I. CALL TO ORDER

II. ROLL CALL

III. PUBLIC COMMUNICATIONS
Oral communications is on each meeting agenda in order to provide members of the public an opportunity to address the Watermaster on matters within its jurisdiction. Matters not appearing on the agenda will not receive action at this meeting but may be referred to the Watermaster Administrator or may be set for a future meeting. Presentations will be limited to three minutes or as otherwise established by the Watermaster. In order that the speaker may be identified in the minutes of the meeting, it is helpful if speakers would use the microphone and state their names. Oral communications are now open.

IV. REVIEW OF AGENDA
If there are any items that arose after the 72-hour posting deadline, a vote may be taken to add the item to the agenda pursuant to the requirements of Government Code Section 54954.2(b). (A 2/3-majority vote is required).

V. MINUTES
Approve Minutes of Regular Board meeting held July 5, 2017 ..........................................................3

VI. CONSENT CALENDAR
A. Consider approval of Summary for Payments made during June - August, 2017 totaling $43,611.25 ..................................................................................................................7
B. Consider Approving Fiscal Year 2017 Financial Reports through August 31, 2017 .....................9

VII. ORAL PRESENTATION
None Scheduled

VIII. OLD BUSINESS
None Scheduled
IX. NEW BUSINESS
A. COMMITTEE REPORTS
   1. BUDGET & FINANCE COMMITTEE / TECHNICAL ADVISORY COMMITTEE (TAC)
      a. Discuss/Consider Approving Cost Sharing for Recalibration and Updating of Seaside
         Groundwater Basin Model in the proposed M&MP Work Plan and Budget for 2018............13
      b. Discuss/Consider Approving Cost Sharing for Modeling of Potential Changes in Groundwater
         Quality Resulting from Introducing New Sources of Water into the Aquifers in the proposed
         M&MP Work Plan and Budget for 2018 .................................................................................31
      c. Discussion/Consider Approving the Proposed Annual Budgets for Fiscal Year January 1,
         2018 through December 31, 2018
         i. Administrative Fund ..........................................................................................................33
         ii. Monitoring and Management – Staff Transmittal .............................................................35
              Work Plan.................................................................................................................39
              Operations Fund .........................................................................................................47
              Capital Fund (unfunded) ..............................................................................................51
         iii. Replenishment Fund (no action required)..........................................................................52
      d. Discussion/Consider Approving the Proposed Replenishment Assessment Unit Cost
         for Water Year October 1, 2017 through September 30, 2018 ................................................53

X. INFORMATIONAL REPORTS (No Action Required)
   A. Technical Advisory Committee (TAC) minutes from meetings of July 12, August 9, and (draft)
      September 13, 2017 .................................................................................................................57, 61, 64
   B. Budget & Finance Committee September 19, 2017draft meeting minutes ...............................67
   C. Watermaster report of water year production of the Seaside Basin through June 30, 2017.........70

XI. DIRECTOR’S REPORTS

XII. ADMINISTRATIVE OFFICER COMMENTS

XIII. NEXT REGULAR MEETING DATE – Wednesday, November 1, 2017 - 2:00 P.M.

XIV. ADJOURNMENT

This agenda was forwarded via e-mail to the City Clerks of Seaside, Monterey, Sand City and Del Rey Oakes; the Clerk of the Monterey Board of Supervisors, the Clerk to the Monterey Peninsula Water Management District; the Clerk at the Monterey County Water Resources Agency, Monterey Regional Water Pollution Control Agency and the California American Water Company for posting on September 27, 2017 per the Ralph M. Brown Act, Government Code Section 54954.2(a).
I. CALL TO ORDER – Chair Rubio called the meeting to order at 2:00 p.m.

II. ROLL CALL
City of Seaside – Mayor Ralph Rubio- Chair
City of Sand City – Mayor Mary Ann Carbone – Vice Chair
California American Water (CAW) – Director Eric Sabolsice
Laguna Seca Subarea Landowner – Director Bob Costa
Coastal Subarea Landowner – Director Paul Bruno
City of Del Rey Oaks – Mayor Jerry Edelen
City of Monterey – Councilmember Dan Albert
Monterey County/Monterey County Water Resources Agency – Supervisor Jane Parker (Alternate)
Watermaster Technical Program Manager – Robert Jaques
Watermaster Administrative Officer/Board Secretary – Laura Dadiw

Absent:
Monterey Peninsula Water Management District (MPWMD) – Director Jeanne Byrne

III. PUBLIC COMMUNICATIONS: There were no public communications.

IV. REVIEW OF AGENDA: There were no requested changes to the agenda.

V. APPROVAL OF MINUTES

It was moved by Councilmember Albert, seconded by Mayor Edelen, and carried to approve the minutes of the Watermaster Regular Board meeting held March 1, 2017. Director Bruno abstained having not been at the meeting.

VI. CONSENT CALENDAR
A. Consider approval of Summary of Payments from February through May, 2017 totaling $65,830.10
B. Consider approving Fiscal Year 2017 (Jan-Dec) Financial Reports through May 31, 2017
C. Consider approving Amendment No. 1 to Brownstein Hyatt Farber Schreck (Russ McGlothlin) RFS 2017-01
D. Consider approving Amendment No. 1 to HydroMetrics WRI RFS No. 2017-01
E. Responses and proposed actions to address regarding HydroMetrics’ Technical Memorandum – Seaside Groundwater Basin Analysis of Wells Sampled in December 2016

It was moved by Director Bruno, seconded by Councilmember Albert, and unanimously carried to approve the consent calendar as presented.

VIII. ORAL PRESENTATION: Maureen Hamilton of MPWMD gave a slide presentation on the status of the Pure Water Monterey Project (PWM). Water quality testing for the wells will begin the end of this week. The 60% design documents for Phase II were received last week and design is on schedule. The California Public Utilities Commission water purchase agreements limit operating reserve storage to 1,000 acre-feet (AF) (200 AF/year). Director Sabolsice explained that CAW currently has a storage agreement with Watermaster that is specific to the functioning Aquifer Storage and Recovery (ASR) Project. A draft agreement is being finalized for submittal to
Watermaster jointly by CAW and MPWMD for storage of all water associated with the PWM per
the parameters of the Court Decision based on the estimated volumes to be produced by each
project. There will be a component included in the agreement that allows requests to be made to
Watermaster for increased storage allotments when there is a surplus of water produced, up to the
limits allowed by the Decision. Jon Lear of MPWMD clarified that water level rise from PWM
injection based on project modeling would be a net of possibly four feet for the Northern Coastal
Subarea after 5 months of project implementation as compared to the predicted 8-22’ gross water
level rise that does not include estimated operational extractions.

Ms. Hamilton responded to Supervisor Parker stating that there is no documentation of any per-
chlorate or other contaminants in the project area, and that testing will be conducted to confirm. Mr.
Lear defined vadose zone for the board: the component of an unconfined aquifer that is unsaturated
(generally at shallow depths and available for storage).

Mr. George Riley inquired whether recent bid documents submitted for the project affect the phases
of the project presented, to which Ms. Hamilton responded in the negative.

IX. NEW BUSINESS: None

X. OLD BUSINESS

1. TECHNICAL ADVISORY COMMITTEE (TAC)

a. Continued Discussion and Consideration of Authorizing HydroMetrics and Martin Feeney to
   Perform Initial Portions of the Work Plan to Investigate Cause(s) of Changing Water Quality
   in the Sentinel Wells
   Mr. Jaques reviewed the submitted memorandum. It was recommended, and the board
   concurred, to defer the decision on whether or not to proceed with Phase I of the Work Plan
   until after data from the Summer 2017 Sentinel Wells sampling event has been evaluated.

   It was moved by Mayor Edelen, seconded by Supervisor Parker, and unanimously
carried to approve Amendment No. 2 to RFS No. 2017-1 with Martin Feeney,
increasing the authorized amount for that RFS by $6,118.24 to $36,203.80, in order to
conduct down hole conductivity and temperature profiling in conjunction with the
Summer 2017 Sentinel Wells sampling event, and to include the collection and analysis
of field blanks and field duplicates in the water quality sampling work.

b. Potential new Management and Monitoring Program Budget items for 2018: (a) updating the
   Basin Management Action Plan and the Model and (b) additional water quality sampling and
   analysis of the Sentinel Wells if induction logging or water quality sampling indicates the
   possibility of seawater intrusion.
   Mr. Jaques reviewed the submitted memorandum and explained that he sought the board’s
   opinion as to whether the somewhat complex items warranted staff time soliciting proposals
   and scopes of work.

   Director Sabolsice expressed his full support of improved quality control in well water
   sampling technique and processing. He however expressed his concern with authorizing
   additional consultant work to update the BMAP due to a need brought forth, he felt, by
inaccurate data synthesis and reporting by the consultant in the first place. He cautioned against continually expanding the consultant’s role in updating a currently functional BMAP that adequately protects against seawater intrusion. Further, he expressed his discomfort with board consideration of budget items outside of the normal budget process. President Rubio felt that an update of the model should be performed routinely every five years or so. Supervisor Parker felt that Watermaster should have the most current model possible for upcoming interaction with surrounding groundwater sustainability agencies. Director Bruno suggested that a scope of work to update the BMAP include Watermaster staff performing any work possible. He also suggested querying other organizations participating in groundwater sustainability for their willingness to share in the cost of an update to the model.

Mr. Riley inquired whether, as opposed to just updating data, an update to the BMAP and Model might tie in the rise in the groundwater level due to the injection from various projects to a positive outcome in regard to heightened prevention of seawater intrusion in the Basin, which is the Watermaster’s charge.

Director Sabolsice requested that Gus Yates of Todd Groundwater examine the model and determine whether it is calibrated sufficiently or if an update of all or portions is warranted. If an update is recommended, Mr. Jaques will include both additional water quality sampling and an update to the BMAP and Model in the 2018 draft budget and will contact related agencies to determine their willingness to share in the cost of the model update.

XI. INFORMATIONAL REPORTS:
A. Technical Advisory Committee minutes from February 8, April 12, and (draft) June 14, 2017
B. D.B.O. Development No. 30 Assignment of Entitlements: 710 Amador, Seaside; and 2 Upper Ragsdale, Monterey
C. Watermaster report of production of the Seaside Basin through 2nd quarter Water Year 2017

XII. DIRECTOR’S REPORTS: None

XIII. ADMINISTRATIVE OFFICER COMMENTS: None

XIV. NEXT MEETING DATE: The next meeting of the Watermaster board will be held Wednesday, August 2, 2017 at the Monterey Regional Water Pollution Control Agency (MRWPCA) Board meeting room at 5 Harris Court, Building "D" on Ryan Ranch in Monterey at 2:00 p.m.

XV. There being no further business, Chair Rubio adjourned the meeting at 3:05 p.m.
SEASIDE GROUNDWATER BASIN WATERMASTER

TO: Board of Directors
FROM: Laura Dadiw, AO
DATE: October 4, 2017
SUBJECT: Summary of Payments made during the months of June - August 2017

RECOMMENDATIONS:
Consider approving the payment of bills submitted and authorized to be paid June through August 2017.

JUNE 2017

**Dadiw Associates (Administrative Officer (AO))**
May 26, 2017 through June 25, 2017 27.0 hours $2,700.00
Responded to telephone inquiries, e-mail, and other correspondence as needed regarding the Seaside Basin. Gathered and posted water production and water level data. Prepared agenda and packet materials for July 5th board meeting. Numerous calls and emails to Mission Memorial for payment of 2017 data collection services; hand-carried data collection checks received to City of Seaside for processing. Routinely picked up mail from PO Box; reconciled accounts to the City of Seaside Watermaster accounts; processed invoices, reviewed and posted items to web site; reviewed TAC agenda packet/minutes.

**Robert Jaques (Technical Program Manager)**
May 31, 2017 through June 30, 2017 31.0 hours $3,100.00
Responded to emails, telephone inquiries, and other correspondence on a variety of Watermaster issues; prepare TAC agenda packet and attended TAC meeting on June 14th; prepare TAC meeting minutes; review groundwater quality issues; prepare board meeting agenda item transmittals; review sentinel well sampling issues.

**HydroMetrics Water Resources, Inc. (Technical Consultant)**
June 2017 2.00 hours 390.00
RFS 2017-01 General Consulting & TAC

Total for June 2017 $6,190.00

JULY 2017

**Dadiw Associates (Administrative Officer (AO))**
June 26, 2017 through July 25, 2017 36.0 hours $3,600.00
Responded to telephone inquiries, e-mail, and other correspondence as needed regarding the Seaside Basin. Gathered and posted water production and water level data. Prepare monthly financial reports. Prepare legal counsel RFS amendment. Prepare agenda packet for July 5th board meeting and attend; prepare minutes of meeting. Review TAC issues. Routinely pick up mail from PO Box; reconciled accounts to the City of Seaside Watermaster accounts; processed invoices, reviewed and posted items to web site.

**Robert Jaques (Technical Program Manager)**
June 28, 2017 through July 28, 2017 37.0 hours $3,700.00
Respond to emails, telephone inquiries, and other correspondence on a variety of Watermaster issues. Prepare agenda transmittals and attend board meeting on July 5th. Prepare TAC agenda
packet and attend meeting on July 12th; prepare minutes. Research Coastal Commission issues re:
Fort Ord Dunes State Park and Sentinel Well sampling issues; meeting w/J Lear re: modeling of
groundwater chemistry changes, prep/send letter to MPWMD & MRWPCA re: sharing in cost to
update the Model; request services from Gus Yates re: Model updating and recalibration. Review
storage agreements for future TAC discussions. Review documents and teleconference with G.
King and J. Lear re: geochemistry modeling; process M. Feeney RFS. Work on M&MP for 2018.

HydroMetrics Water Resources, Inc. (Technical Consultant)
July 2017 4.0 hours – RFS 2017-01 General Consulting & TAC 780.00

Martin Feeney, PG, CHg, Consulting Hydrogeologist (Contractor)
February – July 2017 11.00 hours
RFS 2017-01 Consulting, Conductive logging quote, Acquire locking well caps 2,145.00

Total for July 2017 $10,225.00

AUGUST 2017
Dadiw Associates (Administrative Officer (AO))
July 26, 2017 through August 25, 2017 32.5 hours $3,250.00
Responded to telephone inquiries, e-mail, and other correspondence as needed regarding the
Seaside Basin. Gathered and posted water production and water level data. Data collection
service fees to producers follow up. Laguna Seca Rec Area production/level reporting
requests. Distribute notice of change in water quality sampling schedule. Review TAC issues.
Prepare Budget/Finance Committee transmittals. Routinely picked up mail from PO Box;
reconciled accounts to the City of Seaside Watermaster accounts; processed invoices,
reviewed and posted items to web site.

Robert Jaques (Technical Program Manager)
July 29, 2017 through August 31, 2017 38.0 hours 3,800.00
Respond to emails, telephone inquiries, and other correspondence on a variety of Watermaster
issues. Prepare TAC agenda packet and attend August 9th meeting; prepare minutes. Work on 2018
RFSs; edits and revisions to M&MP; work on B&F Committee agenda items. Meet M. Feeney @
Sentinel Well site to observe conductivity and temperature profiling and photograph same; work
on M&MP.

HydroMetrics Water Resources, Inc. (Technical Consultant)
August 2017 1.25 hours RFS 2017-01 General Consulting & TAC 243.75

Todd Groundwater (Consultant – Gus Yates)
August 2017 - HydroMetrics scope review 5.00 hours 1,097.50

Monterey Peninsula Water Management District
January – June 2017 18.0 hours 1,335.00
Water level/quality data collection from specified wells
Water levels/Water quality/Lab analysis/Reporting 152.0 hours 17,470.00

Total for August 2017 $27,196.25

Grand Total $43,611.25
### Seaside Groundwater Basin Watermaster

#### Budget vs. Actual Administrative Fund

**Fiscal Year (January 1 - December 31, 2017)**

**Balance through August 31, 2017**

<table>
<thead>
<tr>
<th></th>
<th>2017 Adopted Budget Revised July 5, 2017</th>
<th>Contract Amount</th>
<th>Year to Date Revenue / Expenses</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Available Balances &amp; Assessments</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dedicated Reserve</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>FY (Rollover)</td>
<td>47,000.00</td>
<td>41,619.33</td>
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<tr>
<td>Admin Assessments</td>
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<td>52,000.00</td>
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<tr>
<td>Available</td>
<td>99,000.00</td>
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<tr>
<td><strong>Expenses</strong></td>
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<tr>
<td>Contract Staff</td>
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<td>60,000.00</td>
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<td>Legal Advisor</td>
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<td>Total Expenses</td>
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<td>74,000.00</td>
<td>45,362.89</td>
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<td>Total Available</td>
<td>15,000.00</td>
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<tr>
<td>Dedicated Reserve</td>
<td>15,000.00</td>
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<td>25,000.00</td>
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<tr>
<td>Net Available</td>
<td>-</td>
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<td>23,256.44</td>
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</table>
Seaside Groundwater Basin Watermaster

Budget vs. Actual Monitoring & Management - Operations Fund
Fiscal Year (January 1 - December 31, 2017)
Balance through August 31, 2017

<table>
<thead>
<tr>
<th>Available Balances &amp; Assessments</th>
<th>2017 Adopted Amended Budget</th>
<th>Contract Encumbrance</th>
<th>Year to Date Revenue/Expenses</th>
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<tbody>
<tr>
<td>Operations Fund Assessment</td>
<td>$100,000.00</td>
<td>-</td>
<td>$100,000.00</td>
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<tr>
<td>Pass Through 2017</td>
<td>-</td>
<td>4,788.00</td>
<td>2,664.00</td>
</tr>
<tr>
<td>FY 2016 Rollover</td>
<td>270,965.98</td>
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<td>270,965.98</td>
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<td><strong>Total Available</strong></td>
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<td>$4,788.00</td>
<td>$373,629.98</td>
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<table>
<thead>
<tr>
<th>Appropriations &amp; Expenses</th>
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<tbody>
<tr>
<td><strong>GENERAL</strong></td>
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<tr>
<td>Technical Project Manager</td>
<td>-</td>
<td>60,000.00</td>
<td>$28,200.00</td>
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<tr>
<td>Contingency @ 20% (not including TPM)</td>
<td>12,091.00</td>
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<td><strong>Total General</strong></td>
<td>$72,091.00</td>
<td>$60,000.00</td>
<td>$28,200.00</td>
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</table>

<table>
<thead>
<tr>
<th>CONSULTANTS (Hydrometrics; Todd Groundwater; Web Site Database)</th>
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<tbody>
<tr>
<td>Program Administration</td>
<td>$26,276.00</td>
<td>$23,800.00</td>
<td>$16,745.96</td>
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<tr>
<td>Production/Lvl/Qty Monitoring</td>
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<td>-</td>
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<tr>
<td>Basin Management Action Plan</td>
<td>48,881.76</td>
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</tr>
<tr>
<td>Seawater Intrusion Analysis Report</td>
<td>20,890.00</td>
<td>20,890.00</td>
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<tr>
<td><strong>Total Consultants</strong></td>
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<td>$44,690.00</td>
<td>$16,745.96</td>
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<table>
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<tr>
<th>MPWMD</th>
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<th></th>
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</thead>
<tbody>
<tr>
<td>Production/Lvl/Qty Monitoring</td>
<td>$52,558.00</td>
<td>53,454.00</td>
<td>17,470.00</td>
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<tr>
<td>Pass Through 2017</td>
<td>-</td>
<td>4,788.00</td>
<td>1,335.00</td>
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<tr>
<td>Basin Management</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Seawater Intrusion</td>
<td>896.00</td>
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<tr>
<td>Direct Costs</td>
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<tr>
<td><strong>Total MPWMD</strong></td>
<td>$53,454.00</td>
<td>$58,242.00</td>
<td>$18,805.00</td>
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</table>

<table>
<thead>
<tr>
<th>CONTRACTOR (Martin Feeney)</th>
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</thead>
<tbody>
<tr>
<td>Production/Lvl/Qty Monitoring</td>
<td>$36,203.80</td>
<td>$36,203.80</td>
<td>14,406.41</td>
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<tr>
<td>Reserve</td>
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</tr>
<tr>
<td>Transfer Out to Capital Fund</td>
<td>-</td>
<td>-</td>
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<tr>
<td><strong>Total Appropriations &amp; Expenses</strong></td>
<td>$260,196.56</td>
<td>$199,135.80</td>
<td>$78,157.37</td>
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</tbody>
</table>

| Total Available                                                      | $110,769.42                 | 295,472.61           |                              |
## Total California American Water Balance Forward

<table>
<thead>
<tr>
<th>Year</th>
<th>City of Seaside Balance Forward</th>
<th>Cal-Am Water Production</th>
<th>Replenishment Fund 2006 Through 2016</th>
<th>Proposed Budget FY 2017</th>
<th>Projected Totals Through WY 2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>-</td>
<td>$1,641,004</td>
<td>$4,226,710 (2,871,690)</td>
<td>$2,839,939 (3,822,219)</td>
<td>$6,060,164 (6,735,671) (6,173,771)</td>
</tr>
<tr>
<td>2007</td>
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<td>2008</td>
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<td>2015</td>
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<tr>
<td>2016</td>
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</tbody>
</table>

**City of Seaside Unpaid Balance**

Total California American Water Year 2017 (October 1 - September 30) / Fiscal Year (January 1 - December 31, 2016) - Water Balance Forward

- Exceeding Natural Safe Yield Considering Alternative Producers: $2,106,652
- Operating Yield Overproduction Replenishment: $20,235
- Total California American: $2,106,652
- CAW Credit Against Assessment: $(465,648)
- CAW Unpaid Balance: $1,641,004

City of Seaside - Golf Courses

<table>
<thead>
<tr>
<th>Expense</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Yield Overproduction - Alternative Producer</td>
<td>$219,689</td>
</tr>
<tr>
<td>Total</td>
<td>$2,106,652</td>
</tr>
</tbody>
</table>

City of Seaside - Municipal Production

<table>
<thead>
<tr>
<th>Expense</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Yield Overproduction</td>
<td>$232,310</td>
</tr>
<tr>
<td>Total</td>
<td>$2,106,652</td>
</tr>
</tbody>
</table>

City of Seaside Late Payment - 5% | $88,887

Replenishment Fund Balance Forward

- $1,884,298
- $4,652,874 (1,847,417)
- ($1,219,966) ($2,930,710) ($6,170,178) $7,749,648 $5,991,546 $4,023,252 $3,909,125 $6,439,125
TO: Board of Directors
FROM: Robert S. Jaques, Technical Program Manager
REVIEWED BY: Laura Dadiw, Administrative Officer
DATE: October 4, 2017
SUBJECT: Discuss/Consider Cost Sharing for Recalibration and Updating of Seaside Groundwater Basin Model in the proposed Monitoring & Management Program Work Plan and Budget for 2018

------------------------------

RECOMMENDATION:

Approve sharing 50% of the costs of updating the Seaside Groundwater Basin Model with Monterey Peninsula Water Management District (MPWMD) and Monterey One Water (MOW).

Background
At its July 5, 2017 meeting the Board discussed with Staff two items that the TAC was considering recommending for inclusion in the 2018 Monitoring and Management Program (M&MP) Work Plan and Budget. One of these was whether or not the Basin Management Action Plan (BMAP) and the Seaside Basin Groundwater Model (Model) should be updated. The Board’s direction on this was to develop a cost and scope to perform this work and include it in the proposed 2018 Monitoring and Management Plan Work Plan and Monitoring and Management: Operations Fund Budget for its consideration at its October 2017 meeting. Comments from Board members included:

• Look closely at the costs to perform this work and reduce them wherever possible.
• See if staff can do some portions of the updating of the BMAP in order to save consultant costs
• Only do updating when it is shown to be necessary
• Contact MPWMD/MRWPCA to seek their sharing of costs to update the Model, since the Pure Water Monterey Project is using our Model for their analyses
• It will be very important to have up-to-date data and documents when holding discussions with the Salinas Valley Basin Groundwater Sustainability Agency
• It will be good to update our documents periodically to keep them current and accurate
• Ask for input from Gus Yates of Todd Groundwater on what recalibrating and updating he feels should be done to the Model

Discussion
Pursuant to the Board’s direction Technical Program Manager did the following:
1. Re-reviewed HydroMetrics’ proposed scope of work with the TAC to see if any of the work and/or costs could be reduced. The TAC did not identify any aspects of the work that could be reduced.

2. Negotiated a lower price from HydroMetrics by having the Technical Program Manager do a portion of the work.

3. Requested Gus Yates review HydroMetrics’ proposed scope-of-work and provide his comments and recommendations. Attached is Mr. Yate’s Memo discussing his recommendations, and HydroMetrics’ response to his Memo.
4. Both MPWMD and MOW were contacted regarding sharing in the costs to update the Model (see attached letter sent to these entities). Attached is the joint response letter from MPWMD and MOW indicating willingness to share in the costs.

The Budget and Finance Committee voted unanimously at its September 19, 2017 meeting to recommend the Board approve updating the Seaside Groundwater Basin Model in the proposed M&MP Work Plan and Budget for 2018, sharing 50% of the $54,370 cost of the modeling with MPWMD and MOW.

ATTACHMENTS:
- Memo from Gus Yates regarding updating the Model
- HydroMetrics letter responding to Mr. Yates’s memo
- Revised proposal from HydroMetrics for updating the BMAP and the Groundwater Model
- Letter sent to MOW and MPWMD requesting they share in the costs of updating the Model
- Joint MPWMD/MOW Response Letter
August 2, 2017

MEMORANDUM

To: Bob Jaques, Seaside Basin Watermaster Technical Program Manager

From: Gus Yates, Senior Hydrologist

Re: Recommendations Regarding Seaside Basin Groundwater Model Update and Recalibration

I have reviewed the proposed groundwater modeling tasks included in the “Scope and Cost to Update the Seaside Basin Management Action Plan” prepared by HydroMetrics Water Resources, Inc. (March 24, 2017). The proposed update and recalibration of the model are an opportunity to continue improving model performance, particularly with respect to some of the issues pointed out in my peer review of the current model (Todd Groundwater, 2015). Modeling is covered under Tasks 1 and 2 of the scope of work, and the subtasks listed for those two tasks are all reasonable to include in the work effort.

For the subtasks shown below, I offer a few suggestions and concerns related to how the analysis is carried out. I suspect HydroMetrics has already considered these issues, but perhaps some of the ideas are new.

Subtask 1.3 Model Recalibration

- Consider jointly calibrating recharge and aquifer parameters. Rainfall recharge, pipe leaks and irrigation efficiency are all poorly known yet generate most of the basin yield. If the simulated response to pumping ramp-downs in recent years has not been tracking measured water levels, the recharge estimate could be part of the problem.

- Emphasize long-term hydrograph trends in the calibration process. I find that residuals statistics are of little value. Also, trends are a key indicator of yield and sustainability; nonetheless they proved to be fairly unresponsive to model sensitivity tests we completed during my 2015 model peer review. It would be useful to identify which variables do control the trends in various parts of the basin.

- Consider not using PEST. Hydraulic conductivity (K) is undoubtedly highly variable, but the complex K patterns that typically result when PEST is used for calibration complicate the interpretation of results. For example, simpler K patterns might make it easier to identify which variables govern the development of the pumping trough in the Northern Coastal subarea.
• Seek consistency with the new Salinas Valley Integrated Hydraulic Model. Does the current Seaside Basin model boundary coincide with the SVIHM model boundary? Do both models treat that as a no-flow boundary because of a flow divide? Does either model predict water-level trends near the boundary that might alter the flow-divide location?

Subtask 2.1 Update Basin Conceptual Model

• Highlight data and understanding that have changed since 2009. The dynamic, flow-divide character of the northern and eastern basin boundaries has been recognized since at least 2005, but new areas of understanding might include:
  
  o Have data from the seawater intrusion Sentry wells provided any new insight into how the Paso Robles and Santa Margarita aquifers are connected to the ocean?

  o The concept of the Laguna Seca Anticline as only a partial barrier to groundwater flow is relatively recent. It would be useful to present data and implications related to that re-conceptualization.

  o The modeling work that HydroMetrix completed related to the locations of flow divides in the eastern part of the Laguna Seca subarea is a significant refinement of prior understanding of that boundary.

  o Has any information related to the injection wells or studies for the GWR project changed the conceptual understanding of the basin?

  o Do water levels during the past 8 years define the northeastern flow-divide basin boundary more precisely or indicate that its location is shifting?

Subtask 2.3 Update Estimates of Groundwater Storage

• Will the recently developed protective groundwater levels be used to define the bottom surface of a range of operable groundwater storage? How will protective groundwater levels be interpolated between wells and extrapolated inland for that purpose?

• How will areas where water levels are presently below protective elevations be balanced against areas where they are higher in the calculation of Useable Storage Space?

• How will temporary storage depletions (seasonal or multi-year drought) be handled in the calculation of Useable Storage Space?

• What assumptions regarding pumping location will be included in the calculation of Total Useable Storage Space? For example, there is a lot of storage space in the Northern Inland subarea, but is it useable if no wells are there to draw from it?
Subtask 2.4 Update Groundwater Budget

- A "current" groundwater budget might be tricky to define in light of pumping ramp-downs in recent years, plus the effects of a concurrent drought. As long as the pumping assumptions are stated clearly, pumping could be held at existing amounts\(^1\) and simulated over a longer hydrologic period to obtain an average "current" water budget.

Subtask 2.5 Review Natural Safe Yield Estimates

- Appendix B of my 2015 peer review memo documented the shortcomings of the "natural safe yield" concept, and my low opinion of it remains unchanged. Even if "natural safe yield" calculations are required pursuant to the adjudication decision, the "operating yield" that HydroMetrics has calculated in previous reports should be emphasized.

- Applying the Zero Net Draft method for estimating yield could be difficult because 1) water levels in the Laguna Seca subarea have been continuously declining, and 2) water levels in the Northern Coastal subarea have been steady in some wells and declining in others. The Zero Net Draft method requires hydrographs that go up and down.

I look forward to learning what new insights about the basin emerge from the model update and recalibration process.

\(^1\) Possibly including annual adjustments to irrigation pumping related to wet/dry year conditions.
Mr. Bob Jaques  
Seaside Watermaster Technical Program Manager  
83 Via Encanto  
Monterey, CA  93940

August 4, 2017

Subject:  Response to Todd Groundwater’s Recommendations Regarding Seaside Basin Groundwater Model Update and Recalibration

Mr. Jaques,

Thank you for forwarding the above referenced memorandum from Gus Yates of Todd Groundwater. As always, Mr. Yates’s comments are well thought out and appreciated. We have reviewed each comment, and included our responses in this letter. Based on Mr. Yates’s recommendations, we have revised our cost estimate for updating the groundwater model.

**COMMENT REVIEW**

**SUBTASK 1.3 MODEL RECALIBRATION**

- We agree that jointly calibrating recharge and aquifer parameters is a good idea. The recent dry years provide a good opportunity to test the sensitivity of the model to both aquifer parameters and recharge estimates. This will be a somewhat more complicated calibration, and therefore take additional effort.

- Mr. Yates’s point of emphasizing long-term hydrograph trends is well taken. While we disagree that residuals statistics are of little value, we do agree that long term trends should be a primary focus, and appreciate Mr. Yates focusing our attention on this gauge of model applicability. Recalibrating the recharge parameters may improve simulated long-term hydrograph trends.
• We will continue to use Parameter Estimate (PEST) software during calibration. While we strive to use this software judiciously in calibration, it is an important tool in our modeling toolbox. We view this as more of a modeling style comment by Mr. Yates rather than a substantial comment.

• Consistency with the Salinas Valley Integrated Hydraulic Model (SVIHM), currently being developed by the USGS, is desirable but may be impractical for the BMAP/model update because of timing. The SVIHM has not been completed and its completion date is uncertain. Waiting for its completion will delay our model update for many months. We propose that when the SVIHM has been finalized that we assess how well it simulates historical conditions in the Seaside Basin. Based on that assessment, if we conclude that improvement is needed in the Seaside Basin model we can revise it using parts of the SVIHM that we feel improve model calibration. It is important to note is that although the SVIHM includes the Seaside Basin, the USGS will exclude any reporting of the simulation results for the Seaside Basin. We should, however, be able to get the model code from the USGS for our assessment of how well the SVIHM matches historic conditions in the Seaside Basin.

SUBTASK 2.1. UPDATE BASIN CONCEPTUAL MODEL

We agree with the items Mr. Yates’s recommends to include in this update to the narrative description of the basin’s conceptual model in the BMAP. Some of the items will require a little more time than previously budgeted.

Important to note is that this update of the conceptual model will not be used to update the groundwater model layers and boundary conditions. This type of update is very intensive and not warranted at this point. Perhaps when the Salinas Valley Integrated Hydraulic Model has been completed, a Seaside Basin model update can include integrating Salinas Valley model data as well as updating the model layers to reflect an improved conceptual understanding of the Seaside Basin.

SUBTASK 2.3 UPDATE ESTIMATE OF GROUNDWATER STORAGE

We do not plan on making significant changes to our previous methodology for calculating groundwater storage, but will update the storage figures in this subsection using data and other information obtained since the BMAP was originally prepared. Our decision to adhere to the previous methodology is based on the observation that the estimated amount of groundwater in storage has not been a factor in basin management. The
Adjudication Decision requires that the Total Usable Storage Space be periodically adjusted (based on new information).

**SUBTASK 2.4 UPDATE GROUNDWATER BUDGET**

We agree that defining current groundwater budgets for any basin is difficult because basin management conditions vary with time. However, we disagree that the most effective way to deal with this is to hold pumping steady while simulating long-term hydrologic cycles. Pumping variability in response to wet and dry years is part of the hydrologic fluctuation of the basin, and cannot be discounted. We believe the best approach is to address the long-term water budget and acknowledge that recent years have been relatively dry. This approach will lead to a slight increase in budget, but less increase in budget than would be required to adopt the proposed approach of simulating constant pumping and fluctuating hydrology.

**SUBTASK 2.5 REVIEW NATURAL SAFE YIELD**

- We completely agree that the natural safe yield concept is badly flawed. It is, unfortunately, a construct that has burrowed its nose into too many groundwater basin adjudications. We will attempt to emphasize the operating yield concept more strongly.

- Mr. Yates' observation about our inability to apply a Zero Net Draft method for estimating yield is well taken. We will remove this approach from the BMAP update.

**BUDGET IMPLICATIONS**

There are four items that change our estimated budget for the BMAP update.

1. Jointly calibrating recharge and aquifer parameters will be a somewhat more complicated calibration, and therefore take additional effort. Add $8,210 to Subtask 1.2.

2. Update the BMAP's conceptual understanding of the basin will require an additional effort. Add $2,040 to Subtask 2.1.

3. Include analysis of long-term water budget that acknowledges recent drought. Add $1,300 to Subtask 2.4.

4. Zero Net Draft method for estimating basin yield will be removed from the budget. Subtract $1,130 from Subtask 2.5.
Mr. Robert S. Jaques  
Seaside Groundwater Basin Watermaster  
83 Via Encanto  
Monterey, CA  93940  

August 4, 2017  

Subject: Revised Scope and Cost to Update the Seaside Basin Management Action Plan  

Mr. Jaques:  

Thank you for the opportunity to provide you with this scope and cost to update the Seaside Groundwater Basin’s Basin Management Action Plan (BMAP). The scope we have put together addresses the BMAP items that were presented at the February 2017 Technical Advisory Committee meeting, and includes some of the recommendations made by Gus Yates of Todd Groundwater.  

The Watermaster’s first BMAP was completed in February 2009 (HydroMetrics LLC, 2009a). The BMAP constitutes the basic plan for managing the Seaside Groundwater Basin. The BMAP identifies both short-term actions and long-term strategies intended to protect the groundwater resource while maximizing the beneficial use of groundwater in the basin. It provides the Watermaster a logical set of actions that can be undertaken to manage the basin to its Safe Yield. Over the eight years since the BMAP was completed, the Watermaster has collected much groundwater level and quality data, and conducted various studies to improve the understanding of the basin. This improved understanding should be incorporated into an updated BMAP to facilitate ongoing responsible management of the groundwater resource.  

At the time the 2009 BMAP was prepared, a groundwater model had not yet been developed for the basin, and the analysis contained in the BMAP was completed using analytical methods. Following the BMAP recommendation that a groundwater model be
constructed to assist with groundwater management decisions, a calibrated model was completed in November 2009 (HydroMetrics LLC, 2009b). The model simulated groundwater conditions in the basin between January 1987 and December 2008. In 2014, the model was updated with data through September 2013 (HydroMetrics WRI, 2014) but not recalibrated because its accuracy was still acceptable. The 2014 update found that the uncalibrated portion of the model (January 2009 – September 2013) tended to simulate higher groundwater levels than measured levels. Periodic recalibration of the model is necessary to ensure the model simulates groundwater levels within an acceptable industry standard accuracy. If simulated groundwater levels are not accurate this reduces the accuracy of all output from the model such as groundwater storage and water budget.

The scope of work provided below assumes the model will be used to develop estimates of groundwater storage, water budget, and safe yield; and to test impacts of potential management actions. The groundwater model was developed to assist in making basin management decisions, and for providing the simulated results that are required for analysis in the BMAP. As the model currently only includes input data through September 2013, groundwater storage, water budget, and safe yield estimates can only reliably be obtained from the model up through Water Year 2013. The model needs to be updated through Water Year 2016 to be used for current estimates. It is likely recalibration of the model will be required so that it more accurately simulates the historic low groundwater levels currently occurring in the basin.

The scope outlined below starts with an update and recalibration of the groundwater model, and then generally updates each of the main sections of the BMAP.

**Task 1: Update Seaside Basin Groundwater Flow Model.**

**Subtask 1.1. Update Model Input Data.**

Groundwater production, groundwater levels, injected water, and precipitation data will be sourced and compiled for input into the groundwater model. In addition to precipitation, estimates of storm water percolation, septic tank leakage, and system losses are also needed as they all contribute to the recharge of the basin. Most data are already available from MPWMD or Watermaster, but some other pumphers such as Cal Water Service and Marina Coast Water District, which do not fall under the Watermaster will be contacted for their data.

The updated model input data will be incorporated into the groundwater model. Once the model has been updated and is successfully running, hydrographs comparing measured and simulated groundwater levels will be prepared. The hydrographs produced will be the same ones used in the 2009 model report.
**Subtask 1.3. Model Recalibration.**

Model calibration is a process that involves varying relatively uncertain and sensitive parameters such as horizontal and vertical hydraulic conductivities, over a reasonable range of values. Per Mr. Yates’s recommendation, we will jointly calibrate recharge and aquifer parameters. This is a change from our previous calibration approach of only calibrating aquifer parameters. Calibration will be completed when simulated results match the measured data within an acceptable measure of accuracy, and when successive calibration attempts do not notably improve the calibration statistics. Parameter Estimation (PEST) software will be used as a tool to improve calibration.

Estimating the effort involved in model calibration is difficult because there is no defined set of steps that can be followed. The costs provided with this scope reflect our best estimate, but additional costs may be necessary to complete calibration successfully.

**Subtask 1.4. Model Update Technical Memorandum**

A Draft Technical Memorandum will be prepared documenting the model update and calibration results. After presenting the Tech Memo to the TAC and receiving comments, a Final Tech Memo will be prepared for submission to the Board. For purposes of the cost estimate, we have assumed HydroMetrics WRI will present the findings to the TAC and to the Board. One presentation will be in person and one will be by telephone.

**Task 2: Update BMAP Section 2 - State of the Seaside Groundwater Basin.**

**Subtask 2.1. Update Basin Conceptual Model.** Since the 2009 BMAP was completed, a significant amount of modeling has been undertaken that has assisted in improving our hydrogeologic understanding of the basin. Additionally, a few new wells have been drilled that may improve our understanding of basin geometry. Below is a list of recent developments that will be used to update our conceptual understanding of the basin:

- Modeling work we completed related to the locations of flow divides in the eastern part of the Laguna Seca subarea and how pumping outside of the basin affects groundwater within the basin.
- The concept of the Laguna Seca Anticline as only a partial barrier to groundwater flow is relatively recent. We will present data and implications related to that reconceptualization.
- New wells, such as the Pure Water Monterey ASR wells and the MPWMD ASR wells, may provide new data related to aquifer depths and bottom of the basin that could improve the conceptual understanding of the basin.
- Groundwater levels collected over the past eight years may provide an undated definition of the basin’s northeastern flow-divide boundary.
Subtask 2.2. Analyze Groundwater Levels Trends. Since 2009, eight years of groundwater level data have been collected, some of it using data loggers that record groundwater levels multiple times a day. This has allowed us to vastly improve our understanding of both seasonal and long-term trends. The basin has also experienced a recent drought and Court-mandated pumping reductions. How groundwater levels have responded to these changes has also improved our understanding of the basin. Furthermore, protective groundwater elevations developed after the 2009 BMAP should be included and discussed in an updated BMAP.

Subtask 2.3. Update Estimates of Groundwater Storage. The updated BMAP will include updates of estimated total stored groundwater, usable storage space, and total useable storage space. The Watermaster is required under the Decision to recalculate Total Usable Storage Space and adjust the allocation as needed.

The groundwater model and protective groundwater elevations should be used to quantify these storage estimates for the Seaside Basin. The 2009 BMAP did not have the benefit of site specific protective elevations and thus used Ghyben-Herzberg generated elevations. This updated BMAP will instead use protective elevations developed using groundwater models that estimate onshore groundwater elevations that keeps the productive onshore aquifers fresh (HydroMetrics LLC, 2009b).

Subtask 2.4. Update Groundwater Budget. A long-term and current groundwater budget will be developed to enhance our understanding of the groundwater system, and how the basin has responded during the recent drought. Similar to Subtask 2.3, the groundwater budget can be readily generated from groundwater model output. However, the groundwater model needs to be updated through September 2016 and recalibrated for it be used reliably to evaluate the current and historical water budget.

Subtask 2.5. Review Natural Safe Yield Estimates. The State of California has experienced a recent drought which has impacted natural aquifer recharge more than was anticipated in the 2009 BMAP. Also, even though pumping in recent years has been below the amounts required under the Decision, groundwater levels have continued to fall. This suggests that the Natural Safe Yield of 3,000 AFY in the Decision may be too high.

The reevaluated Safe Yield will be compared against other Safe Yield estimates that were included in the 2009 BMAP. If appropriate, a revised Safe Yield to replace the Decision-established Natural Safe Yield of 3,000 AFY will be provided for basin management purposes.
Task 3: Update Section 3 – Supplemental Water Supplies.
This section will be primarily completed by Watermaster staff, and will be edited and integrated into the BMAP update by HydroMetrics WRI. Watermaster staff will update the old BMAP Section 3 with current information on projects being considered to meet the long-term water needs in the Seaside Basin. Included will be MRWPCA’s Pure Water Monterey groundwater replenishment project and Cal Am’s Monterey Peninsula Water Supply Project (MPWSP). Recent Environmental Impact Reports will be used to update the information. If any other projects are in early planning stage, they will also be included in the update.

In the revised cost estimate (Table 1), the number of hours has been reduced from our previous cost estimate in March to reflect that Watermaster staff will be responsible for the majority of this task.

Task 4: Update Section 4 – Groundwater Management Actions.
This section will be updated to reflect actions and interim water supplies that have already been implemented, eliminate actions that are no longer viable, and add potential future actions and interim water supplies that could be implemented to address basin imbalances in the short-term before the long-term supply projects in Section 3 of the BMAP can be permitted, built and operated.

An example of a local management action would be to identify optimal extraction well locations such that those wells can make more efficient use of useable stored groundwater. The groundwater model is the most appropriate tool for this as it is able to simulate cumulative impacts by taking into account long-term projects and any other short-term projects while optimizing well locations.

It is beyond the scope of the BMAP update to prepare preliminary costs for potential future actions and interim water supplies. However, as cost is an important factor in deciding which actions to pursue, the Watermaster may need to engage a financial expert to provide preliminary cost estimates for those actions that do not already have cost estimates associated with them.

Task 5: Update Section 5 – Recommended Management Strategies.
After developing the groundwater management actions, we will present the results to the TAC with the purpose of soliciting input that will allow each action to be ranked in order of preference. The top actions will become recommended management strategies that the Watermaster should consider going forward.
Task 6: Prepare Draft, Final Draft and Final Updated BMAP.
A Draft Updated BMAP will be prepared that follows the format of the 2009 BMAP. After the TAC has reviewed the Draft Updated BMAP, comments received will be incorporated into a Final Draft Updated BMAP that will be presented to the Board. If comments are received from the Board, these will be included in a Final Updated BMAP. Up to 15 bound hardcopies will be provided to the Watermaster. We assume that HydroMetrics WRI will attend one TAC and one Board meeting in person to present the Updated BMAP.

Estimated Budget
The total cost to update and recalibrate the groundwater model through September 2016, and to update the BMAP is provided in Table 1.

Schedule
We expect it will take two months to update and recalibrate the groundwater model. An updated BMAP draft can be completed in approximately six weeks after the model update.

References


Please call if you have any questions.

Sincerely,

[Signature]

Georgina King
Principal Hydrogeologist
HydroMetrics Water Resources Inc.
Table 1: Cost Estimate for Basin Management Action Plan Update

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<th>Tasks</th>
<th>HydroMetrics WRI Labor</th>
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**Task 1: Update Groundwater Model & Recalibrate**

| Subtask 1.1: Update Model Input Data | 8 | 24 | 40 | 72 | $11,840 | $ - | $11,840 |
| Subtask 1.2: Model Recalibration | 46 | 18 | 140 | 195 | $30,270 | $ - | $30,270 |
| Subtask 1.3: Model Update and Recalibration Technical Memorandum | 12 | 28 | 32 | 72 | $12,260 | $200 | $12,460 |
| Subtotal Task 1 | 66 | 82 | 212 | 340 | $54,170 | $200 | $54,370 |

**Task 2: Update BMAP Section 2 - State of the Seaside Groundwater Basin**

| Subtask 2.1: Update Basin FlowModel Model | 9 | 16 | 4 | 77 | $4,080 | $ - | $4,080 |
| Subtask 2.2: Analyze Groundwater Levels Trends | 1 | 16 | 4 | 21 | $3,860 | $ - | $3,860 |
| Subtask 2.3: Update Estimates of Groundwater Storage | 5 | 19 | 16 | 31 | $5,120 | $ - | $5,120 |
| Subtask 2.4: Update Groundwater Budget | 4 | 6 | 20 | 32 | $5,040 | $ - | $5,040 |
| Subtask 2.5: Review of Natural Safe Yield Estimates | 3 | 6 | 12 | 21 | $3,780 | $ - | $3,780 |
| Subtotal Task 2 | 15 | 58 | 56 | 129 | $21,880 | $ - | $21,880 |

**Task 3: Update BMAP Section 3 - Supplemental Water Supplies**

| 1 | 4 | 0 | 5 | $1,000 | $ - | $1,000 |

**Task 4: Update BMAP Section 4 - Groundwater Management Actions**

| 8 | 20 | 12 | 40 | $7,220 | $ - | $7,220 |

**Task 5: Update BMAP Section 5 - Recommended Management Strategies**

| 4 | 10 | 0 | 14 | $2,850 | $ - | $2,850 |

**Task 6: Prepare Draft, Final Draft and Final BMAP**

| 6 | 40 | 20 | 66 | $11,720 | $800 | $12,520 |

**TOTAL for GROUNDWATER MODEL UPDATE**

| 66 | 62 | 212 | 340 | $54,170 | $200 | $54,370 |

**TOTAL for BMAP UPDATE**

| 34 | 132 | 88 | 264 | $44,800 | $800 | $45,600 |

**TOTAL**

| 100 | 194 | 300 | 594 | $98,970 | $800 | $99,770 |

**Notes:**
Other direct costs include travel expenses, office supplies, photocopies, postage, and equipment rental.

*HydroMetrics Water Resources Inc. * 1914 Franklin St., Suite 501 • Oakland, CA 94612
(510) 903-0458 • (510) 903-0468 (fax)
July 12, 2017

Monterey Regional Water Pollution Control Agency  
Attention: Mr. Paul Sciuto, General Manager  
5 Harris Court, Building D  
Monterey, CA 93940

Monterey Peninsula Water Management District  
Attention: Mr. David Stoldt, General Manager  
5 Harris Court, Building G  
Monterey, CA 93940

Subject: Recalibration and Updating of Seaside Groundwater Basin Model

Dear Mr. Sciuto and Mr. Stoldt:

The Seaside Basin Watermaster is considering recalibrating and updating its Seaside Groundwater Basin Model in 2018. The Model was developed for the Watermaster by our consultant, HydroMetrics WRI, and was provided to you free-of-charge for your use in performing modeling studies for your Pure Water Monterey groundwater replenishment project.

Attached is a preliminary proposal from HydroMetrics to perform this work. The proposal provides an explanation of why this work needs to be performed, and includes a preliminary estimate of approximately $46,000 to do this work (Task 1 of their proposal).

Because the Pure Water Monterey project will need to use the Model for further studies and reporting purposes, the Watermaster’s Board of Directors believes it would be appropriate for your entities to share in the cost of recalibrating and updating the Model.

This letter is a request that you provide the Watermaster with an indication of your willingness to share in these costs. Over the next two months we will be developing a firm scope-of-work and cost to have HydroMetrics perform this work, and will be presenting it our Board for approval at their October 2017 meeting.

If you have any questions regarding this request, please contact me at (831) 375-0517 or by email at bobj83@comcast.net.

Sincerely,

Robert S. Jaques  
Technical Program Manager

[Note: Attachment not included in the agenda packet version of this letter]
July 31, 2017

Robert S. Jaques  
Technical Program Manager  
Seaside Basin Watermaster  
PO Box 51502  
Pacific Grove, CA 93950

Subject: Cost Sharing for Recalibration and Updating of Seaside Groundwater Basin Model

Dear Bob:

Thank you for your July 12th letter discussing the recalibration and updating of the Seaside Groundwater Basin Model. In that letter, you inquired about the willingness of our District and Monterey One Water to share in the cost of HydroMetrics to perform the work.

Both of our agencies stand ready to share in the cost of recalibration and updating of the Seaside Groundwater Basin Model.

One possible paradigm for cost sharing might be based on average annual production rights from the basin. For example:

<table>
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<td>Cal-Am</td>
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<td>Middle School</td>
<td>650 AF</td>
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<tr>
<td>average ASR</td>
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<td>Fitch Park</td>
<td>590 AF</td>
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<tr>
<td>average ASR</td>
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<tr>
<td>Total Cal-Am</td>
<td>2,714 AF</td>
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</table>

<table>
<thead>
<tr>
<th>Non-Cal-Am Pumpers</th>
<th>2021 Safe Yield</th>
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<tbody>
<tr>
<td>1,526 AF</td>
<td></td>
<td>18%</td>
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</table>

| MPWMD              | Santa Margarita average ASR | 630 AF | 8% |

| Monterey One Water | Pure Water Monterey      | 3,500 AF | 42% |

That would result in our two public agencies supporting 50% of the cost. Please let me know your thoughts on this.

Sincerely yours,

[Signature]

David J. Stoldt  
General Manager
TO: Board of Directors
FROM: Robert S. Jaques, Technical Program Manager
REVIEWED BY: Laura Dadiw, Administrative Officer
DATE: October 4, 2017
SUBJECT: Discuss/Consider Approving Cost Sharing for Modeling of Potential Changes in Groundwater Quality Resulting from Introducing New Sources of Water into the Aquifers in the proposed M&MP Work Plan and Budget for 2018

RECOMMENDATION:
Approve recovering the cost for modeling of potential changes in groundwater quality resulting from introducing new sources of water into the aquifers from Monterey Peninsula Water Management District (MPWMD), Monterey One Water (MOW), and California American Water (CAW) each paying one-third.

Background
At its July 5, 2017 meeting the TAC received a presentation made by Jon Lear, Senior Hydrologist with MPWMD, regarding potential changes in groundwater quality that can result from introducing new sources of water into an aquifer. He explained that introducing new sources of water into an aquifer, with each source having its own unique water quality, can result in chemical reactions that have the potential to release minerals which have previously been attached to soil particles, such as arsenic or mercury, into solution and thus into the water itself. He reported that this has been experienced in some other locations where changes occurred in the quality of the water entering an aquifer, for example in the Orange County Water District’s (OCWD) groundwater injection program in southern California.

As a result of discussion during Mr. Lear’s presentation and further discussion at its August 9, and September 13, 2017 meetings, the TAC came to the unanimous conclusion that this is an issue that should be addressed by the Watermaster in order to protect the quality of groundwater in the Seaside Basin. The TAC also concluded that this would best be accomplished by performing what is called “geochemical modeling” of the portions of the Basin into which these new water sources, such as desalinated water (via CAW’s Monterey Peninsula Water Supply Project), additional Carmel River water (via the expanded Aquifer Storage and Recovery [ASR] Project), and advance-treated wastewater (via the Pure Water Monterey Project), will be introduced.

Discussion
MPWMD reported that its consultants are already using this type of model to predict the geochemical effects of the injection of Carmel River water into the Seaside Groundwater Basin via the current ASR Project. It was also noted that such a model could be of help to those agencies that need to get permits for projects that would introduce new water sources into the Basin. Mr. Lear reported that while some assessment of the geochemical impacts of injecting these new water sources into the Basin had been made during the environmental review (CEQA) process, the assessment was limited in scope and only pertained to the individual waters themselves, not to the mixture of waters that would result from introducing multiple water sources having different water chemistries. That mixture will vary throughout the year due to the differing seasonal injection schedules for each source.
I held a conference call with Georgina King of HydroMetrics and Jon Lear of MPWMD in August, and another conference call in early September involving Jon Lear, Derrik Williams (of HydroMetrics), and two representatives of Pueblo Water Resources (MPWMD’s consultant), to discuss development of a geochemical model for use in the areas of the Basin where injection of these new water sources will occur.

As a result of these discussions it appears that the most cost-efficient approach would be the following:

**Step 1:** MPWMD’s consultant would use the water quality and water delivery schedule data provided by each of the project proponents to develop and run the geochemical model. If the geochemical modeling indicated there would be no water chemistry problems then there would be no need to have HydroMetrics run the Watermaster’s groundwater model.

**Step 2 (if needed):** If the geochemical modeling in Step 1 indicates the potential for problems to occur, then HydroMetrics would use the Watermaster’s existing groundwater model, and information about injection locations and quantities, injection scheduling, etc. provided by MPWMD for each of these projects, to develop model scenarios to see if the problem(s) can be averted by changing delivery schedules and delivery quantities.

The TAC has voiced its support for taking this approach. Performing this geochemical modeling has therefore been included in the proposed 2018 Management and Monitoring (M&MP) Work Plan and Budget for 2018.

At the August 9 TAC meeting there was also a brief discussion about the feasibility and appropriateness of the Watermaster recovering the costs to perform this work from those entities proposing to store water in the Basin. One thought was that the Watermaster might ask these three entities to fund the cost of the work upfront and share in those costs among themselves. Another thought was that the Watermaster might perform the work and then recover its costs by allocating the costs to each of the entities in conjunction with issuing them their Storage Agreements, which are a prerequisite for being able to introduce water into the Basin for storage and subsequent recovery.

The Budget and Finance Committee voted unanimously at its September 19, 2017 meeting to recommend the Board approve modeling of potential changes in groundwater quality resulting from introducing new sources of water into the aquifers – Step One only – in the proposed M&MP Work Plan and Budget for 2018, and to pursue the cost recovery method prescribed by Mr. Stoldt at the meeting with Monterey Peninsula Water Management District (MPWMD), Monterey One Water (MOW), and California American Water (CAW) each paying 1/3 of the $50,000 cost of the modeling. A memorandum formalizing the cost share method will be arranged between the parties.

The PowerPoint slides Mr. Lear used in his presentation to the TAC and some recent articles describing OCWD’s experience, and a “white paper” summarizing the issues discussed in the September conference call are included in the agenda packet for the Budget and Finance Committee’s September 19, 2017 meeting which is posted on the Watermaster’s website at this link:
SEASIDE GROUNDWATER BASIN WATERMASTER

TO: Board of Directors
FROM: Laura Dadiw, Administrative Officer
DATE: October 4, 2017
SUBJECT: Proposed Fiscal Year (Calendar Year) 2018 Annual Administrative Fund Budget

PURPOSE:
To advise the Board of the estimated amount necessary to properly fund the Administrative oversight portion of the Seaside Groundwater Basin Watermaster for Fiscal Year 2018.

RECOMMENDATION:
Recommended Board approval of the attached proposed Administrative Fund Budget for FY 2018.

DISCUSSION:
The budgeted administrative officer (AO) expenses are proposed to be reduced from the historic $60,000 per year to $50,000 due to administrative streamlining. Budgeted legal expenses take into consideration that (i) the technical program manager will develop the first drafts of the annual report and case management statement, (ii) the case management conference (CMC) in March 2018 will remain by phone rather than in person, and (iii) a marginal contingency is allowed in the event unanticipated issues develop before the CMC that requires addition time. The breakdown for legal fees is as follows:

- Annual report: $2,500
- Case Management Statement: $2,000
- Case Management Conference: $2,500

Total: $7,000

An estimated $42,000 in unspent 2017 funds is expected to be carried over to 2018.

FISCAL IMPACT:
An Administrative Fund Assessment of $40,000 is proposed:
$50,000(AO)+$7,000(Legal)+$25,000(Reserve) = $82,000-$42,000(Carryover) = $40,000

The assessments for the parties required to contribute to the Administrative Fund are:
- California American Water 83.0%  $33,200
- City of Seaside 14.4%  5,760
- City of Sand City 2.6%  1,040

ATTACHMENTS
1) Proposed Administrative Fund Budget for FY (Calendar Year) 2018
Seaside Groundwater Basin Watermaster
Administrative Fund
Proposed Budget
Administrative Year 2018

<table>
<thead>
<tr>
<th></th>
<th>2017 Adopted</th>
<th>2017 Revised Budget</th>
<th>2017 Estimated Total</th>
<th>2018 Proposed Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Assessment Income</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Reserve/Rollover*</td>
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<td>$37,000</td>
<td>$42,000</td>
<td></td>
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<tr>
<td>Administrative Assessment</td>
<td>52,000</td>
<td>52,000</td>
<td>40,000</td>
<td></td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>99,000</td>
<td>89,000</td>
<td>82,000</td>
<td></td>
</tr>
</tbody>
</table>

| **Expenditures**       |             |                     |                      |                      |
| Contractual Services - Administrative | 60,000      | 50,000              | 50,000               |
| Legal Services**       | 24,000      | 24,000              | 7,000                |
| **Total Expenses**     | 84,000      | 74,000              | 57,000               |
| Total Available        | 15,000      | 15,000              | 25,000               |
| Less Reserve           | 15,000      | 15,000              | 25,000               |
| **Net Available**      | $-          | $-                  | $-                   |

*Note: The reserve/rollover balance of $42,000 was determined upon completion by Watermaster staff of a detailed reconciliation from 2006 through July 2017 of the Administrative Fund financial records held at the Watermaster office against the Administrative Fund financial records held by the City of Seaside - the Watermaster fiscal agent.

**July 5, 2017 board action to amend 2017 Administrative Fund Budget to include $10,000 additional for legal services for 3/17/17 Case Management Conference unanticipated expenses.
TO: Board of Directors
FROM: Robert S. Jaques, Technical Program Manager
REVIEWED BY: Laura Dadiw, Administrative Officer
DATE: October 4, 2017

RECOMMENDATION:
Approve, or make changes to and then approve, the below:
1. FY 2018 M&M Work Plan
2. FY 2018 M&M: Operations Fund Budget
3. FY 2018 M&M: Capital Fund Budget (unfunded)

The projected 2019 Operations and Capital Fund Budgets are informational only, no action required.

BACKGROUND:
At its September 13, 2017 meeting the TAC approved the Proposed FY 2018 M&M Work Plan, the proposed 2018 M&M: Operations Fund Budget, and the unfunded Capital Fund Budget, and recommended that the Board approve these. On September 19, 2017 the Budget and Finance Committee reviewed the TAC-approved Work Plan and Budgets, and approved these documents with the following revisions and qualifications:
• Reduce Task I.3.e, the Seaside Basin Geochemical Model, from $70,000 to $50,000
• Reduce the Technical Program Manager from $60,000 to $50,000.
• Reduce the Contingency from 15% to 10%.

DISCUSSION:
The M&MP 2018 Work Plan attached reflects revisions resulting from the TAC’s discussion and input, input from HydroMetrics, Martin Feeney, Todd Groundwater, and MPWMD, and recommendations made by the Budget and Finance Committee. In addition it was found, subsequent to the Budget and Finance Committee meeting, that the correct amount for Task I.4.c (preparation of the 2018 Seawater Intrusion Analysis Report) was $22,082, not $27,302 as stated in the agenda transmittal for that meeting. This resulted in lowering the Operations Budget by $5,220.

The following are the principle differences between the 2017 Work Plan and the proposed 2018 Work Plan, and their respective budgets:

Tasks M.1.c, d, and e (Preparation for and Attendance at Meetings and Peer Review of Documents and Reports): Portions of the RFSs for general hydrogeologic consulting services have been allocated between these three tasks in the proportions anticipated to be calling on HydroMetrics, Todd Groundwater (Gus Yates) and Martin Feeney for assistance. It is anticipated, with TAC and Board approval, to issue RFSs to each of these firms for general on-call/as-needed hydrogeologic consulting services in 2018 as follows:
HydroMetrics: $11,000  
Todd Groundwater: $4,000  
Martin Feeney: $4,000  
Total: $19,000  

These amounts are based on prior experience with these firms and what is believed likely to be a growing need for these types of services, especially as interface with the Groundwater Sustainability Agency for the Salinas Valley Basin begins.

In 2017 the amount budgeted for these three tasks was $14,376. For 2018 the proposed amount is $19,000. Mr. Yates and/or Mr. Feeney would only be called upon when an issue arises that the TAC or Board feels would benefit from their review or input.

**Task 1.2.a.1 (Conduct Ongoing Data Entry/ Database Maintenance/Enhancement):** In 2017 the amount budgeted for this Task was $13,452. The proposed scope of work for this task is unchanged from 2017, but the hourly rate for the MPWMD staff involved in performing their portion of this task has risen from $112/hour to $149/hour, so the amount proposed for 2018 is increased by $3,552 to $17,004. There was no increase in cost for the outside consultant that manages the Watermaster’s website (where data from this task is posted), and that cost remained at $200/month.

**Task 1.2.b.2 (Collect Monthly Water Levels):** In 2017 the amount budgeted for this Task was $7,192. The proposed scope of work for this task is unchanged from 2017, but the hourly rate for the MPWMD staff involved in performing this task has dropped from $89/hour to $62/hour, so the amount proposed for 2018 is reduced by $3,466 to $3,726.

**Task 1.2.b.3 (Collect Quarterly Water Quality Samples):** In 2017 the total amount budgeted for this Task was $55,520, comprised of $29,834 for MPWMD and $25,686 for Martin Feeney. The proposed scope of work for this task is unchanged from 2017, but the hourly rate for the MPWMD staff involved in performing their portion of this task has dropped from $89/hour to $62/hour, so the amount proposed for their portion of this work for 2018 is reduced by $5,292 to $24,542. The amount proposed form Martin Feeney’s portion of this work in 2018 is increased by the $900 additional lab cost of adding field blanks and duplicates to the Sentinel Well water quality sampling program, so the amount proposed for his portion of this work for 2018 is increased by $900 to $26,586. Therefore, the amount proposed for 2018 is reduced by $4,392 to $51,128.

**Task 1.2.b.6 (Reports):** In 2017 the amount budgeted for this Task was $2,688. The proposed scope of work for this task is unchanged from 2017, but the hourly rate for the MPWMD staff involved in performing their portion of this task has risen from $112/hour to $149/hour, so the amount proposed for 2018 is increased by $888 to $3,576.

**Task 1.2.b.7 (CASGEM Data Submittal for Watermaster's Voluntary Wells):** In 2017 the amount budgeted for this Task was $1,792. The proposed scope of work for this task is unchanged from 2017, but the hourly rate for the MPWMD staff involved in performing their portion of this task has risen from $112/hour to $149/hour, so the amount proposed for 2018 is increased by $592 to $2,384.

**Task 1.3.a.1 (Update the Existing Model):** HydroMetrics proposed cost to update the existing Seaside Basin groundwater model is $54,370, and this is the amount proposed for this task in 2018. This amount reflects an increase in cost to address the items recommended in Gus Yate’s peer review of HydroMetrics proposal. Copies of documents with detailed background information on this Task are included in the agenda packet for the Budget and Finance Committee’s September 19, 2017 meeting which is posted on the Watermaster’s website at this link:

It is anticipated that the Watermaster will be reimbursed for 50% of the costs to perform this Task by MPWMD and Monterey One Water (formerly MRWPCA) whose projects intend to inject new sources of water into the Basin. Therefore, the net cost to the Watermaster for the work of this Task should only be $27,185. No amount for this task was budgeted in 2017.

Task I.3.a.3 (Evaluate Replenishment Scenarios & Develop Answers to Basin Management Questions): In 2017 the amount budgeted for this Task was $40,000. That was a placeholder amount in case the Board decided it wished to perform work of this type. Since the Model and BMAP will be updated under Tasks I.3.a.1 and I.3.c respectively, this Task would only be used if there were other issues the Board wished to evaluate and which were not covered in the updated BMAP. For this reason in 2018 it is proposed that this amount be reduced by $20,000 to $20,000.

Task I.3.c (Refine and/or Update the Basin Management Action Plan): In 2017 the amount budgeted for this Task was $25,000. That was a placeholder amount in case the Board decided to perform this work. HydroMetrics’ proposed cost to update the existing Basin Management Action Plan is $45,260, and this is the amount proposed for this task in 2018. This amount includes the cost to address the items recommended in Gus Yate’s peer review of HydroMetrics’ groundwater model updating proposal referred to in Task I.3.a.1. This is an increase of $20,260 over the 2017 budget amount.

Task I.3.e (Seaside Basin Geochemical Model): This is a proposed new Task for 2018. There was no such task in the 2017 Work Plan. The Task would be performed by MPWMD’s Consultant, Pueblo Water Resource, Inc. If necessary, HydroMetrics may also work on this task after the initial modeling results have been prepared and analyzed. A preliminary estimate of Pueblo Water Resource’s cost for their portion of the work is $50,000. A preliminary estimate of HydroMetrics’ cost for their portion of the work, if that work is found to be necessary, is $20,000 to $40,000 depending on how many scenarios need to be run. The proposed budget amount to perform this Task is $50,000, based on only performing the Pueblo Water Resources portion of the work. If the Board determines that the HydroMetrics portion of the work is necessary, the Board could fund that work from the Contingency line-item or in some other manner. It is anticipated that the Watermaster will be reimbursed for all of the costs to perform this Task by the three proponents of the projects that intend to inject new sources of water into the Basin. These are California American Water, MPWMD, and Monterey One Water (formerly MRWPCA). Therefore, there should be no net cost to the Watermaster for the work of this Task.

Task I.4.c (Annual Report- Seawater Intrusion Analysis): In 2017 the total amount budgeted for this Task was $21,786, comprised of $896 for MPWMD and $20,890 for HydroMetrics. The proposed scope of MPWMD’s portion of this task is unchanged from 2017, but the hourly rate for the MPWMD staff involved in performing their portion of this task has risen from $112/hour to $149/hour, so the amount proposed for 2018 is increased by $296 to $1,192. HydroMetrics’ proposed cost to perform their portion of this Task is $20,890. This does not include a new task proposed by HydroMetrics, which would be to perform statistical trend analyses of data from certain of the wells. If that task were included HydroMetrics’ cost would be $26,110. The TAC felt that a decision on whether or not to perform trend analyses should be made only if monitoring anomalies are encountered in 2018. If a decision was made to perform that work, it could be funded from the Contingency line-item. Therefore, the proposed budget shows no change in the cost for performing HydroMetrics’ portion of this Task. Thus, overall there would be an increase of only $296 for this Task in 2018.

The proposed amount for the line-item titled “Contingency (not including Technical Program Manager)” is 10%, the same percentage that has been used in preceding years. The line item for the Technical Program Manager has been reduced by $10,000, based on actual expenditures for this line-item in recent years.
As indicated by the right-hand column titled “Comparative Costs from 2017 Budget” in the proposed 2018 M&MP Operations Budget in Attachment 2, the proposed Budget is $113,636 higher ($369,473 - $255,797) than the 2017 Budget. It should be noted that the Watermaster’s actual expenditures, if this Budget is approved, will be considerably less if there is cost-sharing with other entities for the work of Tasks I.3.a.1 and I.3.e.

There is an estimated $100,000 available balance in the Operations Fund at the end of 2017 that will be applied against the 2018 adopted budget amount of $369,473 leaving $269,473. The budget balance is further reduced $50,000 to account for the reimbursement to be received from Monterey Peninsula Water Management District (MPWMD)/Monterey One Water (MOW)/California American Water for 1/3 each share of Geochemical Modeling costs, and reduced another $27,185 for the reimbursement to be received from MPWMD/MOW for 50% of the cost of updating the Seaside Groundwater Basin Model.

\[ $369,473 - $100,000 - $50,000 - $27,185 = $192,288.00 \]

M&M – Operations Fund Assessments for 2018 will be invoiced later in the year as follows:

<table>
<thead>
<tr>
<th>Company</th>
<th>Percentage</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>California American Water</td>
<td>91%</td>
<td>$174,982.00</td>
</tr>
<tr>
<td>City of Seaside</td>
<td>7%</td>
<td>13,460.00</td>
</tr>
<tr>
<td>DBO Development No. 30</td>
<td>1%</td>
<td>1,923.00</td>
</tr>
<tr>
<td>Graniterock Company</td>
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</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
<td><strong>$192,288.00</strong></td>
</tr>
</tbody>
</table>

**ATTACHMENTS:**
1. Proposed 2018 M&M Work Plan
4. M&M: Capital Fund Budgets Proposed for 2018 and Projected for 2019 (both unfunded)
# ATTACHMENT 1

## Seaside Groundwater Basin Monitoring and Management Program

**FY 2018 Work Plan**

The tasks outlined below are those that are anticipated to be performed during 2018. Some Tasks listed below are specific to 2018, while other Tasks recur throughout the program, such as data collection and database entry, and Program Administration Tasks.

Within the context of this document the term “Consultant” refers either to a firm providing professional engineering or other types of technical services, or to the Monterey Peninsula Water Management District (MPWMD). The term “Contractor” refers to a firm providing construction or field services such as well drilling, induction logging, or meter calibration.

## M.1 Program Administration

<table>
<thead>
<tr>
<th>Task</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>M. 1. a</strong> Project Budget and Controls (S0)</td>
<td>Consultants will provide monthly or bimonthly invoices to the Watermaster for work performed under their contracts with the Watermaster. Consultants will perform maintenance of their internal budgets and schedules, and management of their subconsultants. The Watermaster will perform management of its Consultants.</td>
</tr>
<tr>
<td><strong>M. 1. b</strong> Assist with Board and TAC Agendas (S0)</td>
<td>Watermaster staff will prepare Board and TAC meeting agenda materials. No assistance from Consultants is expected to be necessary to accomplish this Task.</td>
</tr>
<tr>
<td><strong>M. 1. c &amp; M. 1. d</strong> Preparation for and Attendance at Meetings ($11,500)</td>
<td>The Consultants’ work will require internal meetings and possibly meetings with outside governmental agencies and the public. For meetings with outside agencies, other Consultants, or any other parties which are necessary for the conduct of the work of their contracts, the Consultants will set up the meetings and prepare agendas and meeting minutes to facilitate the meetings. These may include planning and review meetings with Watermaster staff. The costs for these meetings will be included in their contracts, under the specific Tasks and/or subtasks to which the meetings relate. The only meeting costs that will be incurred under Tasks M.1.c and M.1.d will be:</td>
</tr>
<tr>
<td></td>
<td>• Those associated with attendance at TAC meetings (either in person or by teleconference connection), including providing periodic progress reports to the Watermaster for inclusion in the agenda packets for the TAC meetings, when requested by the Watermaster to do so. These progress reports will typically include project progress that has been made, problem identification and resolution, and planned upcoming work.</td>
</tr>
<tr>
<td></td>
<td>• From time-to-time when Watermaster staff asks Consultants to make special presentations to the Watermaster Board and/or the TAC, and which are not included in the Consultant’s contracts for other tasks.</td>
</tr>
<tr>
<td></td>
<td>Appropriate Consultant representatives will attend TAC meetings when requested to do so by Watermaster Staff (either in person or by teleconference connection), but will not be asked to prepare agendas or meeting minutes. As necessary, Consultants may provide oral updates to their progress reports (prepared under Task M.1.d) at the TAC meetings.</td>
</tr>
<tr>
<td><strong>M. 1. e</strong> Peer Review of Documents and Reports ($7,500)</td>
<td>When requested by the Watermaster staff, Consultants may be asked to assist the TAC and the Watermaster staff with peer reviews of documents and reports prepared by various other Watermaster Consultants and/or entities.</td>
</tr>
<tr>
<td><strong>M. 1. f</strong> QA/QC ($0)</td>
<td>A Consultant (MPWMD) will provide general QA/QC support over the Seaside Basin Monitoring and Management Program. These costs are included in the other tasks.</td>
</tr>
</tbody>
</table>
Prepare Documents for SGMA Reporting ($1,900)

**I. 2 Comprehensive Basin Production, Water Level and Water Quality Monitoring Program**

**I. 2. a. Database Management**

- **I. 2. a. 1 Conduct Ongoing Data Entry and Database Maintenance/Enhancement ($17,004)**
  
  The database will be maintained by a Consultant (MPWMD) performing this work for the Watermaster. MPWMD will enter new data into the consolidated database, including water production volumes, water quality and water level data, and such other data as may be appropriate. Another Consultant will periodically post database information to the Watermaster's website, so it will be accessible to the public and other interested parties. No enhancements to the database are anticipated during 2018.

- **I. 2. a. 2 Verify Accuracy of Production Well Meters ($0)**
  
  To ensure that water production data is accurate, the well meters of the major producers were verified for accuracy during 2009 and again during 2015. No additional work of this type is anticipated during 2018.

**I. 2. b. Data Collection Program**

- **I. 2. b. 1 Site Representation and Selection ($0)**
  
  The monitoring well network review that was started in 2008 has been completed, and sites have been identified where future monitoring well(s) could be installed, if it is deemed necessary to do so in order to fill in data gaps. No further work of this type is anticipated in 2018.

- **I. 2. b. 2 Collect Monthly Manual Water Levels ($3,726)**
  
  Each of the monitoring wells will be visited on a regular basis. Water levels will be determined by either taking manual water levels using an electric sounder, or by dataloggers. The wells where the use of dataloggers is feasible or appropriate have been equipped with dataloggers. This Task includes the purchase of one datalogger and parts for the datalogger to keep in inventory as a spare if needed.

All of the other wells will be manually measured.
### 1.2. b. 3 Collect Water Quality Samples. ($51,128)

Water quality data will be collected quarterly from certain of the monitoring wells, and annually or semi-annually from the Sentinel Wells. In 2012 water quality analyses were expanded to include barium and iodide ions, to determine the potential benefit of performing these additional analyses. These two parameters have been useful in analyzing seawater intrusion potential in other vulnerable coastal groundwater basins, and are briefly mentioned in the Watermaster’s annual Seawater Intrusion Analysis Reports. These parameters were added to the annual water quality sampling list for the four Watermaster Sentinel wells (SBWM-1, SBWM-2, SBWM-3, and SBWM-4), and also for the 3 most coastal MPWMD monitoring wells (MSC, PCA, and FO-09). Barium and iodide analyses will continue being performed in 2018.

Water quality data may come from water quality samples that are taken from these wells and submitted to a State Certified analytic laboratory for general mineral and physical suite of analyses, or the data may come from induction logging of these wells and/or other data gathering techniques. The Consultant or Contractor selected to perform this work will make this judgment based on consideration of costs and other factors.

Under this Task in 2013 retrofitting to use the low-flow purge approach for getting water quality samples was completed on all of the wells that are sampled. This sampling equipment sits in the water column and may periodically need to be replaced or repaired. Accordingly, an allowance to perform maintenance on previously installed equipment has been included in this Task. Also, in the event a sampling pump is found to be no longer adequate due to declining groundwater levels, or if a sampling pump needs to be installed on a Sentinel Well, an allowance to purchase a replacement sampling pump has been included in this Task.

Improvements to the QA/QC program for the water quality sampling work were adopted in mid-2017 and will be included in this work in 2018.

### 1.2. b. 4 Update Program Schedule and Standard Operating Procedures. ($0)

All recommendations from prior reviews of the data collection program have been implemented. No additional work of this type is anticipated in 2018.

### 1.2. b. 5 Monitor Well Construction ($0)

An additional monitoring well was installed in 2009. No further work of this type is anticipated in 2018.

### 1.2. b. 6 Reports ($3,576)

The groundwater level and water quality monitoring will be conducted on a monthly, quarterly, semi-annual or annual basis, as described in the Consultant’s Scope of Work. Reports summarizing data collected and analyzed will be submitted to the Watermaster on a schedule to be established during the year, and will consist of:

1. A review of the water quality and water level data at the end of each quarter of the Water Year, including tabularized data summaries of the WQ/WL data twice per year, once for the Q1 and Q2 period and once for the Q3 and Q4 period, so this data can be posted to WATERMASTER’s website. No reporting on a quarterly basis is required but the Consultant will promptly notify the Watermaster of any missing data or data collection irregularities that were encountered during the quarterly reporting period.

2. An annual report summarizing the water quality and water level data for the Water Year, and containing tables of this data for the complete Water Year. The report will include a brief cover letter describing any missing data or data collection irregularities that were encountered during the reporting period, and any recommendations for changes to be made to the data collection program.
I. 2.b.7
CASGEM Data Submittal ($2,384)
Compile and submit data on the Watermaster’s “Voluntary Wells” into the State’s CASGEM groundwater management database. The term “Voluntary Well” refers to a well that is not currently having its data reported into the CASGEM system, but for which the Watermaster obtains data. This will be done in the format and on the schedule required by the Department of Water Resources under the Sustainable Groundwater Management Act.

I. 3. a.
Enhanced Seaside Basin Groundwater Model (Costs listed in subtasks below)
The Watermaster and its consultants use a Groundwater Model for basin management purposes.

I. 3.a.1
Update the Existing Model ($54,370)
The existing Model, described in the report titled “Groundwater Flow and Transport Model” dated October 1, 2007, was updated in 2009 in order to develop protective water levels, and to evaluate replenishment scenarios and develop answers to Basin management questions (Tasks I.3.a.2 and I.3.a.3). The scope and budget in 2014 for again updating the Model included the following:
Step 1: Update the model and check its accuracy - $10,000
Step 2: Recalibrate the model - $15,000
Step 3: Prepare report describing the work that was done - $5,000

Step 1 was completed in 2014 by incorporating recent pumping data, groundwater level data, and rainfall data, and then checking to see if the recently simulated groundwater levels match the recently measured groundwater levels. These are the principle findings and conclusions of this Step 1 work:
- The model still provides reliable results in the Laguna Seca Subarea.
- Although the performance of the model during the updated period is worsening, the calibration of the model remains within acceptable standards.
- The northern boundary condition needs to be updated to reflect real groundwater elevation variations for the model period of 2005-2013. The behavior of the northern boundary will impact flows and the ability to calibrate the model for the area of the model that is adjacent to the northern boundary. An alternative method for defining this boundary condition will have to be developed that does not rely upon simulations from the Salinas Valley Integrated Groundwater Surface Water Model (SVIGSM).
- The groundwater model should be updated in a maximum of five years and its calibration reevaluated at that time. However, if groundwater related projects are implemented in the Basin before that time, the update and calibration reevaluation may need to be performed sooner.

Modeling of the Laguna Seca Subarea was performed in 2014 and a peer review of that work was performed in 2015. The peer review concluded that the model is a reasonable representation of the Seaside Basin groundwater flow system. No major errors in assumptions, data or results were identified during this peer review, and the simulated water levels generally matched observed water levels for the historical calibration simulation. The peer review recommended some aspects of the model should be explored to try to determine some differences between field-measured conditions and model-predicted conditions in some parts of the Basin, but stated that the model should be used for estimating the operational safe yield of the basin and subareas, and for simulating the effects of possible management measures. It also recommended that some additional simulations should be completed for management measures likely to be implemented. In 2018 Step 1 (updating the Model) will be performed again, along with Steps 2 (recalibrating) and 3 (reporting on this work).
I.3.a. 2  Develop Protective Water Levels ($0)

A series of cross-sectional models was created in 2009 in order to develop protective water levels for selected production wells, as well as for the Basin as a whole. This work is discussed in Hydrometrics’ “Seaside Groundwater Basin Protective Water Elevations Technical Memorandum.” In 2013 further work was started to refine these protective water levels, but it was found that the previously developed protective water levels were reasonable. Protective water levels will be updated, if appropriate, as part of the work of Task I.3.c.

I.3.a. 3  Evaluate Replenishment Scenarios and Develop Answers to Basin Management Questions ($20,000)

In 2009 the updated Model was used to evaluate different scenarios to determine such things as the most effective methods of using supplemental water sources to replenish the Basin and/or to assess the impacts of pumping redistribution. This work is described in HydroMetrics’ “Seaside Groundwater Basin Groundwater Model Report.” In 2010, and again in 2013, HydroMetrics used the updated Model to develop answers to some questions associated with Basin management. Modeling performed in 2014, 2015, and 2016 led to the conclusion that groundwater levels in parts of the Laguna Seca Subarea will continue to fall even if all pumping within that subarea is discontinued, because of the influence of pumping from areas near to, but outside of, the Basin boundary. Additional modeling work may be performed in 2019 to further examine this situation.

I.3.b.  Complete Preparation of Basin Management Action Plan ($0)

The Watermaster’s Consultant completed preparation of the Basin Management Action Plan (BMAP) in February 2009. The BMAP serves as the Watermaster’s long-term seawater intrusion prevention plan. The Sections that are included in the BMAP are:

- Executive Summary
- Section 1 – Background and Purpose
- Section 2 – State of the Seaside Groundwater Basin
- Section 3 – Supplemental Water Supplies
- Section 4 – Groundwater Management Actions
- Section 5 – Recommended Management Strategies
- Section 6 – References

The only work which may be performed on the BMAP in 2018 is discussed under Task I.3.c.

I.3.c.  Refine and/or Update the Basin Management Action Plan ($45,260)

During 2018 the BMAP will be updated based on new data and knowledge that has been gained since it was prepared in 2009.

I.3.d.  Evaluate Coastal Wells for Cross-Aquifer Contamination Potential ($0)

If seawater intrusion were to reach any of the coastal wells in any aquifer, and if a well was constructed without proper seals to prevent cross-aquifer communication, or if deterioration of the well had compromised these seals, it would be possible for the intrusion to flow from one aquifer to another. An evaluation of this was completed in 2012 and is described in MPWMD’s Memorandum titled “Summary of Seaside Groundwater Basin Cross-Aquifer Contamination Wells Investigation Process and Conclusions” dated August 8, 2012. This Memorandum did not recommend performing any further work on this matter at this time, other than to incorporate into the Watermaster’s Database data from wells that were newly identified by the work performed in 2012. That data has now been incorporated into the Database, and no further work by the Watermaster on this matter is anticipated. In late 2017 a request was made to MPWMD to destroy one of its no-longer-used monitoring wells that is perforated in multiple aquifers (Well PCA-East Multiple). It is anticipated that MPWMD will perform that work in 2018.
### 1. 3. e. Seaside Basin Geochemical Model ($50,000)

When new sources of water are introduced into an aquifer, with each source having its own unique water quality, there can be chemical reactions that may have the potential to release minerals which have previously been attached to soil particles, such as arsenic or mercury, into solution and thus into the water itself. This has been experienced in some other locations where changes occurred in the quality of the water being injected into an aquifer. MPWMD's consultants have been using geochemical modeling to predict the effects of injecting Carmel River water into the Seaside Groundwater Basin under the ASR program.

In order to predict whether there will be groundwater quality changes that will result from the introduction of desalinated water and additional ASR water (under the Monterey Peninsula Water Supply Project) and advance-treated wastewater (under the Pure Water Monterey Project) a geochemical model should be developed for use in the areas of the Basin where injection of these new water sources will occur. This can be most cost-efficiently accomplished in the following manner:

**Step 1:** MPWMD’s consultant would use the water quality and water delivery schedule data provided by each of the project proponents to develop and run the geochemical model. If the geochemical modeling indicated there would be no water chemistry problems then there would be no need perform Step 2.

**Step 2 (if needed):** If the geochemical modeling in Step 1 indicates the potential for problems to occur, then HydroMetrics may use the Watermaster’s existing groundwater model, and information about injection locations and quantities, injection scheduling, etc. provided by MPWMD for each of these projects, to develop model scenarios to see if the problem(s) can be averted by changing delivery schedules and delivery quantities.

If the modeling predicts that there may be adverse impacts from introducing these new sources of water, measures to mitigate those impacts will be developed under a separate task that will be created for that purpose when and if necessary.

### 1. 4 Seawater Intrusion Response Plan (formerly referred to as the Seawater Intrusion Contingency Plan)

#### 1. 4. a. Oversight of Seawater Intrusion Detection and Tracking ($0)

Consultants will provide general oversight over the Seawater Intrusion detection program under the other Tasks in this Work Plan.

#### 1. 4. b. Focused Hydrogeologic Evaluation ($0)

MPWMD attempted to compile historical and current water quality data in the coastal area to provide more in-depth evaluation of conditions in the shallow Dune Sand/Aromas Sand aquifer in the vicinity of the Sand City Public Works well, where unique water quality conditions and variability have recently been observed as discussed at TAC meetings. However, it was found that no historical water quality data from Cal Am’s now-abandoned wells existed, and consequently it was not possible to answer the question of why water quality in the Sand City Public Works well differs from water quality in other wells in the Basin. The Sand City desalination plant could be affecting water quality in this area, but without the prior water quality data from now-abandoned wells, this could not be determined. The results of this work were summarized in 2013 in a brief Technical Memorandum prepared by MPWMD with conclusions and recommendations, and no further work on this matter is planned.
<table>
<thead>
<tr>
<th>I. 4. c.</th>
<th>Annual Report- Seawater Intrusion Analysis ($22,082)</th>
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<tbody>
<tr>
<td></td>
<td>At the end of each water year, a Consultant will reanalyze all water quality data. Semi-annual chloride concentration maps will be produced for each aquifer in the basin. Time series graphs, trilinear graphs, and scatters diagram comparisons will be updated with new data. The annual EM logs will be analyzed to identify changes in seawater wedge locations. All analyses will be incorporated into an annual report that follows the format of the initial, historical data report. Potential seawater intrusion will be highlighted in the report, and if necessary, recommendations will be included. The annual report will be submitted for review by the TAC and the Board. Modifications to the report will be incorporated based on input from these bodies, as well as Watermaster staff.</td>
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<table>
<thead>
<tr>
<th>I. 4. d</th>
<th>Complete Preparation of Seawater Intrusion Response Plan ($0)</th>
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<tr>
<td></td>
<td>The Watermaster’s Consultant (HydroMetrics) completed preparation of the long-term Seawater Intrusion Response Plans (SIRP) in February 2009. The Sections that are included in the SIRP are:</td>
</tr>
<tr>
<td></td>
<td>Section 1 – Background and Purpose</td>
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<td>Section 2 – Consistency with Other Documents</td>
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<td>Section 3 – Seawater Intrusion Indicators and Triggers</td>
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<td>Section 4 – Seawater Intrusion Contingency Actions</td>
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<td></td>
<td>Section 5 – References</td>
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<td>No further work on the SIRP is anticipated in 2018.</td>
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<table>
<thead>
<tr>
<th>I. 4. e.</th>
<th>Refine and/or Update the Seawater Intrusion Response Plan ($0)</th>
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<tr>
<td></td>
<td>At the beginning of 2009 it was thought that it might be beneficial or necessary to perform work to refine the SIRP and/or to update it based on new data or knowledge that was gained subsequent to the preparation of the SIRP. However, this did not prove to be necessary, and no further work of this type is anticipated in 2018.</td>
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<table>
<thead>
<tr>
<th>I. 4. f.</th>
<th>If Seawater Intrusion is Determined to be Occurring, Implement Contingency Response Plan ($0)</th>
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<tr>
<td></td>
<td>The SIRP will be implemented if seawater intrusion, as defined in the Plan, is determined by the Watermaster to be occurring.</td>
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</table>
## Monitoring and Management Plan Operations Budget

### For Tasks to be Undertaken in 2018

<table>
<thead>
<tr>
<th>Task</th>
<th>Subtask</th>
<th>Sub-Subtask</th>
<th>Cost Description</th>
<th>CONSULTANTS &amp; CONTRACTORS</th>
<th>Total</th>
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<td>M.1.g</td>
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<td>Verify Accuracy of Production Well Meters</td>
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<td>I.2.b</td>
<td>Data Collection Program</td>
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<td>I.2.b.1</td>
<td>Site Representation and Selection</td>
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<td>Collect Monthly Water Level</td>
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<td>Collect Quarterly Water Quality Samples</td>
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<td>Update Program Schedule and Standard Operating Procedures</td>
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<td>I.2.b.5</td>
<td>Monitor Well Construction</td>
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<td>I.2.b.6</td>
<td>Reports</td>
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<td>CASGEM Data Submittal for Watermaster's Voluntary Wells</td>
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<td><strong>I.3 Basin Management</strong></td>
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<td>I.3.a</td>
<td>Enhanced Seaside Basin Groundwater Model</td>
<td>(Costs shown in subtasks below)</td>
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<td>I.3.a.1</td>
<td>Update the Existing Model</td>
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<td>Develop Protective Water Levels</td>
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<td>I.3.a.3</td>
<td>Evaluate Replenishment Scenarios and Develop Answers to Basin Management Questions</td>
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<tr>
<td>I.3.c</td>
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<td>Evaluate Coastal Wells for Cross-Aquifer Contamination Potential</td>
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<td>I.4.b</td>
<td>Provide focused area hydrogeologic investigation for Sand City Public Works</td>
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<tr>
<td>I.4.f</td>
<td>If Seawater Intrusion is Determined to be Occurring, Implement Contingency Response Plan</td>
<td>(No costs are included for this task, as this task will likely not be necessary during 2018. If it does become necessary, use of contingency funds or a budget modification will likely be necessary)</td>
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<tr>
<td><strong>TOTALS CONSULTANTS &amp; CONTRACTORS</strong></td>
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**Comparative Costs from 2017 Budget**

| Subtotal not including Technical Program Manager (4%) | $200,400 | $138,796 |
| Contingency (not including Technical Program Manager) @ 10% | $29,043 | $12,091 |
| Technical Program Manager | $50,000 | $60,000 |
| **TOTAL** | $369,473 | $255,797 |

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Footnotes:

(1) Under this Subtask the Watermaster will directly contract with an outside contractor to perform the Sentinel Well induction logging work, and to also collect and analyze water quality samples in conjunction with doing the induction logging. MPWMD will perform the other portions of the work of this Subtask.

(2) The response plan would only be implemented in the event sea water intrusion is determined to be occurring.

(3) Within the context of this document the term “Consultant” refers either to a Private Consultant providing professional engineering or other types of technical services, or to the Monterey Peninsula Water Management District (MPWMD). The term “Contractor” refers to a firm providing construction or field services such as well drilling, induction logging, or meter calibration.

(4) Due to the uncertainties of the exact scopes of some of the larger Tasks listed above at the time of preparation of this Budget, e.g. Tasks I.3.a.1, I.3.c, and I.3.e, it is recommended that a Contingency of approximately 10% be included in the Budget.

(5) Includes $1,000 to maintain equipment previously installed for this purpose. Also includes lab costs to analyze for barium and iodide ions in certain of these wells as was done in preceding years beginning in 2012.

(6) Does not include costs for MPWMD to collect water level data or water quality samples from wells other than those that are part of the basic monitoring well network, i.e. for private well owners who have requested that the Watermaster obtain this data for them. Costs to obtain that data are to be reimbursed to the Watermaster by those well owners, so there should be no net cost to the Watermaster for that portion of the work under these Tasks. Includes the purchase and installation of four new and/or replacement dataloggers at a price of $680, plus $50 for installation parts, for each datalogger.

(7) No additional monitoring well is expected to be constructed in 2018.

(8) For HydroMetrics and Todd Groundwater to provide hydrogeologic consulting assistance to the Watermaster, beyond that associated with performing other specified Tasks, when requested to do so by the Technical Program Manager. This work may include participation in conference calls and reviewing documents prepared by others.

(9) If work under this Task is found to be necessary, it will be funded through the Contingency line item in this Budget.

(10) Since the Model and BMAP will be updated under Tasks I.3.a.1 and I.3.c respectively, this Task would only be used if there were other issues the Board wished to evaluate and which were not covered in the updated BMAP.

(11) It is anticipated that the costs to perform this Task will be shared by the Watermaster, MPWMD, and One Water Monterey (formerly MRWPCA). It is expected that the Watermaster's share of these costs will be 50% and that the other 50% will be funded by those other entities.

(12) If new protective water levels are warranted, that work will be included in Task I.3.a.1.

(13) This is a new Task proposed for 2018. It is anticipated that the Watermaster will be reimbursed for the costs to perform this work by the three proponents of the projects that intend to inject new sources of water into the Basin. These are California American Water, MPWMD, and One Water Monterey (formerly MRWPCA). Therefore, there should be no net cost to the Watermaster for the work of this Task.

(14) The work for this Task is described in the M&MP as consisting of two Steps. The dollar amount shown in this budget only covers the estimated cost of Step 1. After Step 1 is completed, if the Board determines to pursue Step 2, funding for that work will likely be provided by the Contingency line-item, or from other tasks that have unused funds.
## ATTACHMENT 3

### Monitoring and Management Plan Operations Budget

**For Tasks to be Undertaken in 2019**

<table>
<thead>
<tr>
<th>Task</th>
<th>Subtask</th>
<th>Sub-Subtask</th>
<th>Cost Description</th>
<th>CONSULTANTS &amp; CONTRACTORS</th>
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<td>I.2</td>
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<td>I.4.f</td>
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<td><strong>$51,525</strong></td>
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</tbody>
</table>

Total Costs for 2019:

**TOTALS CONSULTANTS & CONTRACTORS:**

**$51,525**

**$140,892**

**$27,383**

**$236,800**

*Contingency (not including Technical Program Manager) @ 10%: $16,980
Technial Program Manager: $50,000

---

*Costs Shown in Subtasks Below*

*No Costs are Included for This Task, as This Task Will Likely Not be Necessary During 2019. If it Does Become Necessary, Use of Contingency Funds or a Budget Modification Will Likely be Necessary*
Footnotes:

(1) An outside contractor would be used to perform the induction logging, and potentially to also collect some water quality samples in conjunction with associated with performing other specified Tasks, when requested to do so by the Technical Program Manager.

(2) The response plan would only be implemented in the event sea water intrusion is determined to be occurring.

(3) Within the context of this document the term “Consultant” refers either to a Private Consultant providing professional engineering or other types of technical services, or to the Monterey Peninsula Water Management District (MPWMD). The term “Contractor” refers to a firm providing construction services.

(4) Due to the uncertainties of the exact scopes of some of the Tasks listed above at the time of preparation of this Budget, it is recommended that a 10% Contingency be included in the Budget.

(5) A portion of this cost is for maintaining sampling equipment that was installed in prior years.

(6) Does not include costs for MPWMD to collect water level data or water quality samples from wells other than those that are part of the basic monitoring well network, i.e. for private well owners who have requested that the Watermaster obtain this data for them. Costs to obtain that data are to be reimbursed to the Watermaster by those well owners, so there should be no net cost to the Watermaster for that portion of the work under these Tasks.

(7) No additional monitoring well is expected to be constructed in 2019.

(8) For HydroMetrics, Todd Groundwater (Gus Yates), and Martin Feeney to provide hydrogeologic consulting assistance to the Watermaster, beyond that associated with performing other specified Tasks, when requested to do so by the Technical Program Manager.

(9) If work under this Task is found to be necessary, it will be funded through the Contingency line item in this Budget.

(10) Not used.

(11) If necessary to reflect knowledge gained from modeling work or other data sources. Since the BMAP will be updated in 2018, no work on this Task is anticipated in 2019.

(12) Includes a 3% inflation factor on most annually recurring costs in the 2018 Budget, except the Technical Program Manager cost which has no inflation factor applied to it.

(13) No further work on this Task is anticipated in 2019.

(14) This amount is proposed to provide a source of funds if further work on the geochemical model beyond that performed in 2018 is found to be necessary. It is anticipated that the Watermaster will be reimbursed for the costs to perform this Task by the three proponents of the projects that intend to inject new sources of water into the Basin. These are California American Water, MPWMD, and One Water Monterey (formerly MRWPCA). Therefore, there should be no net cost to the Watermaster for the work of this Task.
Management and Monitoring Plan Capital Budget
For Tasks to be Undertaken in 2018

No Capital projects are anticipated to be undertaken in 2018, so this budget is $0.

Management and Monitoring Plan Capital Budget
For Tasks to be Undertaken in 2019

No Capital projects are anticipated to be undertaken in 2019, so this budget is $0.
## Seaside Groundwater Basin Watermaster

### Replenishment Fund

**Water Year 2017 (October 1 - September 30) / Fiscal Year (January 1 - December 31, 2016)**

**Balance through June 30, 2017 (And Proposed 2018 RA Budget)**

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<td>Water Year 17/18</td>
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<td>$525,000</td>
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</tbody>
</table>

### Cal-Am Water Balance Forward

- **Grand Total Fund Balance:** $1,884,298
- **Total Replenishment Fund Balance:** $1,884,298

### Total California American

- **City of Seaside Balance Forward:** $1,641,004
- **Total Replenishment:** $1,641,004

### City of Seaside Balance Forward

- **Total City of Seaside:** $1,884,298
- **Total Municipal:** $1,884,298

### City of Seaside Late Payment 5%

- **Alternative Producer:** $201,406
- **Exceeding Natural Safe Yield:** $201,406

### Replenishment Fund - Golf Courses

- **City of Seaside Golf Courses:** $251,759

### Total City of Seaside*

- **City of Seaside Late Payment 5%:** $282,926
- **Total City of Seaside:** $282,926

### City of Seaside Municipal Production

- **Total City of Seaside:** $282,926
- **Total Golf Courses:** $282,926

### Exceeding Natural Safe Yield - Alternative Producer

- **Alternative Producer:** $201,406
- **Exceeding Natural Safe Yield:** $201,406

### Total Exceeding Natural Safe Yield - Seaside Groundwater Basin Watermaster Replenishment Fund

- **Total City of Seaside:** $465,648
- **Total Replenishment Fund Balance:** $465,648

### Totals WY 2006 Through 2016

- **Total Replenishment Fund:** $2,106,652
- **Total California American:** $2,106,652

### Cal-Am Water Production

- **Exceeding Natural Safe Yield Considering Alternative Producers:** $2,349,946
- **Total California American:** $2,349,946

### Totals WY 2018

- **Total Replenishment Fund:** $2,106,652
- **Total California American:** $2,106,652

### Water Year 2017 (October 1 - September 30) / Fiscal Year (January 1 - December 31, 2016)

- **Balance through June 30, 2017:** $1,641,004
- **Projected Budget WY 2018:** $1,641,004

### Total Replenishment Fund Balance

- **Total Replenishment Fund:** $2,106,652
- **Total Replenishment Fund Balance:** $2,106,652

### Projected Totals Through WY 2017

- **Projected Budget WY 2018:** $2,106,652
- **Projected Budget WY 2018:** $2,106,652

### Proposed Budget WY 2018

- **Proposed Budget WY 2018:** $2,106,652
- **Proposed Budget WY 2018:** $2,106,652
TO: Board of Directors
FROM: Laura Dadiw, Administrative Officer
DATE: October 4, 2017
SUBJECT: Unit Cost for Water Year 2017/18 Over Production Replenishment Assessment Amounts

RECOMMENDATION:
It is recommended that the Board approve a Proposed Replenishment Assessment Unit Cost of $2,872 for Operating Yield Overproduction and $718 (25% of $2,872) for Natural Safe Yield Over Production for Water Year 2018 (October 1, 2017 - September 30, 2018).

SUMMARY:
The Replenishment Assessment Unit Cost is used to calculate the Replenishment Assessments that are charged to any Standard Producer that exceeds its allocations (both Operating Yield and Natural Safe Yield allocations) during the Water Year.

Per page 33 of the Decision, “The per acre-foot amount of the Replenishment Assessments shall be determined and declared by Watermaster in October of each Water Year in order to provide Parties with advance knowledge of the cost of Over-Production in that Water Year.” Thus, the per acre-foot amount determined by the Board in or before October of 2017 will be used to calculate Replenishment Assessments for pumping that occurs during the Water Year which begins on October 1, 2017 and ends on September 30, 2018.

BACKGROUND:
For each of the past three Water Years 2014, 2015, and 2016, the Board adopted a unit cost of $2,702/AF. This unit cost was developed starting with Water Year 2014 by taking the average of the Base Unit Cost ($/AF) listed in Table 1 for each project \[($3,507+$1,800+$2,000+$3,500)/4\], as the Replenishment Assessment Unit Cost. The Water Year 2014 unit cost was carried over to the two subsequent Water Years because no updated cost data was available for the projects listed in Table 1, and no other viable projects could be identified. For last Water Year (2016/17) the Budget and Finance Committee updated the basis from which the annual calculation of the Unit Cost of replenishment water is established, a blended cost of a reduced size desalination plant for the Monterey Peninsula Water Supply Project and groundwater replenishment provided by the Pure Water Monterey Project \[($4,591+$2,025+$2,000)/3\] = $2,872 (see Table 2).

DISCUSSION:
Due to the lack of more supportable data the recommendation by the Budget and Finance Committee at its September 19th meeting is to continue using $2,872, the average of the Base Unit Cost ($/AF) listed in Table 2 for each project \[($4,591+$2,025+$2,000)/3\] as the Operating Yield Over Production Replenishment Assessment Unit Cost for the Water Year 2017/2018. The Natural Safe Yield Replenishment Assessment Unit Cost is 25% of that amount, or $718.

ATTACHMENTS:
Table 1: Water Year 2017 Unit Cost Calculation Data
Table 2: Updated Unit Cost Data
WATER YEAR 2014 (October 1, 2013-September 30, 2014)

ANTICIPATED UNIT COSTS OF REPLENISHMENT WATER FOR THE SEASIDE BASIN

<table>
<thead>
<tr>
<th>POTENTIAL SOURCE OF REPLENISHMENT WATER</th>
<th>POTENTIAL DATE REPLENISHMENT WATER COULD BECOME AVAILABLE</th>
<th>POTENTIAL VOLUME OF WATER THAT COULD BE SUPPLIED BY THE PROJECT (AFY) (1)</th>
<th>LEVEL OF PROJECT DEVELOPMENT</th>
<th>CONTINGENCY INCLUDED IN BASE UNIT COST (2) (%)</th>
<th>BASE UNIT COST ($/AF)</th>
<th>BASE UNIT COST YEAR</th>
<th>ADDITIONAL CONTINGENCY ADDED TO REFLECT LEVEL OF PROJECT DEVELOPMENT (3) (%)</th>
<th>UNIT COST INCLUDING ADDITIONAL CONTINGENCY ($/AF)</th>
<th>UNIT COST INFLATED @ 3% FROM COST BASIS YEAR TO YEAR REPLENISHMENT WATER COULD BECOME AVAILABLE ($/AF)</th>
<th>VOLUME-WEIGHTED AVG %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monterey Peninsula Water Supply Project (Regional Desalination) (4)</td>
<td>2018</td>
<td>9,752</td>
<td>Project Report</td>
<td>30%</td>
<td>$3,507</td>
<td>2012</td>
<td>0%</td>
<td>$3,507</td>
<td>$4,188</td>
<td>56.53%</td>
</tr>
<tr>
<td>Seaside Basin ASR Expansion (5)</td>
<td>2015</td>
<td>1,000</td>
<td>Conceptual</td>
<td>11%</td>
<td>$1,800</td>
<td>2012</td>
<td>39%</td>
<td>$2,502</td>
<td>$2,734</td>
<td>5.80%</td>
</tr>
<tr>
<td>Regional Urban Water Augmentation Project (6)</td>
<td>2017</td>
<td>3,000</td>
<td>Design</td>
<td>5%</td>
<td>$2,000</td>
<td>2013</td>
<td>10%</td>
<td>$2,200</td>
<td>$2,476</td>
<td>17.39%</td>
</tr>
<tr>
<td>Groundwater Replenishment Project (GWRP) (7)</td>
<td>2017</td>
<td>3,500</td>
<td>Conceptual</td>
<td>50%</td>
<td>$3,500</td>
<td>2017</td>
<td>0%</td>
<td>$3,500</td>
<td>$3,500</td>
<td>20.29%</td>
</tr>
</tbody>
</table>

Total Quantity of Replenishment Water (AFY) the Listed Projects Could Cumulatively Potentially be Able to Produce Within the Next 10 Years (8) = 17,252

Footnotes:
1. For the Monterey Peninsula Water Supply Project, this is the total amount of water that could potentially come to the CAW distribution system. Only a portion of this amount might be available as initially unused capacity that could be used to help replenish the Seaside Basin. For the RUWAP, this is the total amount of water from this source. Only a portion of this amount might be used for in-lieu replenishment of the Seaside Basin. For the ASR Expansion Project, this is the additional amount of water that could potentially be provided by this project (see footnote 5). For the RUWAP, this is the total amount of water that this project is expected to produce. Only a portion of this amount might be used as in-lieu replenishment of the Seaside Basin. For the GWRP, this is the quantity of water that is being considered at this time by CAW for inclusion in its Monterey Peninsula Water Supply Project.

2. The following Contingency percentages were considered reasonable for the indicated levels of project development: Conceptual Level - 50%, Project Report Level - 30%, and Design Level - 15%. The sum of the values in the columns titled “Contingency Included in Base Unit Cost” and “Additional Contingency Added to Reflect Level of Project Development” equals the Contingency appropriate for the project’s level of development.

3. (3) The following Contingency percentages were considered reasonable for the indicated levels of project development: Conceptual Level - 50%, Project Report Level - 30%, and Design Level - 15%. The sum of the values in the columns titled “Contingency Included in Base Unit Cost” and “Additional Contingency Added to Reflect Level of Project Development” equals the Contingency appropriate for the project’s level of development.

4. Project data based on documents provided by Cal Am and MPWMD.

5. Project data provided by MPWMD. The 1,000 AFY of potential water that this project could supply would be in addition to the 1,300 AFY included as part of the Monterey Peninsula Water Supply Project, and would be an annual average taking into account river flow and hydrologic conditions that change from year to year.

6. Project data provided by MCWD.

7. Project data provided by MRWPCA. MRWPCA reported that the GWRP quantity being used in the current CEQA documentation is 3,500 AFY, but that the project could potentially supply 6,500 AFY or more. The unit cost would be lower if a quantity larger than 3,500 AFY were produced.

8. This value is the cumulative production capacity of all of the Potential Sources of Replenishment Water that listed in this table, and is used only to determine the “Volume-Weighted Average.” It is not the amount of water that is expected to be available to the Seaside Basin.
## ANTICIPATED UNIT COSTS OF WATER COULD POTENTIALLY BE USED FOR REPLENISHMENT OF THE SEASIDE BASIN

<table>
<thead>
<tr>
<th>POTENTIAL SOURCE OF REPLENISHMENT WATER</th>
<th>POTENTIAL DATE REPLENISHMENT WATER COULD BECOME AVAILABLE</th>
<th>POTENTIAL VOLUME OF WATER THAT COULD BE SUPPLIED BY THE PROJECT (AFY)</th>
<th>BASE UNIT COST ($/AF)</th>
<th>BASE UNIT COST YEAR</th>
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</thead>
<tbody>
<tr>
<td>Regional Desalination(2)</td>
<td>2020</td>
<td>6,250</td>
<td>$6,147</td>
<td>2019</td>
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<tr>
<td>Groundwater Replenishment Project (Pure Water Monterey)(2)</td>
<td>2018</td>
<td>3,500</td>
<td>$1,811</td>
<td>2018</td>
</tr>
<tr>
<td>Monterey Peninsula Water Supply Project (Combined Regional Desalination with Groundwater Replenishment Project)</td>
<td>GWRP in 2018 Regional Desalination in 2020</td>
<td>9,750</td>
<td>$4,591</td>
<td></td>
</tr>
<tr>
<td>Seaside Basin ASR Expansion(3)</td>
<td>2020</td>
<td>1,000</td>
<td>$2,025</td>
<td>2016</td>
</tr>
<tr>
<td>Regional Urban Water Augmentation Project (4)</td>
<td>2018</td>
<td>1,400-1,700</td>
<td>$2,000</td>
<td>2018</td>
</tr>
</tbody>
</table>

### FOOTNOTES:

1. For the Regional Desalination Project this is the total amount of water from this source which could potentially come to the CAW distribution system, based on the desalination plant having a 6.4 MGD capacity which is equivalent to 7,169 AFY. Only a portion of this amount might be available as initially unused capacity that could be used to help replenish the Seaside Basin. For the RUWAP this is the total amount of non-potable water from this source. Only a portion of this amount might be used for in-lieu replenishment of the Seaside Basin. For the ASR Expansion Project this is the additional amount of water that could potentially be provided by this project (see footnote 3). For the GWRP this is the quantity of water that is being planned at this time by CAW for inclusion in its Monterey Peninsula Water Supply Project.

2. Base unit cost data based on PUC filing documents and provided by Dave Stoldt of MPWMD.

3. Base unit cost data provided by MPWMD. The 1,000 AFY of potential water that this project could supply would be in addition to the 1,300 AFY included as part of the Monterey Peninsula Water Supply Project, and would be an annual average taking into account river flow and hydrologic conditions that change from year to year.

4. Project data provided by MCWD.
Due to the change-over in the conference call-in number, there was a delay in getting people connected. The meeting was convened at 1:46 p.m. after a quorum had been established.

1. Public Comments
There were no public comments.

2. Administrative Matters:
   A. Approve Minutes from the June 14, 2017 Meeting
      On a motion by Ms. Voss, seconded by Mr. Riedl, the minutes from this meeting were unanimously approved as presented.
   B. Sustainable Groundwater Management Act (SGMA) Update
      Mr. Jaques summarized the agenda packet materials for this item. There was no other discussion.

3. Discussion of Potential Changes in Groundwater Quality Resulting from Introducing New Sources of Water into the Aquifers
Mr. Jaques introduced this agenda item and Mr. Lear made a presentation using the PowerPoint slides included in the agenda packet for the Budget and Finance Committee’s September 19, 2017 meeting posted on the Watermaster’s website at this link: http://www.seasidebasinwatermaster.org/Agenda.pdf/17%200919%20WM%20Budget%20&%20Finance%20Com%20mtg%20Agenda%20pkt.pdf
Some of the items discussed in Mr. Lear’s presentation included:

- MPWMD wanted to raise this topic for discussion by the TAC because new water sources will be coming into the Seaside Groundwater Basin aquifers when the Monterey Peninsula Water Supply Project and Pure Water Monterey projects come on-line.
- In Orange County Water District’s groundwater recharge project the low TDS of the reverse osmosis water caused the release of arsenic from the clays in the aquifer. In other situations other types of constituents such as uranium, chromium, or selenium could be released.
- MPWMD feels water quality changes could lead to Material Damage, as defined in the Adjudication Decision.
- The four types of water that will be in the basin (native Seaside Groundwater Basin water, ASR water from the Carmel River Basin, Pure Water Monterey water, and desalinated water) have considerably different water qualities. Some minerals may be added at the end of the treatment processes for the Pure Water Monterey and Monterey Peninsula Water Supply Projects, for example there may be lime addition for pH adjustment.
- We need to see what changes in groundwater flow paths, water levels, and water chemistry will result from the new projects coming on-line.
- Mixing ratios of the various water sources will vary throughout the year.
- MPWMD has been collecting data on the effects of ASR water going into the Seaside Groundwater Basin. Similar work should be done as these other additional water sources come on-line.
- Models are available off-the-shelf that can predict these types of chemical effects. MPWMD’s consultants have used these to see the effects of the injection of Carmel River water into the Seaside Groundwater Basin.
- A listing of tasks that would need to be done to assess the groundwater quality impacts from the new water sources was presented.
- A geochemical model could be of help to those agencies that need to get permits for their projects.

Mr. Jaques asked Mr. Lear if MPWMD’s consultants or others could develop such a model for the Seaside Basin. Mr. Lear responded yes. He went on to say that Mr. Stoldt felt that the Watermaster having a single model, rather than each proponent having their own model, would be a better approach. Steve Short is a geochemist who does this type of work for MPWMD.

Mr. Jaques asked Ms. King if HydroMetrics does this type of work. She responded that they normally use outside consultants for this type of work.

Mr. Riedl asked if there would be any impact from disinfection byproducts. Mr. Lear said yes, and that some study on this has already been done by MPWMD. He added that the Division of Drinking Water requires some monitoring to be done for this.

Mr. Lear reported that MPWMD feels that this type of work is an important due-diligence action that needs to be taken.

Mr. Gomez and Ms. Voss voiced their support for undertaking this work.

Mr. Jaques said he would pursue this and provide further information for TAC consideration at a future meeting.
4. **Follow-up from Board Discussion and Direction Regarding Updating the Basin Management Action Plan (BMAP) and the Seaside Basin Groundwater Model**

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

Mr. Riedl asked if Task 4 was really necessary. Ms. King explained that it is important for this work to be done in order to see if the various projects will improve water levels sufficiently to protect the basin. Ms. Voss said she concurred that this work was important to do.

Mr. Jaques said he would contact Mr. Yates to solicit his comments and recommendations regarding updating and recalibrating the model, and would share that information with Ms. King.

5. **Discussion of Possible Revisions to Seawater Intrusion Response Plan (SIRP)**

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

Mr. Lear reported that the PCA-East Multiple well is screened in both the Paso Robles and Santa Margarita aquifers, and water quality samples from this well are therefore not representative of the water quality from either of these individual aquifers. He went on to say that the Ord Terrace Shallow and Deep wells are both perforated in the Santa Margarita aquifer (upper-level and lower-level), and water quality results were similar from early samples taken from those two levels, so only the Ord Terrace Deep well was considered necessary to obtain representative Santa Margarita water quality information at that location.

Ms. Voss commented that the Sentinel Wells were originally designed for induction logging and not for water quality sampling. Therefore, she felt using them only as an indicator and following Approach Number 1, as outlined on page 24 in the agenda packet, was satisfactory.

Ms. Voss asked Ms. King how the chloride threshold values listed on page 26 of the agenda packet compared to the “native” water quality, and noted that these values are very low. Ms. King responded that information describing the development of the chloride threshold values is contained in the appendices of the SIRP.

Mr. Lear commented that the intent of the Sentinel Wells was to perform induction logging, and that it would be better, in his opinion, to stay with the current water quality sampling and induction logging approach and to follow Approach Number 1.

There was consensus to pursue Approach Number 1 as described in the agenda packet.

6. **Schedule**

Mr. Jaques highlighted the anticipated TAC meeting schedule changes for the months of October and November, as noted in this agenda item.

7. **Other Business**

Mr. Riedl commented that since the PCA-East Multiple well is screened across two aquifers and is no longer used for monitoring purposes, it should be considered for abandonment and destruction to prevent aquifer cross-contamination. Mr. Lear said he agreed with that, and noted that it is an MPWMD-owned well. Mr. Lear recommended that the Watermaster formally ask MPWMD to abandon and destroy that well. There was agreement to agendize this for action at the next TAC meeting.

8. **Set Next Meeting Date**
The next regular meeting will be held on Wednesday August 9, 2017 at 1:30 p.m. at the MRWPCA Board Room.

The meeting adjourned at 3:10 p.m.
The meeting was convened at 1:34 p.m. after a quorum had been established.

1. Public Comments
There were no public comments.

2. Administrative Matters:
   A. Approve Minutes from the July 12, 2017 Meeting
      On a motion by Ms. Voss, seconded by Mr. Lear, the minutes from this meeting were unanimously approved as presented.
   B. Sustainable Groundwater Management Act (SGMA) Update
      Mr. Jaques summarized the agenda packet materials for this item. There was no other discussion.
      C. Mr. Jaques summarized the agenda packet materials for this item. There were no comments or questions regarding this topic. On a motion by Ms. Williamson, seconded by Mr. Costa, the TAC unanimously approved sending the letter contained in the agenda packet asking MPWMD to destroy the abandon monitoring well.

3. Continued Discussion of Potential Changes in Groundwater Quality Resulting from Introducing New Sources of Water into the Aquifers
Mr. Jaques summarized the agenda packet materials for this item.
Mr. Ottmar asked if MPWMD had already done some geochemical modeling for its ASR project. He also asked if the Pure Water Monterey Project had done some geochemical modeling. Mr. Lear responded yes, some of that type of work had been done. Mr. Ottmar questioned that since some work has already been done, does the Watermaster need to do more. Mr. Lear responded that each project has looked at their individual water chemistry impacts to some extent, but no one has looked at the mixture of waters which will vary throughout the year as differing quantities of water will come in each month from the various new water sources. Mr. Lear went on to say that MPWMD has done some predictive modeling of just its ASR program water. He also reported that MPWMD’s Water Supply Planning Committee suggested that MRWPCA (the proponent of the Pure Water Monterey Project), MPWMD (the proponent of the expanded ASR project), and California American water share in the cost of this modeling. He went on to say that MRWPCA and MPWMD have already agreed to cost-sharing, and they plan to approach Cal Am to see if they are also willing to cost-share. Mr. Ottmar said he felt this seemed reasonable and that the work should be done.

A motion was made by Mr. Lear, seconded by Mr. Costa to tell the Board that the TAC recommends going forward with this work and also that the Board should consider looking into cost-sharing funding options. The motion passed unanimously.

Mr. Jaques asked the TAC if they had any suggestions on how the Watermaster might recover the costs of preforming geochemical modeling for these projects. He said one idea would be to recover costs during the Storage Agreement issuance process. Ms. Miller suggested waiting to see how the cost-sharing negotiations described above progress.

4. Continued Discussion Regarding Updating the Basin Management Action Plan (BMAP) and the Seaside Basin Groundwater Model

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

Mr. Lear said that MPWMD and MRWPCA have offered to share 50% of the cost for updating the groundwater model.

Ms. King said she felt it would be good to update the groundwater model before doing the geochemical modeling.

A motion was made by Mr. Lear, seconded by Mr. Costa, to update and recalibrate the groundwater model. The motion passed unanimously.

A motion was made by Ms. Voss, seconded by Mr. Lear to update the Basin Management Action Plan. The motion passed unanimously.

5. Preliminary Draft Monitoring and Management Program (M&MP) Work Plan for 2018

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

Mr. Lear said that water quality data is sent to HydroMetrics as soon as the data is received by MPWMD, but that water level data only goes to HydroMetrics at the end of the year for their use in preparing the Seawater Intrusion Analysis Report. He said, however, that the water level data is reviewed quarterly by MPWMD as part of their Sustainable Groundwater Management Act reporting activities.
Mr. Ottmar asked regarding M&MP items I.3.a.1 and I.3.e if we should put in wording about cost-sharing. Mr. Jaques responded that typically we do not include discussions in the M&MP regarding how costs will be funded.

Ms. Voss asked regarding M&MP item I.2.b.3 if barium and iodide data from the water quality sampling work is being used. Mr. Lear responded yes that it is used in the preparation of the Seawater Intrusion Analysis Report.

Mr. Lear said he would work directly with Mr. Jaques on the costs for the MPWMD work items.

Mr. Ottmar asked how the costs compared to those for 2017. Mr. Jaques said that he will present that information at the September TAC meeting.

Mr. Lear asked if it would be desirable to include funds for possible additional sampling of the Sentinel Wells. Mr. Jaques said he felt it would be better to wait and see if additional sampling was needed, and if so, it could be funded through the Contingency line item in the budget.

Mr. Jaques said he would be recommending that the contingency line item be increased from the percentage that the board had authorized for 2017, because there was more uncertainty regarding the scope and cost for some of the items in the proposed 2018 M&MP.

6. Schedule
Mr. Jaques reported that there were no significant changes in the schedule and there was no other discussion of this item.

7. Other Business
Ms. Voss asked if the TAC agenda could be sent out further in advance, preferably a week in advance, for future TAC meetings. Mr. Jaques explained that sometimes materials needed from other parties for the agenda packet do not arrive far enough in advance to complete the agenda packet a week in advance, but he said he would strive to accomplish this.

8. Set Next Meeting Date
The next regular meeting was set for Wednesday September 13, 2017 at 1:30 p.m. at the MRWPCA Board Room.

The meeting adjourned at 2:25 p.m.
Attendees:  
**TAC Members**  
City of Seaside – No Representative  
California American Water – Nina Miller  
City of Monterey – No Representative  
Laguna Seca Property Owners – Bob Costa  
MPWMD – Jon Lear  
MCWRA – Tamara Voss  
City of Del Rey Oaks – No Representative  
City of Sand City – No Representative  
Coastal Subarea Landowners – Paul Bruno (via telephone)

**Watermaster**  
Technical Program Manager - Robert Jaques

**Consultants**  
HydroMetrics – Georgina King (via telephone for Items 3, 4, & 5 only)

**Others**  
None

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 July 12, 2017 Meeting**  
   On a motion by Ms. Voss, seconded by Mr. Costa, the minutes from this meeting were unanimously approved as presented, with Mr. Bruno abstaining.

   B. **Sustainable Groundwater Management Act (SGMA) Update**  
   Mr. Jaques summarized the agenda packet materials for this item. There was no other discussion.

3. **Continued Discussion of Potential Changes in Groundwater Quality Resulting from Introducing New Sources of Water into the Aquifers**  
Mr. Jaques summarized the agenda packet materials for this item. He described a revised approach, rather than the one contained in the agenda packet, based on a conference call he had with Derrik Williams, Jon Lear, and Pueblo Water Resources representatives, as follows:
**Step 1:** MPWMD’s consultant (Pueblo Water Resources) would use the water quality and water delivery schedule data provided by each of the project proponents to develop and run the geochemical model. If the geochemical modeling indicated there would be no water chemistry problems then there would be no need to perform Step 2.

**Step 2 (if needed):** If the geochemical modeling in Step 1 indicates the potential for problems to occur, then HydroMetrics may use the Watermaster’s existing groundwater model, and information about injection locations and quantities, injection scheduling, etc. provided by MPWMD for each of these projects, to develop model scenarios to see if the problem(s) can be averted by changing delivery schedules and delivery quantities.

The TAC was supportive of including geochemical modeling using this approach in the 2018 M&MP.

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4. **Consider Revisions to How the Seawater Intrusion Analysis Report (SIAR) is Prepared in FY 2018**

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

Ms. King commented that most wells except the Sentinel Wells do not show seasonal fluctuation. Mr. Lear said that only the coastal wells (approximately 10 total) are sampled 2 times or more per year. Only these could have seasonal fluctuation determined. All the others are sampled only once per year.

Ms. King said that statistical analysis of the wells that are only sampled once per year could be done.

Ms. Voss asked if the expense was necessary. She said she would want to review the SIAR to see what has been done in the past. Also, she was interested in knowing how many wells the statistical analysis would apply to.

Ms. King said this was mainly being recommended in order to be less subjective in determining whether there were water quality changes of significance.

Mr. Jaques suggested that perhaps the work could not be initially performed. Then, if information arose indicating that it would be beneficial, it could be done as a supplemental authorization funded through the contingency line-item in the budget.

There was a motion by Mr. Lear, seconded by Ms. Voss, to approve Mr. Jaques’ recommendation. The motion passed unanimously.

5. **Approve Work Plan for FY 2018 Monitoring and Management Program (M&MP) and FY 2018 and 2019 M&MP Operations and Capital Budgets**

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

Ms. Miller asked what the actual expenses were this year to date. Mr. Jaques said he did not have that information, but knew that expenses were under budget.

Mr. Lear asked if the water level trend analysis could be done for the Laguna Seca Subarea in the SIAR in 2018. Ms. King responded yes. Mr. Lear said he would like to discuss that topic with Ms. King when
the SIAR is being prepared. He noted that water levels are falling to the point that the level may fall below the well screen in the easterly-most monitoring well in the Laguna Seca Subarea, well FO – 04.

Mr. Jaques said he would revise the wording of Task I.3.e in accordance with the approach described under Agenda item 3 of today’s meeting.

A motion was made by Mr. Lear, seconded by Ms. Voss to approve the 2018 Monitoring and Management Program Work Plan and the Operations and Capital budgets. The motion passed unanimously.

6. Schedule
Mr. Jaques reported that there were no significant changes in the schedule, but highlighted that there would be no October TAC meeting. There was no other discussion of this item.

7. Other Business
Mr. Lear provided an update on destruction of the PCA-East monitoring well. He explained that the old wellsite has been worked over and the well is no longer visible and he was not able to find it even with a metal detector. He has asked MPUSD, on whose property the well is located near the Seaside High School, to help dig it up so MPWMD can destroy it.

Mr. Jaques reported that in 2018 he will be gone on a trip all of the month of September. He described the following proposed revised schedule to address this:

- The Preliminary Draft 2019 M&MP documents would be included in the July 2018 TAC agenda.
- The August 2018 TAC meeting would be on the 3rd Wednesday, not the 2nd Wednesday of the month, to provide more time to prepare the M&MP Work Plan and Budgets for TAC approval.
- There would be no TAC meetings in September or October in 2018.
- The November 2018 TAC meeting would be on the 3rd Wednesday of the month as has been done in preceding years.

The TAC felt this was reasonable.

8. Set Next Meeting Date
Since no TAC business needs to be acted upon in October, there will be no need for an October TAC meeting.

The next regular meeting was set for Wednesday November 15, 2017 at 1:30 p.m. at the MRWPCA Board Room. Note that this will be the 3rd Wednesday in November, not the usual 2nd Wednesday of the month.

The meeting adjourned at 2:18 p.m.
CALL TO ORDER – Chair Hodgson called the meeting to order at 1:15 p.m. when a quorum was established.

Present:
Daphne Hodgson – City of Seaside
Paul Bruno – Coastal Subarea Landowner
Eric Sabolsice – California American Water (by phone)

Absent: Todd Bodem – City of Sand City

Others Present:
David Stoldt – Monterey Peninsula Water Management District (MPWMD)
Rick Riedl – City of Seaside
Robert Jaques – Watermaster Technical Program Manager
Laura Dadiw – Watermaster Administrative Officer

PUBLIC COMMUNICATIONS: There were no public communications.

REVIEW OF AGENDA: There were no requested changes to the agenda.

1. Discuss/Consider Recommending a Cost Share Method to the Watermaster Board for Recalibration and Updating of Seaside Groundwater Basin Model in Preparation of the Monitoring and Management Fund – Operations 2018 Budget

   Mr. Jaques reviewed his transmittal on this item. A letter was provided from Mr. Stoldt describing MPWMD and Monterey One Water (MOW) willingness to share in the cost of modeling work, and putting forth one suggested cost share paradigm based on average injection for ASR and contracted acre-feet for the MOW Pure Water Monterey (PWM) project. (Certain Alternative Producers have only minor financial obligation for management of the basin and would not be cost share participants.)

   On a motion by Member Bruno, and second by Member Sabolsice, it was unanimously approved to recommend a cost share arrangement be pursued between MPWMD/Monterey One Water for 50%of the cost for recalibration and updating of Seaside Groundwater Basin Model in preparation of the Monitoring and Management Fund – Operations 2018 Budget.

2. Discuss/Consider Modeling of Potential Changes in Groundwater Quality Resulting from Introducing New Sources of Water into the Aquifers in Preparation of the Monitoring and Management Fund – Operations 2018 Budget

   Mr. Jaques reviewed his transmittal on this item. Mr. Stoldt provided a court testimony of Richard C. Svindland, then Vice President of Engineering for CAW before the Public Utilities Commission
dated March 8, 2013 that records Mr. Svindland’s support of predicting impact on water quality when native water, desalinated water, SWR and ASR are all mixed within the basin. Data was not sufficient at the time to make a study feasible however Mr. Svindland felt consideration should be given as part of the project EIR mitigation and monitoring plan. Mr. Stoldt stated that ultimately the EIR did not sufficiently analyze all mixed waters, mainly addressing only desalinated water. He proposed a 1/3-each cost share between CAW, MOW, and MPWMD for the Watermaster mixing study to be conducted at a MPWMD estimated cost of $50,000.

As it relates to study data, Mr. Stoldt noted that the Seaside Basin Adjudicated Decision has no provision for storage and recovery by agencies other than CAW. As a result, three separate CAW storage and recovery agreements will be created for Pure Water Monterey, MPWMD, and the desalination plant.

Member Sabolsice expressed support of approving Step 1 funding and not Step 2 in the 2018 budget. He felt the Sand City desalination plant, ASR, and the PWM pilot project could provide water quality data needed to commence Step 1 without waiting for full scale projects. Mr. Stoldt noted to consider that Carmel River, desalination, and Aquifer Storage and Recovery water travel in the same pipe for injection; PWM has independent injection sites; and that mixing is seasonal based on CAW operating regimes. Plant design will be irrespective of mixing outcomes; however delivery schedules for the various projects could potentially be altered to mitigate geochemical problems if necessary; being as fully informed as possible is necessary in light of Orange County Water District challenges with water quality as a result of injection.

If necessary, Step 2 could be considered following completion of Step 1 and analysis of the Step 1 findings.

**On a motion by Member Bruno, and second by Member Sabolsice, it was unanimously approved to recommended Watermaster facilitate a cost share agreement between CAW (1/3), MPWMD (1/3), and Monterey One Water (1/3) for Step One only of modeling potential changes in groundwater quality resulting from introducing new sources of water into the aquifers in preparation of the Monitoring and Management Fund – Operations 2018 Budget**

3. Discuss/Consider Recommendation to the Watermaster Board for Proposed Fiscal Year 2018 Annual Budgets.

   A. Administrative Fund

   **On a motion by Member Bruno, and second by Member Sabolsice, it was unanimous to recommend approval of the Watermaster 2018 Administrative Fund Budget as presented.**

   B. Monitoring and Management Fund —Operations

   **On a motion by Member Bruno, and second by Member Sabolsice, it was unanimous to recommend approval of the Monitoring and Management – Operations Fund 2018 Budget,**
amended to decrease Task I.3.e from $70,000 to $50,000, decrease the Technical Program Manager line item from $60,000 to $50,000, and reduce contingency to 10% of budget.

The M&M – Operations budget will be assessed to Watermaster parties net of the $27,185 to be reimbursed by MPWMD/MOW for updating/recalibrating the model, and the $50,000 to be reimbursed (MPWMD, CAW, MOW 1/3 each) for modeling potential changes in groundwater quality. Watermaster will incur the cost of these two tasks as work progresses, and will invoice the three parties for cost share reimbursement after the work is completed.

C. Monitoring and Management Fund—Capital

**On a motion by Member Bruno, and second by Member Sabolsice, it was unanimous to recommend approval of the unfunded Monitoring and Management – Capital Fund 2018 Budget.**

D. Replenishment Fund (No Action Required)

4. Discuss/Consider Recommendation to the Watermaster Board to Approve the Proposed Replenishment Assessment Unit Costs for Operating Yield and Natural Safe Yield Overproduction for Water Year October 1, 2017 through September 30, 2018.

**On a motion by Member Bruno, and second by Member Sabolsice, it was unanimous to recommend approval of the $2,872 Replenishment Assessment Unit Cost for Operating Yield and Natural Safe Yield Overproduction for Water Year October 1, 2017 through September 30, 2018, as presented.**

There being no further business, Chair Hodgson adjourned the meeting at 2:15 p.m.
### Reported Quarterly and Annual Water Production From the Seaside Groundwater Basin

#### For All Producers Included in the Seaside Basin Adjudication – Water Year 2017

(All Values in Acre-Feet [AF])

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| **Laguna Seca Subarea**    |      |      |      |            |       |       |       |            |       |       |       |            |       |       |       |            |                           |                             |                             |
| City of Seaside Golf Courses In-Lieu (MCWD source water) | APA  | 5.18 | 3.88 | 3.36 | 12.42 | 3.13 | 2.90 | 4.58 | 10.61 | 4.26 | 5.35 | 5.16 | 14.77 | 0.00 | 0.00 | 0.00 | 0.00 | 37.80 |
| Nicklaus Club Monterey     |      |      |      |            |       |       |       |            |       |       |       |            |       |       |       |            |                           |                             |                             |
| Laguna Seca Golf Resort (Bishop) | APA  | 17.00 | 0.00 | 0.00 | 17.00 | 2.00 | 0.00 | 0.00 | 2.00 | 0.00 | 18.00 | 30.00 | 48.00 | 25.00 | 0.00 | 0.00 | 25.00 | 92.00 | 251.00 | 251.00 |
| York School                | APA  | 0.07 | 0.02 | 0.01 | 0.90 | 0.00 | 0.00 | 0.00 | 0.00 | 0.65 | 3.20 | 1.91 | 5.77 | 2.70 | 0.00 | 0.00 | 2.70 | 9.36 | 32.00 | 32.00 |
| Laguna Seca County Park    | APA  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.76 | 3.75 | 6.51 | 0.00 | 0.00 | 0.00 | 0.00 | 12.75 | 41.00 | 41.00 |
| **Laguna Seca Subarea Totals** |      |      |      |            |       |       |       |            |       |       |       |            |       |       |       |            | 100.52 | 67.21 | 220.96 |
| Total Production by WM Producers |      |      |      |            | 1,159.32 | 610.85 | 1,113.11 | 130.43 | 3,013.71 | 3,920.00 | 1,310.13 | 5,230.13 |

| **City of Seaside Golf Courses In-Lieu (MCWD source water)** |      |      |      |            |       |       |       |            |       |       |       |            |       |       |       |            |                           |                             |                             |
| MCWD delivery             |      |      |      |            |       |       |       |            |       |       |       |            |       |       |       |            |                           |                             |                             |
| **CAW / MPWMD ASR (Carmel River Basin source water)** |      |      |      |            |       |       |       |            |       |       |       |            |       |       |       |            |                           |                             |                             |
| Injection                 |      |      |      |            |       |       |       |            |       |       |       |            |       |       |       |            |                           |                             |                             |
| Recovery                  | -155.00 | -149.92 | -360.92 | 0.00 | 0.00 | 0.00 | -286.56 | -286.56 | 0.00 | 0.00 | 0.00 | -591.48 | 0.00 | 0.00 | 0.00 | -591.48 | 0.00 | 0.00 | 0.00 | -1753.71 |

**Notes:**
1. The Water Year (WY) begins October 1 and ends September 30 of the following calendar year. For example, WY 2017 begins on October 1, 2016, and ends on September 30, 2017.
2. "Type" refers to water right as described in Seaside Basin Adjudication decision as amended, signed February 9, 2007 (Monterey County Superior Court Case No. M66343).
3. Values shown in the table are based on reports to the Watermaster received by July 15, 2017.
4. All values are rounded to the nearest hundredth of an acre-foot. Where required, reported data were converted to acre-feet utilizing the relationships: 325,851 gallons = 43,560 cubic feet = 1 acre-foot.
5. "Base Operating Yield Allocation" values are based on Seaside Basin Adjudication decision. These values are consistent with the Watermaster Producer Allocations Water Year 2017 (see Item IX B. in 12/7/2016 Board packet).
6. Any minor discrepancies in totals are attributable to rounding.
8. It should be noted that CAW/MPWMD ASR "Injection" and "Recovery" amounts are not expected to "balance" within each Water Year. This is due to the injection recovery "rules" that are part of SWRCB water rights permits and/or separate agreements with state and federal resources agencies that are associated with the water rights permits.

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