

MEETING NOTICE AND AGENDA
TECHNICAL ADVISORY COMMITTEE
OF THE
SEASIDE BASIN WATER MASTER

DATE: Wednesday, March 8, 2023

MEETING TIME: 1:30 p.m.

Monterey One Water Offices
5 Harris Court, Building D (Ryan Ranch)
Monterey, CA 93940

THIS MEETING WILL BE IN PERSON

If you wish to participate in the meeting from a remote location, please call in on the Watermaster Conference Line by dialing (267) 807-9495. Use the Meeting ID 355890617. Please note that if no telephone attendees have joined the meeting by 10 minutes after its start, the conference call will be ended.

OFFICERS

Chairperson: Jon Lear, MPWMD

Vice-Chairperson: Tamara Voss, MCWRA

MEMBERS

California American Water Company	City of Del Rey Oaks	City of Monterey
City of Sand City	City of Seaside	Coastal Subarea Landowners
Laguna Seca Property Owners	Monterey Peninsula Water Management District	Monterey County Water Resources Agency

<u>Agenda Item</u>	<u>Page No.</u>
1. Public Comments	2
2. Administrative Matters:	
A. Update Regarding Holding Meetings Via Teleconference	4
B. Approve Minutes from the November 16, 2022 Meeting	14
C. Sustainable Groundwater Management Act (SGMA) Update	20
3. Discuss and Provide Input on Proposal from Montgomery & Associates to Perform Additional Flow Direction/Flow Velocity Analyses	27
4. Review Construction Documents for FO-9 Replacement Well, Discuss/Provide Direction On Revisions to Montgomery and Associates' Costs to Have the Replacement Well Constructed, and Approve RFS No. 2023-03 to Proceed with Installation of the Replacement Well	83
5. Schedule	86
6. Other Business	
The next regular meeting is tentatively planned for Wednesday May 10, 2023 at 1:30 p.m. That meeting may or may not be held via teleconference.	

**SEASIDE BASIN WATER MASTER
TECHNICAL ADVISORY COMMITTEE**

*** * * AGENDA TRANSMITTAL FORM * * ***

MEETING DATE:	March 8, 2023
AGENDA ITEM:	2.A
AGENDA TITLE:	Update Regarding Holding Meetings Via Teleconference
PREPARED BY:	Robert Jaques, Technical Program Manager

As discussed at prior TAC meetings, under the Governor’s proclaimed State of Emergency in order to remain in compliance with AB 361 the TAC needed to adopt certain findings every 30 days in order to keep meeting remotely.

BACKGROUND:

The Governor’s proclaimed State of Emergency related to the Covid-19 health crisis came to an end on February 28, 2023. Therefore, the provision allowing legislative bodies to hold meetings using Zoom or some other form of videoconferencing also came to an end. Some new legislation has been developed that will provide bodies whose meetings are subject to the requirements of the Ralph M. Brown Act (California Government Code, Title 5, Division 2, Part 1, Chapter 9) (herein referred to simply as the “Brown Act”) with the ability to enable members of those bodies to participate remotely in meetings under certain very limited and restrictive conditions.

The Brown Act applies to the meetings of “legislative bodies” of all “local agencies” in California, e.g., councils, boards, commissions and committees. “Local agencies” are defined in Section 54951 of the Brown Act as including all cities, counties, school districts, municipal corporations, special districts, and all other local public entities. Under the definitions contained in the Brown Act the Watermaster is not a “local agency” and therefore would not be subject to the requirements of the Brown Act.

However, the Adjudication Decision that created the Watermaster states, in paragraph III/L.3.h “*Meeting Procedures. Watermaster shall designate the procedure for conducting meetings within its Rules and Regulations. Rules and regulations for conducting meetings shall conform to the procedures established for meetings of public agencies pursuant to the California Open Meetings Law (“Brown Act”), California Government Code section 54950 et seq., as it may be amended from time to time.*” Therefore, the Watermaster is required to hold its meetings in conformance with the requirements of the Brown Act.

DISCUSSION:

Staff presented an agenda item for the Board’s consideration at the Board’s March 1, 2023 meeting recommending some changes to the Watermaster’s Rules and Regulations that would have enabled the TAC, and other Watermaster committees, to continue meeting via Zoom and still be in compliance with the Brown Act. One of the Board members reported that there is State legislative action in progress that may amend the Brown Act to allow such meetings to be conducted via Zoom. The Board decided not to accept the Staff recommendation at this time, and to return to having TAC, and other committee meetings, in person. The Board was sympathetic to the risk of not having sufficient TAC members being able to attend in-person meetings, and was receptive to being updated on this issue if that becomes a problem.

**SEASIDE BASIN WATER MASTER
TECHNICAL ADVISORY COMMITTEE**

*** * * AGENDA TRANSMITTAL FORM * * ***

AGENDA ITEM:

2.A (Continued)

Consequently, the TAC will need to resume meeting in-person, at least for the time being.

ATTACHMENTS:

None

RECOMMENDED ACTION:

None required – information only

**SEASIDE BASIN WATER MASTER
TECHNICAL ADVISORY COMMITTEE**

*** * * AGENDA TRANSMITTAL FORM * * ***

MEETING DATE:	March 8, 2023
AGENDA ITEM:	2.B
AGENDA TITLE:	Approve Minutes from the November 16, 2022 Meeting
PREPARED BY:	Robert Jaques, Technical Program Manager
SUMMARY:	<p>Draft Minutes from this meeting were emailed to all TAC members. Any changes requested by TAC members have been included in the attached version.</p>
ATTACHMENTS:	Minutes from this meeting
RECOMMENDED ACTION:	Approve the minutes

D-R-A-F-T
MINUTES

**Seaside Groundwater Basin Watermaster
Technical Advisory Committee Meeting
November 16, 2022
(Meeting Held Using Zoom Conferencing)**

Attendees: TAC Members

City of Seaside – No Representative
California American Water – Tim O’Halloran (Joined the meeting at 2:15 p.m.)
City of Monterey – Cody Hennings
Laguna Seca Property Owners – Wes Leith
MPWMD – Jon Lear
MCWRA – Tamara Voss
City of Del Rey Oaks – No Representative
City of Sand City – Initially Taylor Fagan, then at 2:30 p.m. Leon Gomez
Coastal Subarea Landowners – No Representative

Watermaster

Technical Program Manager – Robert Jaques

Consultants

Montgomery & Associates – Georgina King

Others

MCWD – Patrick Breen

The meeting was convened at 1:33 p.m.

1. Public Comments and Roll Call

There were no public comments. Ms. Voss conducted the roll call with the members listed above being in attendance.

2. Administrative Matters:

A. Make Findings Required Under AB 361 Regarding Holding Meetings Via Teleconference

Mr. Jaques briefly summarized the agenda packet materials for this item. A motion was made by Ms. Voss, seconded by Mr. Hennings, to adopt the findings contained in the agenda packet. The motion passed with Mr. Leith voting no.

Mr. Lear reported that beginning January 1 of 2023 there will be some changes in the requirements with regard to using remote participation in meetings. He will send Mr. Jaques the memo that MPWMD’s legal counsel had provided them with information on this.

B. Approve Minutes from the August 10, 2022 Meeting

On a motion by Mr. Lear, seconded by Ms. Voss, the minutes were unanimously approved as presented.

C. Results from Martin Feeney’s October 2022 Induction Logging of the Sentinel Wells

Mr. Jaques summarized the agenda packet materials for this item. Mr. Lear reported that a new datalogger had been put into the well last week. Ms. King asked if the old one could be fished out. Mr. Lear said he was not sure how successful that would be, and said he deferred to Mr. Feeney on doing future induction logging of the well. Mr. Jaques reported that Mr. Feeney felt okay with resuming induction logging next year. At that time it might be possible to determine if the induction logger could be retrieved. However, Mr. Feeney had reported that he expected the datalogger would have been damaged beyond repair and that no data could be retrieved from it if it had descended to the bottom of the well.

D. Sustainable Groundwater Management Act (SGMA) Update

Mr. Jaques summarized the agenda packet materials on this item. There was no other discussion on this item.

E. Update on Security National Guarantee (SNG) Well

Mr. Jaques summarized the agenda packet materials on this item. There was no other discussion on this item.

3. Discuss and Provide Input on the 2022 Seawater Intrusion Analysis Report (SIAR)

Mr. Jaques introduced this topic. Ms. King then made a presentation with the attached PowerPoint slides. She went into detail with regard to well FO-10 shallow, which has an abandoned steel tremie pipe in it which may have corroded and is allowing leakage downward. She feels that both FO-10 Shallow and Deep are compromised and therefore should be destroyed and replaced. Mr. Lear reported that he wasn't here when the well was installed, but did read Mr. Oliver's field notes that said that the tremie pipe had gotten stuck and could not be pulled back out.

Ms. Voss provided some helpful additional information with regard to some of the Stiff diagrams and how they are interpreted.

In the Northern Coastal Subarea groundwater levels are continuing to decline, but this has slowed somewhat as a result of injection of water under the Pure Water Monterey Project. In the Southern Coastal Subarea groundwater levels are relatively stable. In the Laguna Seca Subarea groundwater levels are continuing to fall at about 0.5 feet per year. Ms. King reported she was hopeful of getting data from the SVBGSA to input into the Watermaster's groundwater model to replace the assumed values that had to be used, since no data was available from the area to the east of the Laguna Seca Subarea when the model was created.

All pumping depressions have grown in size, probably due to the shortage of rainfall in the last water year. All Northern Coastal Subarea groundwater levels are below protective water levels, and all deep aquifer groundwater levels in the Northern Coastal Subarea are well below sea level. However, there are no current indications of sea water intrusion.

Groundwater production was slightly higher in WY2022 (by 43 acre-feet) than in WY 2021. However, the WY2022 production of 2,871 acre-feet is less than the 3,000 acre-feet per year of Natural Safe Yield in the Decision.

Recommendations in the report include (1) replacing well FO-9 Shallow, and (2) destroying and replacing wells FO-10 Shallow and Deep.

Mr. Lear reported that if well FO-10 is causing contamination by allowing shallow groundwater to travel downward into the deep aquifer, MPWMD, as the well owner, would have the responsibility to destroy it. Mr. Jaques asked Mr. Breen what Marina Coast Water District's plans were with regard to

well FO-10. He said he would discuss this with their hydrogeologic consultants and seek their recommendations.

Ms. Voss said she supported the destruction and replacement of well FO-10. She felt the steel tremie pipe in there may confuse DWR's AEM flight data when that becomes available after DWR completes the AEM work. She wondered why the Pure Water Monterey monitoring well data has not been provided to Montgomery and Associates for inclusion in the SIAR. Mr. Lear said that MPWMD does not get that data, and that it would need to be obtained from M1W. Ms. King said that she had requested the data from M1W, but the data that was provided was not useful. For next year's SIAR, she will make another request to M1W to obtain the data in a useful form.

Mr. Leith asked how it is possible to differentiate between the shallow and deep aquifers. Ms. King responded that the Paso Robles is the shallow aquifer and the Santa Margarita is the deeper aquifer. They have different lithology (geologic properties) and are at different depths below ground level. Mr. Lear said there is an aquatard between the two aquifers that restricts flow between them. Mr. Lear reported that in the past most groundwater production had been from the Paso Robles aquifer, but now the majority of the production is from the Santa Margarita aquifer. He went on to note that the Ord Terrace shallow well has historically had fluctuations in chloride levels, but no trend is apparent. Ms. King said she concurred with that and felt that it may be affected by nearby production wells.

A motion was made by Mr. Lear, seconded by Mr. Gomez, for the TAC to accept the SIAR and to have it presented to the Board. The motion passed unanimously.

4. Discuss and Provide Input on the Preliminary Draft Watermaster 2022 Annual Report

Mr. Jaques summarized the agenda packet materials on this item. There were no suggested revisions or edits to the document as presented.

5. Approve Initial RFSs for Montgomery & Associates, MPWMD, Martin Feeney, and Todd Groundwater for 2023

Mr. Jaques summarized the agenda packet materials for this item.

Mr. Lear reported that he had been instructed to abstain from voting on the MPWMD contract, since that is the organization he represents.

A motion was made by Mr. Lear, seconded by Ms. Voss, to approve all of the contracts with the exception of the MPWMD contract. This motion passed unanimously.

A second motion was made by Ms. Voss, seconded by Mr. Leith, to approve the MPWMD contract. This motion passed unanimously with Mr. Lear abstaining.

6. Schedule

Mr. Jaques summarized the agenda packet materials for this item. There was no other discussion on it.

7. Other Business


Mr. Jaques reported that he was working on draft cost-sharing agreements for replacement of well FO-9 Shallow, and also on sharing the costs of monitoring data for certain wells with Marina Coast Water District.

The meeting adjourned at 2:49 PM.

SEASIDE GROUNDWATER BASIN

**2022
SEAWATER INTRUSION
ANALYSIS REPORT**

Presented to
the Seaside
Basin TAC
November 15,
2022




SIAR ANALYSIS

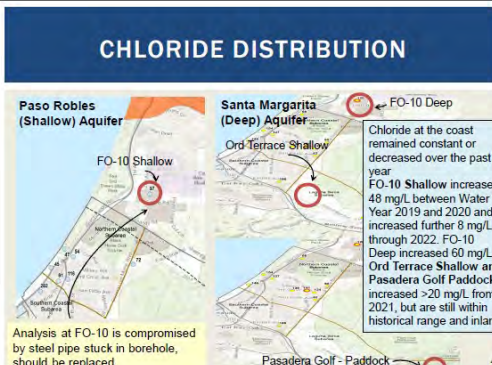
- Chloride Distribution and Na/Cl Molar Ratio
- Cation/Anions – Piper and Stiff Diagrams
- Electric Induction Logs
- Groundwater Elevations
- Protective Groundwater Elevations
- Groundwater Production



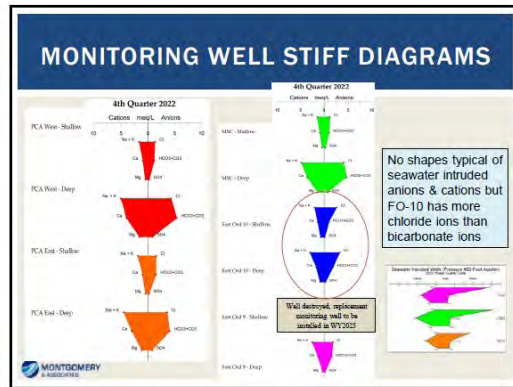
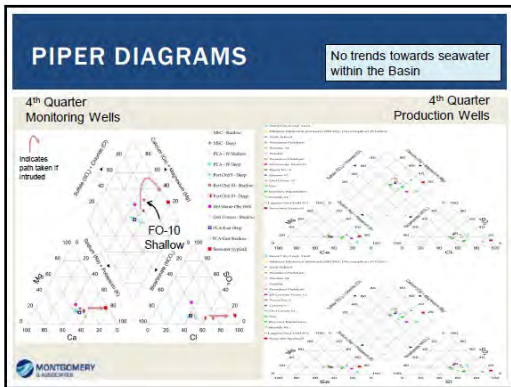
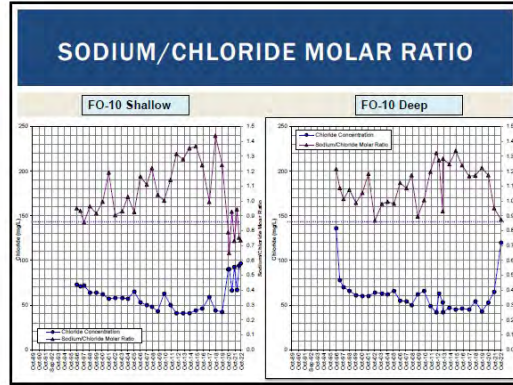
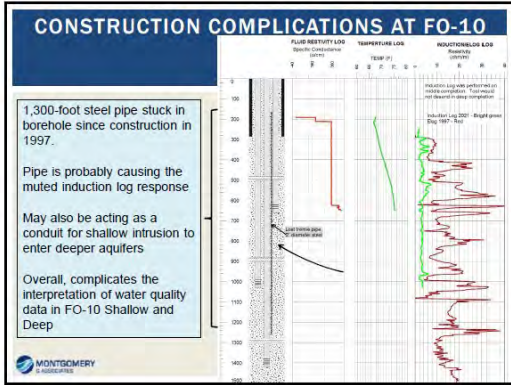
WELL DATA INCLUDED IN SIAR

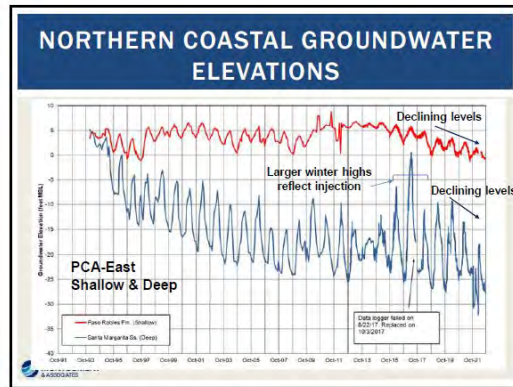
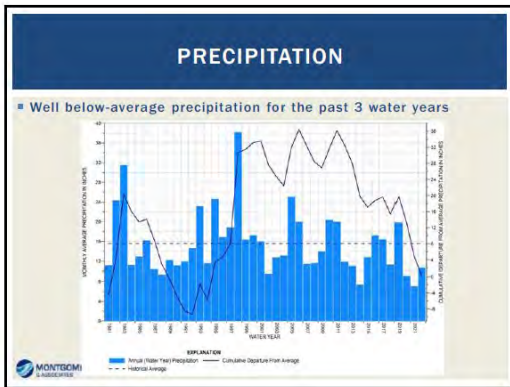
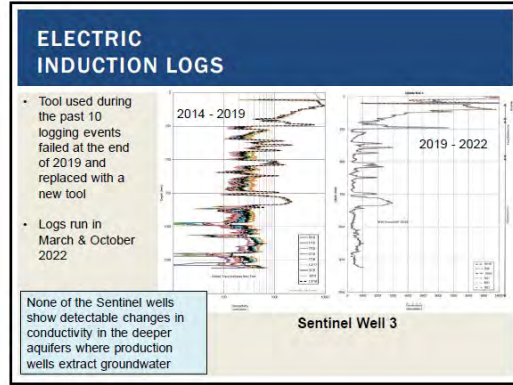
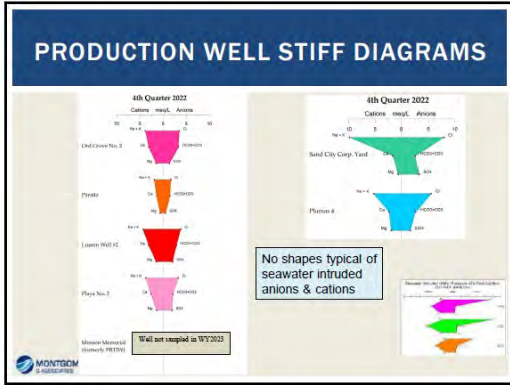


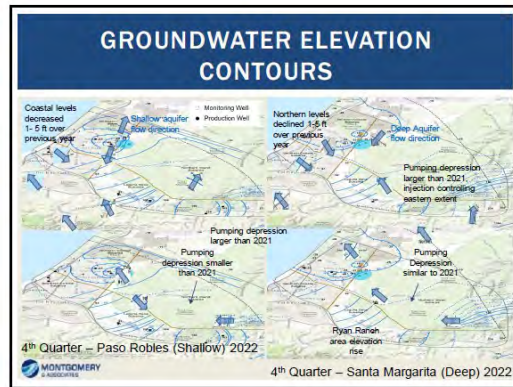
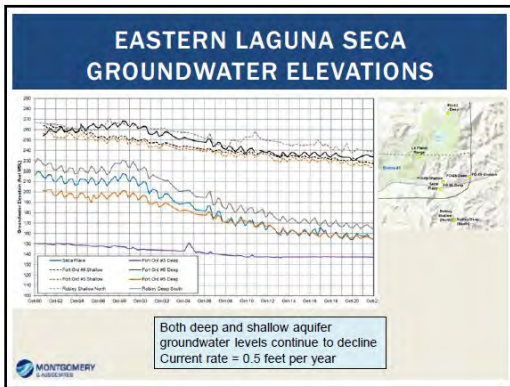
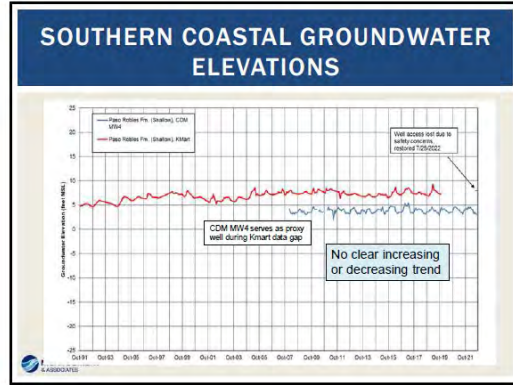
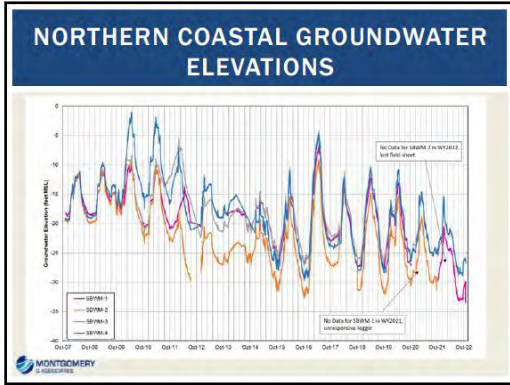
CHLORIDE DISTRIBUTION

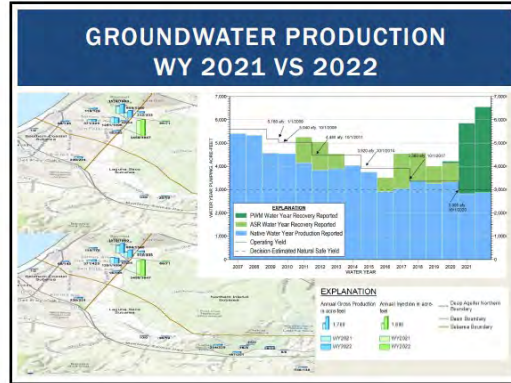
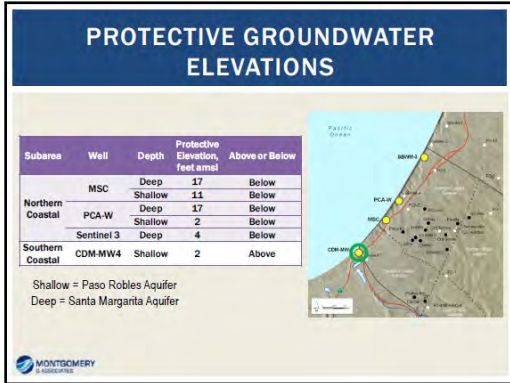


Chloride at the coast remained constant or decreased over the past year. FO-10 Shallow increased 48 mg/L between Water Year 2019 and 2020 and increased further 8 mg/L through 2022. FO-10 Deep increased 60 mg/L. Ord Terrace Shallow and Pasadera Golf Paddock increased >20 mg/L from 2021, but are still within historical range and inland.









CONCLUSIONS

Conditions in the basin that continue to provide a potential for seawater intrusion:

- All deep groundwater in the Northern Coastal subarea is below sea level
 - 2nd quarter (winter/spring) > 40 feet below sea level
 - 4th quarter (summer/fall) > 60 feet below sea level
- Groundwater levels remain below protective elevations in all deep target monitoring wells
- Two of the three shallow wells' groundwater levels are below protective elevations

CONCLUSIONS


Analyses indicating seawater intrusion is currently not occurring in the basin:

- No groundwater chemistry changes towards seawater in either shallow or deep groundwater
- Chloride concentration trends were stable for most monitoring wells.
 - F0-10 Shallow and Deep had chloride increases potentially related to a corroded steel pipe stuck in the borehole since construction.
 - Pasadera Golf- Paddock and Ord Terrace Shallow, sustained a >20 mg/L chloride increase from WY2021, but this is not a result of seawater intrusion.

CONCLUSIONS


Analyses indicating seawater intrusion is currently not occurring in the basin:

- Sodium/chloride molar ratios at most monitoring wells remained constant or increased over the past year. FO-10 Shallow outside the basin has a molar ratio below 0.86
- Induction logging data at the coastal Sentinel Wells do not show changes over time that are indicative of seawater intrusion



CONCLUSIONS

- There are still ongoing groundwater level declines in the Laguna Seca subarea of around 0.5 feet per year
- Native groundwater production in the Seaside Groundwater Basin for Water Year 2022 was 2,871 acre-feet:
 - 43 acre-feet more than Water Year 2020
 - 129 acre-feet less than the Decision-ordered Operating Yield of 3,000 acre-feet per year required starting October 1, 2020




RECOMMENDATIONS

1. Replace FO-9 Shallow with a New Monitoring Well. Sample at Quarterly Frequency
2. Destroy and Replace FO-10 Shallow and Deep. Sample Replacement Well at Quarterly Frequency
3. Continue to Analyze and Report on Groundwater Quality and Levels Annually



QUESTIONS?



**SEASIDE BASIN WATER MASTER
TECHNICAL ADVISORY COMMITTEE**

*** * * AGENDA TRANSMITTAL FORM * * ***

MEETING DATE:	March 8, 2023
AGENDA ITEM:	2.C
AGENDA TITLE:	Sustainable Groundwater Management Act (SGMA) Update
PREPARED BY:	Robert Jaques, Technical Program Manager

At the State level:

Since the last TAC meeting I have not received anything from the State that impacts the Watermaster.

At the Monterey County level:

Attached are summaries of meetings held in December 2022 and January 2023. No meetings were held for the Watermaster to attend in the months of November 2022 or February 2023.

ATTACHMENTS:	Meeting Summaries
RECOMMENDED ACTION:	None required – information only

SUMMARY OF
PURE WATER MONTEREY, AND
SALINAS VALLEY AND
MARINA COAST WATER DISTRICT GROUNDWATER SUSTAINABILITY
AGENCY ZOOM MEETINGS
IN DECEMBER 2022

Note: This is a synopsis of information from these meetings that may be of interest to the Seaside Basin Watermaster

180/400 Foot Aquifer Subbasin Implementation Committee Meeting, December 1, 2022:

I attended the portion of this meeting in which progress on obtaining a feasibility study of installing a seawater extraction barrier, and potentially as a separate project providing a desalination plant for the extracted water so it can be beneficially used, was discussed. It was reported that an RFP to prepare the feasibility plan will likely be sent out in February 2023. I asked if the RFP was available for review, but was told it was still being drafted and was not available for review, but that it would be going to the SVBGSA Board for approval at its next meeting. I asked if the project to provide a desalination plant would look at multiple options and was told that it would look at both a separate stand-alone desalination plant for the extracted seawater and an expanded Cal Am desalination plant.

SVBGSA Advisory Committee Meeting, December 15, 2022:

Due to a scheduling conflict on my part, Laura Paxton attended this meeting on behalf of the Watermaster. She reported that the only item of interest to the Watermaster involved the seawater injection and extraction barrier concepts. It was reported that installing a seawater injection barrier would not be feasible because there would not be a large enough source of water to create such a barrier. So only the extraction barrier will be covered in the feasibility study.

Pure Water Monterey Water Quality and Operations Committee Meeting December 21, 2022:

At this meeting it was reported that:

- There were no water quality exceedances during the most recent reporting period.
- The total amount of PWM AWT water that was injected in WY 2022 was 3,637 AF.
- M1W plans to form a committee to provide input as their Response Plan for the PWM project is updated. I asked that the Watermaster be included on that committee.
- M1W stated that given the complexity of managing the basin a more productive concept could be an extraction/injection based format. They said that MPWMD is/has the proper structure in place to bring all vested parties together to discuss and strategize the new format. I asked that the Watermaster be included in meetings they plan to have to develop that new format.
- Future meetings of the Water Quality and Operations Committee will be on a quarterly basis.

SUMMARY OF
PURE WATER MONTEREY, AND
SALINAS VALLEY AND
MARINA COAST WATER DISTRICT GROUNDWATER SUSTAINABILITY
AGENCY ZOOM MEETINGS
IN JANUARY 2023

Note: This is a synopsis of information from these meetings that may be of interest to the Seaside Basin Watermaster

SVBGSA Meeting with the Watermaster on the Extraction Barrier Feasibility Study, January 27, 2023:

This was a special meeting convened by the SVBGSA to update the Watermaster on the Extraction Barrier Feasibility Study and to invite comments/questions from the Watermaster on that Study.

Information that was provided during the meeting included:

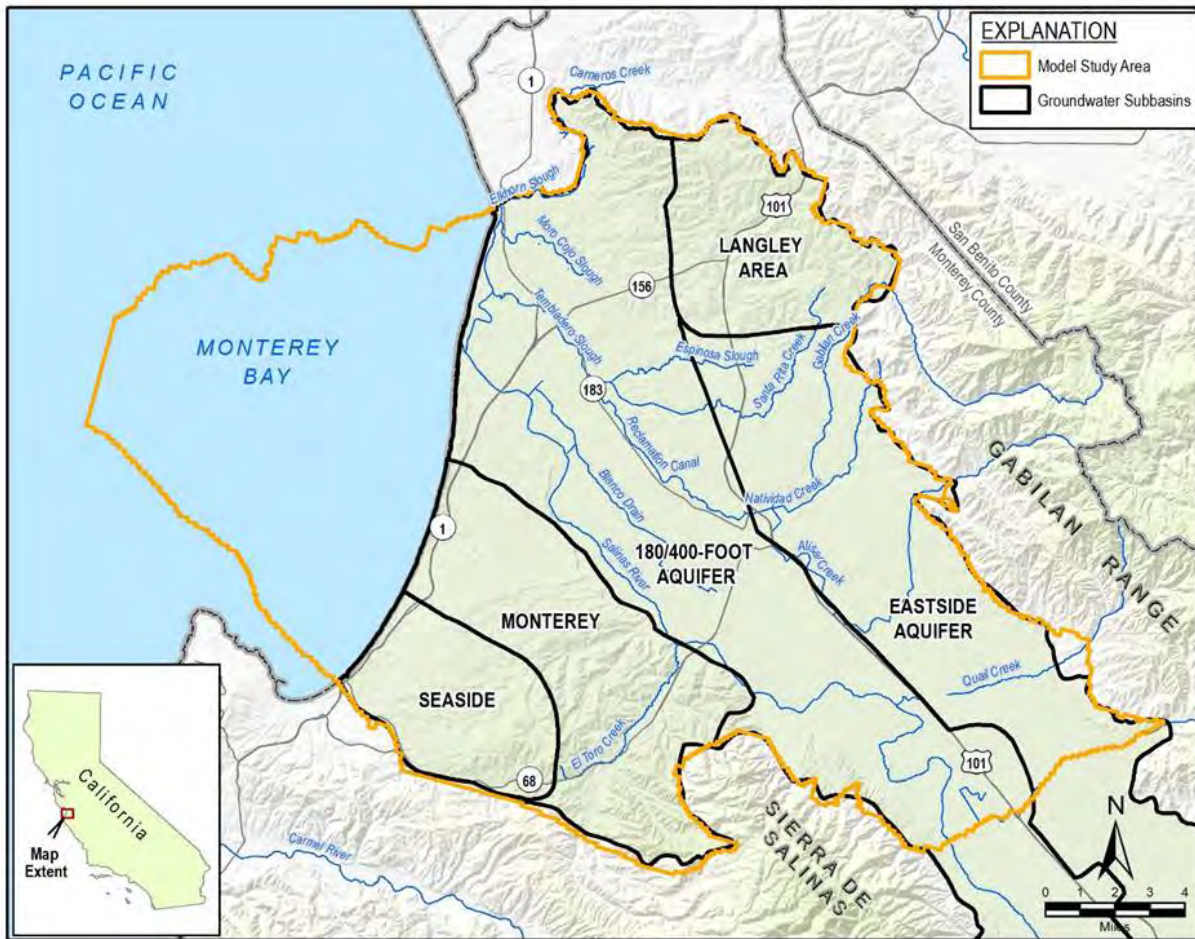
- The SVBGSA has received a grant that will help fund this work. It will include the follow-up project to install a desalination plant to reuse the extracted water.
- A request for qualifications (RFQ) will be sent out on February 13, 2023. The purpose of the feasibility study is severalfold including (1) whether a seawater extraction barrier will in fact be able to stop seawater intrusion, (2) who could be the end users of desalinated water, (3) the preferred location for the desalination plant, (4) costs, (5) the sizing for the desalination plant, etc. Water could be extracted beyond the amount needed for seawater intrusion if desired. I stated that the Seaside Groundwater Basin would be very interested in getting desalinated water, as would all of the other adjacent subbasins.
- This feasibility study is a multi-basin undertaking so they will keep the Advisory Committee informed as progress is made. The deadline for submittal of qualifications statements will be about one month after the RFQ is released, or mid-March. They will be using BIDNET to publicize the project and will prepare an email list to send the RFQ to. Montgomery and Associates will not be one of the entities that will compete in the RFQ process. Rather, qualifications statements will be solicited from engineering firms. It will probably take about one year to complete the study and submit it.
- The seawater intrusion model will provide input into this work. That model will be completed in a couple of weeks, and the model report will be done within a month or less. It will cover zone 2C of MCWRA. A map showing the model boundary is attached. It covers all of the Seaside basin.
- The 2022 GSP update for the 180/400 foot aquifer subbasin changed the description of the desalination project to eliminate the original list of three options. This was reportedly done because of the highly political nature of the desalination plant option. The language in the originally submitted GSP on this project reads as follows:
“The desalination treatment could be provided as a standalone plant or supply one of three proposed desalination plants in the region. The final decision on whether to implement this alternative project, and whether to desalinate the source water with a standalone plan or one of the three planned plants will depend on which of these alternatives is the most cost effective. The following plants are in various planning and design stages in the Monterey Bay Area:
 - ❖ *Monterey Peninsula Water Supply Project desalination plant, 6.4 mgd (7,100 AF/yr.)*
 - ❖ *Deep Water Desalination Plant, 22 mgd (25,000 AF/yr.)*
 - ❖ *People’s Water Supply Project desalination plant, 12 mgd (13,400 AF/yr.)”*

The language in the 2022 GSP Update on this project reads as follows:

“This project is an updated version of Project 6 in the original GSP. This project would construct a regional desalting plant to treat the brackish water extracted from the proposed

seawater intrusion extraction barrier. Further analysis and scoping are needed to determine the exact location of the desalting plant, end uses, and desalting technology.”

- A grant application has been submitted for the Monterey Subbasin jointly with Marina Coast Water District for the Marina-Ord and Corral de Tierra Subarea's. The scope of the application includes CEQA compliance, piping the desalinated water to various sites, golf course reuse, etc. The application was submitted by the MCWDGSA.



SUMMARY OF
PURE WATER MONTEREY, AND
SALINAS VALLEY AND
MARINA COAST WATER DISTRICT GROUNDWATER SUSTAINABILITY
AGENCY ZOOM MEETINGS
IN FEBRUARY 2023

Note: This is a synopsis of information from these meetings that may be of interest to the Seaside Basin
Watermaster

SVBGSA Monterey Subbasin Implementation Committee Meeting, February 22, 2023:

The agenda for this meeting mainly focused on an update on the SGMA Implementation Grant for this subbasin, and an overview of the plans for demand management and the sustainability strategy for the Corral de Tierra subarea of this subbasin. None of this was of direct impact on the Watermaster, so I did not attend this meeting.

**SEASIDE BASIN WATER MASTER
TECHNICAL ADVISORY COMMITTEE**

*** * * AGENDA TRANSMITTAL FORM * * ***

MEETING DATE:	March 8, 2023
AGENDA ITEM:	3
AGENDA TITLE:	Discuss and Provide Input on Proposal from Montgomery & Associates to Perform Additional Flow Direction/Flow Velocity Analyses
PREPARED BY:	Robert Jaques, Technical Program Manager

SUMMARY:

During 2022 the TAC and Board received presentations on the work done by Montgomery & Associates to analyze the direction and velocity that seawater intrusion, if it were to occur, would move within the Seaside Basin. Both the TAC and Board felt it would be worthwhile to perform further analysis of this topic, using a different set of assumptions than were used in the earlier work.

Pascual Benito of Montgomery & Associates prepared the attached draft Scope of Work and Cost Proposal to perform additional analyses, but raised several issues that the TAC should consider before deciding whether to recommend to the Board that additional analysis be performed. At today's meeting Mr. Benito will provide a PowerPoint presentation that discusses those issues. As the Proposal shows, undertaking this work would be very expensive, and is well above the \$30,000 amount that was budgeted for this work in 2023.

Mr. Benito wanted to ensure the TAC understood that using the lower ASR injection rates in the Cal-Am UWMP alternate assumption scenario come from assuming a reduced capacity of the Cal-Am Carmel River Well field, and not from actually using a more severe or drier climate scenario. This means that the very large volume of recharge from precipitation that enters the basin during the simulated multiyear wet period does not decrease relative to the baseline simulation. The timing of this simulated very wet period starting 2/3 of the way through the simulation will still result in limiting and reducing the sea water intrusion rates and inland penetration relative to an alternative future climate scenario where this wet period occurs later in the simulation, or not at all. Using the alternate Cal-Am assumptions will still no doubt show greater inland travel than the baseline scenario because overall there will be greater pumping and less water being injected into the basin. However, he wanted to caution us that it may not necessarily represent the most conservative set of assumptions with regard to uncertainty in future climate. He felt that we should be clear about distinguishing between conservative system supply and demand assumptions that can be modified, versus conservative climate assumptions that would be outside of stakeholder control.

Mr. Benito provided this additional insight: Modeling scenarios should answer a specific question (or questions) that will better inform our understanding of the basin and/or should help inform/plan potential management actions. The purpose of the original 2022 travel time analysis was to develop an order-of-magnitude estimate of potential inland travel rate of water from the coastline to municipal production wells under conservative assumptions. I feel that we now have that order of magnitude estimate in terms of the ~250 ft/year value, which suggests that once seawater reaches the shoreline it could intrude towards

**SEASIDE BASIN WATER MASTER
TECHNICAL ADVISORY COMMITTEE**

*** * * AGENDA TRANSMITTAL FORM * * ***

AGENDA ITEM:

3 (Continued)

the closest inland Cal-Am production wells on a time scale as short as a decade under conservative assumptions. I don't think that we are necessarily going to get substantially different estimates by changing the future demand/supply assumptions. That is for example, with all other assumptions being held constant, even with more conservative assumptions on future demand or reduced supply, it is unlikely that we would see the estimated travel time drop from on the order of a decade to on the order of 1 year or less. The reason for this it that the 250 ft/day intrusion rate value already comes from a simulated period of extended drought conditions, with little to no ASR recharge and very reduced recharge from rainfall, and before any of the "big" simulated projects like Seaside golf courses moving to recycled water, PWM Expansion, Cal-Am repayment period , etc. come online.

So from the perspective of using the model to answer questions that would change our understanding of the risk from SWI or suggest different basin management decisions I don't see that we get anything new from an alternative supply/demand analysis at this point, given all the other unknowns about future conditions. This could change once we see results of the DWR geophysical AEM surveys later this year as it could more clearly help us understand where the SWI front is offshore and in the Monterey Subbasin, and/or to better understand the offshore geology and how it connects to the onshore areas.

Based on this information, I (the Technical Program Manager) do not feel that the value of performing the work described in the January 4, 2023 Proposal from Montgomery & Associates justifies the cost of performing that work. I therefore recommend that the TAC make such a finding and recommend to the Board that at this time no further work be performed on Flow Direction/Flow Velocity Analyses.

If there is a desire to evaluate the impacts of a more severe or drier climate scenario, it would first be necessary to develop such a scenario. How that would be done, and how accurate it would be, would be problematic, unless there were already widely-accepted already-developed scenarios that could be drawn upon.

ATTACHMENTS:

Draft Scope and Cost Proposal to Perform Additional Flow Direction/Flow Velocity Analyses

RECOMMENDED ACTION:

Provide direction to the Technical Program Manager as to whether the TAC feels it would be worthwhile to perform additional analyses



January 4, 2023

Mr. Bob Jaques
Seaside Watermaster Technical Program Manager
83 Via Encanto
Monterey, CA 93940

**SUBJECT: DRAFT SCOPE AND COST FOR ADDITIONAL SEA WATER
INTRUSION RATE MODELING WITH ALTERNATE CAL-AM ASSUMPTIONS**

Dear Mr. Jaques:

Per your request, this letter contains a draft scope of work and estimated cost to evaluate the potential rates of inland sea water intrusion (SWI) into the Seaside Groundwater Subbasin (basin) under simulated future conditions represented by the set of alternate supply and demand assumptions developed by Cal-Am and described in the Draft Technical Memorandum titled “Hybrid Water Budget Analyses of Basin Replenishment Options & Alternate Assumptions”, dated August 5, 2022. This work builds on the earlier seawater intrusion rate analysis that Montgomery & Associates (M&A) conducted in 2022, described in the Draft Technical Memorandum titled “Assessment of Potential Seawater Intrusion Travel Rates”, dated February 25, 2022. This earlier analysis was based on simulations incorporating currently planned projects including the Pure Water Monterey Expansion project, using projected future supply and demand assumptions developed by MPWMD and a projected future hydrology based on a repeated historical hydrology record. The simulation used in the 2022 analysis of travel rates is referred to as the “Baseline Scenario” and is documented in the Draft Technical Memorandum titled “Updated Modeling of Seaside Basin Replenishment Options” dated January 28, 2022. The alternate assumptions to be simulated in the scope included in this letter are referred to as Alternative Scenario 1.

M&A understands that the Technical Advisory Committee (TAC) wants to re-run the seawater intrusion rate analysis with the alternate Cal-Am supply & demand assumptions to determine if the alternate assumptions result in greater rates of potential inland SWI advancement compared to the rates obtained for the Baseline Scenario. The Alternative Scenario 1 assumptions include the following:

- Projected annual water demand values are those in the Cal-Am 2020 Urban Water Management Plan (UWMP) and these are higher than those in the Baseline Scenario;
- Cal-Am’s in-lieu repayment of 700 AFY does not begin until 2030 when the MPWSP Desalination Plant is assumed to begin operations (whereas in the Baseline Scenario the repayment period is assumed to begin in 2024 when the PWM Expansion project is also assumed to begin);
- Annual Pure Water Monterey (PWM) Expansion deliveries and ASR injection volumes are 20% and 25% lower, respectively, relative to the Baseline Scenario; and
- Cal-Am will make up any shortfall between supply and demand prior to 2030 by over-pumping its Seaside Basin allocation of 1,474 AFY.

Our draft scope to evaluate potential rates of inland SWI into the basin under Alternative Scenario 1 is outlined below. It is anticipated the draft scope will be revised in response to feedback received from the January 2023 TAC meeting discussion on the topic.

TASK 1. ALTERNATIVE SCENARIO 1 MODELING AND ANALYSIS

Subtask 1.1. Incorporate Alternative Scenario 1 Assumptions into Groundwater Model and Prepare Input Files, Run Alternative Scenario 1 Model & Process Results

All necessary input files will be updated to incorporate the Alternative Scenario 1 assumptions, including the revised City of Seaside assumptions and new well location, increased supply and demand assumptions, and reduced ASR and PWM injection deliveries. Estimated level of effort assumes no significant changes to Alternative Scenario 1 assumptions from those developed and used in the August 2022 study.

Subtask 1.2. Run Alternative Scenario 1 Model & Process Results

The model will be run, results reviewed and processed, and simulated heads at the coastal monitoring wells compared against protective groundwater elevations.

Subtask 1.3. Water Budget Analysis of Alternative Scenario 1

The previous water budget analysis of the Baseline Scenario showed the response of the basin to changes in assumed supply and demand and/or changing hydrologic conditions is complex and dynamic due to the interactions and cross-flows between subareas, between the shallower and deeper aquifers, between the offshore area, and between the adjacent Monterey Subbasin. Evaluating groundwater levels, total pumping, or particle tracking does not tell the full story of how the basin may react to alternate assumptions. For example, increased pumping in one area or aquifer can be partially offset by inflows from adjacent areas. To help understand the complex changes that occur when there are operational changes in a basin, the results of the Alternative

Scenario 1 simulation will be processed and analyzed to produce water budget summaries on an aquifer-by-aquifer basis and by subareas over time. The analysis for Alternative Scenario 1 will include evaluating changes in onshore/offshore flows as well as reporting changes in cross-boundary fluxes to/from the Monterey Subbasin on an aquifer-by-aquifer basis. Summaries will include both tabular and graphical output and will be compared to water budgets from the Baseline Scenario.

TASK 2. PERFORM PARTICLE TRACKING & TRAVEL TIME ANALYSIS

Particle tracking and flow rate analysis performed for the Baseline Scenario will be repeated for Alternative Scenario 1. Particles will be released along the shoreline in model layers 1 through 4, representing the Older Dune Deposits and Aromas Sands and the Upper, Middle, and Lower Paso Robles formation and their positions tracked over the duration of the simulation. Particle track maps will be prepared for each aquifer unit for the same lower and upper bound effective porosity values and same starting points used for the Baseline Scenario analysis. Charts will also be prepared showing how the maximum inland SWI velocity changes over the simulation period and how they compare with the Baseline Scenario.

TASK 3. REPORTING

Subtask 3.1. Prepare Technical Memorandum

M&A will prepare a technical memorandum which documents Tasks 1 and 2, with a synthesis of the results for the conditions and scenarios evaluated and a comparison to the results and analysis of the Baseline Scenario. For costing purposes, we assume preparing one draft, responding to and addressing one round of review comments, and one final version of the report. The report will be provided in Microsoft Word and PDF formats.

Subtask 3.2. Presentation

M&A will present the results to the Seaside Basin Technical Advisory Committee (TAC) at a regularly scheduled TAC meeting. The presentation will review the analysis assumptions and results, and provide any additional information requested by the TAC. After making the TAC presentation M&A will also make a similar presentation of the results to the Watermaster Board at one of its meetings. Both presentations are assumed to be made via Zoom.

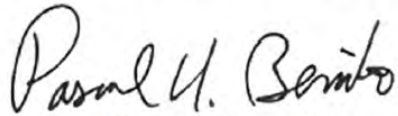
PROJECT COST ESTIMATE AND SCHEDULE

We anticipate that this work can be completed within a three-month period, though the timing may depend on the scheduling of TAC and Board meetings. We can begin work on this immediately following notice to proceed.

The draft estimated cost for the above-described tasks is \$43,081. The attached cost estimate provides a breakdown of costs by task and subtask.

Please feel free to contact us with any questions about the proposed scope of work and budget.

Sincerely,
MONTGOMERY & ASSOCIATES



Pascual Benito, Senior Hydrogeologist



Georgina King, Principal Hydrogeologist



Cost Estimate for Seaside Basin Alternative Scenario 1 Modeling & Analysis										
Task	Hourly Rates	Montgomery & Associates Labor					Labor Total		Other Direct Costs (\$)	TOTALS
		Scientist VIII	Scientist VI	Scientist V	Scientist III	Technical Editor	Hours	(\$)		
		D. Williams	G. King	P. Benito						
1.0 ALTERNATIVE SCENARIO 1 MODELING & ANALYSIS										
1.1	Incorporate revised City of Seaside Assumptions & New Well Location; Incorporate Cal-AM UWMP Demand Assumptions, MPWSP Desal Project, reduced PWM Expansion delivery and revised ASR Diversion Rate into Model	0	2	16	28	0	46	\$8,216	\$0	\$8,216
1.2	Run Alternative Scenario 1 Model and process and review results; Prepare hydrographs at Protective Elevation compared with Baseline Scenario	0	0	16	24	0	40	\$7,120	\$0	\$7,120
1.3	Water budget analysis of Alternative Scenario 1 and comparison to Baseline	0	1	16	24	0	41	\$7,348	\$0	\$7,348
	<i>Task 1 Subtotal</i>	0	3	48	76	0	127	\$22,684	\$0	\$22,684
2.0 PERFORM PARTICLE TRACKING & TRAVEL TIME ANALYSIS										
	Run particle tracking simulations & travel time analysis; Develop particle path maps and travel rate charts	0	1	12	28	0	41	\$7,168	\$0	\$7,168
	<i>Task 2 Subtotal</i>	0	1	12	28	0	41	\$7,168	\$0	\$7,168
3.0 REPORTING										
3.1	Prepare Technical Memorandum describing Scenarios, Analyses, Findings, and Conclusions	2	6	24	14	8	54	\$9,718	\$0	\$9,718
3.2	Prepare Presentation and Present Findings to TAC and Board via Zoom	1	2	12	2	0	17	\$3,511	\$0	\$3,511
	<i>Task 3 Subtotal</i>	3	8	36	16	8	71	\$13,229	\$0	\$13,229
	Total	3	12	96	120	8	239	\$43,081	\$0	\$43,081

**SEASIDE BASIN WATER MASTER
TECHNICAL ADVISORY COMMITTEE**

***** AGENDA TRANSMITTAL FORM *****

MEETING DATE:	March 8, 2023
AGENDA ITEM:	4
AGENDA TITLE:	Review Construction Documents for FO-9 Replacement Well and Approve RFS No. 2023-03 to Proceed with Installation of the Replacement Well
PREPARED BY:	Robert Jaques, Technical Program Manager
SUMMARY:	
<p>Bill DeBoer of Montgomery & Associates has prepared the attached draft set of documents that would be used to install a new monitoring well to replace the former monitoring well FO-9 which had to be destroyed due to casing leakage.</p> <p>These documents are provided for the TAC’s review and to solicit any questions or comments the TAC would like to raise before the documents are finalized.</p> <p>Montgomery & Associates has solicited updated price quotes from two well drillers to install the replacement well. At the time of preparation of this Agenda Transmittal only one of the quotes had been received, that from Maggiora Brothers Drilling Inc. Their updated price would slightly increase the cost for Montgomery & Associates to complete having the well installed. The attached RFS No. 2023-3 reflects the updated costs. The increase is approximately \$18K above the \$240K amount budgeted for Tasks 3 and 4 of this work in the 2023 M&MP Capital Outlay Budget. However, since it now appears that it will be possible to share in the costs of this work with MPWMD and MCWD, the total cost to the Watermaster will likely fall well below the budgeted amount. If not, the increased amount can be funded through the Contingency line-item in the M&MP Operations Budget.</p> <p>If the quote from the second well driller is lower than that received from Maggiora Brothers, and is fully responsive to the project’s requirements, then that driller would be selected and their lower prices would be used to reduce the costs to complete Tasks 3 and 4.</p> <p>Some of the recently scheduled TAC meetings have needed to be postponed. In order to keep moving ahead with this work, I presented RFS No. 2023-03 to the Board for approval at their March 1 meeting, subject to subsequent TAC approval, and the Board approved RFS No. 2023-03. It is recommended that the TAC approve this RFS, so a notice to proceed can be issued to the selected drilling contractor as soon as possible.</p>	
ATTACHMENTS:	<ol style="list-style-type: none"> 1. Draft Monitoring Well Construction Documents 2. RFS No. 2023-03 for Montgomery & Associates to Install Replacement Well FO-9 Shallow
RECOMMENDED ACTION:	Provide questions or comments on the monitoring well construction documents and approve RFS No. 2023-03

ATTACHMENT 1

January 2023

DRAFT Version 2 – Not for Construction

TECHNICAL SPECIFICATIONS
Construction and Development
of Monitoring Well Fort Ord 9R Shallow

Prepared for:

Seaside Groundwater Basin Watermaster
PO Box 51502
Pacific Grove CA, 93950

Prepared by:



1970 Broadway Avenue, Suite 225
Oakland, CA 94612
510-903-0458 | elmontgomery.com

Contents

ACRONYMS & ABBREVIATIONS	3
1 GENERAL	4
1.1 Description of Work.....	4
1.2 Well Construction Permits.....	5
1.3 Final Well Design.....	6
1.4 Current Conditions.....	6
1.5 Geology.....	6
1.6 Schedule and Working Hours	6
1.7 Standards.....	6
1.8 Contractor Responsibilities.....	7
1.9 Qualifications and Quality Assurance.....	8
1.10 Submittals.....	8
1.11 Sanitation.....	9
1.12 Construction Water	9
1.13 Construction Power.....	9
1.14 Drilling Fluids and Cuttings Management	9
1.15 Containment and Disposal of Generated Groundwater.....	9
1.16 Records.....	9
1.17 Noise Control	11
1.18 Spills, Leaks, and Releases	11
1.19 Foreign Material Down-Hole	12
1.20 Lost Material Down-Hole	12
1.21 Stand-by Time.....	12
1.22 Project Closeout.....	13
1.23 Payment.....	13
2 MONITORING WELL CONSTRUCTION & DEVELOPMENT	14
2.1 Scope of Work.....	14
2.2 Mobilization (Bid Item 1).....	14
2.3 Borehole Drilling (Bid Item 2)	15
2.4 Downhole Geophysical Surveys (Bid Item 3).....	18
2.5 Wiper Pass (Bid Item 4)	19
2.6 Caliper Survey (Bid Item 5).....	19

2.7 Well Casing and Screen (Bid Item 6).....	20
2.8 Filter Pack (Bid Item 7)	22
2.9 Annular Seal (Bid Item 8).....	23
2.10 Well Development (Bid Item 9).....	24
2.11 Color Video Camera Survey (Bid Item 10).....	25
2.12 Surface Completion (Bid Item 11)	26
2.13 Demobilization & Cleanup (Bid Item 12).....	27

Tables

Table 1. Anticipated Boring and Well Depths	5
---	---

Figures

Figure 1. Site Location Map
Figure 2. Well Site Features
Figure 3. Monitoring Well FO-9R Shallow Preliminary Design

Appendices

Appendix A. As-Built Diagram, Geophysical Log and Lithology for Fort Ord 9 Nested Wells
Appendix B. Summary of Required Contractor Submittals

ACRONYMS & ABBREVIATIONS

API.....American Petroleum Institute
bgsbelow ground surface
Contractordrilling company whose authorized representative has signed the Agreement
EHDEnvironmental Health Department
HydrogeologistMontgomery & Associates
Owner.....Seaside Groundwater Basin Watermaster
PVCpoly vinyl chloride

1 GENERAL

These technical specifications describe the minimum standards for drilling, construction, and development of 1 groundwater monitoring well. The following definitions apply to these Technical Specifications:

OWNER refers to Seaside Groundwater Basin Watermaster (Bob Jaques, Technical Program Manager).

HYDROGEOLOGIST refers to OWNER's hydrogeologist, Montgomery & Associates (Bill DeBoer, Project Manager).

CONTRACTOR refers to drilling company whose authorized representative has signed the Agreement. CONTRACTOR shall be a California Licensed Well Driller.

SUBCONTRACTOR refers to company hired by and managed by CONTRACTOR to perform specific duties and/or provide materials or equipment.

The HYDROGEOLOGIST, on behalf of the OWNER, has prepared these technical specifications for the drilling, construction, and development of monitoring well Fort Ord 9R shallow. These technical specifications were prepared by the HYDROGEOLOGIST and authorized for use by the OWNER.

These Technical Specifications are part of the signed Agreement between the HYDROGEOLOGIST and the CONTRACTOR. The HYDROGEOLOGIST shall manage, monitor, and direct field activities on behalf of the OWNER. The CONTRACTOR shall submit invoices to the HYDROGEOLOGIST for approval and payment under the terms of the Agreement.

1.1 Description of Work

Work includes the furnishing of all materials, labor, equipment, fuel, tools, transportation, and services for the drilling, construction, and development of 1 monitoring well at the Bayonet & Blackhorse golf course in Seaside, CA. The monitoring well will be located southwest of the intersection of Monterey Road and Noumea Road on City of Seaside property, across the street from pole #6067. The monitoring well is designated as FO-9R Shallow. The following figures are provided in support of these technical specifications:

Figure 1. Site Location Map

Figure 2. Well Site Features

Figure 3. Preliminary Conceptual Well Design

The preliminary monitoring well design described in these technical specifications and shown on Figure 3 is subject to change based on the HYDROGEOLOGIST’s review of the lithologic and geophysical logs obtained during drilling, and authorization by the OWNER.

A summary of anticipated boring and well screen depths is provided in Table 1.

Table 1. Anticipated Boring and Well Depths

Monitoring Well	Total Depth	Sanitary Seal Depth	Screen Top Depth	Screen Bottom Depth	Screen Length ^(b)
	←————— feet bgs —————→				feet
FO-9R Shallow	670	595	610	650	40

- (a) All depths are subject to change based on the HYDROGEOLOGIST’s review of the lithologic and geophysical logs obtained during drilling, and authorization by the OWNER.
- (b) Filter pack sand shall be placed in the annular space adjacent to, 10 feet above and 10 below the screened interval.

The monitoring well shall be installed using the direct mud rotary drilling method and completed with nominal 2.5-inch diameter (2.875-inch outer diameter and 2.3-inch inner diameter) Schedule 80 polyvinyl chloride (PVC) well casing and screen.

1.2 Well Construction Permits

The CONTRACTOR shall obtain a Monterey County Environmental Health Department (EHD) Well Construction Permit for monitoring well installation.

Prior to drilling, the CONTRACTOR shall notify Underground Service Alert and, if necessary, perform a geophysical survey to identify locations of underground utilities and other identifiable subsurface objects. The CONTRACTOR shall hand clear the location (by hand-auger or vacuum truck) to prevent damage to any unidentified underground piping or conduit. Hand clearance shall be completed to a depth of no less than 5 feet and to a diameter not less than 2-inches greater than the maximum borehole diameter proposed.

Subsurface conditions can be expected to vary over a limited range at the drilling location. The OWNER will make best efforts to disclose the presence and location of all subsurface conditions including hidden or obscure man-made objects known to the OWNER that may substantially affect drilling and well installation. Under no circumstances shall the OWNER or HYDROGEOLOGIST be responsible for damage (including contamination) to the CONTRACTOR’S equipment due to subsurface conditions whether known or unknown.

1.3 Final Well Design

HYDROGEOLOGIST will provide the CONTRACTOR with a final well design within 1 business day of receiving electronic submittals of the geophysical surveys.

1.4 Current Conditions

The FO-9R Shallow monitoring well will be located southwest of the intersection of Monterey Road and Noumea Road adjacent to the Blackhorse & Bayonet golf course on City of Seaside property (Figure 2). Nearby monitoring well FO-9 Shallow was destroyed in 2022; FO-9R Shallow is intended to replace the destroyed monitoring well to ensure continuity of groundwater level measurements from this location.

1.5 Geology

The as-built diagram, and geophysical log and lithology for the nearby FO-9 monitoring well are included in Appendix A for reference.

During drilling of the Fort Ord 9 borehole a conductor casing was installed to the first occurrence of a significant clay zone at 190 ft bgs because the shallow sediments encountered were composed of unconsolidated sands. See Section 2.3.4.

1.6 Schedule and Working Hours

Construction activities are limited to daytime hours between 0700 and 1900, Monday through Friday. Deviations from this schedule may be allowed only with HYDROGEOLOGIST authorization.

1.7 Standards

The CONTRACTOR shall follow procedures described in: *State of California Water Well Standards, Bulletin No. 74-81* (dated December 1981) and *Bulletin No. 74-90* (dated June 1991), including any later supplements or revisions; Monterey County Code 15.08; and other California state agency guidance, which are incorporated herein by reference.

1.8 Contractor Responsibilities

Submit applications, pay requisite fees, and obtain and comply with all appropriate permits required to complete the scope of work. These include but are not limited to the well installation permit and encroachment permits.

Confine drilling and construction operations to within the limits of the site, as established in applicable encroachment access agreements. The site is located on land owned by the City of Seaside. The CONTRACTOR shall be responsible for damage resulting from additional land disturbance and unauthorized activities.

Take all necessary precautions to preserve the well site, as nearly as practical, in its present condition. The CONTRACTOR shall be responsible for replacing any damaged property. At all times during the progress of this project, the CONTRACTOR is responsible for keeping the site free of litter and debris.

Be fully responsible for maintaining security of all work areas at all times. The CONTRACTOR shall take such measures as are necessary to prevent access of unauthorized persons or animals into the site. Such measures shall include fencing, posting of signs, temporary closure of excavations, or other means, including hiring private security as needed, and shall be maintained throughout the course of work. All barriers will be in accordance with applicable site safety standards.

Contain and dispose of construction related trash, maintain an organized and safe work site, provide adequate sanitation facilities, and ensure vehicles leaving unpaved sites do not track mud onto public rights-of-way.

Provide all necessary equipment, tools, and appurtenances for the timely completion of the work. The CONTRACTOR's equipment shall be in complete and safe operating condition and shall be appropriately maintained and operated during the project. The CONTRACTOR shall be solely responsible for the condition of their equipment and shall maintain an inventory of necessary spare parts for the timely repair of equipment in the event of a failure or breakdown. No payment shall be made for standby time or equipment rental caused by a breakdown or failure of the CONTRACTOR's equipment.

Remove trackable mud, cuttings, sand, grout, and other materials from undercarriages, tires, and other surfaces of equipment prior to moving equipment on or across public roads and pathways. Immediately clean public rights of way.

Use appropriate measuring devices to obtain and record measurements of depths during operations, including depth to top of annular materials, such as filter pack, cement, or bentonite, borehole depth, and depth to water. Depth to water shall be measured using a calibrated electrical water level sounder, graduated to the nearest one-hundredth of 1 foot (i.e., 0.01 foot), and in good operating condition. Other depths shall be measured using a device consisting of a manufactured steel cable on a reel equipped with an accurate counting device calibrated in feet and shall include a dual or triple-pulley system to properly feed the cable through the counting device.

Maintain copies of all project permits at the construction site.

Furnish all labor, tools, equipment, and incidentals for tipping fees, disposal charges, and for performing the work required to legally dispose of the cuttings to an off-site location.

Maintain wellhead in a sanitary manner at all times and prevent potential entry of pests or contaminants.

1.9 Qualifications and Quality Assurance

The CONTRACTOR shall hold a valid Class C-57 California CONTRACTOR's License.

The FO-9R Shallow borehole shall be drilled by direct mud-rotary methods with equipment of sufficient capacity to drill the hole required by these specifications. Drilling equipment including but not limited to, mast and drawworks, air compressors, drilling fluid pumps, drill pipe, etc., must be of requisite size, sufficient capacity, and suitable condition to drill and set casing to the anticipated depths.

The drill rig utilized must have the ability to fully lift and land the anticipated casing loads without the use of float plugs or other similar methods.

1.10 Submittals

A list of required submittals is provided in Appendix B. In addition, the CONTRACTOR shall be responsible for receiving acceptance for all required equipment and information referenced elsewhere in these Technical Specifications. All submittals required from the CONTRACTOR shall be considered part of the scope of work. Submittal documents shall be provided to the HYDROGEOLOGIST within the time frames listed in Appendix B. All submittals are subject to acceptance by the HYDROGEOLOGIST; submittal requirements shall be satisfied upon acceptance. Premobilization submittals must be accepted by the HYDROGEOLOGIST prior to the CONTRACTOR mobilizing equipment to the work site.

1.11 Sanitation

The CONTRACTOR shall provide and maintain adequate sanitation facilities appropriate to the number of personnel working on the site.

1.12 Construction Water

Water used for drilling purposes may be sourced from the City of Seaside fire hydrant approximately 350 feet to the east of the site on the northeast side of the intersection of Monterey Road and Noumea Road (Figure 2). The CONTRACTOR shall submit an application to the Marina Coast Water District; the Marina Coast Water District will issue a hydrant meter upon receipt of the requisite deposit and approval of the application. The CONTRACTOR shall be responsible for conveyance of water to point of use and for payment on any applicable usage fees. Use of other water sources are subject to HYDROGEOLOGIST approval.

1.13 Construction Power

The CONTRACTOR shall provide all necessary power for completion of the work scope through temporary means such as generators.

1.14 Drilling Fluids and Cuttings Management

The CONTRACTOR is responsible for the containment, hauling, and legal disposal of drilling fluids and cuttings from the site.

1.15 Containment and Disposal of Generated Groundwater

The CONTRACTOR is responsible for the containment, hauling, and legal disposal of generated groundwater from the site.

1.16 Records

In addition to typical measurements and records collected during conduct of work described in the scope of work for this project, the CONTRACTOR shall collect the measurements and records described in this Section, as well as any required measurements or records described elsewhere in these Technical Specifications. All work conducted by the CONTRACTOR to execute these Technical Specifications shall be recorded in the driller daily log and/or on approved forms. Requirements for field measurements and records include those listed below.

Driller's Daily Log: International Association of Drilling Contractors or American Petroleum Institute (API) standard daily logs, or similar, shall be maintained and used to record all site activities. Any hourly items shown in the Bid Schedule shall be clearly identified so that the quantity can be verified. The daily logs shall indicate personnel present; shifts worked; depths drilled, reamed, developed, or bailed; accurate depths, thicknesses, and nature of the strata penetrated; drilling rates; water levels; length of tremie pipe installed in well; volume and depth intervals cemented or sealed with bentonite; down time due to equipment issues; and results obtained from any and all caliper surveys, borehole geophysical logs, etc.

Drilling Fluids and Makeup Water: The CONTRACTOR shall obtain regular measurements of drilling fluid properties. Fluid properties shall be monitored at a minimum frequency of every 4 circulation hours, or every 100-foot drilled interval, whichever is more frequent, when drilling fluids are being circulated. All drilling fluid samples shall be obtained at the flow line where fluid enters and recirculates down the borehole.

Regular measurements of drilling fluid properties shall be comprised of the following:

- Fluid weight
- Marsh funnel viscosity
- Sand content
- 30-minute water loss
- Filter cake thickness

In addition, the CONTRACTOR shall keep an accurate record of the types and quantities of all drilling fluids additives, including the time used, mixture, Marsh funnel viscosity before and after use, and the rate, times, and duration of makeup water injection. Rate of makeup water injection shall also be recorded when drilling fluids are not being circulated so that an evaluation can be made of the ability of the borehole to accept water.

All drilling fluid measurements, additives, and makeup water usage shall be recorded on an approved specialized log form.

Drill Pipe Assembly: The measured length of each section of the drill pipe assembly shall be recorded and correlated with the depth drilled below ground surface. The outside diameter and type of each bit, reamer, hole opener, sub, drill pipe, etc., shall be recorded. The outside diameter of each bit, reamer and hole opener must be measured on site and demonstrated to have an outside diameter within 5 percent of that specified in the final well design prior to use, unless the HYDROGEOLOGIST approves otherwise.

The CONTRACTOR shall also provide a drill pipe tally for all operations involving installation of a drill pipe string in the borehole(s) or well, including filter packing, cement installation, and airlift/swab development.

Miscellaneous: Records shall include any notable event or activity including accidents, violations, visitors, weather conditions, etc.

The CONTRACTOR shall maintain records on a regular basis and in a legible, professional format.

1.17 Noise Control

General best practice noise suppression efforts shall be implemented at all times to minimize disturbance to nearby residents, workers, and the general public. The work site shall be managed and arranged to minimize noise to the extent practicable, including use of mufflers, shielding, and by placing noise-producing equipment away from sensitive receptors, as feasible.

1.18 Spills, Leaks, and Releases

The CONTRACTOR shall not cause the release of any hazardous or nuisance substances to the environment and, if such release occurs, CONTRACTOR shall be responsible for all costs associated with remedial or corrective actions to mitigate the release. For example, CONTRACTOR shall maintain equipment to prevent leaks of fuel, lubricants, or hydraulic fluid and, if such leaks occur, shall remove, and properly dispose affected soil and shall place and maintain appropriate containment to prevent further impacts. CONTRACTOR shall begin the project with appropriate containment in place for any equipment suspected or reasonably anticipated to cause such leaks. Thread lubricant used on drill pipe couplings used for any drilling shall not contain volatile organic compounds.

The CONTRACTOR shall use plastic sheeting to protect the well sites from spills of hydraulic oil, fuel, lubricants, or coolants from the drilling and support equipment. Oil absorbent mats must be placed under and around all leaking engines; oil or other fluid spills must be cleaned to the satisfaction of the HYDROGEOLOGIST. In the event of a large leak or spill from equipment operated by CONTRACTOR, the CONTRACTOR shall be responsible for the excavation and proper disposal of any contaminated soil, and the restoration of the site to original grade with clean topsoil, if applicable.

1.19 Foreign Material Down-Hole

The placement of any foreign material down the hole must be approved by the HYDROGEOLOGIST. This includes, but is not limited to, all drilling materials and fluids.

1.20 Lost Material Down-Hole

The CONTRACTOR shall be responsible for all consequences of material lost down the hole. Every attempt shall be made by the CONTRACTOR to retrieve lost material down hole within a time frame and to the satisfaction of the HYDROGEOLOGIST. If the borehole or well becomes damaged as a result of this investigation in the opinion of the HYDROGEOLOGIST, the CONTRACTOR shall properly abandon the borehole in accordance with permitting requirements and drill another borehole adjacent to the abandoned borehole at no additional expense to the HYDROGEOLOGIST.

1.21 Stand-by Time

The CONTRACTOR stand-by time shall be credited only for inactive periods resulting from requirements of the HYDROGEOLOGIST. Idle time required for maintenance or failure of the CONTRACTOR'S equipment shall not be considered as CONTRACTOR stand by time. Credit for CONTRACTOR stand-by time shall be based on one 8-hour shift per day regardless of the CONTRACTOR'S operating schedule. Stand by time shall not be credited for Saturdays, Sundays or national holidays on which work is not customarily performed, unless the CONTRACTOR has been authorized by the HYDROGEOLOGIST in writing to work on such days.

A Monterey County EHD inspector is required to witness well sealing operation and requires 24-hour advance notice of intent to grout. The CONTRACTOR will be responsible to inform the Monterey County EHD inspector. The HYDROGEOLOGIST will not pay for stand-by time if the sealing inspection has to be rescheduled due to the CONTRACTOR'S equipment breakdown or any delays that were the responsibility of the CONTRACTOR.

HYDROGEOLOGIST stand-by time may be credited at a rate of \$150 per hour per person for inactive periods resulting from idle time required by the CONTRACTOR for any equipment maintenance or failure, or schedule conflicts, that exceed a cumulative 3 hours over the course of a standard workday. Credit for the HYDROGEOLOGIST stand-by times will be based on one 8-hour shift per day regardless of the operating schedule.

1.22 Project Closeout

After completion of the work required in these specifications, the CONTRACTOR shall remove all debris, waste, trash, and unused materials or supplies; shall remove all signs of temporary construction facilities such as temporary work areas, temporary structures, and stockpiles of materials, and shall restore the site, as nearly as possible, to its original condition. Final cleanup shall be completed per Section 2.13.

Upon completion of the scope of work and submittal of all specified submittals, the HYDROGEOLOGIST will perform final site inspections.

1.23 Payment

Costs for this project shall be defined by the completed and accepted Bid Schedule (Seaside Groundwater Basin Watermaster Fort Ord 9R Shallow Monitoring Well Project).

The completed Bid Schedule shall be submitted by CONTRACTOR according to instruction from HYDROGEOLOGIST. Preliminary submittals required to be provided with the completed Bid Schedule are listed in Appendix B.

Payment will be made according to the line items in the Bid Schedule based on the actual unit quantities expended as determined by the HYDROGEOLOGIST. Payment for lump sum items shall be made only upon satisfactory completion of the entire task.

2 MONITORING WELL CONSTRUCTION & DEVELOPMENT

This section provides an overview of the well drilling, construction, and development of the FO-9R Shallow well.

2.1 Scope of Work

CONTRACTOR responsibilities include:

1. Mobilization
2. Drilling by direct mud rotary methods a 10.75-inch diameter borehole to the depth indicated in Table 1
3. Performing Downhole Geophysical Survey: Spontaneous Potential, Single-Point, 64-inch Long and 16-inch Short Normal Resistivity, Focused (Guard) Resistivity, and Natural Gamma-Ray
4. Conducting a caliper survey
5. Furnishing and installing 2.5-inch SCH80 PVC machine slotted well screen (0.040-inch slot)
6. Furnishing and installing 2.5-inch SCH80 PVC blank casing
7. Furnishing and installing hard, water-worn, silica filter sands of 8x16 gradation, including 5-foot-thick transition sand on top of filter pack
8. Furnishing and installing annular seal
9. Performing well development by airlifting and swabbing
10. Completing capping and construction of flush well monument
11. Demobilizing & cleanup

2.2 Mobilization (Bid Item 1)

2.2.1 General

The CONTRACTOR shall provide, mobilize and set up all material and equipment, and execute all labor required for the scope of work.

2.2.2 Submittals

The following submittals are applicable to this section:

- Applicable permits, including but not limited to Underground Service Alert tickets, well installation permits, and encroachment permits (if applicable).

2.2.3 Execution

CONTRACTOR's well drilling equipment, temporary facilities, and operations shall be within the construction limits of the site. The CONTRACTOR shall set up work facilities in a neat and orderly manner within designated area.

2.3 Borehole Drilling (Bid Item 2)

2.3.1 General

The CONTRACTOR shall furnish all material and equipment and execute all labor to drill a 10.75-inch-diameter borehole to the depth specified in (Table 1) unless otherwise directed by the HYDROGEOLOGIST.

2.3.2 Submittals

The following submittals are applicable to this section:

- Description of methods, materials and equipment used to install surface casing, if surface casing is used
- Description of the drilling and fluid system to be used including the types of fluid to be used, weights, viscosities, sand and solids contents, water loss control, and the name of the drilling fluid supplier
- Daily progress logs
- Formation samples every 10 feet (bagged)

2.3.3 Methods

The borehole shall be drilled using the direct-rotary mud drilling method. Although a diameter of 10.75 inches is specified, the CONTRACTOR may increase the borehole size with prior approval by the HYDROGEOLOGIST.

2.3.4 Surface Casing

The CONTRACTOR is responsible for determining the need for a temporary or permanent surface casing. If a surface casing will be used, the details of its installation must be submitted to

the HYDROGEOLOGIST and approved by the OWNER prior to installation. Costs for surface casing shall be included in CONTRACTOR's Bid Item 2.

CONTRACTOR shall be solely responsible for determining diameter and depth required to ensure stability during drilling, to prevent upward or downward seepage of water or drilling fluids outside the surface casing, to prevent bypass of the surface seal by drilling fluids, and/or to prevent soil erosion beneath the drilling rig. CONTRACTOR shall be solely responsible for any damage caused by an insufficient or ineffective temporary surface casing, or any additional work required to remedy any adverse condition created by an inadequate temporary surface casing.

2.3.5 Formation Sampling

The CONTRACTOR shall collect and preserve 1 set of drill cutting samples at 10-foot intervals during the drilling of the borehole. Samples shall be placed in 1-gallon sized, heavy weight, resealable plastic bags and labeled with the well identification, date sampled and sample depth interval. Collected samples shall be stored in a manner to prevent breakage or loss. The sample collection system must allow for collection of representative lithology.

2.3.6 Drilling Fluids

Potable water shall be used to mix a bentonite-based drilling fluid designed to adequately maintain bore wall, minimize invasion of drilling fluid into the formation, and permit recovery of representative samples of cuttings. Soda ash may be used to increase pH of the water used to mix drilling fluids. The drilling fluid shall possess such characteristics that it can be readily removed from the borehole during development of the well. Drilling with clear water alone will not be permitted. All drilling fluid additives shall be NSF/ANSI Standard 60 certified.

Excavation of pits on site for drilling fluids will not be allowed, and surface containment (i.e., tanks and/or bins) of drilling fluids will be required. The CONTRACTOR is advised that cuttings from shaker or those removed from tanks will need to be stored and contained on site for removal. Upon completion of drilling operations and well construction, all fluids shall be removed from the site and legally disposed of by the CONTRACTOR.

It is the responsibility of the CONTRACTOR to ensure that the sizing and configuration of the fluid system, mechanical separator and/or settling tanks are adequate to meet the drilling fluid properties outlined below. In the event the CONTRACTOR cannot attain these properties, drilling shall be halted and the mud replaced.

Proper control of the drilling fluid must remain in compliance with these specifications, and the CONTRACTOR may be required to retain or employ an experienced, qualified Drilling Fluid (Mud) Engineer to supervise and maintain drilling fluid characteristics.

The methods and materials that the CONTRACTOR would utilize in the event of borehole stability problems and/or loss of circulation must be approved by the HYDROGEOLOGIST. In no case shall materials be added to the drilling fluid system or drill hole without prior approval of such materials by the HYDROGEOLOGIST. Addition of unapproved materials to the drill hole or fluid system may result in rejection of the well, as well as necessary work to remediate the boring and groundwater.

The CONTRACTOR must provide Standard API measurement devices in proper working order at the drilling site at all times, along with qualified operating personnel to determine the following drilling fluid properties:

1. Drilling fluid weight
2. Drilling fluid viscosity
3. Drilling fluid sand content
4. 30-minute water loss/filter cake

The CONTRACTOR must additionally include appropriate devices for evaluating the make-up water suitability, including but not limited to:

1. pH test strips or other reliable pH monitoring device
2. Meter or test strips for checking water hardness

The above properties, including pH and hardness, of the drilling fluid entering the mud pump or leaving the circulation tank must be recorded by the CONTRACTOR at a minimum of 4-hour intervals, a maximum of every 100 feet of drilling, and whenever conditions appear to change or problems arise. The drilling fluid shall have the following properties in accordance with API Code RP 13B (or recent modification) "Recommended Standard Procedures for Testing Drilling Fluids."

1. Weight – maximum of 9.2 pounds per gallon
2. Marsh Funnel Viscosity – minimum of 28 and maximum of 38 seconds
3. Sand Content – maximum of 1% by volume
4. Water Loss and Wall Cake – maximum thickness of 2/32 inches with maximum 30-minute water loss of 15 cubic centimeters

The CONTRACTOR shall conduct all tests and shall maintain a log showing the drilling fluid properties set forth herein including date, time, depth, weight, viscosity, sand content, water loss rate and filter cake thickness, pH, and any pertinent comments.

The CONTRACTOR must keep records providing the following well information:

1. A log of drilling bit types and depths at which drill bit changes are made
2. A log of the cuttings, providing the depths and descriptions of the earth materials encountered during the pilot boring

All measurements for depths shall be referenced to existing ground surface at the well site.

2.4 Downhole Geophysical Surveys (Bid Item 3)

2.4.1 General

The CONTRACTOR shall furnish all material and equipment and provide all labor to perform a geophysical log including measurements of:

- Spontaneous potential
- Electrical resistivity (single-point, 16-inch short normal, 64-inch long normal, and focused guard)
- Natural gamma ray

2.4.2 Submittals

The following submittals are applicable to this section:

- The name and qualifications of the firm proposed for completing geophysical surveys
- Two field hardcopies of the geophysical log, which shall be also provided in a digital data format as both PDF and data files. Geophysical logs shall have a vertical scale of 50 feet per inch and horizontal scale appropriate to the log type and response values.

2.4.3 Execution

The CONTRACTOR shall ensure that the borehole is properly conditioned by circulating drilling fluids in preparation for geophysical logging, and the borehole is continually filled with fluid during logging operations.

Standby time will not be paid for additional cleaning and conditioning of the pilot borehole to enable logging operations to proceed.

If the logging probe fails to descend to the desired depth, the CONTRACTOR, at their own expense, shall condition the borehole to permit the logging probe to descend to the desired depth.

2.5 Wiper Pass (Bid Item 4)

2.5.1 General

The CONTRACTOR shall furnish all material and equipment and provide all labor to perform a wiper pass. Wiper passes will not be required if well construction begins within 48 hours of completing the borehole and the borehole is demonstrated to be open to the design depth.

2.5.2 Submittals

Submittals are not required for this section.

2.5.3 Execution

Immediately prior to monitoring well constructing, the CONTRACTOR shall complete a wiper pass to the total depth of the original borehole, unless the OWNER approves otherwise. Wiper pass completion may begin during the design period but should be coordinated such that well construction can begin as soon as possible after the completion of the wiper pass.

2.6 Caliper Survey (Bid Item 5)

2.6.1 General

The CONTRACTOR shall furnish all material and equipment and provide all labor necessary to conduct a caliper survey of the borehole.

2.6.2 Submittals

The following submittals are applicable to this section:

- The name and qualifications of the firm proposed for completing the survey
- Two field hardcopies of the caliper log, which shall be also provided in a digital data format as both PDF and data files. Log shall have a vertical scale of 50 feet per inch and horizontal scale appropriate to the log type and response values.

2.6.3 Execution

The CONTRACTOR shall furnish professional logging services for the caliper survey of the borehole.

The caliper tool must be of sufficient arm capacity to have the ability to measure borehole diameters to 24 inches for the entire depth of each borehole. The caliper survey shall include calculations of the theoretical annular volumes required for completion of the well.

If the caliper survey shows the borehole to be less than the specified diameter(s) at any point or the borehole is less than the specified depth, the borehole shall be re-reamed or redrilled and resurveyed at the CONTRACTOR's expense.

2.7 Well Casing and Screen (Bid Item 6)

2.7.1 General

The CONTRACTOR shall furnish all materials and work necessary to manufacture, deliver, and install well casing, screens, and caps as shown on the figures and in accordance with these specifications.

2.7.2 Submittals

The following submittals are applicable to this section:

- Cut sheet, material data sheet, or equivalent to describe the well casing and screen manufacturer
- Manufacturer, type, and material of centering guide to be used

2.7.3 Materials

Well casing and screen shall be flush-threaded, 2.5-inch diameter Schedule 80 PVC manufactured by Johnson Screens® or OWNER-approved equivalent and composed of new material manufactured in accordance with ASTM F480. Casing shall be manufactured by a single manufacturer and be intended for use in water wells. Casing material shall be new and delivered to the site as packaged from the manufacturer. Casing shall be marked in accordance with these requirements and delivered as individually plastic-wrapped sections in 10- or 20-foot lengths. Male threads shall include a rubber O-ring to ensure water tightness. Well construction materials shall be staged at an onsite location which permits safe access by the

HYDROGEOLOGIST, well construction materials shall be new and maintained in clean, undamaged condition.

The screened casing shall have horizontal machine-cut slots, 0.040-inch wide, with ¼-inch slot spacing and a total open area of approximately 11 square inches per foot of casing, unless otherwise specified in the final well designs. Total screen length is anticipated to be 40 feet but is subject to change based on the lithology encountered. The CONTRACTOR is required to provide screen materials as three 10-foot-long pieces and two 5-foot-long pieces to provide for design changes as needed.

2.7.4 Placement

Maintain circulation of drilling fluid until casing is set unless the CONTRACTOR judges circulation to be unnecessary.

Upon completion of the borehole, the CONTRACTOR shall install the well screen and casing according to the final well design prepared by the HYDROGEOLOGIST, and authorization by the OWNER. The casing and screen shall be plumb and centered in the hole. Centering guides shall be affixed to the top and bottom of the well screen and at intervals of not more than 80 feet within the blank casing. Centering guides shall be designed to have minimum bore wall contact of 4 inches and extend from the casing not less than 2 inches.

The casing shall be suspended in tension from the surface by means of an appropriate hanger or clamp. The bottom of the casing shall be at a sufficient distance above the bottom of borehole to ensure that the casing will not be supported from the bottom of the borehole.

If, for any reason, the casing cannot be landed in the correct position or at a depth acceptable to the HYDROGEOLOGIST, or any of the casings or screens should collapse prior to well completion, the CONTRACTOR shall construct another well adjacent to the original location and complete this well in accordance with the specifications at no additional cost to the HYDROGEOLOGIST. The first hole shall be destroyed by sealing in accordance with Monterey County requirements pertaining to proper well destruction. All work required to be repeated and all additional materials, labor, and equipment required, shall be furnished at the expense of the CONTRACTOR and no claim for additional compensation shall be made or be allowed, except as specifically provided herein.

To avoid collapse or deformation of casing, all annular materials including cement, filter pack, fill materials, and fluids used during their installation, shall be installed in proper increments. The CONTRACTOR shall document and verify the proper increments to use to prevent casing

damage and shall, at its own expense, replace any damaged casing and repair, or remedy any other associated damage to the well.

A clean construction tremie pipe shall be installed to place the annular materials.

The top of the casing shall be provided with a secure, locked cap at all times when personnel are not on the site.

The CONTRACTOR shall measure the depth to the bottom of the well inside the well casing to confirm depth matches the design criteria prior to placing annular materials.

2.8 Filter Pack (Bid Item 7)

2.8.1 General

CONTRACTOR shall furnish all material and equipment and provide all labor necessary to install filter media as described within these specifications.

2.8.2 Submittals

The following submittals are applicable to this section:

- A product description and sieve analysis of the filter pack filter materials to be delivered to the site

2.8.3 Materials

Filter pack material shall be as specified in the final well designs. Filter pack materials shall be hard, water worn, at least 90-percent silica and washed clean of silt, dirt, and foreign matter. Crushed gravel will not be accepted. Filter pack materials shall be NSF/ANSI 61-certified, well rounded with a high sphericity, and graded. An 8 x 16 gradation shall be used for the filter pack unless otherwise specified in the final well designs.

Final filter pack gradation will be determined from borehole data. The filter pack materials shall be delivered to and contained in supersacs and, if stockpiled at the well site, shall be protected and kept free of all foreign matter.

2.8.4 Placement

Prior to placement of the filter pack in the well, the drilling fluid shall be thinned as appropriate with potable water to reduce weight and viscosity. The filter pack, as specified, shall be installed

in the annular space between the borehole and the well screen through a construction tremie pipe. Place the filter pack by hydraulically pumping through the tremie pipe from the bottom of the annulus upward to the depth specified by the HYDROGEOLOGIST. The placement shall proceed without interruption until complete. A circulating system with 1 or more positive displacement pumps utilizing fresh water shall be used for the purpose of introducing the filter pack into the annulus. Under no circumstances will the filter pack be allowed to freefall down into the annular space. Fluids displaced from the well casing and annulus during filter packing (and sealing) operations shall be controlled and discharged to temporary storage tanks for off-site disposal.

The level of the filter pack shall be measured during placement.

A 5-foot layer of #60 plaster sand shall be installed immediately above the top of the filter pack to separate the cement seal from the filter pack.

The CONTRACTOR shall contain and appropriately manage displaced fluids during the well installation process in accordance with Section 1.14.

2.9 Annular Seal (Bid Item 8)

2.9.1 General

The CONTRACTOR shall furnish all material and equipment and provide all labor necessary to install an annular seal in accordance with Monterey County permit conditions and applicable standards (see Section 1.7). The Contractor shall make applicable notifications to Monterey County prior to seal placement, as specified in the permit.

2.9.2 Submittals

The following submittals are applicable to this section:

- Type and content of proposed sealing material
- Copy of the concrete weight ticket upon delivery to the job site. Concrete weight tickets shall include the origin and type of sealing material used.

2.9.3 Materials

Sealing material shall consist of batch plant mixed 10.3 sack sand cement grout in conformance with permitting requirements. Accelerators, retardants, bentonite, and other additives shall not be used without prior approval by the HYDROGEOLOGIST.

2.9.4 Placement

Sealing material shall be placed in compliance with permit requirements. The CONTRACTOR shall notify the HYDROGEOLOGIST a minimum of 24 hours in advance of planned sealing material placement.

Sealing material shall be placed using the tremie method from the top of the transition sands and shall be completed in a manner that prevents freefall, bridging or separation. Placement shall be completed in one continuous operation, from the top of the filter pack to ground surface where feasible. The CONTRACTOR shall place sealing material in a manner which does not cause damage to the well casing. For deep seals, care must be taken to ensure exothermic reactions in sealing material do not negatively impact collapse strength of the well casing and cause deformation or failure. Mitigation through methods such as multiple pours, addition of retardants, or circulation of fresh water should be utilized as deemed necessary by the CONTRACTOR and approved by the HYDROGEOLOGIST.

Placement shall be completed in one continuous operation from top of the transition sands to ground surface.

Upon installation of the sealing material and unless approved otherwise by the HYDROGEOLOGIST, the CONTRACTOR shall not operate heavy equipment on the site for a minimum of 24 hours. The 24-hour curing period shall not be regarded as standby time.

The CONTRACTOR shall contain and appropriately manage displaced fluids during the well installation process.

2.10 Well Development (Bid Item 9)

2.10.1 General

The CONTRACTOR shall furnish all material and equipment and provide all labor necessary to develop the well by means of swabbing and airlifting.

2.10.2 Submittals

The following submittals are applicable to this section:

- Well development data field logs

2.10.3 Materials

The following materials are applicable to this section:

1. Dual Swab Isolation Development Tool:
 - a) Two rubber flanges separated by not more than 5 feet of perforated drill pipe
 - b) Outside diameter of flanges not more than 1/8 inch smaller than inside diameter of screen section of well

2.10.4 Execution

The CONTRACTOR shall commence development not less than 24 hours and no more than 48 hours after placing grout seal. If development is not commenced within 48 hours conduct, without additional cost to the HYDROGEOLOGIST, swab and airlift development for length of time between 48 hours since placing grout seal and time that development is initiated, in addition to normal development time.

Install open-ended tremie pipe and airlift groundwater from the monitoring well. This shall be done to remove heavy drilling muds and solids from the well and will be completed from the top of the well to the bottom. Airlifting shall be performed until drilling fluids are removed from the well.

Install a dual swab while airlifting the screened interval until airlift development is completed (assumed 8 hours total). When airlift development is complete, measure and remove fill in the bottom of the well.

The CONTRACTOR shall be compensated according to the hourly well development bid item for work performed in well screen sections only. The time required to move tooling through the unperforated well casing section(s) shall not be considered development and therefore will not be paid for by the HYDROGEOLOGIST.

2.11 Color Video Camera Survey (Bid Item 10)

2.11.1 General

CONTRACTOR shall furnish all material and equipment and provide all labor necessary to complete a color video well survey prior to acceptance of the well by the HYDROGEOLOGIST. The color video survey shall verify well is constructed per the final well design and that the well is free of structural defects and clear of all debris throughout the entire depth of the well prior to acceptance of the well by the HYDROGEOLOGIST. If any defects or debris are found, the

CONTRACTOR shall make repairs to, or remove debris from, the well as necessary, prior to acceptance of the well by the HYDROGEOLOGIST.

2.11.2 Submittals

The following submittals are applicable to this section:

- The name and qualifications of the firm proposed for completing video surveys
- One copy of the video survey on DVD, including AVI format, and two copies of the written report

2.11.3 Execution

Prior to conducting survey, allow the well to remain idle for at least 24 hours. Prior to and, if necessary, during survey, introduce sufficient quantity of clear water into well to produce clear viewing conditions during survey. Run a dynamic vertical down-hole view video from top of well to the bottom of well at a speed not exceeding 30 feet per minute. Video shall be in color, with side-scan capabilities, and include an automatic depth indicator to the nearest 0.1 foot.

If survey fails to produce a clear picture of internal casing condition, introduce clear, potable water and conduct survey to HYDROGEOLOGIST's satisfaction until a clear video is obtained.

2.12 Surface Completion (Bid Item 11)

2.12.1 General

The CONTRACTOR shall furnish all material and equipment and provide all labor necessary to install a lockable and watertight hinged well monument.

2.12.2 Submittals

- Manufacturer and model of well vault

2.12.3 Execution

CONTRACTOR shall install a 12-inch diameter (round) Emco Wheaton (or HYDROGEOLOGIST approved equivalent) well vault. The vault shall be bolt-down style, include a steel skirt, have overall height of not less than 12-inches, and be traffic rated and watertight. Well vault shall be installed to allow surface water to flow away from the well but shall not be set at a height that poses a hazard to pedestrians or vehicle traffic. Vault shall be set

in a concrete pad approximately 2-feet on each side and in conformance with encroachment permit or OWNER access agreement requirements. Lampblack may be required to match surrounding asphalt color. Place the vault such that the well casing is centered and cut well casing approximately 6-inches below completed grade. Well casing shall be completed with a lockable, water-tight compression well cap.

2.13 Demobilization & Cleanup (Bid Item 12)

2.13.1 General

The CONTRACTOR shall removal all material and equipment from the site following acceptance of the monitoring well by the HYDROGEOLOGIST.

2.13.2 Submittals

The following submittals are applicable to this section:

- State of California Well Completion Report

2.13.3 Execution

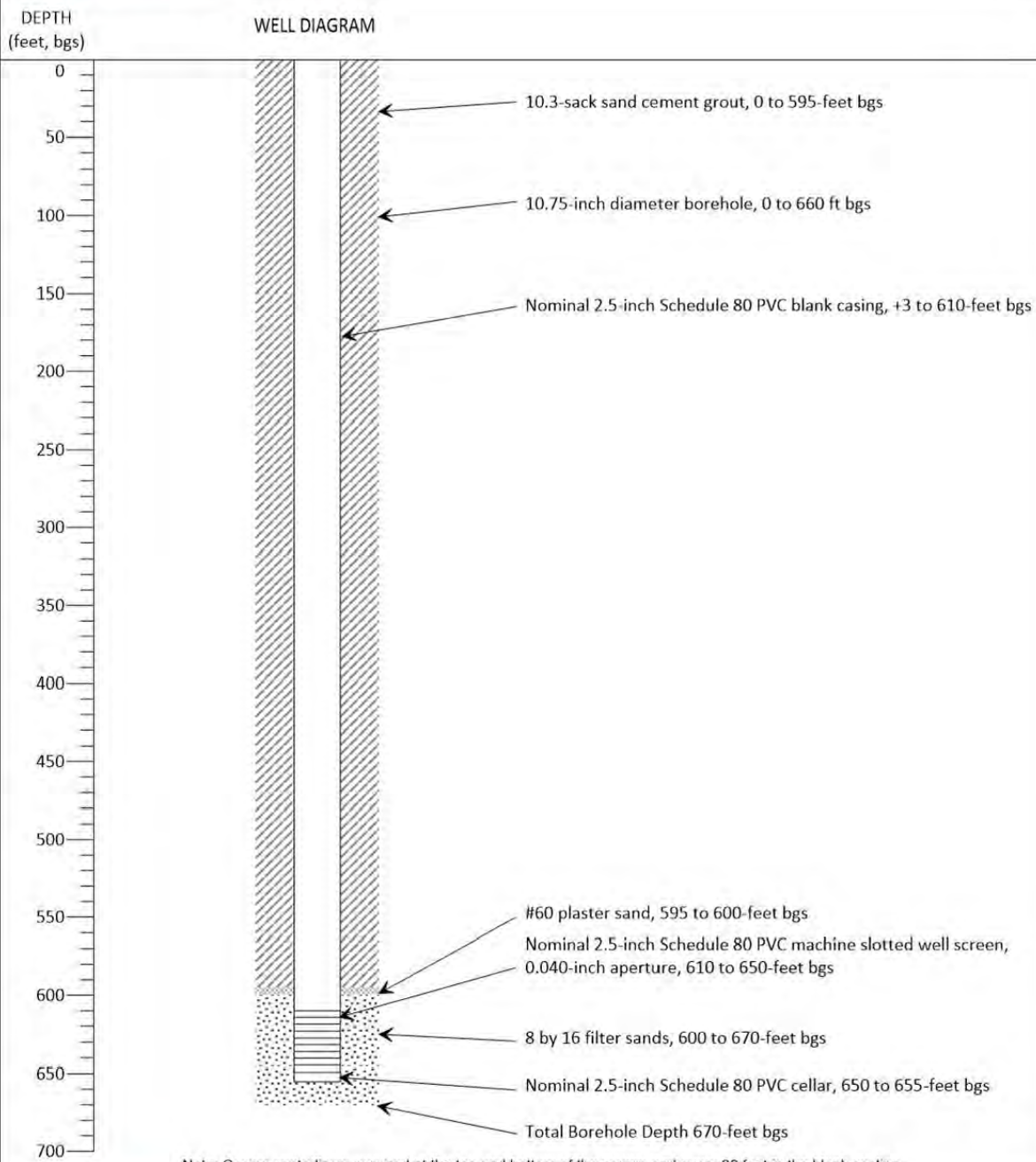
Complete removal of all material, temporary facilities, drilling fluids, cuttings and municipal waste from the site to the satisfaction of the HYDROGEOLOGIST. The CONTRACTOR shall notify the HYDROGEOLOGIST at the completion of demobilization and site cleanup activities.

FIGURES

Seaside Groundwater Basin Watermaster
Replacement Monitoring Well Fort Ord 9 Shallow

TECHNICAL
SPECIFICATIONS





Note: Casing centralizers required at the top and bottom of the screen and every 80 feet in the blank section.

X:\2022 Projects\FO-9 Replacement\150_0802_tech_specs\01_support\01_GIS\Reports and Deliverables\3_Well_Design_TheBlock.mxd 03Sept2023



2023

Figure 3. Monitoring Well FO-09R
Shallow Preliminary Well Design



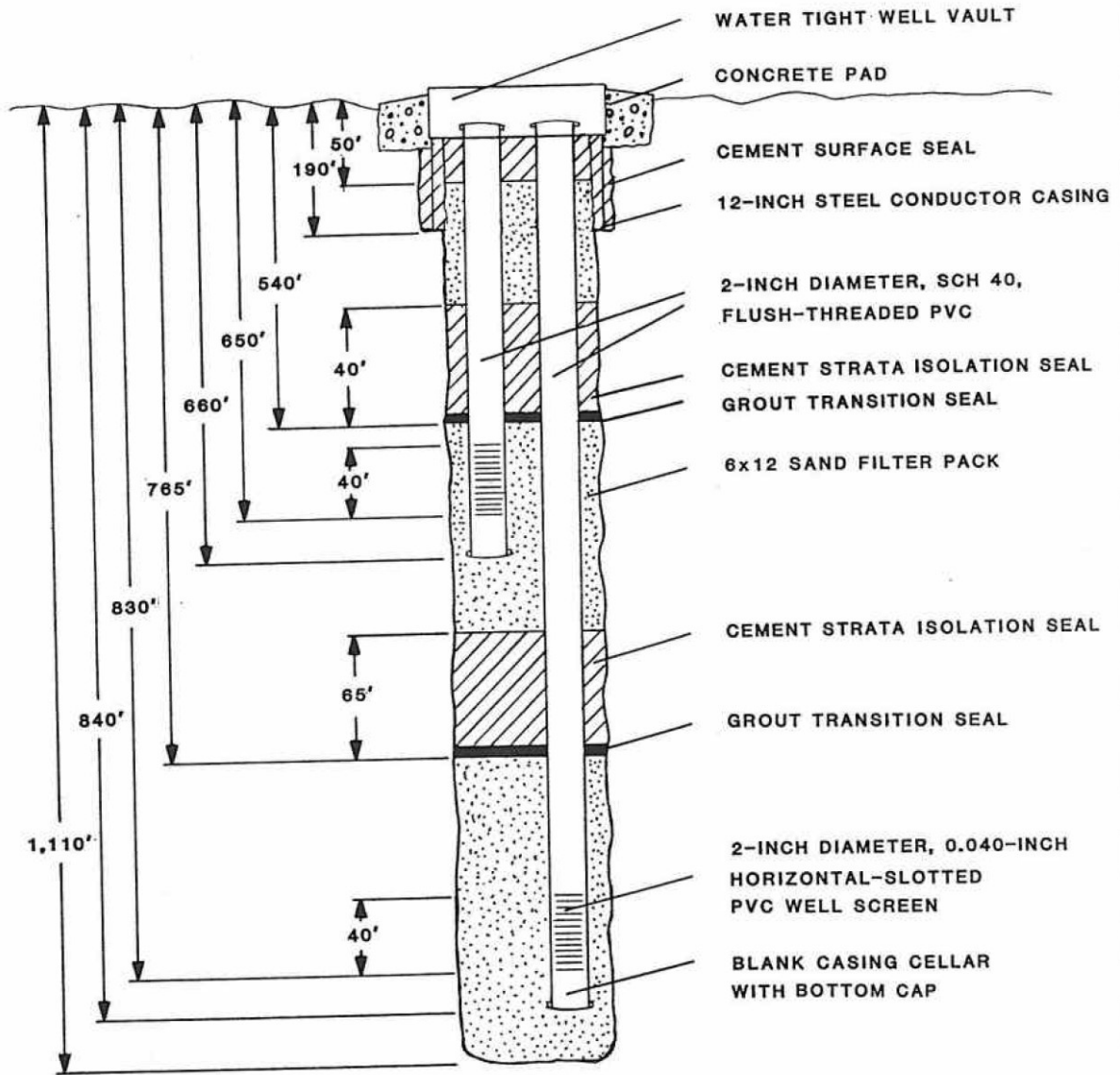
APPENDIX A

As-Built Diagram, Geophysical Log and Lithology for Fort Ord 9 Nested Wells

FORT ORD COASTAL SUBBASIN GROUND WATER MONITORING PROJECT

MONITOR WELL CONSTRUCTION

MPWMD #FO-09



NOT TO SCALE

Figure 6. FO-09 Completion.



Field # 97 Joe Driver



ELECTRIC LOG

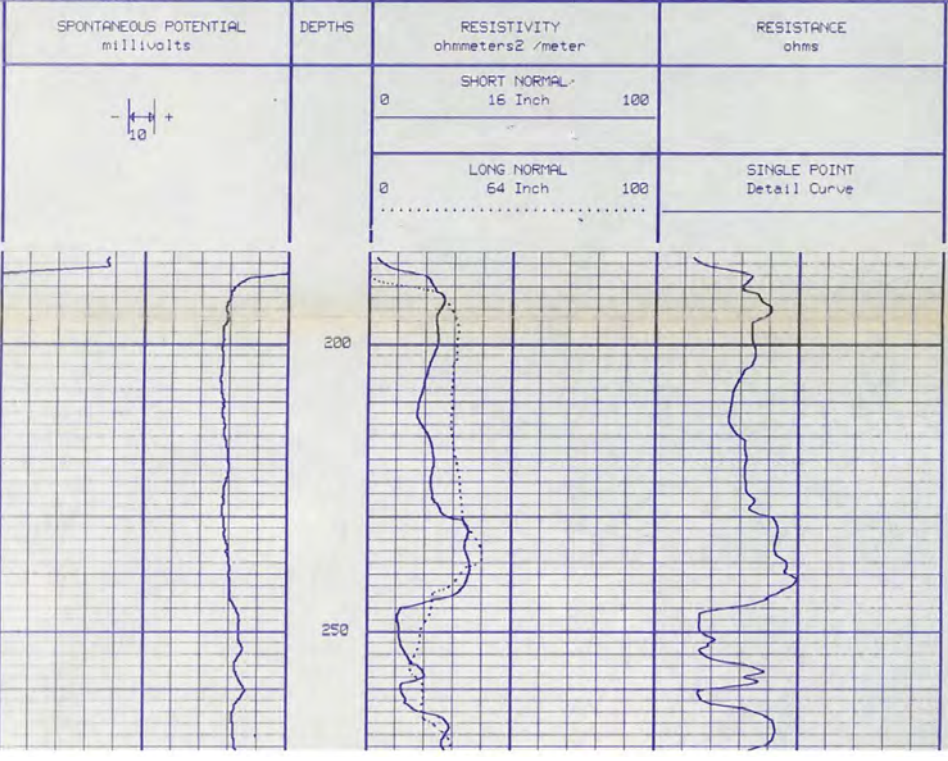
FILING NO. COMPANY CHAPPELL PUMP & SUPPLY
 WELL SITE C / (#9)
 FIELD FORT ORD
 COUNTY MONTEREY STATE CALIFORNIA
 LOCATION: 1.5 MILES NORTH FROM THE OTHER SERV:
 END OF COE STREET ON THE WEST SIDE NONE
 OF HWY 1 IN FORT ORD.
 JOB NO. 23147 SEC N/A TWP N/A RGE N/A
 Permanent Datum: GROUND LEVEL Elev: N/A K.B: N/A
 Log Measured From G.L. 0 Ft Above Perm Datum D.F: N/A
 Drilling Measured From GROUND LEVEL G.L: N/A
 Date 08-13-1994
 Run No. ONE
 Depth - Driller 1110'
 Depth - Logger 1101'
 Btm. Log Inter. 1100'
 Top Log Inter. 185'
 Casing-Driller 121/4x1190'
 Casing-Logger at 1189'
 Bit Size 10" at
 Type Fluid In Hole BENTONITE- GRR
 Dens. Visc. 9.1 34
 PH Fluid Loss N/A N/A ml
 Source of Sample FLOWLINE ml
 Rm at Meas. Temp 15.2 at 75 F at 75 F at 75 F
 Rmf at Meas. Temp 16.9 at 75 F at 75 F at 75 F
 Rmc at Meas. Temp N/A at F at F at F
 Source: Rmf Rmc N/A at F at F at F
 Rm at BHT N/A at F at F at F
 Time Since Circ. 1.5 HRS
 Max. Rec. Temp. N/A F
 Equip Location L-18 BFL
 Recorded By DAN HOE
 Witnessed By JOHN GIBBS

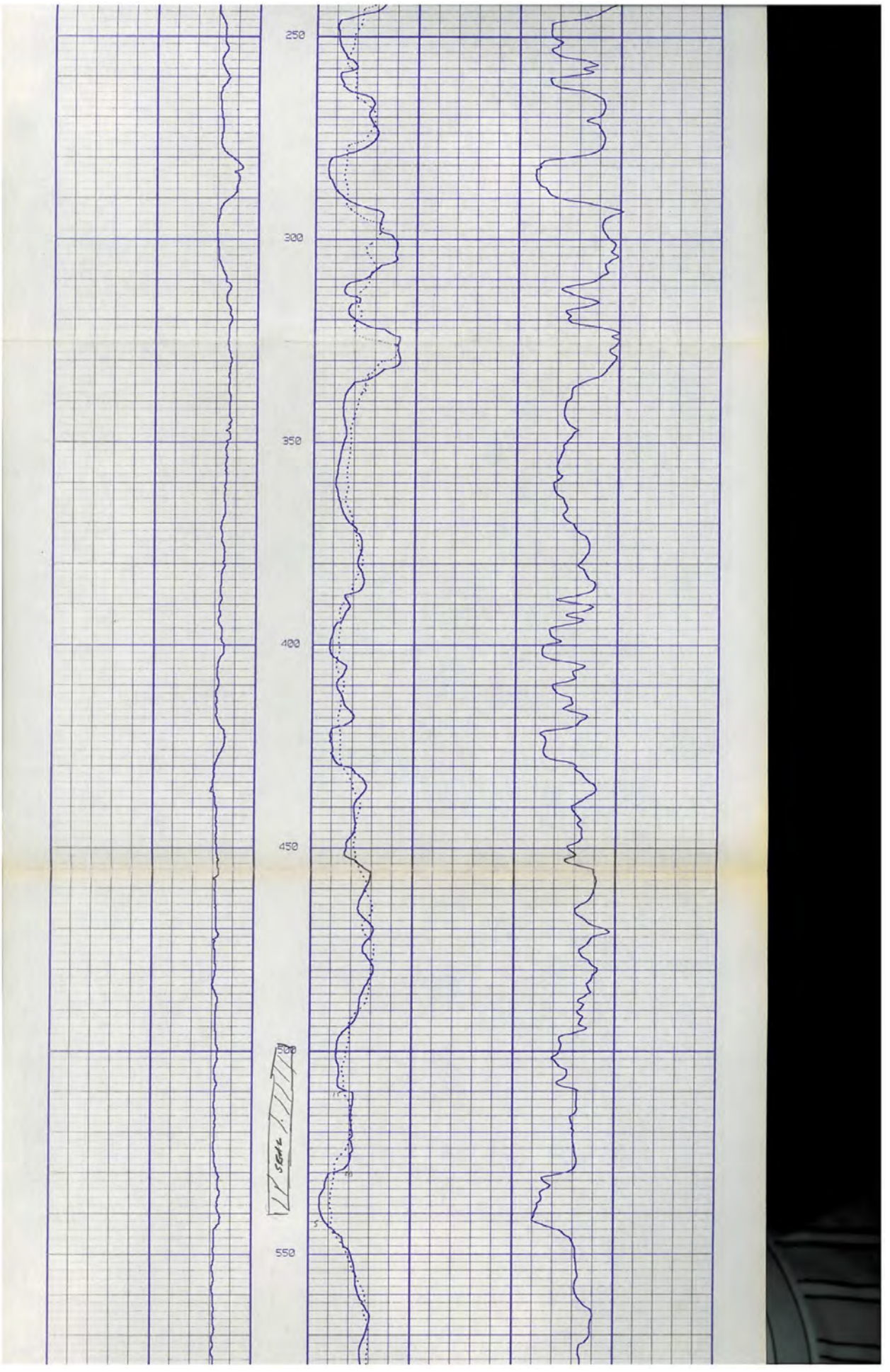
Fold Here This Reading and Log Conform To API RP 31

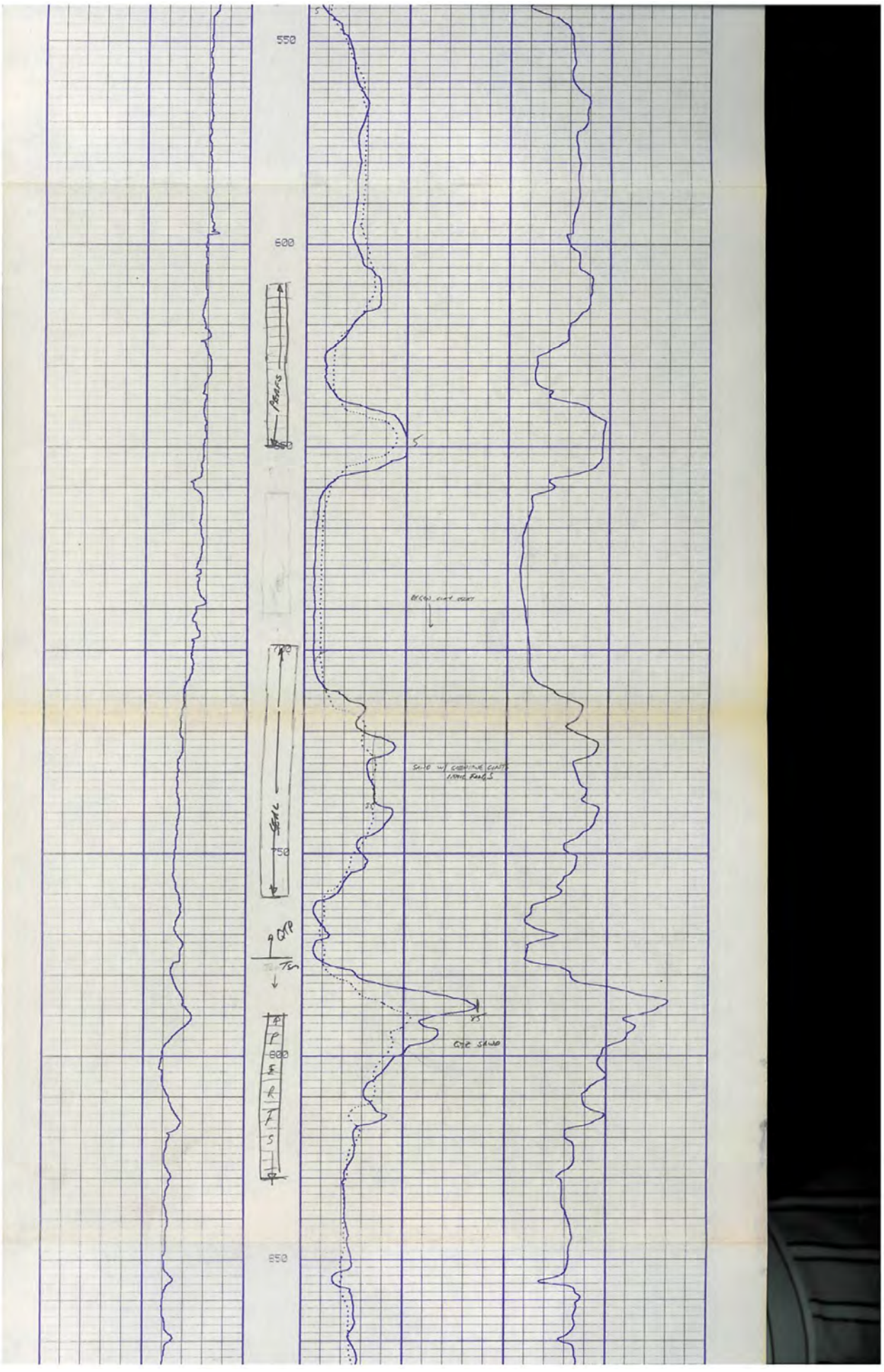
Changes in Mud Type or Additional Samples		Scale Changes			
Date	Sample No.	Type Log	Depth	Scale Up Hole	Scale Down Hole
Type Fluid in Hole					
Dens.	Visc.				
ph	Fluid Loss				
Source of Sample					
Rm at Meas. Temp.		at	F		
Rmf at Meas. Temp.		at	F		
Rmc at Meas. Temp.		at	F		
Source: Rmf	Rmc				
Rm at BHT		at	F		
Rmf at BHT		at	F		
Rmc at BHT		at	F		

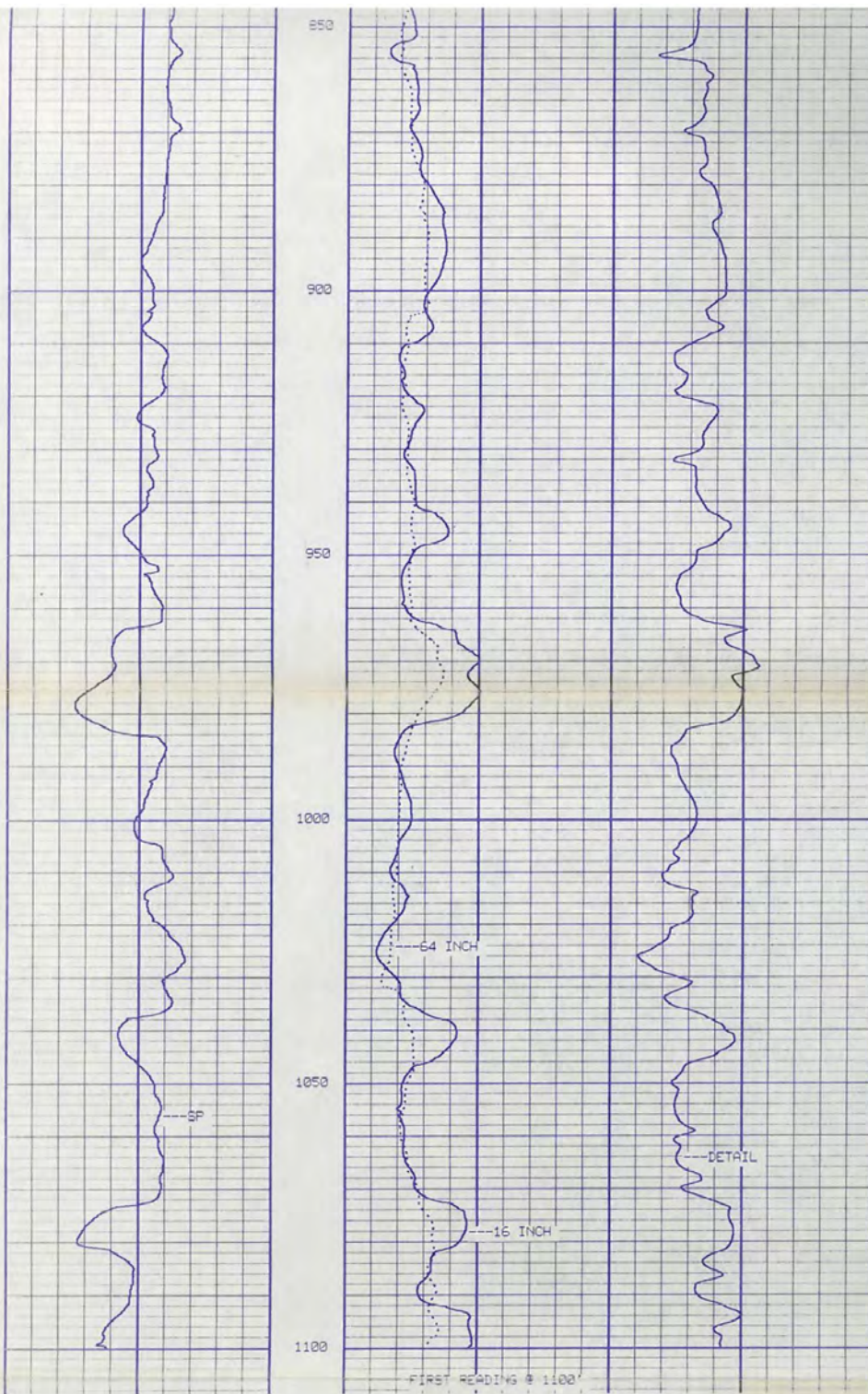
REMARKS: DATA RECORDED AT 5 SAMPLES PER FOOT. TOOL NO. T-124.

WELL DRILLED BY: CHAPPELL PUMP & SUPPLY
 DRILLER: JOHN GIBBS









 0 64 Inch 100 LONG NORMAL		Detail Curve SINGLE POINT
 0 16 Inch 100 SHORT NORMAL		
millivolts SPONTANEOUS POTENTIAL	DEPTHS	ohm-meters/meter RESISTIVITY	ohms RESISTANCE

MONTEREY PENINSULA WATER MANAGEMENT DISTRICT

MPWMD Stillwell

MPWMD #FO-09

Mo. Co. Health Dept Permit #94-102

WELL AND PUMP DATA

1/5

Location of Well <u>Adjacent SW corner Stilwell Park Housing Area</u>				Property owner's name and address <u>U.S. Army Corps of Engineers Management and Disposal Branch, Real Estate Division 1325 J Street Sacramento, CA 95814-2922</u>			
County <u>Monterey</u>	Township Number	Range Number	Section No.	Fraction			
Township	N or S	E or W			% 1/4 %		
Street Address and City or Distance and Direction from Road Intersections <u>~ 200' SW of Okinawa Rd "elbow" and 20' SE from service rd.</u>				Well depth <u>1110'</u> Datum point from which all measurements are taken <u>ground surface</u>			
Show exact location of well in section grid with an 'x'				Method of Drilling <input type="checkbox"/> Cable tool <input type="checkbox"/> Hollow rod <input type="checkbox"/> Driven <input type="checkbox"/> Dug <input type="checkbox"/> Direct rotary <input type="checkbox"/> Air rotary <input type="checkbox"/> Bucket auger <input type="checkbox"/> <u>of auger</u> <input type="checkbox"/> Reverse rotary <input type="checkbox"/> Jetted <input type="checkbox"/> Flight auger <input type="checkbox"/> <u>drilling fluid</u>			
Sketch map of well location 				Use <input type="checkbox"/> Domestic <input type="checkbox"/> Public supply <input type="checkbox"/> Industrial <input type="checkbox"/> <input type="checkbox"/> Irrigation <input type="checkbox"/> Municipal <input type="checkbox"/> Commercial <input type="checkbox"/> <input type="checkbox"/> Test Well <input type="checkbox"/> Heating or cooling <input checked="" type="checkbox"/> Monitoring			
Remarks, Elevation, Source of Data, etc. <u>Ground surface elevation ~ 121' (Paulin altimeter)</u>				Casing Type (Flush thread) <input type="checkbox"/> Steel <input type="checkbox"/> Threaded Height above/below surface _____ <input type="checkbox"/> Galv. <input type="checkbox"/> Welded Drive shoe? Yes ___ No ___ <input type="checkbox"/> PVC <input type="checkbox"/> Solvent welded <input type="checkbox"/> SS			
Borehole data				Intake Portion of Well Screen type <u>factory horiz. slot</u> or open hole from _____ ft to _____ ft			
Formation Log		Bulk Color	Hardness	From	To		
<u>SAND med, well rounded</u>		<u>med to drk brn</u>		<u>0</u>	<u>10</u>		
<u>moderately well sorted,</u>							
<u>dk brn org-rich, silty</u>							
<u>soil horizon (0-1')</u>							
<u>SAND, fine to med well</u>		<u>med brn</u>		<u>10</u>	<u>145</u>		
<u>rounded, mod. well sorted,</u>							
<u>mostly wht/yellow to brn gtz</u>							
<u>grains, w/ common drk grains</u>							
<u>SAND, fine to med, well</u>		<u>light tan</u>		<u>145</u>	<u>175</u>		
<u>rounded, abundant wht to rust,</u>							
<u>silty, friable, non-calcareous</u>							
<u>indurated clay frags</u>							
<u>CLAY, soft, plastic, vry</u>		<u>light tan to gry</u>		<u>175</u>	<u>190</u>		
<u>minor silt, alternating w/</u>							
<u>streaks of fine gtz sand</u>							
<u>SAND, vry fine to med, clayey</u>		<u>med tan to gry</u>		<u>190</u>	<u>210</u>		
<u>(~ 10%), vry minor rounded</u>							
<u>chert frags (< 1mm)</u>							
<u>CLAY, sandy (~ 25%), soft,</u>		<u>med brn to gry</u>		<u>210</u>	<u>235</u>		
<u>plastic, minor chert frags</u>							
<u>SAND, med to coarse, vry minor</u>		<u>med tan</u>		<u>235</u>	<u>250</u>		
<u>clay abundant chert frags</u>							
<u>CLAY, silty, soft, clay frags</u>		<u>brn to gry</u>		<u>250</u>	<u>300</u>		
<u>indicate possible alternating layers</u>							
<u>of med brn to olive-gry clay</u>							
Contractor Name and Address <u>Chappell Pump & Supply 585 Las Animas Ave. Gilroy, CA 95020</u>				Water Quality Sample taken? <input type="checkbox"/> Yes <input type="checkbox"/> No Where analyzed _____			
Name of Driller <u>Drillers: Jim Brundage, John Gibbs</u>				Date well started <u>8/2/94</u>			
State License Number <u>C57647140</u>				Date well completed <u>8/16/94</u> Recorded by: <u>J. Oliver</u>			

MONTEREY PENINSULA WATER MANAGEMENT DISTRICT

MPWMD #FO-09

2/5

WELL AND PUMP DATA

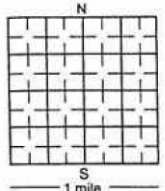
Location of Well					Property owner's name and address																																		
County	Township Number	Range Number	Section No.	Fraction																																			
Township	N or S	E or W		1/4 1/4 1/4																																			
Street Address and City or Distance and Direction from Road Intersections																																							
Show exact location of well in section grid with an 'x'					Sketch map of well location																																		
					Well depth _____ Datum point from which all measurements are taken _____ Method of Drilling <input type="checkbox"/> Cable tool <input type="checkbox"/> Hollow rod <input type="checkbox"/> Driven <input type="checkbox"/> Dug <input type="checkbox"/> Direct rotary <input type="checkbox"/> Air rotary <input type="checkbox"/> Bucket auger <input type="checkbox"/> _____ <input type="checkbox"/> Reverse rotary <input type="checkbox"/> Jetted <input type="checkbox"/> Flight auger																																		
Remarks, Elevation, Source of Data, etc.					Use <input type="checkbox"/> Domestic <input type="checkbox"/> Public supply <input type="checkbox"/> Industrial <input type="checkbox"/> _____ <input type="checkbox"/> Irrigation <input type="checkbox"/> Municipal <input type="checkbox"/> Commercial <input type="checkbox"/> Test Well <input type="checkbox"/> Heating or cooling <input type="checkbox"/> Monitoring																																		
					Casing Type <input type="checkbox"/> Steel <input type="checkbox"/> Threaded <input type="checkbox"/> Height above/below surface _____ <input type="checkbox"/> Galv. <input type="checkbox"/> Welded <input type="checkbox"/> Drive shoe? Yes _____ No _____ <input type="checkbox"/> PVC <input type="checkbox"/> Solvent <input type="checkbox"/> _____ <input type="checkbox"/> SS welded <input type="checkbox"/> _____ Hole diameter _____ in to _____ ft																																		
Borehole data					Intake Portion of Well																																		
<table border="1"> <thead> <tr> <th>Formation Log</th> <th>Bulk Color</th> <th>Hardness</th> <th>From</th> <th>To</th> </tr> </thead> <tbody> <tr> <td>CLAY + SAND, alternating layers of soft, plastic clay + fine to med sand, also minor frags of vry fine, calcereous cemented sand (gry), abundant thin, platy, wht to beige, eggshell - textured shell frags (clams?), minor light rounded chert.</td> <td>dkk gry</td> <td></td> <td>300</td> <td>355</td> </tr> <tr> <td>SAND, clayey (~15%), abundant grains of rounded, noncalcareous-cemented, vry fine sand, vry minor shell frags.</td> <td>light gry to tan</td> <td></td> <td>355</td> <td>405</td> </tr> <tr> <td>CLAY, sandy (~25%), clay frags vary from soft to mod well consolidated, minor soft, olive clay, occasional shell frags.</td> <td>steel to dkk gry</td> <td></td> <td>405</td> <td>450</td> </tr> <tr> <td>SAND, clayey (~20%), sand is mostly fine to coarse gr's grains, colors include wht, yellow, grn, rose, abundant shell and chert frags.</td> <td>steel to dkk gry</td> <td></td> <td>450</td> <td>470</td> </tr> <tr> <td>SAND, fine to coarse, vry minor clay (<5%), mostly rounded grains of wht yellow s brngts, w/ abundant sub-rounded chert frags.</td> <td>med gry-brn</td> <td></td> <td>470</td> <td>490</td> </tr> </tbody> </table>					Formation Log	Bulk Color	Hardness	From	To	CLAY + SAND, alternating layers of soft, plastic clay + fine to med sand, also minor frags of vry fine, calcereous cemented sand (gry), abundant thin, platy, wht to beige, eggshell - textured shell frags (clams?), minor light rounded chert.	dkk gry		300	355	SAND, clayey (~15%), abundant grains of rounded, noncalcareous-cemented, vry fine sand, vry minor shell frags.	light gry to tan		355	405	CLAY, sandy (~25%), clay frags vary from soft to mod well consolidated, minor soft, olive clay, occasional shell frags.	steel to dkk gry		405	450	SAND, clayey (~20%), sand is mostly fine to coarse gr's grains, colors include wht, yellow, grn, rose, abundant shell and chert frags.	steel to dkk gry		450	470	SAND, fine to coarse, vry minor clay (<5%), mostly rounded grains of wht yellow s brngts, w/ abundant sub-rounded chert frags.	med gry-brn		470	490	Screen type _____ or open hole from _____ ft to _____ ft Manufacturer _____ Dia. _____ Material _____ Length _____ Fittings _____ Set between _____ ft and _____ ft Slot _____ _____ ft and _____ ft Slot _____ _____ ft and _____ ft Slot _____ Method of installation _____ Filter Pack Source _____ Gradation _____ Method of installation _____ Composition _____ Volume used _____ Depth to top of f.p. _____ Grout Used? <input type="checkbox"/> Yes <input type="checkbox"/> No Volume used _____ <input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> _____ Method of installation _____ Depth: from _____ ft to _____ ft from _____ ft to _____ ft				
Formation Log	Bulk Color	Hardness	From	To																																			
CLAY + SAND, alternating layers of soft, plastic clay + fine to med sand, also minor frags of vry fine, calcereous cemented sand (gry), abundant thin, platy, wht to beige, eggshell - textured shell frags (clams?), minor light rounded chert.	dkk gry		300	355																																			
SAND, clayey (~15%), abundant grains of rounded, noncalcareous-cemented, vry fine sand, vry minor shell frags.	light gry to tan		355	405																																			
CLAY, sandy (~25%), clay frags vary from soft to mod well consolidated, minor soft, olive clay, occasional shell frags.	steel to dkk gry		405	450																																			
SAND, clayey (~20%), sand is mostly fine to coarse gr's grains, colors include wht, yellow, grn, rose, abundant shell and chert frags.	steel to dkk gry		450	470																																			
SAND, fine to coarse, vry minor clay (<5%), mostly rounded grains of wht yellow s brngts, w/ abundant sub-rounded chert frags.	med gry-brn		470	490																																			
Contractor Name and Address					Development Method _____ Duration _____ Dates _____ Sand content after _____ hrs _____ Chemicals used _____ Static Water Level _____ ft <input type="checkbox"/> below <input type="checkbox"/> above grade Date measured _____ Pumping Water Level _____ ft <input type="checkbox"/> below <input type="checkbox"/> above grade Date _____ After _____ hrs pumping at _____ gpm Specific Capacity _____ gpm/ft of drawdown at _____ hours Date _____ Pump Date installed _____ Type _____ Manufacturer _____ Model No. _____ H.P. _____ Volts _____ Capacity _____ Depth of pump intake setting _____ No. of stages _____ <input type="checkbox"/> Oil <input type="checkbox"/> Water lubrication. Power source _____ Material of drop pipe _____ bowls _____ shafting _____ impellers _____ Bowl dia. _____ Column pipe dia. _____ Length _____ Modifications _____ Well Head Completion <input type="checkbox"/> Pitless adaptor <input type="checkbox"/> Basement offset Distance above grade _____ Nearest Sources of Possible Contamination _____ ft Direction _____ Type _____ Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No Geophysical Logs Run _____ Water Quality Sample taken? <input type="checkbox"/> Yes <input type="checkbox"/> No Where analyzed _____ Date well completed _____																																		
Name of Driller _____																																							
State License Number _____																																							

MONTEREY PENINSULA WATER MANAGEMENT DISTRICT

MPWMD #FO-09

3/5

WELL AND PUMP DATA

Location of Well					Property owner's name and address																																												
County	Township Number	Range Number	Section No.	Fraction																																													
Township	N or S	E or W		% % %																																													
Street Address and City or Distance and Direction from Road Intersections																																																	
Show exact location of well in section grid with an 'x'					Sketch map of well location																																												
					Addition Name Block Number Lot Number		Well depth		Datum point from which all measurements are taken																																								
							Method of Drilling		Use																																								
Remarks, Elevation, Source of Data, etc.					<input type="checkbox"/> Cable tool <input type="checkbox"/> Hollow rod <input type="checkbox"/> Driven <input type="checkbox"/> Dug <input type="checkbox"/> Direct rotary <input type="checkbox"/> Air rotary <input type="checkbox"/> Bucket auger <input type="checkbox"/> Reverse rotary <input type="checkbox"/> Jetted <input type="checkbox"/> Flight auger		<input type="checkbox"/> Domestic <input type="checkbox"/> Public supply <input type="checkbox"/> Industrial <input type="checkbox"/> Irrigation <input type="checkbox"/> Municipal <input type="checkbox"/> Commercial <input type="checkbox"/> Test Well <input type="checkbox"/> Heating or cooling <input type="checkbox"/> Monitoring																																										
					Casing Type		Hole diameter																																										
					<input type="checkbox"/> Steel <input type="checkbox"/> Threaded Height above/below surface _____ <input type="checkbox"/> Galv. <input type="checkbox"/> Welded Drive shoe? Yes _____ No _____ <input type="checkbox"/> PVC <input type="checkbox"/> Solvent welded <input type="checkbox"/> SS		_____ in to _____ ft Wgt _____ lb/ft Sch. No. _____ _____ in to _____ ft Wgt _____ lb/ft Sch. No. _____ _____ in to _____ ft Wgt _____ lb/ft Sch. No. _____																																										
					Borehole data					Intake Portion of Well																																							
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;">Formation Log</th> <th style="width: 10%;">Bulk Color</th> <th style="width: 10%;">Hardness</th> <th style="width: 10%;">From</th> <th style="width: 10%;">To</th> </tr> </thead> <tbody> <tr> <td>CLAY, sandy (~25%), clay frags very firm soft, olive-gray to friable dk grey, abundant rounded chert frags (up to 1/2" length)</td> <td>olive-gray</td> <td></td> <td>490</td> <td>500</td> </tr> <tr> <td>CLAY, sandy (~25%), soft, plastic, abundant chert</td> <td>med brn</td> <td></td> <td>500</td> <td>510</td> </tr> <tr> <td>SAND, very fine to coarse, abundant - casts of consolidated, very fine dk grey sand, minor gtz + chert grains (subrounded), clayey (~15%)</td> <td></td> <td></td> <td>510</td> <td>540</td> </tr> <tr> <td>CLAY, silty to sandy (up to 30%), soft to friable, sand is mostly very fine + multi-colored, occasional clay frags light green</td> <td>med grn-brn</td> <td></td> <td>540</td> <td>580</td> </tr> <tr> <td>SAND + CLAY, sand is mostly very fine, consolidated, non- calcareous. Clay is soft, silty</td> <td>med brn</td> <td></td> <td>580</td> <td>610</td> </tr> <tr> <td>CLAY, silty to sandy (up to 25%), soft, gritty</td> <td>dk grn-brn to dk grey</td> <td></td> <td>610</td> <td>715</td> </tr> <tr> <td>SAND, fine to med, rounded, mostly dk to grn gtz grains common whitish firm, platy clay, minor very fine, white, sugary sand, minor grn to blk lithic frags</td> <td>whitish-grn</td> <td></td> <td>715</td> <td>770</td> </tr> </tbody> </table>					Formation Log	Bulk Color	Hardness	From	To	CLAY, sandy (~25%), clay frags very firm soft, olive-gray to friable dk grey, abundant rounded chert frags (up to 1/2" length)	olive-gray		490	500	CLAY, sandy (~25%), soft, plastic, abundant chert	med brn		500	510	SAND, very fine to coarse, abundant - casts of consolidated, very fine dk grey sand, minor gtz + chert grains (subrounded), clayey (~15%)			510	540	CLAY, silty to sandy (up to 30%), soft to friable, sand is mostly very fine + multi-colored, occasional clay frags light green	med grn-brn		540	580	SAND + CLAY, sand is mostly very fine, consolidated, non- calcareous. Clay is soft, silty	med brn		580	610	CLAY, silty to sandy (up to 25%), soft, gritty	dk grn-brn to dk grey		610	715	SAND, fine to med, rounded, mostly dk to grn gtz grains common whitish firm, platy clay, minor very fine, white, sugary sand, minor grn to blk lithic frags	whitish-grn		715	770	Screen type _____ or open hole from _____ ft to _____ ft Manufacturer _____ Material _____ Dia. _____ Fittings _____ Length _____ Set between _____ ft and _____ ft Slot _____ _____ ft and _____ ft Slot _____ _____ ft and _____ ft Slot _____ Method of installation _____ Filter Pack Source _____ Gradation _____ Method of installation _____ Composition _____ Volume used _____ Depth to top of f.p. _____ Grout Used? <input type="checkbox"/> Yes <input type="checkbox"/> No Volume used _____ <input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Method of installation _____ Depth: from _____ ft to _____ ft from _____ ft to _____ ft Development Method _____ Duration _____ Dates _____ Sand content after _____ hrs _____ Chemicals used _____ Static Water Level _____ ft <input type="checkbox"/> below <input type="checkbox"/> above grade Date measured _____ Pumping Water Level _____ ft <input type="checkbox"/> below <input type="checkbox"/> above grade Date _____ After _____ hrs pumping at _____ gpm Specific Capacity _____ gpm/ft of drawdown at _____ hours Date _____ Pump Date installed _____ Type _____ Manufacturer _____ Model No. _____ H.P. _____ Volts _____ Capacity _____ Depth of pump intake setting _____ No. of stages _____ <input type="checkbox"/> Oil <input type="checkbox"/> Water lubrication Power source _____ Material of drop pipe _____, bowls shalling _____, impellers _____ Bowl dia. _____ Column pipe dia. _____ Length _____ Modifications _____ Well Head Completion <input type="checkbox"/> Pitless adaptor <input type="checkbox"/> Basement offset Distance above grade _____ Nearest Sources of Possible Contamination _____ ft Direction _____ Type _____ Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No Geophysical Logs Run _____ Water Quality Sample taken? <input type="checkbox"/> Yes <input type="checkbox"/> No Where analyzed _____ Date well completed _____				
Formation Log	Bulk Color	Hardness	From	To																																													
CLAY, sandy (~25%), clay frags very firm soft, olive-gray to friable dk grey, abundant rounded chert frags (up to 1/2" length)	olive-gray		490	500																																													
CLAY, sandy (~25%), soft, plastic, abundant chert	med brn		500	510																																													
SAND, very fine to coarse, abundant - casts of consolidated, very fine dk grey sand, minor gtz + chert grains (subrounded), clayey (~15%)			510	540																																													
CLAY, silty to sandy (up to 30%), soft to friable, sand is mostly very fine + multi-colored, occasional clay frags light green	med grn-brn		540	580																																													
SAND + CLAY, sand is mostly very fine, consolidated, non- calcareous. Clay is soft, silty	med brn		580	610																																													
CLAY, silty to sandy (up to 25%), soft, gritty	dk grn-brn to dk grey		610	715																																													
SAND, fine to med, rounded, mostly dk to grn gtz grains common whitish firm, platy clay, minor very fine, white, sugary sand, minor grn to blk lithic frags	whitish-grn		715	770																																													
Contractor Name and Address					Name of Driller _____ State License Number _____																																												

MONTEREY PENINSULA WATER MANAGEMENT DISTRICT

MPWMD # FO-09

4/5

WELL AND PUMP DATA

Location of Well					Property owner's name and address																																												
County	Township Number	Range Number	Section No.	Fraction																																													
Township	N or S	E or W			%																																												
Street Address and City or Distance and Direction from Road Intersections																																																	
Show exact location of well in section grid with an 'x'					Sketch map of well location																																												
					Well depth _____ Datum point from which all measurements are taken _____																																												
Remarks, Elevation, Source of Data, etc.					Method of Drilling <input type="checkbox"/> Cable tool <input type="checkbox"/> Hollow rod <input type="checkbox"/> Driven <input type="checkbox"/> Dug <input type="checkbox"/> Direct rotary <input type="checkbox"/> Air rotary <input type="checkbox"/> Bucket auger <input type="checkbox"/> Reverse rotary <input type="checkbox"/> Jetted <input type="checkbox"/> Flight auger																																												
					Use <input type="checkbox"/> Domestic <input type="checkbox"/> Public supply <input type="checkbox"/> Industrial <input type="checkbox"/> _____ <input type="checkbox"/> Irrigation <input type="checkbox"/> Municipal <input type="checkbox"/> Commercial <input type="checkbox"/> Test Well <input type="checkbox"/> Heating or cooling <input type="checkbox"/> Monitoring																																												
					Casing Type <input type="checkbox"/> Steel <input type="checkbox"/> Threaded Height above/below surface _____ <input type="checkbox"/> Galv. <input type="checkbox"/> Welded Drive shoe? Yes _____ No _____ <input type="checkbox"/> PVC <input type="checkbox"/> Solvent welded <input type="checkbox"/> SS																																												
					_____ in to _____ ft Wgt _____ lb/ft Sch. No. _____ Hole diameter _____ in to _____ ft _____ in to _____ ft Wgt _____ lb/ft Sch. No. _____ _____ in to _____ ft _____ in to _____ ft Wgt _____ lb/ft Sch. No. _____ _____ in to _____ ft																																												
Borehole data					Intake Portion of Well																																												
<table border="1"> <thead> <tr> <th>Formation Log</th> <th>Bulk Color</th> <th>Hardness</th> <th>From</th> <th>To</th> </tr> </thead> <tbody> <tr> <td>CLAY, sandy (25%), soft, silty, minor chert frags</td> <td>med grn</td> <td></td> <td>770</td> <td>780</td> </tr> <tr> <td>SAND, fine to med, grn & wht gtz grains, w/ soft grn & wht clay, common ang to rounded wht chert frags, minor blk friable clay frags</td> <td>whitish-grn</td> <td></td> <td>780</td> <td>820</td> </tr> <tr> <td>SAND, fine to coarse, mostly med, ball-bearing shaped to angular frags of very fine, whitish consol. sand, minor wht chert, drk clay & shell frags</td> <td>whitish-grn</td> <td></td> <td>820</td> <td>840</td> </tr> <tr> <td>SAND, vry fine to med, mostly fine, well sorted, clean to wht, sugary gtz sand, minor drk clay, shell frags & grn gtz, clay content varies from 10-25%</td> <td>whitish-gry</td> <td></td> <td>840</td> <td>890</td> </tr> <tr> <td>SAND, as above except predom. med sand, w/ common wht, porcelainous chert frags</td> <td>med gry</td> <td></td> <td>890</td> <td>950</td> </tr> <tr> <td>SAND, as above except predom. fine sand & > clay content (~30%)</td> <td>med gry</td> <td></td> <td>950</td> <td>960</td> </tr> <tr> <td>SAND, fine to coarse, mostly clean to wht, rounded gtz, minor grn gtz, minor firm blk clay frags (clay < 10%)</td> <td>med gry</td> <td></td> <td>960</td> <td>1010</td> </tr> </tbody> </table>					Formation Log	Bulk Color	Hardness	From	To	CLAY, sandy (25%), soft, silty, minor chert frags	med grn		770	780	SAND, fine to med, grn & wht gtz grains, w/ soft grn & wht clay, common ang to rounded wht chert frags, minor blk friable clay frags	whitish-grn		780	820	SAND, fine to coarse, mostly med, ball-bearing shaped to angular frags of very fine, whitish consol. sand, minor wht chert, drk clay & shell frags	whitish-grn		820	840	SAND, vry fine to med, mostly fine, well sorted, clean to wht, sugary gtz sand, minor drk clay, shell frags & grn gtz, clay content varies from 10-25%	whitish-gry		840	890	SAND, as above except predom. med sand, w/ common wht, porcelainous chert frags	med gry		890	950	SAND, as above except predom. fine sand & > clay content (~30%)	med gry		950	960	SAND, fine to coarse, mostly clean to wht, rounded gtz, minor grn gtz, minor firm blk clay frags (clay < 10%)	med gry		960	1010	Screen type _____ or open hole from _____ ft to _____ ft Manufacturer _____ Dia. _____ Material _____ Length _____ Fittings _____ Set between _____ ft and _____ ft Slot _____ _____ ft and _____ ft Slot _____ _____ ft and _____ ft Slot _____ Method of installation _____ Filter Pack Source _____ Gradation _____ Method of installation _____ Composition _____ Volume used _____ Depth to top of f.p. _____ Grout Used? <input type="checkbox"/> Yes <input type="checkbox"/> No Volume used _____ <input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> _____ Method of installation _____ Depth: from _____ ft to _____ ft from _____ ft to _____ ft				
Formation Log	Bulk Color	Hardness	From	To																																													
CLAY, sandy (25%), soft, silty, minor chert frags	med grn		770	780																																													
SAND, fine to med, grn & wht gtz grains, w/ soft grn & wht clay, common ang to rounded wht chert frags, minor blk friable clay frags	whitish-grn		780	820																																													
SAND, fine to coarse, mostly med, ball-bearing shaped to angular frags of very fine, whitish consol. sand, minor wht chert, drk clay & shell frags	whitish-grn		820	840																																													
SAND, vry fine to med, mostly fine, well sorted, clean to wht, sugary gtz sand, minor drk clay, shell frags & grn gtz, clay content varies from 10-25%	whitish-gry		840	890																																													
SAND, as above except predom. med sand, w/ common wht, porcelainous chert frags	med gry		890	950																																													
SAND, as above except predom. fine sand & > clay content (~30%)	med gry		950	960																																													
SAND, fine to coarse, mostly clean to wht, rounded gtz, minor grn gtz, minor firm blk clay frags (clay < 10%)	med gry		960	1010																																													
					Development Method _____ Duration _____ Dates _____ Sand content after _____ hrs Chemicals used _____																																												
					Static Water Level _____ ft <input type="checkbox"/> below <input type="checkbox"/> above grade Date measured _____																																												
					Pumping Water Level _____ ft <input type="checkbox"/> below <input type="checkbox"/> above grade Date _____ After _____ hrs pumping at _____ gpm																																												
					Specific Capacity _____ gpm/ft of drawdown at _____ hours Date _____																																												
					Pump Date installed _____ Type _____ Manufacturer _____ Model No. _____ H.P. _____ Volts _____ Capacity _____ Depth of pump intake setting _____ No. of stages _____ <input type="checkbox"/> Oil <input type="checkbox"/> Water lubrication. Power source _____ Material of drop pipe _____ bowls shafting _____ impellers _____ Bowl dia. _____ Column pipe dia. _____ Length _____ Modifications _____																																												
					Well Head Completion <input type="checkbox"/> Pitless adaptor <input type="checkbox"/> Basement offset Distance above grade _____																																												
					Nearest Sources of Possible Contamination _____ ft Direction _____ Type _____ Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No																																												
					Geophysical Logs Run _____																																												
Contractor Name and Address blk clay frags (clay < 10%)					Water Quality Sample taken? <input type="checkbox"/> Yes <input type="checkbox"/> No Where analyzed _____																																												
Name of Driller _____ State License Number _____					Date well completed _____																																												

MONTEREY PENINSULA WATER MANAGEMENT DISTRICT

MPWMD # FO-09

S/S

WELL AND PUMP DATA

Location of Well					Property owner's name and address																								
County	Township Number	Range Number	Section No.	Fraction																									
Township	N or S	E or W																											
Street Address and City or Distance and Direction from Road Intersections																													
Show exact location of well in section grid with an 'x'					Sketch map of well location																								
					Well depth _____ Datum point from which all measurements are taken _____																								
Addition Name _____ Block Number _____ Lot Number _____					Method of Drilling <input type="checkbox"/> Cable tool <input type="checkbox"/> Hollow rod <input type="checkbox"/> Driven <input type="checkbox"/> Dug <input type="checkbox"/> Direct rotary <input type="checkbox"/> Air rotary <input type="checkbox"/> Bucket auger <input type="checkbox"/> Reverse rotary <input type="checkbox"/> Jetted <input type="checkbox"/> Flight auger																								
Remarks, Elevation, Source of Data, etc.					Use <input type="checkbox"/> Domestic <input type="checkbox"/> Public supply <input type="checkbox"/> Industrial <input type="checkbox"/> _____ <input type="checkbox"/> Irrigation <input type="checkbox"/> Municipal <input type="checkbox"/> Commercial <input type="checkbox"/> Test Well <input type="checkbox"/> Heating or cooling <input type="checkbox"/> Monitoring																								
Borehole data					Casing Type																								
<table border="1"> <thead> <tr> <th>Formation Log</th> <th>Bulk Color</th> <th>Hardness</th> <th>From</th> <th>To</th> </tr> </thead> <tbody> <tr> <td>SAND, fine to coarse, most grains rounded, clear to whitish gtz, clayey (~25%), minor wht to blk, rounded to subangular chert</td> <td>med grnsh-gry</td> <td></td> <td>1010</td> <td>1030</td> </tr> <tr> <td>SAND, fine to coarse, most grains clear to whitish gtz, common grn grains, well sorted / rounded, clay content < 10%, minor vry fine to fine blk sand, vry minor shell frags</td> <td>Med gry</td> <td></td> <td>1030</td> <td>1110</td> </tr> <tr> <td>Stop drilling @ 1110' with last joint of drill pipe</td> <td>Hole</td> <td>TD =</td> <td></td> <td>1110</td> </tr> </tbody> </table>					Formation Log	Bulk Color	Hardness	From	To	SAND, fine to coarse, most grains rounded, clear to whitish gtz, clayey (~25%), minor wht to blk, rounded to subangular chert	med grnsh-gry		1010	1030	SAND, fine to coarse, most grains clear to whitish gtz, common grn grains, well sorted / rounded, clay content < 10%, minor vry fine to fine blk sand, vry minor shell frags	Med gry		1030	1110	Stop drilling @ 1110' with last joint of drill pipe	Hole	TD =		1110	<input type="checkbox"/> Steel <input type="checkbox"/> Threaded Height above/below surface _____ <input type="checkbox"/> Galv. <input type="checkbox"/> Welded Drive shoe? Yes _____ No _____ <input type="checkbox"/> PVC <input type="checkbox"/> Solvent welded Hole diameter _____ <input type="checkbox"/> SS				
Formation Log	Bulk Color	Hardness	From	To																									
SAND, fine to coarse, most grains rounded, clear to whitish gtz, clayey (~25%), minor wht to blk, rounded to subangular chert	med grnsh-gry		1010	1030																									
SAND, fine to coarse, most grains clear to whitish gtz, common grn grains, well sorted / rounded, clay content < 10%, minor vry fine to fine blk sand, vry minor shell frags	Med gry		1030	1110																									
Stop drilling @ 1110' with last joint of drill pipe	Hole	TD =		1110																									
					Intake Portion of Well																								
					Screen type _____ or open hole from _____ ft to _____ ft Manufacturer _____ Material _____ Dia. _____ Fittings _____ Length _____ Set between _____ ft and _____ ft Slot _____ _____ ft and _____ ft Slot _____ _____ ft and _____ ft Slot _____																								
					Method of installation _____																								
					Filter Pack																								
					Source _____ Gradation _____ Method of installation _____ Composition _____ Volume used _____ Depth to top of f.p. _____																								
					Grout																								
					Used? <input type="checkbox"/> Yes <input type="checkbox"/> No Volume used _____ <input type="checkbox"/> Neat Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> _____ Method of installation _____ Depth: from _____ ft to _____ ft from _____ ft to _____ ft																								
					Development																								
					Method _____ Duration _____ Dates _____ Sand content after _____ hrs Chemicals used _____																								
					Static Water Level																								
					_____ ft <input type="checkbox"/> below <input type="checkbox"/> above grade Date measured _____																								
					Pumping Water Level																								
					_____ ft <input type="checkbox"/> below <input type="checkbox"/> above grade Date _____ After _____ hrs pumping at _____ gpm																								
					Specific Capacity																								
					_____ gpm/ft of drawdown at _____ hours Date _____																								
					Pump																								
					Date installed _____ Type _____ Manufacturer _____ Model No. _____ H.P. _____ Volts _____ Capacity _____ Depth of pump intake setting _____ No. of stages _____ <input type="checkbox"/> Oil <input type="checkbox"/> Water lubrication. Power source _____ Material of drop pipe _____, bowls _____ shalling _____, impellers _____, Bowl dia. _____ Column pipe dia. _____ Length _____ Modifications _____																								
					Well Head Completion																								
					<input type="checkbox"/> Pitless adaptor <input type="checkbox"/> Basement offset Distance above grade _____																								
					Nearest Sources of Possible Contamination																								
					_____ ft Direction _____ Type _____ Well disinfected upon completion? <input type="checkbox"/> Yes <input type="checkbox"/> No																								
					Geophysical Logs Run																								
Contractor Name and Address					Water Quality																								
Name of Driller _____ State License Number _____					Sample taken? <input type="checkbox"/> Yes <input type="checkbox"/> No Where analyzed _____ Date well completed _____																								



APPENDIX B

Summary of Required Contractor Submittals

Seaside Groundwater Basin Watermaster
Replacement Monitoring Well Fort Ord 9 Shallow

TECHNICAL
SPECIFICATIONS

Submittal	Specifications Sections	Due
Section 2 - Monitoring Well Construction and Development		
Applicable permits	2.2	Prior to mobilization
Description of methods, materials and equipment used to install surface casing, if surface casing is used		Prior to mobilization
Description of the drilling and fluid system to be used	2.3	Prior to use
Daily progress logs		Daily during drilling
Formation samples every 10-feet		As collected
The name and qualifications of the firm proposed for completing geophysical surveys	2.4	Prior to use
Copies of the geophysical logs		Within 12-hours of completion
The name and qualifications of the firm proposed for completing caliper survey	2.6	Prior to use
Copies of the caliper logs		Within 12-hours of completion
Cut sheet, material data sheet, or equivalent to describe the well casing and screen manufacturer	2.7	Prior to use
Manufactured, type and material of centralizer to be used		Prior to use
A product description and sieve analysis of the filter pack filter materials to be delivered to the site	2.8	Prior to use
Type and content of proposed sealing material	2.9	Prior to use
Cement weight tickets		Upon arrival to site
Well Development data field logs	2.10	Daily during development
The name and qualifications of the firm proposed for completing video survey	2.11	Prior to use
Copies of the video survey		Within 48-hours of completion
Manufacturer and model of well vault	2.12	Prior to use
State of California Well Completion Report	2.13	Within 30 days of completion

ATTACHMENT 2

SEASIDE BASIN WATERMASTER
REQUEST FOR SERVICE

DATE: March 9, 2023 **RFS NO.** 2023-03
(To be filled in by WATERMASTER)

TO: Cameron Tana **FROM:** Robert Jaques
Montgomery & Associates WATERMASTER
PROFESSIONAL

Services Needed and Purpose: Plan and design a replacement groundwater monitoring well for existing Monitoring Well FO-9 Shallow (now destroyed and abandoned). RFS No. 2022-05 only authorized the first two Tasks described in the Scope of Work in Attachment 1. This RFS No. 2023-03 authorizes the subsequent Tasks (3 and 4) which include updated well driller costs.

Completion Date: All work authorized by this RFS shall be completed not later than December 31, 2023, and shall be performed in accordance with the Schedule described in Attachment 1.

Method of Compensation: Time and Materials (As defined in Section V of Agreement.)

Total Price Authorized by this RFS: \$ 258,197.00 (Cost is authorized only when evidenced by signature below.) (See Attachment 1 for Estimated Costs).

Total Price may not be exceeded without prior written authorization by WATERMASTER in accordance with Section V. COMPENSATION.

Requested by: _____ **Date:** _____
WATERMASTER Technical Program Manager

Agreed to by: _____ **Date:** _____
PROFESSIONAL

ATTACHMENT 1

SCOPE OF WORK

RFS No. 2022-05 authorized PROFESSIONAL to perform the work of Tasks 1 and 2 described in the attached Proposal dated August 3, 2022 titled “Scope and Fee for Replacement Monitoring Well FO-9 Shallow.” Only a portion of the hours associated with Task 1 were needed to perform Task 2, and the remaining hours associated with Task 1 will be used to perform Tasks 3 and 4. A copy of the body of the Proposal is attached for reference in Exhibit A. A copy of the well driller’s quote that was included with RFS No. 2022-05 is attached for reference in Exhibit B.

This RFS No. 2023-03 authorizes PROFESSIONAL to perform Tasks 3 and 4. It includes an updated cost quote from the well driller based on the final design of the well, and an updated table for PROFESSIONAL’s costs which supersede the costs for Task 3 in the August 3, 2022 Proposal. The updated well driller’s cost quote is contained in Exhibit C. The updated table of PROFESSIONAL’s costs is contained in Exhibit D.

Differences between the well driller’s quote in Exhibit B, and the updated quote dated 02/01/2023 in Exhibit C are described below:

- Item 2 increased by 10 feet because the well depth was increased by 10 feet.
- Item 5 decreased by 5 feet because the blank casing length was decreased by 5 feet.
- Item 7 decreased by 35 feet because the length of the gravel pack was decreased by 35 feet.
- Item 8 was increased by 45 feet because the length of the sanitary seal was increased by 45 feet.
- Item 9 was changed to air lift well development because for the small diameter of this bore, airlift development is more effective than pumping.
- Item 10 “Test pump install and remove” was deleted and replaced with a new Item “Video well” because no test pump will be required, and it is desirable to have a video log to ensure that the well is constructed as designed and without damage.
- Item 11 “Pump development” was deleted because this will not be needed.
- A new Item 12 was added to provide a concrete pad with a lockable cover to protect the well.
- An item was added titled “Adder, if needed” to install a 60 foot long conductor if this is needed to stabilize the upper portion of the well. It is hoped that the conductor will not be needed, but several wells in the area are constructed with deep conductors. It is not known why some of those wells have deep conductors while others do not. This item is included in the budget for this work, so that if drilling conditions require installing a conductor, budget will available to accommodate that. If a conductor is not needed, this cost will not be incurred.

Certain of the items listed in the Footnotes of the updated quote are standard verbiage in the well driller’s quotes and will not be applicable to this work. These will be revised in the contract between PROFESSIONAL and the well driller. These footnotes are:

- Footnote 4 talks about disposal of cuttings and drill fluids being the customer’s responsibility. However item 11 of the quote covers having the contractor do this.
- Footnote 6 says that the only permit the contractor will get is the Monterey County Health Department’s well permit. However, the specifications will also require the contractor to get the City of Seaside’s encroachment permit to install the well.
- Footnote 7 mentions “test well” destruction, but this project will not require a test well.

EXHIBIT A



**MONTGOMERY
& ASSOCIATES**

Water Resource Consultants

Groundwater experts since 1984

August 3, 2022

Mr. Bob Jaques
Seaside Watermaster Technical Program Manager
83 Via Encanto
Monterey, CA 93940

SUBJECT: SCOPE AND FEE FOR REPLACEMENT MONITORING WELL FO-9 SHALLOW

Dear Mr. Jaques,

Montgomery & Associates (M&A) is pleased to submit this scope, fee, and schedule proposal to the Seaside Groundwater Basin Watermaster (Watermaster) to provide hydrogeological support and construction management services for a replacement monitoring well for FO-9 shallow. The current FO-9 shallow monitoring well is constructed of 2-inch diameter PVC well casing with a screen intake from 610 to 650-feet below ground surface. This proposal assumes a borehole depth of 660-feet below ground surface (bgs), total well depth of 650-feet bgs, and proposes 2.5-inch Schedule 80 PVC well casing and screen. The deeper depth assumed is because the replacement well may not be located at the location of the original FO-9 shallow monitoring well. The actual location of the well will be determined during Task 2. Schedule 80 PVC is proposed to increase the lifespan of the replacement well.

M&A currently anticipates retaining the support of Maggiora Brothers Drilling (Maggiora) of Watsonville, CA, for well installation and development services. The drilling contractor is subject to change based on project requirements and with prior approval from Watermaster. Martin Feeney will additionally be retained to provide hydrogeological review and monitoring well design recommendations based on his history with Watermaster, as requested.

SCOPE OF WORK

The scope of work includes technical specifications, bidding and contract support, construction management, and reporting. M&A proposes the following tasks to complete the project:

- Task 1 – Project Management
- Task 2 – Technical Specifications
- Task 3 – Construction Management
- Task 4 – Reporting

These tasks are described individually below.

Estimated Drilling Costs

Estimated costs for the construction and development of monitoring well FO-9 shallow are included for budgetary purposes. These costs will be revised based on the selection of the well site and the final details of the technical specifications under Task 2. Costs included herein represent good-faith estimates based on current project understanding and/or assumptions, but may be revised to account for adjustments based on site conditions, well construction details and/or logistics, project duration, changes in labor or material rates, and other such factors. The technical specifications prepared under Task 2 will include a detailed bid schedule and timeline which will be used to refine M&A and Maggiora cost estimates. M&A will

provide revised costs for Task 3 and negotiate any required contract changes prior to beginning well construction activities.

Task 1: Project Management

M&A will provide administrative and budgetary management duties throughout the duration of the project; including but not limited to coordination with Watermaster, attendance at project meetings, assistance with site selection, permitting and providing information needed for Watermaster to obtain approvals from the landowner, budget management, and schedule management.

This task assumes a contract completion date of December 31, 2023. Progress reports will be included with invoice submittals.

Task 2: Technical Specifications

M&A will prepare technical specifications for the FO-9 shallow monitoring well to describe well design features, construction logistics, and installation and development procedures. Technical specifications will be used to gain agreement on the well design, construction logistics, and construction approach. Key components of the well design include borehole drilling, borehole geophysics, well installation, well development, and surface completion.

Task 2 includes preparation of draft technical specifications, one round of comments from Watermaster on the draft, and finalization. Draft and final technical specifications will be transmitted electronically. This task includes costs for one visit to the proposed well site with Watermaster and Maggiora to assess access and other site logistics.

M&A will assist the Watermaster with site selection for the well, including assistance in providing the information needed for Watermaster to obtain any necessary permits and approvals from the landowner. Watermaster is ultimately responsible for obtaining necessary permits.

Task 3: Construction Management

M&A will retain Maggiora to complete well installation and development, and will provide construction management during these activities. M&A will observe and document construction activities, including development of a lithologic log and determination of the final well design based on observations during drilling.

ASSUMPTIONS

- M&A can reasonably rely on the accuracy, timeliness, and completeness of information provided by Watermaster.
- M&A is responsible for tracking, cataloging, and approving submittals. M&A will provide Watermaster copies of all approved contractor submittals.
- Fieldwork will generally be conducted during 12-hour workdays on a standard 5-day workweek.
- Equipment rentals and fieldwork consumable purchases may be required. These may include but are not limited to field notebooks, chip trays and other miscellaneous project supplies. Costs for these items are included herein.
- M&A will assist the Watermaster in coordinating property access with the property owner.

- Prior to the start of drilling activities, M&A will coordinate and oversee subsurface utility locating by a Subtronic Corporation or equally qualified subsurface utility locating company. M&A is specifically not responsible for damages to buried utilities not identified by the property owner, Watermaster, Underground Service Alert of Northern California or the private utility locator.
- M&A and Maggiora will pay for and secure the Monterey County well permit.
- Costs for wellhead surveying (latitude, longitude, and elevation), groundwater sampling and well equipping (datalogger, sample pump, etc.) are not included in this proposal. Costs for these services can be provided upon request.

Construction management costs provided herein are estimated based on anticipated durations for each activity. The following durations are assumed for cost estimating purposes, for a total of approximately 24 field days:

- Utility clearance – 1 day
- Mobilization – 2 days
- Borehole drilling – 13 days
- Well installation – 3 days
- Well development – 3 days
- Well completion and demobilization – 2 days

Actual durations are subject to site conditions, drilling progress, weather and other factors not controlled by M&A. As such, actual costs are subject to increase or decrease based on actual durations. Field oversight costs are based on the Scientist 2 hourly rate, but efforts will be made to use the most cost-efficient, responsible staff level where feasible.

Task 4: Reporting

M&A will prepare a Well Installation Report following completion of site activities. The report will include a description of the work completed, description of the methods and procedures used, results and discussion of drilling and testing activities, conclusions and relevant appendices. A draft well installation report will be prepared in Microsoft Word format for Watermaster comment. Final submittal of this report will include one hardcopy and one PDF copy. The hardcopy report will additionally include long-form print outs of downhole logging (geophysical, caliper, alignment, spinner), a copy of the complete video survey in MP4 format (provided on DVD or flash drive), and one set of drill cutting chip trays.

Maggiora will file the Well Installation Report with the appropriate agency(s) including Monterey County Department of Health.

SCHEDULE

M&A assumes Task 2 will be completed by the end of calendar year 2022, provided the contract is executed by mid-October 2022 and that site selection is also completed during this time period. Well construction would occur in 2023 according to driller availability. The Well Installation Report will be completed within approximately 45 days following the completion of field activities.

EXHIBIT B

MAGGIORA BROS. DRILLING, INC.

DRILLING CONTRACTORS - PUMP SALES & SERVICE

CALIFORNIA CONTRACTOR'S LICENSE NO. 249957

Corporate Office
595 Airport Blvd.
Watsonville, CA 95076

Tel: (831) 724-1338
Tel: (800) 728-1480
Fax: (831) 724-3228

Contractor Bid - 08/01/2022

Montgomery & Associates

1970 Broadway, Suite 225

Oakland, Ca 94612

Attn. Bill DeBoer P.G., C.Hg.

Re: Construction of 2.5" Dia. x 660', PVC cased, monitoring well in Seaside, Ca.

The following is Maggiora Bros. Drilling, Inc. proposal:

1	Mobilization, includes permit	LS	1	\$10,000.00	\$10,000.00
2	Drill 10.75" bore hole	LF	660	\$92.00	\$60,720.00
3	E-log	LS	1	\$4,500.00	\$4,500.00
4	Caliper Log	LS	1	\$3,500.00	\$3,500.00
5	2.5" Sch 80 FT Blank Casing F&I	LF	620	\$25.00	\$15,500.00
6	2.5", Sch80 FT .030" screen F&I	LF	40	\$35.00	\$1,400.00
7	F & I Gravel Pack	LF	110	\$56.00	\$6,160.00
8	F & I sanitary seal	LF	550	\$55.00	\$30,250.00
9	Well Development	HR	8	\$500.00	\$4,000.00
10	test pump install & remove	LS	1	\$1,500.00	\$1,500.00
11	Pump development	HR	4	\$395.00	\$1,580.00
12	disposal of fluids & cuttings	LS	1	\$12,000.00	\$12,000.00
13	Standby time	HR	0	\$500.00	\$0.00

Price: includes labor, equipment, material, taxes, & freight: \$151,110.00

1. Customer is to provide access to site and to mark location of well.
2. Drilling Contractor will USA for drilling. We recommend that the customer have a private locator verify utilities at well location if needed.
3. Customer to provide a source of water for drilling at site and provide a level site for the well drilling equipment.
4. ~~Cuttings and drill fluids to remain on site and are the responsibility of the Customer, unless other provisions have been made.~~
5. Temp fencing, sound-walls, traffic control, or other BMP's are not included. These can be provided at an additional cost.
6. Drilling Contractor will provide a drilling permit from the County. All other permits are excluded.
7. Test hole destruction, if required, will be \$75/ft. If drilling slows to < 8' in two hours, drilling converts to hourly at \$550.00

MAGGIORA BROS. DRILLING, INC.

DRILLING CONTRACTORS - PUMP SALES & SERVICE
CALIFORNIA CONTRACTOR'S LICENSE NO. 249957

Page 2

8. Bonding is not included in this proposal, but can be provided on a cost/plus basis.
9. Maggiora Bros. Drilling, Inc. current backlog is such that we may not be able to start the project for 4 to 5 months.
10. Proposal is valid for 30 days.
11. Due to the volatility of material & fuel costs in the current market, Maggiora Bros. Drilling, Inc. reserves the right to adjust pricing based on the actual cost of materials at the time of order.

Maggiora Bros. Drilling, Inc is a Union company; Operating Engineers, Local #3, as well as, a Certified Small Business. (34073)

If you have any questions, feel free to contact us!

Sincerely,

Michael F. Maggiora

EXHIBIT C

MAGGIORA BROS. DRILLING, INC.

DRILLING CONTRACTORS - PUMP SALES & SERVICE
CALIFORNIA CONTRACTOR'S LICENSE NO. 249957

Corporate Office
595 Airport Blvd.
Watsonville, CA 95076

Tel: (831) 724-1338
Tel: (800) 728-1480
Fax: (831) 724-3228

Contractor Bid - 02/01/2023
Montgomery & Associates
1970 Broadway, Suite 225
Oakland, Ca 94612
Attn. Bill DeBoer P.G., C.Hg.

Re: Construction of 2.5" Dia. x 655', PVC cased, monitoring well in Seaside, Ca.

The following is Maggiora Bros. Drilling, Inc. proposal:

1	Mobilization, includes permits	LS	1	\$10,000.00	\$10,000.00
2	Drill 10.75" bore hole	LF	670	\$92.00	\$61,640.00
3	E-log	EA	1	\$4,500.00	\$4,500.00
4	Caliper Log	EA	1	\$3,500.00	\$3,500.00
5	2.5" Sch 80, FT, Blank Casing F&I	LF	615	\$25.00	\$15,375.00
6	2.5", Sch80, FT, .030" screen F&I	LF	40	\$35.00	\$1,400.00
7	F & I Gravel Pack	LF	75	\$56.00	\$4,200.00
8	F & I sanitary seal	LF	595	\$55.00	\$32,725.00
9	Well Development - Airlift	HR	8	\$550.00	\$4,400.00
10	Video well	EA	1	\$3,500.00	\$3,500.00
11	Disposal of fluids & cuttings	LS	1	\$12,000.00	\$12,000.00
12	Install flush box and 4' x 4' pad	EA	1	\$1,950.00	\$1,950.00
13	Standby time	HR	0	\$550.00	\$0.00

Price: includes labor, equipment, material, taxes, & freight: \$155,190.00
Adder, if needed: 12", .250 wall x 60', MS Conductor: \$12,480.00

1. Customer is to provide access to site and to mark location of well.
2. Drilling Contractor will USA for drilling. We recommend that the customer have a private locator verify utilities at well location if needed.
3. Customer to provide a source of water for drilling at site and provide a level site for the well drilling equipment.
4. Cuttings and drill fluids to remain on site and are the responsibility of the Customer, unless other provisions have been made.
5. Temp fencing, sound-walls, traffic control, or other BMP's are not included. These can be provided at an additional cost.
6. Drilling Contractor will provide a drilling permit from the County. All other permits are excluded.
7. Test hole destruction, if required, will be \$75/ft. If drilling slows to < 8' in two hours, drilling converts to hourly at \$550.00

MAGGIORA BROS. DRILLING, INC.

DRILLING CONTRACTORS - PUMP SALES & SERVICE
CALIFORNIA CONTRACTOR'S LICENSE NO. 249957

Page 2

8. Bonding is not included in this proposal, but can be provided on a cost/plus basis.
9. Maggiora Bros. Drilling, Inc. current backlog is such that we may not be able to start the project for 4 to 5 months.
10. Proposal is valid for 30 days.
11. Due to the volatility of material & fuel costs in the current market, Maggiora Bros. Drilling, Inc. reserves the right to adjust pricing based on the actual cost of materials at the time of order.

Maggiora Bros. Drilling, Inc is a Union company; Operating Engineers, Local #3, as well as, a Certified Small Business. (34073)

If you have any questions, feel free to contact us!

Sincerely,

Michael F. Maggiora

EXHIBIT D

	\$/hr	Bill DeBoer	Field/Staff Hydrogeologi	Editing	Labor Costs	Expenses	Subcontractors			M&A	TOTAL
		Scientist 6	Scientist 2	Technical Editor			Martin Feeney	Maggiora Bros.	Subtronic Locating	10% Markup	
1 Project Management											
Progress tracking, coordination, meeting and		32	-	-	\$ 7,296	\$ -	-	-	-	-	\$ 7,296
Task 1 Subtotals		32	0	0	\$ 7,296	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 7,296
2 Technical Specifications											
Site Visit		14	10	-	\$ 4,572	\$ 300	-	-	-	\$ 30	\$ 4,902
Draft Technical Specifications		18	32	4	\$ 8,840	\$ -	\$ 1,000	-	-	\$ 100	\$ 9,940
Final Technical Specifications		-	-	-	\$ -	\$ -	\$ 500	-	-	\$ 50	\$ 550
Construction Management cost revisions		4	-	-	\$ 912	\$ -	-	-	-	\$ -	\$ 912
Task 2 Subtotals		36	42	4	\$ 14,324	\$ 300	\$ 1,500	\$ -	\$ -	\$ 180	\$ 16,304
3 Construction Management											
Subsurface Utility Locating		2	10	-	\$ 1,836	\$ 200	-	-	\$ 1,600	\$ 180	\$ 3,816
Mobilization, Drilling, Well Installation*		12	216	-	\$ 32,544	\$ 4,500	\$ 500	\$ 145,820	-	\$ 15,082	\$ 198,446
Well Development		2	36	-	\$ 5,424	\$ 750	-	\$ 7,900	-	\$ 865	\$ 14,939
Wellhead Completion, Demobilization, Waste		2	24	-	\$ 3,768	\$ 500	-	\$ 13,950	-	\$ 1,445	\$ 19,663
SUBTOTAL COST					\$ 43,572	\$ 5,950	\$ 500	\$ 167,670	\$ 1,600	\$ 17,572	\$ 236,864
Contingency (5%)**					\$ 2,179	\$ 298	\$ 25	\$ 8,384	\$ 80	\$ 879	\$ 11,843
Task 3 Subtotals		18	286	0	\$ 45,751	\$ 6,248	\$ 525	\$ 176,054	\$ 1,680	\$ 18,451	\$ 248,707
4 Reporting											
Draft Well Installation Report		16	24	2	\$ 7,120	\$ -	\$ 500	-	-	\$ 50	\$ 7,670
Final Well Installation Report		4	6	1	\$ 1,820	\$ -	-	-	-	\$ -	\$ 1,820
Task 4 Subtotals		20	30	3	\$ 8,940	\$ -	\$ 500	\$ -	\$ -	\$ 50	\$ 9,490
TOTAL HOURS		106	358	7							
TOTAL COST		\$ 24,168	\$ 49,404	\$ 560	\$ 76,311	\$ 6,548	\$ 2,525	\$ 176,054	\$ 1,680	\$ 18,681	\$ 281,797
* Includes addition of 12" conductor, if needed.											
** To provide for uncertainties in field conditions and cost changes mentioned in well driller's quote Footnote 11.											

**SEASIDE BASIN WATER MASTER
TECHNICAL ADVISORY COMMITTEE**

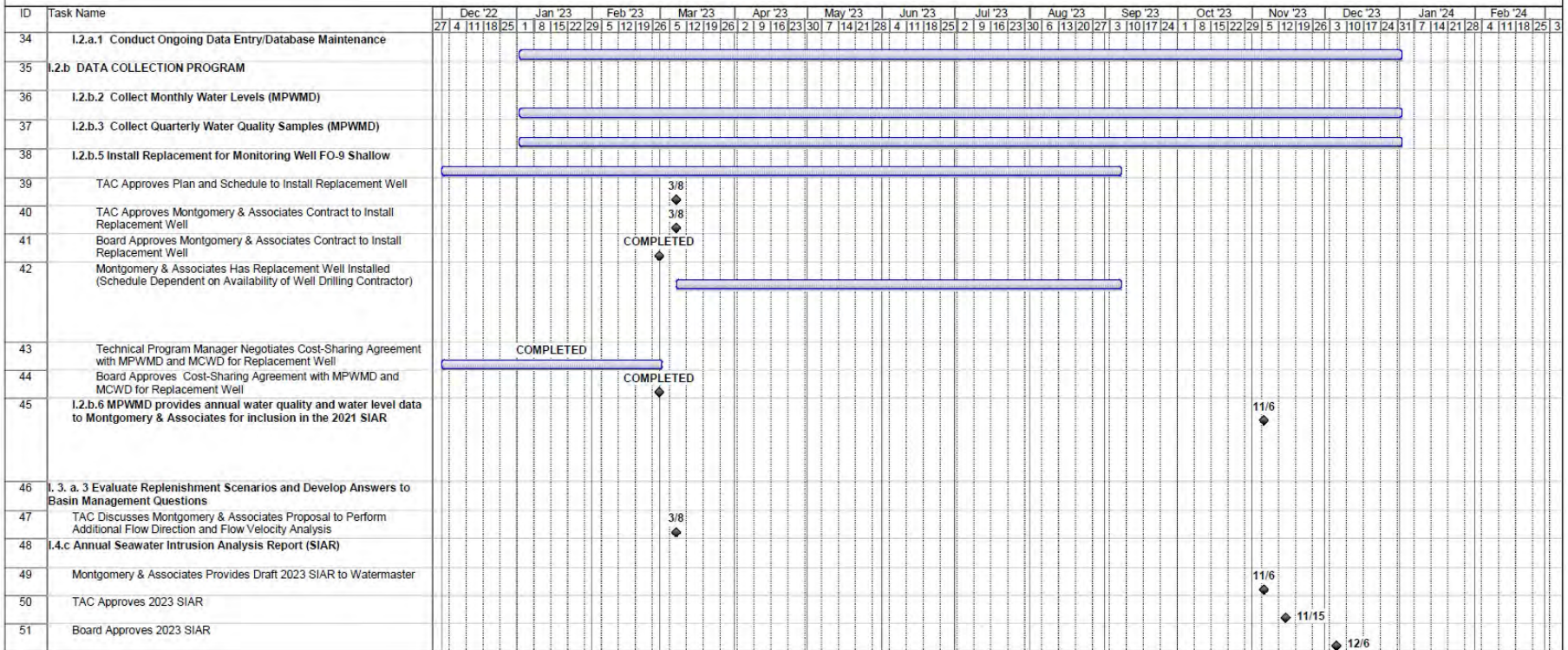
*** * * AGENDA TRANSMITTAL FORM * * ***

MEETING DATE:	March 8, 2023
AGENDA ITEM:	5
AGENDA TITLE:	Schedule
PREPARED BY:	Robert Jaques, Technical Program Manager
SUMMARY:	
<p>As a regular part of each monthly TAC meeting, I will provide the TAC with an updated Schedule of the activities being performed by the Watermaster, its consultants, and the public entity (MPWMD) which are performing certain portions of the work.</p> <p>Attached is the updated schedule for 2023.</p> <p>As there is no business that the TAC needs to deal with in April, the next TAC meeting is scheduled to be held on Wednesday May 10, 2023.</p>	
ATTACHMENTS:	Schedule of Work Activities for FY 2023
RECOMMENDED ACTION:	Provide Input to Technical Program Manager Regarding Any Corrections or Additions to the Schedules

Seaside Basin Watermaster 2023 Monitoring and Management Program Work Schedule

ID	Task Name	Dec '22	Jan '23	Feb '23	Mar '23	Apr '23	May '23	Jun '23	Jul '23	Aug '23	Sep '23	Oct '23	Nov '23	Dec '23	Jan '24	Feb '24
1	MANAGEMENT & ADMINISTRATION															
2	Replenishment Assessment Unit Costs for Water Year 2023															
3	B&F Committee Develops Replenishment Assessment Unit Cost for 2023 Water Year															
4	If Requested, Technical Program Manager Provides Assistance to B&F Committee in Development of 2023 Water Year Replenishment Assessment Unit Cost															
5	Board Adopts and Declares 2023 Water Year Replenishment Assessment Unit Cost															
6	Replenishment Assessments for Water Year 2023															
7	Watermaster Prepares Replenishment Assessments for Water Year 2023															
8	Watermaster Board Approves Replenishment Assessments for Water Year 2023 (At December Meeting)															
9	Watermaster Levies Replenishment Assessment for 2023															
10	2023 Annual Report															
11	Prepare Preliminary Draft 2023 Annual Report															
12	TAC Provides Input on Preliminary Draft 2023 Annual Report															
13	Prepare Draft 2023 Annual Report (Incorporating TAC Input)															
14	Board Provides Input on Draft 2023 Annual Report (At December Board Meeting)															
15	Prepare Final 2023 Annual Report (Incorporating Board Input)															
16	Watermaster Submits Final 2023 Annual Report to Judge															
17	MONITORING AND MANAGEMENT PROGRAM															
18	Monitoring & Management Program (M&MP) Plan and Budgets for 2024															
19	Discussion of Potential Scope of Work for 2024 M&MP															
20	Prepare 2024 M&MP															
21	TAC approves 2024 M&MP															
22	Prepare 2024 O&M and Capital Budgets															
23	TAC approves 2024 O&M and Capital Budgets															
24	Budget & Finance Committee Approves 2024 M&MP and 2024 O&M and Capital Budgets															
25	Board approves 2024 M&MP AND 2024 O&M and Capital Budgets															
26	M.1 PROGRAM ADMINISTRATION															
27	Prepare Initial Consultant Contracts for 2024															
28	TAC Approval of Initial Consultant Contracts for 2024															
29	Board Approval of Initial Consultant Contracts for 2024															
30	M.1.g – Sustainable Groundwater Management Act Reporting Requireme															
31	Montgomery & Associates Prepares Draft Groundwater Storage Analysis															
32	Submit SGMA Documentation to DWR															
33	I.2.a DATABASE MANAGEMENT															

Seaside Basin Watermaster 2023 Monitoring and Management Program Work Schedule



**SEASIDE BASIN WATER MASTER
TECHNICAL ADVISORY COMMITTEE**

*** * * AGENDA TRANSMITTAL FORM * * ***

MEETING DATE:	March 8, 2023
AGENDA ITEM:	6
AGENDA TITLE:	Other Business
PREPARED BY:	Robert Jaques, Technical Program Manager
SUMMARY:	<p>The “Other Business” agenda item is intended to provide an opportunity for TAC members or others present at the meeting to discuss items not on the agenda that may be of interest to the TAC.</p>
ATTACHMENTS:	None
RECOMMENDED ACTION:	None required – information only