

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

DATE: Wednesday, May 12, 2021

MEETING TIME: 1:30 p.m.

IN KEEPING WITH GOVERNOR NEWSOMS EXECUTIVE ORDERS N-29-20 AND N-35-20,
 THE TECHNICAL ADVISORY COMMITTEE MEETING WILL BE CONDUCTED BY
 TELECONFERENCE AND WILL NOT BE HELD IN THE MONTEREY ONE WATER OFFICES.

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Meeting ID: **883 3684 2063**

Passcode: **448666**

OFFICERS

Chairperson: Jon Lear, MPWMD

Vice-Chairperson: Tamara Voss, MCWRA

MEMBERS

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

Agenda Item

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The next regular meeting is tentatively planned for Wednesday June 9, 2021 at 1:30 p.m.

**SEASIDE BASIN WATER MASTER
TECHNICAL ADVISORY COMMITTEE**

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

MEETING DATE:	May 12, 2021
AGENDA ITEM:	2.A
AGENDA TITLE:	Approve Minutes from the April 14, 2021 Meeting
PREPARED BY:	Robert Jaques, Technical Program Manager
SUMMARY:	<p>Draft Minutes from this meeting were emailed to all TAC members. Any changes requested by TAC members have been included in the attached version.</p>
ATTACHMENTS:	Minutes from this meeting
RECOMMENDED ACTION:	Approve the minutes

D-R-A-F-T
MINUTES

**Seaside Groundwater Basin Watermaster
Technical Advisory Committee Meeting
April 14, 2021
(Meeting Held Using Zoom Conferencing)**

Attendees: TAC Members

City of Seaside – Scott Ottmar
California American Water – Tim O’Halloran
City of Monterey – Cody Hennings
Laguna Seca Property Owners – Wes Leith
MPWMD – Jon Lear
MCWRA – Tamara Voss
City of Del Rey Oaks – John Gaglioti
City of Sand City – Leon Gomez
Coastal Subarea Landowners – No Representative

Watermaster

Technical Program Manager - Robert Jaques
Administrative Officer – Laura Paxton

Consultants

Montgomery & Associates – Georgina King
Martin Feeney – Martin Feeney

Others

City of Seaside – Nisha Patel
California American Water – Ian Crooks and Catherine Stedman

The meeting was convened at 1:31 p.m.

1. Public Comments

There were no public comments.

2. Administrative Matters:

A. Approve Minutes from the March 10, 2021 Meeting

On a motion by Mr. Gaglioti, seconded by Mr. Ottmar, the minutes were unanimously approved as presented.

B. Sustainable Groundwater Management Act (SGMA) Update

Mr. Jaques summarized the agenda packet materials for this item. Ms. Voss noted that the date of the extra (special) SVBGSA Monterey Subbasin GSP Committee listed on page 9 of the agenda packet as being scheduled for May 23 was in fact scheduled for March 23. There was no other discussion on this item.

C. Water Quality Sampling Results from SNG Well

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

Mr. Gaglioti noted that the SNG well provides another data point showing seawater intrusion into the Basin.

Mr. Feeney commented that the SNG well is old (nearly 60 years) and that its steel casing may be “shot”. He felt that the high chloride level may be due to water going down the gravel pack for this well.

Ms. King recommended that this well be fixed to keep it from being a cross-contamination source to the Paso Robles aquifer. Ms. Voss said she concurred with Ms. King’s recommendation. Since the dune sands are known to be intruded it is not surprising that it could be cross contaminating the Paso Robles aquifer.

Mr. Lear asked if the cross-contamination issue should be agendized as a future item for the TAC.

Mr. Stoldt said he believed that Cal Am has a tee in its water system to serve this parcel in the future, and noted that there is a wheeling agreement for this purpose.

Mr. Gaglioti said the Board should be made aware of this potential cross-contamination situation.

Mr. Feeney reiterated that he is certain the casing has holes in it and therefore the well should be destroyed to prevent cross-contamination.

Mr. Lear said that the previously completed cross-contamination study could be provided to the Board along with a TAC recommendation to have this well destroyed.

On a motion by Mr. Gaglioti, seconded by Ms. Voss, the TAC recommended that the Board (1) be informed of the potential risk of cross-contamination from the SNG well, and be provided the previously completed cross-contamination report, and (2) that a letter be sent to the owner notifying him to destroy the well. The motion passed unanimously.

It was noted that destroying the well will have a cost impact to the well owner, since it can currently be used for construction site irrigation. Loss of use of this well, if it were destroyed, would necessitate the well owner having to purchase water to meet his needs.

Mr. Stoldt said it was his understanding that the ownership of the parcel were the SNG well is located is currently in dispute, and that MPWMD could provide information on that.

Ms. Voss said that Monterey County Health may have a program to help with well destruction costs, but it is most likely focused on the agricultural fields of the lower Salinas Valley. Mr. Feeney said he was not aware of a program like this at the location of the SNG well. Ms. Voss reported that the Agency received a Department of Water Resources Prop 1 grant for well destruction in Zone 2B (CSIP area), but not in the location of the SNG well.

D. MPWMD Water Supply Committee Meeting Agenda Items

Mr. Jaques summarized the agenda packet materials for this item

Mr. Gaglioti asked why there was a rush on the part of MPWMD to get rid of the FO-9 Shallow monitoring well.

Mr. Lear explained that if video inspection of the well shows a crack, Monterey County Health will not approve a repair using a sleeve to seal the leak. Installing a sleeve would restrict the diameter of the casing such that water quality sampling could no longer be performed. He went on to explain that wells in that area were drilled to get stratigraphic information in the 1990s. When the Watermaster’s Monitoring and Management Program was created, regular monitoring of the

wells was commenced. MPWMD will also video inspect FO-9 deep to ensure it is okay and not also leaking. MPWMD does not want the liability of continuing to have FO-9 left in service if it is leaking. Because of the well's importance to both the watermaster, MPWMD, and Marina Coast Water District, there could be a cost sharing approach to have a replacement monitoring well installed near that location.

Mr. Gaglioti said he was open to having the existing well repaired if it was feasible, or to exploring the most cost-effective means of having a new monitoring well installed there.

Ms. Voss went on to clarify that the well cannot be fixed with a sleeve because that would prevent it from further use as a water quality monitoring well. She felt it was important to video inspect well FO-9 deep to determine whether it is okay.

Mr. Feeney said that if the problem with FO-9 Shallow is just a crack, it might be repairable using a "squeeze job" approach with a packer and sealing the crack with bentonite. If there is a separated joint, then a sleeve would be necessary. He went on to say that video inspection of the well is planned in the next few weeks.

Mr. Lear further explained that MPWMD is the owner of the well and therefore must make the final decision on what to do. The well is old, as are the others that were drilled at about the same time, and those wells are reaching the end of their useful lives.

Mr. Ottmar asked about the Water Supply Committee table on page 18 of the agenda packet which shows 774 AFY as the Cal Am allotment after it reduces its 1,474 AFY by 700 AFY to repay its over-pumping. Mr. Lear explained that this table only looks at Cal Am's supply and does not address the City of Seaside municipal water supply system. Mr. Ottmar went on to say that the City was having trouble meeting its Adjudication ramp-down requirements and was looking for additional water supply sources. Also, the City's planning department has difficulty with the growth projections that are in the AMBAG forecast. Mr. Stoldt noted that portions of Seaside's growth will be in the MCWD service area, not within the City's municipal water system service area.

Mr. O'Halloran commented that Seaside is a good example of the difficulty in making growth projections, because they are affected by the water hook-up moratorium.

There was discussion of replenishment water amounts and that more study of this is needed to refine the previous modeling work on this subject.

Mr. Riley said he felt the Watermaster should be working on two tracks with regard to water supply (1) is a replenishment water supply available? and (2) who pays for replenishment water? He said he felt the burden is on the watermaster to generate the funding and protecting the basin.

Ms. King remarked that it will be a complex process to make the decisions on what assumptions and conditions are to be used in the replenishment modeling work, including the various projects and how they affect groundwater conditions in the Basin. There was consensus to agendaize this topic for further discussion at a future TAC meeting.

3. Report on Findings and Conclusions from Induction Logging of Monitoring Wells FO-9 and FO-10

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

Mr. Feeney provided a more detailed explanation of the work that was done and its findings. He reported that FO-9 Shallow has high chloride due to an apparent casing leak. He said he did not have an explanation of the cause for the findings in the FO-10 Shallow induction logging which shows high conductivity over nearly the entire depth of the casing, but noted that the data shows that the water quality samples from that well are valid. In response to a question from Mr. Jaques, Mr. Feeney said he did not feel videoing of FO-10 Shallow would tell us anything of value. He noted that FO-10 is outside of the Seaside Basin, and said he felt that the MCWDGSA should take on the responsibility of investigating this well.

Mr. Jaques said he would send Mr. Feeney's report to MCWD and their consultant, EKI, and ask them to address the FO-10 issues in the Monterey Subbasin GSP.

Mr. Lear recommending making sure that MCWD plans to sample the FO-10 wells on a quarterly basis once they begin their GSP water quality sampling program.

4. Continued Discussion of Board Direction Regarding Concerns about Possible Detection of Seawater Intrusion in Monitoring Wells FO-9 and FO-10 Shallow

Mr. Gaglioti recommended including the FO-9 and FO-10 induction logging results in the Discussion Paper. Other than this revision, there was consensus that the Discussion Paper was suitable for presentation to the Board as-is.

5. Continued Discussion of Opinions of Consultants and TAC Members Regarding Implementation of the Seawater Intrusion Response Plan and Ionic Analysis

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

Mr. Lear commented that the data does not look like seawater intrusion that has been seen in other locations.

6. Recommendations and/or Contract Amendments with Martin Feeney, MPWMD, and Montgomery & Associates

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

A motion was made by Mr. Gaglioti, seconded by Mr. O'Halloran, to recommend to the Board approval of Montgomery and Associates Amendment No. 1. The motion passed unanimously.

7. Discussion of Projected ASR Volumes

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

Mr. Lear explained that citations of the 1,300 acre-feet per year ASR value came from earlier Cal Am of documents. Mr. Stoldt went on to say that in 2012 a group with many diverse representatives met and discussed the five-year average of water demand figures. ASR was discussed and 1,300 AFY came out of that discussion. That value was used in early documents. He said he felt it appears to be a reasonable value, and might even be a little low.

Mr. Lear provided background information on the development and operations of the ASR program.

There was discussion of other topics related to the ASR figures, including climate change.

Mr. Ottmar asked if ASR has proven to be cost-effective. He wondered if more could be stored under the ASR problem program in very wet years, or would it not be cost-effective to scale-up the size of the ASR facilities to be able to do that. Mr. Lear responded that some initial analysis has been done on the cost-effectiveness of the ASR program. Mr. Stoldt went on to say that increasing well capacity, iron removal capacity at the Begonia iron removal plant, delivery pipeline capacity, and injection well

capacity all have cost impacts, and it appeared not to be cost-effective to scale-up the ASR facilities, compared to up-scaling some of the other water supply projects.

Mr. O'Halloran reported that he had met with Mr. Stoldt and Mr. Lear earlier today and that the 1,300 FY figure "has legs" based on their analysis. He said, however, that he was still concerned about counting on this level of ASR in future years.

8. Discussion of Potential for Providing Recycled Water for Irrigation of Laguna Seca Golf Course

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

Mr. Ottmar reported that the City of Seaside is negotiating with MCWD for reclaimed water for the Seaside golf courses.

Mr. Stoldt explained that MCWD retained rights to receive as much reclaimed water as they contributed to the Regional Treatment Plant in the form of wastewater. He went on to describe the Pebble Beach reclaimed water project and the additional treatment that was required there to irrigate tees and greens in order to prevent turf burn from the reclaimed water. He felt the cost of reclaimed water for golf course irrigation at the Laguna Seca golf courses would be higher than the \$2,800 per acre foot that is currently estimated. He felt it was costing the Pebble Beach recycled water users between \$6,000 and \$7,000 per acre foot.

9. Schedule

Mr. Jaques said he had nothing to add to the information in the agenda packet on this item.

10. Other Business

There was no other business.

The meeting adjourned at 4:17 PM.

**SEASIDE BASIN WATER MASTER
TECHNICAL ADVISORY COMMITTEE**

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

MEETING DATE:	May 12, 2021
AGENDA ITEM:	2.B
AGENDA TITLE:	Sustainable Groundwater Management Act (SGMA) Update
PREPARED BY:	Robert Jaques, Technical Program Manager
<p>At the State level: Since my last update, I have not received any new materials from the State that would impact the Watermaster.</p> <p>At the Monterey County level: Because so many Board meetings are being cancelled, the Board asked that I keep them updated on issues related to my participation in meetings pertaining to Sustainable Groundwater Management Act issues and Pure Water Monterey issues by sending out meeting summaries on a monthly basis. Attached are summaries of those meetings held in April 2021.</p> <p>Also, because of the workload demands of attending the many meetings that are being held on SGMA issues, I have withdrawn as a voting member of the SVBGSA's Seawater Intrusion Work Group and will only be attending that Group's meetings as an attendee, when there are topics of interest to the Watermaster on their agendas. I will also be having Laura Paxton, the Watermaster's Administrative Officer, serve as my Alternate on the SVBGSA's Advisory Committee. She will attend meetings of that Committee in my place when their agendas contain mainly administrative items or other items that do not have a direct impact on the Watermaster.</p>	
ATTACHMENTS:	Meeting Summaries
RECOMMENDED ACTION:	None required – information only

SUMMARY OF
PURE WATER MONTEREY,
SALINAS VALLEY GROUNDWATER SUSTAINABILITY, AND
MARINA COAST WATER DISTRICT GROUNDWATER SUSTAINABILITY
ZOOM MEETINGS
IN APRIL 2021

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

SVBGSA Advisory Committee meeting, April 15, 2021

Topics discussed included:

- It was reported that the Salinas Valley Integrated Hydrologic Model (SVIHM) is not well calibrated in the Monterey or Seaside Subbasins, and therefore a new Monterey Subbasin model is being developed by Marina Coast Water District's consultant, EKI. This new model will be used for development of the GSP for the Monterey Subbasin. The SVIHM will not be used for that purpose.
- In the discussion about the model being developed by EKI for the Monterey Subbasin, I stressed the need for it to be coordinated with the Watermaster's Seaside Basin model so they will match well at the subbasin boundaries. Derrik Williams confirmed that EKI is doing this and making adjustments as necessary so that the two models will match at the basin boundaries.

SVBGSA Seawater Intrusion Work Group meeting, April 26, 2021

I reviewed the agenda for this meeting and did not see any items of impact to the Watermaster, so I did not attend this meeting. There was an item from Derrik Williams describing progress on development of the SVBGSA's seawater intrusion model, and I reviewed his report.

**SEASIDE BASIN WATER MASTER
TECHNICAL ADVISORY COMMITTEE**

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

MEETING DATE:	May 12, 2021
AGENDA ITEM:	3
AGENDA TITLE:	Report on Video Inspection of Monitoring Well FO-9
PREPARED BY:	Robert Jaques, Technical Program Manager
SUMMARY:	<p>On April 29, 2021 Martin Feeney performed video inspections of Monitoring Wells FO-9 Shallow and Deep. The purpose of doing this was to see if the source of the leakage in the well casing of FO-9 Shallow could be identified, and to see if there were any apparent structural defects in FO-9 Deep. Attached are the reports provided by the video inspection company for both of these wells.</p> <p>Mr. Feeney reported that the video inspection of FO-9 Shallow was inconclusive as to the nature of the leak, but that the conductivity log shows that it is obviously leaking. MPWMD has asked him for a proposal to destroy that well.</p> <p>He provided this link to view the actual videos: https://www.dropbox.com/sh/6j80n4tjwq9k8go/AADgfz1uNyEtK9DhAiRb0Irua?dl=0</p>
ATTACHMENTS:	Video inspection reports
RECOMMENDED ACTION:	None required – information only

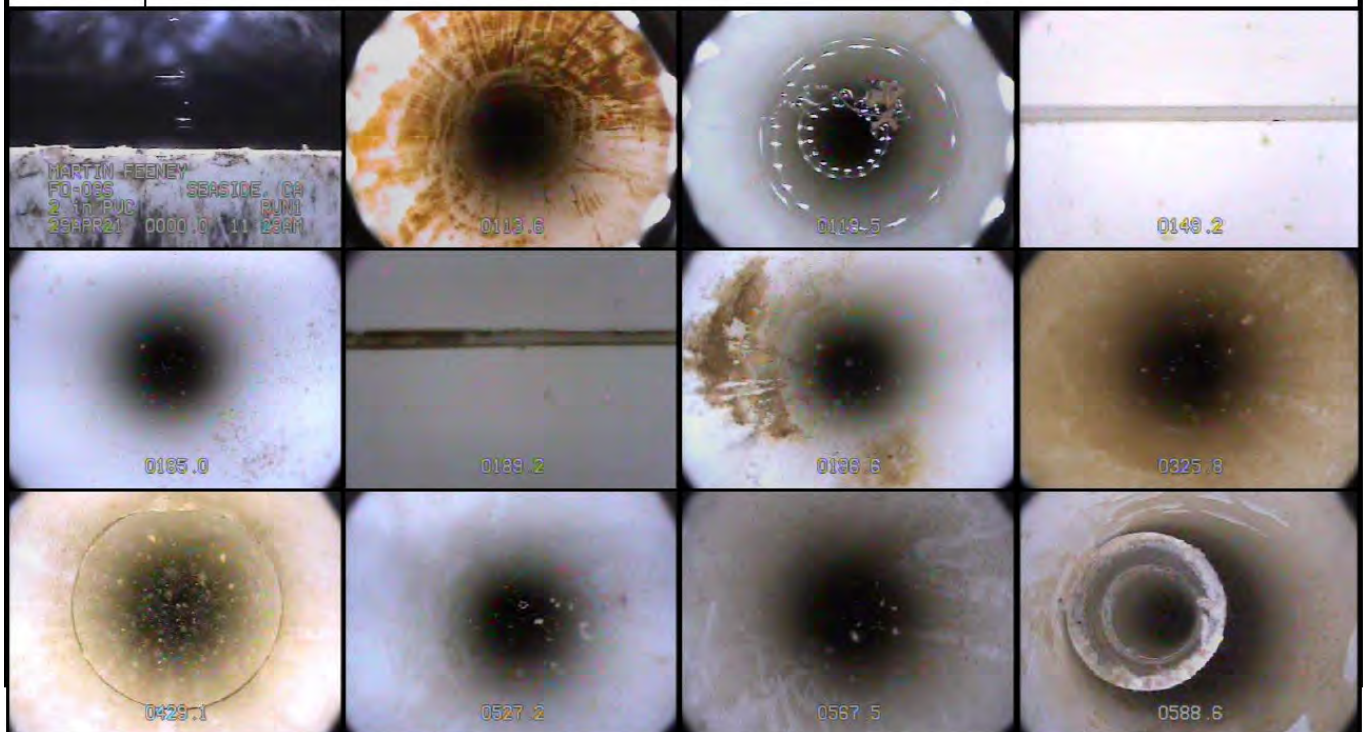
Pacific Surveys

a full service geophysical well logging company

Video Survey Report

Company: Martin Feeney	Date: 29-Apr-21
Well: FO-09S	Run No.: One Truck: PS-7
Field: Seaside	Job Ticket: 28067
State: California	Total Depth: 588.8 ft
Location: 600' NW of Kiska Rd. & Okinawa Rd.	Water Level: 120.0 ft
GPS: 36.638191 -121.827554	Oil on Water: No Amount: N/A
Zero Datum: Top of CSG	Operator: Farrell Dead Space: 0"
Reason for Survey: General Inspection	Tool Zero: Side-Scan
	Guides Set @: N/A

Depth	Observations	Well Details	
0.0 ft	Begin survey at top of casing.	Perforation:	As-Built
50.0 ft	Casing appears in normal condition.	Horizontal Mill Slot	610.0 ft to 650.0 ft
110.0 ft	Casing has some dark staining.		
117.0 ft	Less staining on casing wall.		
120.0 ft	SWL; water is clear with good visibility.		
149.2 ft	Typical joint.		
185.0 ft	Stop to observe flow. No flow observed. A lot of time was spent in this area from 180-190 ft to see if the casing was compromised. Other than some staining, operator could not see any problems with the well at this location.		
188.8 ft	Stop to observe flow. No flow observed.		
320.0 ft	Casing wall appears darker.		
429.6 ft	It appears that some tooling had got caught on the lip of a joint and pulled it slightly into the well.	Casing Size (in):	As-Built
588.8 ft	Top of obstruction. End survey.	O.D.	I.D.
			2.00
		Casing Size Measured by Operator:	
		O.D.	I.D.
		Casing Material	PVC
		Screen Material	PVC



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Pacific Surveys

a full service geophysical well logging company

Video Survey Report

Company: Martin Feeney	Date: 29-Apr-21
Well: FO-09D	Run No.: One Truck: PS-7
Field: Seaside	Job Ticket: 28067
State: California	Total Depth: 738.6 ft
Location: 600' NW of Kiska Rd. & Okinawa Rd.	Water Level: 138.9 ft
GPS: 36.638191 -121.827554	Oil on Water: No Amount: N/A
Zero Datum: Top of CSG	Operator: Farrell Dead Space: 0"
Reason for Survey: General Inspection	Guides Set @: N/A
Tool Zero: Side-Scan	

Depth	Observations	Well Details	
0.0 ft	Begin survey at top of casing.	Perforation: Horizontal Mill Slot	As-Built 790.0 ft to 830.0 ft
50.0 ft	Casing appears in normal condition.		
134.5 ft	Scum line from historical water levels.		
138.9 ft	SWL; water is slightly cloudy.		
149.1 ft	Typical joint.		
192.0 ft	Cloudiness of water column decreases.		
426.1 ft	Stain on casing wall.		
530.0 ft	Casing wall appears darker.		
534.0 ft	Casing wall appears less dark.		
535.0 ft	Casing wall appears darker.		
730.0 ft	Casing wall appears darker.		
738.0 ft	Stain on casing wall.	Casing Size (in): O.D. I.D. 2.00	As-Built 0.00 ft to 840.00 ft
738.6 ft	Top of obstruction. End survey.		
		Casing Size Measured by Operator:	
		O.D.	I.D.
		Casing Material	PVC
		Screen Material	PVC



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**SEASIDE BASIN WATER MASTER
TECHNICAL ADVISORY COMMITTEE**

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

MEETING DATE:	May 12, 2021
AGENDA ITEM:	4
AGENDA TITLE:	Discussion of Board Direction at its May 5, 2021 Meeting Regarding Concerns about Possible Detection of Seawater Intrusion in Monitoring Wells FO-9 and FO-10 Shallow
PREPARED BY:	Robert Jaques, Technical Program Manager

SUMMARY:

At its May 5, 2021 meeting the Board approved the TAC's recommendations regarding follow-up actions to take in response to concerns about possible seawater intrusion starting to occur at Monitoring Wells FO-9 and FO-10 Shallow. Those recommendations were:

1. The Watermaster should right now:
 - a. Start negotiating with both Cal Am and MPWMD/M1W to establish terms and conditions under which replenishment water could be provided by the Desalination Project or the PWM Expansion Project, respectively. Because of the highly political nature of local water issues, Staff believes this process should be conducted at the Board level, not at the staff level, and that this could best be done by forming a committee comprised of Board representatives of each of these entities.
 - b. Determine if a new monitoring well should be installed to replace Monitoring Well FO-9 Shallow, and if so, how the cost to do that would be funded. Because Monitoring Well FO-9 is part of the Watermaster's monitoring well network, is a well that Marina Coast Water District intends to use as part of the monitoring well network for the Monterey Subbasin Groundwater Sustainability Plan, and is a well that has historically been used by MPWMD for monitoring purposes, a cost-sharing agreement among these parties may be possible.
2. In the near future the Watermaster should:
 - a. Update the 2013 groundwater modeling to provide a more accurate indication of current replenishment water needs.
 - b. Start developing a plan to finance the cost of obtaining such replenishment water for the Basin.
 - c. Update the SIRP to provide site-specific indicators of SWI (e.g. chloride threshold levels) for additional wells.
 - d. Consider developing flow direction and flow velocity maps

Items 1.b and 2.a, 2.c, and 2.d are items for the TAC to pursue. Item 2.b will be pursued by the Watermaster's Administrative Officer. I will be contacting Montgomery & Associates to obtain scope of work and cost proposals for items 2.a, 2.c, and 2.d so they can be presented to the TAC for review and approval at future TAC meetings. In conjunction with item 1.b the Board supported having a new well installed to replace the existing FO-9 Shallow which has been determined to have a structural defect that allows Dune Sand intruded water to leak downward into the Paso Robles aquifer. The Board Chair will be sending a letter to MCWD and MPWMD citing the importance of maintaining a Paso Robles aquifer monitoring well in that location, and seeking their cooperation in having a replacement well installed there.

ATTACHMENTS:	None
RECOMMENDED ACTION:	None required – information only

**SEASIDE BASIN WATER MASTER
TECHNICAL ADVISORY COMMITTEE**

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

MEETING DATE:	May 12, 2021
AGENDA ITEM:	5
AGENDA TITLE:	Discuss 2012 Cross-Aquifer Contamination Study and Develop Recommendations
PREPARED BY:	Robert Jaques, Technical Program Manager
SUMMARY:	
<p>In 2012 the Monterey Peninsula Water Management District was requested by the Watermaster to evaluate Seaside Groundwater Basin wells for contamination potential between two primary aquifers: the confined Santa Margarita aquifer and the unconfined Paso Robles aquifer. Mr. Lear of MPWMD prepared a report that compiled well log data from multiple sources into a single database, thus facilitating the ability to identify wells that may pose a contamination risk based on screened intervals, age, construction material, and current status (i.e., abandoned).</p> <p>In preparing the report records from 279 wells were extensively reviewed. Well construction material was identified, with steel being recognized as the most prone to deterioration. The screened aquifers were identified for as many as possible, based on available records. 155 Wells were in the "unknown status" category. 83 were reportedly destroyed according to the Monterey County Department of Environmental Health. 68 of these were field-verified as having been properly destroyed. It was noted that the wells that are screened in all three aquifers are well inland from the coastline.</p> <p>The report was presented to the TAC at its August 12, 2012 meeting. At that meeting Mr. Lear said he would not be recommending that any further work be done on this matter, unless seawater intrusion or some other form of contamination is detected. If that occurs, the wells that are screened in more than one aquifer should be further examined. There was consensus that no further work needed to be done to verify that wells have been properly abandoned, beyond the work that Mr. Lear has already completed.</p> <p>Attached is the report. In Table 8 (cross-screened wells) I have yellow-highlighted those wells that are perforated in both the Aromas Sands and the Paso Robles aquifers. The Aromas Sands overlie the Paso Robles. We do not know how far inland the intrusion in the Aromas Sands goes. There is concern that if the seawater intrusion in the Aromas Sands reaches a well that is perforated in both of these aquifers, the intrusion could leak downward in those wells and contaminate the Paso Robles.</p> <p>Even though seawater intrusion has not yet been detected, it may be desirable to video inspect the highlighted wells which have not already been destroyed in order to determine if they pose a contamination threat to the Paso Robles aquifer.</p>	
ATTACHMENTS:	2012 Cross-Aquifer Contamination Study
RECOMMENDED ACTION:	Provide direction to the Technical Program Manager regarding video inspection of selected wells



**MONTEREY PENINSULA
WATER MANAGEMENT DISTRICT**

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POST OFFICE BOX 85
MONTEREY, CA 93942-0085 • (831) 658-5600
FAX (831) 644-9560 • <http://www.mpwmd.dst.ca.us>

**SEASIDE BASIN WATERMASTER
MEMORANDUM 2012-02**

Date: August 8, 2012
To: Seaside Basin Watermaster
From: Jonathan Lear, PG, CHg, Senior Hydrogeologist
Subject: Summary of Seaside Groundwater Basin Cross-Aquifer Contamination Wells Investigation Process and Conclusions

Purpose and Scope

The Monterey Peninsula Water Management District (MPWMD) was retained to evaluate Seaside Groundwater Basin wells for contamination potential between two primary aquifers: the confined Santa Margarita aquifer and unconfined Paso Robles aquifer. MPWMD's evaluation was also to include evaluation of data to assess the potential for contamination due to inadequate well seals. This analysis compiled well log data from multiple sources into a single database, thus facilitating the ability to identify wells that may pose contamination risks based on screened intervals, age, construction material, and current status (e.g., abandoned).

The Seaside Groundwater Basin is subdivided into four distinct subareas: Northern Coastal, Southern Coastal, Northern Inland, and Laguna Seca (Southern Inland). Although the scope of work pertained only to analysis of wells within the Coastal subareas, efficiency in the data work flow allowed inclusion of Inland subareas at no additional cost to the Seaside Watermaster. This technical memorandum summarizes the procedures employed in the analysis; well statistics including the number and type of wells in the Seaside Basin; assessment of wells regarding potential for surface and/or cross-aquifer contamination; and recommendations regarding potential additional evaluation of specified wells to further enhance this assessment.

Potential Sources of Contamination

The primary sources of cross-contamination between the primary aquifers within the Seaside Groundwater basin include: (1) cross-screened wells (i.e., wells screened in both the Paso Robles and Santa Margarita/Purissima aquifers), (2) poorly-constructed wells (i.e., inadequate seals between aquifers), (3) cracked casing due to age and/or deterioration of construction materials, and (4) abandoned or improperly destroyed wells.

General Stratigraphy and Hydrostratigraphy

The Seaside Groundwater Basin consists of a sedimentary sequence of water-bearing materials that overlie a base of relatively impermeable Miocene age and older crystalline rocks of the Monterey Formation. Even though the Monterey Formation is capable of yielding poor-quality water to wells in many locations, the shales of the Monterey Formation are considered non water-bearing for the purposes of this analysis.

Conformably overlying the Monterey Formation is the Santa Margarita Sandstone, which is commonly referred to as the Santa Margarita aquifer or deep aquifer. This aquifer consists primarily of marine-derived sedimentary sandstone.

The Purissima Formation interfingers with the Santa Margarita Sandstone in the northern portion of the Basin. The location of the transition is poorly understood due to a paucity of wells in the northern part of the project area where this transition may occur. The Purissima Formation is similar to the Santa Margarita Sandstone in that it is a marine deposit consisting of poorly indurated gravels, sands, silts, and silty clay.

The geologic unit unconformably overlying the Purissima Formation and Santa Margarita Sandstone is a Tertiary and Quaternary continental deposit referred to as the Paso Robles or shallow aquifer. This unit consists of a mixture of continentally-derived gravel, sand, silt, and clay sedimentary deposits. The Paso Robles Aquifer is unconfined and overlain by surficial Aromas Sand, which is only saturated along the coastline.

Analysis Performed

Comprehensive Microsoft Access and ArcGIS databases were constructed using data from the following 4 sources: (1) Seaside Watermaster database (SBWM), (2) MPWMD well database, (3) Department of Water Resources (DWR) database, and (4) Fort Ord environmental cleanup database.

The current Seaside Watermaster database (SBWM) well log files were compared with logs available from the other three sources in order to identify records in common and those that should be added into the Watermaster database.

A new database was constructed and populated with available lithology, DWR well number, TIFF (digital record) number, and well construction details including age of well, well type, drilling method, casing materials, estimated capacity, water level, and location data for wells located in each subarea of the basin. Numerous log files contained only a subset of these data.

Locations were determined using a combination of the following sources in order of accuracy: aerial photos (orthorectified) where well locations had been previously field-verified, geographic coordinates, location sketches, log descriptions, APN parcel numbers, TRS (Township – Range – Section) subsections, and TRS sections.

A digital elevation model of the basin was constructed containing well locations, well type, lithology, total depth, and screened intervals based on the compilation from the four available data sources. Seaside Basin groundwater model files were acquired, and model layers containing matrix physical properties and structural geology were incorporated into the digital elevation model.

Cross contamination potential was evaluated based on the digital elevation model and hydrostratigraphy used in the groundwater model.

Wells identified as having a cross-contamination risk were field verified as to their current condition.

Results: Well locations, status, ages, and casing materials

In total, 91 additional well records (an increase of 47%) were identified as part of this investigation and merged with 132 wells from the Seaside Watermaster database and 56 from the MPWMD database, resulting in a total of 279 identified wells records (Table 1). The vast majority of the newly identified wells records (92%) site the potential wells within the Northern and Southern Coastal subareas of the Seaside Basin.

Well locations were sited on maps using a combination of orthorectified aerial photos, coordinates, location sketches, log descriptions, APN parcel numbers, TRS subsections, and TRS sections (Table 2). Uncertainty in location increases from $\pm 3'$ for orthorectified and field-verified wells to $\pm 3,000'$ for those having only TRS descriptions noting their locations. Roughly 62% of the identified wells are located to a degree of $\pm 50'$, 28% are located to a degree of $\pm 100'$, and the remaining 10% are located to a degree of $\pm 600 - 3,000'$.

The current status of identified well records within the basin was categorized as destroyed, abandoned, active, inactive, or unknown (Table 3) across a suite of well use types (industrial, irrigation, domestic, etc.). The status of over 52% of the identified well records within the basin are unknown. Roughly 18% of the well records are categorized as active, 10 % are inactive, 15 % are destroyed, and 5% are abandoned. Well status by subarea is shown in Table 4 panels A-E. Reported well ages (binned by decade) and casing construction materials (PVC, steel, none, and unknown) are shown in Table 5 and Figure 1. The reported ages of 33% of the wells are unknown. The reported casing material of roughly 56% of the wells are unknown, but wells completed prior to 1970 are likely to be cased with steel and are highlighted in Table 5. Steel casings (susceptible to deterioration over time) line 19% of the wells whereas PVC casings line the remaining 25%. Two wells were not cased. Table 6 displays casing construction materials as a function of data source and basin subarea. Table 7 includes the status of the identified wells by subarea. Figure 2 shows locations of all identified well records during this effort.

There are 176 identified wells in the coastal subareas of the basin. Lithological analysis suggests that roughly 60% (104 wells) are screened in multiple aquifers (Table 8 and Figure 3) . Of these cross-screened wells, 66 are screened in two aquifers and 38 are screened in three aquifers. Twenty six of these cross-screened wells are over 40 years old and have steel casing materials which are susceptible to deterioration (Figure 4).

Out of the cross-screened wells and wells identified that may be susceptible to deterioration, 59 wells were scheduled for field investigation (Figure 5). Over August 2011, District staff performed site investigations into the status of these wells. Out of the 59 wells identified for field inspection, 18 are cross-screened over one or multiple aquifers (Figure 6), 33 were destroyed, and 8 were not locatable.

Tables 8, 9, and 10 were compiled as a product of this investigation and are included in the memo to provide the comprehensive work product.

Recommendations

- During the course of this investigation, several follow up tasks were identified if deemed appropriate, these include:
 1. Verify that seals are correctly installed and structurally sound in multi-completed wells and deep wells.
 2. Video log older deep wells for structural integrity.
 3. Refine model stratigraphy and interface location between the Santa Margarita Sandstone and Purisima Formation.
 4. Add newly located wells to the Seaside Watermaster Database.

It is recommended that items 1 through 3 be tabled at this time as field investigations into well status did not yield potential to obtain and process these types of data. District staff recommends destroyed well records, including lithology, be migrated from the database associated with this investigation to the Watermaster Master Database so that an inclusive set of well records exist in one location.

Figure 1

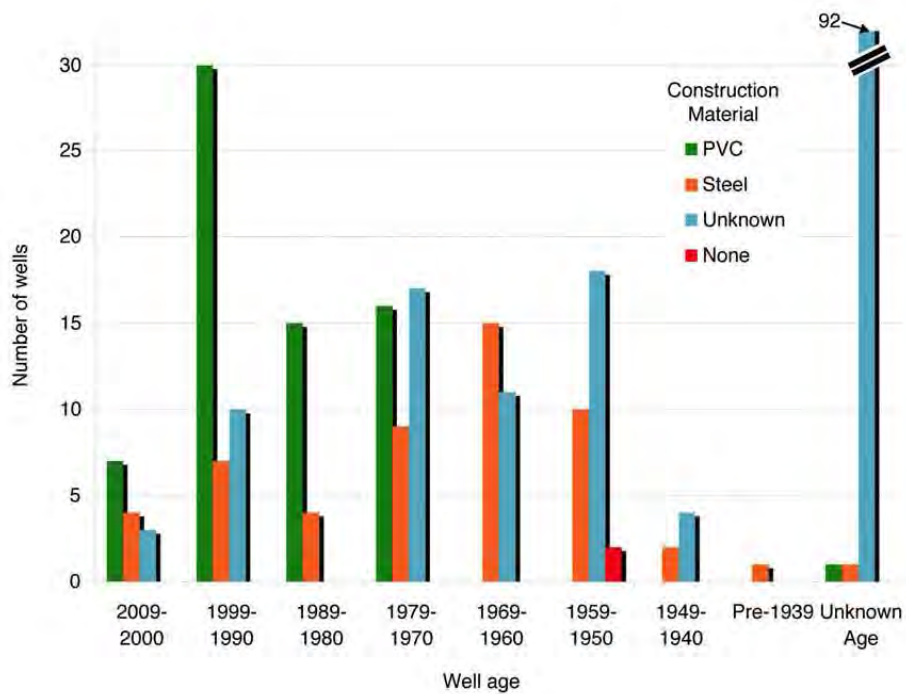
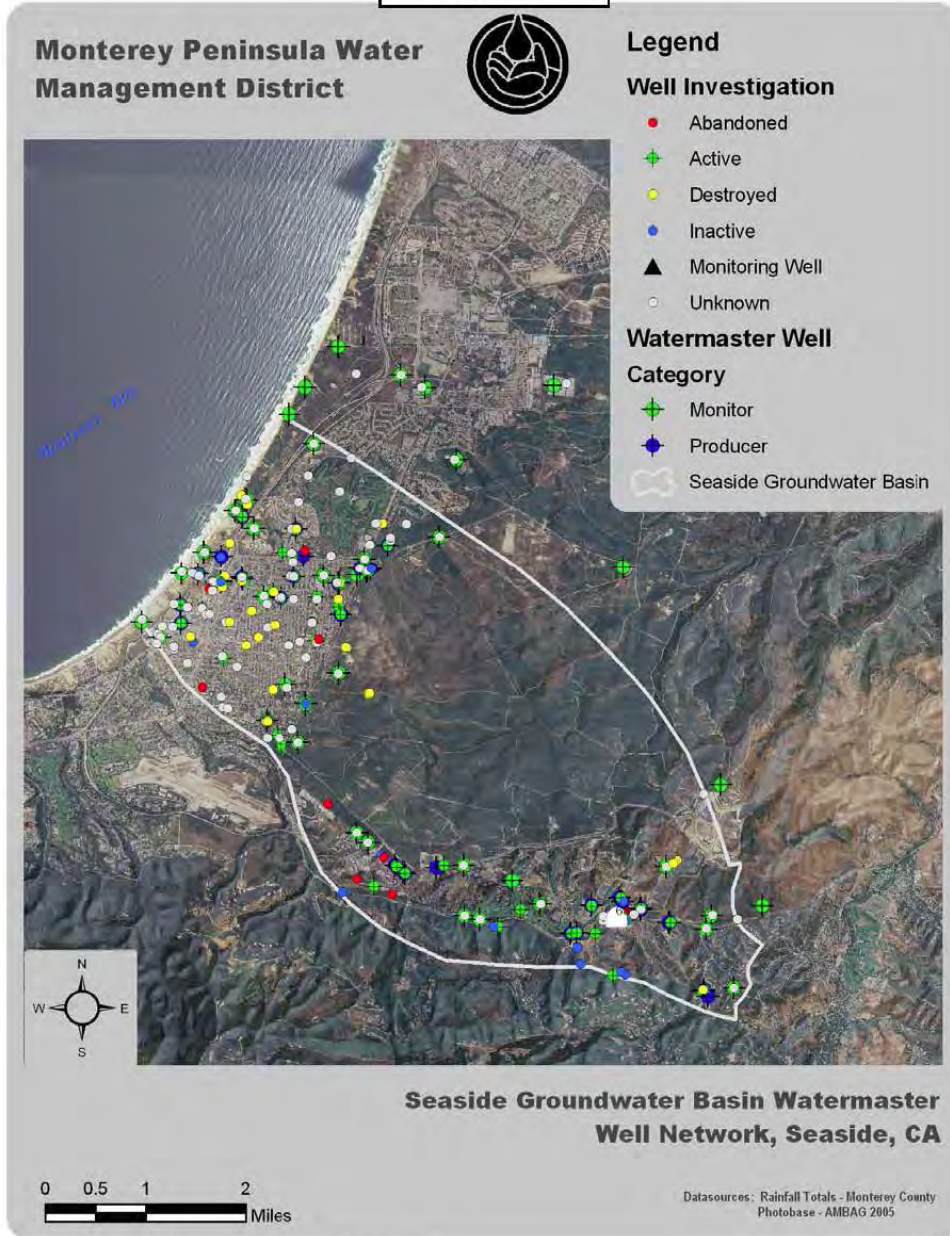


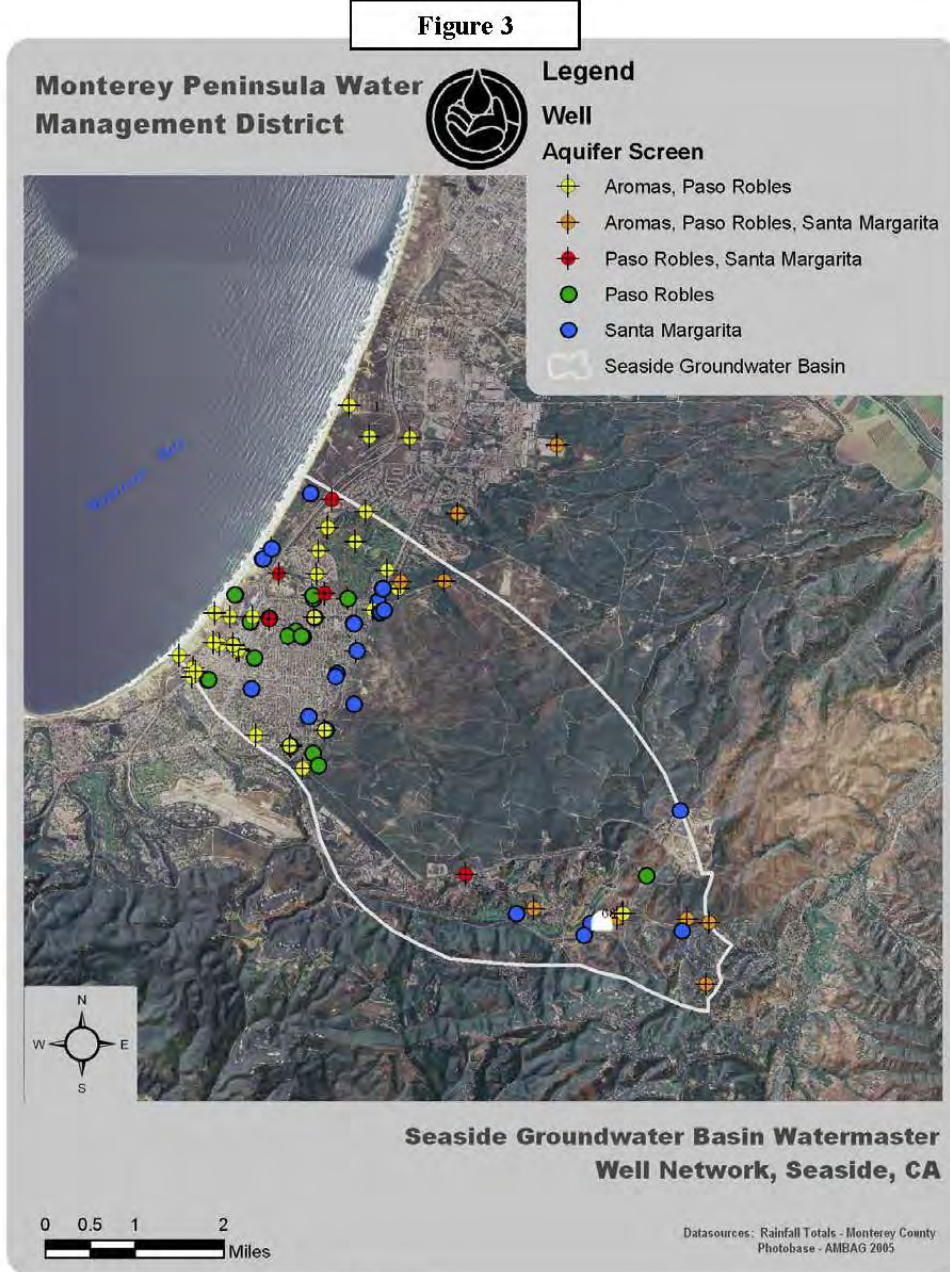
Figure 2



U:\jear\Watermaster\1stand2ndquarter\2010\Watermaster Wells Monitor.mxd

Locations are approximate based on MPVMD files.

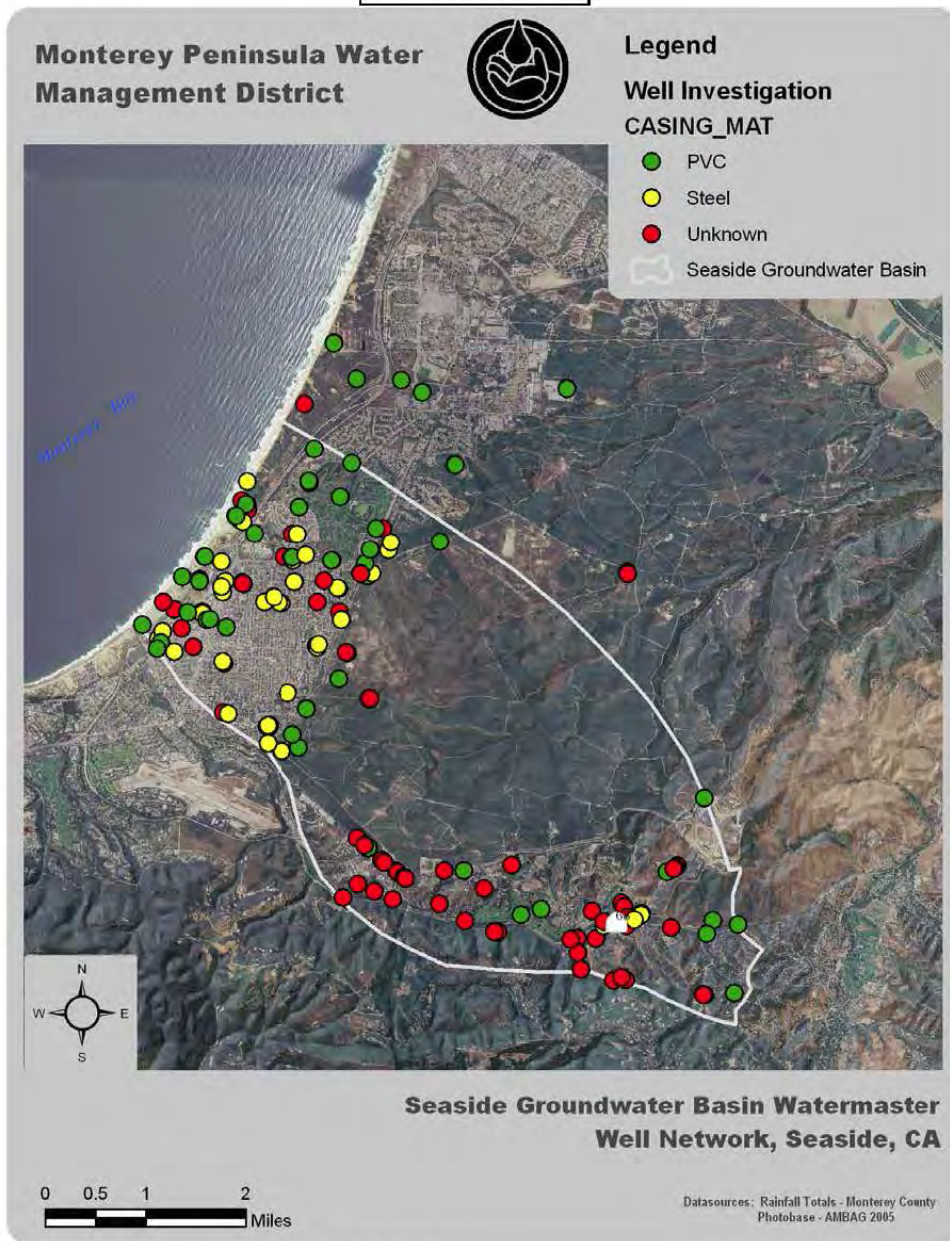
Figure 3



U:\jear\Watermaster\1stand2ndquarter\2010\Watermaster Wells Monitor.mxd

Locations are approximate based on MPVMD files.

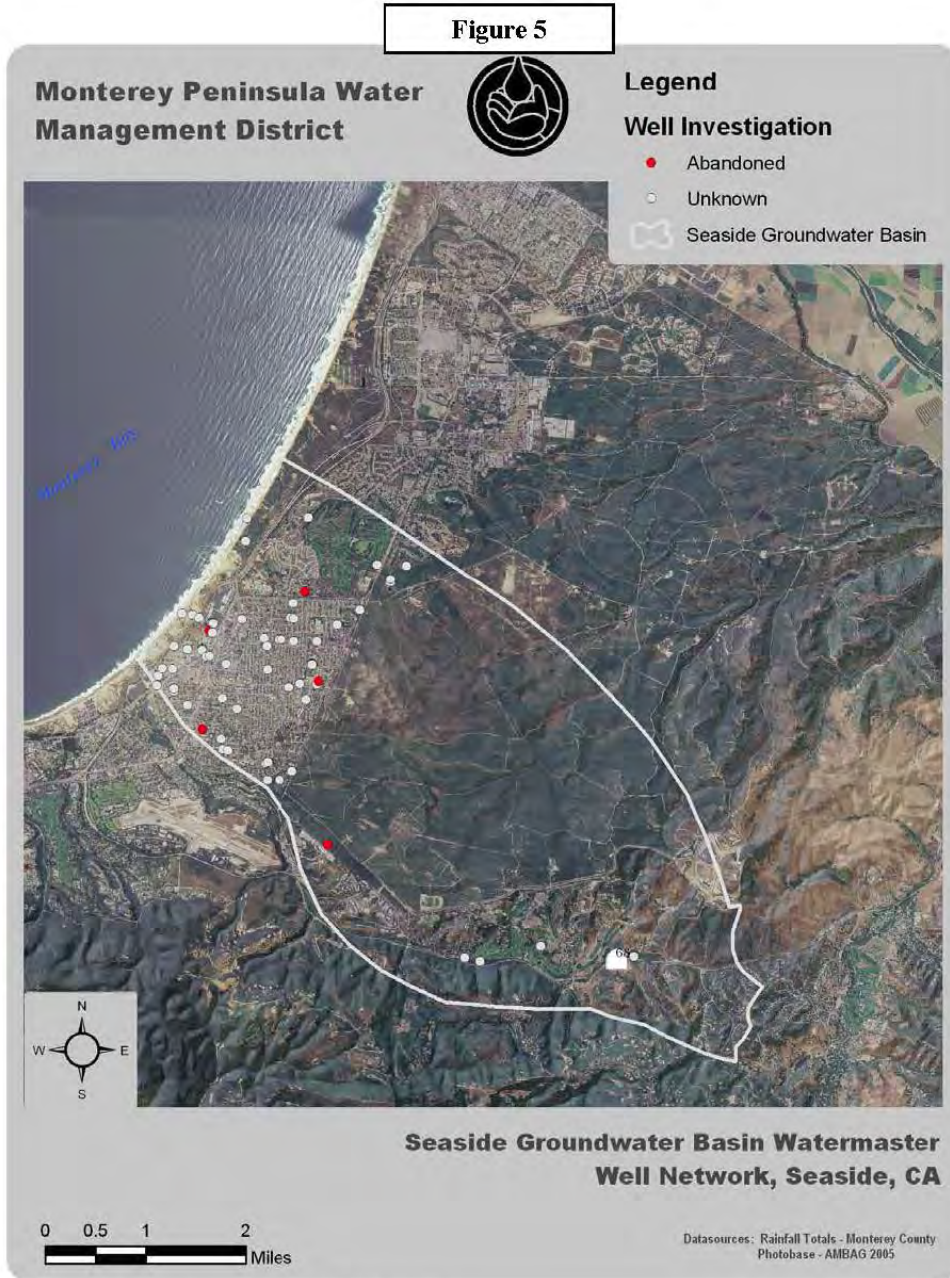
Figure 4



U:\jear\Watermaster\1stand2ndquarter\2010\Watermaster Wells Monitor.mxd

Locations are approximate based on MPVMD files.

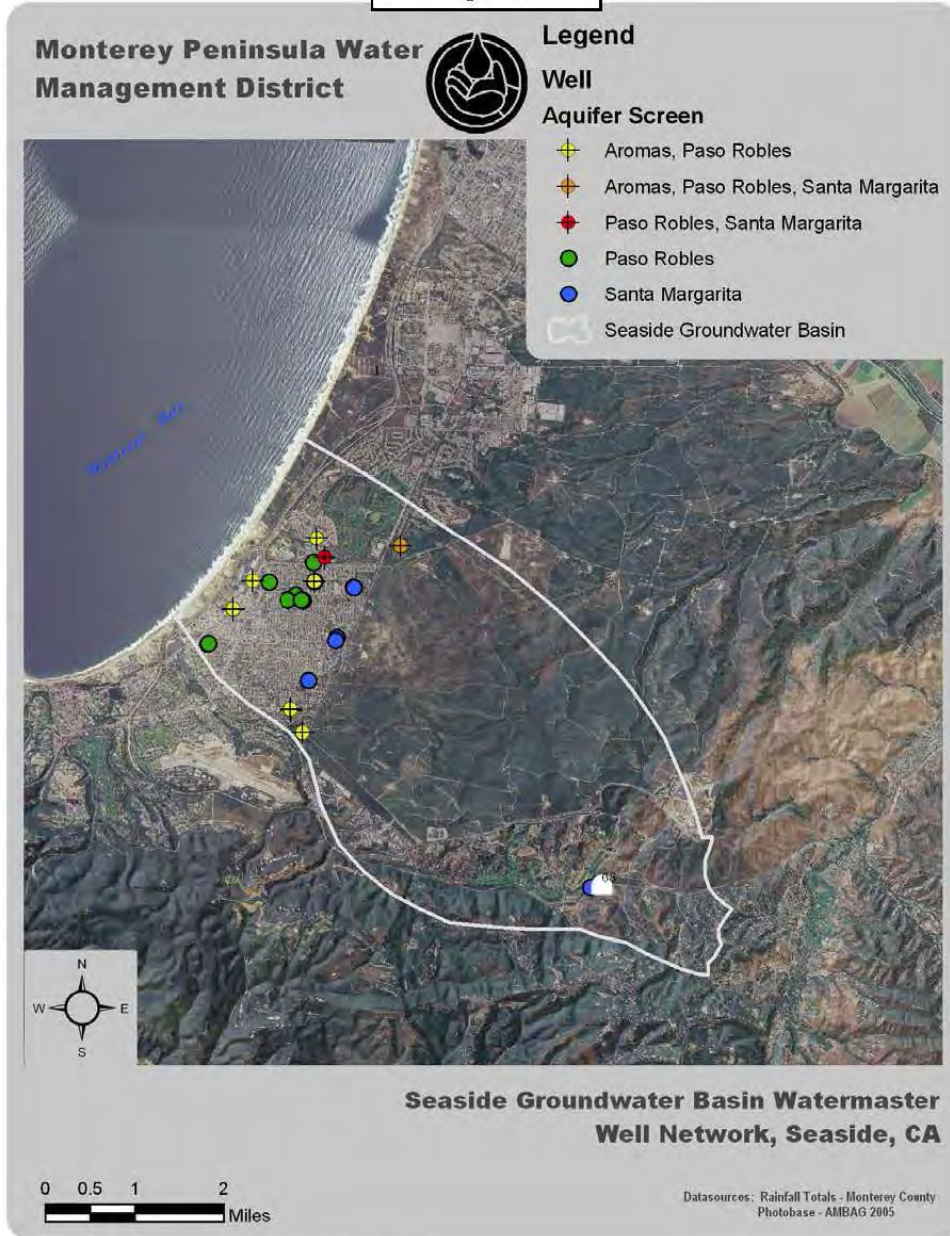
Figure 5



U:\jear\Watermaster\1stand2ndquarter\2010\Watermaster Wells Monitor.mxd

Locations are approximate based on MPVMD files.

Figure 6



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Locations are approximate based on MPVMD files.

		Seaside Basin Subarea Well Count					
		N. Coastal	S. Coastal	N. Inland	Laguna Seca	Outside Boundary	Total
Data Source	SBWM	43	22	10	42	15	132
	MPWMD	24	4	5	23	0	56
	WMI*	41	43	3	3	1	91
	Total	108	69	18	68	16	279

* This investigation. Data sources: DWR, MPWMD, Fort Ord database.

Table 1. Number of wells identified within the Seaside Basin from various sources. Ninety-one additional wells were identified as part of this investigation.

		Location Method						
		Ortho-rectified	Coord's	Loc. Sketch & Log description	Log description	APN Parcel	TRS Subsection	TRS
Data Source	Uncertainty **	± 3'	± 10-15'	± 50'	± 50-100'	± 50-100'	± 600'	± 3,000'
	SBWM	80	6	12	20	3	11	
	MPWMD	25			1	1	1	
	WMI*	30	10	10	48	5	4	12
	Subtotal	135	16	22	69	9	16	12
	Total	279						

* This Investigation. Data sources: DWR, MPWMD, Fort Ord database.

** Uncertainty in location (ft), based on location method. Distances may be significantly greater in rural areas.

Table 2. Number of wells identified and their corresponding location method from various sources. Shaded region highlights poorly-located wells.

Well Use and Status: Seaside Basin						
Well Use	Status					Total #
	DST	ABD	ACT	IA	UNK	
Dest/Abd	7				1	8
Domestic			2		4	6
Industrial	1		2	1	3	7
Irrigation			3		5	8
Monitoring				4	47	51
Municipal	1		4	2	9	16
Other	2			2	1	5
Public			2		2	4
Recharge			1	1	1	3
Test	6	3			27	36
Cathodic					4	4
Unknown	26	9	35	18	43	131
Total	43	12	49	28	147	279

Table 3. Well use and status. Status nomenclature is as follows: DST = destroyed, ABD = abandoned, ACT = active, IA = inactive, UNK = status unknown. Well use is derived from well logs.

Panel A: Northern Coastal

Well Use	Status					Total #
	DST	ABD	ACT	IA	UNK	
Dst/Abd	3					3
Domestic			1			1
Industrial			2	1	1	4
Irrigation						0
Monitoring				1	14	15
Municipal	1		3	2	6	12
Other	1			1	1	3
Public			1			1
Recharge			1			1
Test	3	1			18	22
Catholic						0
Unknown	14	1	11	1	19	46
Total:	22	2	19	6	59	108

Panel B: Northern Inland

Well Use	Status					Total #
	DST	ABD	ACT	IA	UNK	
Dst/Abd						0
Domestic						0
Industrial						0
Irrigation			1			1
Monitoring					5	5
Municipal						0
Other						0
Public						0
Recharge				1		1
Test					2	2
Catholic						0
Unknown	8				1	9
Total	8	0	1	1	8	18

Panel C: Southern Coastal

Well Use	Status					Total #
	DST	ABD	ACT	IA	UNK	
Dst/Abd	4					4
Domestic			1		4	5
Industrial	1				2	3
Irrigation			1		3	4
Monitoring				3	9	12
Municipal			1		3	4
Other	1					1
Public					1	1
Recharge					1	1
Test	3	1			7	11
Catholic					4	4
Unknown	3		6	1	9	19
Total	12	1	9	4	43	69

Panel D: Laguna Seca

Well Use	Status					Total #
	DST	ABD	ACT	IA	UNK	
Dst/Abd					1	1
Domestic						0
Industrial						0
Irrigation			1		2	3
Monitoring					10	10
Municipal						0
Other				1		1
Public			1		1	2
Recharge						0
Test		1				1
Catholic						0
Unknown	1	8	18	16	7	50
Total	1	9	20	17	21	68

Panel E: Outside Boundaries

Well Use	Status					Total #
	DST	ABD	ACT	IA	UNK	
Dst/Abd						0
Domestic						0
Industrial						0
Irrigation						0
Monitoring					9	9
Municipal						0
Other						0
Public						0
Recharge						0
Test						0
Catholic						0
Unknown					7	7
Total	0	0	0	0	16	16

Table 4. Well use and status for Seaside Basin Subareas (panels A-E). Status nomenclature is as follows: DST = destroyed, ABD = abandoned, ACT = active, IA = inactive, UNK = status unknown. Well use is derived from well logs.

		Casing Material			
		Unknown	None	PVC	Steel
Well Age	2009-2000	3	0	7	4
	1999-1990	10	0	30	7
	1989-1980	0	0	15	4
	1979-1970	17	0	16	9
	1969-1960	11	0	0	15
	1959-1950	18	2	0	10
	1949-1940	4	0	0	2
	Pre-1939	0	0	0	1
	Unknown Age	92	0	1	1
	sub total:	155	2	69	53
total	279				

Table 5. Number of wells grouped by age (10-year bins) showing casing construction material. Shaded region highlights wells with unknown casing materials that are likely to be steel.

Seaside Basin Subarea Well Construction Material																		
		N. Coastal			S. Coastal			N. Inland			Laguna Seca			OOB				
Data Source		PVC	Steel	Unk	PVC	Steel	Unk	None	PVC	Steel	Unkn	PVC	Steel	Unk	PVC	Steel	Unk	Total
	SBWM		13	20	10	8	5	9		5	2	3	12	3	27	11		4
MPWMD		1	3	1		1	1						1	20				28
WMI*		10	5	45	7	12	24	2		1	7	1		4	1			119
	Subtotal	24	28	56	15	18	34	2	5	3	10	13	4	51	12	0	4	279
	Total	108			69				18			68			16			

* This Investigation. Data sources: DWR, MPWMD, Fort Ord database.

Table 6. Number of wells within Seaside Basin Subareas showing datasource and casing construction material. Unk = unknown material. Shaded area highlights two uncased wells – one is abandoned and the status of the other is unknown.

		Casing Material															Total:					
		PVC					Steel					Unknown						None				
Well Status:		ACT	IA	ABD	DST	UNK	ACT	IA	ABD	DST	UNK	ACT	IA	ABD	DST	UNK		ACT	IA	ABD	DST	UNK
Well Age	2009-2000		1			6	2	1			1				1	2						14
	1999-1990		2			28	4				3	1			8	1						47
	1989-1980	2				13		2			2											19
	1979-1970		1			15		2			7			1	9	7						42
	1969-1960						3			2	10	1		1	4	5			1		1	28
	1959-1950						4	1		2	3				1	17						28
	1949-1940								1		1	2				2						6
	Pre-1939									1												1
	Unknown Age					1					1	30	18	9	14	21						94
	sub total:		2	4	0	0	63	13	6	1	5	28	34	18	11	37	55	0	0	1	0	1
total				69					53					155					2			

Table 7. Number of wells grouped by well age (10-year bins), casing material, and well status. Shaded region highlights wells with unknown casing materials that are likely to be steel.

NAME	Log #	Aquifers Well is Screened in	Steel > 40 yrs old
Bougainville	27	Aromas, Paso Robles	no
CalAm 1961-B	101376	Aromas, Paso Robles	yes
Castaldo	13	Aromas, Paso Robles	yes
CDM MW-1	14	Aromas, Paso Robles	no
CDM MW-2	38	Aromas, Paso Robles	no
CDM MW-3	52	Aromas, Paso Robles	no
CDM MW-4	45	Aromas, Paso Robles	no
Chas Brown	81221	Aromas, Paso Robles	no
City of Sand City Corp. Yard	490449	Aromas, Paso Robles	no
City of Seaside #4	742178	Paso Robles, Santa Margarita	no
Coe Ave.	107527	Aromas, Paso Robles	yes
County Parks No. 1	498010	Aromas, Paso Robles, Santa Margarita	no
Cypress Pacific	748975	Aromas, Paso Robles	no
FO Boring GD-1	26	Aromas, Paso Robles	no
FO Boring GS-1	24	Aromas, Paso Robles	no
FO Boring GS-2	25	Aromas, Paso Robles	no
FO Boring GS-3	19	Aromas, Paso Robles	no
FO Boring GS-4	36	Aromas, Paso Robles	no
FO Boring GS-5	32	Aromas, Paso Robles	no
FO Boring GS-6	28	Aromas, Paso Robles	no
FO Boring GS-7	23	Aromas, Paso Robles	no
FO Test Hole B	31	Aromas, Paso Robles, Santa Margarita	yes
FO-05	107	Aromas, Paso Robles, Santa Margarita	no
FO-08	106	Aromas, Paso Robles, Santa Margarita	no
FO-11	105	Aromas, Paso Robles, Santa Margarita	no
FO6	101	Aromas, Paso Robles, Santa Margarita	no
FORT ORD #7	103	Aromas, Paso Robles, Santa Margarita	no
FORT ORD #9	104	Paso Robles, Santa Margarita	no
Granite Const. Co -1	121102	Aromas, Paso Robles	yes
Granite Const. Co -2	121103	Aromas, Paso Robles	yes
Granite Const. Co -3	121104	Aromas, Paso Robles	yes
Granite Const. Co -4	72030	Aromas, Paso Robles, Santa Margarita	no
KMART	46	Aromas, Paso Robles	no
Love Motors MW-1	480855	Aromas, Paso Robles	no
Love Motors MW-2	480856	Aromas, Paso Robles	no
Love Motors MW-3	480857	Aromas, Paso Robles	no
LS Old #12	461400	Aromas, Paso Robles, Santa Margarita	no
Luzern Replacement	419426	Aromas, Paso Robles	yes
MCPD No. 2	788672	Aromas, Paso Robles	no
Monte No.4	3	Aromas, Paso Robles	no
MPWMD Plumas-1	232078	Aromas, Paso Robles	no
MW-B-22-180	20	Aromas, Paso Robles	no
MW-B-23-180	16	Aromas, Paso Robles	no
MW-BW-08-A	76	Aromas, Paso Robles	no
n/a - Granite Rock	29387	Aromas, Paso Robles	no
Ord Village No. 2	35	Paso Robles, Santa Margarita	yes
PCA_EAST_MULT	338402	Paso Robles, Santa Margarita	no

Table 8. Cross-screened wells.

NAME	Log #	Aquifers Well is Screened in	Steel > 40 yrs old
Playa4	290011	Paso Robles, Santa Margarita	no
Plumas #2	10	Aromas, Paso Robles	yes
Plumas 4	442710	Aromas, Paso Robles	no
Plumas Production	43635	Aromas, Paso Robles	yes
PRT1W	520448	Aromas, Paso Robles	no
Reservoir	701787	Aromas, Paso Robles	no
Righello	360768	Aromas, Paso Robles	no
ROBLEY	111	Aromas, Paso Robles, Santa Margarita	no
Water Pollution Control Plant	114994	Aromas, Paso Robles	yes
Wells Fargo	411362	Aromas, Paso Robles	no
YORK_WEST	112	Paso Robles, Santa Margarita	no

Table 8. (Continued)

Well Name	Location Method	Well Age	Casing Material	Well Use	Status	Subarea	Data Source
Ranches	TRS Centroid	13	PVC	Monitoring	unk	SC	WMI
Chas Brown	TRS Centroid	37	Steel	Domestic	unk	SC	WMI
Central Post Test - B	TRS Centroid	46	unk	Test Well	unk	NI	WMI
Ca. Water&Phone-4	TRS Centroid	53	unk	Test Well	unk	NC	WMI
Ca. Water&Phone-5	TRS Centroid	53	unk	Test Well	unk	NC	WMI
Ca. Water&Phone-6	TRS Centroid	53	unk	Test Well	unk	NC	WMI
Ca. Water&Phone-7	TRS Centroid	53	unk	Test Well	unk	NC	WMI
Ca. Water&Phone-8	TRS Centroid	53	unk	Test Well	unk	NC	WMI
Ca. Water&Phone-1	TRS Centroid	53	unk	Test Well	unk	NC	WMI
Ca. Water&Phone-2	TRS Centroid	53	unk	Test Well	unk	NC	WMI
Ca. Water&Phone-3	TRS Centroid	53	unk	Test Well	unk	NC	WMI
Durksen	TRS Centroid	unk	unk	unk	unk	SC	WMI
FO-05 Deep	TRS Subsection Centroid	19	PVC	Monitoring	unk	OB	SBWM
FO-05 Shallow	TRS Subsection Centroid	19	PVC	Monitoring	unk	OB	SBWM
Del Rey Oaks Test	TRS Subsection Centroid	20	PVC	Test Well	unk	SC	WMI
FO-03 Deep	TRS Subsection Centroid	24	PVC	Monitoring	unk	NI	SBWM
City of Mont. Ryan Ranch Test	TRS Subsection Centroid	32	nd	Test Well	ABD	LS	WMI
CDM MW-4	TRS Subsection Centroid	34	PVC	Monitoring	unk	SC	SBWM
City of Seaside Test No. 5	TRS Subsection Centroid	37	unk	Test Well	unk	SC	WMI
Hot Spring Well	TRS Subsection Centroid	108	Steel	unk	DST	NC	MPWMD
Blue Larkspur	TRS Subsection Centroid	unk	unk	unk	unk	LS	SBWM
LS Driving Range (SCS Deep)	TRS Subsection Centroid	unk	unk	unk	unk	LS	SBWM
Paddock #4	TRS Subsection Centroid	unk	unk	unk	unk	LS	SBWM
SBWM MW-1	TRS Subsection Centroid	unk	unk	unk	unk	OB	SBWM
SBWM MW-2	TRS Subsection Centroid	unk	unk	unk	unk	OB	SBWM
SBWM MW-5d	TRS Subsection Centroid	unk	unk	unk	unk	OB	SBWM
SBWM MW-5s	TRS Subsection Centroid	unk	unk	unk	unk	OB	SBWM
City Dump	TRS Subsection Centroid	unk	Steel	Industrial	unk	NC	WMI

Table 9. Wells located using TRS Centroid or TRS Subsection Centroids.

Well Name	Location Method	Casing Material	Well Age	Data Source	Well Use	Subarea
SUBDIV	air photo	nd	48	SBWM	Unknown	LS
Granite-CAW	air photo	nd	Unknown	SBWM	Unknown	LS
LS1959	air photo	nd	Unknown	WMI	Unknown	LS
LAGUNASEC	air photo	PVC	22	SBWM	Monitoring	LS
ROBLEYN	air photo	PVC	22	SBWM	Monitoring	LS
ROBLEYS	air photo	PVC	22	SBWM	Monitoring	LS
YORK_WEST	air photo	PVC	22	SBWM	Monitoring	LS
FO4EAST	air photo	PVC	22	SBWM	Monitoring	LS
FO4WEST	air photo	PVC	22	SBWM	Monitoring	LS
MCPD No. 2	air photo	Steel	8	SBWM	Domestic	LS
ordterracedee	air photo	nd	Unknown	SBWM	Unknown	NC
ordterracsha	air photo	nd	Unknown	SBWM	Unknown	NC
Fitch MW-1	air photo	PVC	1	SBWM	Monitoring	NC
Fitch MW-2	air photo	PVC	1	SBWM	Monitoring	NC
ASR-MW 1	air photo	PVC	Unknown	SBWM	Monitoring	NC
MW-B-30-180	air photo	nd	36	WMI	Unknown	NC
MW-B-32-180	air photo	nd	Unknown	WMI	Unknown	NC
LS Old #12	air photo, Log description	PVC	13	WMI	Irrigation	LS
FO6DEEP	air photo, Log description	PVC	19	SBWM	Monitoring	LS
FO6SHAL	air photo, Log description	PVC	19	SBWM	Monitoring	LS
SECA_PLAC	air photo, Log description	PVC	22	SBWM	Monitoring	LS
RYAN_RANC	air photo, Log description	PVC	29	SBWM	Monitoring	LS
FORT ORD #9 D	air photo, Log description	PVC	16	SBWM	Monitoring	NC
FORT ORD #9 S	air photo, Log description	PVC	16	SBWM	Monitoring	NC
M. SAND CO. D	air photo, Log description	PVC	20	SBWM	Monitoring	NC
M. SAND CO. S	air photo, Log description	PVC	20	SBWM	Monitoring	NC
PARALTA_TEST_	air photo, Log description	PVC	20	SBWM	Test Well	NC
PCA W Deep	air photo, Log description	PVC	20	SBWM	Monitoring	NC
PCA W Shallow	air photo, Log description	PVC	20	SBWM	Monitoring	NC
PCA_EAST_MULT	air photo, Log description	PVC	20	SBWM	Monitoring	NC

Table 10. Wells with unknown status

Well Name	Location Method	Casing Material	Well Age	Data Source	Well Use	Subarea
FORT ORD #7 D	air photo, Log description	PVC	16	SBWM	Monitoring	NI
FORT ORD #7 S	air photo, Log description	PVC	16	SBWM	Monitoring	NI
FO1DEEP	air photo, Log description	PVC	24	SBWM	Monitoring	NI
FO1SHAL	air photo, Log description	PVC	24	SBWM	Monitoring	NI
PLUMAS_TEST_9	air photo, Log description	PVC	20	SBWM	Monitoring	SC
KMART	air photo, Log description	PVC	34	SBWM	Unknown	SC
SBWM MW-3	Coordinates	nd	3	SBWM	Monitoring	NC
SBWM MW-4	Coordinates	nd	3	SBWM	Monitoring	NC
FO Boring GD-1	Coordinates	PVC	33	WMI	Unknown	NC
FO Boring GD-2	Coordinates	PVC	33	WMI	Unknown	NC
FO Boring GD-3	Coordinates	PVC	33	WMI	Unknown	NC
FO Boring GS-1	Coordinates	PVC	33	WMI	Unknown	NC
FO Boring GS-2	Coordinates	PVC	33	WMI	Unknown	NC
FO Boring GS-3	Coordinates	PVC	33	WMI	Unknown	NC
FO Boring GS-5	Coordinates	PVC	33	WMI	Unknown	NC
FO Boring GS-6	Coordinates	PVC	33	WMI	Unknown	NC
FO Boring GS-7	Coordinates	PVC	33	WMI	Unknown	NC
FO Boring GS-4	Coordinates	PVC	33	WMI	Unknown	OB
MW-B-22-180	Coordinates	PVC	33	SBWM	Unknown	OB
MW-B-23-180	Coordinates	PVC	33	SBWM	Unknown	OB
City of Seaside Test No. 2	Log description, drawing	nd	46	WMI	Test Well	NC
FO-11 Shallow	Log description, drawing	PVC	14	SBWM	Monitoring	OB
FO-10 Deep	Log description, drawing	PVC	14	SBWM	Monitoring	OB
FO-10 Shallow	Log description, drawing	PVC	14	SBWM	Monitoring	OB
FO-08 Shallow	Log description, drawing	PVC	16	SBWM	Monitoring	OB
FO-11 Deep	Log description, drawing	PVC	14	SBWM	Monitoring	OB
FO-08 Deep	Log description, drawing	PVC	16	SBWM	Monitoring	OB
n/a - Granite Rock	Log description, drawing	Steel	32	SBWM	Industrial	SC
Cypress Pacific	Log description, drawing	PVC	9	SBWM	Domestic	SC
MCPD No. 1	Log description	Steel	18	SBWM	Public	LS
Paddock #1	Log description	Steel	38	SBWM	Irrigation	LS
New Cities Land Co.	Log description	nd	Unknown	SBWM	Unknown	LS

Table 10. (continued)

Well Name	Location Method	Casing Material	Well Age	Data Source	Well Use	Subarea
City of Seaside Test No. 4	Log description	nd	37	WMI	Test Well	NC
FO Test Hole A	Log description	nd	46	WMI	Test Well	NC
CalAm Test No. 4	Log description	nd	53	WMI	Test Well	NC
CalAm Test No. 5	Log description	nd	53	WMI	Test Well	NC
CalAm Test No. 6	Log description	nd	53	WMI	Test Well	NC
CalAm Test No. 1	Log description	nd	53	WMI	Test Well	NC
CalAm Test No. 2	Log description	nd	53	WMI	Test Well	NC
G.J. No. 1	Log description	nd	61	WMI	Test Well	NC
Metz No. 1	Log description	nd	65	WMI	Unknown	NC
CDM MW-2	Log description	PVC	7	SBWM	Monitoring	NC
Bougainville	Log description	PVC	36	WMI	Monitoring	NC
Luzern Original	Log description	Steel	44	SBWM	Municipal	NC
Playa No. 1	Log description	Steel	44	SBWM	Municipal	NC
Harding	Log description	Steel	53	WMI	Municipal	NC
Mission Memorial Monitor	Log description	nd	Unknown	SBWM	Unknown	NC
Playa Well	Log description	nd	Unknown	SBWM	Unknown	NC
FO Test Hole C	Log description	nd	46	WMI	Test Well	NI
FO Test Hole B	Log description	Steel	69	WMI	Unknown	NI
CDM MW-1	Log description	PVC	7	SBWM	Monitoring	OB
Dune Well	Log description	nd	52	WMI	Unknown	SC
CalAm Test No. 3	Log description	nd	53	WMI	Test Well	SC
CalAm Test No. 7	Log description	nd	53	WMI	Test Well	SC
CalAm Test No. 8	Log description	nd	53	WMI	Test Well	SC
James Siino	Log description	nd	Unknown	WMI	Unknown	SC
Seaside Sanitary District	Log description	nd	Unknown	WMI	Unknown	SC
CalAm Test No. 6	Log description	none	43	WMI	Test Well	SC
CDM MW-3	Log description	PVC	7	SBWM	Monitoring	SC
MPWMD Plumas-1	Log description	PVC	28	WMI	Recharge	SC
MPWMD Plumas-2	Log description	PVC	28	WMI	Monitoring	SC
Plumas 4	Log description	Steel	14	SBWM	Public	SC
Monte No.4	Log Description	Steel	37	WMI	Unknown	SC
Granite Const. Co -4	Log description	Steel	37	WMI	Industrial	SC

Table 10. (continued)

Well Name	Location Method	Casing Material	Well Age	Data Source	Well Use	Subarea
CalAm-71	Log description	Steel	39	WMI	Municipal	SC
CalAm 1961-B	Log description	Steel	42	WMI	Domestic	SC
Elm Well	Log description	Steel	42	WMI	Municipal	SC
Seaside #1	Log description	Steel	44	WMI	Municipal	SC
Granite Const. Co -1	Log description	Steel	44	WMI	Irrigation	SC
Granite Const. Co -2	Log description	Steel	44	WMI	Irrigation	SC
Granite Const. Co -3	Log description	Steel	44	WMI	Irrigation	SC
Orange	Log description	Steel	54	WMI	Unknown	SC
Hilby MGT	Log description	Steel	57	SBWM	Unknown	SC
Desal Monitor	Log description	nd	Unknown	SBWM	Unknown	SC
City of Seaside #2	Log description	Steel	45	SBWM	Municipal	NC
City of Seaside #1	Log description	Steel	45	SBWM	Municipal	NC
Chiantelli	Log description	Steel	33	WMI	Test Well	SC
Love Motors MW-1	Log description, drawing	nd	17	WMI	Monitoring	SC
PG&E	Log description, drawing	nd	32	WMI	Cathodic Protection	SC
PG&E	Log description, drawing	nd	32	WMI	Cathodic Protection	SC
PG&E	Log description, drawing	nd	32	WMI	Cathodic Protection	SC
PG&E	Log description, drawing	nd	32	WMI	Cathodic Protection	SC
Love Motors MW-2	Log description, drawing	PVC	16	WMI	Monitoring	SC
Love Motors MW-3	Log description, drawing	PVC	16	WMI	Monitoring	SC
PRT1W	APN, Log description	Steel	12	SBWM	Other	NC
Ord Grove #2	APN, Log description	Steel	27	SBWM	Unknown	NC
Cunningham Park	APN centroid	nd	Unknown	WMI	Unknown	NC
Metz Park	APN centroid	nd	Unknown	WMI	Unknown	NC
CalAm W-3917	APN centroid	Steel	27	WMI	Municipal	NC
Wells Fargo	APN centroid	PVC	17	WMI	Monitoring	SC
Righello	APN centroid	PVC	19	SBWM	Domestic	SC
Blue Larkspur	TRS Subsection Centroid	nd	Unknown	SBWM	Unknown	LS
LS Driving Range (SCS Deep)	TRS Subsection Centroid	nd	Unknown	SBWM	Unknown	LS
Paddock #4	TRS Subsection Centroid	nd	Unknown	SBWM	Unknown	LS
FO-03 Deep	TRS Subsection Centroid	PVC	24	SBWM	Monitoring	NI
SBWM MW-1	TRS Subsection Centroid	nd	Unknown	SBWM	Unknown	OB

Table 10. (continued)

Well Name	Location Method	Casing Material	Well Age	Data Source	Well Use	Subarea
SBWM MW-2	TRS Subsection Centroid	nd	Unknown	SBWM	Unknown	OB
SBWM MW-5d	TRS Subsection Centroid	nd	Unknown	SBWM	Unknown	OB
SBWM MW-5s	TRS Subsection Centroid	nd	Unknown	SBWM	Unknown	OB
FO-05 Deep	TRS Subsection Centroid	PVC	19	SBWM	Monitoring	OB
FO-05 Shallow	TRS Subsection Centroid	PVC	19	SBWM	Monitoring	OB
City of Seaside Test No. 5	TRS Subsection Centroid	nd	37	WMI	Test Well	SC
CDM MW-4	TRS Subsection Centroid	PVC	34	SBWM	Monitoring	SC
Del Rey Oaks Test	TRS Subsection Centroid	PVC	20	WMI	Test Well	SC
City Dump	TRS Subsection Centroid	Steel	Unknown	WMI	Industrial	NC
Ca. Water&Phone-4	TRS Centroid	nd	53	WMI	Test Well	NC
Ca. Water&Phone-5	TRS Centroid	nd	53	WMI	Test Well	NC
Ca. Water&Phone-6	TRS Centroid	nd	53	WMI	Test Well	NC
Ca. Water&Phone-7	TRS Centroid	nd	53	WMI	Test Well	NC
Ca. Water&Phone-8	TRS Centroid	nd	53	WMI	Test Well	NC
Ca. Water&Phone-1	TRS Centroid	nd	53	WMI	Test Well	NC
Ca. Water&Phone-2	TRS Centroid	nd	53	WMI	Test Well	NC
Ca. Water&Phone-3	TRS Centroid	nd	53	WMI	Test Well	NC
Central Post Test - B	TRS Centroid	nd	46	WMI	Test Well	NI
Durksen	TRS Centroid	nd	Unknown	WMI	Unknown	SC
Ranches	TRS Centroid	PVC	13	WMI	Monitoring	SC
Chas Brown	TRS Centroid	Steel	37	WMI	Domestic	SC

Table 10. (continued)

Name	Status	Casing	Casing Type	Drill Method	Drill Year	Well Age	Data Source	Well Use	Subarea
64 SEASIDE TEST 1	ACT	nd	nd	nd	UNK	UNK	WMI	Unknown	NC
AMADOR	ACT	nd	nd	nd	UNK	UNK	WMI	Unknown	SC
BayRidge	ACT	nd	nd	nd	UNK	UNK	SBWM	Unknown	LS
Behen/Wayland	IA	nd	nd	nd	UNK	UNK	MPWMD	Unknown	LS
Bishop No. 1	ACT	nd	nd	nd	UNK	UNK	SBWM	Unknown	LS
Bishop No. 2	ACT	nd	nd	nd	UNK	UNK	SBWM	Unknown	LS
Blue Larkspur	UNK	nd	nd	nd	UNK	UNK	SBWM	Unknown	LS
Ca. Water&Phone-1	UNK	nd	nd	Rotary	1957	53	WMI	Test Well	NC
Ca. Water&Phone-2	UNK	nd	nd	Rotary	1957	53	WMI	Test Well	NC
Ca. Water&Phone-3	UNK	nd	nd	Rotary	1957	53	WMI	Test Well	NC
Ca. Water&Phone-4	UNK	nd	nd	Cable	1957	53	WMI	Test Well	NC
Ca. Water&Phone-5	UNK	nd	nd	Cable	1957	53	WMI	Test Well	NC
Ca. Water&Phone-6	UNK	nd	nd	Cable	1957	53	WMI	Test Well	NC
Ca. Water&Phone-7	UNK	nd	nd	Cable	1957	53	WMI	Test Well	NC
Ca. Water&Phone-8	UNK	nd	nd	Cable	1957	53	WMI	Test Well	NC
Calabrese	ACT	nd	nd	nd	1945	65	MPWMD	Domestic	NC
CalAm 1961-B	UNK	Steel	12 gage	Cable	1968	42	WMI	Domestic	SC
CalAm Plumas 2	DST	nd	na	na	UNK	UNK	SBWM	Destroy	SC
CalAm Plumas 3	DST	nd	na	na	UNK	UNK	SBWM	Destroy	SC
CalAm Test No. 1	UNK	nd	nd	Rotary	1957	53	WMI	Test Well	NC
CalAm Test No. 2	UNK	nd	nd	Rotary	1957	53	WMI	Test Well	NC
CalAm Test No. 3	DST	nd	nd	Rotary	1967	43	WMI	Test Well	SC
CalAm Test No. 3	UNK	nd	nd	Rotary	1957	53	WMI	Test Well	SC
CalAm Test No. 4	UNK	nd	nd	Cable?	1957	53	WMI	Test Well	NC
CalAm Test No. 4: Lowell	DST	nd	na	na	UNK	UNK	WMI	Test Well	SC
CalAm Test No. 5	UNK	nd	nd	Cable?	1957	53	WMI	Test Well	NC
CalAm Test No. 5: Flores	DST	nd	na	na	UNK	UNK	WMI	Test Well	NC
CalAm Test No. 6	DST	nd	nd	Rotary	1967	43	WMI	Test Well	SC
CalAm Test No. 6	UNK	nd	nd	Cable?	1957	53	WMI	Test Well	NC
CalAm Test No. 7	UNK	nd	nd	Rotary	1957	53	WMI	Test Well	SC
CalAm Test No. 8	UNK	nd	nd	Rotary	1957	53	WMI	Test Well	SC
Castaldo	ACT	Steel	12 gage	Cable	1952	58	SBWM	Domestic	SC
Central Post Test - B	UNK	nd	nd	Rotary	1964	46	WMI	Test Well	NI
City Dump	UNK	Steel	nd	Dug	UNK	UNK	WMI	Industrial	NC
City of Seaside #1	UNK	Steel	1/4	Rotary, Cable	1965	45	SBWM	Municipal	NC

Table 11. Wells that are likely to be cased in steel and over 40 years old.

Name	Status	Casing	Casing Type	Drill Method	Drill Year	Well Age	Data Source	Well Use	Subarea
City of Seaside #2	UNK	Steel	nd	Rotary	1965	45	SBWM	Municipal	NC
City of Seaside Test No. 1	ABD	nd	na	Rotary	1964	46	WMI	Test Well	NC
City of Seaside Test No. 2	UNK	nd	na	Rotary	1964	46	WMI	Test Well	NC
Coe Ave.	DST	Steel	5/16	Cable	1965	45	SBWM	Municipal	NC
County Parks No. 4?	ACT	nd	nd	nd	UNK	UNK	MPWMD	Unknown	LS
Cunningham Park	UNK	nd	nd	nd	UNK	UNK	WMI	Unknown	NC
Darwin	ACT	Steel	8 gage	Cable	1954	56	SBWM	Municipal	NC
Desal Monitor	UNK	nd	nd	nd	UNK	UNK	SBWM	Unknown	SC
Dune Well	UNK	nd	nd	nd	1958	52	WMI	Unknown	SC
Durksen	UNK	nd	nd	nd	UNK	UNK	WMI	Unknown	SC
E.O. Neuman	DST	nd	nd	nd	UNK	UNK	WMI	Unknown	SC
East Well	IA	nd	nd	nd	UNK	UNK	SBWM	Unknown	LS
Elm Well	UNK	Steel	1/4	Rotary	1968	42	WMI	Municipal	SC
Ethel Jackson	DST	nd	nd	nd	UNK	UNK	WMI	Destroy	NC
FO Test Hole A	UNK	nd	nd	nd	1964	46	WMI	Test Well	NC
FO Test Hole B	UNK	Steel	nd	nd	1941	69	WMI	Unknown	NI
FO Test Hole C	UNK	nd	nd	nd	1964	46	WMI	Test Well	NI
Fowler_Snyder	ACT	nd	nd	nd	UNK	UNK	SBWM	Unknown	LS
G.C. 1	ACT	nd	nd	nd	1965	45	WMI	Unknown	NC
G.J. No. 1	UNK	nd	nd	nd	1949	61	WMI	Test Well	NC
Granite	DST	nd	na	na	UNK	UNK	WMI	Unknown	NC
Granite Const. Co -1	UNK	Steel	16 gage	Rotary Bucket	1966	44	WMI	Irrigation	SC
Granite Const. Co -2	UNK	Steel	16 gage	Rotary Bucket	1966	44	WMI	Irrigation	SC
Granite Const. Co -3	UNK	Steel	16 gage	Rotary Bucket	1966	44	WMI	Irrigation	SC
Granite-CAW	UNK	nd	nd	nd	UNK	UNK	SBWM	Unknown	LS
Harding	UNK	Steel	1/4	Rotary	1957	53	WMI	Municipal	NC
Hilby MGT	UNK	Steel	nd	nd	1953	57	SBWM	Unknown	SC
Hot Spring Well	DST	Steel	nd	Cable	1902	108	MPWMD	Unknown	NC
James Siino	UNK	nd	nd	nd	UNK	UNK	WMI	Unknown	SC
Laguna Seca ABD 1	ABD	nd	nd	nd	UNK	UNK	MPWMD	Unknown	LS
Laguna Seca ABD 2	ABD	nd	nd	nd	UNK	UNK	MPWMD	Unknown	LS
LaSalle	ACT	Steel	1/4	Rotary	1955	55	MPWMD	Industrial	NC
LaSalle No. 2	DST	Steel	8 gage	Cable	1959	51	SBWM	other	NC
LazyJake	IA	nd	nd	nd	UNK	UNK	MPWMD	Unknown	LS
LS Driving Range (SCS Deep)	UNK	nd	nd	nd	UNK	UNK	SBWM	Unknown	LS
LS1959	UNK	nd	nd	nd	UNK	UNK	WMI	Unknown	LS

Table 11. (continued)

Name	Status	Casing	Casing Type	Drill Method	Drill Year	Well Age	Data Source	Well Use	Subarea
LSS new #12	ACT	nd	nd	nd	UNK	UNK	SBWM	Unknown	LS
Luxton	IA	Steel	8 gage	Cable	1959	51	SBWM	other	NC
Luzern Original	UNK	Steel	1/4	Rotary	1966	44	SBWM	Municipal	NC
M9	IA	nd	nd	nd	UNK	UNK	MPWMD	Unknown	LS
Main Gate No. 2	ACT	nd	nd	nd	UNK	UNK	MPWMD	Unknown	LS
Manuel Morton	DST	nd	nd	nd	UNK	UNK	WMI	Unknown	SC
MCPD Dest. 1999	DST	nd	nd	nd	UNK	UNK	SBWM	Unknown	NI
MCPD Dest. 2003	DST	nd	nd	nd	UNK	UNK	SBWM	Unknown	NI
MCPD Dest. 2005	DST	nd	nd	nd	UNK	UNK	SBWM	Unknown	NI
Metz No. 1	UNK	nd	nd	nd	1945	65	WMI	Unknown	NC
Metz Park	UNK	nd	nd	nd	UNK	UNK	WMI	Unknown	NC
Military	ACT	Steel	8 gage	nd	1963	47	SBWM	Industrial	NC
Mission Memorial Monitor	UNK	nd	nd	nd	UNK	UNK	SBWM	Unknown	NC
Mutual	IA	nd	nd	nd	UNK	UNK	SBWM	Unknown	LS
MW-B-32-180	UNK	nd	nd	nd	UNK	UNK	WMI	Unknown	NC
New Cities Land Co.	UNK	nd	nd	nd	UNK	UNK	SBWM	Unknown	LS
NG1983	ACT	nd	nd	nd	UNK	UNK	MPWMD	Unknown	LS
NG2	IA	nd	nd	nd	UNK	UNK	MPWMD	Unknown	LS
NG3	IA	nd	nd	nd	UNK	UNK	MPWMD	Unknown	LS
NGIA	IA	nd	nd	nd	UNK	UNK	MPWMD	Unknown	LS
Orange	UNK	Steel	10 gage	Cable	1956	54	WMI	Unknown	SC
Ord Grove	ACT	Steel	8 gage	Rotary	1968	42	MPWMD	Municipal	NC
Ord Village No. 2	ABD	Steel	10 gage	nd	1941	69	WMI	Unknown	NC
ORD_GROVE_TES	DST	nd	nd	Rotary	1967	43	SBWM	Test Well	NC
ordterracedee	UNK	nd	nd	nd	UNK	UNK	SBWM	Unknown	NC
ordterracesha	UNK	nd	nd	nd	UNK	UNK	SBWM	Unknown	NC
Oscar Veach	DST	nd	nd	nd	UNK	UNK	WMI	Destroy	NC
OV-1	ACT	nd	nd	nd	1941	69	WMI	Unknown	NC
P.C.A.	ACT	nd	nd	nd	UNK	UNK	SBWM	Unknown	NC
Paddock #4	UNK	nd	nd	nd	UNK	UNK	SBWM	Unknown	LS
Palm Well	DST	nd	nd	nd	UNK	UNK	WMI	Unknown	SC
Pasadera Paddock	ACT	nd	nd	nd	UNK	UNK	MPWMD	Unknown	LS
PLAYA #02	ACT	nd	nd	nd	UNK	UNK	SBWM	Unknown	NC
Playa No. 1	UNK	Steel	1/4	Rotary	1966	44	SBWM	Municipal	NC
Playa Test No. 3	DST	nd	nd	nd	1966	44	WMI	Test Well	NC
Playa Well	UNK	nd	nd	nd	UNK	UNK	SBWM	Unknown	NC

Table 11. (continued)

Name	Status	Casing	Casing Type	Drill Method	Drill Year	Well Age	Data Source	Well Use	Subarea
Playa3	ACT	nd	nd	nd	UNK	UNK	SBWM	Unknown	NC
Plumas #2	DST	Steel	1/4	Cable	1958	52	SBWM	Other	SC
PLUMAS 03	ACT	nd	nd	nd	UNK	UNK	SBWM	Unknown	SC
PLUMAS M-02	ACT	nd	nd	nd	UNK	UNK	WMI	Unknown	SC
Plumas Production	ACT	Steel	1/4	Rotary	1958	52	MPWMD	Municipal	SC
Pratt	IA	nd	nd	nd	UNK	UNK	SBWM	Unknown	LS
Robinette Well	ACT	nd	nd	nd	UNK	UNK	SBWM	Unknown	SC
RR6 ABD	ABD	nd	nd	nd	UNK	UNK	MPWMD	Unknown	LS
Ryan Ranch #2	ABD	nd	nd	nd	UNK	UNK	SBWM	Unknown	LS
RYAN RANCH M7S	ACT	nd	nd	nd	UNK	UNK	WMI	Unknown	LS
RYAN RANCH M8S	ACT	nd	nd	nd	UNK	UNK	WMI	Unknown	LS
Ryan Ranch No. 10	ABD	nd	nd	nd	UNK	UNK	SBWM	Unknown	LS
Ryan Ranch No. 11	ACT	nd	nd	nd	UNK	UNK	SBWM	Unknown	LS
Ryan Ranch No. 4	ABD	nd	nd	nd	UNK	UNK	MPWMD	Unknown	LS
Ryan Ranch No. 5	ABD	nd	nd	nd	UNK	UNK	SBWM	Unknown	LS
Ryan Ranch No. 7	ACT	nd	nd	nd	UNK	UNK	SBWM	Unknown	LS
Ryan Ranch No. 8	IA	nd	nd	nd	UNK	UNK	SBWM	Unknown	LS
Ryan Ranch No. 9	IA	nd	nd	nd	UNK	UNK	SBWM	Unknown	LS
SBWM MW-1	UNK	nd	nd	nd	UNK	UNK	SBWM	Unknown	OB
SBWM MW-2	UNK	nd	nd	nd	UNK	UNK	SBWM	Unknown	OB
SBWM MW-5d	UNK	nd	nd	nd	UNK	UNK	SBWM	Unknown	OB
SBWM MW-5s	UNK	nd	nd	nd	UNK	UNK	SBWM	Unknown	OB
Schmeltz	ACT	nd	nd	nd	UNK	UNK	SBWM	Unknown	SC
Seaside #1	UNK	Steel	1/4	Rotary	1966	44	WMI	Municipal	SC
SEASIDE 02	ACT	nd	nd	nd	UNK	UNK	WMI	Unknown	NC
SEASIDE 03	ACT	nd	nd	nd	UNK	UNK	WMI	Unknown	NC
Seaside Rec. Center	ABD	nd	nd	nd	UNK	UNK	WMI	Destroy	SC
Seaside Sanitary District	UNK	nd	nd	nd	UNK	UNK	WMI	Unknown	SC
Shea/Johnen	IA	nd	nd	nd	UNK	UNK	SBWM	Monitoring	SC
Shi Ting Huang	IA	nd	nd	nd	UNK	UNK	SBWM	Unknown	SC
SNG	ACT	Steel	1/4	Rotary	1966	44	SBWM	Unknown	NC
Souza, Frank and Tina	ACT	nd	nd	nd	UNK	UNK	SBWM	Unknown	SC
SPCA WDS	ACT	nd	nd	nd	UNK	UNK	SBWM	Unknown	LS
Standex	IA	nd	nd	nd	UNK	UNK	SBWM	Unknown	LS
Stolich	ACT	nd	nd	nd	UNK	UNK	SBWM	Unknown	LS
StolichIA	IA	nd	nd	nd	UNK	UNK	MPWMD	Unknown	LS

Table 11. (continued)

Name	Status	Casing	Casing Type	Drill Method	Drill Year	Well Age	Data Source	Well Use	Subarea
SUBDIV	UNK	nd	nd	nd	1962	48	SBWM	Unknown	LS
TAWorthwindmillABD	ABD	nd	nd	nd	UNK	UNK	MPWMD	Unknown	LS
Tom Phillips	DST	nd	nd	Cable	1959	51	WMI	Industrial	SC
Wang 02	IA	nd	nd	nd	UNK	UNK	MPWMD	Unknown	LS
Wang 03	ACT	nd	nd	nd	UNK	UNK	MPWMD	Unknown	LS
Wang02072	IA	nd	nd	nd	UNK	UNK	MPWMD	Unknown	LS
WangOldIA	IA	nd	nd	nd	UNK	UNK	MPWMD	Unknown	LS
Water Pollution Control Plant	DST	Steel	10 gage	Rotary	1968	42	WMI	Destroy	NC
Watkins	DST	nd	na	na	UNK	UNK	WMI	Destroy	SC
WisonStreetEnt	ACT	nd	nd	nd	UNK	UNK	SBWM	Unknown	LS
York School	ACT	nd	nd	nd	UNK	UNK	SBWM	Unknown	LS

Table 11. (continued)

**SEASIDE BASIN WATER MASTER
TECHNICAL ADVISORY COMMITTEE**

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

MEETING DATE:	May 12, 2021
AGENDA ITEM:	6
AGENDA TITLE:	Datalogger Issues with Monitoring Well PCA-West Shallow
PREPARED BY:	Robert Jaques, Technical Program Manager
SUMMARY:	<p>At a previous meeting the TAC was informed that the datalogger in Monitoring Well PCA-West Shallow had become stuck due to tangling of the cables in that well for the datalogger and the sampling pump. This has left that well with no useable datalogger. Mr. Feeney recommended that the existing datalogger be abandoned in place, and that a new datalogger be installed with a cable allowing it to be downloaded from the surface, rather than having to pull it out of the well to download it.</p> <p>Mr. Lear has expressed these concerns about doing this: He said that MPWMD agrees with the TAC that installing a data logger in PCA West Shallow would be helpful. However, even though Mr. Feeney's recommendation provided the least cost option to move forward with installing a data logger while also retaining the ability to obtain water quality samples from this well, as the owner of the well MPWMD feels it is not the best option for MPWMD. There is already instrumentation stuck in the well and installing more instrumentation in the well without correcting the blockage is not a conservative approach to protect and extend the life of the well. In MPWMD's view, following Mr. Feeney's recommendation would be deferring required maintenance, since the sampling pump will eventually fail (as the one in PCA West Deep just did) and this work (clearing the blockage) will need to be completed eventually. MPWMD feels that taking care of this maintenance now is the best course of action before installing a new datalogger.</p> <p>Mr. Feeney is in the process of preparing a proposal to clear the blockage in this well and it will be presented to the TAC for consideration at a future meeting. He will attend today's meeting and provide an oral update on this.</p> <p>The TAC is asked to discuss this issue and provide input on the action that should be taken to resolve the datalogger problem in this well.</p>
ATTACHMENTS:	None
RECOMMENDED ACTION:	Determine the best course of action to resolve the datalogger problem in this well

**SEASIDE BASIN WATER MASTER
TECHNICAL ADVISORY COMMITTEE**

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

MEETING DATE:	May 12, 2021
AGENDA ITEM:	7
AGENDA TITLE:	Datalogger Issues and Contract Amendment with MPWMD
PREPARED BY:	Robert Jaques, Technical Program Manager

SUMMARY:

At its March 10, 2021 meeting the TAC provided approval to proceed with certain actions, including:

- Revising the datalogger program by having dataloggers in specified wells and relocating some dataloggers from their existing wells to other wells
- Installing a replacement datalogger in PCA-West Shallow
- Processing the historical data which has been downloaded from the existing dataloggers but has never been processed

All of this work is outside of our consultants' current contract authorizations, so I will need to issue amendments to their existing contracts to authorize them to perform this work. In order to do this I requested that they provide me scope of work and cost proposals for their portions of the work. Specifically, I asked for the following:

Montgomery & Associates:

1. Proposal to process historical downloaded datalogger data.

Martin Feeney:

1. Proposal to replace the datalogger in PCA-W Shallow. As reported at the April 14 TAC meeting, Mr. Feeney recommended that the existing datalogger there be abandoned in place and that a new datalogger be installed. He said that this work could be performed by MPWMD without his assistance, so no proposal from Mr. Feeney was needed.

MPWMD:

1. Proposal to relocate dataloggers to different wells per Georgina King's Tech Memo on this, Table 3, and for the purchase of any new dataloggers needed to accomplish this work.
2. Proposal to provide and install a new datalogger for PCA-W Shallow, per Mr. Feeney's recommendation.
3. Proposal to compile the historical datalogger data so it can be sent to Montgomery & Associates for processing.

The scope and cost proposal from Montgomery & Associates was presented to the TAC at its April 14 meeting, and the TAC recommended it for approval by the Board. The cost proposed by Montgomery & Associates to perform its portion of the datalogger work is \$7,400. Since the proposal from MPWMD was not received in time for inclusion in the April 14 TAC agenda packet, I held off on forwarding Montgomery & Associates' RFS to the Board until MPWMD's Proposal has been received and approved by the TAC.

Attached is the scope and cost proposal from MPWMD to do the datalogger work, as well as their cost

**SEASIDE BASIN WATER MASTER
TECHNICAL ADVISORY COMMITTEE**

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

AGENDA ITEM: 7 (Continued)

proposal to perform the additional sampling of Monitoring Well FO-10. The additional monitoring work was recommended by the TAC and authorized by the Board at their earlier meetings. Included with their proposal is a new set of hourly rates they will be charging, reflecting an increase of about 30% in Mr. Lear's rate compared to the rate being charged under their current contracts. They will also be including other charges in their future work.

MPWMD has informed the Watermaster that it is only willing to execute one further amendment to its contract under the existing Professional Services Agreement, under which MPWMD has been performing work since 2008. MPWMD said that any further additional work that the Watermaster may wish to have MPWMD perform would have to be done under a new Master Agreement that MPWMD would develop to replace the existing Professional Services Agreement.

As a result of MPWMD's position regarding only issuing one further amendment, unless the TAC feels that the datalogger work could be deferred until a new Master Agreement has been agreed-to, or arrangements are made to have another entity perform that work, the TAC needs to provide direction to the Technical Program Manager on which of the tasks listed in MPWMD's proposal should be included in the amendment.

I am concerned about the cost of having the datalogger work performed. Between Montgomery & Associates and MPWMD's costs, that work would total nearly \$20,000. I believe a strong justification for that level of expenditure will be needed in order for the Board to approve it. From the TAC's discussion on dataloggers at previous meetings, these are what the meeting minutes reflect concerning the basis of the TAC's recommendation to have the datalogger work performed:

- The more data the better.
- The data loggers help us to understand what is going on during the time periods between the monthly water level measurements that are currently being made and that this "nuanced data" can be helpful in better understanding the basin.
- Being able to review the unprocessed data that currently exists could be helpful. If we find it doesn't provide anything helpful, it might help to better decide where data loggers are providing the most helpful data.
- Having the detailed information from data loggers was good to have in areas where pumping depressions and groundwater divides exist. Having a data logger in Monitoring Well FO – 11 might help to understand what is causing the groundwater depression there.
- It would be good to process the historical data to see if it is helpful or not. After doing that, decide whether or not continuing to process data from each location is proving to be beneficial, and then make a decision about revising how the data logger network data is handled.
- Data from Monitoring Well PCA-West shallow is important to understanding water quality data in that area of the Seaside basin.

Because of the uncertainty of whether performing the TAC's proposed datalogger work will in fact prove to provide beneficial information for making Basin management decisions, I am concerned that the Board may be unwilling to authorize this expenditure. It does not appear that any Basin management decisions the Board is currently faced with making would be impacted by the datalogger work. Undertaking the unbudgeted datalogger work is of particular concern, since budget transfers have already become necessary this year to fund unanticipated work related to the FO-9 and FO-10 well issues.

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

AGENDA ITEM:	7 (Continued)
<p>Other unbudgeted work that the Board will be considering undertaking includes:</p> <ul style="list-style-type: none"> • Having Montgomery & Associates perform modeling to develop flow direction and flow velocity mapping to aid in identifying what wells would be at risk if seawater intrusion is detected within the Basin. • Updating the previous modeling work regarding the quantity of replenishment water that will be needed to achieve protective elevations. • Updating the SIRP to provide site-specific indicators of SWI (e.g. chloride threshold levels) for additional wells. • Potentially having to help fund the cost of replacing Monitoring Well FO-9. • Performing a Sustainable Yield analysis to replace the current Natural Safe Yield approach to manage the Basin. • Engaging a financial consultant to help develop a plan to finance the purchase of replenishment water. <p>In my view, the actions listed above are more important at this time than carrying out the datalogger program modifications and processing the historical datalogger data. I feel that that work might best be deferred until the Sustainable Yield analysis is undertaken.</p> <p>I am asking the TAC to reexamine this topic to determine whether or not the potential value of performing the datalogger work warrants its level of expenditure. If the TAC remains in favor of performing the work, the TAC is asked to help in developing a more convincing justification that can be presented to the Board when seeking its approval.</p>	
ATTACHMENTS:	Scope and cost proposal from MPWMD
RECOMMENDED ACTION:	<p>Provide direction to the Technical Program Manager on:</p> <ol style="list-style-type: none"> 1. Whether the datalogger program work needs to be performed now 2. Which of the tasks listed in MPWMD's proposal should be included in the amendment to MPWMD

MPWMD Price Estimate - Revised Ammendment No. 1 RFS 2021-1

Task	Description	Time/Unit	Billing Rate	Cost Estimate	Comments
1	<u>Relocate Data Loggers</u>				
	Determine best depth for deployment Review well Construction, water level data, and logger model	2	196	\$392	
	Inspect Wellheads for datalogger deployment, purchase hardware	3	196	\$588	
	Collect dataloggers, Construct hanging apparatus and move loggers (Kmart needs retrofit work for security)	8	196	\$1,568	
2	<u>PCA West Work</u>				
	None to be completed				
3	<u>Transfer Historical Data Logger Data To Montgomery</u>				
	Organize files on server for Transfer cross reference download logs (10 years of 10 Loggers, 2 hr per record)	20	196	\$3,920	
	Answer questions re transferred Logs (if necessary)	6	196	\$1,176	if necessary
4	<u>Annual Download of Watermaster Data Loggers</u>				
	Download Loggers Field Work	12	196	\$2,352	
	Transfer data	2	196	\$392	
	Exchange logger if not working RMS process	6	196	\$1,176	If necessary
	Answer questions re transferred logs	2	196	\$392	if necessary
5	<u>Quarterly FO-10 S Water Quality Sampling</u>				
	Collect water quality samples for CY 2021 (3 remaining samples)	9	196	\$1,764	
	Order bottles and COC to Labratory	1.5	196	\$294	
	<u>Administrative Staff</u>	4	63	\$252	
Labor Total		75.5		\$14,266	
Estimated Fleet Support		180	0.57	\$103	
Laboratory Analysis		3	155	\$465	
Fuel (CO2 Bottle) to run sample pump		3	25	\$75	
				\$14,369	

Note: Estimate does not include materials that may be needed to repair well heads or hang equipent in monitor wells

Monterey Peninsula Water Management District

Schedule of Reimbursement Rates as of July 1, 2020

Employee	Job Title	Hourly Wage	Labor Overhead Percentage	Labor Overhead Amount	Hourly Benefits Amount	P/R Tax & W/C Ins Hourly Cost	Total Employee Cost Per Hour	Indirect Overhead Percentage	Indirect Overhead Amount	Total Calculated Hourly Rate	Rounded Billable Rate
ITM	Information Technology Mgr.	0.00	0.1731	0.00	0.00	0.00	0.00	0.4773	0.00	0.00	0.00
Bennett	Accountant	37.74	0.1731	6.53	10.27	0.75	55.29	0.4773	26.39	81.68	81.00
Prasad	Admin. Services Manager/CFO	89.40	0.1731	15.47	37.57	1.78	144.23	0.4773	68.84	213.07	213.00
Reyes	Senior Office Specialist	34.13	0.1731	5.91	19.24	0.68	59.96	0.4773	28.62	88.58	88.00
GIS Contract	GIS Contract	0.00	0.1731	0.00	0.00	0.00	0.00	0.4773	0.00	0.00	0.00
HR Contract	HR Contract	0.00	0.1731	0.00	0.00	0.00	0.00	0.4773	0.00	0.00	0.00
Mossbacher	Accounting/Office Specialist	28.08	0.1731	4.86	9.47	0.56	42.97	0.4773	20.51	63.48	63.00
Stoldt	General Manager	118.28	0.1731	20.47	47.18	2.36	188.29	0.4773	89.87	278.16	278.00
Pablo	Executive Assistant	33.37	0.1731	5.78	10.04	0.69	49.88	0.4773	23.81	73.69	73.00
Atkins	Environmental Program Specialist	35.00	0.1731	6.06	10.04	2.39	53.49	0.4773	25.53	79.02	79.00
Christensen	Environmental Resources Manager	68.13	0.1731	11.79	31.17	4.66	115.76	0.4773	55.25	171.01	171.00
Hampson	Interim/Temp District Eng.	78.03	0.1731	13.51	0.00	10.18	101.71	0.4773	48.55	150.26	150.00
Lumas	Resources Maintenance Specialist	32.52	0.1731	5.63	9.84	0.65	48.64	0.4773	23.22	71.86	71.00
PM	Project Manager	0.00	0.1731	0.00	0.00	0.00	0.00	0.4773	0.00	0.00	0.00
Hamilton, M	Water Resources Engineer	63.27	0.1731	10.95	12.34	4.33	90.89	0.4773	43.38	134.27	134.00
Bravo	Conservation Analyst	50.66	0.1731	8.77	25.08	1.01	85.52	0.4773	40.82	126.34	126.00
Timmer	Conservation Rep I	40.57	0.1731	7.02	10.51	0.84	58.94	0.4773	28.13	87.07	87.00
Kister	Conservation Analyst	50.66	0.1731	8.77	25.05	1.05	85.53	0.4773	40.83	126.36	126.00
Smith	Conservation Rep II	42.67	0.1731	7.39	10.69	0.85	61.60	0.4773	29.40	91.00	90.00
Jakic	Conservation Technician I	37.69	0.1731	6.52	10.41	0.78	55.41	0.4773	26.45	81.85	81.00
Locke	Water Demand Manager	69.84	0.1731	12.09	31.79	1.45	115.16	0.4773	54.97	170.12	170.00
Chaney	Associate Fisheries Biologist	48.22	0.1731	8.35	24.25	3.30	84.12	0.4773	40.15	124.27	124.00
Fish Crew Leader	Fish Crew Leader	44.00	0.1731	7.62	0.00	5.74	57.35	0.4773	27.38	84.73	84.00
Gallagher	Assistant Fisheries Biologist	16.25	0.1731	2.81	7.36	2.12	28.54	0.4773	13.62	42.17	42.00
Hamilton, C	Associate Fisheries Biologist	48.22	0.1731	8.35	24.22	3.30	84.08	0.4773	40.14	124.22	124.00
James	Hydrography Programs Coord.	54.56	0.1731	9.44	26.50	3.73	94.23	0.4773	44.98	139.21	139.00
Lear	Water Resources Manager	79.01	0.1731	13.68	34.95	5.41	133.04	0.4773	63.51	196.55	196.00
Lindberg	Associate Hydrologist	53.23	0.1731	9.21	26.09	3.64	92.17	0.4773	43.99	136.16	136.00
HT	Hydrology Technician	0.00	0.1731	0.00	0.00	0.00	0.00	0.4773	0.00	0.00	0.00
SFB	Senior Fisheries Biologist	0.00	0.1731	0.00	0.00	0.00	0.00	0.4773	0.00	0.00	0.00
Wtr Resouces Asst.	Water Resources Assistant	14.75	0.1731	2.55	0.00	1.92	19.23	0.4773	9.18	28.40	28.00

**SEASIDE BASIN WATER MASTER
TECHNICAL ADVISORY COMMITTEE**

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

MEETING DATE:	May 12, 2021
AGENDA ITEM:	8
AGENDA TITLE:	Schedule
PREPARED BY:	Robert Jaques, Technical Program Manager
SUMMARY:	<p>As a regular part of each monthly TAC meeting, I will provide the TAC with an updated Schedule of the activities being performed by the Watermaster, its consultants, and the public entity (MPWMD) which are performing certain portions of the work.</p> <p>Attached is the updated schedule for 2021 activities. Consistent with the determination that seawater intrusion is not occurring in Monitoring Well FO-9 Shallow, I have closed out the Task pertaining to implementation of the Seawater Intrusion Response Plan.</p> <p>As a result of the Board's direction at its May 5th meeting, in the next update to the Schedule I will include Tasks pertaining to the follow-up actions approved by the Board at its May 5 meeting, as described in Agenda Item No. 4.</p>
ATTACHMENTS:	Schedule of Work Activities for FY 2021
RECOMMENDED ACTION:	Provide Input to Technical Program Manager Regarding Any Corrections or Additions to the Schedules

Seaside Basin Watermaster 2021 Monitoring and Management Program Work Schedule

ID	Task Name	Dec '20		Jan '21		Feb '21		Mar '21		Apr '21		May '21		Jun '21		Jul '21		Aug '21		Sep '21		Oct '21		Nov '21		Dec '21																							
		29	6	13	20	27	3	10	17	24	31	7	14	21	28	4	11	18	25	1	8	15	22	29	5	12	19	26	3	10	17	24	31	7	14	21	28	4	11	18	25	1	8	15	22	29	5	12	19
1	Replenishment Assessment Unit Costs for Water Year 2022																																																
2	B&F Committee Develops Replenishment Assessment Unit Cost for 2022 Water Year																																																
3	If Requested, TAC Provides Assistance to B&F Committee in Development of 2022 Water Year Replenishment Assessment Unit Cost																																																
4	Board Adopts and Declares 2022 Water Year Replenishment Assessment Unit Cost																																																
5	Replenishment Assessments for Water Year 2021																																																
6	Watermaster Prepares Replenishment Assessments for Water Year 2021																																																
7	Watermaster Board Approves Replenishment Assessments for Water Year 2021 (At December Meeting)																																																
8	Watermaster Levies Replenishment Assessment for 2021																																																
9	Monitoring & Management Program (M&MP) Budgets for 2022 and 2023																																																
10	Preliminary Discussion of Potential Scope of Work for 2022 M&MP																																																
11	Prepare Draft 2022 M&MP																																																
12	TAC approves Draft 2022 M&MP																																																
13	Prepare Draft 2022 and 2023 O&M and Capital Budgets																																																
14	TAC approves Draft 2022 and 2023 O&M and Capital Budgets																																																
15	Budget & Finance Committee Approves Draft 2022 M&MP and Draft 2022 O&M and Capital Budgets																																																
16	Board approves 2022 M&MP and 2022 M&MP O&M and Capital Budgets																																																
17	2021 Annual Report																																																
18	Prepare Preliminary Draft 2021 Annual Report																																																
19	TAC Provides Input on Preliminary Draft 2021 Annual Report																																																
20	Prepare Draft 2021 Annual Report (Incorporating TAC Input)																																																
21	Board Provides Input on Draft 2021 Annual Report (At December Board Meeting)																																																
22	Prepare Final 2021 Annual Report (Incorporating Board Input)																																																
23	Watermaster Submits Final 2021 Annual Report to Judge																																																
24	MANAGEMENT																																																

Seaside Basin Watermaster 2021 Monitoring and Management Program Work Schedule

ID	Task Name	Dec '20	Jan '21	Feb '21	Mar '21	Apr '21	May '21	Jun '21	Jul '21	Aug '21	Sep '21	Oct '21	Nov '21	Dec '21	J
25	M.1 PROGRAM ADMINISTRATION														
26	Prepare Initial Consultant Contracts for 2022														
27	TAC Approval of Initial Consultant Contracts for 2022														
28	Board Approval of Initial Consultant Contracts for 2022														
29	M.1.g – Sustainable Groundwater Management Act Reporting Requirements														
30	Montgomery & Associates Prepares Draft Groundwater Storage Analysis														
31	Submit SGMA Documentation to DWR														
32	IMPLEMENTATION														
33	I.2.a DATABASE MANAGEMENT														
34	I.2.a.1 Conduct Ongoing Data Entry/Database Maintenance														
35	I.2.b DATA COLLECTION PROGRAM														
36	I.2.b.2 Collect Monthly Water Levels (MPWMD)														
37	I.2.b.3 Collect Quarterly Water Quality Samples (MPWMD)														
38	I.2.b.6 MPWMD provides annual water quality and water level data to Montgomery & Associates for inclusion in the 2021 SIAR														
39	I.4.c Annual Seawater Intrusion Analysis Report (SIAR)														
40	Montgomery & Associates Provides Draft SIAR to Watermaster														
41	TAC Approves Annual Seawater Intrusion Analysis Report (SIAR)														
42	Board Approves Annual Seawater Intrusion Analysis Report (SIAR)														
43	I.4.f If Seawater Intrusion is Determined to be Occurring, Implement Seawater Intrusion Response Plan														
44	Work on Evaluating Increased Chloride Levels at Monitoring Well FO-9 Shallow														

**SEASIDE BASIN WATER MASTER
TECHNICAL ADVISORY COMMITTEE**

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

MEETING DATE:	May 12, 2021
AGENDA ITEM:	9
AGENDA TITLE:	Other Business
PREPARED BY:	Robert Jaques, Technical Program Manager
SUMMARY:	<p>The “Other Business” agenda item is intended to provide an opportunity for TAC members or others present at the meeting to discuss items not on the agenda that may be of interest to the TAC.</p>
ATTACHMENTS:	None
RECOMMENDED ACTION:	None required – information only