M E E T I N G N O T I C E AND A G E N D A

TECHNICAL ADVISORY COMMITTEE
OF THE
SEASIDE BASIN WATER MASTER

DATE: Wednesday, May 8, 2019

MEETING TIME: 1:30 p.m.

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

If you wish to participate in the meeting from a remote location, please call in on the Watermaster Conference Line by dialing (515) 739-1015. Use the Meeting ID 355890617. Please note that if no telephone attendees have joined the meeting by 10 minutes after its start, the conference call will be ended.

OFFICERS
Chairperson: Nina Miller, California American Water Company
Vice-Chairperson: Jon Lear, MPWMD

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**

The next regular meeting will be held on Wednesday June 12, 2019 at 1:30 p.m. at the M1W Board Room.

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SEASIDE BASIN WATER MASTER
TECHNICAL ADVISORY COMMITTEE
**** * * AGENDA TRANSMITTAL FORM * * ****

MEETING DATE:	May 8, 2019
AGENDA ITEM:	2.A
AGENDA TITLE:	Approve Minutes from the March 13, 2019 Meeting
PREPARED BY:	Robert Jaques, Technical Program Manager

SUMMARY:

Draft Minutes from this meeting was emailed to all TAC members. Any changes requested by TAC members 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
March 13, 2019

Attendees: TAC Members

City of Seaside – Rick Riedl
California American Water – Nina Miller
City of Monterey – Max Rieser
Laguna Seca Property Owners – No Representative
MPWMD – Jon Lear (via telephone)
MCWRA – Tamara Voss
City of Del Rey Oaks – No Representative
City of Sand City – Leon Gomez (via telephone)
Coastal Subarea Landowners – No Representative

Watermaster
Technical Program Manager - Robert Jaques
Administrative Officer - Laura Paxton

Consultants
Montgomery & Associates - Georgina King and Derrik Williams (via telephone)

Others
City of Seaside – Scott Ottmar
California American Water - Lori Girard

The meeting was convened at 1:38 p.m. after a quorum had been established.

1. **Public Comments**

There were no public comments.

2. **Administrative Matters:**

A. Approve Minutes from the February 13, 2019 Meeting

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

B. MPWMD Letter Regarding Need to Maintain the PCA-East Monitoring Well in Service

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

C. Progress Report on Geochemical Modeling

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

Mr. Riedl asked if there would be a full report made on this topic. Mr. Jaques said that a technical memorandum on this item would be presented at the next TAC meeting.

Ms. Miller asked if the Sand City desalination plant's water could be used for bench testing of the MPWSP desalination plant's water. Mr. Lear responded that he will ask the Pueblo Water Resources modeler about this and get back to the TAC at the next TAC meeting, when the technical memorandum will be presented.

D. Change-in-Storage Memo for Sustainable Groundwater Management Act Reporting

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

3. CONTINUED DISCUSSION OF NATURAL SAFE YIELD (NSY) AND SUSTAINABLE YIELD

A. Allocation of Water Rights After Decision-Required Pumping Ramp-Downs Have Been Completed

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

Ms. Voss asked if either Option 1 or Option 2 would be do-able, if some producers may be unable to supply their demands under these options.

Mr. Jaques said he proposed to meet with the Producers to inquire about their ability to meet their water supply demands under the reduced pumping levels and report back to the TAC.

Mr. Riedl commented that the City of Seaside's Municipal water system is currently only using an estimated 50 gallons per-person-per-day as a result of conservation, and that this figure may actually be a lower gallons-per-person-per-day figure, because the city believes the population figures for its service area may be underestimated.

Ms. Voss reported that the Marina Coast Water District will do the Groundwater Sustainability Plan for the Monterey subbasin of the Salinas Valley Groundwater Basin in coordination with the Salinas Valley Basin Groundwater Sustainability Agency, but that the Corral de Tierra Management Area will be covered by the Salinas Valley Basin Groundwater Sustainability Agency's Groundwater Sustainability Plan.

Mr. Williams reported that the Salinas Valley Basin Groundwater Sustainability Agency and the Marina Coast Water District will jointly write the Monterey subbasin Groundwater Sustainability Plan, but that it is not yet clear on exactly how this will be done. However, in any case, the Corral de Tierra Groundwater Sustainability Plan will be managed by the Salinas Valley Basin Groundwater Sustainability Agency.

Ms. Girard commented that the 644 acre-feet per year of Operational Yield allocated to the Laguna Seca Subarea Alternative Producers being reduced to 608 acre-feet per year may be a nuance with which those Producers may differ.

Ms. Voss questioned if we don't reduce pumping to the 2,370 acre-feet per year that is recommended in the Updated Basin Management Action Plan, is it worth discussing Option 2 at this time?

Mr. Riedl asked if the Corral de Tierra Groundwater Sustainability Plan would affect the 2,370 acre-foot per year figure. Ms. Voss responded that she felt that it could, so why consider going from 2,913 acre-feet per year to 2,800 acre-feet per year (Option 2) now?

Ms. King commented that if we use the model with the Sustainable Yield approach, the Sustainable Yield for the Seaside Basin would probably be lower than the 2,370 acre-feet per year figure. She went on to say that we should wait to see what the Groundwater Sustainability Plan for the Corral de Tierra area comes up with before proceeding with a Sustainable Yield analysis. She said, however, that the adjacent subbasins will most likely not take steps that will raise groundwater levels in the Seaside Basin. She went on to say, however, that any Seaside Basin pumping reductions would help in the meantime.

Ms. Miller commented that the biggest influence on the Laguna Seca subarea is pumping in the adjacent subbasin.

Mr. Lear said he had discussed this agenda item with Mr. Stoldt, General Manager of the Monterey Peninsula Water Management District. He commented that ramp-downs at the next scheduled ramp-down, and any subsequent ramp downs, could be used to reach whatever lower Natural Safe Yield figure the Watermaster decides is appropriate.

Mr. Jaques asked if the TAC preferred him to represent only Option 1 to the Producers.

Ms. Miller commented that she would like to provide them with options.

Mr. Riedl said he did not feel that Option 2 needs to be presented, as it is not required by the Decision.

Ms. Voss recommended tabulating actual production figures from the last several water years and providing that information to the producers when Mr. Jaques meets with them.

Mr. Lear said he concurred with Ms. Voss, and that the producers should get a heads-up that Natural Safe Yield is likely to be lower in the future.

A motion was made by Ms. Voss and seconded by Mr. Riedl to have Mr. Jaques present the producers with Option 1 and also to notify them that the Natural Safe Yield is likely to be lower in the future. The motion passed unanimously.

B. Informational Presentation on the Sustainable Yield Approach for Basin Management

Ms. King made an informational PowerPoint presentation on this topic (see attached PowerPoint slides).

Mr. Jaques and Ms. King pointed out that in the future flows will stop coming into the Laguna Seca subarea from the Corral de Tierra subarea and will reverse direction with flows going east from the Laguna Seca subarea to the Corral de Tierra area subarea.

Ms. King and Mr. Williams reported that in Task 5 of their proposal, they would put in boundary conditions for each well and the program they use would optimize the analysis to get the maximum yield from the Basin to achieve whatever Management Objectives were set by the Watermaster.

Ms. Voss asked how the Seaside Basin model would differ from the Salinas Valley Basin and Marina Coast Water District models. Mr. Williams responded that the Watermaster will want to examine those models in order to have confidence in how they predict groundwater levels in the Seaside Groundwater Basin.

Ms. Voss also asked how well the Salinas Valley Basin model would represent the Seaside Basin. Mr. Williams responded that the Salinas Valley Basin modeling does not plan to cover the Seaside Basin.

Mr. Lear noted that the Salinas Valley Basin model will require input from throughout the Salinas Valley Basin area in order to properly run, and that it is only predictive at this point, and does not reflect historical data. He said we will want to examine the Salinas Valley Basin model's assumptions to see how they compare with the assumptions made for the Seaside Basin Groundwater Model.

C. Pros and Cons of Using the Sustainable Yield Approach in Place of the NSY Approach for Basin Management

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

Ms. King said she generally agreed with a listing of Pros and Cons in the agenda packet, but felt that action needs to be taken to keep groundwater levels from continuing to fall. Lowering the Basin's yield to 2,913 acre-feet per year helps, but more will be needed. If Sustainable Yield work is done, the 2,370 acre-feet per year figure would likely change to a lower level. She commented that as an interim step we could ramp down to 2,370 acre-feet per year now, and then see what happens after the Corral de Tierra subbasin Groundwater Sustainability Plan is developed.

Ms. Miller said she would like more time to consider this topic, as there is a lot of information to digest.

Mr. Jaques questioned whether the Watermaster should continue studying things such as Sustainable Yield, when it seems clear that injection is the only realistic way of achieving protective water levels.

Mr. Riedl asked if Task 1 of the Montgomery &Associates proposal could be done without performing modeling. Ms. King responded that the Decision's Natural Safe Yield value of 3,000 acre-feet per year was only intended to stabilize groundwater levels, but not to increase them. She went on to say that she suggested developing Management Targets first, rather than Operational Parameters, and that Board direction would probably be needed in setting the Management Targets.

Mr. Jaques said he felt the primary Management Target of the Decision is to get to protective water levels in order to protect against seawater intrusion. Mr. Riedl and Ms. Voss said they concurred with Mr. Jaques' conclusion.

Ms. Voss felt that the Watermaster's focus should be on figuring out how to achieve protective water levels.

Ms. King reported that natural recharge to the Seaside Basin occurs in a small area to the far east of the Basin, and that it takes a long time for that water to raise groundwater levels near the coast to protective water levels.

Mr. Riedl asked if redistributing pumping into the Southern Coastal Subarea would help achieve protective water levels. Ms. King reported that moving Cal Am production wells inland did not have much benefit, based on previously perform modeling, but that some redistribution of pumping into the Southern Coastal Subarea might have some beneficial effect. However it would not be sufficient to achieve protective water levels without undertaking other projects.

Ms. King said that one approach would be to use the model to see how much would be needed for injection to achieve protective water levels, in addition to any redistribution of pumping in the Southern Coastal Subarea.

Mr. Riedl asked if producers kept pumping at final ramp-down levels, and 850 acre-feet per year was injected near the coast, could the injection water be obtained from increased pumping in the Southern Coastal Subarea. Ms. King said you could probably get a small amount (a few hundred acre-feet per year) from increased pumping in the Southern Coastal Subarea, but that you would not be able to get the full 850 acre-foot per year amount.

Ms. Voss suggested that if the Watermaster decides more water is needed for injection to raise groundwater levels in the Seaside Basin, then the Watermaster should consider supporting a larger desalination plant and/or a larger Pure Water Monterey Project.

Mr. Riedl asked if Montgomery &Associates could determine how much more could be pumped from the Southern Coastal Subarea in order to provide an injection water source for injection near the coast.

Mr. Lear commented that once the Pure Water Monterey project begins operation and some data is obtained from monitoring wells, we will know more about how that projects affects groundwater levels.

There was consensus to continue discussion of this topic to the next TAC meeting.

8. **Continued Discussion of Proposed Drainage Improvements at the Del Monte Manor in Seaside**
   Mr. Jaques summarized the agenda packet materials for this item and Mr. Ottmar amplified on them.

   Mr. Ottmar summarized that the project protects some existing infrastructure and increases infiltration.

   There were no further questions about this project from TAC members.

   A motion was made by Ms. Voss, seconded by Mr. Gomez, that the TAC find that there is no adverse effect on the Seaside Basin from the proposed project. The motion passed unanimously.

9. **Schedule**

Mr. Jaques summarized the agenda packet materials for this item, highlighting the principle schedule updates as reported on page 61 of the agenda packet, and that there will not be a need to have an April TAC meeting, so the next TAC meeting will be on May 8, 2019.

6. Other Business

Ms. Miller reported that the State Water Resources Control Board had requested Cal Am to destroy wells that are no longer needed.

Ms. King said she recommended seeking input from Mr. Lear on this matter. Mr. Lear noted that the Watermaster's Monitoring and Management Program calls out wells by name, so it would be desirable to go through the list of wells and see which ones may no longer be needed.

Mr. Lear and Ms. Miller said they would work together on this and provide recommendations on this topic at the next TAC meeting.

The meeting adjourned at 4:10 PM

SEASIDE GROUNDWATER BASIN

SUSTAINABLE YIELD

MONTGOMERY & ASSOCIATES

Presented to the Seaside Basin Technical Advisory Committee
February 13, 2019

1

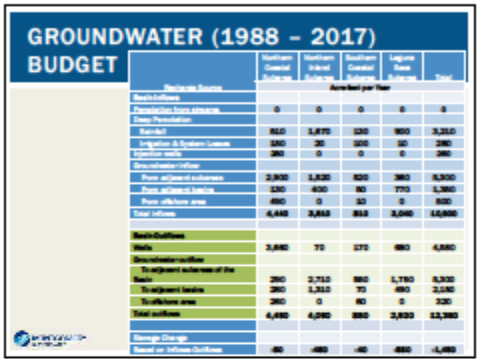
SAFE YIELD

- Assumes the "safe" amount to pump cannot be more than the rate of natural recharge
- This is referred to as the "Water-Budget Myth"
- It is an oversimplification of information needed to understand the effects of using a groundwater system
- As human activities change the system, the components of the water budget (inflows, outflows, and changes in storage) change and must be accounted for in any management decision

2

2

GROUNDWATER (1988 – 2017) BUDGET



3

NATURAL FLOW SYSTEM CHANGES

- We change the natural flow system by pumping water for use, changing recharge patterns by irrigation and urban development, changing the type of vegetation, and other activities

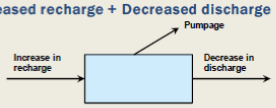
4

4

BALANCED SYSTEM

- Pumping starts and the groundwater system readjusts
- Initial response to pumping is change in storage
- If system comes to equilibrium, changes in storage stop and inflows will again balance outflows:

Pumpage = Increased recharge + Decreased discharge



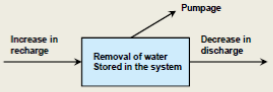
MONTGOMERY & ASSOCIATES

5

UNBALANCED SYSTEM

- If system does not comes to equilibrium, changes in storage continue (i.e. falling groundwater levels):

Pumpage = Increased recharge + Decreased discharge + Decreased storage



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6

SUSTAINABLE YIELD

- How much ground water available for use depends upon how changes in inflow and outflow affect the surrounding environment and what the users define as undesirable effects on the environment or groundwater system
  - Changes to inflows and outflows are very complex
  - Not possible to use the water budget to determine how much groundwater is available for use
  - Groundwater model is the best tool to use because it allows for spatial effects

MONTGOMERY & ASSOCIATES

7

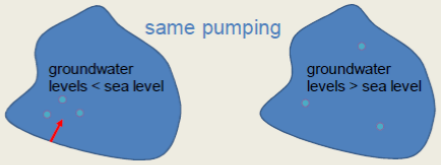
SUBSURFACE FLOWS BETWEEN SUBAREAS, OCEAN & OTHER BASINS

MONTGOMERY & ASSOCIATES

8

LOCALIZED EFFECTS

- Localized effects of pumping need to be accounted for



Greater impact on local groundwater levels

Lesser impact on local groundwater levels

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9

MODELING APPROACH FOR DETERMINING SUSTAINABLE YIELD

Task 1: Develop Operational Parameters & Management Targets

- Operational parameters include how each well is expected to be pumped in the future
- Management targets are groundwater levels that the basin should be managed to. Examples are:
  - Meet protective groundwater elevations at the coast
  - To stop declining groundwater levels
  - Recover groundwater levels in the basin to a certain level

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10

MODELING APPROACH FOR DETERMINING SUSTAINABLE YIELD

Task 2: Extend Predictive Model Climate

- Extend Historical Hydrology Baseline Scenario

- Convert Historical Climate Baseline Scenario Model to Future Climate Condition Model (Optional)

Task 3: Incorporate Sea Level Rise at Ocean Boundaries (Optional)

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MODELING APPROACH FOR DETERMINING SUSTAINABLE YIELD

Task 4: Incorporate All Existing & Approved/Planned Supplemental Supply Projects into Baseline Model

Task 5: Optimization Scenario Simulations

- Use Sustainable Optimization Model to optimize pumping to achieve management targets
- Prepare Scenario Inputs - Need TAC input Two yield numbers will result
  - Interim Yield needed to achieve management targets (lower than Sustainable Yield)
  - A Sustainable Yield that maintains targets (this will be a higher yield than the Interim Yield

Task 6: Prepare Technical Memo

Task 7: Attend TAC and Board Meetings

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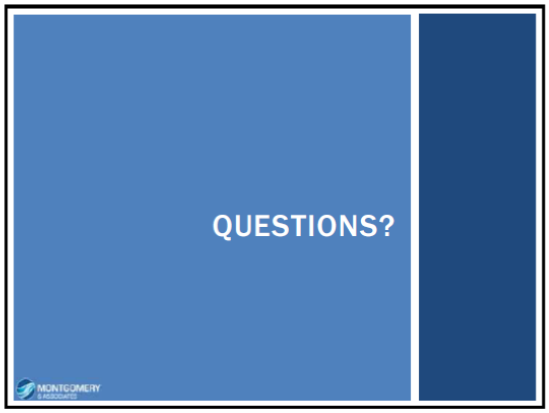

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SEASIDE BASIN WATER MASTER
TECHNICAL ADVISORY COMMITTEE
**** * * AGENDA TRANSMITTAL FORM * * ****

MEETING DATE:	June 12, 2019
AGENDA ITEM:	3
AGENDA TITLE:	Report on Geochemical Modeling of the Pure Water Monterey AWT Water
PREPARED BY:	Robert Jaques, Technical Program Manager

SUMMARY:
The Technical Memorandum on this work was still being finalized by MPWMD and its consultant, Pueblo Water Resources, at the time this agenda was prepared, so the item will be postponed until the June TAC meeting.

ATTACHMENTS:	None
RECOMMENDED ACTION:	None – information only at this time

SEASIDE BASIN WATER MASTER
TECHNICAL ADVISORY COMMITTEE
**** * * AGENDA TRANSMITTAL FORM * * ****

MEETING DATE:	May 8, 2019
AGENDA ITEM:	4
AGENDA TITLE:	Continued Discussion of Allocation of Water Rights After Decision-Required Pumping Ramp-Downs Have Been Completed
PREPARED BY:	Robert Jaques, Technical Program Manager

SUMMARY:
At its March 13, 2019 meeting the TAC recommended that in my meeting with the Producers (well pumpers in the Seaside Basin) I present them with the discussion and analysis contained in the agenda packet materials from the March 13 TAC meeting on this topic, but include only the analysis leading to the pumping ramp-down to 2,913 AFY, not the one to 2,800 AFY.

I met with the Producers on March 21 and provided them with a revised version of the Memo included in the TAC's March 13 agenda packet for this item, deleting reference to a 2,800 AFY ramp-down, but adding calculations associated with a ramp-down to 3,000 AFY. I included that additional set of ramp-down calculations because after the March 13 meeting I recalled that 3,000 AFY had been the ramp-down figure that was developed when Cal Am was sizing its Monterey Peninsula Water Supply Project. That analysis led to the conclusion that Cal Am's ultimate water right in the Basin would be 1,474 AFY, based on a basin-wide Natural Safe Yield of 3,000 AFY. Therefore, it was appropriate to include the ramp-down analysis leading to Cal Am's 1,474 AFY of ultimate water right.

Attached is the revised Memo, dated March 18, 2019, that was presented to, and discussed with, the Producers at the March 21 meeting. Although all of the Producers were invited, and nearly all responded to the Doodle Poll invitation, the Producer representatives that actually attended were:

- California American Water Company
- Cypress Pacific (formerly Calabrese)
- DBO
- Laguna Seca Golf Resort
- City of Seaside
- Granite Rock

It may be that the producers that did not attend reviewed the Memo before the meeting and decided that either of the ramp-downs discussed in it would not adversely impact them, and so they did not feel the need to attend.

My notes of comments provided by the Producers at the March 21 meeting are attached.

AGENDA ITEM:	4 (Continued)

SEASIDE BASIN WATER MASTER
TECHNICAL ADVISORY COMMITTEE
**** * * AGENDA TRANSMITTAL FORM * * ****

I believe the attached Memo provides all of the necessary background information and calculations for use by the Board in determining which of the two ramp-down approaches (3,000 AFY or 2,913 AFY) should be used when the next (and presumably final) ramp-down occurs in WY 2021.

I also believe that either of the two approaches would be consistent with the Decision, since there is an apparent anomaly in the Decision regarding what it establishes as the NSY of the Seaside Basin. Since ramping-down to 3,000 AFY would cause less hardship on the Alternative Producers by not requiring them to ramp-down along with the Standard Producers, it is my recommendation that the TAC support recommending to the Board to ramp-down to 3,000 AFY when the next ramp-down is required in WY 2021.

I request that the TAC authorize the Technical Program Manager to present the attached Memo, along with this recommendation, to the Board at its next meeting.

ATTACHMENTS:	1. Memorandum dated March 18, 2019 titled "Seaside Groundwater Basin Natural Safe Yield Allocations to Producers" 2. Notes from March 21, 2019 meeting with the Producers
RECOMMENDED ACTION:	Either as-presented, or with edits from the TAC, approve providing the attached Memorandum, and the TAC's recommendation to ramp-down to 3,000 AFY in WY 2021, to the Watermaster Board for their consideration in establishing water rights to the Producers after all pumping ramp-downs have been completed.

MEMORANDUM

TO: Seaside Groundwater Basin Producers

FROM: Robert S. Jaques, Technical Program Manager, Seaside Basin Watermaster

DATE: March 18 , 2019

SUBJECT: Seaside Groundwater Basin Natural Safe Yield Allocations to Producers

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Introduction

As required by the Amended Seaside Groundwater Basin Adjudication Decision dated February 2007 (referred to herein simply as the "Decision"), ramp-downs in pumping are to be performed triennially until the initially authorized Operational Yield (OY) of 5,600 acre-feet per year (AFY) is reduced to the Basin's Natural Safe Yield (NSY).

The purpose of this Memorandum is to describe how the allocation of water rights to each of the Producers that are parties to the Decision could be calculated once these ramp-downs to achieve NSY production levels have been completed. These allocations will be the amounts that each Producer can pump on an ongoing basis and be in compliance with the Decision.

The Memorandum also briefly provides information on the water rights impacts if the initial NSY established by the Decision were to be reduced as recommended in the recently completed Draft Updated Basin Management Action Plan (Updated BMAP). No action or decision on using a lower NSY has been made, and no consideration of that recommendation by the Watermaster Board is expected until at least the Board's June 2019 meeting.

The Decision's Breakdown of NSY Between Subareas of the Basin

The Decision breaks the Seaside Basin down into these four subareas:

- Northern Coastal Subarea
- Southern Coastal Subarea
- Northern Inland Subarea
- Laguna Seca Subarea

The Decision used the NSY approach to establish the total quantity of water that Producers may ultimately pump from the Basin on an ongoing basis (their long-term OYs), and laid out how the long-term OYs are to be allocated amongst the various Producers. Under the NSY approach used in the Decision, Alternative Producers have first rights to the NSY, and Standard Producers share in the amount of NSY remaining after the Alternative Producer allocations have been made. The 5,600 AFY Basinwide initial OY consisted of an OY of 4,611 AFY for the Coastal Subarea and an OY of 989 AFY for the Laguna Seca Subarea.

Section III.A.17 of the Decision states that for the Basin as a whole the NSY is between 2,581 and 2,913 AFY, that for the Coastal Subarea the NSY is between 1,973 and 2,305 AFY, and that for the Laguna Seca Subarea the NSY is 608 AFY.

However, Section III.A.20 of the Decision states that the initially assumed Basinwide NSY is 3,000 AFY. In the range of values stated in the Decision for the Coastal Subarea (1,973 to 2,305 AFY) , if the upper value of 2,305 AFY is added to the 608 AFY for the Laguna Seca Subarea, the resultant NSY is only 2,913 AFY for these two Subareas. This is slightly less than the Basinwide NSY of 3,000 AFY cited in Section III.A.20. This apparent anomaly in the Decision is discussed below in the section titled *Pumping Ramp-down Calculations*.

Alternative and Standard Producer Allocations

Table 2 on page 21 of the Decision sets forth the initial Alternative Producer allocations in the Coastal and Laguna Seca Subareas. These are shown below in Table 1.

In 2015 Alternative Producer Calabrese converted 8 AFY of its Alternative Production allocation to a Standard Production allocation, leaving it with 6 AFY of Alternative Production. As a result of this the Alternative Production allocations were revised to those shown below in Table 2.

Table 1 on page 19 of the Decision sets forth the initial Standard Producer percentages of OY in the Coastal and Laguna Seca Subareas as shown below in Table 3. Shown in the right-hand column of Table 3 are the percentages of the total Standard Producer allocation for each of these Standard Producers.

As a result of Producer Calabrese's 2015 partial conversion of its Alternative Production allocation to a Standard Production allocation, giving it 8 AFY of Standard Production, the Standard Production OY allocation percentages were revised to those shown below in Table 4.

Pumping Ramp-down Calculations

The Decision requires only Standard Producers to ramp-down in order for pumping to be reduced to the NSY level, unless all Standard Producers are ramped-down to zero production, in which case ramp-downs are also required of Alternative Producers. If it is necessary to ramp-down Alternative Producers, the amount of ramp-down required would be allocated amongst the Alternative Producers in proportion to their share of the initial OY of the subarea within which they are located.

3,000 AFY NSY

If it is assumed that the intent of the Decision was to set the Basinwide NSY at 3,000 AFY, and that the ranges of values for NSY cited in Section III.A.17 were simply to provide background information, then the allocation of long-term OY would be calculated on the Basin as a whole, and not on a subarea-by-subarea basis. This subsection describes the calculation of long-term OYs based on this assumption.

Section III.A.20 of the Decision establishes an OY of 4,611 AFY for the Coastal Subarea, and in that subarea the total allocation to Alternative Producers (including the Calabrese partial conversion to Standard Production) is 735 AFY as shown below in Table 2. Therefore, the OY available to Standard Producers in the Coastal Subarea is 4,611 – 735 = 3,876 AFY. Using the allocation percentages in Table 4, the amount of OY available to each Standard Producer in the Coastal Subarea before any ramp-downs occur is shown below in Table 5.

Similarly, Section III.A.20 of the Adjudication Decision establishes an OY of 989 AFY for the Laguna Seca Subarea, and in that subarea the total allocation to Alternative Producers is 644 AFY as shown above in Table 2. Therefore, the OY available to Standard Producers in the Laguna Seca Subarea is 989 – 644 = 345 AFY. Using the allocation percentages in Table 4, the amount of OY available to each Standard Producer in the Laguna Seca Subareas is shown in Table 5. Note that there is only one Standard Producer in the Laguna Seca Subarea – California American Water.

The total amount of OY available to each Standard Producer for all subareas Basinwide before any ramp-downs occur is shown in Table 6, along with the percentage of total OY available to each Standard Producer Basinwide. In that table the OY available to California American Water is the sum of its OYs in the Coastal and Laguna Seca Subareas (3,505 + 345 = 3,850 AFY).

If the OY is ramped-down to an NSY of 3,000 AFY for the Basin as a whole, the total amount of long-term OY available to Standard Producers is 3,000 – 735 – 644 = 1,621 AFY. Since all of the required ramping-down can be accomplished by the Standard Producers, the Alternative Producers do not have to ramp-down.

Table 7 shows the long-term OYs for all Producers Basinwide if the Basinwide OY is ramped-down to 3,000 AFY.

The 3,000 AFY approach was used to arrive at California American Water's 1,474 AFY of long-term OY that was reported in the March 2018 FEIR/EIS for the Monterey Peninsula Water Supply Project. As seen in Table 7, that figure rose slightly to 1,479 AFY as result of Calabrese's later partial conversion of its Alternative Production to Standard Production.

As a result of the ramp-downs that have already been implemented, current OY allocations Basinwide total 3,360 AFY. Achieving a Basinwide OY of 3,000 AFY would require a ramp-down of 360 AFY in 2021.

2,913 AFY NSY

A lengthy discussion of the pumping ramp-downs was held between Russ McGlothlin (Watermaster's legal counsel), Lori Girard (California American Water's legal counsel), and Watermaster staff (Laura Paxton and Bob Jaques) on March 6, 2019. The apparent anomaly in the Decision regarding the Basin's NSY, mentioned above, was one topic explored in that discussion.

The apparent anomaly suggests that the Decision may (1) simply have rounded up the 2,913 AFY figure to 3,000 AFY, recognizing that subsequent studies might arrive at an updated set of NSYs for each of these subareas, or (2) may have contemplated that a portion of the Basinwide NSY comes from the other of the Basin's four subareas, namely the Northern Inland Subarea. Of the four persons who were in the March 6 discussion, only Mr. McGlothlin actually participated in the legal process that led to the Decision. He felt that the 3,000 AFY figure was simply a rounding-up of the 2,913 AFY, and that the intent of the Decision actually was for the NSY for the Coastal Subarea to be between 1,973 and 2,305 AFY, and that the NSY for the Laguna Seca Subarea was to be 608 AFY. Since there are no Producers with wells in the Northern Inland Subarea, it would have been impossible to allocate any portion of the Northern Inland Subarea's NSY to any of the Producers. Also, in the Decision the NSY of between 1,973 and 2,305 AFY for the Coastal Subarea is not broken down between the Southern

Coastal Subarea and the Northern Coastal Subarea, which together constitute the Coastal Subarea. Therefore, it is not possible to allocate the Coastal Subarea NSY within these two subareas.

For the reasons stated in the paragraph above, one could conclude that the intent of the Decision was that the Basinwide NSY was intended by the Decision to be a maximum of 2,913 AFY, and that this amount was to be allocated to just the Coastal and Laguna Seca Subareas. Under that assumption, the maximum NSY allocated to the Coastal Subarea would be 2,305 AFY and the NSY allocated to the Laguna Seca Subarea would be 608 AFY.

Section III.B.2 of the Decision states that the OYs for both subareas (the Coastal Subarea and the Laguna Seca Subarea) are to be reduced by ramp-downs until the OY in each subarea is equivalent to the NSY for that subarea.

Ramping down the OYs in the Coastal Subarea to reach the NSY of 2,305 AFY, with a total allocation to Alternative Producers in the Coastal Subarea of 735 AFY, would require the Standard Producers to ramp-down to 2,305 – 735 = 1,570 AFY. No ramp-down by Alternative Producers in that subarea would be necessary to reach the 2,305 AFY level.

Ramping down the OYs in the Laguna Seca Subarea would require a 100% ramp-down of the one Standard Producer's (California American Water) allocation, and partial ramp-downs for each of the Alternative Producers, to reach the NSY of 608 AFY.

Using this method of calculation, the allocations to all of the Producers would be as shown below in Table 8.

As a result of the ramp-downs that have already been implemented, current OY allocations Basinwide total 3,360 AFY. Achieving a Basinwide OY of 2,913 AFY would require a ramp-down of 447 AFY in 2021.

Updated BMAP

Using the Watermaster's Seaside Basin Groundwater Model (that did not exist at the time the Decision was prepared) and more recent data from the Watermaster's well monitoring program, the Updated BMAP developed a new NSY of 2,370 AFY figure for the Basin as a whole. Under this new NSY, 2,570 AFY of was in the Coastal and Inland Subareas, and -200 AFY (a negative NSY) was in the Laguna Seca Subarea. A negative NSY means that more water is naturally being lost from a subarea than is coming into the subarea to recharge it through precipitation and subsurface groundwater flow.

Having a negative NSY for the Laguna Seca Subarea would mean that all pumping in that subarea would have to be eliminated. This would be untenable. The negative NSY of 200 AFY for that subarea will hopefully be mitigated in conjunction with the development of the Groundwater Sustainability Plan (GSP) for the adjacent Monterey Subarea of the Salinas Valley Basin. The Salinas Valley Basin Groundwater Sustainability Agency and the Marina Coast Water District Groundwater Sustainability Agency will be working together to coordinate the development of that GSP. That GSP must be completed by January 31, 2022. Once that GSP has been developed, it would be appropriate to reevaluate the Laguna Seca Subarea NSY to determine if changes in Producer allocations in that subarea will be necessary in order to achieve NSY.

Watermaster staff will participate in the development of the GSP through membership on the committees that these GSAs have established to review and comment on draft chapters of the GSP as it is being developed by their consultants.

At this time it would not be appropriate to reduce Producer allocations below the levels described in the *Pumping Ramp-down Calculations* above.

Historical Pumping and Ramp-Downs

Table 9 provides a summary of each Producer's pumping in recent Water Years (WY - October 1 to September 30) as well as the ramped-down OY for each Producer. The blue-highlighted production figures indicate that the amount pumped exceeded the OY available. As the table indicates, the only Producers that have been unable, at least in some years, to reduce their pumping to stay within the OY available to them are California American Water and the City of Seaside's municipal system.

The two far right-hand columns of Table 9 show the projected Final Allocations, taken from Tables 7 and 8, that each Producer would have depending on which NSY value (3,000 AFY or 2,913 AFY) is used in the final ramp down calculation. Regardless of which NSY value is used, it appears that only California American Water and the City of Seaside's municipal system would have difficulty reducing their pumping to stay within the long-term OY available to them.

TABLES

Table 1. Initial Alternative Production Allocations

Coastal Subarea	
Producer	**Allocation, AFY**
Seaside Golf Courses	540
SNG	149
Calabrese	14
Mission Memorial	31
Sand City	9
Subtotal Coastal Subarea	**743**
Laguna Seca Subarea	
Producer	**Allocation, AFY**
Pasadera	251
Bishop	320
York School	32
Laguna Seca County Park	41
Subtotal Laguna Seca Subarea	**644**

Table 2. Revised Alternative Production Allocations

Coastal Subarea	
Producer	**Allocation, AFY**
Seaside Golf Courses	540
SNG	149
Calabrese	6
Mission Memorial	31
Sand City	9
Subtotal Coastal Subarea	**735**
Laguna Seca Subarea	

Producer	**Allocation, AFY**
Pasadera	251
Bishop	320
York School	32
Laguna Seca County Park	41
Subtotal Laguna Seca Subarea	**644**

Table 3. Initial Percentages of Operating Yield Allocated to Standard Producers

Coastal Subarea		
Producer	**Percentage of Total Subarea OY**	**Percentage of Subarea Standard Producer Allocation**
California American Water	77.55	90.6
City of Seaside (Municipal)	6.36	7.43
Granite Rock Company	0.6	0.7
D.B.O. Development No. 27	1.09	1.27
Subtotal Coastal Subarea	**85.60**	**100.00**
Laguna Seca Subarea		
Producer	**Percentage of Total Subarea OY**	**Percentage of Subarea Standard Producer Allocation**
California American Water	45.13	100
Subtotal Laguna Seca Subarea	**45.13**	**100.00**

Table 4. Revised Percentages of Operating Yield Allocated to Standard Producers

Coastal Subarea		
Producer	**Percentage of Total Subarea OY**	**Percentage of Subarea Standard Producer Allocation**
California American Water	77.55	90.44
City of Seaside (Municipal)	6.36	7.42
Granite Rock Company	0.6	0.70
D.B.O. Development No. 27	1.09	1.27
Calabrese	0.15	0.17
Subtotal Coastal Subarea	**85.75**	**100.00**
Laguna Seca Subarea		
Producer	**Percentage of Total Subarea OY**	**Percentage of Subarea Standard Producer Allocation**
California American Water	45.13	100
Subtotal Laguna Seca Subarea	**45.13**	**100**

Table 5. OY Available to Standard Producers in the Coastal and Laguna Seca Subareas Before Any Ramp-downs Occur

Coastal Subarea		
Producer	**Percentage of Subarea Standard Allocation Multiplied by Amount of OY Available**	**OY Available, AFY**
California American Water	90.44 x 3,876	3505
City of Seaside (Municipal)	7.42 x 3,876	288
Granite Rock Company	0.7 x 3,876	27
D.B.O. Development No. 27	1.27 x 3,876	49
Calabrese	0.17 x 3,876	7
Subtotal Coastal Subarea		**3876**
Laguna Seca Subarea		
Producer	**Percentage of Subarea Standard Allocation Multiplied by Amount of OY Available**	**OY Available, AFY**
California American Water	100.00 x 345	345*
Subtotal Laguna Seca Subarea		**345**

* Section III.B.2 of the Decision states that of the 989 AFY total OY for the Laguna Seca Subarea, 644 AFY is allocated to the Alternative Producers and 345 AFY is allocated to the Standard Producers. Since California American Water is the only Standard Producer in the Laguna Seca Subarea, this establishes California American Water's Laguna Seca Subarea OY allocation of 345 AFY.

Table 6. Total OY Basinwide Available for Each Standard Producer Before Any Ramp-downs Occur

Producer	OY Available, AFY	Percentage of Available OY
California American Water	3505 + 345 = 3850	91.22%
City of Seaside (Municipal)	288	6.81%
Granite Rock Company	27	0.64%
D.B.O. Development No. 27	49	1.17%
Calabrese	7	0.16%
Total for All Subareas	**4221**	100.00%

Table 7. Total Long-term OYs Available to All Producers After Ramp-downs Are Complete, if the NSY is 3,000 AFY

Producer	Percentage of Available OY Multiplied by Amount of NSY Available	Long-term OY Available, AFY
Standard Producers		
California American Water	91.22 x 1,621	1479
City of Seaside (Municipal)	6.81 x 1,621	110
Granite Rock Company	0.64 x 1,621	10
D.B.O. Development No. 27	1.17 x 1,621	19
Calabrese	0.16 x 1,621	3
Total for All Standard Producers		**1621**
Alternative Producers		
Seaside Golf Courses		540
SNG		149
Calabrese		6
Mission Memorial		31
Sand City		9
Pasadera		251
Bishop		320
York School		32
Laguna Seca County Park		41
Total for All Alternative Producers		**1379**
	Basinwide Total	**3000**

Table 8. Total Long-term OYs Available to All Producers After Ramp-downs Are Complete if the Basinwide NSY is 2,913 AFY

Producer	Percentage of Available OY Multiplied by Amount of NSY Available	Long-term OY Available, AFY
Standard Producers		
California American Water	90.44 x 1,570	1420
City of Seaside (Municipal)	7.42 x 1,570	116
Granite Rock Company	0.70 x 1,570	11
D.B.O. Development No. 27	1.27 x 1,570	20
Calabrese	0.17 x 1,570	3
Total for All Standard Producers		**1570**
Alternative Producers		
Seaside Golf Courses		540
SNG		149
Calabrese		6
Mission Memorial		31
Sand City		9
Pasadera	251/644 x 608	237
Bishop	320/644 x 608	302
York School	32/644 x 608	30
Laguna Seca County Park	41/644 x 608	39
Total for All Alternative Producers		**1343**
	Basinwide Total	**2913**

Table 9. Historical Production and OY Allocations

Producer	Type of Producer	WY 2014		WY 2015		WY 2016		WY 2017		WY 2018		Projected WY 2021 OY Allocation	
		Actual Production AFY	OY Allocation After 2nd Ramp-down	Actual Production AFY	OY Allocation After 3rd Ramp-down	Actual Production AFY	OY Allocation After 3rd Ramp-down	Actual Production AFY	OY Allocation After 3rd Ramp-down	Actual Production AFY	OY Allocation After 4th Ramp-down	Final OY Allocation Based on an NSY of 3,000 AFY	Final OY Allocation Based on an NSY of 2,913 AFY
Coastal Subareas													
California American Water (Coastal Suba	Standard	2,871	2,669	2,437	2,254	1,562	2,254	1,730	2,254	1,926	1,792	1479*	1420*
City of Seaside (Municipal)	Standard	224	219	185	185	195	185	188	185	185	147	110	116
Granite Rock Company	Standard	0	21	0	17	0	17	0	17	0	14	10	11
DBO Development No. 27	Standard	0	37	0	32	0	32	0	32	0	25	19	20
Calabrese (Cypress Pacific Inv.)	Standard			0	4	0	4	0	4	0	3	3	3
City of Seaside (Golf Courses)	Alternative	1	540	312	540	458	540	439	540	512	540	540	540
Sand City	Alternative	1	9	1	9	1	9	0	9	1	9	9	9
SNG (Security National Guaranty)	Alternative	0	149	0	149	0	149	0	149	0	149	149	149
Calabrese (Cypress Pacific Inv.)	Alternative	0	14	0	6	0	6	0	6	0	6	6	6
Mission Memorial (Alderwoods)	Alternative	25	31	18	31	14	31	14	31	14	31	31	31
Laguna Seca Subarea													
CAW - Laguna Seca Subarea	Standard	362	147	328	48	317	48	299	48	303	0	0	0
Nicklaus Club Monterey	Alternative	207	251	193	251	112	251	155	251	143	251	251	237
Laguna Seca Golf Resort (Bishop)	Alternative	300	320	249	320	224	320	193	320	240	320	320	302
York School	Alternative	22	32	18	32	14	32	14	32	17	32	32	30
Laguna Seca County Park	Alternative	29	41	21	41	17	41	16	41	22	41	41	39
Basin Totals		4,040	4,480	3,762	3,920	2,913	3,920	3,049	3,920	3,363	3,360	3,000	2,913

Notes:

1. Blue shading indicates production exceeded allocation.
2. Ramp-downs shown above through WY 2018 are based on ramping-down 10% triennially from a starting Basinwide OY of 5,600 AFY to an ending Basinwide OY of 3,000 AFY to match the initial NSY of 3,000 AFY.
3. Ramp-downs shown in the two right-hand columns show two sets of final ramp-down figures: (1) Ramp-down to a final Basinwide OY of 3,000 AFY and (2) ramp-down to a final Basinwide OY of 2,913 AFY.

* This is California American Water's long-term OY for all subareas.

Notes from March 21, 2019 Producers Meeting

- California American Water pointed out that its higher than usual pumpage in WYs 2014 and 2015 was because of the small amount of ASR water that was available in those years.
- California American Water reported that with the implementation of the Monterey Peninsula Water Supply Project, it will discontinue its pumping from the Laguna Seca Subarea.
- Cypress Pacific reported that it is subject to ramp-down requirements imposed by MPWMD, so the ramp-downs discussed in the Memo did not have any additional impacts on them.
- There was interest in seeing what the pumpers to the east of the Laguna Seca Subarea will do under the Groundwater Sustainability Plan with which they will have to comply, and how that may mitigate the problem of falling water levels in that subarea, and perhaps elsewhere in the Seaside Basin.
- The City of Seaside said it is working on how to achieve the projected ramp-down levels for its Municipal Water System.
- Laguna Seca Resort said it did not realize that Alternative Pumpers could be required to ramp-down. Cutting back to less than current pumping levels would have a significant adverse impact on their golf course.
- There was some discussion regarding potentially doing more pumping in the Southern Coastal Subarea and returning this additional water to the Laguna Seca Subarea to help mitigate the falling water levels there.
- There seemed to be consensus to not pursue the Sustainable Yield approach at this time, but instead to work with the neighboring Corral de Tierra area (part of the Monterey Subbasin of the larger Salinas Valley Groundwater Basin) to try to resolve the problem of falling groundwater levels in the Laguna Seca Subarea.
- California American Water would like to get its desalination plant on-line before the Watermaster considers making any changes to the Natural Safe Yield approach used in the Decision to determine ultimate water rights to the Producers.

SEASIDE BASIN WATER MASTER
TECHNICAL ADVISORY COMMITTEE
**** * * AGENDA TRANSMITTAL FORM * * ****

MEETING DATE:	May 8, 2019
AGENDA ITEM:	5
AGENDA TITLE:	Continued Discussion of Pros and Cons of Using the Sustainable Yield Approach in Place of the Natural Safe Yield (NSY) Approach for Basin Management
PREPARED BY:	Robert Jaques, Technical Program Manager

Due to the complexity of the issue, at the TAC's March 13, 2019 meeting there was consensus to continue discussion of the topic of using the Sustainable Yield (SY) approach in place of the Natural Safe Yield (NSY) approach for Basin management purposes.

The Agenda packet materials from the March 13 meeting are attached as information for the TAC's use in those continued discussions at today's meeting.

Attachment 1 contains the Proposal received from Montgomery & Associates to perform an SY analysis.

Attachment 2 contains a summary of pertinent information gained from previous groundwater modeling work. From this modeling work it seems apparent that the Basin cannot sustain pumping at any level without the injection of a new source of water to raise groundwater levels to protective elevations.

Attachment 3 contains a discussion of potential Pros and Cons of developing and using the SY approach.

Based on the information provided in these Attachments, the TAC's prior discussion of these topics at its February and March 2019 meetings, and input from the Producers at their March 21 meeting (discussed in the preceding Agenda item) it is my recommendation that:

1. An SY analysis not be performed at this time.
2. That the concept of using the SY approach to replace the NSY approach be revisited after the Groundwater Sustainability Plan for the Monterey Subbasin of the Salinas Valley Groundwater Basin has been completed, and its impacts on the Seaside Groundwater Basin have been determined.

The TAC is asked at today's meeting to complete its discussion of the topic of the NSY and SY approaches, to propose additional items for inclusion in the listing of Pros and Cons if it feels additional items should be included, and to provide to the Technical Program Manager the TAC's recommendation as to whether or not the Watermaster should undertake performing an SY analysis.

ATTACHMENTS:	1. Proposal from Montgomery & Associates to Perform a Sustainable Yield Analysis of the Seaside Basin 2. Summary of pertinent information from previous groundwater modeling work 3. Discussion of potential Pros and Cons of staying with the NSY approach vs. developing and using the SY approach

SEASIDE BASIN WATER MASTER
TECHNICAL ADVISORY COMMITTEE
**** * * AGENDA TRANSMITTAL FORM * * ****

RECOMMENDED ACTION:	Authorize the Technical Program Manager to present the attachments to this Agenda item, and the TAC's recommendation regarding whether or not to perform an SY analysis, to the Board as information for their consideration of whether or not to perform a Sustainable Yield analysis.

Attachment 1

MONTGOMERY
& ASSOCIATES
Water Resource Consultants

www.elmontgomery.com
1814 Franklin Street, Ste. 501
Oakland, CA 94612
510.903.0458

February 1, 2019

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

SUBJECT: COST PROPOSAL FOR SEASIDE BASIN SUSTAINABLE YIELD ANALYSIS

Dear Mr. Jaques:

Montgomery & Associates (M&A) appreciates the opportunity to present this scope of work and cost for estimating the Sustainable Yield of the Seaside Basin (Basin).

As described in the recent BMAP Update, the simplified method used to estimate Natural Safe Yield is now recognized as not being complete enough to take into account the complexities of inflows and outflows that are occurring in the Basin, and which ultimately affect the amount of groundwater that can be sustainably pumped from the Basin without causing negative effects. A more complete approach to managing the Basin is to use the Seaside Basin Watermaster model (model) to optimize the amount of pumping that can be sustained (Natural Sustainable Yield) at existing and/or new wells. This Natural Sustainable Yield acknowledges management targets such as stopping declining groundwater levels or meeting protective groundwater elevations. The model is the appropriate tool for integrating the effects of various pumping rates with operating or planned projects in the Basin. It is important that the Technical Advisory Committee (TAC) provide input for determining all the operational parameters and management targets to include in the analysis of Sustainable Yield.

This scope of work outlines tasks to estimate the Natural Sustainable Yield. Tasks include developing management targets and updating the predictive portion of the model. Additional tasks include simulating and optimizing a combination of management actions and supplemental water supply projects to estimate the Natural Sustainable Yield.

The tasks described below may be more than the TAC would like to include in the modeling for the Natural Sustainable Yield analysis, and therefore some tasks are identified as optional tasks in the task heading.

TASK 1. DEVELOP OPERATIONAL PARAMETERS & MANAGEMENT TARGETS

M&A will support the TAC in developing basin-wide operational parameters and management targets to be used in the Natural Sustainable Yield optimization modeling runs. Examples of potential management targets would include managing the Basin's groundwater levels to meet the protective groundwater elevations at the coast, or setting a groundwater elevation target at Laguna Seca wells to halt declining groundwater levels at a level acceptable to the groundwater users.

We anticipate attending and participating in up two TAC meetings in person for this task. The costs for TAC meetings are included in Task 7.

TASK 2. EXTEND PREDICTIVE MODEL CLIMATE

The analysis of Natural Sustainable Yield relies entirely on the predictive portion of the model. There are a number of aspects and underlying assumptions of the predictive model that need to be updated for the model to be comparable to groundwater models being used in the larger Salinas Valley. These updates were not part of the recent model update as that effort was purely to update and calibrate the historical Model.

When the model was developed in 2009, the TAC provided substantial input on assumptions related to how long the predictive period was to be, what future climate to use, and what future pumping to include over the predictive period. We acknowledge that some of these are impossible to forecast exactly, but it is important to use assumptions that reflect current science and Basin understanding and therefore some updates are necessary.

TASK 2.1. EXTEND HISTORICAL HYDROLOGY BASELINE SCENARIO

Since 2009, all predictive simulations using the model have been based on repeating the historical hydrology from the 22-year model calibration period of 1987 – 2008. The current predictive simulation runs from 2009 through 2042. While maintaining this approach allows for direct comparison between new simulations and previous simulations, it does not take advantage of the additional nine years of hydrologic and climatic data that have been incorporated into the historical model. The historical model was updated in 2014 and 2018, and now includes a continuous 31 year hydrologic record from 1987 through 2017. Significantly, this 31-year hydrologic record includes the recent 2012-2015 drought. We propose that this full 31-year historical hydrology and climate dataset be used as basis for all predictive modeling, as this incorporates a broader range of potential climate variability.

There are two options for extending the hydrology for the historical predictive baseline:

1. Simply repeat the 31-year hydrology from 1987 – 2017, so that the baseline scenario is extended out 31-years from 2018 to 2048.

2. Extend the predictive model, based on repeating the new extended historical climate record out to 2070, which is more consistent with the long-term planning horizon that will be used in neighboring basins under SGMA compliance.

From the perspective of the Natural Sustainable Yield analysis, there is a strong benefit to having a longer extended predictive simulation period (e.g. out to 2070 instead of 2048). As will be further discussed below in Task 5, the analysis consists of first identifying a shorter-term Basin yield which allows groundwater levels to reach their management targets within a defined time-frame, and then estimating an increased longer-term Natural Sustainable Yield that keeps levels at these targets into the future. Having a longer extended simulation period allows for more flexibility on selecting a reasonable time-frame over which management targets can be met without having to ramp production down too quickly, and it also provides a longer period over which to evaluate the longer-term Natural Sustainable Yield, taking into account historical variability in hydrology and climate.

The updated and extended baseline model will be run and processed to produce a baseline water budget and hydrographs to be used for comparison against subsequent simulations.

TASK 2.2. CONVERT HISTORICAL CLIMATE BASELINE SCENARIO MODEL TO FUTURE CLIMATE CONDITION MODEL (OPTIONAL)

Previous predictive model simulations for the basin have not taken the effects of likely climate change into account: including projected changes in precipitation, temperature, and evapotranspiration. These are projected future conditions that would impact the magnitude and timing of both natural groundwater recharge and surface water deliveries to the Basin. If the TAC feels that management of the Basin should take into account climate change, we propose modifying the baseline predictive simulation model with projected future climate conditions.

For this task we will leverage new California-specific climate change datasets, data preparation tools, and guidance that have been developed by DWR in support of SGMA Groundwater Sustainability Plan development (DWR, 2018). DWR provides basin-specific climate change factors that allow historical hydrology and climatological data to be converted into datasets representative of projected near-future climate conditions in 2030, and late-future climate conditions in 2070. Depending on the degree of climate change uncertainty to be considered, datasets can be chosen that represent three different climate scenarios including Central Tendency, Drier with Extreme Warming, and Wetter with Moderate Warming. A single climate change scenario will be selected in consultation with the TAC, and the DWR climate change factors will be applied to inputs of the historical climate model to represent future climate conditions and hydrology.

TASK 3. INCORPORATE SEA LEVEL RISE AT OCEAN BOUNDARIES (OPTIONAL)

In this task we will incorporate estimates of projected sea level rise over the next century into the predictive model simulation by adjusting the head boundary conditions specified along the ocean boundary. Generally speaking, sea level rise is expected to increase seawater intrusion and/or the risk of sea water intrusion in coastal aquifers, though the magnitude of the effects due to sea level rise alone are highly dependent on local conditions. The sea level rise estimates will be based on the projected levels for Monterey Bay from the 2018 update of the State of California Sea-Level Rise Guidance document recently released by the California Ocean Protection Council (OPC, 2018). It should be noted that adjustments to the sea level elevations will also entail simple equivalent adjustments to the protective head elevations as they are tied to sea level.

TASK 4. INCORPORATE ALL EXISTING AND APPROVED/PLANNED SUPPLEMENTAL SUPPLY PROJECTS INTO BASELINE MODEL

We will update the predictive model to include various supplemental supply projects likely to be, or are in the process of being, constructed, as described in the 2019 BMAP Update. TAC involvement will be crucial to developing a predictive model that incorporates all of the projects envisioned over the predictive period, such as the Monterey Peninsula Water Supply Project (MPWSP), the Regional Urban Water Augmentation Project (RUWAP), Carmel River water ASR, and potentially other projects such as stormwater recharge projects. M&A will work with the TAC to finalize a list of projects and their planned implementation schedule. For costing purposes we have assumed incorporating up to three new projects not previously modeled and extending previously modeled projects.

The Pure Water Monterey project and existing phases of the Carmel River water ASR have already been modeled through 2041 but operational assumptions will need to be extended through the end of the predictive model period if it is extended, and other operational changes may be incorporated, such as increasing recharge if additional water sources such as RUWAP are included. We assume we will receive technical support from MPWMD who will provide recharge volumes based on climate, similar to what they have provided us before.

TASK 5. OPTIMIZATION SCENARIO SIMULATIONS

TASK 5.1. PREPARE SCENARIO INPUTS AND SETUP SUSTAINABLE OPTIMIZATION MODEL

M&A will work with the TAC to identify production wells that will be used in optimization. This may include only the Standard Producers, or a combination of Standard and Alternate Producers. There are other potential management actions such as installing new wells in either the Southern Coastal Subarea or the Northern Inland Subarea, or shifting a portion of production to these new wells, but this will likely require development of a separate scenario and therefore additional budget. Costs for development of additional scenarios are provided as an optional line item in the budget.

Given the management targets from Task 1 and wells identified for use in optimization, the USGS MODFLOW Groundwater Management Optimization process (GWM) will be configured to optimize average production rates at a predetermined set of wells such that the defined management targets at specific locations (e.g. groundwater levels) are met within a specified time frame and then maintained at those levels in the future. There will be two different Basin yields estimated. The first will be the yield that allows the Basin to achieve its management targets, and the second will be the Natural Sustainable Yield. Reaching management targets will require pumping less than the Natural Sustainable Yield until targets are achieved, thereafter, the Basin yield can be increased to the Natural Safe Yield that keeps groundwater levels at Basin management targets.

For costing purposes, we assume that a single set of management targets to be met within a single defined time frame will be used for the scenario, and that if multiple scenarios are developed, they will be based on the same baseline climate model (e.g. either Historical Climate or Climate Change Baseline).

TASK 5.2. RUN AND PROCESS OPTIMIZATION SCENARIO

In this task we will run the optimization model and process the model results, and document the scenario and the results with hydrographs and maps, along with a brief text summary.

TASK 6. PREPARE TECHNICAL MEMORANDUM

We will prepare a technical memorandum which documents Task 1 through 5, with a synthesis of the model optimization results and water budgets and Natural Sustainable Yield analysis for the Basin based on the identified management targets. For costing purposes we assume preparing one draft, responding to and addressing one round of review comments, and one final version of the report. The report will be provided in MSWord and PDF formats.

TASK 7. ATTEND TAC AND BOARD MEETINGS

In support of Tasks 1 – 5, to get input and direction from the TAC, and to report on progress and findings, we will prepare presentations and attend those monthly TAC meetings at which this work will be discussed. For costing purposes we assume preparing for and attending up to five TAC meetings. One in-person Board meeting is also included to present the findings of the analysis. Should the number of meetings be more than those assumed above, additional budget will be required to prepare for and attend those meetings.

MODELING CONTINGENCY

Modeling the long-term optimization of integrated groundwater management at a basin-wide scale is a complex process with several technical challenges that can arise and can lead to additional effort not originally scoped out. For this reason we have allocated a contingency budget corresponding to 40 additional hours of modeling effort (11% of the lead modeling effort for Tasks 2- 5) to address unexpected model integration or optimization issues that may arise during the modeling components of the project. This contingency task budget will not be used without prior consultation and approval from the client.

PROJECT BUDGET AND SCHEDULE

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

The total estimate costs for these tasks is $133,035 as detailed in the attached cost table. As mentioned previously, there are a few optional tasks that we have included which may need to be discussed at the Technical Advisory Committee level.

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

Sincerely,

Derrik Williams

Derrik Williams, Principal Hydrogeologist
E.L. MONTGOMERY & ASSOCIATES

Georgina King, Senior Hydrogeologist
E.L. MONTGOMERY & ASSOCIATES

MONTGOMERY & ASSOCIATES
Water Resource Consultants

www.elmontgomery.com
1814 Franklin Street, Ste. 501
Oakland, CA 94612
510.903.0458

Cost Estimate for Seaside Basin Watermaster Sustainable Yield Modeling Analysis									
		Montgomery & Associates Labor						Other Direct Costs	TOTALS
		Scientist VIII	Scientist VI	Scientist V	Scientist III	Labor Total			
		D. Williams	G. King	P. Benito	N. Byler				
Task	Hourly Rates	$225	$200	$185	$145	Hours	($)	($)	
1.0	**Develop Operational Parameters & Management Targets**								
	Support TAC in developing Operational Parameters & Management Targets	8	32	36	0	76	$14,860	$0	$14,860
	Task 1 Subtotal	*8*	*32*	*36*	*0*	*76*	*$14,860*	*$0*	*$14,860*
2.0	**Extend Predictive Model Climate**								
2.1	Option 1: Extend Historical Hydrology Baseline Scenario to 2048	0	2	24	0	26	$4,840	$0	$4,840
	Option 2: Extend Historical Hydrologic Baseline Scenario to 2070	0	2	32	0	34	$6,320	$0	$6,320
	Run and Process Model Results	0	0	12	0	12	$2,220	$0	$2,220
	Document Results and Water Budget	1	1	12	4	18	$3,225	$0	$3,225
2.2	Convert Historical Climate Baseline Model to Future Climate Condition Model (Optional)	2	4	60	0	66	$12,350	$0	$12,350
	Run and Process Model Results	0	0	12	0	12	$2,220	$0	$2,220
	Document Results and Water Budget	1	1	12	4	18	$3,225	$0	$3,225
	Task 2 Subtotal (with Option 2 for Task 2.1)	*4*	*8*	*140*	*8*	*160*	*$29,560*	*$0*	*$29,560*
3.0	**Incorporate Sea Level Rise at Ocean Boundaries (Optional)**								
	Adjust General Head Boundaries to account for predicted sea level rise rate over model period	2	4	16	0	22	$4,210	$0	$4,210
	Optional Task 3 Subtotal	*2*	*4*	*16*	*0*	*22*	*$4,210*	*$0*	*$4,210*
4.0	**Incorporate All Existing and Approved/Planned Supplemental Supply Projects Into Baseline Predictive Model**								
	Set up modified input files including projects	2	4	32	4	42	$7,750	$0	$7,750
	Run and Process Model Results	0	0	12	0	12	$2,220	$0	$2,220
	Document Results and Water Budget	1	1	12	4	18	$3,225	$0	$3,225
	Task 4 Subtotal	*3*	*5*	*56*	*8*	*72*	*$13,195*	*$0*	*$13,195*
5.0	**Optimization Scenario Simulations**								
5.1	Prepare Scenario Inputs and Setup Sustainable Optimization Model	2	8	40	0	50	$9,450	$0	$9,450
5.2	Run and Process Optimization Scenario								
	Run and Process Model Results	0	1	12	0	13	$2,420	$0	$2,420
	Document Results and Water Budget	2	2	12	4	20	$3,650	$0	$3,650
	Task 5 Subtotal	*4*	*11*	*64*	*4*	*83*	*$15,520*	*$0*	*$15,520*
6.0	**Prepare Technical Memorandum**								
	Synthesize Simulation Results and Develop Sustainable Yield	8	30	40	32	110	$19,840	$0	$19,840
	Task 6 Subtotal	*8*	*30*	*40*	*32*	*110*	*$19,840*	*$0*	*$19,840*

		Montgomery & Associates Labor						Other Direct Costs	TOTALS
		Scientist VIII D. Williams	Scientist VI G. King	Scientist V P. Benito	Scientist III N. Byler	Labor Total			
Task	Hourly Rates	$225	$200	$185	$145	Hours	($)	($)	
7.0	**TAC and Board Meetings**								
	Prepare for and attend up to five onsite TAC meetings and one Board meeting	16	80	16	0	112	$22,560	$1,050	$23,610
	Task 7 Subtotal	*16*	*80*	*16*	*0*	*112*	*$22,560*	*$1,050*	*$23,610*
	Modeling Contingency (11%)								
	Contingency for Modeling Tasks 2-5	0	0	40	0	40	$7,400	$0	$7,400
	Task 9 Subtotal	*0*	*0*	*0*	*0*	*40*	*$7,400*	*$0*	*$7,400*
	Total (with Option 2 for Task 2.1)	**45**	**172**	**392**	**52**	**701**	**$131,985**	**$1,050**	**$133,035**
	Total without Optional Task 2.2. and 3	**40**	**163**	**292**	**48**	**583**	**$109,980**	**$1,050**	**$111,030**

Additional Optimization Scenarios								
Prepare for and Setup Optimization Model	2	8	32	0	42	$7,970	$0	$7,970
Run and Process Optimization Scenario								
Run and Process Model Results	0	1	12	0	13	$2,420	$0	$2,420
Document Results and Water Budget	2	2	12	4	20	$3,650	$0	$3,650
Additional Optimization Scenario Total	*4*	*11*	*56*	*4*	*75*	*$14,040*	*$0*	*$14,040*

Attachment 2

Summary of Pertinent Information from Previous Groundwater Modeling Work

The information provided below comes from modeling reports prepared for the Watermaster by HydroMetrics.

Report Title: *Seaside Groundwater Basin Modeling and Protective Groundwater Elevations*
Report Date: November 2009
Pertinent Findings/Conclusions:

1. The Decision-required triennial pumping reductions will result in a slow increase in most groundwater elevations. They will decrease, but not eliminate, inflow from the ocean into the Basin.
2. The "Physical Solution" required in the Decision, consisting of triennial pumping reductions until pumping has been reduced to a Natural Safe Yield of 3,000 AFY, by itself will not achieve protective groundwater level elevations.
3. Significant injection of water that is left in storage and not taken out through pumping is the most successful means of raising groundwater elevations to protective water level elevations.
4. It will take a long time for the Santa Margarita aquifer to achieve protective water levels without artificial recharge. This is because the Santa Margarita aquifer is highly confined and does not receive significant deep percolation recharge near the coastline.
5. The amount of water in storage is highly dependent on rainfall. Artificial recharge will increase the amount of groundwater in storage.
6. New wells in the Paso Robles aquifer will be required in order to recover much of the stored groundwater.
7. Moving California American Water's major production wells inland has little benefit and is therefore a not a good option to pursue.
8. The quantity of groundwater flowing into and out of the Seaside Basin, from or to the Salinas Valley Basin, is highly dependent on groundwater elevations in the Salinas Valley Basin.

Report Title: *Groundwater Modeling Results of Temporary Suspension of Triennial Pumping Reductions*
Report Date: September 2012
Pertinent Findings/Conclusions:

1. Skipping one triennial pumping reduction for a three-year period from 2011 to 2014 would have a negligible effect on the rate of advance of seawater intrusion (less than 0.001 feet per day of change).
2. Groundwater levels would reach the same levels by 2031 as they would if the pumping reduction had not been skipped.

Report Title: *Groundwater Modeling Results of Replenishment Repayment in the Seaside Basin*
Report Date: April 2013
Pertinent Findings/Conclusions:

1.The protective water level elevations developed in 2009 remain reasonable targets for groundwater management and should not be lowered.
2.California American Water's 25-year, 700 AFY, replenishment payback plan raises shallow aquifer groundwater levels by about 1 to 1.5 feet, and deep aquifer groundwater levels by about 3 feet, but does not achieve protective water level elevations in any of the six protective water level wells, except PCA-West-Shallow, which is already above its protective water level elevation.
3.Stopping all Standard and Alternative Production pumping beginning in 2017 (which would reduce Basinwide pumping by approximately 2,000 AFY) would finally achieve protective water level elevations in all six of the protective water level wells by 2041 (the assumed end of the 25 year payback used for this scenario.)
4.Assuming the 25-year, 700 AFY, repayment plan began in 2017, and 1,000 AFY of water was injected at the four ASR wells near General Jim Moore Boulevard and left stored in the Basin and not pumped back out, protective water levels would be achieved in all six of the protective water level wells by 2041.

Report Title: *Groundwater Modeling Results of Coastal Injection in the Seaside Basin*
Report Date: July 2013
Pertinent Findings/Conclusions:

1.All of the findings and conclusions listed below are based on the assumption that Cal Am's replenishment repayment program of forgoing 700 AFY of pumping for a period of 25 years is being carried out.
2.Coastal groundwater levels in the Santa Margarita aquifer reach protective groundwater level elevations one to ten years faster, and with less injected water, if injection is performed near the coast rather than inland at the General Jim Moore Boulevard ASR well locations.
3.Coastal groundwater levels in the Paso Robles aquifer reach protective water level elevations at similar times with injection at either the coastal or General Jim Moore Boulevard locations.
4.In order to achieve protective water level elevations in all six of the coastal wells for which protective water levels were developed, over a 25-year injection period only 850 AFY of injection is required using coastal injection wells compared to 1,000 AFY required at the General Jim Moore Boulevard ASR well locations.
5.Injection rates higher than those mentioned in item 3 above would shorten the time needed to achieve protective water level elevations.
6.After coastal protective water level elevations are achieved, injection of 850 AFY would need to be continued indefinitely at coastal injection wells in order to keep groundwater levels above protective water level elevations.

Report Title: *Results of Laguna Seca Safe Yield Analysis (Revised)*
Report Date: July 2014
Pertinent Findings/Conclusions:

1.The Laguna Seca Subarea Natural Safe Yield was estimated to be 240 AFY. The Decision used 608 AFY with no explanation of the basis for that value.
2.Stopping all California American Water Laguna Seca Subarea pumping stabilizes groundwater level elevations in the western portion of the subarea, but they continue to decline in the central and eastern portions of the subarea.
3.Stopping all Laguna Seca Subarea pumping (pumping by California American Water and all Alternative Producers) results in stable or rising groundwater levels in the western and central

portions of the subarea, but groundwater level declines continue in the eastern portion of the subarea.

4. There is significantly more pumping just east of the Laguna Seca Subarea (within the Salinas Valley Basin and outside of the Seaside Basin boundary) than the total pumping that occurs within the Laguna Seca Subarea itself.
5. Groundwater levels in the eastern portion of the Laguna Seca Subarea are heavily influenced by pumping from outside of the Seaside Basin.

Report Title: *Groundwater Flow Divides Within and East of the Laguna Seca Subarea*
Report Date: January 2016
Pertinent Findings/Conclusions:

1. Under anticipated future pumping conditions, groundwater elevations in the Laguna Seca Subarea will continue to decline. The eastern portion of the Laguna Seca Subarea will suffer the greatest and most persistent declines.
2. Pumping by wells located to the east of the Laguna Seca Subarea, outside of the Seaside Basin boundary and in the Salinas Valley Basin, affect groundwater levels in the Laguna Seca Subarea by diverting groundwater which would otherwise flow into, and thus recharge, the Laguna Seca Subarea. This diversion results in lowering groundwater levels in the Laguna Seca Subarea.
3. Flow currently goes into the Laguna Seca Subarea from the southeast (from the adjacent portion of the Salinas Valley Basin outside of the Seaside Basin boundary), and flows through the Laguna Seca Subarea to the west into the Southern Coastal Subarea and to the northeast into the Northern Inland Subarea.
4. With reduced pumping in the Laguna Seca Subarea in the future, groundwater levels will rise within this subarea and the flow divide between this subarea and the adjacent Salinas Valley Basin will move west.
5. Because of this flow divide movement, reduced pumping in the Laguna Seca Subarea in the future will result in some flow leaving the Laguna Seca subarea and flowing into the Corral de Tierra subbasin of the Salinas Valley Basin.

Attachment 3

Discussion Paper of Potential Pros and Cons of Using the Sustainable Yield Approach in Place of Using Natural Safe Yield for Basin Management

Natural Safe Yield Approach

Discussion. The Adjudication Decision ("Decision") uses the Natural Safe Yield (NSY) approach to establish the total quantity of water that producers may pump from the Seaside Basin, and to allocate that quantity amongst the various producers. Under the NSY approach used in the Decision, Alternative Producers have first rights to the NSY, and Standard Producers share in the amount of NSY remaining after the Alternative Producer allocations have been made. The Decision established an initial Basin-wide NSY at 3,000 AFY, and allocated 1,387 AFY of this NSY to Alternative Producers. That left 3,000 – 1,387 = 1,613 AFY to be divided among the Standard Producers. Subsequent to the date of the Decision, one of the Alternative Producers converted part of its allocation to a Standard Producer allocation, which had the effect of increasing the 1,613 AFY figure to 1,621 AFY. If the lower NSY of 2,370 AFY reported in the Updated BMAP were to replace the Decision's initial NSY of 3,000 AFY, the Standard Producers would need to reduce their collective annual pumping to 2,370 – 1,379 = 991 AFY. This means the Standard Producers would have to reduce their pumping by an additional 630 AFY.

It would likely be very difficult if not impossible for some of the Standard Producers, particularly Cal Am and the Seaside Municipal system, to accomplish making these additional pumping reductions while still supplying the water demands of their customers.

Pros and Cons of Continuing to Use the NSY Approach for Basin Management.

PROS	CONS
1. This is the approach prescribed by the Decision, so no change from the current approach would be required.	1. There are some oversights in the numbers included in the Decision which slightly complicate the calculation of Producers' water rights after the pumping ramp-downs are all completed. However, this should be fairly easy to work through.
2. If the 3,000 AFY NSY figure in the Decision continues to be used, no action will be required.	2. The Watermaster's hydrogeologic consultants report that using the NSY approach in the Decision is no longer appropriate for estimating yield. The NSY figure in the Decision was developed in 2005 based on a simplified water balance equation that accounted for some, but not all, flows in the groundwater system. It has now become apparent that there are significant flows across the Basin's boundaries that were not accounted for in the 2005 analysis. Unless those flows are also accounted for, the relationship between pumping, intrusion and storage identified in 2005 will be incorrect.

PROS	CONS
3. If the lower NSY figure of 2,370 AFY is used, the recalculation of water rights to each Producer will be relatively straightforward by following the same calculation approach set forth in the Decision. As noted in Con No. 1, however, there are some oversights in the Decision which will need to be resolved.	3. The Watermaster's hydrogeologic consultants recommend that Basin management use a "sustainable" or "operational" yield approach that takes advantage of the Seaside Basin groundwater model. This would allow the maximum pumping rate to reflect all of the system boundaries as well as the locations of wells and the introduction of new sources of recharge (injection, stormwater percolation, etc.). They feel that making this change from using the NSY approach is essential to linking long-term Basin management to reality.
	4. Given the modeling done to date, and evidenced by continuing declining groundwater levels even in years where pumping has been close to 3,000 AFY, Material Damage is more likely to occur if the 3,000 AFY NSY continues to be used rather than using the lower NSY of 2,370 AFY.

Sustainable Yield Approach

Discussion. As described in the recent BMAP Update, the simplified method used in the Adjudication Decision to estimate Natural Safe Yield is now recognized as not being complete enough to take into account the complexities of inflows and outflows that are occurring in the Basin. These ultimately affect the amount of groundwater that can be sustainably pumped from the Basin without causing negative effects (Material Damage). A more complete approach to managing the Basin would be to use the Seaside Basin groundwater model to optimize the amount of pumping that can be sustained (the Sustainable Yield) at existing and/or new wells. The Sustainable Yield would take into account management targets such as stopping declining groundwater levels or meeting protective groundwater elevations.

The SY analysis would involve making numerous assumptions and evaluations. These could include such things as alternative pumping scenarios and redistribution of pumping locations and quantities. The SY for the entire Basin would be the sum of the production quantities that each well could produce and still prevent Material Damage from occurring.

Pros and Cons of Changing to Using the Sustainable Yield Approach for Basin Management.

PROS	CONS
1. This approach would more realistically reflect the characteristics of the Basin and more accurately predict how much pumping could be sustainably supported without causing Material Damage in the Basin.	1. Performing an SY analysis would be costly. The cost proposal from Montgomery & Associates to do this work is well over $100,000. The proposal notes that modeling the long-term optimization of integrated groundwater management at a basin-wide scale is a complex process with several technical challenges that could arise and could lead to additional effort (and cost) not anticipated in the cost proposal.
	2. Changing from the NSY approach to the SY approach would first have to be approved by the Court. Documentation justifying making this change would have to be prepared and submitted to the Court. This would involve considerable staff, consultant, and legal counsel time and effort.
	3. The SY analysis would then need to be prepared and submitted to the Court for its review and approval before it could be used to replace the NSY approach used in the Decision. If the Court approved the SY analysis, then the Decision would need to be amended to reflect this. All of this would involve considerable staff and legal counsel time and effort.
	4. If SY were used instead of NSY, a new method of allocating pumping rights to each producer would have to be developed. This could be a contentious and time-consuming undertaking.
	5. It is very likely that greater pumping reductions will be required of many of the Producers if the Sustainable Yield approach is used in place of the NSY approach. It may be difficult if not impossible for some Producers to make these additional pumping reductions while still supplying the water demands of their customers.

PROS	CONS
	6. Because of the historical overpumping from the Basin, regardless of the approach that is used for Basin management, be it NSY or SY, it is very likely that even the reduced NSY pumping levels recommended in the Updated Basin Management Action Plan will not achieve protective groundwater levels. The Basin would therefore still be at risk of seawater intrusion at some time in the future. An additional source(s) of water that can be injected into the Basin to raise groundwater levels, and to maintain them at protective water levels, will be necessary regardless of which approach is used for Basin management. Therefore, the expense and complexity of changing to the SY approach may not be justified.

SEASIDE BASIN WATER MASTER
TECHNICAL ADVISORY COMMITTEE
**** * * AGENDA TRANSMITTAL FORM * * ****

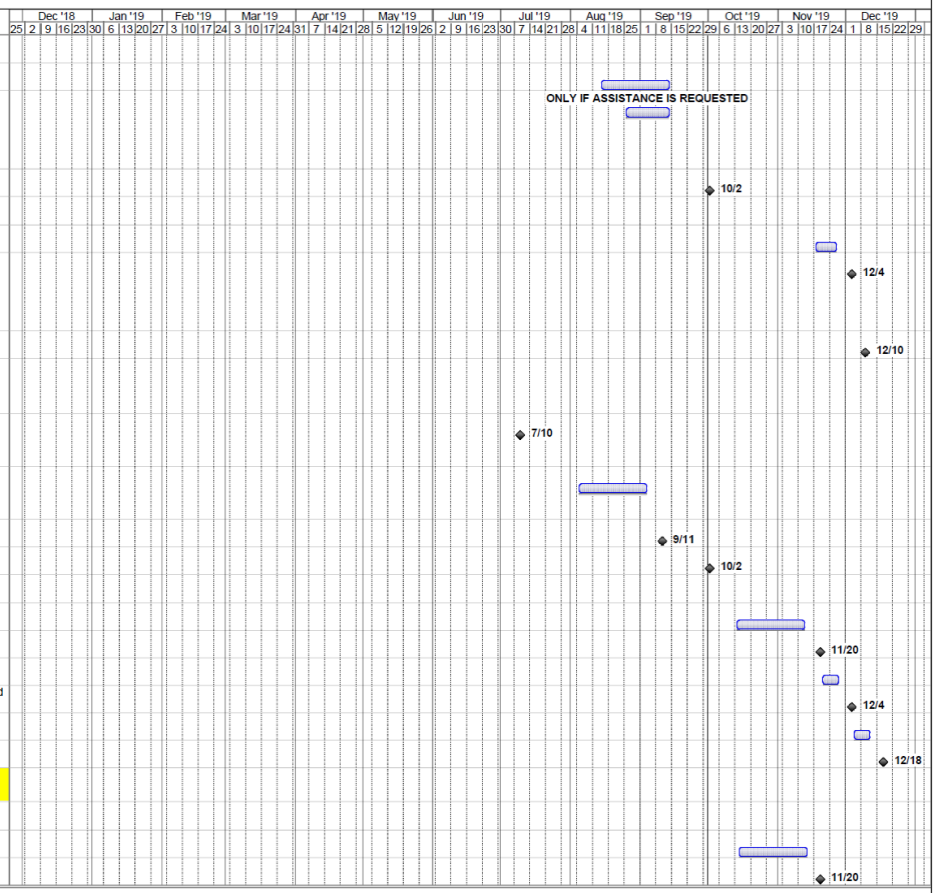
MEETING DATE:	May 8, 2019
AGENDA ITEM:	6
AGENDA TITLE:	Schedule
PREPARED BY:	Robert Jaques, Technical Program Manager

SUMMARY:
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.

Attached is the proposed Work Schedule for FY 2019.

ATTACHMENTS:	Schedule of Work Activities for FY 2019
RECOMMENDED ACTION:	Provide Input to Technical Program Manager Regarding Any Corrections or Additions to the Schedule

Seaside Basin Watermaster
2019 Monitoring and Management Program
Work Schedule



2019 Consultants Work Schedule 5-8-19.mpp

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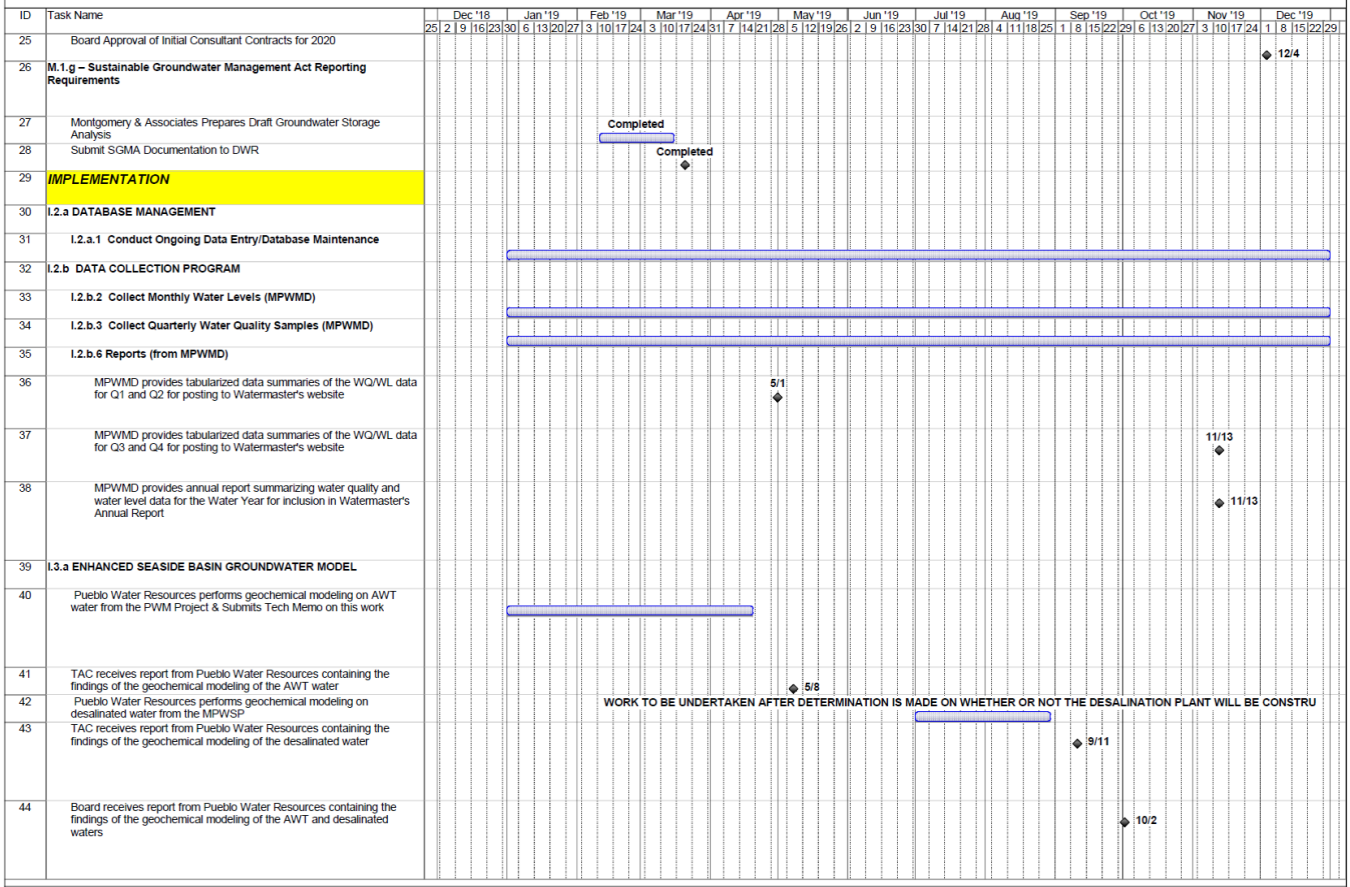
Seaside Basin Watermaster
2019 Monitoring and Management Program
Work Schedule



2019 Consultants Work Schedule 5-8-19.mpp

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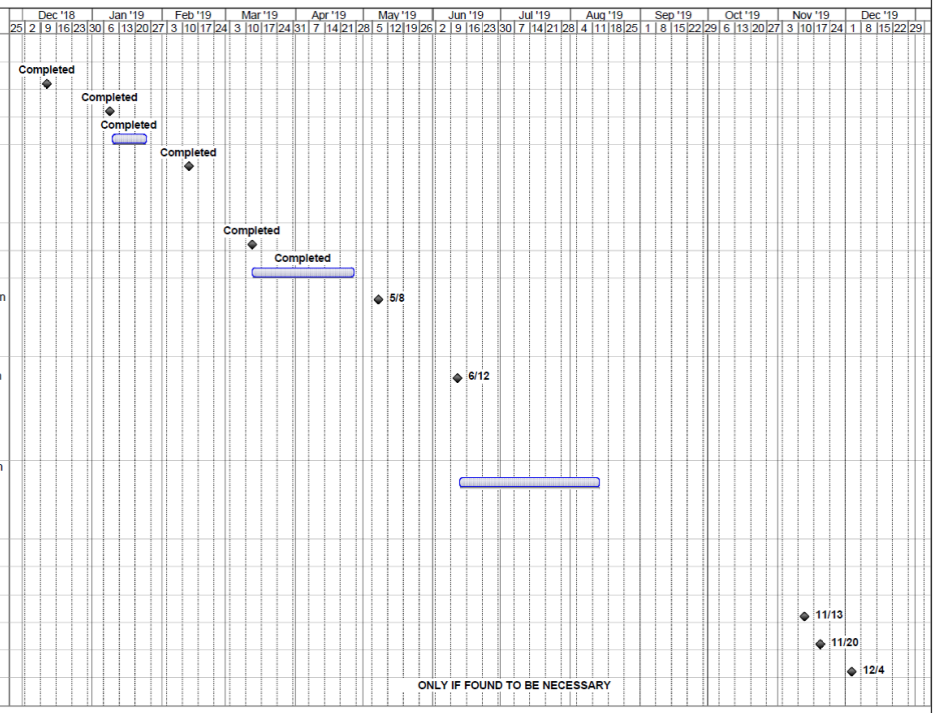
Seaside Basin Watermaster
2019 Monitoring and Management Program
Work Schedule



ID	Task Name
45	**I.3.c Refine and/or Update the BMAP**
46	TAC Receives Presentation on Preliminary Draft Updated BMAP
47	TAC receives Gus Yate's Memo on the Updated BMAP
48	Montgomery & Associates makes revisions to the Updated BMAP to respond to Gus Yate's Memo & TAC Input
49	TAC Approves Draft Updated BMAP & Provides Direction to Technical Program Manager Regarding Development of Information on NSY Issues
50	TAC Discusses NSY and Sustainable Yield Issues
51	Watermaster Staff Solicits Input on NSY Issues from Standard Producers & Legal Counsel
52	TAC Receives Report on Outcome of Discussions with Standard Producers and Legal Counsel & Prepares Recommendation to Board on Ramp-Down issues
53	Board receives presentation on the Draft Updated BMAP from Montgomery & Associates, TAC recommendation regarding ramp-down issues, and Information on NSY and Sustainable Yield Issues
54	Watermaster Staff and TAC Develop Responses to Questions/Direction from Board on NSY and Sustainable Yield Issues
55	Board Receives Information in Response to its Questions/Direction on NSY and Sustainable Yield Issues
56	**I.4.c Annual Seawater Intrusion Analysis Report (SIAR)**
57	Montgomery & Associates Provides Draft SIAR to Watermaster
58	TAC Approves Annual Seawater Intrusion Analysis Report (SIAR)
59	Board Approves Annual Seawater Intrusion Analysis Report (SIAR)
60	**I.4.e Refine and/or Update the SIRP**

2019 Consultants Work Schedule 5-8-19.mpp

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SEASIDE BASIN WATER MASTER
TECHNICAL ADVISORY COMMITTEE
**** * * AGENDA TRANSMITTAL FORM * * ****

MEETING DATE:	May 8, 2019
AGENDA ITEM:	7
AGENDA TITLE:	Other Business
PREPARED BY:	Robert Jaques, Technical Program Manager

SUMMARY:
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.

ATTACHMENTS:	None
RECOMMENDED ACTION:	None required – information only