifting and swabbing from between packers.
11. Performing final development by pumping.
12. Complete each well at the surface with an above ground steel monument cover with lockable lid.

13. Demobilizing the drilling rig and associated drilling equipment including all site clean-up.

D. For bidding purposes, the construction and completion details for the monitoring wells are shown on the Project Plan Sheets 4 and 5.

3.13 NESTED MONITORING WELL DRILLING

A. The pilot borehole for the installation of the nested monitoring well shall be drilled using the dual tube reverse air rotary method to a total depth of 305 ft bgs (see Sheet 4). Formation samples shall be collected at 5 ft intervals, or less, for classification of the geologic formations encountered. The diameter of the nested monitoring well pilot borehole shall be nominal 6-inch. The GEOHYDROLOGST will be on site during the drilling process to log the drill cuttings and verify the depth of the borehole. The CONTRACTOR shall take all measures necessary to protect all portions of the monitoring well bore from caving or raveling. The CONTRACTOR shall protect the formation samples from being lost, destroyed or contaminated with foreign debris during construction of the well.

B. During drilling of the nested monitoring well borehole, procedures for collecting formation samples and keeping records as previously specified shall be strictly followed. The CONTRACTOR shall provide a sampling device that will be approved by the GEOHYDROLOGST to collect lithologic samples that are representative of both the fine- and coarse-grained fractions of the formation.

C. At each change of formation and at 5 ft intervals between changes in formation, the CONTRACTOR shall collect a large, representative sample of the interval of new formation material from the sampling trough, label and preserve each sample in a clear, heavy-duty, freezer-type, one gallon “zip-lock” plastic bag. Each sample bag shall be clearly labeled, with indelible black ink, to indicate the depth interval of the collected sample, Owner’s name and well number, and shall be stored in a manner to prevent breakage, contamination or loss. All sample bags shall be furnished by the CONTRACTOR and become the property of the OWNER.

D. Following completion of the pilot borehole drilling, the borehole shall be reamed to a diameter of 17.5-inches using the direct rotary drilling method.

3.14 GEOPHYSICAL BOREHOLE LOGS

A. Upon completion of the pilot borehole, a suite of geophysical borehole logs shall be run on the entire depth of the pilot borehole by a company approved by the GEOHYDROLOGIST and OWNER, which is independently owned and separate from the CONTRACTOR. There will be no additional payment for either rig time or standby

time while logging is being performed, or while the CONTRACTOR is waiting on any SUBCONTRACTOR.

B. If the logging tools fail to descend to the desired depth, the CONTRACTOR, at their own expense, shall clean and condition the hole in order to permit the logging tools to descend to total depth. Standby time will not be paid for additional cleaning and conditioning of the borehole as necessary to enable logging operations to proceed.

C. The geophysical borehole logs shall consist of the following:

1. 16-inch short-normal and 64-inch long-normal resistivity;
2. Spontaneous potential (SP);
3. Laterlog 3 (focused resistivity - guard);
4. Gamma-ray; and
5. Acoustic (sonic) with variable density log (VDL) and sonic porosity;

D. The aforementioned logs shall have appended to them such information as necessary for proper interpretation of the logs (e.g., resistivity of the mud and mud filtrate, surface and bottom hole temperatures, etc.). The logs shall be scaled appropriately to the formations logged to allow for adequate definition of the subsurface strata. The horizontal scale for the plot of the spontaneous potential log shall be capable of being displayed in the range from at least 5 to 20 millivolts per inch, as specified by the GEOHYDROLOGIST. The horizontal scale for the plot of each of the resistivity logs (16-inch and 64-inch normal or guard log) shall be capable of being displayed in the range from at least 25 to 50 ohm-meters per inch, as specified by the GEOHYDOLOGIST. A vertical scale of 20 feet per inch is specified.

E. The geophysical logs shall become the property of the OWNER at the time that logging is completed. The logs shall be run in the presence of the GEOHYDROLOGIST. The logs shall be provided to the GEOHYDROLOGIST for interpretation immediately after completion. The CONTRACTOR shall provide the GEOHYDROLOGIST with nine (9) copies of each log at no additional cost to the OWNER. In addition, the CONTRACTOR shall provide the GEOHYDROLOGIST with electronic copies of each log, in a format suitable for inclusion into an AutoCAD drawing file (i.e., dxf or dwg file), in a format to be used in Microsoft Excel (i.e., las file), and in a portable document format (i.e., pdf).

3.15 FINAL DESIGN OF CASING, SCREEN, FILTER PACK AND ANNUAL SEAL

A. The final design for the nested monitoring well, including depth of the borehole, casing and screen intervals, filer pack, and inter-annular and cement seal recommendations

shall be provided by the GEOHYDROLOGIST following analysis of the geophysical logs.

B. The final well design will supersede any conceptual design details provided in these technical specifications.

3.16 REAMING OF THE PILOT BOREHOLE

A. At the instruction of the GEOHYDROLOGIST, the nominal 6-inch diameter pilot borehole shall be enlarged to its final diameter of 17.5-inches from ground surface to the total depth of the borehole, as determined by the GEOHYDROLOGIST. Reaming of the pilot borehole shall be performed using the mud rotary drilling method. During the reaming process, the drilling fluid properties as described in Section 3.6 Drilling Fluid, shall be strictly adhered to.

B. The CONTRACTOR shall not begin a reaming pass prior to receipt of an approved well design from the GEOHYDROLOGIST. In the event that drilling is authorized or ordered to depths shallower or deeper than specified herein, a corresponding adjustment shall be made to the bid line-item quantity and the total cost adjusted at the unit bid rate of the contract.

3.17 BLANK WELL CASING

A. The blank monitoring well casing used shall be fabricated from threaded 4-inch diameter schedule 80 PVC. The casing shall conform to the physical properties of the American Society for Testing Materials (ASTM) Specification F480.

B. For bidding purposes, it is assumed that blank casing for the nested monitoring well will be installed from estimated depths of (see Sheet 4):

1. +2 to 35 ft bgs in MW-1S (shallow) completion,
2. +2 to 90 ft bgs in MW-1D (deep) completion,

C. 5 ft of blank well casing with an end cap shall be placed below the screened interval of each monitoring well completion.

D. Final monitoring well blank and perforated intervals shall be determined by the GEOHYDROLOGIST upon review of the lithologic and geophysical logs.

3.18 WELL SCREEN

A. The well screen used for each monitoring well shall be manufactured in accordance with the aforementioned casing requirements of ASTM Specification F480 and shall consist of threaded 4-inch diameter schedule 80 PVC casing material.

B. The slot size of the screen is expected to be 0.020 inches with a variance of ±0.005 inches. For bidding purposes, it is assumed that the screen will be installed at estimated depths of:

1. 35 to 60 ft bgs in MW-1S (Shallow) completion,
2. 90 to 295 ft bgs in MW-1D (Deep) completion,

C. Final monitoring well blank and perforated intervals shall be determined by the GEOHYDROLOGIST upon review of the lithologic and geophysical logs.

3.19 CASING AND SCREEN INSTALLATION

A. Monitoring well casing and screen installation shall be performed by such methods that will ensure no damage to the casing and screen during installation. Prior to installation of the casing and screen, a tremie pipe shall be set in the borehole not more than 30 ft above the bottom of the borehole.

B. During installation, the casing shall be suspended above the bottom of the borehole a sufficient distance to ensure that the casing will not be supported by the bottom of the borehole prior to the start of the filter packing procedure.

C. During installation, centering guides shall be installed at no greater than 100 ft intervals throughout the entire length of casing and screen, starting from the bottom of the screened interval. The centering guides shall consist of stainless steel material in a basket or cage type of configuration. These centering guides shall be tightly strapped to the casings.

D. The conceptual casing and screen design for the proposed well is provided in the tables on the following page:

Conceptual Design of Well Casing and Screen
USLR MW-1S (Shallow)

Interval [ft bgs]	Borehole Diameter [in.]	Casing Diameter [in.]	Wall Thickness [in.]	Screen Slot Size [in.]	Material Type
+2 – 35	17.5	4 ID	0.337	-	Blank Casing (Schedule 80 PVC)
35 - 60	17.5	4 ID	0.337	0.020	Horizontal Mill Slot Screen (Schedule 80 PVC)
60 - 65	17.5	4 ID	0.337	-	Blank Casing w/ End Cap (Schedule 80 PVC)

USLR MW-1D (Deep)

Interval [ft bgs]	Borehole Diameter [in.]	Casing Diameter [in.]	Wall Thickness [in.]	Screen Slot Size [in.]	Material Type
+2 – 90	17..5	4 ID	0.337	-	Blank Casing (Schedule 80 PVC)
90 - 295	17.5	4 ID	0.337	0.020	Horizontal Mill Slot Screen (Schedule 80 PVC)
295 - 300	17.5	4 ID	0.337	-	Blank Casing w/ End Cap (Schedule 80 PVC)

3.20 MONITORING WELL CASING AND SCREEN ALIGNMENT

A. The monitoring well borehole shall be constructed, and all casing set sufficiently round, plumb and true so as to enable the free installation and operation of a submersible pump with the intake set at approximately 5 to 15 ft below the top of the screened interval. Should the well fail to meet these requirements for installation of a submersible pump to the required depth, the CONTRACTOR, at his expense, shall correct the deviation. If the alignment cannot be corrected, the well will be properly abandoned according to State of California and San Diego County standards, and shall be re-drilled, constructed, developed and tested, at the CONTRACTOR's expense.

B. A minimum of two inches shall be maintained between all casings and the borehole wall. Casing spacers shall be used to separate individual well casing strings from one another. The spacers shall be placed at intervals directed by the GEOHYDROLOGIST to ensure a minimum separation of two inches between casing strings.

3.21 ARTIFICIAL FILTER PACK

A. The annular space between the 17.5-inch diameter borehole and the screened portion of each monitoring well shall be filled with a suitable filter pack material as shown in Sheet 4. The gradation of the filter pack shall be CEMEX Lapus Lustre #3, or approved equal. The volume of the annular space between the casing and screen and the borehole wall shall be calculated prior to placing the filter pack material.

CEMEX Lapis Lustre #3 Gradation Filter Pack

U.S. Standard Sieve Size	Cumulative % Passing
No. 6	100
No. 8	99
No. 12	59
No. 16	9
No. 20	2
No. 30	1

B. The filter pack shall be composed of sound, durable, well-rounded particles of natural sand and fine gravel, free from flat or elongated particles. The filter pack material shall be washed so that it is free from organic matter, shale, carbonates, mica, silt, clay, or other deleterious materials. It shall conform to the AWWA A100 Standard, Section 6.3.4 that stipulates that not more than 5% of the filter pack shall be soluble in hydrochloric acid.

C. All filter pack material shall be delivered to the well site in 50 lb. bags or in one cubic yard sacks (“super sacks”) prior to casing and screen installation, allowing for adequate time for inspection, testing and approval. All materials shall be protected from contamination until installed in the borehole.

D. The filter pack material shall be tested and approved by the GEOHYDROLOGIST. It shall be well-graded and shall be within the limits (with minor variations) determined and approved by the GEOHYDROLOGIST upon completion of the drilling and testing. Under no circumstances shall crushed rock be installed in the well.

E. After the assembled casing and screen is installed in the borehole, circulation shall be established in the annulus through the 2-inch diameter tremie pipe. Once circulation has been established and borehole fluids are balanced, filter pack shall be pumped from the surface into the annular space opposite the screened portions of the nested wells. Continuous circulation shall be maintained through the tremie while placing the filter pack material and the annular space shall remain full of fluid at all times during

placement of the filter pack material. No more than one section of tremie pipe shall be removed at any one time during installation of the filter pack.

F. The top of the filter pack material shall be tagged frequently to verify the level of the material in the annular space. At no time shall the CONTRACTOR allow the filter pack material to fall more than 30 ft below the bottom of the tremie. This method will ensure the proper placement of the filter pack material, while simultaneously washing sand, silt, and drilling mud from the filter pack material that is placed in the annulus.

G. Prior to placement of the annular seal, the filter pack shall be briefly agitated, using a swab or similar device, to ensure that bridging of the filter pack material has not occurred.

3.22 PLACEMENT OF BENTONITE SAND LAYER

A. Following placement of the filter pack material, a layer of fine sand and bentonite shall be placed. The bentonite sand layer shall consist of uniformly graded, fine to medium "construction" sand, or gravel of the same gradation as used for gravel packing. The dry mixture shall be composed of equal parts (i.e., 1:1 ratio) of granular bentonite and sand and shall be thoroughly dry mixed prior to emplacement in the borehole. The bentonite sand layer shall be placed on top of the filter pack material in the same fashion as the filter pack material. The bentonite seal shall be installed using a tremie pipe initially lowered to a depth not more than 20 feet above the top of the filter pack. The top of the bentonite sand layer shall be tagged and recorded one hour after placement and again immediately prior to pumping the initial load of 10.3 sack cement to verify its level.

3.23 SEALING OF UPPER ZONES BY CEMENT GROUTING

A. After placement of the filter pack and bentonite-sand layer to the depths specified, the annular space between the borehole and well casing shall be filled with cement grout from the top of the bentonite sand layer to ground surface. The grout mixture shall consist of a 10.3 sack sand-cement grout.

B. 10.3 sack sand-cement grout shall consist of 968 lbs of Type II cement (ASTM C150-95 Standard Specification for Portland Cement) and 1,936 lbs of washed sand to create a volume of one cubic yard of material. Approximately 60 gallons of water per cubic yard shall be added, with a maximum of 63 gallons per cubic yard allowed if necessary, to make the mixture more fluid for pumping. Care must be taken to avoid segregation of the grout mix by the addition of excessive quantities of water. The weight of the mixture shall be approximately 128-lbs/cu ft. A maximum of 2% by weight of calcium chloride, may be added to condition the slurry for a fluid mix, and to accelerate the set-up time for the cement.

C. In no case shall more than two hours elapse from the time of addition of water to the mixture at the ready-mix plant, to time of pumping the mixture down into the well. The CONTRACTOR shall provide the cement delivery ticket demonstrating the date and time that the cement was mixed at the ready-mix plant.

D. Personnel thoroughly trained in the operation and application of their equipment shall operate all cementing equipment and specialized tools. The placing of the cement shall be done in a manner such that the casing is entirely sealed against infiltration by water. Each grouting event shall be accomplished in one continuous operation by pumping the cement mixture through a tremie pipe to force the cement slurry into the annular space. The end of the tremie pipe shall remain submerged in the wet cement slurry at all times while pumping each lift. The cement shall be placed to the depth directed by the GEOHYDROLOGIST. The CONTRACTOR should be aware of and protect against any large hydrostatic forces which may be involved, and if necessary (based on the collapse strength of the casing), conduct the cementing operation in stages, allowing sufficient time after each interval has been cemented for hydration and consolidation of the cement. The height of each lift and minimum time between lifts will be specified by the GEOHYDROLOGIST in the final well design letter. These instructions shall be strictly adhered to.

E. The annular cement seal shall remain undisturbed for a minimum of 24 hours before further work is performed on the well. Should the top of the cement seal drop below 3 ft bgs, it shall be topped off with additional cement.

3.24 INITIAL AIRLIFT DEVELOPMENT

A. Following monitoring well construction, and after allowing sufficient time for the cement to harden, the wells will be developed to clean and consolidate the filter pack and near-well zone. Proper development will ensure full communication within the screened interval with the aquifer. Development will also ensure that low turbidity samples are available for water quality analysis. The CONTRACTOR shall provide a combination swab/airlift tool with a double rubber packer assembly spaced 10 feet apart, designed to be run on drill pipe in the 4-inch diameter screened portion of the well. The tool shall be designed such that it will allow simultaneous pumping (by airlift) and swabbing to occur.

B. Following the sealing of the well, initial development and cleaning of the filter pack and aquifer shall be accomplished by airlift pumping and swabbing in stages opposite the entire screened interval until the filter pack is clean and consolidated. Initial airlift development shall begin at the top of the screened interval and shall proceed downward.

C. The air compressor shall be capable of airlifting a minimum of 25 gpm during initial development. The swabbing and airlifting operations shall be conducted simultaneously, over no more than one length of drill pipe, until that section is adequately developed as directed by the GEOHYDROLOGIST.

D. Drilling mud and groundwater generated during the airlift development process shall be contained in settling tanks prior to hauling off to dispose at an approved facility. Each well completion will be developed for approximately 20 hours, depending on the time required to produce clear water that is free of suspended sediment.

E. During development by airlifting and swabbing, the CONTRACTOR shall keep an accurate account of the hours spent actively airlifting each well. The CONTRACTOR shall regularly measure and record sand production in his daily records. These records shall be provided on a daily basis to the GEOHYDROLOGIST. Other than time required to install and remove the airline, only time spent actively airlifting the well will be compensated.

3.25 DEVELOPMENT BY PUMPING

A. Within 72 hours of completion of initial development by swabbing and airlifting, the CONTRACTOR shall furnish, install, operate and remove a submersible pump (having the check valve either removed or disabled) for final development of the well. A 3-inch stainless-steel submersible pump capable of producing a minimum of 40 gallons per minute (gpm) with 150 ft of lift shall be used for schedule 80 wells. The submersible test pump shall be installed using 1 ½-inch schedule 80 PVC pipe. It is important to begin pumping at a low rate of flow (by valving back on the discharge), before gradually opening the valve to increase the flow to the maximum amount.

B. The CONTRACTOR shall furnish and install discharge piping of sufficient size and length for the pumping unit to conduct water to the storage tanks (later to be hauled offsite). The discharge piping shall include acceptable orifices, meters, valves, or approved devices, which will accurately measure and control the discharge rate. The metering device shall have an instantaneous reading in gallons per minute, and shall have a totalizer, which shall measure the pump discharge rate in gallons, acre-feet, or cubic feet. An airline, complete with a properly calibrated pressure gauge, with readings to 0.5 psi and suitable air supply, shall be provided to measure the depth of water in the well. In addition, a sampling port consisting of a ¾-inch hose bib shall be installed at an accessible location on the discharge line to facilitate collection of water quality samples.

C. A “Rossum” centrifugal sand tester shall be installed in the discharge line to measure the sand concentration during final development.

D. The initial pumping rate shall be restricted and, as the water clears, it shall be increased gradually until the maximum rate is reached. The GEOHYDROLOGIST will determine the maximum pumping rate after the well's drawdown and discharge characteristics are known. At intervals, the pump shall be stopped and the water in the pump column shall be allowed to surge back through the pump bowls and into the perforated area.

E. The cycle of pumping and surging shall be repeated until the discharged water is relatively clear and free of sand, silt, or mud and until there is no increase in the specific capacity.

F. During pumping, the depth to water, instantaneous discharge rate (gpm), flow meter totalizer, turbidity, pH, ORP, DO, specific conductance, temperature, and exact time (hours and minutes) of each reading shall be recorded at 30-minute intervals or as directed by the GEOHYDROLOGIST.

G. Specifically, the CONTRACTOR shall continue pump development until the discharged water has a turbidity measurement of less than 5 standard turbidity units (NTUs), or is acceptably clear and free of sediment as certified by the GEOHYDROLOGIST.

H. Once the water is deemed acceptably clear and free of sediment, water quality samples shall be collected from the well by the GEOHYDROLOGIST, and shall be submitted by the GEOHYDROLOGIST to the Certified Laboratory (see Table 1 for a full list of analytes to be tested following the end of pumping development). The cost of these analyses is the responsibility of the CONTRACTOR. The CONTRACTOR shall provide a sample port along the discharge line for use in sample collection. Water quality samples shall be obtained in appropriate sterilized laboratory containers, provided by the laboratory. It is essential that the water samples collected have minimal turbidity, as many constituents have very low detection limits and even moderate turbidity in the sample will give erroneous lab results.

I. Groundwater generated during pump development shall be contained in tanks before being hauled off to an approved facility. No groundwater discharge shall be made to any river, storm drain, channel, canal, or ground surface. Each well will be developed for approximately 24 hours, depending on the time required to produce clear water that is free of suspended sediment.

3.26 WELL HEAD COMPLETION

A. The nested monitoring well shall be covered using an 16-inch OD x 5 ft long steel monument-style protective well cover that has a lockable lid (see Sheet 5). The protective well cover shall be cemented into place around the well, leaving approximately 2.5 ft of stick up above the finished surface of the well pad. A 3 ft by 3 ft by 6-inch thick concrete well pad shall be constructed around the base of the well cover.

Ready mix concrete shall be used to pour the pad. Four (4) traffic bollards shall be placed in the corners of the concrete pad to protect the well casing and vault (see Sheet 5). The CONTRACTOR shall provide the OWNER with a lock and two (2) keys at the completion of the Work.

END OF SECTION