

MEETING NOTICE AND AGENDA

TECHNICAL ADVISORY COMMITTEE OF THE SEASIDE BASIN WATER MASTER

DATE: Wednesday, January 13, 2010

TIME: 1:30 p.m.

**LOCATION: City of Seaside City Hall – Portable Buildings Conference Room
440 Harcourt Avenue
Seaside, CA 93955**

If you wish to participate in the meeting from a remote location, please call in on the Watermaster Conference Line by dialing (877)810-9415. Use the Access Code of 4560043.

OFFICERS

Chairperson: Diana Ingersoll, City of Seaside

1st Vice-Chairperson: Eric Sabolsice, California American Water Company

2nd Vice-Chairperson: Rob Johnson, 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 County Water Resources Agency
Monterey Peninsula Water Management District		Public Member (John Fischer)

Agenda Item

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The next regular meeting will be held on Wednesday, February 10, 2010 at 1:30 p.m. at the City of Seaside City Hall – Portable Buildings Conference Room

In compliance with the Americans with Disabilities Act, the City of Seaside does not discriminate against persons with disabilities. Both Seaside City Hall and the Portable Office Buildings Conference Room are accessible facilities. If you wish to attend this meeting and you will require assistance in order to participate, please contact the Office of the City Clerk (831) 899-6707 at least three days in advance of the event to make necessary arrangements. If you need assistance in speaking on a specific item noted on the agenda, please inform staff as to which item you would like to comment on and arrangements will be made for you to participate. Portable microphones and assisted listening devices are available upon request.

**SEASIDE BASIN WATER MASTER
TECHNICAL ADVISORY COMMITTEE**

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

MEETING DATE:	January 13, 2010
AGENDA ITEM:	1.A
AGENDA TITLE:	Approve Minutes from November 19, 2009
PREPARED BY:	Robert Jaques, Technical Program Manager
SUMMARY: Draft Minutes from this meeting were emailed to all TAC members. Proposed changes have been included in the attached version.	
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 19, 2009**

Attendees: **TAC Members**
City of Seaside – Rick Riedl
California American Water – Tom Bunosky
City of Monterey – Norman Green
Laguna Seca Property Owners – Bob Costa
MPWMD – Joe Oliver
Public Member – John Fischer
MCWRA – No Representative
City of Del Rey Oaks – No Representative
City of Sand City – No Representative
Coastal Subarea Landowners – No Representative

Watermaster
Technical Program Manager - Robert Jaques

Consultants
HydroMetrics LLC - Derrick Williams (by telephone)
Martin Feeney Hydrogeologist - Martin Feeney

Others:
MPWMD – Jonathan Lear
MCWD – Brian True

The meeting was called to order at 1:42 p.m. (Start of meeting delayed waiting for members to arrive).

Note: Since Ms. Ingersoll, Mr. Sabolsice, nor Mr. Johnson were present (Chair and 1st and 2nd Vice-Chairs respectively), Mr. Bunosky chaired the meeting.

1. Administrative Matters:

A. Approve Minutes from October 14, 2009 Regular Meeting

On a motion by Mr. Oliver, second by Mr. Fischer, the minutes were unanimously approved as presented.

B. Approve Minutes from October 28, 2009 Special Meeting

Mr. Riedl commented that for all five of the Scenarios discussed under item 2.A on the October 28, 2009 TAC Agenda, he felt the predicted groundwater levels were unrealistically low, because the Scenarios all include pumping from wells that have not pumped for many years. He went on to recommend that new assumptions be made in this regard and that some of the Scenarios be re-run in 2010.

Mr. Riedl also questioned whether Scenario 5 had been characterized as being “not cost-effective” during Mr. Williams’ presentation at the October 28, 2009 TAC meeting. Mr. Williams responded confirming that he had made that statement, and that it was included in one of the PowerPoint presentation slides he had used.

Mr. Fischer asked Mr. Williams if he had heard from Philip Williams & Associates (PWA) recently. Mr. Williams said he had not. Mr. Fischer commented that PWA is interested in the Groundwater Model, and that they may be contacting Mr. Williams with regard to the issues of sea level rising and coastal erosion impacts on southern Monterey Bay, as these issues may pertain to the Model.

Following these discussion, on a motion by Mr. Oliver, second by Mr. Fischer, the minutes were unanimously approved as presented.

C. Consider Request from HydroMetrics for Additional Funds for Performance of Work on the Groundwater Model

Mr. Jaques summarized the agenda packet material on this item. Mr. Riedl asked Mr. Williams to what portions of the work Tasks 4, 5, and 6 of his contract with the Watermaster pertained. Mr. Williams responded that these tasks pertained to the Regional Groundwater Model, not to the Protective Water Level Model.

Mr. Williams explained that HydroMetrics had needed to do more work on iterations of pumping, geology, and other data than he had anticipated. He explained that this situation was different than the earlier \$7,500 additional funding request earlier in the year to obtain data from MCWRA's consultants. He said that in this instance it had been difficult to predict a possible overrun. Mr. Williams noted that he had asked for a transfer of money from HydroMetrics' general hydrogeologic consulting RFS to the Groundwater Modeling RFS, but acknowledged that this would require Board action to amend these RFSs, as they are two separate RFSs.

Mr. Bunosky asked Mr. Williams how many iterations he had anticipated when he prepared his cost proposal for the contract. Mr. Williams said he felt only a few iterations would be needed, but more were necessary than HydroMetrics had anticipated.

Mr. Riedl asked what type of data had been found to be problematic. Mr. Williams responded that the Paso Robles formation bottom elevation, the top of the Monterey Shale formation, and the extent of the Aromas Sands were some of the problematic data which required additional iterations. Mr. Williams went on to say that much interpolation of data was required, and some of the data sources were found to be in conflict, and these needed to be resolved. Mr. Riedl asked if there had been a problem with sewer and septic leakage recharge quantities. Mr. Williams responded that this had not been a problem, and that HydroMetrics had adequately budgeted for that part of the work.

Mr. Oliver asked Mr. Williams if he could break-out the overrun costs. Mr. Williams said he probably could try to pull this together, but that he would not know until he examined the time sheets. Mr. Oliver said he knew he had had numerous conversations with Ms. King of HydroMetrics on various data sets from various sources.

Mr. Bunosky asked when the cost overrun had occurred. Mr. Williams responded that the overrun had probably occurred in the August-September, 2009 time frame. He commented that the Tasks in the contract are relatively broad, and HydroMetrics felt they were spending more time on some of the work, but also thought they still would be able to come in on time and within the authorized budget. He said they did not track the costs closely enough to identify the overrun until it already occurred.

Mr. Riedl commented that the cost overrun had occurred before the Watermaster was notified, so there was no way for the Watermaster to take actions to avoid or reduce the overrun.

Mr. Bunosky asked Mr. Williams when the existence of the cost overrun had been communicated to the TAC. Mr. Williams said he did not see any cost overrun discussion included in the TAC meeting minutes. He then commented that he may only have discussed this issue with Mr. Oliver in separate conversations outside the TAC meetings, rather than at the TAC meetings themselves.

Mr. Green asked if all the work had been completed. Mr. Jaques responded that the final billing from HydroMetrics has not yet come in, but as of the last billing that the Watermaster had received, the cost authorization limit had not been reached. Mr. Jaques commented that he understood that all of the work of his contract had been completed with the exception of printing the required number of hard copies of the Groundwater Modeling Report itself.

Mr. Fischer asked Mr. Williams if any information from Mr. Feeney with regard to changes in the understanding of the Basin hydrology resulting from the drilling information obtained from the BLM monitoring well would add to the understanding of the potential need for additional work that Mr. Williams indicated HydroMetrics had had to perform. Mr. Feeney responded that the information obtained from the recent BLM monitoring well drilling had not been obtained until after the work of the Groundwater Modeling Report had largely been completed, and thus the new information should not have contributed to the cost overrun.

A motion was made by Mr. Riedl, second by Mr. Fischer, to deny the request due to lack of support and the lateness of the request being made. During discussion of the motion Mr. Fischer commented that there was no way to justify the increase since it was not supported by the meeting minutes as having been communicated earlier to TAC members. Mr. Green asked if it would be feasible to go "halfway" on the request.

Mr. Fischer asked Mr. Bunosky, since Seaside is a payer of Watermaster assessments and recommended denial of the request, how did CAW feel as another payer of Watermaster assessments. Mr. Bunosky said he did not feel the request was well-documented and was not submitted in time to allow the TAC and the Watermaster to mitigate the overrun. Mr. Bunosky said the request needed to be much better documented in order to be considered further, and that his position was that CAW concurred with Seaside in recommending denial of the request.

A vote on Mr. Riedl's motion was made. Mr. Oliver voted no, commenting that he would like to see the break-out of the cost overrun. Mr. Costa said he would like to abstain as he had not been following this matter closely in the past. All other TAC members voted yes, and the motion passed.

On a related matter Mr. Fischer commented that an abstention is the same as a "yes" vote. Mr. Jaques said he had never heard of that being the case in public meetings. Following some discussion there was consensus to check Robert's Rules on this matter. The Watermaster will do that and report its findings to the TAC.

2. Progress Reports

A. MPWMD

Mr. Oliver summarized the agenda packet material on this item. Mr. Jaques urged TAC members to provide input to him, Mr. Oliver and Ms. Dadiw regarding any suggested items for improvement in the Watermaster's Database.

B. HydroMetrics

Mr. Williams said that the work of his current contracts was substantially complete, and that he only needed to produce the hard copies of the Groundwater Model Report in December to complete all currently contracted work. Following brief discussion a deadline of November 30, 2009 was set for receipt of comments on the Groundwater Model Report. That deadline should enable Mr. Williams to produce the hard copies of the Groundwater Model Report on or about December 9, 2009, so Mr. Jaques can distribute them at the TAC meeting to be held on that date.

C. Martin Feeney

Mr. Feeney summarized the agenda packet material for this item. He said that dataloggers were installed today on the BLM monitoring well. He commented that the aquifers were found to be deeper at the BLM well site than had previously been thought. He said ground water levels were about 10 feet below mean sea level in the Santa Margarita aquifer, but were about 12 feet above mean sea level in this Paso Robles aquifer. Prior reports had indicated that the Paso Robles water level would be about 50 feet above mean sea level, but that previous reports had not made any prediction with regard to water levels in the Santa Margarita aquifer. He said that these groundwater elevation values were subject refinement by field surveying of the well.

Mr. Feeney said that the groundwater model predicted a groundwater elevation of about 8 feet below mean sea level in the Santa Margarita aquifer at this location, thus indicating that the Model was quite accurate at this location. Mr. Feeney commented that the former Camp Huffman well would now be completely dry, and that when it was operational it may have been in a perched aquifer, in an area which has since been dewatered, because the previously reported groundwater elevation at this location is no longer accurate. He said that the data obtained from the BLM well will be used along with other data to attempt to explain these findings. He said it will be interesting to see the impacts on the BLM monitoring well of CAW's well pumping from its production wells when the CAW pumping ceases in the winter.

Mr. Feeney said that he will prepare his report on the BLM well when all the data is in, probably by mid-December.

Mr. Feeney briefly discussed the geophysical log shown on page 27 of the agenda packet. He noted that the Paso Robles formation ranges from 300 to 700 feet below ground level, and the Santa Margarita formation ranges from 900 to 1,350 feet below ground level. He noted that a 200-foot concrete seal had been installed between the two aquifers in the BLM monitoring well borehole. He said there was a very good clay seal layer between the two aquifers in this location, so using the nested well configuration should be very satisfactory. He will try to provide his report to Mr. Jaques in time to be handed out at the December 9th 2009 TAC meeting.

Mr. Bunosky asked Mr. Feeney: If the driller had not stopped at the depth they did and subsequently damaged their drilling equipment while trying to go deeper, who would have been responsible for the cost consequences of that action. Mr. Feeney said that if he directed the driller to continue drilling in spite of the driller's request to stop, it would have been the Watermaster's cost responsibility. Mr. Jaques clarified that it would not have been the Watermaster's responsibility unless Mr. Feeney had first notified the Watermaster of the situation, made a recommendation to cease drilling at that depth, and the Watermaster had directed Mr. Feeney to have the driller proceed in spite of that. Mr. Feeney concurred with this.

Mr. Riedl asked if the Monterey Shale elevation could be accurately predicted, even though the driller stopped short of hitting it. Mr. Feeney said yes, because the strata at this site matches well to other drill samples where the Monterey Shale was encountered. Several other questions were asked to Mr. Feeney and he responded to them.

Mr. Bunosky asked Mr. Oliver if the MPWMD Fitch School monitoring well would be included in the Watermaster's Database. Mr. Oliver said he has already added it to the Watermaster's database, so that information would be available for use in the Watermaster's analyses.

3. Proposed Initial Consultant Contracts for FY 2010

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

Mr. Oliver summarized his recommended changes to Attachment No. 3 to MPWMD RFS 2010-01. He reported that there would be some cost savings from the sample taking improvements which MPWMD has made to the monitoring well sampling methodology, and also applying this new approach to the

Sentinel Wells along the coast. Mr. Bunosky complemented Mr. Oliver for his efforts to keep costs down. Mr. Riedl asked Mr. Oliver why there are labor costs included in the Supplies and Materials component of Attachment 3. Mr. Jaques explained that this is for the Database consultant's labor, not MPWMD's labor.

Mr. Williams reported that HydroMetrics RFS No. 2010-01 will not provide sufficient funds to cover hydrogeologic consulting services for the full year, but that it will be sufficient to cover a portion of that work. Additional funds can be included in the other RFSs that will be issued to HydroMetrics for other work they will be doing in 2010.

Mr. Riedl asked if additional well sampling was included and Mr. Oliver responded that well SBWM-5 (the new BLM monitoring well) has been included, and that the ASR monitoring well data is paid for by others (MPWMD), so it goes into the Watermaster's Database at no additional cost to the Watermaster.

Mr. Riedl asked if some of the sampling could now be reduced, since sampling has been conducted for several years. Mr. Oliver and Mr. Feeney recommended against reducing the sampling program, because they felt the current sampling program is producing data that could be valuable under certain conditions.

On a motion by Mr. Fischer, second by Mr. Riedl, all four of the proposed consultant contracts were unanimously approved as presented, with the changes to the cost breakdown mentioned above for MPWMD RFS No. 2010-01 as described by Mr. Oliver.

4. Discuss Issues Pertaining to MPWMD ASR Injection

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

Mr. Oliver noted that in Water Year 2008 CAW did take a credit for ASR water, but that this was already reflected in CAW's production data that was reported to the Watermaster. This year (Water Year 2009) CAW initially forgot to take a credit, so it had to submit a revised figure. 182 acre feet of non-native water was injected into the Basin in Water Year 2009, so pumping this quantity out was not reported in the CAW revised production data.

Mr. Bunosky said that with the Coastal Water Project there will be much larger amounts of ASR and storage, so it would be a good idea to now proceed with developing storage agreements.

Mr. Oliver suggested that the approach could be straightforward by using the water rights permit language that was issued to MPWMD and CAW for the Phase 1 ASR wells.

There was discussion as to whether or not legal counsel would be needed to draft storage agreements. Mr. Bunosky felt that a number of scenarios should be considered when drafting such agreements.

There was consensus to recommend that the Board now develop a storage agreement template, and that the TAC could offer to prepare a draft agreement for Board consideration. Mr. Riedl also suggested considering an "in-lieu" type of storage agreement. Mr. Jaques recommended discussing the topic of in-lieu storage agreements as a TAC agenda topic for a future meeting, since the Decision does not appear to speak to the issue of having in-lieu recharge types of agreements. Mr. Jaques will agendize this for future TAC discussion. Mr. Riedl agreed to prepare some agenda materials for that topic.

5. Update on Draft Environmental Impact Report for CAW Coastal Water Project

Mr. Jaques summarized the agenda packet materials on this item and Mr. True and Mr. Bunosky elaborated.

Mr. Bunosky referred to the Watermaster-CAW Replenishment Credit Repayment Agreement, the Cease and Desist Order requirement for CAW to develop 500 acre feet per year of "small water projects" to lower demand on the CAW system, increased levels of conservation, and a pending rate increase, all of

which he anticipates will reduce CAW system demands, thereby freeing up water which might be available to the Seaside Basin. Mr. Bunosky expressed concern that seeking additional water at this point in time might delay the FEIR certification process. He suggested that if additional water is needed for the Seaside Basin this could be pursued as a future project separate from the CWP.

Mr. Jaques expressed concern that once the Coastal Water Project is approved by the Public Utilities Commission, there will still be a shortage of water for the Seaside Basin to bring groundwater levels up to protective levels, and thus the Basin will remain vulnerable to sea water intrusion.

There was much discussion on the subject. Mr. Green commented that in an emergency condition one could even consider bringing in a ship-mounted desalination plant to inject water into the Seaside Basin.

No action was taken and no direction was provided on this agenda item.

6. Status Report on City of Seaside Negotiations with MCWD to Obtain Golf Course Water

Mr. Riedl reported that Seaside and MCWD representatives met recently, but he had no information to report as an update on the subject. Mr. True said that the recent meeting between Seaside and MCWD was not to discuss the MCWD water supply to the golf courses, but to discuss other topics.

Mr. Jaques proposed discontinuing this as a regular agenda item, inasmuch as there has been little information for Mr. Riedl to provide to the TAC. It was agreed that Mr. Riedl will notify Mr. Jaques when and if he would like to provide an update to the TAC as a future agenda item.

7. Schedule

Mr. Jaques summarized the 2010 Schedule and several changes were made to the dates and durations of certain Tasks. Mr. Jaques will revise this into the final 2010 Schedule. With those revisions made, on a motion by Mr. Green, second by Mr. Oliver the 2010 Schedule was unanimously approved.

8. Other business

Mr. Riedl had some questions with regard to the desalination aspects of the Coastal Water Project, and Mr. Bunosky provided answers to them.

9. Set next meeting date

The next regular meeting will be held on Wednesday December 9, 2009 at 1:30 p.m. at the Seaside City Hall Portable Offices Building

The meeting adjourned at 4:48 p.m.

**SEASIDE BASIN WATER MASTER
TECHNICAL ADVISORY COMMITTEE**

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

MEETING DATE:	January 13, 2010
AGENDA ITEM:	2
AGENDA TITLE:	BLM Monitoring Well Construction Report
PREPARED BY:	Robert Jaques, Technical Program Manager

SUMMARY: Martin Feeney has completed the attached report describing the monitoring well he installed for the Watermaster at the BLM site in the former Fort Ord. Some of the principle conclusions from this work are:

- The geologic, geophysical and hydrogeologic data from the new well have provided significant additional understanding of the hydrogeology of the inland portion of the Seaside Groundwater Basin, but also raise new questions.
- The adopted base of freshwater for the Seaside Basin, the Monterey Formation, is much deeper (approximately 450 feet) in this location than previously believed.
- The thickness of both the Santa Margarita Sandstone and Paso Robles Formation is much greater than previously thought in this location.
- The greater depth to the Monterey Formation and increased thickness of the overlying units at the subject location does not fit well into the existing understanding of subsurface structure of the inland portion of the Seaside Basin.
- It is likely that the deep aquifer at the site is impacted by pumping in the highly-confined Santa Margarita Sandstone from wells in Seaside proper. It is also likely that water levels will be influenced by injection operations in the Santa Margarita Sandstone.

In conjunction with one of the conclusions in the Conclusions section of the Report, Mr. Feeney comments that resolving the complexities that arise from the new data will require additional boreholes in the inland area. In the Recommendations section he states that resolving the geologic complexities is relatively academic and is not particularly relevant to Basin management. He also goes on to state that the monitoring well program should not be accelerated, in part because it would not be cost-effective to do so.

Although the Recommendations section does not recommend that further bore-hole work be done at this time, I will be asking for the language in the Conclusions section of the Report to be edited before the Report is finalized to ensure that there is no ambiguity regarding the need to install additional bore-holes. Since the Report will ultimately be provided for the Court's review, either separately or in the next Annual Report, including this language in its current form might lead to direction from the Court to conduct additional borehole operations in this part of the Basin. Board members have previously expressed their desire to minimize the construction of additional monitoring wells due to the high cost of constructing them, unless they are deemed essential to proper Basin management. I will also be recommending edits in the Recommendations section of the Report, as some of the current recommendations are actually conclusions, and some of them could be clarified.

Mr. Feeney will provide a brief overview of the report at today's TAC meeting, and will respond to any questions TAC members may have.

ATTACHMENTS:	BLM Monitoring Well Construction Report
RECOMMENDED ACTION:	None required – information only

SEASIDE GROUNDWATER BASIN WATERMASTER
INLAND MONITORING WELL PROJECT
Construction of SGBWM Monitoring Well #5
Summary of Operations

For
Seaside Groundwater Basin Watermaster



Prepared by

Martin B. Feeney PG, CHg
with assistance from Pueblo Water Resources, Inc.

December 2009

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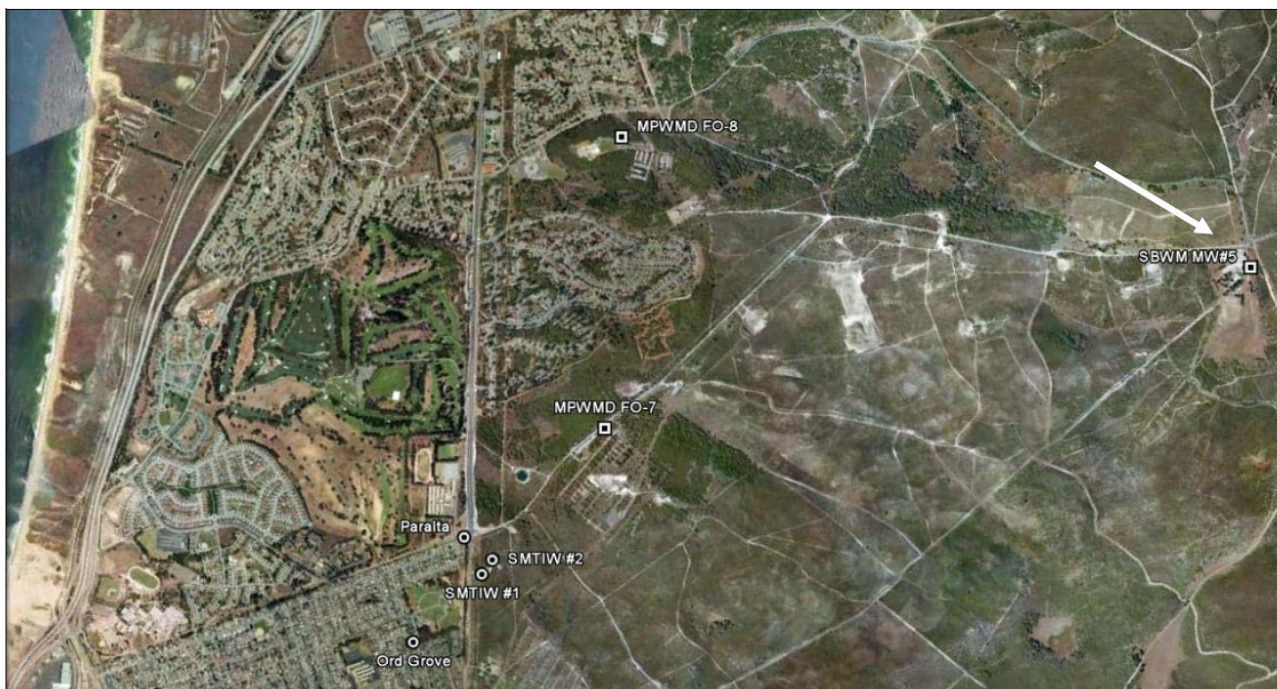
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INTRODUCTION

This report documents the installation of a deep dual-completion monitoring well in the inland portion of the Seaside Groundwater Basin. The well is located at the Bureau of Land Management (BLM) Fort Ord Office on Parker Flats Road on the former Fort Ord Military Reservation. The well was constructed by the Seaside Groundwater Basin Watermaster (Watermaster) as part of a court-ordered monitoring program for the Seaside Basin. The installation of the well is to provide additional understanding of the inland hydrogeology and provide for on-going water level and water quality data collection. The report provides a description of construction activities, summarizes hydrogeologic data collected, provides conclusions based on the data collected, and provides recommendation for the on-going monitoring of the well as it supplements the existing network of monitoring wells. The generalized location of the well site is shown on Figure 1.

Figure 1 - Location Map



SCOPE

The scope of work for this project was developed through discussion with Watermaster representatives and is documented in the scope of work prepared and authorized in June 2009. The work performed included:

- On-going support to Watermaster Technical Advisory Committee (TAC) and Watermaster Board throughout project duration.
- Permitting for the monitoring well construction project. This included: 1) Negotiation and meetings with Bureau of Land Management (BLM) personnel; 2) Acquisition of Well Construction Permits from Monterey County Environmental Health.
- Drilling of an exploratory borehole to the top of the Monterey Formation.
- Collection of lithologic and geophysical data from the borehole.

- Completion of borehole as two monitoring wells.
- Air-development of the wells.
- Collection and laboratory analysis of the water quality samples from the wells.
- Surveying of well location to establish wellhead elevation
- Acquisition and installation of continuous water level monitoring equipment (data loggers).
- Preparation of this report documenting construction of the wells and presenting our conclusions developed from the data collected and recommendations for future monitoring of the well.

BACKGROUND

Pursuant to the Seaside Groundwater Basin Watermaster's (Watermaster) obligations under the court settlement, the Watermaster is moving ahead with installation of inland monitoring wells to better understand the inland hydrogeology of the basin. The subject well at the BLM site is the initial step in this process.

The BLM site was selected for the initial inland well for several reasons. Firstly, the BLM site is located at the site of the original Camp Huffman on Fort Ord. There was a water well drilled at this location in 1912. This now-destroyed water well had been used by previous investigators for gradient control that was critical in the interpretations of the regional ground water flow regime. This well was destroyed in the early 1990's and re-establishment of this inland control for water level is considered critical to continued refinement of the understanding of the Seaside Basin. Secondly, the geologic structure and hydrostratigraphy of the inland portion of the basin is poorly understood and the drilling of a deep borehole at an inland location would provide valuable understanding. The location of the well on the BLM compound is shown on Figure 2.

This report documents the second attempt to construct a monitoring well at the subject site. The basis-of-design (included in Appendix C) for the subject well recommended the construction of a three-completion well cluster (three wells separated by 5 to 10 feet). Work on the well cluster began in mid-August 2009. The initial borehole was drilled to a depth of 1320 feet at which depth the drill rig suffered complete failure of the hydraulic system. Before the equipment could be repaired, the drill pipe had become stuck in the borehole. Efforts to free and remove the pipe failed and the drilling contractor had to resort to "shooting off" the pipe and abandoning the pipe and hole in place. While the hole was lost, lithologic and geophysical data were collected as part of drilling operations. The failure at the originally permitted site required that the Watermaster renegotiate with BLM for a new well site at the facility. As part of this negotiation, the Watermaster agreed to construct a nested well (two casings in single borehole) rather than the originally proposed well cluster. Fortunately, the lithologic and geophysical data from the first failed attempt documented significant hydrogeologic separation between the aquifer units which negated the previous concerns discussed in the basis-of-design document regarding whether a nested well could be constructed without leakage between the various aquifer units.

Figure 2 - Site Location Map

PROJECT COMPONENTS

PERMITTING

The permitting for the well construction and siting was relatively straight-forward. Permitting was limited to acquisition of a Right of Entry/License Agreement to construct and maintain a well-site on BLM land. This document was issued in July 2009. Subsequent to the receipt of the documents from BLM, the County of Monterey issued well construction permits in early August 2009.

WELL CONSTRUCTION

Bradley and Sons, Inc. of Del Rey, California was the Contractor for the drilling and well construction. Drilling was performed using an Ingersoll-Rand Top Head Drive (TH-60) drilling rig. The well was drilled by the direct rotary method, with a bentonite based fluid. Fluid was circulated and conditioned in a system equipped with mechanical separators for solids. Well construction was performed in late October 2009.

Drilling

The pilot boring was 8.75 inches. Drill pipe lengths were twenty feet, and following advancement of each joint of pipe the fluid was circulated and cleaned to provide representative cutting samples and a balanced column of fluid. Cutting samples were collected throughout the pilot drilling and a lithologic log of the borehole was prepared. Representative cutting samples for each ten-foot depth interval were placed in labeled, compartmentalized sample trays.

The pilot boring was advanced to a depth of 1,338 feet where the material became very indurated slowing the rate of penetration. Based on the lithologic samples it was inferred that the bottom of the borehole was within 30 to 40 feet of the Monterey Formation. To reduce risk of damage to, or loss of, the drill string the decision was made to remove the drill string from the hole, inspect the drill string, and geophysically log the hole.

Geophysical logging was performed by Welenco, Inc. The geophysical logs include measurements of natural gamma radiation, spontaneous potential, short-and long-normal resistivities, and single point resistance. Review of the geophysical log and comparison of the geophysical log with proximate geophysical logs, confirmed the conclusion from the lithologic data – that the bottom of the borehole was within 30 to 40 feet of the top of the Monterey Formation. Based on this confirmation, and consideration of the risks associated with additional drilling, the borehole was terminated at the current depth.

The lithologic log, photographic documentation of the cutting samples, and geophysical logs for the boring are included in Appendix A.

Well Completion

Review of the lithologic and geophysical data allowed interpretation of the geologic conditions and the development of a completion plan for the well. The completion plan (total depth, placement of well screens, and annular seal depth) was developed for wells through consultation between project geologists (Martin Feeney PG, CHg and Mike Burke PG, CHg) and Mr. Joe Oliver PG, CHg of the Monterey Peninsula Water Management District.

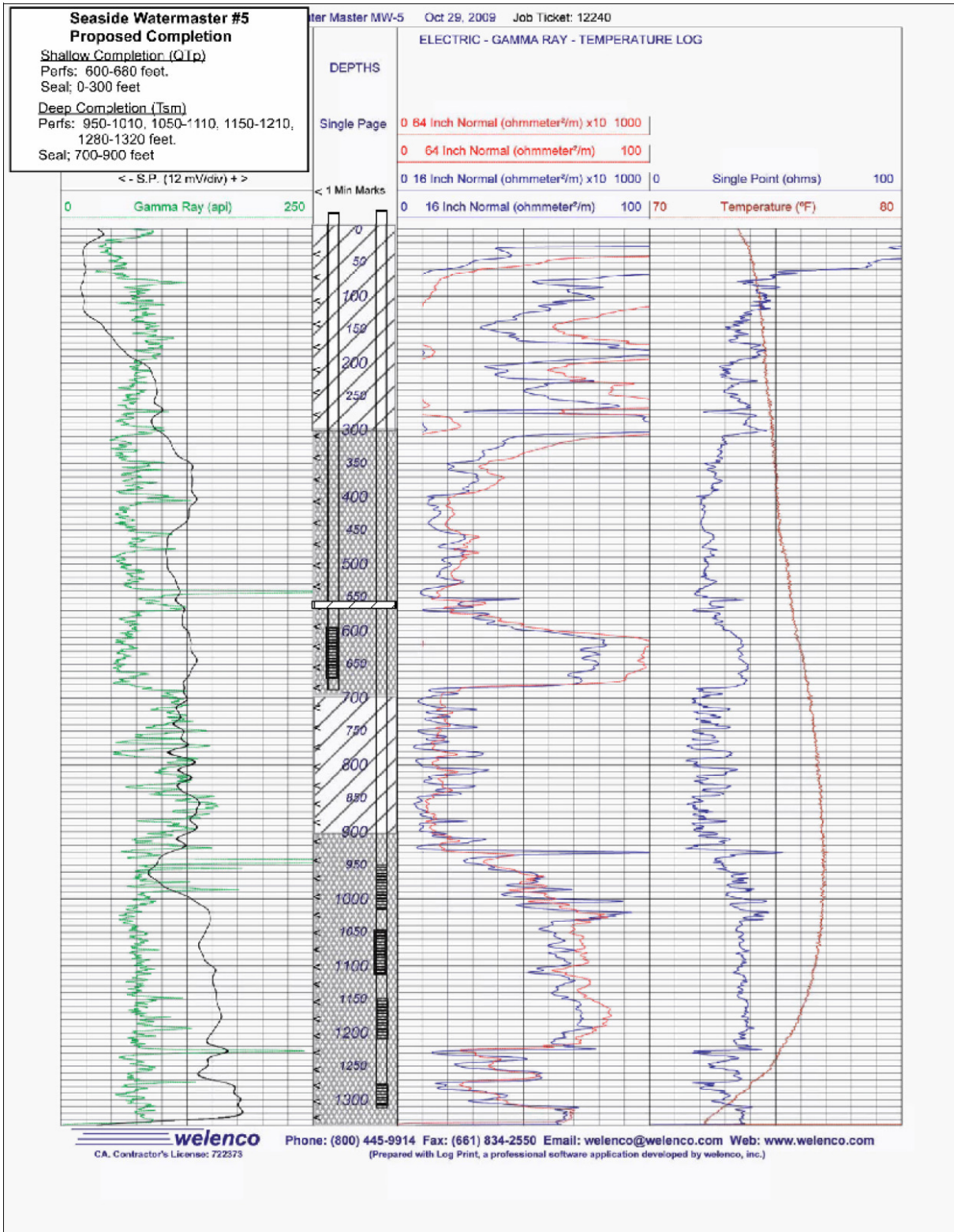
Hydrostratigraphy. The geologic and geophysical data from this well revealed the expected sequence of geologic materials. The Dun/Aromas Sands, underlain, in turn, by the Paso Robles Formation, the Santa Margarita Sandstone and the Monterey Formation. However, the depth to the Monterey Formation was significantly deeper than had been inferred. Both the Santa Margarita Sandstone and the Paso Robles Formation are significantly thicker than where encountered at other locations in the Seaside Basin. The geologic interpretations are as follows:

Geologic Unit	Depth to Top of Geologic Unit (feet)
Dunes Sands Deposits	0
Aromas Sand	50
Paso Robles Formation	250
Santa Margarita Sandstone	900
Monterey Formation	1,360 ¹

¹ – Although the borehole only extended to a depth of 1,338 feet, the depth to the Monterey Formation can be projected from the geophysical log signature.

From the geologic interpretations, a well completion plan was developed. The details of the completion plan presented on the geophysical log are presented in Figure 3.

Figure 3 - Geophysical Log/Well Completion



Well Construction

The first step in the well construction process was the reaming of the pilot bore to a diameter of 12-1/4 inches. Once the ream was complete, a temporary construction tremie was installed in the boring. The deeper casing was then installed, and centered in the boring using plastic centralizers. Centralizers were placed immediately above and below each screen zone, and at intervals of 80 feet within the upper blank section. Gravel pack was installed using the construction tremie, in lifts of approximately 60 feet, to the depth of the bottom of the first seal interval. The bottom seal consisted of benonite pellets and Holeplug™ and was also placed with the construction tremie. After the seal material was established to be at the top of the sealed interval, the second casing string was installed and gravel pack placed up to the bottom of the surface seal depth. An intermediate 10-foot isolation seal of bentonite pellets was installed from depth 560 to 570 feet in the upper gravel pack to isolate the perforated interval. A cement grout annular seal was placed from the top of the gravel pack to ground surface.

A schematic of the as-built well is presented as Figure 4.

Once the annular seal was complete and cured, the monitoring well was provided with a water-tight, flush-mounted, traffic-rated circular well vault set in place with concrete. A reference point elevation and coordinates were established for the well vault by Central Coast Surveyors.

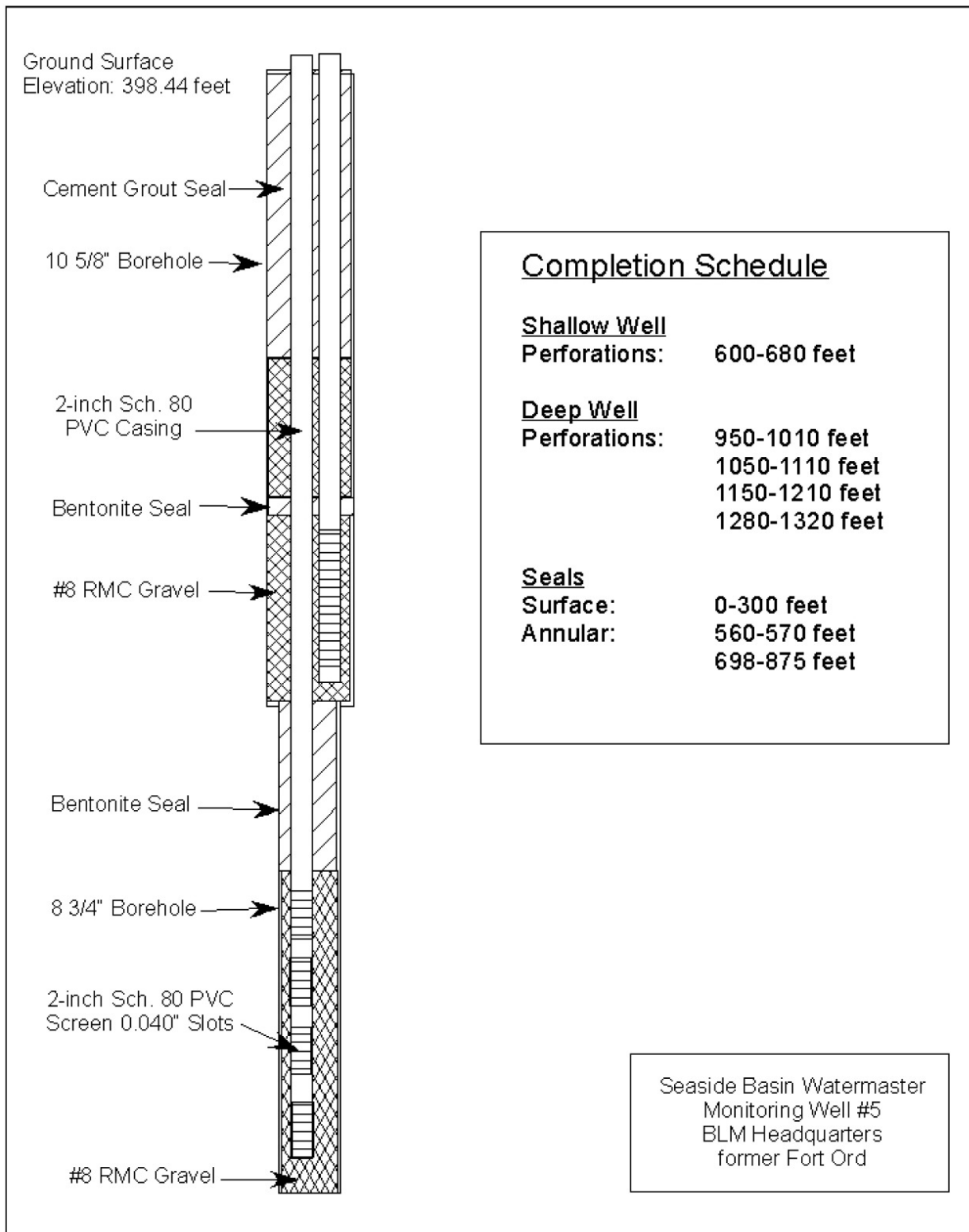
Coordinates	N: 2120743.13 feet E: 5748971.05 feet
Ground Surface Elevation	398.44 feet, msl
Datums: Horizontal: California State Plane Coordinate System, Zone IV Vertical: NAVD 88	

A summary of well construction details for the well is presented in Table 1.

Table 1 – Well Completion Summary

	SBWM-5 Shallow	SBWM-5 Deep
Casing Depth, ft.	690	1320
Screen Depths, ft.	600-680	950-1010 1050-1110 1150-1210 1280-1320
Annular Seal Depth, ft.	560-570, 0-300	698-875

Figure 4 -Well Schematic



Well Development

Well development was performed immediately following the construction of the well. Initial development was performed by airlifting, with the well casings serving as the eductor pipe. Final development was accomplished by airlifting through a 1-1/2 inch eductor pipe that was lowered to the total completed depth of each casing string. The purpose of the final development and the use of the eductor pipe was to develop the lower portions of the wells to ensure that the casings were clean and open through total depth in order to provide access to total casing depth for future geophysical monitoring, and to clear and clean all portions of the well screen for water quality sampling.

INITIAL DATA COLLECTION

Baseline Data Collection

The successful construction of the monitoring well allowed for the completion of baseline data collection. Lithologic and geophysical data were acquired through the drilling of the pilot borings. The completed monitoring wells provided for the collection of water quality data and water level data.

Water Level Data

Static water levels were measured in both of the wells on November 19, 2009. The reference point elevation established by Central Coast Surveyors was used to determine the water surface elevation in each well. Water level data are summarized in the Table 2.

Table 2 – Water Level Data Summary

	SBWM-5 Shallow	SBWM-5 Deep
Approx. Ground Surface Elevation, ft, (msl)	398.44	398.44
Depth to Water, ft.	387.2	410.1
Water Surface Elevation, ft. from MSL	11.24	-11.66

The water surface elevation in the Paso Robles Formation (shallow) well is approximately 11.2 feet above sea level whereas water surface elevation in the Santa Margarita Sandstone (deep) well is below sea level at - 11.7 feet, msl. The wells display more than 22 feet of head differential demonstrating the effectiveness of the annular seal.

Water Quality Data

Once airlift development was believed to be sufficiently complete, and water produced by airlifting was clear, water quality samples were collected. The samples likely represent a composite of groundwater produced from all sections of the well screen. Samples were delivered to the Monterey Bay Analytical Services laboratory in Monterey for analysis. Laboratory program consisted of general mineral analysis. Laboratory reports are included in Appendix B, and the data are summarized in Table 3.

Table 3 – Summary of Water Quality Data, Composite Samples

	SBWM-5 Shallow	SBWM-5 Deep
Sample Date	11/11/2009	11/11/2009
Specific Conductance, $\mu\text{mhos/cm}$	816	808
Total Dissolved Solids, mg/l	475	525
Calcium, mg/l	43	44
Magnesium, mg/l	16	10
Sodium, mg/l	100	119
Potassium, mg/l	3.5	4.2
Bicarbonate, mg/l (as HCO ₃)	157	272
Sulfate, mg/l	33	64
Chloride, mg/l	157	76
Arsenic ($\mu\text{mg/l}$)	2	1

Water Quality Interpretation

Water quality data from the two completions have been presented graphically in two forms. Figure 5 presents the data as a Piper diagram whereas Figure 6 presents the data as Schoeller nomographs. Both presentations also utilize data from the Santa Margarita Test Injection Well (SMTIW #1) for comparison to the deep completion. Data from the injection well is from a period prior to injection. No proximate data were available for comparison with the shallow completion.

Figure 5 – Piper Diagram

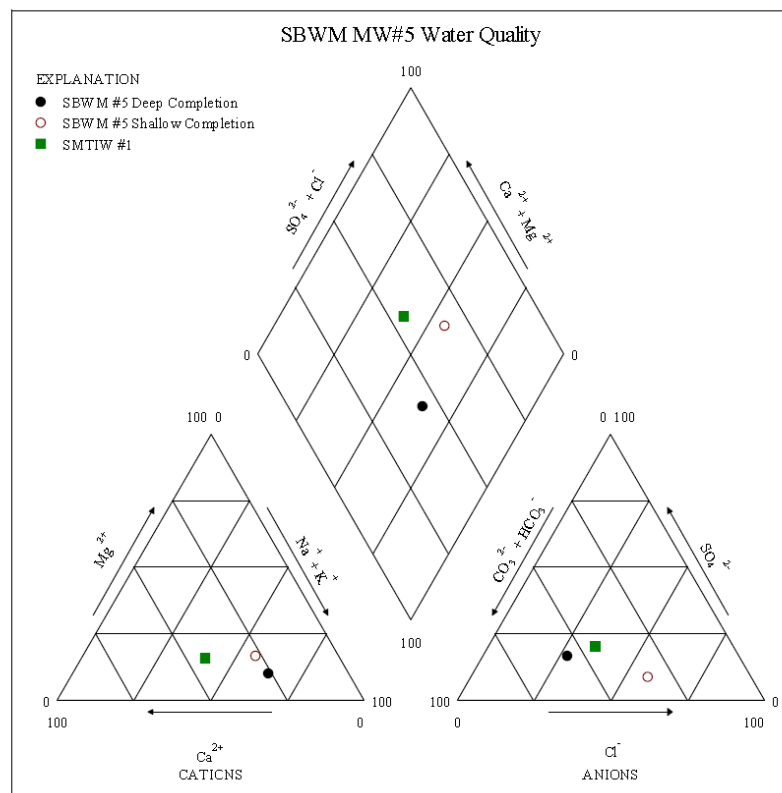
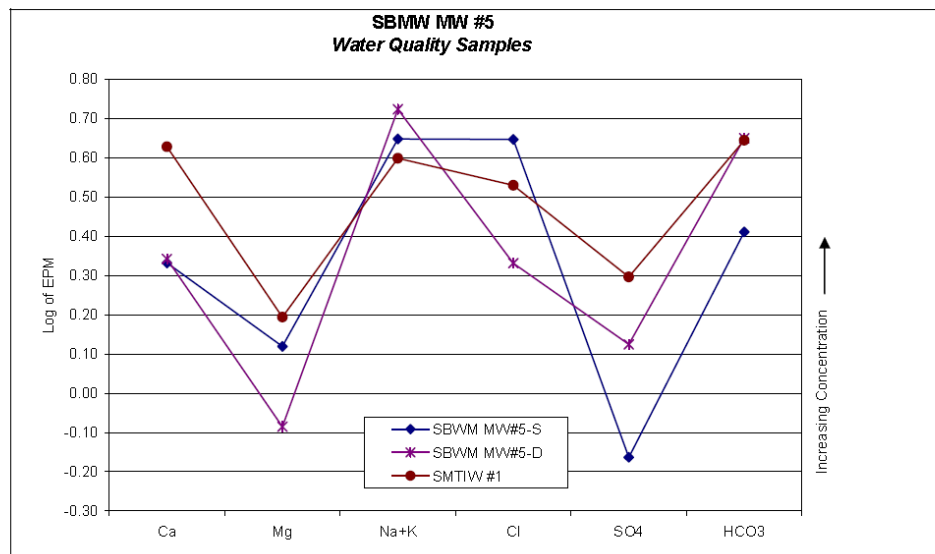


Figure 6 – Schoeller Nomographs



Water quality data from the well completions supplement and complement the geologic and geophysical data from the borehole. The water quality findings are as follows:

- The water quality data from the both the wells are not completely comparable with other wells assigned to the same aquifer units in the Seaside area. In particular, the total dissolved solids concentration of the shallow completion is significantly higher than other wells in the Paso Robles Formation and the chloride ion concentration in the deep completion is low for the Santa Margarita Sandstone.
- As can be seen in both of the graphical presentations, the water chemistries have unique signatures relative to each other and the sample from the SMTIW #1. Direct comparison of the water quality with those in the Seaside area may be misleading as the new wells are a significant distance from other wells with water quality data. SMTIW #1 is over 2 miles from the new well.
- Previous experience has shown that initial water quality samples from newly constructed monitoring wells are sometimes not representative. Before additional analysis of the water quality data is undertaken, the wells, after water in the casings equilibrates with aquifer water, should be resampled.

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

The geologic, geophysical and hydrogeologic data from the new well have provided significant additional understanding of the hydrogeology of the inland portion of the Seaside Groundwater Basin. However, like any new set of data, the data also raise new questions.

- The most significant geologic finding was the greater depth to the Monterey Formation, the adopted base of freshwater for the Seaside Basin. Interpretation of existing data sources had placed the top of the Monterey Formation at an elevation of more than -500 feet msl, or about 900 feet below ground surface at the site. Based on data from the subject borehole, the Monterey Formation is interpreted to be at a depth of approximately 1,350 feet or an elevation of approximately -950 feet, msl.
- Overlying the Monterey Formation are materials that are tentatively assigned to the Santa Margarita Sandstone and Paso Robles Formation. However, the thickness of both these units is significantly thicker than have been encountered at other locations in the basin. In particular, the Santa Margarita Sandstone unit at the site is approximately 450 feet in thickness. This compares with typical thicknesses of 250 feet encountered at other locations.
- The greater depth to the Monterey Formation and increased thickness of the overlying units at the subject location does not fit well into the existing understanding of subsurface structure of the inland portion of the Seaside Basin. Resolving the complexities that arise from the new data will require additional boreholes in the inland area.
- The BLM site was selected for the subject well to re-establish water level data from a previously existing well that had been used by previous investigators of the Seaside Basin hydrogeology. The well, the so-called Camp Huffman Well, was relatively shallow extending to a depth of 485 feet or an elevation of about -90 feet, msl. Water level records from the old well are confusing. A water level from Army records in 1939 suggests at water surface elevation of 89 feet, msl. The 1982 USGS report suggests a value of 215 feet, msl. The shallow completion at the new well displays a water surface elevation of approximately 11 feet, msl. Comparing these historical values with the elevation from the shallow completion suggests: 1) The USGS value is erroneous, possibly due to a collapsed casing at the time of measurement, 2) Comparison with the old Army value suggests 78 feet of dewatering in the shallow aquifer zone. This value is not unreasonable, available records document 50 feet of dewatering in the City of Seaside since the 1950's.
- Water surface elevation in the deep monitor at the subject site is -11 feet, msl. It is likely that the deep aquifer at the site is impacted by pumping in the highly-confined Santa Margarita Sandstone from wells in Seaside proper. It is also likely that water levels will be influenced by injection operations in the Santa Margarita Sandstone.
- Water quality data from the new wells documents slightly different water chemistries than are typical for similar wells in the Seaside Basin. However, there is a possibility that the water quality data is not representative and the water in the casing is not yet equilibrated with the aquifer water.

RECOMMENDATIONS

Additional Monitoring Wells:

- While data from the subject borehole raises many questions about the inland hydrogeology that can only be answered with additional boreholes, the nature of many of these questions are academic and do not necessarily need to be answered to effectively manage a coastal basin.
- The most relevant data for basin management are water level data. The water level data from the new wells, while surprising, was predicted by the recently completed groundwater model.
- While more borehole data are almost always useful, it is not believed to be necessary or cost-effective to speed-up the Watermaster's established schedule for installation of additional monitoring wells. In the interim, other tools such as the model, for example, are likely adequate.

Data Collection:

- To minimize disruption to BLM activities, the new monitoring wells were equipped with continuous water-level data loggers to record water level fluctuations. Continuous water level data collection will allow characterization of both pumping and recharge stresses imposed by regional activities. These data will assist in understanding: (1) the nature and degree of connectivity of this portion of the basin with the area of extraction and injection; (2) the regional gradients and groundwater flow directions; and (4) long-term trends in ground water levels.
- The wells should be resampled until water quality is established and confirmed. After water quality has been established, additional periodic water quality sampling is not considered necessary. Given the location of the new wells, away from basin boundaries and other pumpers, changes to water quality are not to be expected. Changes in water quality, if any, will be extremely slow to emerge. If deemed important for compliance with monitoring requirements, wells could be sampled on a 5 year basis. This would provide for detection of changes, if any.

CLOSURE

This letter-report has been prepared for the exclusive use of the Seaside Groundwater Basin Watermaster for the specific application to the Inland Monitoring Well Project. This report documents the hydrogeologic conditions encountered at the time of construction and initial sampling. The report also documents the physical condition of the wells at the time of construction. Environmental changes, either naturally-occurring or artificially induced, may cause damage to the wells over time. This report expressly does not constitute a guarantee of future performance. The findings, conclusions, and recommendations presented were prepared in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing under similar conditions in the fields of engineering geology and hydrogeology. No other warranty, express or implied, is made.

I appreciate the opportunity to be of service. Please call if you have any questions.

Sincerely,




Martin B. Feeney, PG, CEG, CHg

Attachments: Appendices A-C

APPENDIX A - LITHOLOGIC AND GEOPHYSICAL LOGS


Contents:

SBWM #5
Lithologic Log
Electric Log
DWR Well Completion Report

Well I.D.: Seaside Basin Watermaster MW-5	Logger: Michael Burke	
Owner: Seaside Basin Watermaster	Date: October 2009	
Location: Fort Ord, BLM Facility, Monterey County	Driller: Bradley and Sons; Madera, CA	
N 36 37' 14.03"; W 121 46' 10.97"	Method/Fluid: Direct, Bentonite	
Other: Welenco e-log; dual completion - deep (Tsm) - TD 1320 ft.; shallow (QTp) TD - 690 ft.; deep mw is nw casing.		

CLAY
 SILT
 SAND
 GRAVEL

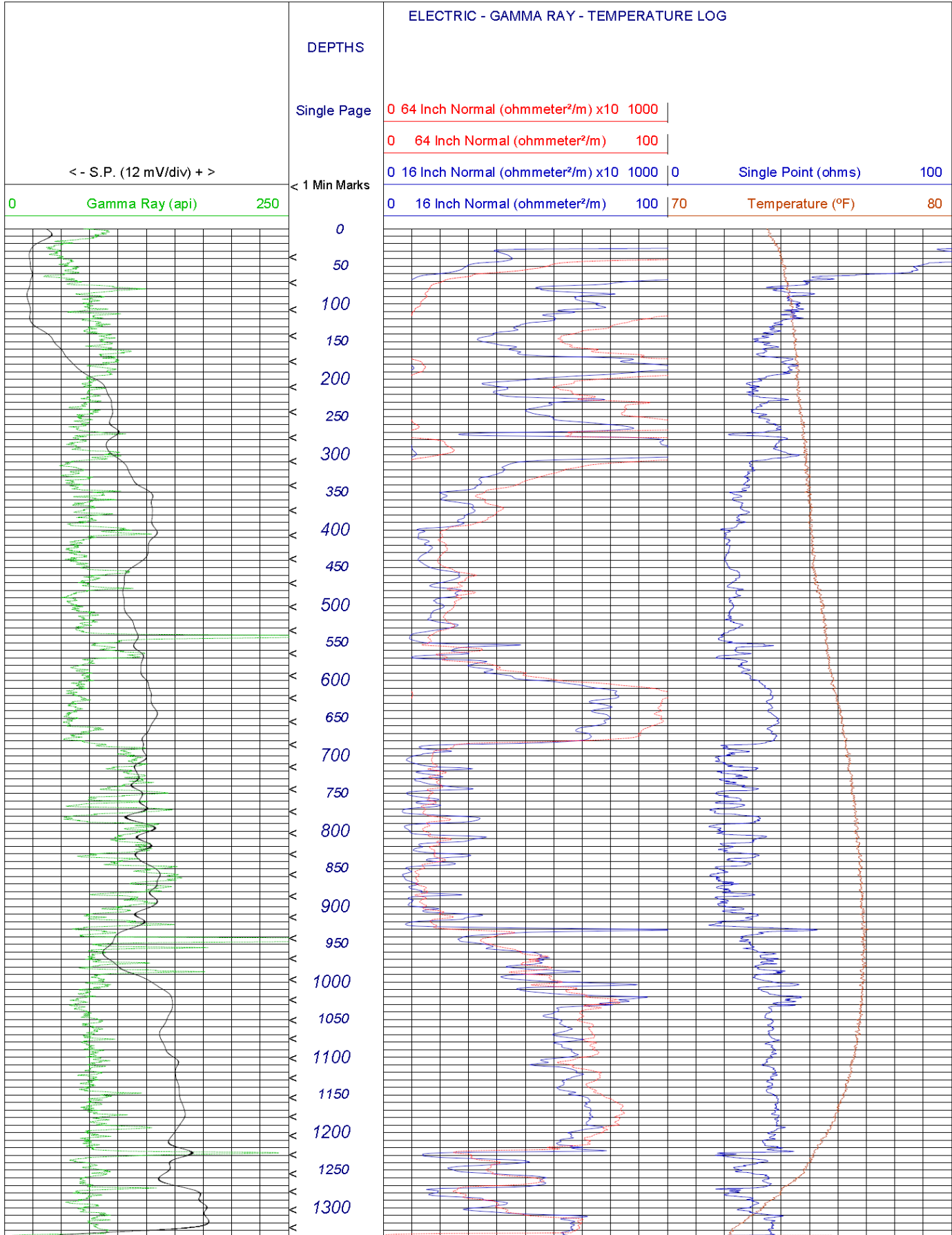
Depth	Lithology % Sand Concentration	Grain Size Distribution			Rig Activity, Bit Sizes, Mud Additives & Properties	Description of Lithology
		% Coarse	% Medium	% Fine		
0		5	5	90		SAND: Yellowish, grayish brown; fine grained; well sorted; minor fine gravel; silty.
50						CLAYEY SAND: pale brown; fine grained sand; silty
100		30	30	40		SAND: grayish brown; fine to coarse grained; silty/clayey; w/ some fine gravel fragments (porc.)
150		10	20	70		More clay.
200		30	30	40		
250		5	5	90		SILTY SAND: grayish brown; fine grained; w. soft, light gray clay.
300				100		SAND: grayish brown, fine grained; well sorted; silty. Gravel fragments, chert/porcellanite (Tm). Gray clay. Dark brown silt.
350		15	25	60		
400		40	30	30		SANDY CLAY: grayish brown, coarse grained sand; large subrounded grains; abdt. quartz; w/ brown, gray, and white clay.
450		25	25	50		
500		30	30	40		SAND/GRAVEL: brown to tan, fine to coarse grained sand; fine gravel and gravel frags (porc/chert); w/ brown clay.
550		20	30	50		SILTY SAND: dark grayish brown; predom. fine sand; some clay. CLAYEY, SILTY SAND: dark brownish gray; fine sand predom., some coarser grains; porc. gravel.
600		5	20	75		SILTY CLAY; grayish brown. Bluish gray and brown clay. CLAY: very dark gray/bluish gray; firm; sticky; silty; w/ some sand and gravel frags.
650		5	15	80		SANDY CLAY: olive gray/bluish gray; fine to medium grained sand. SILTY, SANDY CLAY: olive gray to bluish gray. SANDY CLAY/CLAYEY SAND: pale gray; fine to medium grained sand; moderately well sorted; w/ gray, bluish gray, brown, yellowish brown and white clay. SAND: pale gray; fine grained, well sorted; porc. and chert gravel, rounded intact edges; gray, blue, brown, yellow and white clay.

Well I.D.: Seaside Basin Watermaster MW-5	Logger: Michael Burke	
Owner: Seaside Basin Watermaster	Date: October 2009	
Location: Fort Ord, BLM Facility, Monterey County	Driller: Bradley and Sons; Madera, CA	
N 36 37' 14.03"; W 121 46' 10.97"	Method/Fluid: Direct, Bentonite	
Other: Welenco e-log; dual completion - deep (Tsm) - TD 1320 ft.; shallow (QTp) TD - 690 ft.; deep mw is nw casing.		

CLAY
 SILT
 SAND
 GRAVEL

Depth	Lithology % Sand Concentration	Grain Size Distribution			Rig Activity, Bit Sizes, Mud Additives & Properties	Description of Lithology
		% Coarse	% Medium	% Fine		
650						SAND: pale gray, fine grained, well sorted; porc. and chert gravel, rounded intact edges; gray, blue, brown, yellow and white clay.
700		5	5	90		SAND: gray/pale brownish gray; fine grained.
750		5	15	80		SANDY CLAY: grayish brown, fine grained gray sand. CLAYEY SAND: pale grayish brown; fine grained gray sand.
800		30	30	40		SAND: grayish brown; fine to coarse grained; poorly sorted; w/ brownish gray clay; w/ some gravel frags (porc./chert). SILTY CLAY: pale brown; some sand (fine to coarse); some orange/brown oxidized silt.
850						
900		25	25	50		CLAY: brownish gray; sandy; silty; w/ chert/porc sand and gravel frags. SAND: pale brownish gray; fine to coarse grained; abundant pale olive/cream porc and chert grains and gravel frags. SAND: pale brownish gray; fine to coarse grained; abundant pale olive/cream porc and chert
950		10	15	75		SAND: dark bluish gray; fine to coarse grained; abundant porc/chert; abundant dark colored grains (blue, green, turquoise); w/ brown clay. Much soft white clay/brown clay. SAND/CLAY: pale brown; pale gray fine sand; brown to pale brown clay/claystone; some small chert fragments; abundant 'flakes' of white rock(?); some soft white clay, some gray clay.
1000			5	95		SAND: pale grayish brown; fine grained; well sorted; with brown clay/claystone (small cuttings). Abundant 'flakes' of white material.
1050		5	5	90		SAND: very pale gray to white; fine grained; well sorted; with very small pieces of brown claystone, and white 'flakes'. White sand (coarser), w/ soft pale brown clay, and darker brown claystone.
1100		15	25	60		
1150						SAND: very pale gray to white; fine to medium grained; w/ small claystone (brown) cuttings.
1200						SAND: white/gray, fine to coarse grained sand; w/ brown, bluish gray, gray and white clay.
1250		5	15	80		SAND: white/gray; predom. fine grained; w/ very pale bluish gray clay.
1300						

ELECTRIC - GAMMA RAY - TEMPERATURE LOG



welenco

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 (Prepared with Log Print, a professional software application developed by welenco, inc.)

TRIPLICATE
Owner's Copy

STATE OF CALIFORNIA
WELL COMPLETION REPORT
Refer to Instruction Pamphlet

DWR USE ONLY — DO NOT FILL IN

STATE WELL NO./STATION NO.

LATITUDE LONGITUDE

APN/TRS/OTHER

Page 2 of 6

Owner's Well No. FT ORD #5
Date Work Began 11/1/2009, Ended 11/5/2009

No. **EO100613**

Local Permit Agency ENVIRO HEALTH, MONTEREY
Permit No. 09-11667 Permit Date 11/9/2009

GEOLOGIC LOG

ORIENTATION (✓) VERTICAL HORIZONTAL ANGLE _____ (SPECIFY)

DEPTH FROM SURFACE DRILLING METHOD _____ FLUID _____

DESCRIPTION
Describe material, grain, size, color, etc.

Fl.	to	Fl.	DESCRIPTION
			BLACK CLAY, SOME SMALL GRAVEL
960		980	MEDIUM/FINE SANDS, WHITE CLAY
980		1000	FINE SAND, WHITE CLAY
1000		1060	FINE SAND, WHITE CLAY
1060		1100	WHITE/BROWN CLAY, MEDIUM/COARSE SAND
1100		1120	SOME WHITE CLAY, MEDIUM/COARSE SAND AND SHALE
1120		1180	BROWN-WHITECLAY, MEDIUM/COARSE SAND
1180		1200	SOME BROWN CLAY, MEDIUM/COARSE SAND
1200		1220	SOME BROWN CLAY, MEDIUM/COARSE SAND
1220		1260	LIGHT BROWN, DARK BROWN CLAY, SOME SHALE
1260		1280	BROWN-WHITE CLAY, SOME MEDIUM COARSE SANDS
1280		1300	FINE SAND, BLUE CLAY
1300		1338	WHITE-BLUE CLAY, COARSE SAND WITH COBBLE

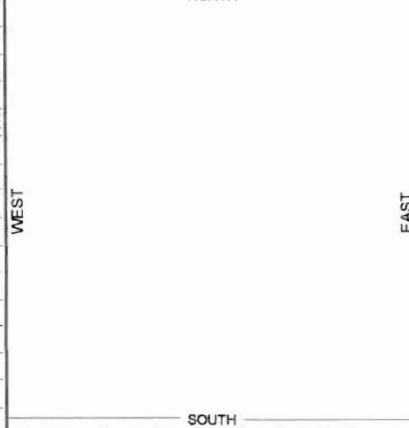
WELL OWNER

Name U.S. BUREAU OF LAND MGMT
Mailing Address 20 HAMELTON COURT
HOLLISTER CA 95023
CITY STATE ZIP

WELL LOCATION

Address FORT ORD
City SEASIDE CA
County MADERA
APN Book _____ Page _____ Parcel _____
Township _____ Range _____ Section _____
Latitude _____

DEG. MIN. SEC. DEG. MIN. SEC.
LOCATION SKETCH NORTH



ACTIVITY (✓)
 NEW WELL

MODIFICATION/REPAIR
 Deepen
 Other (Specify)

DESTROY (Describe Procedures and Materials Under "GEOLOGIC LOG")

PLANNED USES (✓)

WATER SUPPLY
 Domestic Public
 Irrigation Industrial

MONITORING _____

TEST WELL _____

CATHODIC PROTECTION _____

HEAT EXCHANGE _____

DIRECT PUSH _____

INJECTION _____

VAPOR EXTRACTION _____

SPARGING _____

REMEDICATION _____

OTHER (SPECIFY) _____

BRACKISH WAT

WEST

EAST

SOUTH
Illustrate or Describe Distance of Well from Roads, Buildings, Fences, Rivers, etc. and attach a map. Use additional paper if necessary. PLEASE BE ACCURATE & COMPLETE.

WATER LEVEL & YIELD OF COMPLETED WELL

DEPTH TO FIRST WATER _____ (Ft.) BELOW SURFACE

DEPTH OF STATIC WATER LEVEL _____ (Ft.) & DATE MEASURED _____

ESTIMATED YIELD * _____ (GPM) & TEST TYPE _____

TEST LENGTH _____ (Hrs.) TOTAL DRAWDOWN _____ (Ft.)

May not be representative of a well's long-term yield.

TOTAL DEPTH OF BORING 1338 (Feet)

TOTAL DEPTH OF COMPLETED WELL _____ (Feet)

DEPTH FROM SURFACE Fl. to Ft.	BORE HOLE DIA. (Inches)	CASING (S)							
		TYPE (✓)			MATERIAL / GRADE	INTERNAL DIAMETER (Inches)	GAUGE OR WALL THICKNESS	SLOT SIZE IF ANY (Inches)	
BLANK	SCREEN	CON-DUCTOR	FILL PIPE						
1050	1010	✓				PVC	2"	SCH 80	
1010	950		✓			PVC	2"	SCH 80	.040
950	0	✓				PVC	2"	SCH 80	
#2									
680	600	10 5/8"	✓			PVC	2"	SCH 80	.040
600	0	10 5/8"	✓			PVC	2"	SCH 80	

DEPTH FROM SURFACE Fl. to Ft.	ANNULAR MATERIAL TYPE			
	CE-MENT (✓)	BEN-TONITE (✓)	FILL (✓)	FILTER PACK (TYPE/SIZE)
1337	900			#8 SAND
900	700		✓	
#2				
700	300			#8 SAND
300	0	✓		

ATTACHMENTS (✓)
 Geologic Log
 Well Construction Diagram
 Geophysical Log(s)
 Soil/Water Chemical Analysis
 Other _____
 ATTACH ADDITIONAL INFORMATION, IF IT EXISTS.

CERTIFICATION STATEMENT
 I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief.
 NAME BRADLEY & SONS
 (PERSON, FIRM, OR CORPORATION) (TYPED OR PRINTED)
 3625 S. HIGHLAND DEL REY CA 93616
 ADDRESS CITY STATE ZIP
 Signed _____ 11/23/09 414178
 WELL DRILLER/AUTHORIZED REPRESENTATIVE DATE SIGNED C-57 LICENSE NUMBER

DWR 188 REV. 11-97

IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

TRIPPLICATE
Owner's Copy

STATE OF CALIFORNIA
WELL COMPLETION REPORT
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Permit No. 09-11667

Permit Date 11/9/2009

GEOLOGIC LOG

WELL OWNER

ORIENTATION (✓)		DRILLING METHOD	FLUID	DESCRIPTION
DEPTH FROM SURFACE		Describe material, grain, size, color, etc.		
FL	to	FL		
0	80			FINE SAND
80	100			FINE/MEDIUM SANDS
100	160			F/W, MEDIUM/COARSE SANDS
160	200			MEDIUM/FINE/COARSE SANDS, CLAY, SMALL GRAVEL
200	280			MEDIUM/FINE/COARSE SANDS, SOME GRAVEL
280	300			FINE/MEDIUM/COARSE SANDS, W/SILTY CLAY
300	320			MEDIUM/COARSE SANDS
320	380			FINE/MEDIUM COARSE SAND
380	400			FINE SANDS
400	440			FINE SAND, SOME MEDIUM/COURSE, CLAY
440	460			BROWN SILTY CLAY
460	480			BROWN CLAY, SHALE, MEDIUM/FINE SANDS
480	500			CEMENTED SANDS
500	520			BROWN CLAY
520	540			BROWN CLAY, SOME SHALE, MEDIUM/FINE SANDS
540	560			DARK BLUE CLAY, SOME MEDIUM SAND & SHALE
560	580			BROWN CLAY, DARK BLUE CLAY, SOME SHALE
580	600			BROWN & DARK BLUE CLAY, SOME SHALE
600	620			LIGHT BROWN CLAY, FINE/MEDIUM SANDS
620	660			LIGHTBROWN CLAY, SHITE/FINE/MEDIUM SANDS
660	680			SILTY WHITE SAND, BROWN CLAY
680	720			BROWN/WHITE CLAY, SOME MEDIUM SAND AND SHALE
720	820			BROWN CLAY, SHALE
820	840			SOME CLAY, SHALE, MEDIUM SAND
840	940			MEDIUM/FINE/COARSE CEMENTED SANDS, SOME BROWN CLAY
940	960			MEDIUM/COARSE/FINE SANDS, WHITE CLAY,

Name U.S. BUREAU OF LAND MGMT
Mailing Address 20 HAMELTON COURT
HOLLISTER CA 95023
CITY STATE ZIP

Address FORT ORD
City SEASIDE CA
County MADERA
APN Book Page Parcel
Township Range Section
Latitude

DEG. MIN. SEC. LOCATION SKETCH NORTH SOUTH

DEG. MIN. SEC. ACTIVITY (✓)
NEW WELL
MODIFICATION/REPAIR
Deepen
Other (Specify)
DESTROY (Describe Procedures and Materials Under "GEOLOGIC LOG")
PLANNED USES (✓)
WATER SUPPLY
Domestic Public
Irrigation Industrial
MONITORING
TEST WELL
CATHODIC PROTECTION
HEAT EXCHANGE
DIRECT PUSH
INJECTION
VAPOR EXTRACTION
SPARGING
REMEDICATION
OTHER (SPECIFY)
BRACKISH WAT

WATER LEVEL & YIELD OF COMPLETED WELL
DEPTH TO FIRST WATER (Ft.) BELOW SURFACE
DEPTH OF STATIC WATER LEVEL (Ft.) & DATE MEASURED
ESTIMATED YIELD * (GPM) & TEST TYPE
TEST LENGTH (Hrs.) TOTAL DRAWDOWN (Ft.)
May not be representative of a well's long-term yield.

TOTAL DEPTH OF BORING 1338 (Feet)

TOTAL DEPTH OF COMPLETED WELL (Feet)

DEPTH FROM SURFACE	BORE-HOLE DIA. (Inches)	CASING (S)					
		TYPE (✓)	MATERIAL / GRADE	INTERNAL DIAMETER (Inches)	GAUGE OR WALL THICKNESS	SLOT SIZE IF ANY (Inches)	
FL	to	FL					
1338	680	8 3/4"					
1320	1280		✓	PVC	2"	SCH 80	.040
1280	1210		✓	PVC	2"	SCH 80	
1210	1150		✓	PVC	2"	SCH 80	.040
1150	1110		✓	PVC	2"	SCH 80	
1110	1050		✓	PVC	2"	SCH 80	.040

DEPTH FROM SURFACE	ANNULAR MATERIAL			
	TYPE			
FL	to	FL		
1337	900			#8 SAND
900	700		✓	
#2	700	300		#8 SAND
300	0		✓	

ATTACHMENTS (✓)
Geologic Log
Well Construction Diagram
Geophysical Log(s)
Soil/Water Chemical Analysis
Other
ATTACH ADDITIONAL INFORMATION, IF IT EXISTS.

CERTIFICATION STATEMENT
I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief.
NAME BRADLEY & SONS
(PERSON, FIRM, OR CORPORATION) (TYPED OR PRINTED)
3625 S. HIGHLAND DEL REY CA 93616
ADDRESS CITY STATE ZIP
Signed Donna Bodie
WELL DRILLER/AUTHORIZED REPRESENTATIVE DATE SIGNED 11/23/09 414178 C-57 LICENSE NUMBER

DWR 188 REV. 11-97

IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

APPENDIX B - WATER QUALITY DATA

Laboratory Reports



4 Justin Court Suite D, Monterey, CA 93940
831.375.MBAS

montereybayanalytical@usa.net
ELAP Certification Number: 2385

Martin Feeney
P.O. Box 23240
Ventura, CA 93002

Tuesday, December 01, 2009

Lab Number: AA62052

Collection Date/Time: 11/11/2009 12:00 Sample Collector: BURKE, M
Submittal Date/Time: 11/11/2009 14:22 Sample ID

Sample Description: Seaside Basin Water Master, MW-5 Shallow

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed
Alkalinity, Total (as CaCO3)	2320B	mg/L	129		2		11/11/2009
Arsenic, Total	200.8	ug/L	2		1	10	11/23/2009
Bicarbonate (as HCO3-)	2320B	mg/L	157		10		11/11/2009
Calcium	3111B	mg/L	43		1		11/20/2009
Carbonate as CaCO3	2320B	mg/L	Not detected		10		11/11/2009
Chloride	300.0	mg/L	157		1	250	11/12/2009
Fluoride	300.0	mg/L	0.12		0.10	2.0	11/12/2009
Hardness (as CaCO3)	2340B	mg/L	173		10		11/20/2009
Iron, Total	3111B	ug/L	Not detected		50	300	11/23/2009
Langlier Index (15 deg. C)	2330B		0.41				11/30/2009
Langlier Index (60 deg. C)	2330B		1.01				11/30/2009
Magnesium	3111B	mg/L	16		1		11/20/2009
Manganese, Total	3111B	ug/L	141		20	50	11/23/2009
Nitrate as NO3	300.0	mg/L	3		1	45	11/12/2009
Nitrite as Nitrogen	300.0	mg/L	Not detected		0.1	1.00	11/12/2009
o-Phosphate-P	300.0	mg/L	Not detected		0.1		11/12/2009
pH (Laboratory)	4500-H+B	STD. Units	8.2				11/11/2009
Potassium	3111B	mg/L	3.5		0.5		11/20/2009
QC Anion Sum x 100	Calculation	%	95%				11/20/2009
QC Anion-Cation Balance	Calculation	%	1				11/20/2009
QC Cation Sum x 100	Calculation	%	97%				11/20/2009
QC Ratio TDS/SEC	Calculation		0.58				11/30/2009
Sodium	3111B	mg/L	100		1		11/20/2009
Specific Conductance (E.C)	2510B	umhos/cm	816		1	900	11/11/2009
Sulfate	300.0	mg/L	33		1	250	11/12/2009
Total Diss. Solids	2540C	mg/L	475		10	500	11/18/2009

Sample Comments:

Report Approved by:

David Holland, Laboratory Director

mg/L: Milligrams per liter (=ppm)

ug/L : Micrograms per liter (=ppb)

PQL : Practical Quantitation Limit

H = Analyzed outside of hold time

E = Analysis performed by External Laboratory; See External Laboratory Report attachments.

D = Method deviates from standard method due to insufficient sample for MS/MSD



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831.375.MBAS

montereybayanalytical@usa.net
ELAP Certification Number: 2385

Martin Feeney
P.O. Box 23240
Ventura, CA 93002

Tuesday, December 01, 2009

Lab Number: AA62051

Collection Date/Time: 11/11/2009 11:00 Sample Collector: BURKE, M
Submittal Date/Time: 11/11/2009 14:22 Sample ID

Sample Description: Seaside Basin Water Master, MW-5 Deep

Analyte	Method	Unit	Result	Qual	PQL	MCL	Date Analyzed
Alkalinity, Total (as CaCO3)	2320B	mg/L	223		2		11/11/2009
Arsenic, Total	200.8	ug/L	1		1	10	11/23/2009
Bicarbonate (as HCO3-)	2320B	mg/L	272		10		11/11/2009
Calcium	3111B	mg/L	44		1		11/20/2009
Carbonate as CaCO3	2320B	mg/L	Not detected		10		11/11/2009
Chloride	300.0	mg/L	76		1	250	11/12/2009
Fluoride	300.0	mg/L	0.27		0.10	2.0	11/12/2009
Hardness (as CaCO3)	2340B	mg/L	151		10		11/29/2009
Iron, Total	3111B	ug/L	Not detected		50	300	11/23/2009
Langlier Index (15 deg. C)	2330B		0.75				11/30/2009
Langlier Index (60 deg. C)	2330B		1.34				11/30/2009
Magnesium	3111B	mg/L	10		1		11/20/2009
Manganese, Total	3111B	ug/L	83		20	50	11/23/2009
Nitrate as NO3	300.0	mg/L	2		1	45	11/12/2009
Nitrite as Nitrogen	300.0	mg/L	Not detected		0.1	1.00	11/12/2009
o-Phosphate-P	300.0	mg/L	Not detected		0.1		11/12/2009
pH (Laboratory)	4500-H+B	STD. Units	8.3				11/11/2009
Potassium	3111B	mg/L	4.2		0.5		11/20/2009
QC Anion Sum x 100	Calculation	%	99%				11/20/2009
QC Anion-Cation Balance	Calculation	%	2				11/29/2009
QC Cation Sum x 100	Calculation	%	103%				11/29/2009
QC Ratio TDS/SEC	Calculation		0.65				11/30/2009
Sodium	3111B	mg/L	119		1		11/20/2009
Specific Conductance (E.C)	2510B	umhos/cm	808		1	900	11/11/2009
Sulfate	300.0	mg/L	64		1	250	11/12/2009
Total Diss. Solids	2540C	mg/L	525		10	500	11/18/2009

Sample Comments:

Report Approved by:

David Holland, Laboratory Director

mg/L: Milligrams per liter (=ppm)

ug/L : Micrograms per liter (=ppb)

PQL : Practical Quantitation Limit

H = Analyzed outside of hold time

E = Analysis performed by External Laboratory; See External Laboratory Report attachments.

D = Method deviates from standard method due to insufficient sample for MS/MSD

APPENDIX C - SUPPORTING DOCUMENTS

1. Technical Memorandum -- Basis of Design – Seaside Basin Groundwater Watermaster's 2009 Inland Monitoring Well, dated June 29, 2009, 2007 prepared by Martin B. Feeney PG, CHG

TECHNICAL MEMORANDUM

To: Seaside Groundwater Basin Watermaster
Date: June 29, 2009

From: Martin Feeney, PG, CHg
Project No:

Subject: Basis of Design – Seaside Basin Groundwater Watermaster's
2009 Inland Monitoring Well

INTRODUCTION

Pursuant to the Seaside Groundwater Basin Watermaster's (Watermaster) obligations under the court settlement, the Watermaster is moving ahead with installation of inland monitoring wells to better understand the inland hydrogeology of the basin. The Watermaster has budgeted for the installation of one new monitoring well in 2009. This document presents a basis-of-design for the proposed well. Presented in this document is a review of the regional hydrogeologic setting, a summary of available site-specific data, a preliminary design, construction approach and cost estimate.

PROJECT GOALS

The purpose of the monitoring well installation project is to further understand the hydrogeology of the inland portion of the Seaside Groundwater Basin. Data will be developed from both the drilling of the monitoring well and from the longer-term record from the established monitoring well.

The information from the borehole will provide for the following:

- Allow identification of aquifer units in the inland portion of the Seaside Groundwater Basin.
- Allow for delineation of depths, thickness and characteristics of the underlying aquifer units.
- Collect lithologic and geophysical data that will assist in better delineation of aquifer units and basin structure

The completed monitoring well will allow for the following:

- Allow for on-going collection of aquifer-specific water level data
- Allow for on-going collection of aquifer-specific water quality data

DESIGN CONSIDERATIONS

Location

Two potential locations are being considered for the inland monitoring well. One site is located on land that is to be developed as Monterey Peninsula College's (MPC) Fort Ord Campus. The other site is at the current Bureau of Land Management (BLM) Headquarters on Fort Ord. The BLM Headquarters is located at the site of the old Camp Huffman, a predecessor to Fort Ord. Camp Huffman previously had a water well that has subsequently been destroyed. However, data from this well has been used to support much of the hydrogeologic analysis of the Seaside Basin. The locations of the sites under consideration are shown on Figure 1 – Well Site Location Map.

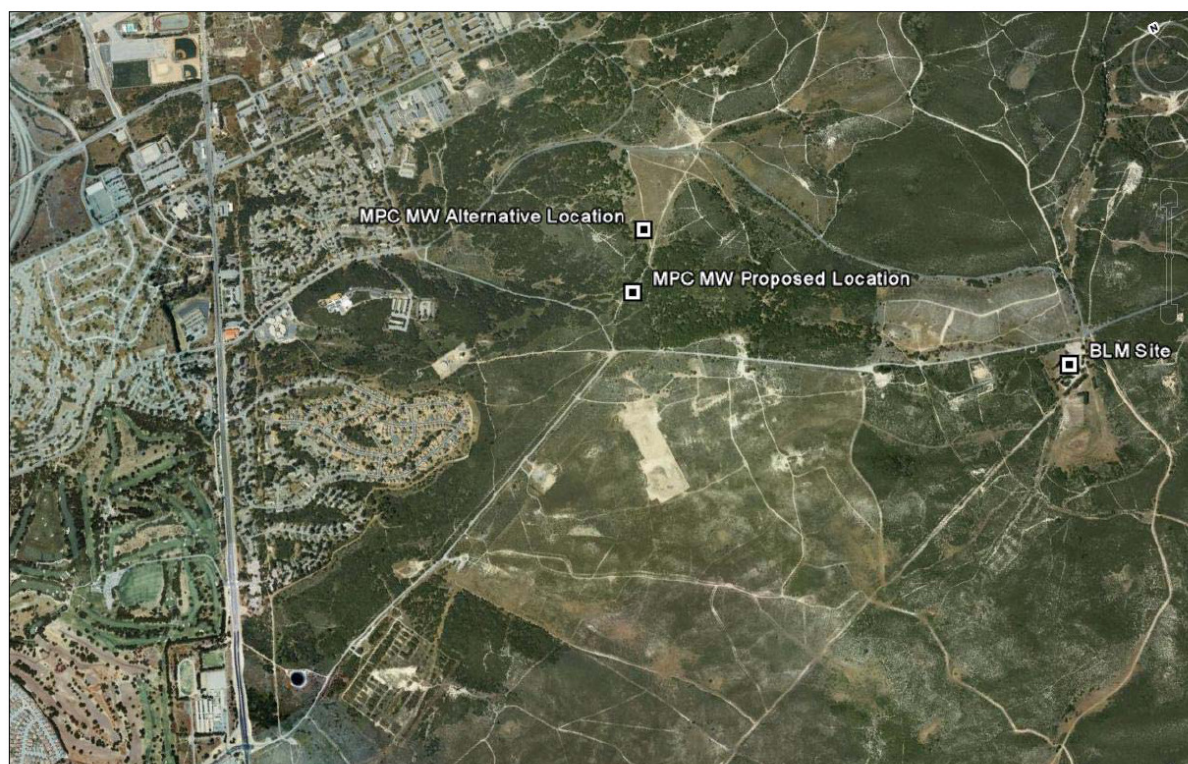


Figure 1 - Well Site Location Map

Hydrogeology

Regional Hydrogeology

Due to the surficial dune sand deposits that cover most of the Seaside Basin indications of the subsurface geology is largely obscured. As such, subsurface data in the Basin is limited to areas where water wells have been historically drilled. Very few water wells have been drilled in the inland portion. The wells that have been drilled are limited to the historical well at the BLM site and the monitoring wells installed by the MPWMD.

Based on data from adjacent areas, the hydrogeology underlying both sites is anticipated to be consistent with conditions observed in the other portions of the Seaside Groundwater Basin. That is, a sedimentary sequence of water-bearing materials that overlie the non-water-bearing Monterey Shale. The Monterey Shale is considered the bottom of the Seaside Ground Water Basin due to its low-permeability and poor water quality. The sedimentary materials overlying the Monterey Shale are assigned to three stratigraphic units — the Aromas Sand/Older Dunes, Paso Robles Formation and the underlying Santa Margarita Sandstone/Purisima Formation. Structural deformation of the basin has resulted in varying thickness and depths of these units across the basin.

The three upper stratigraphic units constitute the three aquifers in the Seaside Basin. The upper aquifer consists of the Aromas Sand/Older Dunes. This aquifer is of minor importance in the basin as it is unconfined, in direct hydraulic communication with the ocean, and is saturated only in the extreme coastal portion of the basin. The Aromas Sand/Older Dune aquifer is underlain by the Paso Robles Formation. This formation consists of a complex sequence of interbedded sand, gravel and clay deposits. These deposits are more than 600 feet thick in some portions of the basin. The water bearing portions of this formation are thick sand gravel lenses of limited areal extent. The Santa Margarita Sandstone underlies the Paso Robles Formation. The Santa Margarita Sandstone is a loose to weakly

cemented arkosic sandstone with a stratigraphic thickness of approximately 200 to 250 feet. The upper portion of this formation is clean sand. With increasing depth and proximity to the underlying Monterey Shale, the clay content of the formation increases. Recent exploration suggests that in the northern portion of the Seaside Groundwater Basin, the Santa Margarita Sandstone is replaced in the stratigraphic sequence by the Purisima Formation.

In the inland area of the Seaside Basin, the understanding of the areal and vertical distribution of the various hydrostratigraphic units described above is limited. However, regional analysis of the area has allowed investigators (Clark and Rosenberg 1994, Rosenberg 2007) to infer regional structure of the area. Presented in Figure 2 – Contours on Top of Monterey Shale are contours on the top of the Monterey Shale from these two sources overlaid on a regional airphoto showing existing well control and proposed well sites.

Site Specific Data

Camp Huffman Well – This now-destroyed well was located at what is now the BLM headquarters on Fort Ord. The well was drilled in 1912 to 485 feet and was at an elevation of approximately 390 feet. As constructed the well bottom was at an elevation of approximately 95 feet below sea level. The wellbore encountered sand, gravel and clay horizons to total depth. The available geologic data are inadequate to precisely define the producing aquifer unit but analysis of the regional hydrogeology suggests that the well was in the Paso Robles Formation, the top of the Santa Margarita Sandstone being inferred to be approximately 55 deeper than the well at a depth of approximately 540 feet.

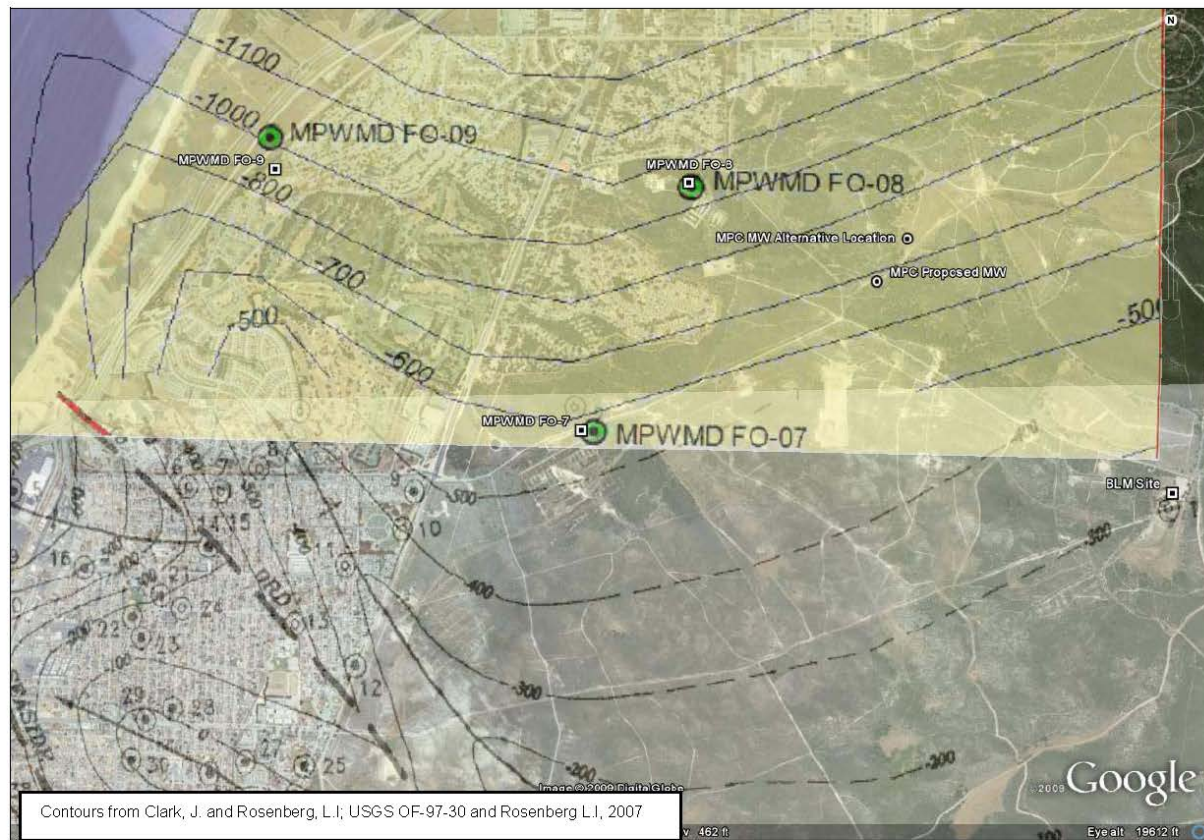


Figure 2 - Contours on Top of Monterey Shale

Based on the above preliminary well designs can be developed for each of the sites. Proposed for each well site are three casing strings; one perforated in the Santa Margarita Sandstone the other two perforated in the upper and lower portions of the overlying Paso Robles Formation. Assuming a multiple completion at the selected site, the well particulars are as presented below:

Site	Elevation (feet, mgl)	Projected Depth to Water (feet, bgs)	Estimated Elevation QTP Water Surface (feet, msl)	Estimated Elevation of Top of Monterey Shale (feet, msl)	Estimated Depth to Top of Santa Margarita (feet, bgs)	Estimated Elevation of Top of Santa Margarita (feet, msl)	Saturated Thickness of QTP (feet)	Estimated Depth of Deep Boring (feet, bgs)	Estimated Depth of Tsm Well (feet, bgs) ^c	Estimated Depth of Deep QTP Boring/Well (feet, bgs) ^b	Estimated Depth of Shallow QTP Boring/Well (feet, bgs) ^a	Total Drilled Footage (feet)	Total Well Footage (feet)
BLM	394	300	80	-400	544	-150	230	794	694	469	414	1677	1577
MPC	343	273	70	-700	793	-450	520	1043	943	718	373	2134	2034
MPC Alt	296	231	65	-735	781	-485	550	1031	931	706	331	2068	1968

notes

a Shallow QTP Completion 100 below saturation

b Deep QTP Completion 75 above Tsm/QTP contact

c Tsm Completion 100 above Tm contact

Monitoring Well Functional Requirements

The adopted well design must include the flexibility to allow the well to accommodate all the intended and potential uses. Although the primary data interest is water level and there are no reasons to anticipate rapid changes in water quality, periodic water quality sampling is still likely to be performed. The adopted design therefore needs allow for aquifer-specific collection of water level and water quality data. Well casings must be of sufficient diameter to allow for anticipated sampling and monitoring equipment.

With minor exception, all water level monitoring equipment, either manual or automated, is designed to fit within 1-inch diameter casings. As such, this criterion is not particularly limiting. Collection of water quality samples is more complicated. The proposed wells are to be as deep as 900 feet. Water levels in the wells are anticipated to be between 200 and 300 feet below ground surface. For the deeper wells, this will result in a standing water column of 600 to 700 feet of water in the well under static conditions. Some sampling guidelines suggest that as much as three casing volumes should be removed prior to collecting representative samples. Assuming a 2.5 inch diameter PVC casing, this can be more than 500 gallons of purge water. Removal of this amount of water with a pump that will fit in this size casing and pump from the anticipated depths can take significant time (100 minutes at 5 gpm). Increasing the casing diameter to 4-inch would allow for a larger pump, however, increasing the casing diameter will increase costs significantly. Alternatively, the well could be outfitted for airlift pumping. This is the method used by the Monterey Peninsula Water Management District to purge their monitoring wells. An additional alternative would be to adopt the use of "zero-purge" sampling methods that utilize downhole tools that sample directly opposite the well screen. This is the method utilized for the Sentinel Wells.

CONCEPTUAL WELL DESIGN/WORKPLAN

Overall workplan includes drilling a borehole to the top of the Monterey Shale. After reaching Monterey Shale the borehole will be geophysically logged. These geophysical data, along with lithologic data from the borehole will be used to determine the depth, perforated intervals and seal depths for the monitoring wells.

Potential Monitoring Well Designs

At locations where there is an interest in monitoring hydrogeologic conditions two or more underlying aquifer units, there are two common monitoring well designs. The nested well consist of a single borehole containing two or more separate casing strings. Each casing string is perforated at differing depths and is hydraulically separated from other perforated intervals with low-permeability seals. The other common design is a well cluster. This design utilizes a separate smaller diameter borehole for each casing string. In comparison, a nested well designed to monitor three separate hydrogeologic units would have three casings in a single borehole whereas; a well cluster designed for the same purpose would consist of three separate wells of varying depths. The two designs are presented on Figure 3 – Monitoring Well Designs.

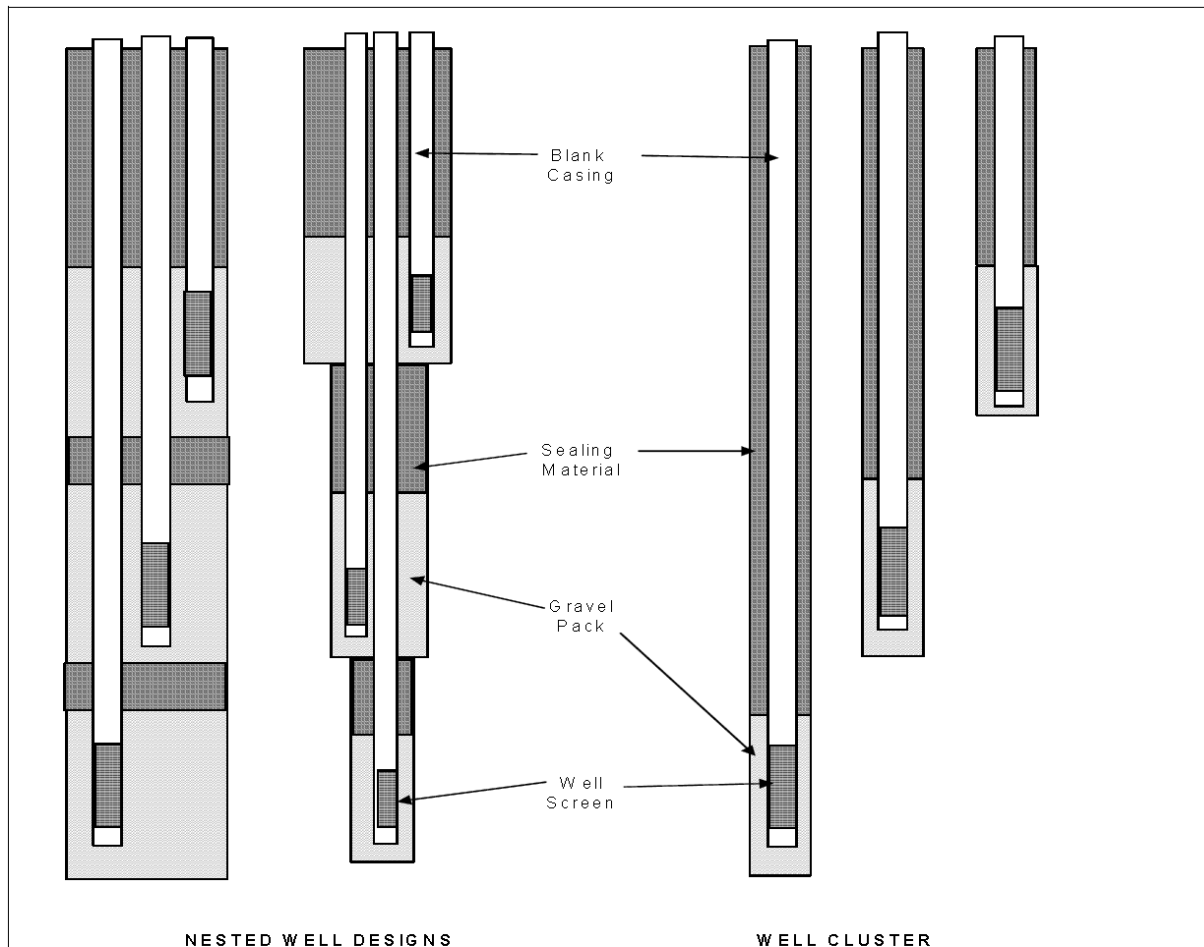


Figure 3 - Monitoring Well Designs

Both of the designs have pros and cons. The primary advantage of the nested well design is that its surface footprint is more limited than the well cluster. The surface expression of a 3-aquifer zone nested

well is typically a single large diameter surface mounted vault. In comparison, the surface expression of a comparable well cluster would consist of three smaller diameter surface mounted vaults separated by 10 or more feet.

The primary advantage of the well cluster is the increased confidence in the hydraulic separation between aquifer units. Although nested wells are routinely constructed and typically can display significant differences in water level between the casings, there is always the possibility that the seals within the borehole are less than perfect and the some minor leakage between aquifer units is occurring.

The cost differences between the approaches are not significant. Whereas there is significantly more drilled footage in a clustered design, the boreholes are smaller in diameter reducing the volume of fluid and cuttings. Comparison of the volume of cuttings and fluids from a 14 ¾ inch diameter 1,000 foot borehole for a triple completion nested well verses three 8 ¾ inch diameter wells (say 1,000, 700 and 400 feet in depth) comprising a cluster reveals the three well cluster comprised of three separate holes to have a third less cuttings and fluids. Given that disposal of cuttings and fluids are significant costs, this difference in volume of cuttings and fluids can balance out the cost of the more drilled footage in the cluster design over the nested.

Additionally, construction of a nested well takes significantly more time than construction of a single casing well. Each casing needs to be installed, gravel packed, an intermediate seal placed and allowed to harden, a second casing string installed, gravel packed and sealed and repeated. This process can typically take several days. This extended construction time increases risk of hole stability problems and formation damage. This compares to single casing construction that allows installation of casing, gravel pack and final seal as continuous process; a process that can take less than a day for each well.

Bradley and Sons Drilling, the Contractor that constructed the Watermaster's Sentinel Wells, provided estimates for the two designs under consideration that confirms the assertions above. The estimated cost for the nested design is \$212,000 while the clustered design is estimated at \$202,000. The increased cost for the nested design derives from the fluid and disposal costs and the increased diameter of the conductor casing. The well bid documents and bid results are attached.

CONCLUSIONS/RECOMMENDATIONS

Given the above it is recommended that the subject monitoring well be established as a well cluster. The recommended design and methods are summarized below:

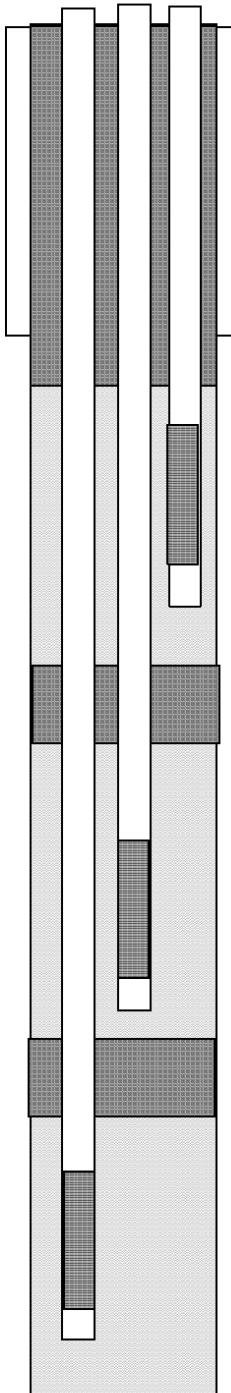
Recommended Design and Methods

Design:	Well Cluster (3 boreholes, 3 wells)
Drilling Method:	Direct Rotary Method
Casing:	2 inch Sch. 80 PVC casing (2.375 inch OD)
Screen:	2 inch diameter Sch. 80 PVC horizontally slotted (0.032 inch slots)
Borehole size:	9 7/8 or 10 5/8 inch diameter
Gravel Pack:	8 x 16 or Aquarium #3
Sealing Material:	Concrete or as permitted by local agency
Development:	Swabbed and air-lifted clean to bottom

-/-

SEASIDE BASIN WATERMASTER 2009 Monitoring Well

Alternative A - Nested Well - 3 completions



Cross Sectional View

Proposed Well Design

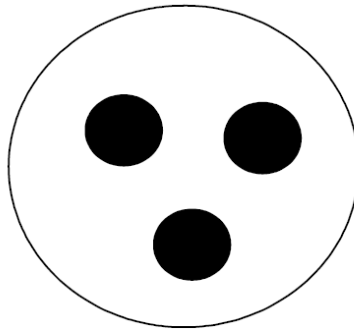
- 2 -inch diameter casings
- 8-16 Gravel Pack
- Cement Seals (or as allowed by regulators)
- 0.032" slots

Methods:

- Drilling: Direct Rotary
- Construction: Casings separated by 2 inches
- Development: Swabbed and air-lifted to bottom
- Surface: Traffic Rated Grade-level vault

Assume:

- 200 foot conductor
- Borehole Depth: 1,000
- Well Depths: 900, 600, 400 - Total 1900
- 50 foot Screens
- 100 foot Isolation Seals
- 300 Annular Seal



Plan View

SEASIDE BASIN WATERMASTER 2009 Monitoring Well**Alternative A - Nested Well - 3 completions**

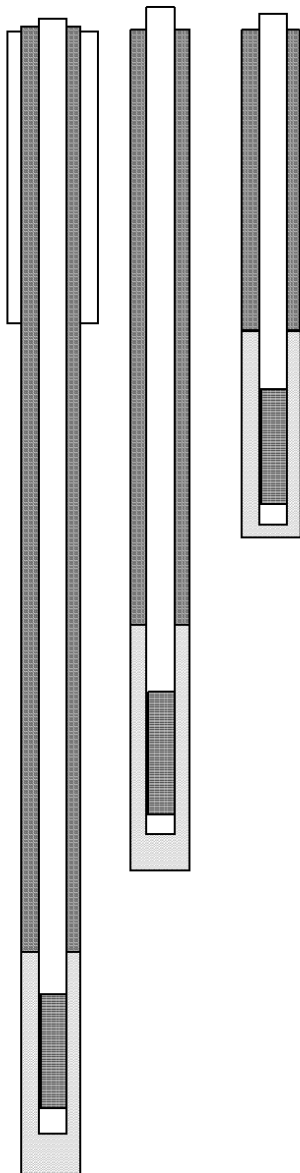
ITEM	DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT PRICE	TOTAL
1	Mobilization , Permits, Per Diem	Lump Sum	1	\$25,000.00	\$25,000.00
2	16-Inch Diameter Carbon Steel Conductor Casing	Linear Feet	200	\$250.00	\$50,000.00
3	Pilot Bore Drilling	Linear Feet	1,000	\$25.00	\$25,000.00
4	Geophysical Log	Lump Sum	1	\$2,500.00	\$2,500.00
5	Reaming Borehole 14" diameter	Linear Feet	900	\$20.00	\$18,000.00
6	Furnish and Install 2" diameter Sch. 80 PVC Blank Casing	Linear Feet	1,750	\$12.00	\$21,000.00
7	Furnish and Install of 2" Sch. 80 PVC Well Screen	Linear Feet	150	\$14.00	\$2,100.00
8	Gravel Pack	Linear Feet	225	\$30.00	\$6,750.00
9	Furnish and Install Isolation Seals and Annular Seal - Cement Grout	Linear Feet	675	\$30.00	\$20,250.00
10	Fluid and Cuttings Containment and Disposal	Lump Sum	1	\$30,000.00	\$30,000.00
11	Well Development	Lump Sum	1	\$6,000.00	\$6,000.00
12	Surface Completion	Lump Sum	1	\$1,500.00	\$1,500.00
13	Clean Up and Demobilization	Lump Sum	1	\$4,000.00	\$4,000.00

TOTAL

\$212,100.00Bidder: BRADLEY & SON'S, INC.License: 414178By: Doug BradleyTitle PRESDate: 6/25/2009

SEASIDE BASIN WATERMASTER 2009 Monitoring Well

Alternative B - Well Cluster -- 3 Wells



Cross Sectional View

Proposed Well Design

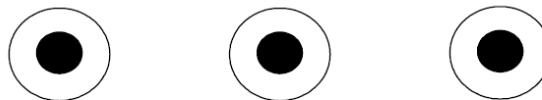
- 2 -inch diameter casings
- 8-16 Gravel Pack
- Cement Seals (or as allowed by regulators)
- 0.032" slots

Methods:

- Drilling: Direct Rotary
- Construction: Centralizers
- Development: Swabbed and air-lifted to bottom
- Surface: Traffic Rated Grade-level vault

Assume:

- 200 foot conductor on deep borehole
- Borehole Depths: 1000, 620, 420 Total = 2040
- Well Depths: 900, 600, 400 - Total 1900
- 50 foot Screens
- Annular Seals: 825, 525, 325 Total 1675
- Gravel Pack: 75 feet per well



Plan View

SEASIDE BASIN WATERMASTER 2009 Monitoring Well**Alternative B - Well Cluster – 3 Wells**

ITEM	DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT PRICE	TOTAL
1	Mobilization , Permits, Per Diem	Lump Sum	1	\$25,000.00	\$25,000.00
2	10-Inch Diameter Carbon Steel Conductor Casing	Linear Feet	200	\$185.00	\$37,000.00
3	Borehole Drilling (8.75" diameter)	Linear Feet	2,040	\$25.00	\$51,000.00
4	Geophysical Log	Lump Sum	1	\$2,500.00	\$2,500.00
5	Installation of 2" Sch. 80 PVC Blank Casing	Linear Feet	1,750	\$12.00	\$21,000.00
6	Installation of 2" Sch. 80 PVC Well Screen	Linear Feet	150	\$14.00	\$2,100.00
7	Gravel Pack	Linear Feet	225	\$14.00	\$3,150.00
8	Cement Grout	Linear Feet	1675	\$14.00	\$23,450.00
9	Fluid and Cuttings Containment and Disposal	Lump Sum	1	\$25,000.00	\$25,000.00
10	Well Development	Lump Sum	1	\$6,000.00	\$6,000.00
11	Surface Completions	Lump Sum	1	\$2,000.00	\$2,000.00
12	Clean Up and Demobilization	Lump Sum	1	\$4,000.00	\$4,000.00

TOTAL

\$202,200.00Bidder: BRADLEY & SON'S, INC.License: 414178By: Doug BradleyTitle PRESDate: 6/25/2009

TECHNICAL ADVISORY COMMITTEE

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

MEETING DATE:	January 13, 2010
AGENDA ITEM:	3
AGENDA TITLE:	Preliminary Discussion of Possible Modeling Scenarios to be Performed in 2010
PREPARED BY:	Robert Jaques, Technical Program Manager
<p>SUMMARY: In 2009 we completed development of the new Seaside Basin Groundwater Model, and HydroMetrics ran the five scenarios we asked them to run. Recognizing that the five initial scenarios were intended to provide us preliminary findings to help focus our attention on refined scenarios that could provide more directly useful information and help the Watermaster to shape Basin management decisions, we included in the FY 2010 Budget a line-item to run additional scenarios.</p> <p>This agenda item is intended to open discussion on this topic, with the objective of developing additional scenarios we would like analyzed during FY 2010. There are many considerations to be made in defining the additional scenarios, and it may not be possible to complete this discussion in a single meeting. However, we should make as much progress as we can in today's meeting, and clarify and define any additional information the TAC needs in order to complete its discussions. Assuming that additional information can be provided, the topic can then be continued to the next TAC meeting in hopes of arriving at refined scenarios to recommend to the Board for approval.</p>	
ATTACHMENTS:	Discussion paper for use by the TAC in refining the modeling scenarios to be run in 2010
RECOMMENDED ACTION:	Discuss and provide direction on refining the list of scenarios to be performed in 2010

DISCUSSION PAPER FOR USE BY THE TAC
IN REFINING
MODELING SCENARIOS TO BE RUN IN 2010

Introduction

In the FY 2010 Budget the Watermaster has included funds for HydroMetrics to simulate additional management scenarios with the regional groundwater Model. The information presented below serves as background and initial thoughts for a discussion with the TAC. This is not intended to be a series of recommendations, but rather a guidance document for further discussion. During the January 13th TAC meeting, the TAC should work to develop a clear outline of what groundwater modeling work should be accomplished during 2010.

Management Objectives

The term “management objectives” was touched on in HydroMetrics’ presentations to the TAC and the Board on the Groundwater Model. HydroMetrics recommends the development of management objectives prior to defining scenarios to be evaluated by the groundwater Model. In this context management objectives refers to the guiding foundations of the Watermaster’s groundwater management actions. Management objectives would describe how the Watermaster wants the Seaside Groundwater Basin to be managed, how producers want to use the Seaside Groundwater Basin, and how soon the Seaside Groundwater Basin should achieve a certain state. Agreeing upon objectives would help give the Watermaster targets for developing and analyzing various management actions. After agreeing to various objectives, all decisions by the Watermaster could be measured against whether they promote or detract from these objectives.

Objectives could vary by aquifer or subarea. Different objectives could be developed for different parts of the Seaside Groundwater Basin. The following are some possible management objectives:

- **Raise coastal groundwater elevations to protective elevations.** The Watermaster would decide whether coastal groundwater elevations need to approach protective elevations quickly or slowly.
 - Raising coastal groundwater elevations quickly will prevent seawater intrusion, allowing the various producers to operate without the threat of losing production to seawater intrusion. This will satisfy an important requirement of the Amended Decision. It will, however, likely require a more significant up-front investment in injection, and (depending on the method for raising water levels) much of the injected water may be lost to the ocean.
 - Raising coastal groundwater levels slowly will permit a wider variety of groundwater management options, because the constraint of high coastal water elevations has been relaxed. This may result in less expensive management options. This approach, however, retains the threat of future seawater intrusion during the time that protective elevations are being attained. If seawater intrusion is observed in the future, it is likely that much of the pumping capacity of the basin will be eliminated quickly in order to reverse seawater intrusion. Replacing the lost pumping capacity could be expensive.
- **Lower coastal water levels by forming a pumping trough to prevent seawater intrusion.** This is an optional management objective to the objective stated above.
 - This can be accomplished more quickly than raising groundwater elevations to protective elevations.
 - The pumped water would need to be disposed of. The best location for disposal would be a desalination plant.

- It is difficult to reverse this management action after it has been initiated.
- **Store groundwater in the various subareas.**
 - Storing water long term will provide a buffer during dry years.
 - Storing water seasonally effectively uses the basin as a large storage tank.
 - Water stored in the Santa Margarita Formation must be injected through wells (relatively expensive), but can likely be easily recovered.
 - Water can be stored in the Paso Robles aquifer by means of spreading basins which are relatively less expensive, but the water may not all be recoverable.
 - Water stored in the Laguna Seca subarea can likely be recovered, but the storage volume may be limited.
 - Various producers pump water from different depths and in different subareas, therefore the location and method of storage may benefit some producers more than others.
 - There is likely a large storage capacity in the Northern Inland subarea; however the exact capacity is uncertain due to limited data. There is a good potential that storing groundwater in this subarea will benefit the Northern Coastal subarea as groundwater can be captured by existing wells as it flows towards the ocean.

Other management objectives could be developed by TAC and Board members.

Technical Program Manager's Comments and Recommendations: The TAC should decide whether it is the best use of the TAC's time, at this point in time, to develop management objectives as a prerequisite to defining the refined scenarios to be modeled in 2010. My recommendation as Technical Program Manager is that we should proceed with the modeling work as planned, and that the development of management objectives can be discussed and potentially pursued separately because I believe it is currently of less importance to the Watermaster than getting the results of the modeling (and the Protective Water Level refinements discussed under Agenda Item No. 4). If the TAC concurs that it is more important to proceed with the modeling work first, and to consider the pros and cons of developing management objectives as a separate undertaking, then we can adhere to the currently proposed Schedule contained in Agenda Item No. 7. However, if the TAC feels that development of management objectives should precede the modeling work, then the time and cost to develop such objectives will need to be determined and, if additional funding for HydroMetrics' services are required for this work, for that funding to be approved by the Board.

Additional Potential Scenarios

During 2009, HydroMetrics evaluated five scenarios using the groundwater Model. The scenarios were intended to show the general groundwater impacts that would result from various types of groundwater management schemes. Results from the 2009 scenarios showed the following:

- Most groundwater management objectives can be achieved, but not necessarily simultaneously.
- The mandated triennial pumping reduction results in a slow increase in most groundwater elevations. The mandated pumping reduction decreases does not completely eliminate inflow from the ocean.
- Because the Santa Margarita aquifer is highly confined beneath thick clay beds near the ocean, it does not receive significant deep percolation recharge near the ocean. Therefore, it will take a long time for wells in the Santa Margarita aquifer to reach protective elevations without artificial recharge.
- Inland injection (along General Jim Moore Boulevard) is effective at raising groundwater levels in the Santa Margarita Formation. However, coastal injection may allow additional pumping in the basin by focusing the groundwater level rise at the coast.
- The amount of water in storage is highly dependent on rainfall.
- The quantity of groundwater in storage does not necessarily equate to recoverable groundwater. Groundwater stored in the shallow Paso Robles aquifer in some scenarios may not be easily recovered with existing wells, which mostly extract from the underlying Santa Margarita aquifer. New wells will be required in the Paso Robles aquifer to recover more of the stored water.

- Groundwater management will likely require a number of coordinated actions combining managed groundwater pumping with an injection and/or recharge plan. It will be difficult to rely on either reduced pumping or injection/recharge alone for basin recovery.
- Moving pumping inland has limited benefit.
- The groundwater model should be used to refine the general management plans.

The Watermaster FY 2010 Budget includes \$25,000 to fund evaluating additional model scenarios. These scenarios should build on the information obtained in 2009 to answer specific questions or focus on more realistic groundwater management options than those modeled in 2009.

I feel it is important by way of a “reality check” that we be cognizant of the amount of supplemental water being proposed for the Seaside Basin in the projects being evaluated under the Coastal Water Project’s (CWP) EIR. The three principal Phase 1 projects being considered in the EIR all propose to provide only 2,600 AFY of supplemental water to the Basin. Several of the scenarios that were analyzed for the Watermaster by HydroMetrics in 2009 involved significantly more supplemental water than 2,600 AFY. In my opinion it is not money well-spent for the Watermaster to analyze further scenarios that require supplemental water in quantities that are greater than any of the currently proposed Phase 1 projects can supply. Once the Phase 1 project has been selected by the PUC, if there is any indication of likelihood of there being a Phase 2 project which could supply additional water to the Basin, then it would make sense at that time to define additional scenarios for modeling to assess the impacts of bringing increased quantities of supplemental water to the Basin.

The following are some additional scenarios proposed by HydroMetrics for evaluation in 2010. HydroMetrics has indicated its full openness to these scenarios being accepted, refined, or rejected by the TAC, as well as having the TAC offer other scenarios for consideration. I have included my recommendations in *italics* at the end of the description of each scenario, for the TAC’s consideration.

1. Refine the estimated Usable Storage Capacity of the Seaside Groundwater Basin. Annual estimates of the Basin’s Usable Storage Capacity, as well as a distribution of this storage capacity among Standard Producers, are required by the Amended Decision. The Usable Storage Capacity is the difference between the current groundwater level and some estimated maximum groundwater level. Estimating the Usable Storage Capacity will entail the following steps:
 - A. Agree upon the definition of a maximum groundwater level. The maximum groundwater level may be the natural groundwater level if there were no groundwater pumping. Alternatively, the Watermaster may want to set a minimum depth below ground surface to prevent liquefaction of surface soils or seepage into building substructures. If this scenario is chosen, the TAC should be prepared to discuss the definition of maximum groundwater level at the January 13th TAC meeting
 - B. Simulate the maximum groundwater level. The calibrated groundwater model will be used to simulate a maximum groundwater level, incorporating the definition agreed to in step A. The model will need to use average recharge conditions rather than the 22-year historical recharge used in most simulations.
 - C. Agree upon the time period that defines current groundwater levels. Because shallow groundwater levels do not vary significantly over the course of a year, the date used to define current groundwater levels is likely not too important. However, this calculation must be done every year, so consistency is desirable. Once a date is established, all pumping data, rainfall data, and groundwater level data up to that date must be entered into the groundwater model, and the model must be run. An early date, such as June, assures that all of the data will be available early in the year. A later date, such as September, may be more indicative of the annual water level changes, but will require a rapid modeling exercise before the annual report is due.
 - D. Run the groundwater model to estimate current groundwater conditions. The groundwater model will be updated annually to simulate the most recent recharge, pumping, and

groundwater levels. The groundwater levels simulated on the date chosen in step C will be used to represent current conditions. The Watermaster will need to budget an annual groundwater model update every year to regularly refine the Usable Storage Space estimate.

- E. Calculate the volume of water between current conditions and maximum conditions. The cell-by-cell water levels will be subtracted from each other, and multiplied by the appropriate cell-by-cell specific yield and specific storage data to obtain the total Usable Storage Space.
- F. Distribute Usable Storage Space among the standard producers. This distribution will be in accordance with Table 1 of the Amended Decision.

Technical Program Manager's Recommendation: *My understanding is that there is a vast amount of usable storage capacity available within the Basin, and that it is far in excess of what would be needed for any storage projects being contemplated by any parties or groups of parties at this time. It is also my understanding that the projects currently being evaluated in the Coastal Water Project EIR all only propose to provide 2,600 AFY of water to be stored in the Basin via ASR. As found in the work HydroMetrics did in 2009 to develop preliminary Protective Water Levels, this is less than the amount that will be needed to reach Protective Water Levels in most parts of the Basin. For these reasons I do not think it is currently important to spend more time and money on refining the storage capacity of the Basin. With the storage capacity determination made in the Basin Management Action Plan, prepared by HydroMetrics, I believe we have sufficient data upon which to allocate storage capacity to the Producers and fulfill that requirement of the Amended Decision. This is discussed in more detail under Agenda Item No. 5.*

- 2. Identify effects of additional pumping in the Laguna Seca subarea. The purpose of this scenario is to begin addressing questions about the ability of wells in the Laguna Seca subarea to pump additional groundwater. The scenario will be based on the baseline scenario created in 2009. Three new simulations will be run, with pumping from all wells in the Laguna Seca subarea increased by 10%, 20%, and 25% for all years. These percentages may be modified, based on discussions with the TAC. At a minimum, each simulation will be analyzed for the following:
 - A. Impact on coastal groundwater levels,
 - B. Impact on amount of groundwater flowing into the Southern Coastal subarea,
 - C. Impact on amount of groundwater flowing into the Northern Inland subarea, and
 - D. Changes to Laguna Seca subarea groundwater levels.

Technical Program Manager's Recommendation: *I concur with evaluating this scenario in 2010. At least one Board member has specifically asked us to look at the amount of outflow to the ocean from the Southern Coastal Subarea, and how this information could be used in determining whether the Laguna Seca Subarea pumping could be increased without having any adverse effects on the other Subareas within the Basin. Before deciding whether we need to run the three proposed percentage increases, we should determine whether that will deplete the budgeted amount so much that other desired scenarios cannot be analyzed. If that were to be the case, it might be sufficient to run only one or at most two of these percentages.*

- 3. Begin to develop a likely groundwater management scenario. Based on the knowledge gained from the 2009 scenarios, the TAC should begin to develop a likely groundwater management scenario that could be realistically implemented. This should include any pumping modifications that may be anticipated, such as replacing pumping for the Bayonet and Black Horse golf courses with imported MCWD water. Any anticipated ASR or likely groundwater recharge scenarios should be included. This scenario should be designed to meet the management objectives identified earlier.

Technical Program Manager's Recommendation: *I concur with developing the most likely supplemental water scenario, along with any other Basin management actions that are likely to be implemented, to see the overall Basin impacts of these actions. Since it appears there is growing support for the "Regional Project" within the Coastal Water Project EIR process, I recommend that a scenario be developed that models the impacts on the Basin of implementing the Regional Project*

An additional scenario (scenario 4) that I propose for the TAC's consideration comes from one Board member's comment expressing his belief that optimizing the management of the water currently stored in the Santa Margarita aquifer is an important next-step for the Watermaster to undertake. I do not have a clear understanding of how the Model would be used in this regard, but assume that our consultants and TAC members may be able to help define a scenario that would be responsive to this Board member.

If funding remains after running and analyzing the scenarios listed above, additional scenarios could be defined, or refinements, for example to scenario 3 could be made, and these new scenarios analyzed to gain further knowledge for making management decisions.

**SEASIDE BASIN WATER MASTER
TECHNICAL ADVISORY COMMITTEE**

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

MEETING DATE:	January 13, 2010
AGENDA ITEM:	4
AGENDA TITLE:	Preliminary Discussion of Possible Refinements to Protective Water Levels to be Performed in 2010
PREPARED BY:	Robert Jaques, Technical Program Manager
SUMMARY:	
<p>In 2009 we completed development of preliminary Protective Water Levels (PWLs) for each of the Basin's production aquifers at the locations of several coastal wells. When these PWLs were presented to the TAC and then to the Board, there was discussion of performing refined analyses, and/or to determine how the PWLs would be affected if less than 100% of the Basin was to be protected. To provide for further work to be done on the PWLs in 2010, we included in the FY 2010 Budget a \$25,000 line-item to perform additional work on this.</p> <p>This agenda item is intended to open discussion on this topic, with the objective of determining what additional work we would like to perform regarding PWLs during FY 2010. There are many considerations to be made in deciding what assumptions should be made before proceeding with this work. Hence, and it may not be possible to complete this discussion in a single meeting. However, we should make as much progress as we can in today's meeting, and clarify and define any additional information the TAC needs in order to complete its discussions. Assuming that additional information can be provided, the topic can then be continued to the next TAC meeting in hopes of arriving at TAC consensus on what additional PWL work we would like to have HydroMetrics perform, so this can be recommend to the Board for approval.</p>	
ATTACHMENTS:	Discussion paper for use by the TAC in refining the Protective Water Levels in 2010
RECOMMENDED ACTION:	Discuss and provide direction on refining the Protective Water Levels

DISCUSSION PAPER FOR USE BY THE TAC
IN REFINING
THE PROTECTIVE WATER LEVELS IN 2010

Introduction

Results from the protective groundwater elevation analyses were presented during the October 28, 2009 special TAC meeting, and again at the November 4, 2009 Board of Directors Meeting. Two issues were identified at each of these meetings:

1. Because of the necessary timing, the protective groundwater elevation analyses relied on previous estimates of aquifer properties. Now that the regional groundwater model has been calibrated, better estimates of the aquifer properties are available.
2. It may not be necessary to protect 100% of the aquifer depth. Protecting 90% of the aquifer depth may adequately protect municipal and private wells.

There was no action taken on these two concerns at the time, but there was general agreement that these concerns should be addressed in 2010.

Refining Protective Water Levels

The objectives of performing this work would be to find the most cost-effective approach to provide the desired degree of protection to the wells within the Basin. HydroMetrics envisions the work as generally consisting of the following tasks:

1. Revise the protective groundwater elevation analyses using aquifer parameters derived from the calibrated groundwater model, and a reasonable range of aquifer parameters around the calibrated values. This will provide more confident estimates of the protective groundwater elevations. A report would be produced showing the revised estimates and range of uncertainty.
2. Estimate the impact of protecting only 90% of the aquifer depth. An estimate would be made of how far inland from each monitoring well the toe of the seawater intrusion may reach if only 90% of the aquifer depth is protected. If the toe of the seawater intrusion does not approach any currently active production wells, it may be preferable to use the 90% protective elevation as the target management objective.

TAC members may wish to raise other questions to be answered by performing work on the PWLs, or to propose revisions to these tasks. Also, if it is found that the 90% protective elevations still provide substantial protection to the existing production wells, it may be worthwhile examining an even lower percentage level of protection.

**SEASIDE BASIN WATER MASTER
TECHNICAL ADVISORY COMMITTEE**

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

MEETING DATE:	January 13, 2010
AGENDA ITEM:	5
AGENDA TITLE:	Preliminary Draft Watermaster Declaration of Total Usable Storage Capacity of the Basin
PREPARED BY:	Robert Jaques, Technical Program Manager

SUMMARY:

Attached is a preliminary draft of a Declaration to go to the Chief Executive Officer for further processing and ultimately to the Board for its approval stating the Total Usable Storage Capacity of the Basin, and also stating the storage allocations to be made to each of the entitled producers. Making such a declaration is required under the Amended Decision.

Now that the Basin Management Action Plan has been completed, and its findings with regard to Basin storage capacity have essentially been confirmed by the groundwater modeling work completed in late 2009, it is appropriate for the Watermaster to make this declaration. This will then allow storage allocations, also discussed in the Amended Decision, to be assigned to those producers who are entitled to receive a storage allocation.

I would appreciate getting the TAC's input on the attached preliminary draft document, so it can be forwarded to the Chief Executive Officer for further processing reflecting any technical issues that the TAC feels should be addressed in it.

ATTACHMENTS:	Draft Declaration of Total Usable Storage Capacity of the Basin
RECOMMENDED ACTION:	Approve or edit the Draft Declaration so it can be forwarded to the Board for its action

NOTICE TO ALL SEASIDE GROUNDWATER PRODUCERS

Pursuant to Section III.3.L.3.j.xix of the Amended Decision Filed February 2, 2007 in the Superior Court of the State of California, in and for the County of Monterey, Case No. M66343 (the “Decision”), the Seaside Basin Watermaster hereby Declares that the Total Usable Storage Space in the Seaside Groundwater Basin (“Basin”) is as follows:

Total Usable Storage Space in the Coastal and Northern Inland Subareas is 31,770 acre-feet.

Total Usable Storage Space in the Laguna Seca Subarea is 20,260 acre-feet.

Total Usable Storage Space in the entire Seaside Groundwater Basin is 52,030 acre-feet.

Pursuant to Section III.B.3.b of the Decision, Alternative Producers do not receive a storage allocation, only Standard Producers receive such an allocation. Pursuant to Section III.H.2 of the Decision, the Seaside Basin Watermaster further Declares that the Total Usable Storage Space in the Basin shall be allocated to the Standard Producers, who are identified in the Decision, as follows:

Producer	Current Allocation (Using Table 1 of the Decision)		
	Operating Yield Allocation Percentage (1)	Usable Storage Allocation Percentage (2)	Useable Storage Allocation (acre-feet)
Coastal and Northern Inland Subareas			
California American Water (3)	77.55%	90.60%	28,784
City of Seaside (Municipal)	6.36%	7.43%	2,361
Granite Rock Company	0.60%	0.70%	222
DBO Development No. 27	1.09%	1.27%	403
SUBAREAS TOTAL	85.60%	100%	31,770
Laguna Seca Subarea			
California American Water (3)	45.13%	100.00%	20,260
SUBAREA TOTAL	45.13%	100%	20,260
BASIN TOTAL		100%	52,030

Footnotes:

(1) From Table 1 on page 19 of the Decision.

(2) Calculated as each Standard Producer’s percentage of the total Standard Producers’ operating yield allocation percentages within each subarea.

(3) CAW’s Usable Storage Allocation is subject to the provisions and requirements of Section III.H.3 of the Decision.

Pursuant to Section III.H.6 of the Decision, no Producer may store water in the Basin without first executing with the Watermaster a Storage and Recovery Agreement.

**SEASIDE BASIN WATER MASTER
TECHNICAL ADVISORY COMMITTEE**

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

MEETING DATE:	January 13, 2010
AGENDA ITEM:	6
AGENDA TITLE:	Preliminary Draft Storage and Recovery Agreement and Storage and Recovery Application Templates
PREPARED BY:	Robert Jaques, Technical Program Manager
SUMMARY:	<p>In anticipation of some producers wishing to use their storage allocations, the attached preliminary Draft Storage and Recovery Agreement template and preliminary draft Storage and Recovery Application template have been prepared.</p> <p>These preliminary drafts are provided to the TAC for its review and editing before they are sent to the Chief Executive Officer for further processing and ultimately to the Board for its approval.</p> <p>There may be revisions proposed by attorneys representing some of the producers, or of the other Parties to the Amended Decision, as well as during review by the Budget and Finance Committee and the Board itself. However, I would appreciate getting the TAC's input on the attached preliminary draft documents, so they can be forwarded to the Chief Executive Officer for further processing reflecting any technical issues that the TAC feels should be addressed in them.</p>
ATTACHMENTS:	<ol style="list-style-type: none"> 1. Preliminary Draft Storage and Recovery Agreement Template 2. Preliminary Draft Storage and Recovery Application Template
RECOMMENDED ACTION:	Approve or edit the Draft Storage and Recovery Agreement Template and the Draft Storage and Recovery Application Template so they can be forwarded to the Chief Executive Officer for further processing

AGREEMENT FOR STORAGE AND RECOVERY OF WATER FROM THE SEASIDE GROUNDWATER BASIN

THIS AGREEMENT is made and entered into on _____, _____, by and between the SEASIDE BASIN WATERMASTER, an arm of the Superior Court of the State of California, in and for the County of Monterey, as established under Case No. M66343, hereinafter referred to as the "WATERMASTER," and _____, a _____, hereinafter referred to as the "PRODUCER," as follows:

Recitals

1. The WATERMASTER was created by Order of the Superior Court in and for the County of Monterey to administer and enforce the provisions of the Amended Decision of the Court filed February 9, 2007 under Case No. M66343, hereinafter referred to as the "Decision." This Decision was made for the purposes of managing and protecting the Seaside Groundwater Basin, hereinafter referred to as the "Basin," for the benefit of the businesses, individuals, and public agencies that overlie or extract groundwater from the Basin.
2. The PRODUCER has applied to the WATERMASTER for permission to store water in, and to subsequently recover water from, the Basin.
3. Under the authorities granted to the WATERMASTER through the Amended Decision, the WATERMASTER hereby grants permission to the PRODUCER to store water in, and to recover water from, the Basin, subject to the Terms and Conditions contained in this Agreement.

Terms and Conditions

NOW, THEREFORE, in consideration of the foregoing and the mutual promises contained herein, the parties hereto agree to the following terms and conditions:

1. Definitions. The definitions of certain terms used in this Agreement are taken from the Decision and are contained in Attachment A "Definitions."
2. Storage Quantity. The PRODUCER is authorized to store by means of [insert method of storage, i.e. spreading or direct injection] _____ acre-feet per year of water in the Basin. In the event the WATERMASTER revises the Total Usable Storage Space of the Basin in accordance with Section III.H.4 of the Decision, or if one or more Alternative Producers converts entirely or in part from an Alternative Production Allocation to a Standard Production Allocation in accordance with Section III.B.3.e of the Decision, the PRODUCER's Storage Allocation may change, and this may affect the storage quantity authorized by this Agreement. In such instance this Agreement will be modified to reflect these changes.
3. Storage Location(s). The storage of water authorized under paragraph 2 above will be performed at the following location(s): [insert proposed spreading or injection location(s)].
4. Recovery Location(s). The recovery of water stored at the location(s) described under paragraph 3 above will be performed at the following location(s): [insert proposed recovery location(s)].

5. Recovery Quantity. The PRODUCER is initially authorized to recover (Extract) the full amount of the Stored Water Quantity cited in paragraph 2 of this Agreement. However, due to the hydrogeologic characteristics of the Seaside Basin, naturally occurring losses of Stored Water may result in the WATERMASTER discounting the percentage of Stored Water that may be Extracted. Should the WATERMASTER determine that this needs to be done, this Agreement will be modified to reflect the discounted quantity of water that the PRODUCER may recover.
6. Water Quality. The PRODUCER hereby certifies that all of the water to be stored in the Basin under this Agreement will meet all California Department of Public Health primary and secondary standards for drinking water, as set forth in the California Code of Regulations, Title 22 (Social Security), Division 4 (Environmental Health), Chapter 15 (Domestic Water Quality and Monitoring Regulations), prior to the water being introduced into the Basin via either injection or spreading. The water quality characteristics of the water that will be stored under this Agreement are as follows, and are considered by both parties to this Agreement to not pose a threat of harm to the Basin:

[Insert physical, chemical, and microbiological information about the water being proposed for storage]

7. Carryover of Unused Production Allocation and Carryover Credits. In accordance with Section III.F of the Decision, if during a particular Water Year the PRODUCER does not Extract from the Basin a total quantity equal to the PRODUCER's Standard Production Allocation for the particular Water Year, the PRODUCER may establish Carryover Credits, up to the total amount of the PRODUCER's Storage Allocation. However, in no circumstance may the sum of the PRODUCER's Stored Water Credits and Carryover Credits exceed the PRODUCER's available Storage Allocation. In consideration of the Seaside Basin's hydrogeologic characteristics, the WATERMASTER may discount the quantity of Water that may be Extracted pursuant to a Carryover Credit.

In accordance with Section III.H.5 of the Decision, the PRODUCER shall have the right to use its Storage Allocation to Store any Carryover Water subject to the provisions of the Decision and this Agreement. Unused (not Extracted) Stored Water Credits and Carryover Credits may be carried over from year to year, but the amount that may be carried over in any year is subject to a percentage decrease, if a decrease in the Basin's Operating Yield is declared by the WATERMASTER in accordance with Section III.B.2 of the Decision.

8. Measurement and Reporting of Extractions and Storage. In accordance with Section III.J of the Decision, the PRODUCER shall install, maintain, and use adequate measuring devices on all Storage and Extraction facilities as required by the WATERMASTER's Rules and Regulations and this Agreement.

The PRODUCER shall provide to the WATERMASTER, as part of each monthly Production Report, data for the reporting period stating:

- The quantity of water that was stored
- The quantity of stored water that was recovered (Extracted)
- The location(s) where the water was stored
- The location(s) where the water was recovered (Extracted)

9. Indemnification. The PRODUCER shall assume the defense of, indemnify and hold harmless, the WATERMASTER, its officers, agents and employees from all claims, liability, loss, damage and injury of any kind, nature or description directly or indirectly arising during the term of this Agreement, or from acts, omissions or activities of the PRODUCER's officers, agents, employees or

independent contractors employed by the PRODUCER, excepting claims, liability, loss, damage or injury which arise from the willful or negligent acts, omissions, or activities of an officer, agent or employee of the WATERMASTER.

10. Successors and Assigns. This Agreement, and all the terms and conditions hereof, shall apply to and bind the successors and assigns of the respective parties hereto; provided that the PRODUCER shall not assign this agreement without prior written consent of the WATERMASTER.
11. Exchange of Information. Each of the parties agree to execute and deliver to the other all such documents and instruments, and to take such further actions, as may reasonably be required to give effect to the terms and conditions of this Agreement.
12. Negotiation. It is agreed and understood by the parties hereto that this Agreement has been arrived at through negotiation and that neither party is to be deemed the party which prepared this Agreement within the meaning of Civil Code §1654. The provisions of this Agreement shall be interpreted in a reasonable manner to effect the purpose of the parties and this Agreement.
13. Disputes. If any dispute under this Agreement arises the parties shall first meet and confer in a good faith attempt to resolve the matter between themselves. Each party shall make all reasonable efforts to provide to the other party all the information that the party has in its possession that is relevant to the dispute, so that both parties will have ample information with which to reach a decision. If the dispute is not resolved by meeting and conferring, the matter shall be submitted to the Court for resolution. However, and the parties must proceed to meet and confer before filing any court action.
14. Modification. This Agreement may be amended, altered or modified only by a writing, specifying such amendment, alteration or modification, executed by authorized representatives of both of the parties hereto.
15. Attorney's Fees and Costs. In the event it should become necessary for either party to enforce any of the terms and conditions of this Agreement by means of court action or administrative enforcement, the prevailing party, in addition to any other remedy at law or in equity available to such party, shall be awarded all reasonable costs and reasonable attorney's fees in connection therewith, including the fees and costs of experts reasonable consulted by the attorneys for the prevailing party.
16. Counterparts. This Agreement may be executed in two counterparts, each of which shall be deemed an original, but both of which shall be deemed to constitute one and the same instrument.
17. Entire Agreement. This Agreement constitutes the entire and complete agreement between the parties regarding the subject matter hereof, and supersedes all prior or contemporaneous negotiations, understandings or agreements of the parties, whether written or oral, with respect to such subject matter.

IN WITNESS WHEREOF, the Parties hereto have executed this Agreement consisting of four (4) pages and one (1) attachment in duplicate on the date hereinabove written.

WATERMASTER

PRODUCER

By _____
Dewey Evans
Chief Executive Officer

By _____
Insert Name
Insert Title

ATTACHMENT A

DEFINITIONS
(Excerpted from the Decision)

PRELIMINARY DRAFT

"Artificial Replenishment" means the act of the WATERMASTER, directly or indirectly, engaging in or contracting for Non-Native Water to be added to the Groundwater supply of the Seaside Basin through Spreading or Direct Injection to offset the cumulative Over- Production from the Seaside Basin in any particular Water Year pursuant to Section III.L.3.j.iii. It shall also include programs in which Producers agree to refrain, in whole or in part, from exercising their right to produce their full Production Allocation where the intent is to cause the replenishment of the Seaside Basin through forbearance in lieu of the injection or spreading of Non-Native Water.

"Carryover" means that portion of a Party's Production Allocation that is not Extracted from the Basin during a particular Water Year. Each acre-foot of Carryover establishes an acre-foot of Carryover Credit.

"Carryover Credit(s)" means the quantity of Water established through Carryover, that a Party is entitled to Produce from the Basin pursuant to Section III.F.

"Extraction," "Extractions," "Extracting," "Extracted," and other variations of the same noun or verb, mean pumping, taking, diverting or withdrawing Groundwater by any manner or means whatsoever from the Seaside Basin.

"Groundwater" means all Water beneath the ground surface in the Seaside Basin, including Water from Natural Replenishment, Artificial Replenishment, Carryover, and Stored Water.

"Natural Replenishment" means all processes by which Water may become a part of the Groundwater supply of the Seaside Basin without the benefit of the Physical Solution and the coordinated management it provides. Groundwater that occurs in the Seaside Basin as a result of the Physical Solution, which is not Natural Replenishment, includes, but is not limited to Storage, Carryover, and Artificial Replenishment.

"Non-Native Water" means all Water that would not otherwise add to the Groundwater supply through natural means or from return flows from surface applications other than intentional Spreading.

"Physical Solution" means the efficient and equitable management of Groundwater resources within the Seaside Basin, as prescribed by this Decision, to maximize the reasonable and beneficial use of Water resources in a manner that is consistent with Article X, Section 2 of the California Constitution, the public interest, and the basin rights of the Parties, while working to bring the Production of Native Water to Natural Safe Yield.

"Standard Production Allocation" is the amount of Groundwater that a Producer participating in this allocation method may Produce from a Subarea of the Seaside Basin as provided in Section III.B.2, which is determined by multiplying the Base Water Right by the Operating Yield.

"Storage" means the existence of Stored Water in the Seaside Basin.

"Storage Allocation" means that quantity of Stored Water in acre feet that a Party is allowed to Store in the Coastal Subarea or the Laguna Seca Subarea at any particular time.

"Storage Allocation Percentage" means the percentage of Total Usable Storage Space allocated to each Producer proceeding under the Standard Production Allocation. Producers proceeding under the Alternative Production Allocation are not allocated Storage rights and, consequently, their share of the Total Usable Storage Space is apportioned to the Producers proceeding under the Standard Production Allocation. Pursuant to the terms of Section III.B.3, Parties proceeding under the Alternative Production Allocation enjoy a one-time right to change to the Standard Production Allocation. Due to the recalculation of the Storage Allocation Percentage necessitated when a Party changes to the Standard Production Allocation, the WATERMASTER will maintain the up-to-date Seaside Basin Storage Allocation Percentages.

"Storage and Recovery Agreement" means an agreement between WATERMASTER and a Party for Storage pursuant to Section III.L.3.j.xx.

"Store" and other variations of the same verb refer to the activities establishing Stored Water in the Seaside Basin.

"Stored Water" means (1) Non-Native Water introduced into the Seaside Basin by a Party or any predecessors-in-interest by Spreading or Directly Injecting that Water into the Seaside Basin for Storage and subsequent Extraction by and for the benefit of that Party or their successors-in-interest; (2) Groundwater within the Seaside Basin that is accounted for as a Producer's Carryover; or (3) Non-Native water introduced into the Basin through purchases by the WATERMASTER, and used to reduce and ultimately reverse Over-Production.

"Stored Water Credit" means the quantity of Stored Water augmenting the Basin's Retrievable Groundwater Supply, which is attributable to a Party's Storage and further governed by this Decision and a Storage and Recovery Agreement.

"Total Useable Storage Space" means the maximum amount of space available in the Seaside Basin that can prudently be used for Storage as shall be determined and modified by WATERMASTER pursuant to Section III.L.3.j.xix, less Storage space which may be reserved by the WATERMASTER for its use in recharging the Basin.

**APPLICATION TO STORE AND RECOVER WATER
FROM THE
SEASIDE GROUNDWATER BASIN**

INSTRUCTIONS: This Application form is for use by Standard Producers in the Seaside Groundwater Basin (Seaside Basin) for the purpose of obtaining approval from the Seaside Basin Watermaster (Watermaster) to store water in, and to subsequently recover water from, the Seaside Basin. The application process is as described in Section III.L.3.j.xx of the Amended Decision of the Superior Court in and for the County of Monterey under Case No. M66343 filed February 9, 2007.

Name of Standard Producer (Applicant)

Contact Information for Applicant:

Contact Person: _____

Address: _____

Telephone: _____

Proposed quantity of water Applicant wishes to store through spreading or direct injection into the Seaside Basin (acre-feet per year): _____

Proposed location(s) where the spreading or direct injection of water into the Seaside Basin will be performed. If injection will be performed using one or more injection wells, provide identifying information for those wells. If spreading will be performed, provide coordinate location information, as well as any physical street address information for the proposed location.

Proposed location(s) where the spread or injected water may be recovered. If recovery of the water will be performed using one or more recovery wells, provide indentifying information for each of those wells.

Water quality characteristics of the water proposed for spreading or direct injection into the Seaside Basin. Provide sufficient physical, chemical, and microbiological information about the water being proposed for storage, so that the Watermaster can determine whether or not storing such water will have any adverse impacts on the Seaside Basin. Provide this information in for the form of analytical results from a properly certified water testing laboratory, attached to this Application.

PRELIMINARY

DRAFT

**SEASIDE BASIN WATER MASTER
TECHNICAL ADVISORY COMMITTEE**

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

MEETING DATE:	January 13, 2010
AGENDA ITEM:	7
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 Consultants Work Schedule of the activities being performed by the Watermaster's consultants and the public entity, MPWMD, which is performing certain portions of the work, and of the Critical Program Milestones Schedule.</p> <p>Attached is the Updated Consultants Work Schedule. The principle update from the November 2009 version is delaying work on Database enhancements by one month, starting this in February 2010 rather than January 2010, due to the size of the January 13, 2010 TAC agenda packet.</p>	
ATTACHMENTS:	Updated Schedule of Work Activities
RECOMMENDED ACTION:	Provide Input to Technical Program Manager Regarding Any Corrections or Additions to This Schedule

Seaside Basin Watermaster Monitoring and Management Program 2010 Work Schedule

ID	Task Name	2010																
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
1	CRITICAL PROJECT MILESTONES ASSOCIATED WITH TAC, BOARD, AND/OR CONSULTANT WORK																	
2	2011 Administration, Operations and Replenishment Budgets																	
3	Prepare M&MP Draft Budgets (Same as Task 35)																	
4	TAC Approves M&MP Budgets (Same as Task 36)																	
5	Board Approves M&MP Budgets (Same as Task 37)																	
6	Watermaster Prepares Quarterly Water Production, Water Level, and Water Quality Reports																	
26	Replenishment Assessment Unit Costs for Water Year 2011																	
27	Develop Replenishment Assessment Unit Cost for 2011 Water Year																	
28	TAC Approves 2011 Water Year Replenishment Assessment Unit Cost																	
29	Board Adopts and Declares 2011 Water Year Replenishment Assessment Unit Cost																	
30	Replenishment Assessments for Water Year 2010																	
31	Watermaster Prepares Replenishment Assessments for Water Year 2010																	
32	Watermaster Board Approves Replenishment Assessments for Water Year 2010																	
33	Watermaster Levies Replenishment Assessment for 2010																	
34	Monitoring & Management Program (M&MP) Budgets for 2011 and 2012																	




Seaside Basin Watermaster Monitoring and Management Program 2010 Work Schedule

ID	Task Name	2010																				
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Ju			
35	Prepare Draft 2011 and 2012 M&MP O&M and Capital Budgets								■													
36	TAC approves Draft 2011 and 2012 M&MP O&M and Capital Budgets									◆	9/8											
37	Board approves 2011 and 2012 M&MP O&M and Capital Budgets										◆	10/6										
38	2009 Annual Report																					
39	Prepare Preliminary Draft 2010 Annual Report											■										
40	TAC Provides Input on Draft 2010 Annual Report												◆	10/13								
41	Prepare Revised Draft 2010 Annual Report (Incorporating TAC Input)											■										
42	Board Provides Input on Revised Draft 2010 Annual Report												◆	11/3								
43	Prepare Final 2010 Annual Report (Incorporating Board Input)												■	11/4								
44	Watermaster Submits Final 2010 Annual Report to Judge													◆	11/12							
45	MANAGEMENT																					
46	M.1 PROGRAM ADMINISTRATION (All Work Performed by Watermaster Staff)																					
47	Prepare Initial Consultant Contracts for 2011													■								
48	TAC Approval of Initial Consultant Contracts for 2011													◆	11/10							
49	Board Approval of Initial Consultant Contracts for 2011														◆	12/1						

Seaside Basin Watermaster Monitoring and Management Program 2010 Work Schedule

ID	Task Name	2010																	
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Ju
50	IMPLEMENTATION																		
51	I.2.a DATABASE MANAGEMENT																		
52	I.2.a.1 Conduct Ongoing Data Entry/Database Maintenance																		
53	Perform Data Entry (Production, Level, and Quality)	[Bar spanning Jan to Dec]																	
54	TAC Discusses Possible Enhancement to Database		◆ 2/10																
55	Compile Enhancements to be Made to the Database Based on User Input		[Bar]																
56	TAC Approves Enhancements to be Made to the Database			◆ 3/10															
57	Prepare RFS to Have Enhancements Made to the Database			[Bar]															
58	Board Approves RFS for Enhancements to be Made to the Database				◆ 4/7														
59	Make Enhancements to the Database				[Bar]														
60	I.2.b DATA COLLECTION PROGRAM																		
61	I.2.b.2 Collect Monthly Water Levels (MPWMD)	[Bar spanning Jan to Dec]																	
62	I.2.b.3 Collect Quarterly Water Quality Samples (MPWMD)	[Bar spanning Jan to Dec]																	
63	I.2.b.4 Update Program Schedule and Standard Operating Procedures																		
64	MPWMD Prepares Memo with Recommendations		[Bar]								[Bar]								

Seaside Basin Watermaster Monitoring and Management Program 2010 Work Schedule

ID	Task Name	2010																	
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Ju
67	TAC Approves Recommendations			◆ 3/10						◆ 9/8									
70	I.2.b.6 Reports (from MPWMD)	SEE ID 6 ABOVE																	
71	I.3.a ENHANCED SEASIDE BASIN GROUNDWATER MODEL																		
72	I.3.a.2 Develop Protective Water Levels																		
73	HydroMetrics Meets with TAC to Discuss Development of Protective Water Levels	◆ 1/13																	
74	Prepare Contract with HydroMetrics to Refine Protective Water Levels Developed in 2009																		
75	TAC Approves Contract with HydroMetrics to Refine Protective Water Levels		◆ 2/10																
76	Board Approves Contract with HydroMetrics to Refine Protective Water Levels			◆ 3/3															
77	HydroMetrics Refines Protective Water Levels																		
78	HydroMetrics Makes Summary Report to TAC on Refinement of Protective Water Levels							◆ 5/12											
79	HydroMetrics Makes Summary Report to Board on Protective Water Levels							◆ 6/2											
80	I.3.a.3 Evaluate Replenishment Scenarios and Develop Answers to Basin Management Questions																		
81	HydroMetrics Meets with TAC to Select Additional Scenarios to be Evaluated	◆ 1/13																	
82	Possible Second Meeting with TAC to Complete Selection of Additional Scenarios to be Evaluated		◆ 2/10																
83	Prepare Contract with HydroMetrics to Evaluate Additional Replenishment Scenarios																		

Seaside Basin Watermaster Monitoring and Management Program 2010 Work Schedule

ID	Task Name	2010																	
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Ju
84	TAC Approves Contract with HydroMetrics to Evaluate Additional Replenishment Scenarios			◆ 3/10															
85	Board Approves Contract with HydroMetrics to Evaluate Additional Replenishment Scenarios				◆ 4/7														
86	HydroMetrics Evaluates Additional Replenishment Scenarios				▬														
87	HydroMetrics Makes Summary Report to TAC Regarding Evaluation of Additional Replenishment Scenarios																		
88	HydroMetrics Makes Summary Report to Board Regarding Evaluation of Replenishment Scenarios and Answers to Basin Management Questions																		
89	I.3.b Complete Preparation of Basin Management and Action Plan (BMAP)	WORK COMPLETED - NO FURTHER WORK PLANNED IN 2010																	
90	I.3.c Refine and/or Update the BMAP																		
91	TAC Discusses Issues to be Addressed in Updating the BMAP																		
92	Prepare Contract with HydroMetrics for Updating the BMAP																		
93	TAC Approves Contract with HydroMetrics for Updating the BMAP																		
94	Board Approves Contract with HydroMetrics for Updating the BMAP																		
95	HydroMetrics Updates the BMAP																		
96	HydroMetrics Makes Presentation on Draft Updated BMAP to TAC																		
97	HydroMetrics Makes Presentation of Final Draft Updated BMAP to Board and Board Adopts Final Updated BMAP																		

Seaside Basin Watermaster Monitoring and Management Program 2010 Work Schedule

ID	Task Name	2010																
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
98	I.3.d Evaluate Coastal Wells for Cross-Aquifer Contamination Potential																	
99	Prepare Contract with MPWMD for Evaluating the Wells		■	■														
100	TAC Approves Contract with MPWMD for Evaluating the Wells			◆ 3/10														
101	Board Approves Contract with MPWMD for Evaluating the Wells				◆ 4/7													
102	MPWMD Evaluates the Wells					■	■	■										
103	MPWMD Makes Presentation of Well Evaluation to TAC						◆ 6/9											
104	MPWMD Makes Presentation of Well Evaluation to Board							◆ 7/7										
105	I.4.a HydroMetrics & MPWMD Provide Oversight of Seawater Intrusion Detection and Tracking	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
106	I.4.b HydroMetrics Analyzes and Maps Water Quality from Coastal Monitoring Wells	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
107	I.4.c Annual Seawater Intrusion Analysis Report (SIAR)																	
108	HydroMetrics Provides Draft SIAR to Watermaster												◆ 10/6					
109	TAC Approves Annual Seawater Intrusion Analysis Report (SIAR)												◆ 10/13					
110	Board Approves Annual Seawater Intrusion Analysis Report (SIAR)													◆ 11/3				
111	I.4.d Complete Preparation of Seawater Intrusion Response Plan (SIRP)	WORK COMPLETED - NO FURTHER WORK PLANNED IN 2010																
112	I.4.e Refine and/or Update the SIRP	NOT NECESSARY																