MARINA COAST WATER DISTRICT

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May 21, 2020

Via Electronic Mail and U.S. Mail

Joaquin Esquivel, Chair
State Water Resources Control Board Members
Eileen Sobeck, Executive Director
State Water Resources Control Board
1001 I Street
Sacramento, CA 95814

Re: Eileen Sobeck's May 8, 2020 letter to John Ainsworth, Executive Director to the California Coastal Commission regarding Application 9-19-0918 and Appeal No. A-3-MRA-19-0034 (California American Water Company)

Dear Chair Esquivel, Members of the Board, and Ms. Sobeck:

I write to express our Board's disappointment and concerns with Ms. Sobeck's May 8, 2020 letter to the Executive Director of the California Coastal Commission, which appears to improperly support California American Water Company's (Cal-Am's) Monterey Peninsula Water Supply Project (MPWSP or project), and to improperly request that the Coastal Commission act on Cal-Am's application and appeal at its August 2020 meeting even if the Coastal Commission does not have all the information it needs to evaluate the project's compliance with the Coastal Act. We find it extremely troubling that Water Board staff is advancing Cal-Am's demonstrably false narrative that the Coastal Commission must approve Cal-Am's desal project to avoid continued harm to endangered Carmel River steelhead. While we support the Water Board's strong demand that Cal-Am comply with the diversion limits in your Carmel River cease-and-desist order (CDO), as addressed below, recent supply and demand information and analysis shows that Cal-Am can comply with the CDO and stop its illegal diversions on January 1, 2022, without its proposed desal plant.

In addition, Ms. Sobeck's letter incorrectly suggests the Coastal Commission is purportedly reconsidering issues already decided by the California Public Utilities Commission (CPUC) that she mistakenly asserts are outside the Commission's jurisdiction, with the alleged improper result of delaying the project. Her letter also implies that the Coastal Commission should not consider the expansion of Pure Water Monterey as a viable alternative to Cal-Am's desal proposal. As explained below, these suggestions are not supported by the facts or the law. Contrary to the largely unsupported statements in Ms. Sobeck's letter, there

is new information regarding viable alternatives and the project's impacts to coastal resources that the Coastal Commission has jurisdiction to consider—and must evaluate—before it can consider whether to grant coastal development permits (CDPs) for the MPWSP. Furthermore, Ms. Sobeck's letter disregards the CPUC's own environmental review, which properly acknowledged that the Coastal Commission would need to independently decide whether Cal-Am's desal project could be approved under the Coastal Act.

Finally, we fail to understand why the Water Board is collaborating with Cal-Am to obstruct implementation of the Pure Water Monterey Expansion, in light of both your enforcement duties under the Sustainable Groundwater Management Act over a Critically Overdrafted Subbasin and the State's recycled water priority policies. Moreover, if Ms. Sobeck's letter is allowed to stand, it will continue to provide improper cover for Cal-Am to refuse to consider a viable, less environmentally damaging alternative to its oversized and overpriced desal project – even as a back-up plan for future supply needs while the desalination project faces increasingly significant setbacks and delays.

For these reasons and those expressed below, Marina Coast Water District (MCWD) requests the Water Board immediately issue a new letter withdrawing Ms. Sobeck's letter and, in doing so, consider encouraging further review and potential approval and implementation of the Pure Water Monterey Expansion in light of the real delays and difficulties encountered by the desalination proposal.

Any new letter or communication regarding Ms. Sobeck's May 8, 2020 letter should, at the very least, contain a statement to the effect that her letter should not be interpreted to imply that the Coastal Commission does not have full jurisdiction to review the MPWSP under the Coastal Act or that the Water Board wishes that project to be approved. That is for the Coastal Commission to decide. Additionally, such a communication should clearly state that the Water Board does not oppose PWM Expansion.

If Cal-Am will Prudently Manage its System, Cal-Am will have a Sufficient Water Supply on January 1, 2022, to Comply with the State Water Board's CDO such that No CDO Extension is Required

It appears the Water Board staff has adopted Cal-Am's false narrative that it has advanced to every permitting agency that unless they approve Cal-Am's desal proposal immediately, without evaluating new information or circumstances, Cal-Am cannot comply with the CDO diversion limits and there will be dire consequences to Carmel River steelhead and economic Armageddon on the Monterey Peninsula. Ms. Sobeck's letter actually mimics this narrative in her conclusion that "there could be dire consequences for the steelhead and other public trust resources if a reliable and sustainable water supply allowing Cal-Am to terminate its unlawful diversions is not promptly developed" and, therefore, the Coastal Commission must act on Cal-Am's CDP applications at its August 2020 meeting. This prediction is simply false, and it is not supported by the evidence.

Recognizing the importance of this issue and the fact that Cal-Am has been repeating it to every agency considering the MPWSP for the last 8 years, MCWD asked Peter Mayer of WaterDM[1] to analyze the water supply and demand conclusions set forth in the October 28, 2019 California Coastal Commission Staff Report. He was also asked to evaluate whether the proposed expansion of the Pure Water Monterey (PWM) project would provide Cal-Am with a sufficient and reliable supply of water as an alternative to the MPWSP proposal.

Mr. Mayer prepared two demand forecasts for the Cal-Am Monterey Main service area, using population growth rates based on AMBAG's anticipated increase through 2040[2] and the historic water usage of all sectors – residential, commercial, public and re-sale and non-revenue water. (See Attachment 1 – Water DM Report.)[3] The first, "Current gpcd," forecast assumes the current rate of gallons used per person per day will continue in the future without any increase in efficiency or additional conservation reductions. The second, "Continued efficiency," forecast accounts for the likely impacts of ongoing efficiency improvements, consistent with California laws and directives to ensure future water efficiency across the state, as well as Cal-Am's own existing and planned future programs to further reduce per capita use. Under either forecast approach, Mr. Mayer's report concludes that Coastal Commission staff correctly determined Pure Water Monterey Expansion would provide a feasible, reasonable, and reliable supply to meet future demand.

The WaterDM report demonstrates that the Pure Water Monterey Expansion, together with Cal-Am's existing lawful sources, would provide an ample supply to meet anticipated water demand in Cal-Am's Monterey district by more than 1,200 excess acre-feet annually through at least 2040. The report concludes that, with implementation of Pure Water Monterey Expansion, Cal-Am's reliable supply sources will be capable of providing at least 11,650 acre-feet per year beginning in 2022. This level of supply security would permit compliance with the CDO, and it would also allow an to end the moratorium on new water connections.

Thus, the best available information shows that Cal-Am will have sufficient supply to meet 2022 demands with only Carmel River diversions at 3,376 AFY for two major reasons: conservation and water supply diversification. System demand has dropped from around 15,000 AFY to less than 10,000 AFY, due to extensive urban water conservation programs by Cal-Am and the Monterey Peninsula Water Management District (MPWMD), implementation of state urban water conservation mandates, and customer conservation efforts. As Mr. Mayer explains, this conservation is permanent. In fact, per capita use in Cal-Am's Monterey district

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[1] Peter Mayer has been recognized as an urban water management expert by the U.S. Supreme Court. He has worked with and advised hundreds of water providers and organizations such as the U.S. EPA; the U.S. Department of Justice; California Department of Water Resources; Metropolitan Water District of Southern California; and many others. He recently testified as an expert witness on municipal and industrial water use at the U.S. Supreme Court on behalf of the State of Georgia.

[2] The AMBAG report overstates population growth in the Cal-Am service area because some of that growth is attributable to the Fort Ord build-out. Water service to all of the former Fort Ord, including portions of the cities of Seaside, Del Rey Oaks, and Monterey, is provided by Marina Coast Water District and not by Cal-Am.

[3] Our Board reviewed and received the WaterDM report at our May 18, 2020 public Board meeting following a presentation from Mr. Mayer and public comment.

is likely to further decrease between now and 2040 due to ongoing conservation program implementation, continued conservation pricing, and statewide policy directives to reduce indoor and outdoor use and improved utility water loss control measures.

Even if it does not, Cal-Am would still have sufficient supplies to meet its long-term demand with PWM Expansion. In response to Order 95-10, Cal-Am has been diversifying its water sources albeit with the leadership and cooperation of the MPWMD and others – Aquifer Storage and Recovery (ASR) and PWM projects being the major examples. Ms. Sobeck's letter fails to acknowledge that come January 1, 2022, when Cal-Am's Carmel River diversions drop to 3,376 AFY, additional river water will then be available in more years for diversion to direct use and underground storage from December through May under the State Board's ASR permits and Permit 21330.[4] [5]

Without addressing this information and new analysis, Ms. Sobeck's letter states the Water Board staff has reviewed the available documents regarding Monterey Peninsula water supply and demand (without any listing of the numerous available documents to which she may be referring or who provided them to the Board) and "does not have a basis to conclude that the Public Utilities Commission's prior analysis and determinations regarding the water demand, sizing, reliability, or diversity of supply were unreasonable, invalid, ***or outdated***." (emphasis added.) Her letter fails to recognize that the CPUC's supply and demand analysis was limited to data gathered only through 2016 and there are now more than three additional years of data available to support a more accurate estimation of demand. As shown in the table below, the additional data show that decreased 2015 water demand was simply not an aberration due to the drought. Nor does she explain why the CPUC's estimate is valid today when it is nearly 2,500 AFY higher than Cal-Am's current annual demand or why the CPUC's estimate should still be utilized by the Coastal Commission in performing its own analysis. Given that Cal-Am's own most recent demand projections, as provided to the CPUC in its 2019 general rate case (filed under penalty of perjury), estimated its Monterey Main system-wide demand in 2022 will be 9,789 AFY, it is clear the Coastal Commission cannot base its alternatives analysis on the CPUC's estimates that current demand would exceed 12,000 AFY. In fact, such an assumption would amount to a prejudicial abuse of discretion and subject the Commission to near certain litigation.

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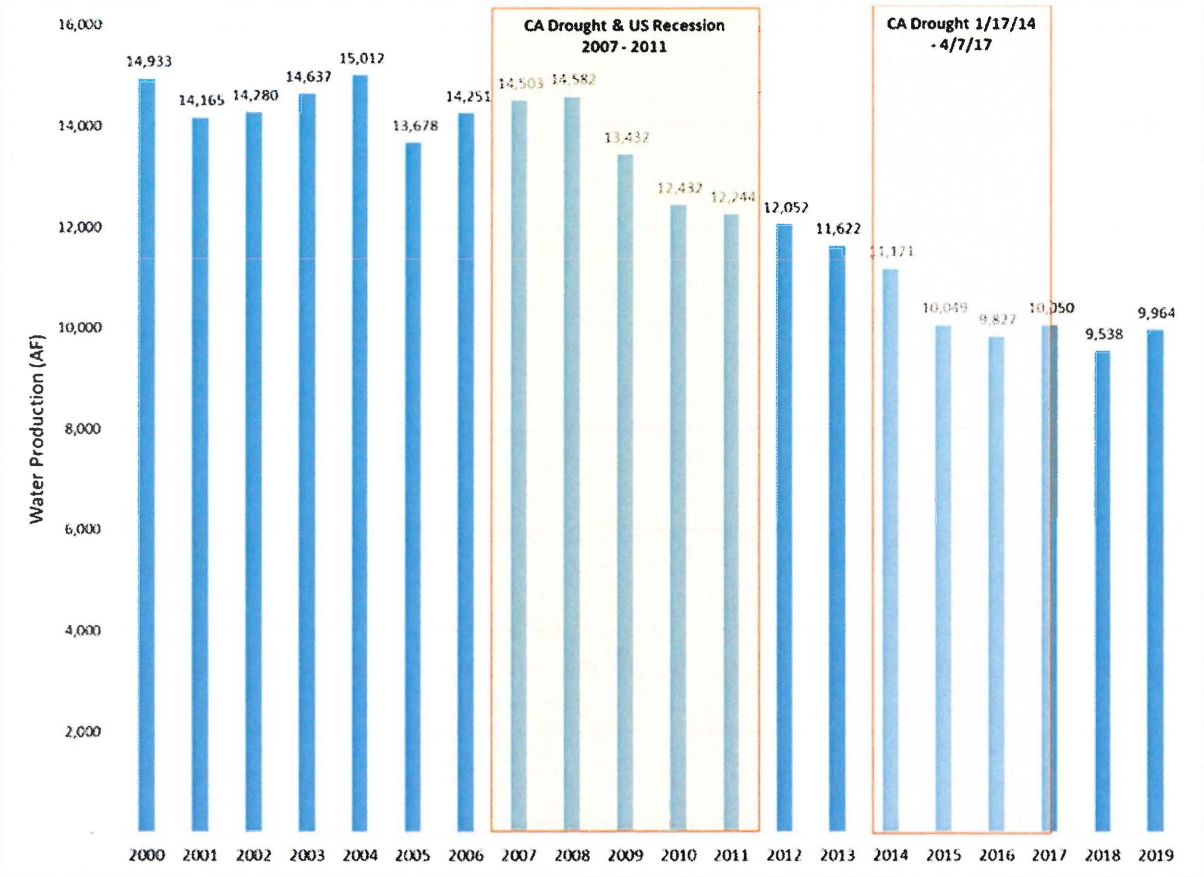
[4] Permit 21330's authorized place of use needs to be enlarged to coincide with the authorized place of use under the ASR permits.

[5] Ordering Paragraph 3.b.i of Order 2016-0016 requires that Cal-Am's Effective Diversion Limit (EDL) be reduced by 1 AF for every AF of PWM recovered and delivered for direct use. Even though Cal-Am will miss the October 1, 2020 milestone and have its EDL reduced by 1,000 AFY from October 1, 2020, Cal-Am has not been diverting its full EDL and as of October 1, 2019 had a "Cumulative Carryover credit for Future Years" of 4,788 AF. (Cal-Am 4th Quarter, WY 2028-19 Report to State Water Board.) Therefore, since PWM water is not needed for 2020 and 2021, Cal-Am should only be recovering PWM water needed for testing and almost all of the injected PWM water should remain in underground storage for 2022 and beyond.



Cal-Am Monterey Main water production, 2000 - 2019[6]

While Ms. Sobeck's letter recognizes that actual water use within Cal-Am's Monterey District service area in recent years has been lower than the CPUC's estimated current demand, she does not explain why the magnitude of the difference is not significant new information requiring the Coastal Commission to consider alternatives that meet the actual level of annual demand, as Coastal Commission staff concluded in their most recent staff report. The CPUC rejected any project alternative that would not meet the inflated 12,000 AFY level of demand. As explained in the WaterDM report, recent demand data and analysis shows there are alternatives to desalination that can meet Cal-Am's long-term demand. The table below from the Water DM report demonstrates how this reduction in actual annual demand impacts potential future demand projections for Cal-Am's Monterey Main service area.

[6] WaterDM Report, Figure 2. 2017 – 2019 data from Cal-Am quarterly reports to the California State Water Resources Control Board. 2000 – 2016 data from Monterey Peninsula Water Management District.

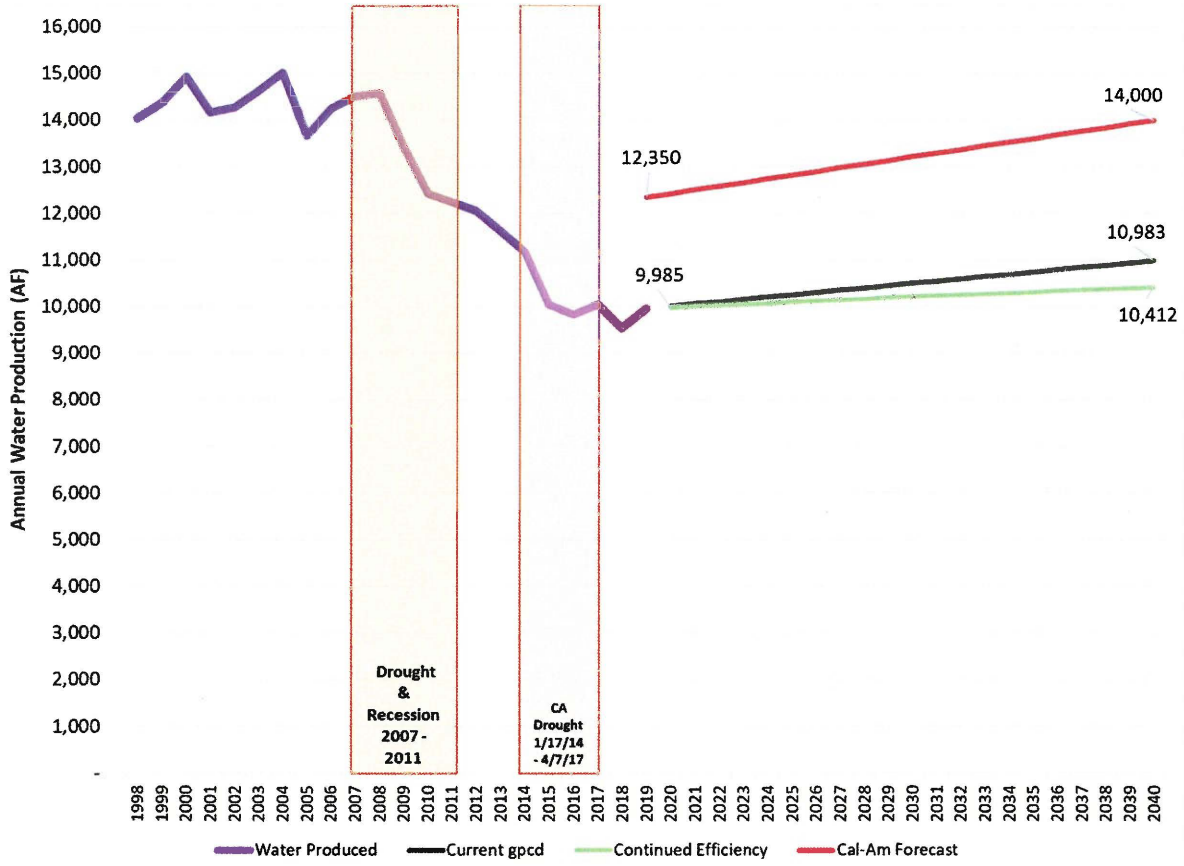


Figure 6: WaterDM forecasts of future average annual production

Furthermore, Ms. Sobeck's letter does not acknowledge that Cal-Am has acquired rights to new water supplies (i.e., Aquifer Storage & Recovery (ASR), SWRCB Permit 21330, Sand City desalinated water, as well as the base Pure Water Monterey project advanced treated water). These supplies in conjunction with a reduced Carmel River supply and native groundwater from the adjudicated Seaside Groundwater Basin, will enable Cal-Am to meet current demands and achieve compliance with the CDO's diversion limits by December 31, 2021.

In summary, contrary to the unsupported argument in Ms. Sobeck's letter, the best available evidence shows:

- The Coastal Commission Staff Report's supply and demand conclusions are consistent with the best available evidence.
- Recent data showing a continued decline in demand on the Monterey Peninsula is consistent with regional and statewide trends.
- Reduced per capita demand is the new normal, not an aberration.
- Pure Water Monterey Expansion, when coupled with supplies in year 2022, can provide sufficient annual water supplies to meet future demand (based on AMBAG growth projections) for more than the next twenty years, and which could allow the moratorium on new connections to be lifted as soon as 2022.

Most importantly, Cal-Am's own supply and demand data demonstrate it can comply with the CDO deadline of December 31, 2021, with water supply sources then in place. Therefore, in light of the Water Board's legislative mandates and policies, the Water Board should encourage the Coastal Commission to address—not ignore—this new information in evaluating whether there are future supply alternatives that could reduce the desalination project's significant unmitigated adverse impacts on Coastal resources and communities.

Cal-Am's Over-Sized Desalination Proposal Is Not Consistent with the Coastal Act; the Coastal Commission Lacks the Information Required to Consider Overriding these Conflicts.

Among the MPWSP's many significant and unavoidable adverse environmental impacts, it is undisputed that Cal-Am's desal project would permanently destroy over seven acres of rare coastal dune habitat within the City of Marina (City) that is home to multiple endangered species and is protected as primary habitat under Marina's Local Coastal Program (LCP) and which constitutes Environmentally Sensitive Habitat Area (ESHA) under the Coastal Act. Given this reality and the project's numerous inconsistencies with the City's LCP, the Commission cannot approve the project under the Coastal Act without substantial evidence to support *all three* required override findings for a "coastal-dependent industrial facility" under Section 30260[7] of the Public Resources Code. The record to date, in contrast, only supports the conclusion that the Project cannot meet any of the criteria for an override of the Coastal Act and the City's LCP.

(1) The proposed MPWSP slant wells do not meet the definition of a "coastal-dependent industrial facility."

(2) Feasible alternatives are available that would avoid the project's inconsistencies with the City's LCP and the Coastal Act, which are not more environmentally damaging, but would instead avoid the Project's significant adverse environmental impacts.

(3) Not issuing a CDP will not adversely affect the public welfare but would instead promote the public welfare and the Commission's environmental justice policies.

(4) The Project's adverse environmental impacts are not mitigated to the maximum extent feasible nor are they "fully mitigated."

Ms. Sobeck's letter incorrectly asserts that "these issues have already been resolved by the CPUC in its environmental review" during its "consideration of evidence and testimony over a multi-year adjudicative proceeding." She is mistaken. While the CPUC's EIR

[7] Section 30260 provides that "where new or expanded coastal-dependent industrial facilities cannot feasibly be accommodated consistent with other policies of [the Coastal Act], they may nonetheless be permitted in accordance with this section and Sections 30261 and 30262 if (1) alternative locations are infeasible or more environmentally damaging; (2) to do otherwise would adversely affect the public welfare; and (3) adverse environmental effects are mitigated to the maximum extent feasible."

acknowledged that the MPWSP's slant wells are sited directly in ESHA (FEIR, pp. 4.6-197, 4.6-235), it did not – and could not – decide whether the City or the Coastal Commission would approve the MPWSP in light of the Coastal Act's ESHA protections or consider alternatives that would avoid impacts to ESHA (such as expansion of the PWM project or other alternatives). Rather, the CPUC stated its mistaken belief that these conflicts did not constitute a feasibility issue because the Coastal Commission had previously determined that a temporary test slant well on the project site did not violate the Coastal Act's policy pertaining to ESHA. (FEIR, Appendix C, p. C-67.) What the Coastal Commission determined regarding the temporary test well was that it could exercise its discretion to approve the test well despite inconsistencies with the City's LCP, using the "override" provision in the Coastal Act. (California Coastal Commission ("CCC") Final Findings, November 12, 2014, p. 58.) In fact, the Coastal Commission informed the CPUC in its comments on the DEIR that the types of development allowed in ESHA are "extremely limited" and it recommended that the CPUC "thoroughly evaluate and consider" alternatives that comply with the Coastal Act's ESHA restrictions, which recommendation the CPUC did not heed. (Compare FEIR, pp. 8.4-3 - 8.4-4 [CCC Comments on DEIR] with FEIR, pp. 8.4-25 [CPUC Response].)

Nor does the Coastal Commission lack jurisdiction to revisit the CPUC's conclusions regarding supply and demand, alternatives, and the project's groundwater impacts[8] as Ms. Sobeck suggested in footnote 2 of her letter, where the contention is that Section 30231 does not apply. That is simply not correct. Section 30231 can readily be interpreted to apply in this case since there will be discharges from the project to the Marine Sanctuary waters and impacts on public health. Furthermore, both the Coastal Act and case law interpreting it expressly and clearly hold that the Coastal Commission has broad discretion in evaluating the project's impacts and it is not bound by decisions adopted by other government entities in making its own evaluation of the impacts of projects within the Coastal Zone. In adopting the Coastal Act, the Legislature expressly directed: "This division shall be liberally construed to accomplish its purposes and objectives." (Pub. Resources Code, § 30009.). As the Court of Appeal noted in *Gualala Festivals Committee v. California Coastal Com.* (2010) 183 Cal.App.4th 60, 70:

> "The [A]ct is to be liberally construed to accomplish its purposes and objectives." [Citation] "Such a broad interpretation is consistent with the ***legislative policy of the Act found in section 30001.5 and the broad grant of power to the agency to adopt any regulations or take any action it deems reasonable and necessary to carry out its provisions.*** (§ 30333.)" [Citation] (emphasis added.)

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[8] While beyond the scope of this letter, MCWD does not believe the Water Board had a complete set of information in positing that there is not significant new information relating to groundwater to warrant additional modeling of the project's potential impacts. Attached to this letter are comments from three experts supporting the Coastal Commission's independent hydrologist's determinations that additional modeling is required. (Attachment 2.) The attached comments explain why completing the revised modeling is so critical to determining the project's potential impacts on groundwater and groundwater dependent ecosystems (GDEs). MCWD welcomes the opportunity to address any questions the Water Board may have regarding these issues.

In light of this authority, the Coastal Commission would expose itself to significant liability if it acquiesced in the improper suggestions of Ms. Sobeck's letter and ignored the recommendations of its staff, independent experts, and the information in the record and rushed to consider approval of the project. The likely litigation that would follow such a rushed and incomplete determination would only further delay implementation of any long-term water source that would allow the moratorium to be lifted.

The Desalination Proposal Faces Significant Delays, including Additional Legal and Permitting Hurdles, so Pure Water Monterey Expansion Should Proceed.

Finally, MCWD is very concerned that Cal-Am is manipulating the Water Board as a shield to avoid Cal-Am's own responsibility to the CPUC to consider and move forward with Pure Water Monterey Expansion. Fourteen months ago, the City denied Cal-Am's application for a CDP for its MPWSP slant wells. Now, with no end to the ensuing delay in sight, Cal-Am still refuses to pursue the designated back-up plan. It vigorously urges the Water Board, the Coastal Commission, the Monterey One Water board, and the public to ignore its diversified water portfolio and the last five years of demand data – including its sworn testimony to the CPUC in 2019 regarding its own current annual demand projections. In fact, Cal-Am has already used Ms. Sobeck's May 8, 2020 letter to assert that it is the Water Board's opinion that the Coastal Commission should promptly resolve the CDP application *in Cal-Am's favor* and that the Water Board supports Cal-Am's argument that the PWM Expansion should not be considered as an alternative because it purportedly cannot provide a sufficient additional long-term supply. (See Attachment 3, letter of Cal-Am President, Rich Svindland, to M1W Board, May 9, 2020, p. 5.)

We find the Water Board's apparent efforts to advocate for Cal-Am's desal project and its seeming disdain for the PWM Expansion extremely troubling and perplexing given that California, including under Water Board policy, favors advanced-treated recycled water as a sustainable source of supply. Moreover, SGMA requires affirmative steps for the protection and restoration of the state's groundwater resources. However, Cal-Am's desalination project would thwart both of these important objectives, which are also instrumental to achieving broader statewide goals of sustainability and climate resilience. Efforts to boost Cal-Am's over-sized and over-priced desalination project ignore the "New Normal" in urban water management in California, i.e., the State's urban water conservation mandates coupled with water purveyor funding and implementation of additional conservation measures are working, and they have resulted in steep, permanent decreases in per capita urban water consumption across the state.

We also fail to see the logic behind Ms. Sobeck's statement that: "In the State Water Board's observation, further Coastal Commission delay will also limit Cal-Am's ability or willingness to consider and pursue, let alone fund and construct, other short-term or long-term water supply alternatives to terminate unauthorized diversions from Carmel River as required no later than December 31, 2021." The project is already delayed to the point that it will not

be in service by December 31, 2021 or any time soon thereafter. However, Cal-Am's ability to comply with the CDO using its available resources is entirely in its own hands. Moreover, as discussed above, provided Cal-Am prudently manages its existing lawful resources, no CDO extension should be required.

Notably, Ms. Sobeck's statement ignores the significant obstacles and delays that Cal-Am's desal project already faces, in addition to its unsuccessful CDP applications, including:

- **Monterey Superior Court Has Stayed County's Approval of Desal Plant** - In October 2019 the Monterey County Superior Court issued an injunction halting construction outside the Coastal Zone on the desalination plant.
- **New Groundwater Rights Lawsuit** - The City of Marina filed suit in May 2020, to enforce the strict groundwater extraction provisions applicable to the CEMEX site under a 1996 agreement among it, CEMEX (the current owner of the slant well site), MCWRA, and MCWD; the City's suit seeks an injunction, which would bar any slant well development for the duration of the suit; if the City prevails, the project intake wells could not located at the CEMEX site.
- **No Application for Outfall Permits** -- Cal-Am has not applied for the required Coastal Development Permits for the outfall liner from the City of Marina and Coastal Commission as required under the CPUC's Mitigation and Conditions of Approval. [9]
- **No Approval or Application for Pipeline Needed to Transport Desal Water** -- New information shows that Cal-Am still needs to apply to the CPUC for a permit to construct a major pipeline to transport desal water.
- **NOAA/MBNMS has not issued a ROD for the MPWSP EIS**. This federal approval, if it happens, would be subject to legal challenge.

If this were not enough, Monterey Peninsula residents as well as Marina/Ord residents oppose Cal-Am's oversized and overpriced desalination project and support PWM Expansion as the affordable and environmentally superior alternative. Notably, public testimony at the November 2019 Coastal Commission meeting was overwhelmingly opposed to the desalination project. Similarly, written public comments for the April 2020 Monterey One Water meeting overwhelmingly favored certifying the Supplemental Environmental Impact Report and proceeding with Pure Water Monterey Expansion. Moreover, in November 2018, Monterey Peninsula voters approved Measure J, pursuant to which MPWMD has begun the process of acquiring public ownership of Cal-Am's Monterey system.

Thus, rather than advancing a feasible long-term water supply solution that would permit a prompt lifting of the moratorium on new connections, as the Monterey Peninsula residents and business want and deserve, Ms. Sobeck's letter provides cover for Cal-Am to

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[9] The Coastal Commission cannot evaluate, much less approve, Cal-Am's pending approvals without this information to determine whether it can approve an override (as discussed above).

refuse to investigate PWM Expansion or any other alternatives to its desalination project with slant wells constructed in ESHA as currently proposed. Importantly, when the CPUC approved Cal-Am's application to construct the project and collect the cost in rates, it also directed Cal-Am to explore the feasibility of implementing Pure Water Monterey Expansion as a back-up plan, in the event the desalination project encountered significant difficulty or delay. In March of 2019, Cal-Am reported to the CPUC that its desalination project was on track so it would not be exploring Pure Water Monterey Expansion. In fact, the desalination project has now encountered multiple significant delays as noted above. It will not be delivering water by the Dec. 31, 2021 CDO deadline or likely at any time within the next five years. Nonetheless, current data and analysis demonstrates that no extension of the CDO will be required, as discussed above.

In sum, Cal-Am's desal proposal is inconsistent with multiple Coastal Act policies and cannot be permitted unless: there are no feasible alternatives, the project is fully mitigated, *and* it is in the public interest. As Coastal Commission staff has correctly determined on the record before it in November, the project cannot meet any of these requirements, much less all of them as required for approval. Even with additional time to further the investigate remaining issues its staff has identified, there is no guarantee of a different outcome. In light of the fact that the expansion of Pure Water Monterey would provide a sufficient long-term water supply in conjunction with Cal-Am's existing legal water supplies, MCWD nonetheless believes it is of critical importance that the Coastal Commission meet its mandate to ensure any MPWSP approvals meet the requirements of the Coastal Act and other State laws even if that means the Commission needs to delay consideration of the MPWSP until after its August 2020 meeting.

Therefore, we request the Water Board withdraw Ms. Sobeck's letter and immediately issue a new letter clarifying that the Board neither supports nor discourages Cal-Am's desalination proposal and that the SWRCB recognizes the appropriate jurisdiction of the Coastal Commission in its review of the project under the Coastal Act. Furthermore, we suggest the Board consider encouraging further review and potential approval and implementation of the PWM Expansion, consistent with its recycled water policies and in light of the multiple delays and difficulties encountered by the desalination proposal. Thank you for your prompt attention to this critical matter. If you have any questions regarding this letter or its contents, please contact our General Manager Keith Van Der Maaten or our legal counsel.

Very truly yours,

Thomas P. Moore

Thomas P. Moore
President, MCWD Board of Directors

Attachments

Attachment 1 – Water DM Report
Attachment 2 – EKI, Hopkins and GeoHydros comments on Water Board letter regarding Weiss proposed scope of work
Attachment 3 – Cal-Am letter of May 9, 2020 (attaching Sobeck letter)

CCs:

John Ainsworth, Executive Director, California Coastal Commission
Alison Dettmer, Senior Deputy Director, California Coastal Commission
Kate Huckelbridge, Deputy Director of Energy, Ocean Resources, & Federal Consistency, California Coastal Commission
Tom Luster, Senior Environmental Scientist, California Coastal Commission
Layne Long, City Manager, City of Marina
Board of Directors, Monterey One Water
Paul Sciuto, General Manager, Monterey One Water
Board of Directors, Monterey Peninsula Water Management District
David Stoldt, General Manager, Monterey Peninsula Water Management District

CORRESPONDENCE FROM MARINA COAST WATER DISTRICT TO STATE WATER RESOURCES CONTROL BOARD MEMBERS

ATTACHMENT 1

Expert Report and Recommendations of

Peter Mayer, P.E.

Regarding Water Supply and Demand in the California American Water Company's Monterey Main System

Prepared for:

The Marina Coast Water District

April 21, 2020

WaterDM
DEMAND MANAGEMENT

WATER DEMAND MANAGEMENT
1339 Hawthorn Ave.
Boulder, CO 80304
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INTRODUCTION

My name is Peter Mayer. I am the Principal of Water Demand Management, LLC (WaterDM) based in Boulder, Colorado.

WaterDM is a water consulting firm providing expertise and services in the following areas:

- Municipal and industrial water use, research, and analysis
- Water conservation and demand management planning and implementation
- Integrated water resources planning
- Water loss control
- Analysis of municipal water rates and rate structures
- Drought preparedness and response
- Demand forecasting
- Evaluation of changes in demand
- Statistical analysis of water demand and modeling
- Meter technology implementation
- Meter and service line sizing

I have a Master of Science in Engineering (1995) from the University of Colorado, Boulder and a Bachelor of Arts (1986) from Oberlin College. I am a registered and licensed Professional Engineer in Colorado.

I am a civil engineer and the focus of my career for over 25 years has been on urban water systems and demand management including conservation planning and implementation, rate analysis, water demand research, demand forecasting, drought preparation, utility metering, and water loss control.

Since 1995, I have served as a consultant and researcher to urban water providers, US EPA, the Water Research Foundation, the Alliance for Water Efficiency, state governments, and municipal and industrial water users in the US and Canada.

Over my 25 -year engineering and consulting career, I have worked with and advised hundreds of water providers and organizations such as the California Department of Water Resources; Tucson Water; New York City Water Board; the Colorado Water Conservation Board; Hilton Head, SC; Denver, CO; Scottsdale, AZ; San Antonio, TX; Metropolitan Water District of Southern California; US EPA; the US Department of Justice; the Alliance for Water Efficiency and many others. I have served as the principal investigator and lead or co-author of numerous national and state-level water demand research studies including: Residential End Uses of Water (2016, 1999); Assessing Water Demand Patterns to Improve Sizing of Water Meters and Service Lines (2020); Peak Demand Management (2018); Colorado Water Plan and Update (2010, 2018); National Submetering and Allocation Billing Program Study (2004); Water Budgets and Rate Structures (2008); Commercial and Institutional End Uses of Water (2000); and many others.

I was Chair of the subcommittee and lead author of the American Water Works Association (AWWA) M22 Sizing Water Service Lines and Meters 3rd. ed. (2014). I am co-author of the AWWA G480 Water Conservation Standard and co-author of the Colorado Best Practices Guidebook for Municipal Water Conservation (2010). I served as Trustee of the AWWA Water Conservation Division from 2001-2007 during which time I worked with EPA to create the WaterSense™ program and helped establish the Alliance for Water Efficiency. I have been a Senior Technical Advisor to the Alliance for Water Efficiency since 2007. I am a member of the American Water Works Association, the Alliance for Water Efficiency, the American Water Resources Association, the American Society of Civil Engineers (ASCE) and the Colorado River Water Users Association.

In 2016, I testified as an expert witness on municipal and industrial water use at the US Supreme Court (FL v. GA, 142 Original) on behalf of the State of Georgia.

A copy of my curriculum vitae is attached to this report.

SCOPE OF INVESTIGATION

I was retained by the Marina Coast Water District to review and respond to the recommendations in the staff report of the California Coastal Commission related to Application 9-19-0918 / Appeal A-3-MRA-19-0034 (California American Water Co.). Specifically, I was asked to investigate if the California-American Water Company ("Cal-Am") has a feasible, reasonable, and reliable alternative to its proposed Monterey Peninsula Water Supply Project ("MPWSP") desalination project that will allow it to reduce its water withdrawals from the Carmel River in accordance with provisions of a cease-and-desist order from the State Water Resources Control Board. I was also asked to respond to the analyses and opinions contained in reports prepared by the Monterey Peninsula Water Management District (MPWMD) and a peer review report prepared by Hazen and Sawyer as they relate to future water supply and water demand of the Cal-Am Monterey Main system.

My opinions are based on my understanding of the information available as of the date of this report and my experience evaluating municipal and industrial water supplies and demands and conservation measures. In forming my opinions, I also considered the documents, testimony, and other materials listed in Appendix A. Should additional information become available to me, I reserve the right to supplement this report based on any additional work that I may conduct based on my review of such materials.

SUMMARY OF OPINIONS AND CONCLUSIONS

I have reviewed the following reports and documents:

- *Staff Report: Recommendation on Appeal Substantial Issue & De Novo Hearing and Consolidated Coastal Development Permit, California Coastal Commission, Application 9-19-0918 / Appeal A-3-MRA-19-0034 (California American Water Co.).* (Staff Report) (10-28-2020)

- *Supply and Demand for Water on the Monterey Peninsula prepared by David Stoldt, General Manager, MPWMD.* (MPWMD Report) (3-13-2020, 12-3-2019, and 9-16-2019)

- *California American Water Peer Review of Supply and Demand for Water on the Monterey Peninsula prepared by Kevin Alexander and Cindy Miller, Hazen and Sawyer* (Hazen Report) (1-22-2020)

- *MPWMD's March 6 response to the Hazen Report including supporting exhibits prepared by David Stoldt (*MPWMD Response) (3-6-2020)

As result of my review of these and other related and relevant documents and reports, my own independent analysis, and my expertise in municipal and industrial water use, water management, and engineering, I offer the following opinions and conclusions:

a) California Coastal Commission staff have correctly concluded that the Pure Water Monterey Expansion project provides an available, feasible[1] water supply alternative for Cal-Am.

The Staff Report concludes, *"the Commission finds that there is a feasible and less environmentally damaging alternative that would meet all or most of the proposed project's objectives in a timely manner*." I concur with this finding as it relates to the feasibility of the Pure Water Monterey Expansion project and the forecast adequacy of the future water supply provided by the combination of sources available to Cal-Am. I offer no opinion on the environmental components of the Staff Report.

I conducted an analysis of the historic demand trends in the Cal-Am service area and forecast growth in the service area. I developed an independent demand forecast based on the Associated Monterey Bay Area Governments (AMBAG) 2018 forecast of future population growth for the Cal-Am service area. My analysis supports the conclusions in the Staff Report projecting 2040 demands in the Cal-Am service area to be much lower than the California Public Utility Commissions (CPUC) certificating decision.

[1] Coastal Act Section 30108 states "'Feasible' means capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors.".

With the addition of the Pure Water Monterey Expansion project providing an additional 2,250 acre-feet per year of supply to Cal-Am, the combination of Cal-Am's available and reliable water resources provides sufficient supply potential to meet annual future demand in 2040 by more than 1,200 acre-feet (an 11.9% surplus).

The CPUC, in its September 2018 Decision accepted that Cal-Am's "current" demand was 12,350 acre-feet per year and the future demand in 2040 will be approximately 14,000 acre-feet per year.[2] This appears outdated and therefore unreasonably high based on my analysis, the MPWMD Report, and Cal Am's own most recent forecasts. Over the most recent five-year period, 2015 – 2019, water demand in the Monterey Main service area averaged 9,885 AF per year. Cal-Am, in its most recent General Rate Case Application, forecast demand for 2021 and 2022 at 9,789 acre-feet per year.[3] Thus Cal Am's own most recent forecast estimates 2022 demand to be 20% lower than "current" demand in the CPUC decision. Independent estimates of demand developed for the MPWMD Report and developed separately for this report, align closely with Cal Am's recent rate case forecast.

My analyses show that the staff of the California Coastal Commission correctly utilized more recent information on available future water supplies and likely future demands in its analysis. I agree with the staff findings that concluded there exists an available, feasible water supply alternative to Cal-Am's proposed desalination project.

b) Cal-Am's per capita use is likely to decrease between now and 2040 due to ongoing conservation program implementation, conservation pricing, and statewide policy directives to reduce indoor and outdoor use and improve utility water loss control measures.

The Monterey region has been regarded as a model for water conservation programs for many years. The Monterey Peninsula Water Management District implements an array of effective demand management policies and programs that are likely to extend water efficiency gains.[4] Cal-Am implements an active water conservation program including a steeply inclining block rate pricing structure and customer incentives for installing drought tolerant landscapes and high-efficiency fixtures and appliances. Cal-Am also implements a rigorous utility-scale water loss control program aimed at reducing real losses in its distribution system. Regional development regulations ensure that all new and remodeled buildings are equipped with high-efficiency fixtures.

Cal-Am acknowledged the level of effort, significance, and impact of this conservation program in recent testimony. "California American Water has expended significant effort and resources

[2] CPUC Decision 18-09-017, September 13, 2018

[3] California-American Water Company. 2019. (U-210-W) Update to General Rate Case Application, A.19-07-004.

[4] California-American Water Company. 2019. (U-210-W) Update to General Rate Case Application, A.19-07-004. Direct Testimony of Stephanie Locke. (pp.7-8)

to encourage conservation in the Monterey County District through a variety of methods. Most important has been the tiered rate design, which features steeply inclining block rates to encourage efficient water use." – Direct Testimony of Christopher Cook, July 1, 2019.[5]

Mr. Cook's testimony is backed up by testimony from Stephanie Locke, Water Demand Manager for the Monterey Peninsula Water Management District, and the significant financial resources Cal-Am continues to apply toward water conservation in the region. In its most recent General Rate Case, Cal-Am proposed a $1.845 million three-year budget ($615,132 per year) to fund water conservation programs in the Monterey service area.[6] Locke's testimony notes that many of the conservation programs budgeted in the General Rate Case and in the prior Cal-Am rate filings focus on reductions in outdoor water use, on reductions in demand areas that have not previously been extensively targeted, and on maintaining the current low water use fixtures that have been installed to date.[7]

Cal-Am's local efforts are in parallel to broader policy measures at the state level, designed to further increase efficiency. The State of California has implemented a series of laws and directives to ensure future water efficiency across the state including Assembly Bill 1668 and Senate Bill 60 which effectively mandate an ongoing reduction in per capita use. Cal-Am's continued compliance with these regulations and its active efforts to reduce customer water demand in the future are likely to gradually further decrease per capita water use across the service area.

I have prepared two demand forecasts for the Cal-Am Monterey Main service area with growth rates based on AMBAG's anticipated population increase in 2040 and the water usage of each sector – residential, commercial, public and re-sale and non-revenue water. In each forecast, demand in each of Cal-Am's sectors is increased each year proportionally to the increase in population. The "Current gpcd" forecast assumes the current rate of daily per person water usage (based on annual production which includes residential, commercial, water loss, irrigation, etc.) continues into the future, without any increases in efficiency or conservation reductions. The "Continued efficiency" forecast includes the impacts of ongoing efficiency improvements by applying an indoor reduction factor.

Under both forecasts, the "Current gpcd" and "Continued efficiency", Cal-Am will have sufficient and reliable water supplies to meet 2040 demand with the Pure Water Monterey Expansion. Even in the highly unlikely event that Cal-Am achieves no additional water efficiency reductions over the next 20 years, my analysis shows the portfolio of available reliable supplies will exceed demand.

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[5] California-American Water Company. 2019. (U-210-W) Update to General Rate Case Application, A.19-07-004. Direct Testimony of Christopher Cook. (p.10)

[6] California-American Water Company. 2019. (U-210-W) Update to General Rate Case Application, A.19-07-004. Direct Testimony of Stephanie Locke. (p.9)

[7] California-American Water Company. 2019. (U-210-W) Update to General Rate Case Application, A.19-07-004. Direct Testimony of Stephanie Locke. (p.10)

c) Cal-Am's existing peak capacity is sufficient to meet anticipated future maximum daily demand (MDD) and peak hour demand (PHD) and Cal-Am has yet to avail itself of low/no-cost peak demand management measures that could reduce future peaks, if necessary.

Peak capacity planning is typically based on metered measurements of peak day and peak hour production maintained by the water provider. To my knowledge, Cal-Am does not publicly report its actual peak day or peak hour demands for the Monterey system. Rather than producing actual measurements, Cal-Am relies on a calculated approach to estimate future peak day usage. This approach was described and carried out in both the MPWMD Report and the MPWMD response, using slightly different assumptions.

Analyses in the MPWMD Report and MPWMD Response show that Cal-Am has the ability to produce 19.41 million gallons per day and 0.81 million gallons per hour. Calculations of future Maximum Daily Demand (MDD) and Peak Hour Demand (PHD) show that Cal-Am must support an MDD of 19.01 MG/day and a PHD of 0.792 MG/hour (based on a July 2012 maximum month demand). Revised analysis in the MPWMD Response using slightly different demand data showed that Cal-Am must support an MDD of 16.13 MG/day and a PHD of 0.672 MG/hour (based on an August 2014 maximum month demand). Under either demand assumption, from an infrastructure standpoint alone, Cal-Am has sufficient capacity to meet future peak day and peak hour demands even under the highly conservative assumptions embedded in the calculated approach.

If managing the peak day or peak hour becomes an issue in the future, Cal-Am has several options it has yet to implement. From an infrastructure standpoint, Cal-Cam could increase pumping capacity and add finished water storage. Cal-Am could also choose to implement low-cost peak day and peak hour demand management measures such as prohibiting automatic irrigation at certain times or on certain days or by re-assigning irrigation days of the week to distribute the summertime peak. Sophisticated approaches using smart irrigation controllers could also be employed to ensure optimal irrigation scheduling (Mayer et. al. 2018).

d) The Hazen Report contains numerous errors, mischaracterizations, and incorrect conclusions regarding Cal-Am's likely demand in 2040 and the availability and reliability of future water supply sources.

The Hazen & Sawyer peer review report is rife with misleading statements leading to incorrect conclusions regarding California codes, Cal-Am's likely water demand in 2040, and the availability and reliability of future water supply sources. MPWMD's March 6 response to the Hazen Report identifies line by line these errors and misleading statements. In this report I focus on the following problems:

- The Hazen Report repeatedly confuses and conflates peak demand and annual demand planning requirements and offers numerous misleading statements about California codes and standards and AWWA water planning guidance.

- The Hazen Report makes incorrect statements about water conservation programs and planning without offering data or analysis and states that per capita water use will increase substantially, despite Cal-Am's demand management efforts and prevailing state policy and regulations.

- The Hazen Report asserts that "current" demand in the Cal-Am Main System must be assumed to be 12,350 acre-feet per year. This is far higher than actual current demand and contradicts Cal-Am's own most recent General Rate Case filing which forecasts 2022 demand to be 9,789 acre-feet per year.

- The Hazen Report mischaracterizes the likely future reliability of water supplies available to Cal-Am and in particular the beneficial impacts of the ASR system over time.

- The Hazen Report reaches erroneous conclusions regarding the reliability of future water supplies based on inflated hypothetical demands, misleading statements about planning requirements, and inaccurate characterization of future water supply reliability.

Analysis and Recommendations

Overview

California-American Water Company proposes to construct and operate the Monterey Peninsula Water Supply Project to provide potable water from desalinated water for customers in its service area in the Monterey Peninsula region. One of the main project purposes is to provide an alternative water supply for Cal-Am that will allow it to reduce its water withdrawals from the Carmel River system in accordance with provisions of a cease-and-desist order from the State Water Resources Control Board.[8]

The California Public Utilities Commission has regulatory authority over Cal-Am and its infrastructure. In 2018 the CPUC approved Cal-Am's application to construct and operate the desalination project. The CPUC approved a smaller overall project than Cal-Am had initially proposed, because of the availability of water from another project – the Pure Water Monterey recycling and aquifer storage and recovery project. The CPUC found the two projects together could produce more than enough water to meet Cal-Am's expected water demands.

The California Coastal Commission also must review and approve the proposed desalination project under the California Coastal Act because portions of the project are within the coastal zone with the potential to impact environmentally sensitive habitat and other resources. The desalination plant itself would be located outside the coastal zone at a site about two miles inland within the jurisdiction of Monterey County, but components extend through the coastal zone to the Pacific Ocean and the project cannot be constructed without a Coastal Commission approved coastal development permit.[9]

The November 2019 California Coastal Commission staff review considered new information about water supplies and demands that were not available at the time of the 2018 CPUC decision. The Coastal Commission staff found that there is less need for water from new sources than previously determined. Significantly, another project alternative – the expansion of the above-referenced Pure Water Monterey project – has progressed from being too "speculative" for the CPUC to consider as a viable alternative, to now being a feasible, well-developed alternative. This Pure Water Monterey Expansion would occur entirely outside of the coastal zone and would cause far fewer environmental impacts than Cal-Am's proposed project.

[8] The original order, issued in 1995, determined that Cal-Am was extracting over 14,000 acre-feet per year from the river when it had a legal right to 3,376 acre-feet. The Board determined that these excess withdrawals were adversely affecting the river's population of federally-threatened Central Coast steelhead. The Board ordered Cal-Am to develop or purchase alternative water supplies so it could end its excess withdrawals. Subsequent orders issued by the Board have included additional requirements, with Cal-Am currently required to end its excess withdrawals and be able to rely on a new source of water by December 2021.

[9] California Coastal Act, Sections 30108, 30260

The recently developed Pure Water Monterey Expansion along with revised water supply and demand information were considered and included in the Staff Report[10] of October 28, 2019. The Staff report recommended denying Cal-Am's permit request to construct elements of the desalination project in the coastal zone due to its inconsistency with the Local Coastal Program's habitat protection and hazards policies, its failure of the three tests of Coastal Act Section 30260, and its failure of the alternatives consideration of Section 30233.

The California Coastal Commission has yet to approve or deny Cal-Am's proposal.

Coastal Commission 2019 Staff Report

Cal-Am's proposed desalination project is subject to the Coastal Act and the City of Marina Local Coastal Plan that require the California Coastal Commission to determine among other things, "whether there is a feasible and less environmentally damaging alternative to the proposed project".

The Staff Report provides the Coastal Commission staff's assessment of the proposed project's conformity to the City of Marina Local Coastal Plan (LCP) and Coastal Act's public access and recreation policies for purposes of the Commission's *de novo* review. The report also provides staff's assessment of the project's conformity to relevant Coastal Act provisions for those project components proposed within the Commission's consolidated permit jurisdiction.

Inconsistent Project

The Staff Report recommended that the California Coastal Commission deny both the *de novo* and consolidated permit aspects of the proposed project because the proposed desalination project is inconsistent with the Coastal Act and/or Local Coastal Plan including the following.[11]

1. **Environmentally Sensitive Habitat Areas** (ESHA) - The proposed project could adversely affect up to about 35 acres of ESHA. The project is inconsistent with requirements of both the City LCP and the Coastal Act that allow uses in ESHA only if they are dependent on those habitat resources.
2. **Coastal hazards** - The proposed project's well field would be sited at a location where it could be adversely affected by coastal erosion and the associated inland movement of foredunes that could bury the well heads.
3. **Protection of coastal water quality** - The proposed project would involve placement of fill in coastal waters in the form of new or modified outfall diffusers and monitoring buoys. In this case there is a feasible and less damaging alternative to the proposed fill, so the project would not conform to the alternatives requirement of Section 30233.

[10] Staff Report: Recommendation on Appeal Substantial Issue & De Novo Hearing and Consolidated Coastal Development Permit, California Coastal Commission, Application 9-19-0918 / Appeal A-3-MRA-19-0034 (California American Water Co.). (p 7)

[11] Staff Report (pp. 4-5)

Three-Part Test for an Inconsistent Project

Coastal Act Section 30260, which is incorporated into the Local Coastal Plan, provides that the Coastal Commission may approve a permit for a coastal-dependent facility that is otherwise inconsistent with other Coastal Act Chapter 3 policies if it meets a three-part test. The three test components that must be met are:

1) Alternative locations are infeasible or more environmentally damaging
2) Denial of the permit would not adversely affect the public welfare
3) The project's adverse effects are mitigated to the maximum extent feasible

The Staff Report addresses each of these three tests as outlined below.[12] The Staff Report concluded that the Cal-Am's proposed desalination project failed each test.

Test 1: Are alternative locations infeasible or more environmentally damaging?

The Staff Report states that, "another project, known as the Pure Water Monterey Expansion, would provide enough water to meet Cal-Am's needs for the next twenty years or more and would cause fewer adverse environmental impacts, including few, if any, on coastal resources, since it would be located outside the coastal zone."[13]

The Staff Report recommends the Commission find that Cal-Am's proposed project does not meet this first test of Section 30260, since there is a feasible, less environmentally damaging alternative to the proposed project that could be constructed in a different location.

Test 2: Would denying the project adversely affect the public welfare?

The Staff Report agrees there is a "clear need" for additional water supply to serve the Monterey Peninsula region and concludes that there is a "feasible and less environmentally damaging alternative that can supply sufficient water to allow Cal-Am to meet its legal obligations and to supply its customers for the coming decades."[14]

The Staff Report concluded that the costs of the proposed desalination project are substantially higher than other water sources, including the PWM Expansion, and would be borne by ratepayers and visitors to this coastal area.

From an environmental justice perspective the Staff Report notes, "Several communities of concern would be burdened by Cal-Am's project due to the higher costs for water it would impose or due to expected or potential impacts resulting from the construction and operation of some project components in areas of sensitive habitat or that provide public access to the shoreline."[15]

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[12] Staff Report (pp. 5-6)

[13] Staff Report (p.6)

[14] Staff Report (p.6)

[15] Staff Report (p.6)

The Staff report concluded that Cal-Am's proposed desalination project would "result in adverse effects to coastal resources – for example, sensitive habitat areas – that would diminish the public benefit from those coastal resources. The alternative project would entirely avoid those coastal resource impacts."[16]

Test 3: Are the project impacts mitigated to the maximum extent feasible?

Here the Staff Report concludes that "because the proposed project does not meet either of the first two tests of Section 30260, there is no need to determine whether it meets the third test. Nonetheless, Commission staff have determined that the proposed project's impacts are not mitigated to the maximum extent feasible. For example, the project could adversely affect up to several dozen acres of sensitive habitat, but the mitigation proposed thus far would result in a net loss of that sensitive habitat. Similarly, the proposed project would result in adverse effects to coastal water quality, but those effects, and the measures needed to avoid or minimize them, are not yet known."[17]

Feasible Alternative that Meets All or Most Objectives

The November 2019 California Coastal Commission staff review considered new information about water supplies and demands that were not available for the 2018 CPUC decision. The Coastal Commission staff found that there is less need for water from new sources than previously determined. Significantly, another project alternative – the Pure Water Monterey project – has progressed from being too "speculative" for the CPUC to consider as a viable alternative, to now being a feasible, well-developed alternative. This Pure Water Monterey Expansion would occur entirely outside of the coastal zone and would cause far fewer environmental impacts than Cal-Am's proposed project.

The Pure Water Monterey Expansion along with revised water supply and demand information were considered and included in the Staff Report of October 28, 2019 which concluded based on data and analyses, "that there is a feasible and less environmentally damaging alternative that would meet all or most of the proposed project's objectives in a timely manner."[18]

This conclusion relies on three core components:

1) A feasible alternative exists.[19]
2) The alternative is less environmentally damaging.
3) The alternative would meet all or most of the proposed project's objectives in a timely manner.

[16] Staff Report (p.6)

[17] Staff Report (pp.6-7)

[18] Staff Report (p. 7)

[19] The Coastal Act Section 30108 states "'Feasible' means capable of being accomplished in a successful manner with a reasonable period of time, taking into account economic, environmental, social, and technological factors."

The Staff Report relied on analyses and opinions contained in reports and applications prepared by the Monterey Peninsula Water Management District (MPWMD) as they relate to future water supply and water demand of the Cal-Am on the Monterey Peninsula.

Cal-Am Monterey System

The Cal-Am Monterey water system serves most of the population on the Monterey Peninsula, located along the coast of Central California. The Monterey Main system encompasses greater than 90-percent of the Monterey County District service area and is the area to be served with the proposed desalination plant. The Monterey Main system and includes the incorporated cities of Carmel-by-the-Sea, Del Rey Oaks, Monterey, Pacific Grove, Sand City, and Seaside as well as unincorporated communities of Pebble Beach, Carmel Valley East and West, Carmel Highlands, and the Presidio of Monterey.[20]

Cal-Am also serves a number of unincorporated satellite systems, including the communities of Hidden Hills, Ryan Ranch, Bishop, Ambler, Ralph Lane, Chualar, Garrapata, and Toro. These satellite systems encompassed an area greater than 7,000 acres and service a total population of 5,313 in 2010. Other than Garrapata, Ralph Lane and Chualar, the satellite systems border the Monterey Main system. By 2022, Hidden Hills, Ryan Ranch, and Bishop will be interconnected to the Monterey Main system.

A map delineating the service area of Cal-Am Monterey prepared by the MPWMD is shown in Figure 1.

[20]Cal-Am 2010 Urban Water Management Plan. 9/7/2012. Water Systems Consulting, Inc.

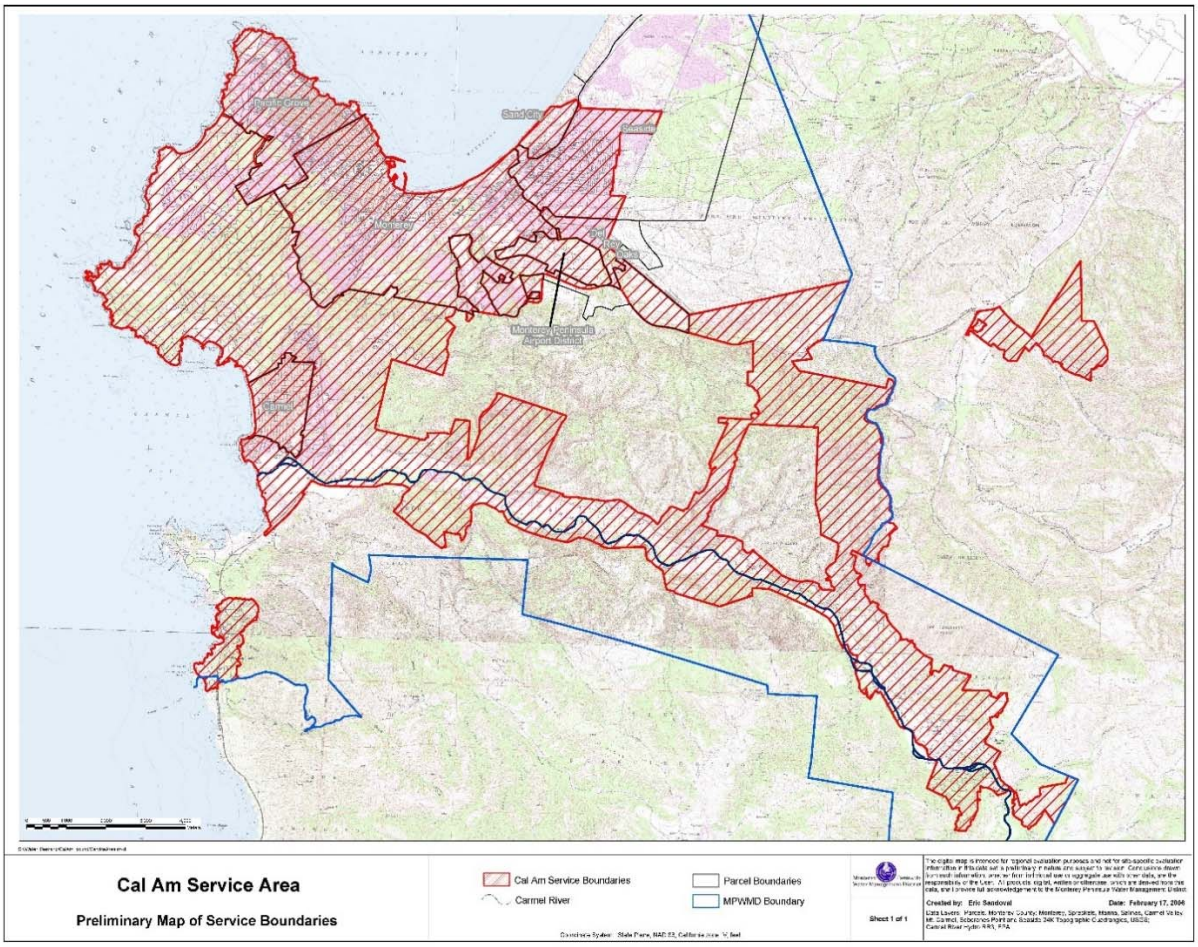

Figure 1: Cal-Am Monterey service area boundaries[21]

Population Served

The Association of Monterey Bay Area Governments (AMBAG) prepares regional population and growth forecasts for the region. The most recently available forecast, the AMBAG 2018 Regional Growth Forecast, estimates the 2020 service area population of the Cal-Am Monterey Main service area to be 91,884.[22] This population is forecast to increase to 100,814 in 2040. These population estimates include Monterey, Pacific Grove, Carmel-by-the-Sea, Sand City, Seaside, Del Rey Oaks, and portions of the unincorporated County.[23] The MPWMD Report notes that the population estimates likely overstates growth to 2040 because portions of the cities of

[21] Monterey Peninsula Water Management District. Map created by Eric Sandoval. 2/17/2006

[22] Association of Monterey Bay Area Governments. 2018 Regional Growth Forecast. Table 8, page 32.

[23] Unincorporated county estimates based on Cal-Am service area population reported to the State Water Resources Control Board June 2014 – September 2019 Urban Water Supplier Monthly Reports (Raw Dataset), minus urban areas, escalated at 5%.

Monterey, Seaside, and Del Rey Oaks within the Fort Ord Buildout will be served water by the Marina Coast Water District.[24]

Water Production and Demand

Annual Production

Annual water production for the Monterey System from 2000 – 2019 are shown in Figure 2 along with shaded periods added to indicate the influence of mandatory drought restrictions and recession. For this purposes of this report, total water production is assumed to be equivalent to the total annual water demand in the system inclusive of all water use, non-revenue water, and treatment losses.

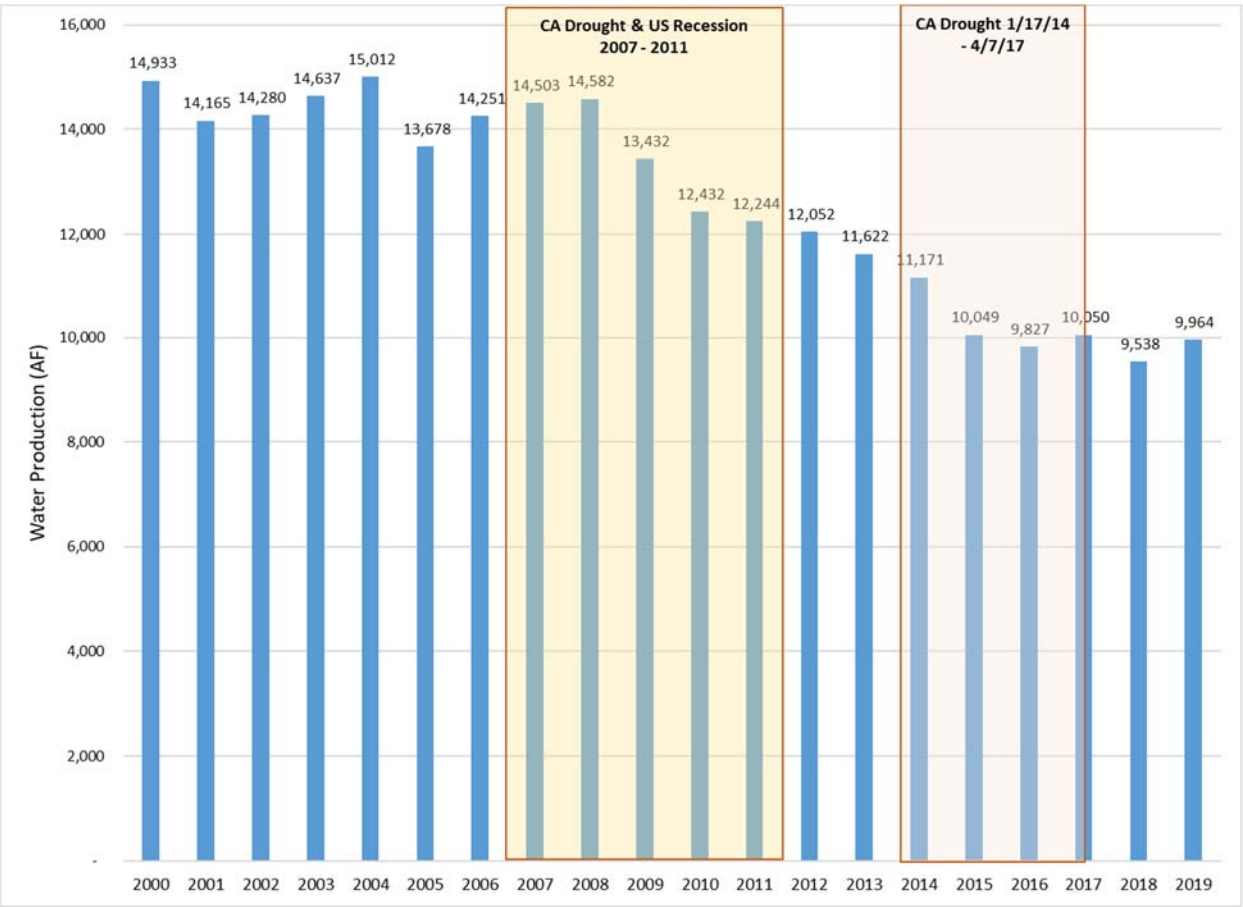

Figure 2: Cal-Am Monterey Main water production, 2000 - 2019[25]

[24] Monterey Peninsula Water Management District. 2020. Supply and Demand for Water on the Monterey Peninsula prepared by David Stoldt, General Manager. Appendix A.

[25] 2017 – 2019 From Cal-Am quarterly reports to the California State Water Resources Control Board. 2000 – 2016 From Monterey Peninsula Water Management District. 2019. Supply and Demand for Water on the Monterey Peninsula prepared by David Stoldt, General Manager. Figure 1.

From Figure 2 it is evident water production in the Monterey System was reasonably steady from 2000 – 2008, with the exception of the steep decline in 2005. In 2009 production began to steadily decrease and the decline didn't stop until 2016. During this 8-year period, steep demand reductions occurred during years when California was in an officially declared drought paired with an economic recession, but production reductions also occurred in 2012 and 2013 which were non-drought and recession influenced years. Over the most recent five-year period, 2015 – 2019, water production in the Monterey Main service area averaged 9,885 AF per year.

Comment on Data Sources

Cal-Am publishes and regularly updates monthly and annual water deliveries for Monterey Main, Hidden Hills, Ryan Ranch & Bishop on its website for the desalination project.[26] Monthly data going back to 2007 are available from the testimony of Ian Crooks (2012)[27]. I compared these published records with the production data set used in the MPWMD Report and (for 2017-19) with Cal-Am's quarterly and annual reports to the California State Water Resources Control Board.

The monthly data published on Cal-Am's website and in Ian Crooks testimony, while very similar was generally lower than the annual values in the MPWMD Report. Production from Cal-Am's quarterly and annual reports to the California State Water Resources Control Board for the three most recent years (2017-2019) was higher than either the delivery values published on Cal-Am's web site or the values in the MPMWD Report.

For the purposes of the demand forecasts prepared in this report, WaterDM used the higher production values reported to the State Water Resources Control Board and the higher production values from the MPMWD Report to establish the starting point for the demand forecast, rather than the lower delivery values from Cal-Am. WaterDM's forecasts are therefore conservative in that they are based on the highest published values of annual water production for the Monterey Main System.

Monthly Deliveries

While not relied upon as the starting point for WaterDM's demand forecasts, Cal-Am's published delivery data were used to analyze the seasonality of demand on the Monterey Main System. Monthly production is shown in Figure 3 with the period of recent drought declaration highlighted. A linear trendline is also added.

[26] https://www.watersupplyproject.org/system-delivery (accessed 3/25/2020)

[27] Direct Testimony of Ian Crooks Before the Public Utilities Commission of the State of California. Application 12-04-019 (Filed April 23, 2012) (p.9)

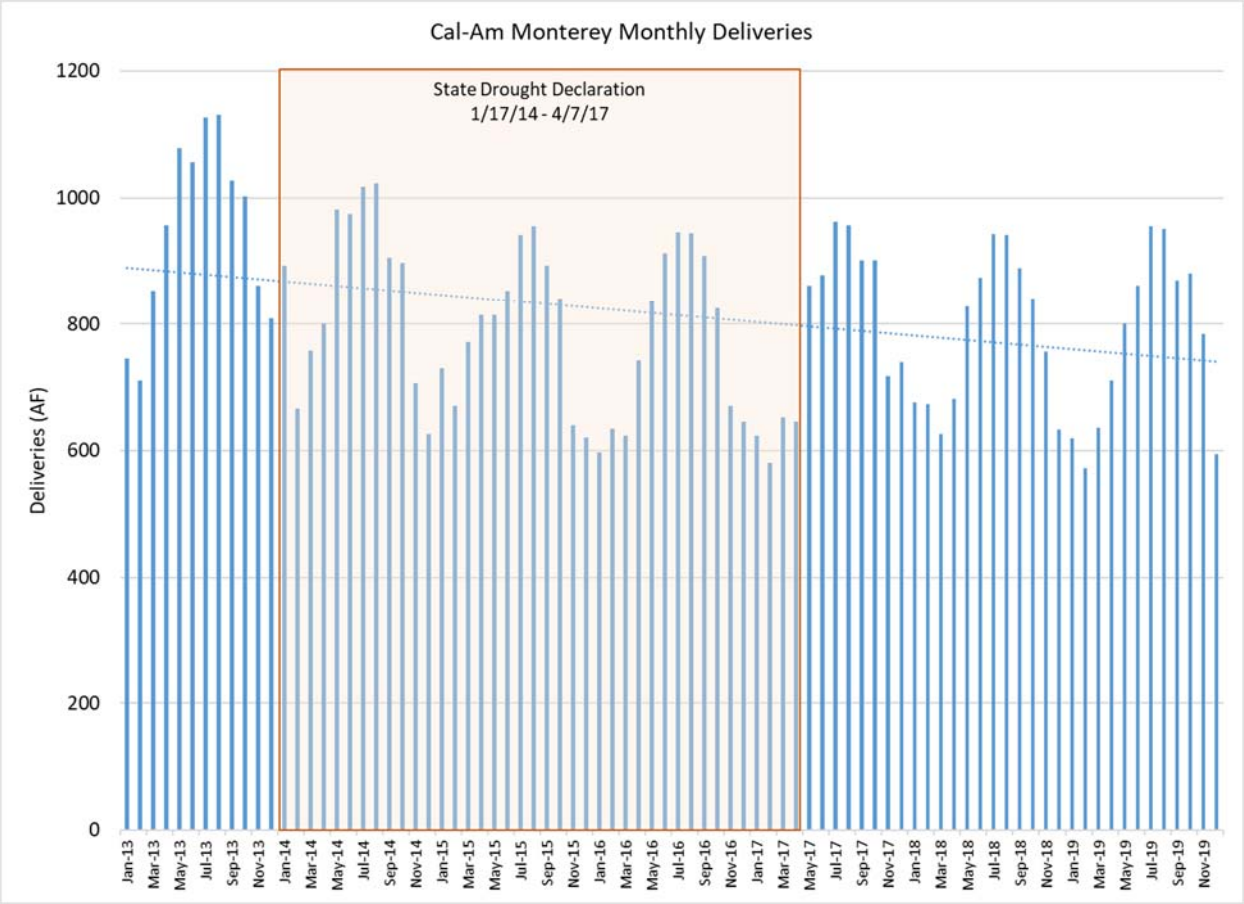

Figure 3: Cal-Am Monterey monthly deliveries

Using these published monthly data, I found the minimum and maximum month of delivery for each year. The average annual non-seasonal (predominantly indoor) deliveries for each year was calculated as the average water use in January, February, November and December multiplied by 12. Seasonal production for each year was calculated by subtracting non-seasonal from total production. These data and results are shown in as a chart in Figure 4 and in Table 1.

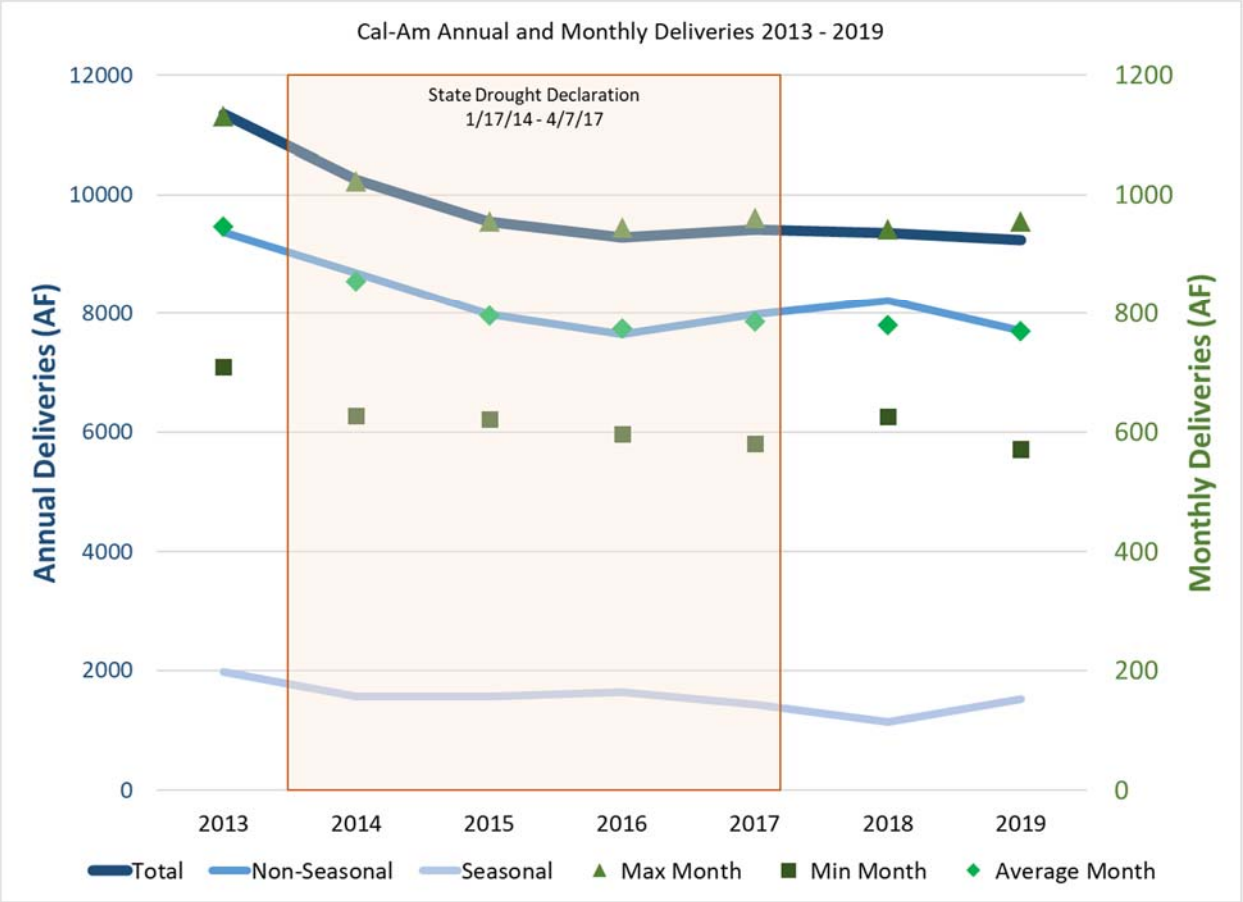

Figure 4: Cal-Am Monterey annual and Monthly Deliveries, 2013 - 2019[28]

Seasonal deliveries provide an estimate of summertime demand including outdoor irrigation and summertime tourism use. Non-seasonal deliveries provide an estimate of baseline indoor use and non-revenue water that occur throughout the year.

On average, seasonal deliveries accounted for 15.8% of Cal-Am's total across these seven years and ranged between 12.3% and 17.7%. Non-seasonal deliveries accounted for between 82.3% and 87.7% of usage from 2013 – 2019.

This analysis shows that the demand reductions achieved from 2013 - 2016 were largely in the non-seasonal (predominantly indoor use) category. Seasonal demand did decline during this period, but not nearly as much as non-seasonal demand.

Both the minimum and the maximum month deliveries for each year has also been declining since 2013. The minimum month of delivery in 2019 was the lowest of any of the past seven years. Notably, 2019 also had the higher annual precipitation in the region than any of the other years shown.

[28] From production data published at: https://www.watersupplyproject.org/system-delivery (accessed 3/25/2020)

Table 1: Cal-Am monthly deliveries and annual statistics[29]

Month	2013	2014	2015	2016	2017	2018	2019	2020
Jan	745	893	730	597	624	676	620	628
Feb	710	667	671	635	581	673	572	650
Mar	853	757	771	623	653	626	636	
Apr	957	800	814	742	645	682	710	
May	1079	982	814	836	861	828	801	
Jun	1056	975	853	912	878	874	861	
Jul	1127	1018	942	946	962	943	955	
Aug	1131	1023	956	944	957	941	951	
Sep	1027	906	893	909	902	889	870	
Oct	1002	897	840	826	901	841	881	
Nov	861	707	640	670	717	756	784	
Dec	809	627	621	646	740	633	594	
Total Annual Deliveries	11,356	10,250	9,545	9,285	9,421	9,362	9,234	
Maximum Month	1131	1023	956	946	962	943	955	
Minimum Month	710	627	621	597	581	626	572	
Average Month	946.4	854.3	795.4	773.8	785.1	780.2	769.6	
Annual Non-Seasonal	9,375	8,682	7,986	7,644	7,986	8,214	7,710	
Annual Seasonal	1,981	1,568	1,559	1,641	1,435	1,148	1,524	
%Seasonal	17.4%	15.3%	16.3%	17.7%	15.2%	12.3%	16.5%	
Total Annual Production (from Figure 2)	11,622	11,171	10,049	9,827	10,050	9,538	9,964	
Difference between Production and Deliveries	266	921	504	542	629	176	730	
% Difference	2.3%	8.2%	5.0%	5.5%	6.3%	1.8%	7.3%	

Note on Data Differences

The volume of water produced by Cal-Am annually as shown in Figure 2 are based on Cal-Am's quarterly and annual reports to the State Water Resources Control Board (2017-2019) and the

[29] From delivery data published at: https://www.watersupplyproject.org/system-delivery (accessed 3/25/2020) Includes: Monterey Main, Hidden Hills, Ryan Ranch & Bishop.

MPWMD Report and are higher than the delivery values reported on Cal-Am's website (Figure 3, Figure 4, and Table 1).

As noted above, for the purposes of forecasting future production reflecting the needs of the community, WaterDM used the higher values reported to the State Water Resource Control Board for 2017, 2018, and 2019. For Years 2000- 2016 WaterDM used the MPWMD Report values (also higher than Cal-Am's monthly reports) so that the highest reported baseline production values were used to consider baseline consumption.

Per Capita Water Use

WaterDM prepared an independent calculation of per capita water use based on the production volumes shown in Figure 2 and population data from AMBAG. System per capita use is calculated as the total volume of water produced at the source divided by the service area population and the number of days in the year. This calculation of system per capita use is based on production and thus inclusive of all water use, non-revenue water, and treatment losses.

System per capita use in the Cal-Am Monterey Main System in 2010 was 127.0 gpcd. This was highest level of gpcd over the past 10 years. In 2019, system per capita use was 97.3 gpcd and in 2018 it was 93.6 gpcd. Ten years of daily system per capita use for the Monterey Main System in shown in Table 2.

Table 2: Per capita water use, 2010 - 2019

Year	Population	Production	Per Capita	Source of Production Data
2010	87,419	12,432	127.0	MPMWD Report
2011	87,866	12,244	124.4	MPMWD Report
2012	88,312	12,052	121.8	MPMWD Report
2013	88,759	11,622	116.9	MPMWD Report
2014	89,205	11,171	111.8	MPMWD Report
2015	89,652	10,049	100.1	MPMWD Report
2016	90,098	9,827	97.4	MPMWD Report
2017	90,545	10,050	99.1	SWRCB Quarterly Reports
2018	90,991	9,538	93.6	SWRCB Quarterly Reports
2019	91,438	9,964	97.3	SWRCB Quarterly Reports

Water Demand by Sector

Cal-Am's 2019 water demand by sector is shown as a pie chart in Figure 5, based on data presented in 2019 testimony.[30] As shown in Figure 2, 2019 was not a drought year nor was it

[30] Direct Testimony of David Mitchell Before the Public Utilities Commission of the State of California. Application 19-07-004 (Filed July 1, 2019)

impacted by economic recession. Residential use including single- and multi-family customers used 58% of the total produced in 2019. Commercial and industrial customers used 30%, the public / other sector used 5%, and non-revenue was 7%. Non-revenue water includes real and apparent water loss as well as authorized and unauthorized uses for which the utility does not collect revenue.[31]

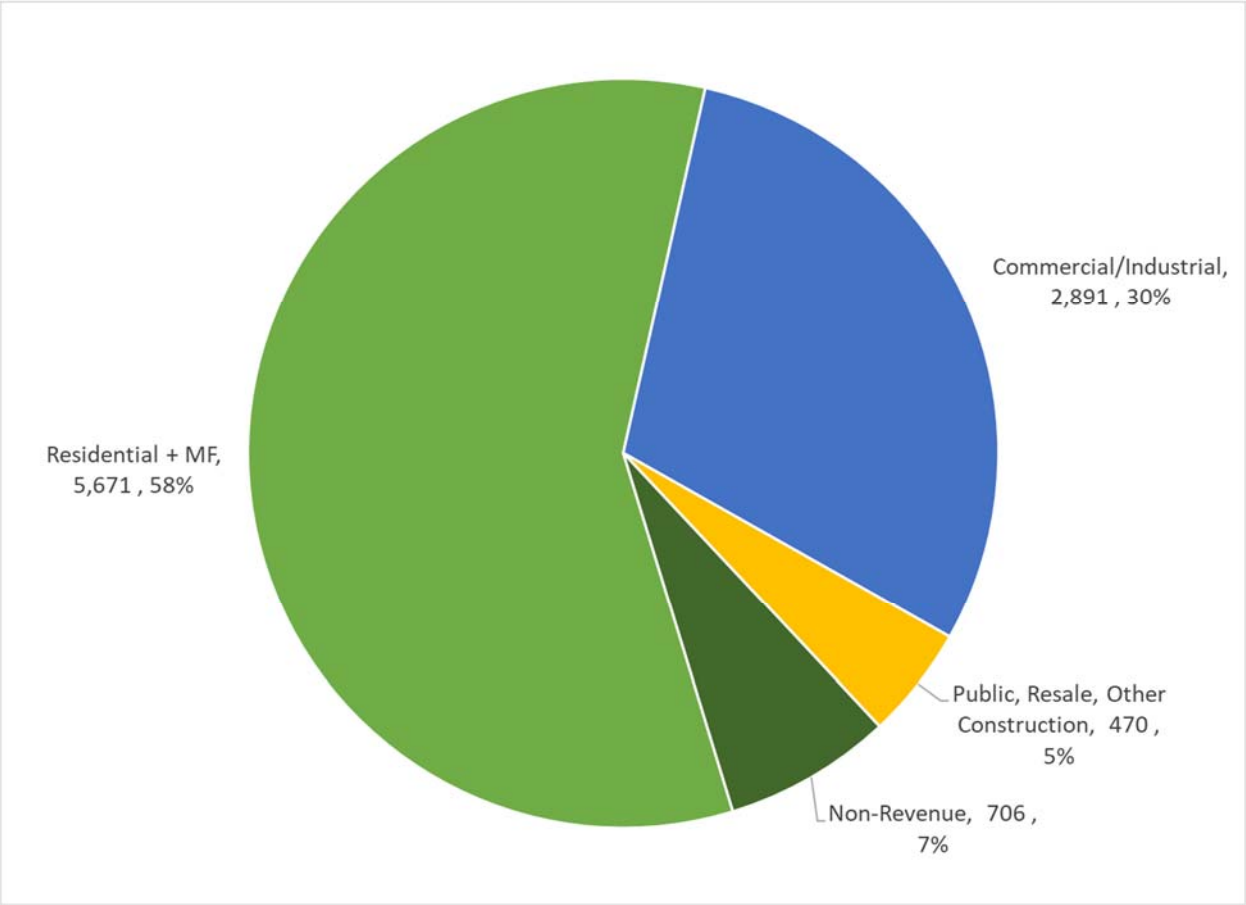

Figure 5: 2019 Cal-Am Monterey Main System demand by sector[32]

[31] In 2009 the residential sector used 59%, commercial/industrial sector 22%, non-revenue 9%, public/other 8%, golf course irrigation 2%.

[32] Direct Testimony of David Mitchell Before the Public Utilities Commission of the State of California. Application 19-07-004 (Filed July 1, 2019)

Water Demand Management

Water demand management includes five core components:[33]

1. **Technical efficiency** - reducing the quantity or quality of water required to accomplish a specific task (e.g. a high-efficiency toilet).
2. **Behavioral efficiency** - Adjusting the nature of the task so it can be accomplished with less water or lower quality water (e.g. take a shorter shower).
3. **Water loss and leakage control** - Reducing losses in movement from source through use to disposal including reducing leakage in the distribution system and customer-side leaks.
4. **Peak management** - Shifting time of use to off-peak periods.
5. **Drought response** - Increasing the ability of the system to operate during droughts.

Both Cal-Am and the Monterey Peninsula Water Management District implement active, far-reaching, and effective water demand management programs that address all five of these core components. The water demand data presented in the previous section of this report and in particular Figure 2 show a steady reduction in water demand in the Cal-Am Monterey Main system which was achieved through the active and intentional water demand management efforts implemented in the region. The reduction in per capita use over the past 10 years shown in Table 2 is further indication of increased water use efficiency.

The Monterey region has been regarded as a model for water conservation programs for many years. Cal-Am and the Monterey Peninsula Water Management District implement an array of effective demand management policies and programs that are likely to extend water efficiency gains. Cal-Am implements an active water conservation program including a steeply inclining five-tier block rate pricing structure and customer incentives for installing drought tolerant landscapes and high-efficiency fixtures and appliances. Cal-Am also implements a rigorous utility-scale water loss control program aimed at reducing real losses in its distribution system. Local development regulations ensure that all new and remodeled buildings are equipped with high-efficiency fixtures and appliances.

Cal-Am acknowledged the level of effort, significance, and impact of this conservation program in recent testimony. “California American Water has expended significant effort and resources to encourage conservation in the Monterey County District through a variety of methods. Most important has been the tiered rate design, which features steeply inclining block rates to encourage efficient water use.” – Direct Testimony of Christopher Cook, July 1, 2019.

Mr. Cook’s testimony is backed up by testimony from Stephanie Locke, Water Demand Manager for the Monterey Peninsula Water Management District, and the significant financial resources Cal-Am continues to apply toward water conservation in the region. In its most

[33] Adapted from Brooks, D.B. 2007. An Operational Definition of Water Demand Management. International Journal of Water Resources Development. Volume 22, 2006 - Issue 4

recent General Rate Case, Cal-Am proposed a $1.845 million three-year budget ($615,132 per year) to fund water conservation programs in the Monterey service area. Locke's testimony notes that many of the conservation programs budgeted in the General Rate Case and in the prior Cal-Am rate filings focus on reductions in outdoor water use, on reductions in demand areas that have not previously been extensively targeted, and on maintaining the current low water use fixtures that have been installed to date.

Cal-Am's local efforts are in parallel to broader policy measures at the state level, designed to further increase efficiency. The State of California has implemented a series of laws and directives to ensure future water efficiency across the state including Assembly Bill 1668 and Senate Bill 60 which effectively mandate an ongoing reduction in per capita use. Cal-Am's continued compliance with these regulations and its active efforts to reduce customer water demand in the future are likely to gradually further decrease per capita water use across the service area.

Peak demand management to shift the timing to off peak periods is already being practiced to some degree in the Cal-Am service area but could be expanded and adjusted if necessary. Peak demand days usually occur during the hot and dry part of the year when outdoor irrigation occurs simultaneously across the service area. Currently Cal-Am restricts outdoor irrigation between 9 a.m. and 5 p.m. on any day. Irrigation is only permitted on two specific days per week (Wednesdays and Saturdays) unless the customer is equipped with a weather-responsive "smart" controller that automatically adjusts irrigation to meet prevailing climate conditions. These are all effective measures but focusing some irrigation demand on Wednesdays and Saturdays could have the unintended impact of creating peaks on those particular days. Cal-Am does not report measured peak day demand data so it was not possible to determine if this is in fact the case.

Should peak demands become a concern, Cal-Am could choose to implement low-cost peak day and peak hour demand management measures such as requiring automatic irrigation to be scheduled at certain times or on certain days by re-assigning irrigation days of the week to distribute the summertime peak. If smart irrigation controllers are widespread, then more sophisticated approaches to irrigation scheduling and timing could also be employed to harmonize demand with water production and finished water storage conditions (Mayer et. al. 2018).

Water Demand Forecasts

WaterDM prepared two forecasts for the Cal-Am Monterey Main System to estimate future average annual production, inclusive of treatment losses and non-revenue water. The growth rate in each forecast is based on AMBAG's anticipated population increase from 2020 to 2040.[34]

[34]This likely over-estimates Cal-Am's future growth because it includes new population in portions of the cities of Monterey, Seaside, and Del Rey Oaks within the Fort Ord Buildout that will be served water by the Marina Coast Water District.

Each component of Cal-Am's demand – residential, commercial, public/other/re-sale, non-revenue water, and treatment losses was increased each year proportionally to the increase in population to produce a forecast of future average annual production, inclusive of treatment losses and non-revenue water.

- The "Current gpcd" forecast assumes the current rate of daily per person water usage continues into the future, without any increases in efficiency or conservation reductions.
- The "Continued efficiency" forecast includes the impacts of ongoing efficiency improvements by applying an indoor reduction factor.

These annual demand projections were built up from the analysis of historical production and deliveries presented above. The year 2020 is the first year of the projection, which then continues for 20-years to produce average annual demands in 2040. Over the most recent five-year period, 2015 – 2019, water production in the Monterey Main service area averaged 9,885 AF per year. This level of production was the starting point for the WaterDM forecasts.

Production was split out by sector and future demand was increased proportionally with population increases to 2040. The four sectors included in the model are:

- Residential (single-family + multi-family)
- Commercial and industrial
- Public, resale, other, construction
- Non-revenue water

The summed annual demand of these four categories equals the estimated water supply requirement under average future conditions. The model allows specific factors to be applied to the non-seasonal or seasonal component of annual demand for each demand category, to simulate the impacts of water efficiency and conservation programs.

The two forecasts prepared by WaterDM – "Current gpcd" and "Continued efficiency" are shown in Figure 6 along with the forecast demands included in Cal-Am's filings provided to the CPUC. Notably, WaterDM's 2020 – 2022 forecasts are higher than the forecasts Cal-Am General Rate Case Application forecast which estimated demand for 2021 and 2022 at 9,789 acre-feet per year.

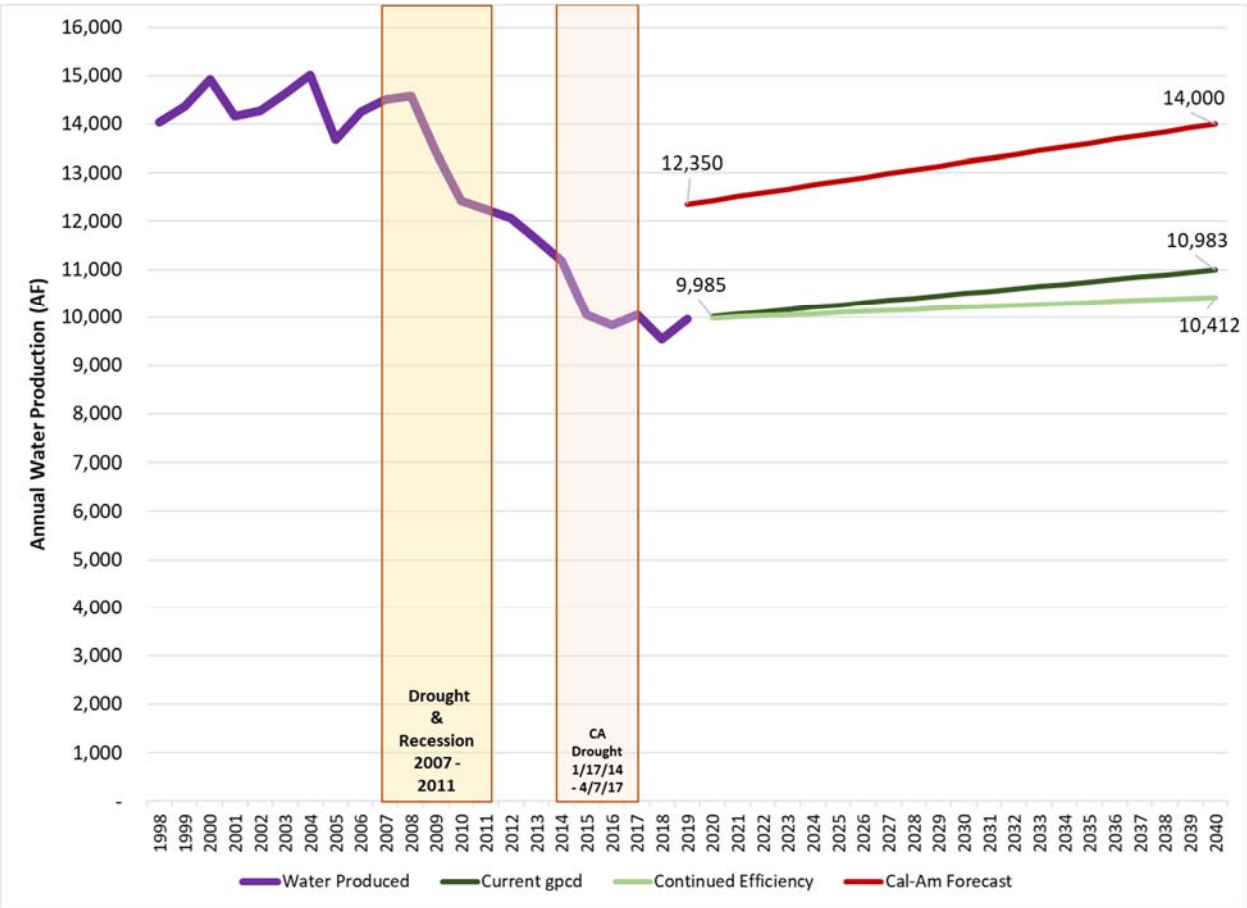

Figure 6: WaterDM forecasts of future average annual production

Current GPCD Forecast

The "Current gpcd" forecast includes ongoing conservation efforts only at levels required to maintain current per-capita water use with no additional savings. This forecast results in a future per-capita water use that is identical to the current level. The 2020 and 2040 statistics for the forecast are shown in Table 3.

Table 3: Current GPCD Forecast

	2020	2040
Population	91,884	100,814
Production Forecast	9,985 AF	10,983 AF
Per Capita Use Forecast	97.3	97.3

Continued Efficiency Forecast

The "Continued efficiency" forecast represents future production assuming slow, steady ongoing demand reductions from existing conservation activities relative to current per-capita use. This forecast results in a per-capita water use in 2040 that is 5.2% lower than current level.

Specifically, the "Continued efficiency" forecast includes the anticipated impacts of continuing the long-term water conservation program measures described in published documents and recent testimony from Cal-Am and MPWMD. It does not assume any drought restrictions or mandatory demand curtailments are applied.

The "Continued efficiency" forecast incorporates a modest level of increased efficiency of about 0.26% per year over 20 years. In my professional judgement, the "Continued efficiency" forecast represents the most likely forecast of future average annual production, inclusive of treatment losses and non-revenue water.

Table 4: Continued Efficiency Forecast

	2020	2040
Population	91,884	100,814
Production Forecast	9,985 AF	10,412 AF
Per Capita Use Forecast	97.3 gpcd	92.2 gpcd

Cal-Am Demand Forecast

The demand forecast provided to the CPUC as part of Cal-Am's application for the proposed desalination plant are included with the AMBAG population forecast and per capita use for comparison. The Cal-Am forecast includes an estimate of "current" demand and a forecast of demand in 2040.

Table 5: Cal-Am Forecast

	2020	2040
Population	91,884	100,814
Production Forecast	12,350 AF	14,000 AF
Per Capita Use Forecast	120.0 gpcd	124.0 gpcd

Water delivery patterns have changed substantially in the region and perhaps as a result, Cal-Am has produced conflicting forecasts. The Cal-Am forecast submitted to the CPUC differs substantially from Cal-Am's own more recent General Rate Case Application forecast which estimated demand for 2021 and 2022 at 9,789 acre-feet per year.[35] The magnitude of the changes in demand and the differences in the forecasts is significant and has implications for water planning. Cal Am's own most recent forecast estimates 2022 demand to be 20% lower than "current" demand in the CPUC decision.

The Cal-Am forecast also results in an inflated value for gpcd. Using the "current" Cal-Am forecast of 12,350 AF and the current AMBAG population results in a calculated current gpcd of

[35] California-American Water Company. 2019. (U-210-W) Update to General Rate Case Application, A.19-07-004.

120.0 which is 23% higher than WaterDM's fully inclusive calculation of Cal-Am Monterey Main system gpcd in 2019 which was 97.3 gpcd. This forecast doesn't square with Cal-Am's stated intent to spend more than $1.8 million over three years on its water conservation programs and with state regulations and policies that incentivize demand reductions. The Cal-Am forecast doubles down on the problem an inflates per capita use up to 124 gpcd in the year 2040.

A 2040 level of 124 gpcd is extremely unlikely and such a dramatic and remarkable reversal in water use efficiency is inconsistent with the state and local directives and contradicts recent sworn testimony from Cal-Am in its current General Rate Case. Customers in the Cal-Am Monterey service area are among the most water efficient in the state. The outdated Cal-Am forecast unreasonably assumes that these customers will go from being the most efficient to becoming among the least water efficient in California over the next 20 years.

Water Supply

Introduction

The November 2019 California Coastal Commission staff analysis considered new information about water supplies (and demands) that were not available for the 2018 CPUC decision. As a result of this new information, the Coastal Commission staff found that there is less need for water from new sources than previously determined and that a project alternative – the expansion of the above-referenced Pure Water Monterey project – had progressed from being too "speculative" for the CPUC to consider as a viable alternative, to being a feasible, well-developed alternative. This Pure Water Monterey Expansion would occur entirely outside of the coastal zone and would cause far fewer environmental impacts than Cal-Am's proposed project.

The recently developed Pure Water Monterey Expansion along with revised water supply and demand information were considered and included in the Staff Report[36] of October 28, 2019 in which the Staff report recommended denying Cal-Am's permit request to construct elements of the desalination project in the coastal zone due to its inconsistencies with the Coastal Act and the Local Coastal Program's habitat protection and hazards policies, its failure of the three tests of Coastal Act Section 30260, and its failure of the alternatives consideration of Section 30233.

I considered the available, reliable water supply sources for Cal-Am Monterey to utilize out to the year 2040 including the existing Pure Water Monterey project and its expansion. Based on this analysis I agree with the conclusions in the 2019 Staff Report. With the addition of the Pure Water Monterey Expansion providing an additional 2,250 acre-feet per year of supply to Cal-Am, the combination of Cal-Am's available and projected water resources total 11,650 acre-feet of reliable supply. This provides sufficient supply potential to meet annual future demand in 2040 by more than 1,200 acre-feet above WaterDM's most-likely "Continued efficiency" forecast.

[36] Staff Report: Recommendation on Appeal Substantial Issue & De Novo Hearing and Consolidated Coastal Development Permit, California Coastal Commission, Application 9-19-0918 / Appeal A-3-MRA-19-0034 (California American Water Co.). (p 7)

Water Supply for the Monterey Main System

Cal-Am delivers water to its Monterey Main system from a diverse collection of water sources. This will remain true into the future, even with the Pure Water Monterey Expansion or the proposed desalination plant. Figure 7 shows historic and projected deliveries in the Monterey Main system including the Pure Water Monterey projects along with the two water demand forecasts prepared by WaterDM. All of the supply sources shown in Figure 7 and are documented in Table 6. The anticipated available reliable water supply in 2040 from each source is included and the total is 11,650 AF. Each source of water and the volume of available reliable supply is described in detail in the sections below.

Cal-Am has historically relied heavily on withdrawals from the Carmel River water and Seaside Basin groundwater to provide water to the Monterey Main system. In the future withdrawals from both sources must be reduced. Cal-Am must carefully manage its supply portfolio in the coming years regardless of the Coastal Commission's ruling regarding the desalination project. Even under the best of circumstances it will be at least 2022 before either the Pure Water Monterey Expansion or the proposed desalination project are online.

The focus of the Coastal Commission staff analysis and recommendations was on the availability of sufficient water supply to meet the community needs twenty years from now in 2040, and less on how Cal-Am will manage the transition from its reliance on the Carmel River in 2022. The water supply analysis summarized in Figure 7 indicates that with the addition of the full Pure Water Monterey project Cal-Am does have available water supply both in the near term (2020 – 2025) and twenty years from now in 2040. In keeping with the Staff Report, the primary focus of the WaterDM analysis was on the determining the volume of reliable supply available in 2040.

The Pure Water Monterey project with the expansion would provide enough available supply to meet the likely 20-year requirements, but it is still reasonable to expect Cal-Am may need to seek to secure additional supplies in the future beyond 2040. Much will depend upon what happens to the local economy and climate over the coming decade. Over-building infrastructure such as desalination (at its current size) would be an expensive error. The future is uncertain and the impact of COVID 19 and other economic unknowns could well be to reduce future demand in the Monterey Main System from current levels, lessening or eliminating the need for securing additional supply.

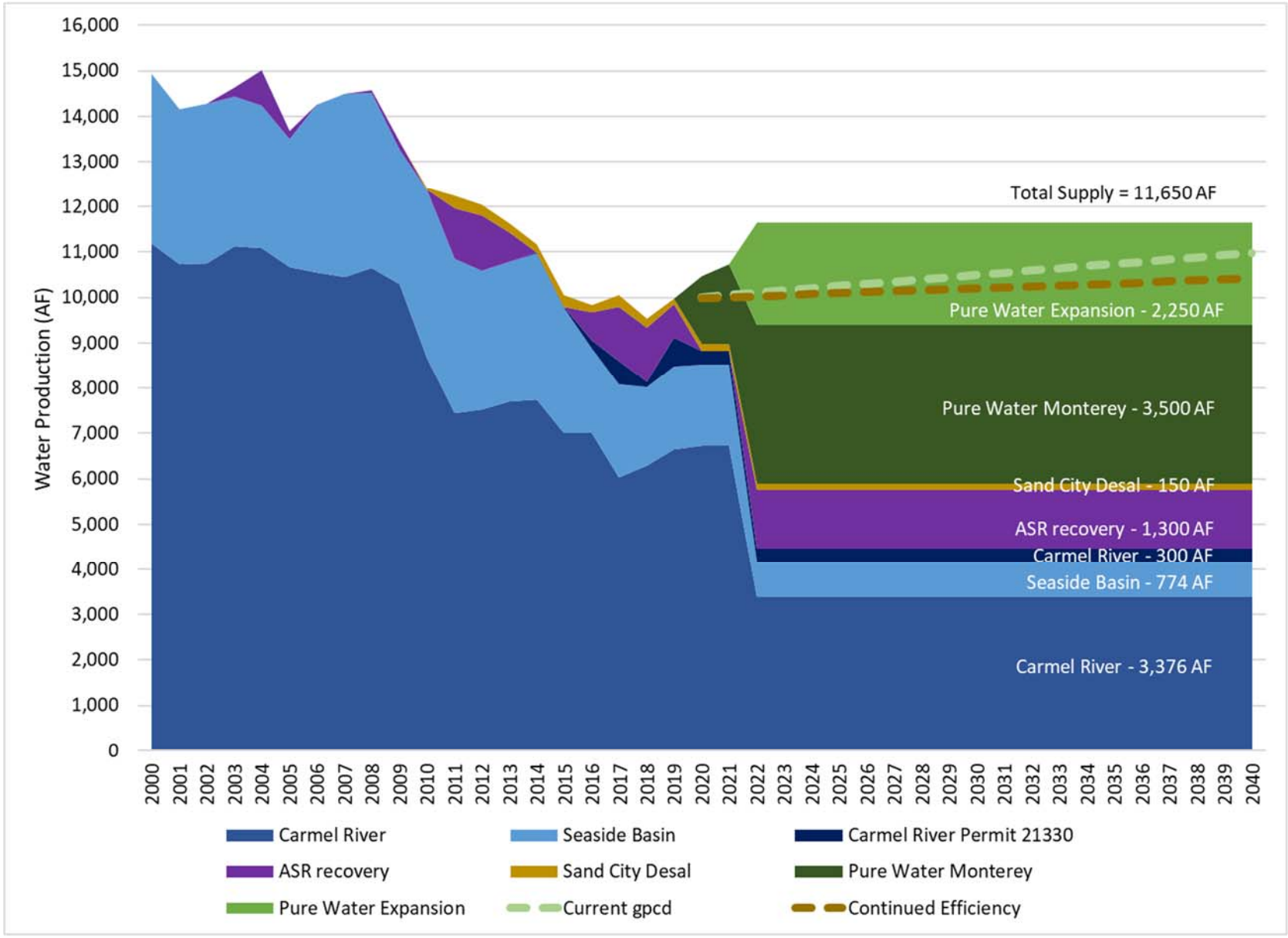

Figure 7: Cal-Am historic water production (2000 – 2019) and future water supply and demand (2020 – 2040)

Table 6: Cal-Am Monterey Main System water supply sources

Water Source	AF/Year	Notes	Regulator	Data Source
Carmel River – Cease and Desist Order	3,376 AF.	2,179 AF from License 11866; 1,137 AF of pre-1914 appropriative rights; and 60 AF of riparian rights.	SWRCB Order 2016-0016	Cal-Am reports to the SWRCB
Carmel River – Permit 21330	300 AF	Only available Dec. – May.	SWRCB	Cal-Am reports to the SWRCB
Seaside Basin Native Groundwater	774 AF	Reflects Cal-Am's 25-year obligation to leave 700 AF of the 1,474 AF it is entitled.	Seaside Basin Watermaster	Watermaster's annual reports.
ASR Recovered Water	1,300 AF	Based on long-term historical precipitation and streamflow, ASR system may be capable of recovering an average of 1,920 AF per year.	SWRCB Water Rights Permits 20808A & C	Cal-Am reports to the SWRCB
Sand City Desalination Plant	150 AF	300 AF capacity. Has averaged 209 AF over life of plant.	SWRCB Order 2016-0016 & Division of Drinking Water	Cal-Am reports to the SWRCB
Pure Water Monterey	3,500 AF	Withdrawals prior to 2022 will reduce Effective Diversion Limit from the Carmel River.	Division of Drinking Water & Seaside Basin Watermaster	TBD
Pure Water Monterey Expansion	2,250 AF		Division of Drinking Water & Seaside Basin Watermaster	TBD
TOTAL	**11,650 AF**			

Carmel River

Withdrawals from the Carmel River, Cal-Am's primary water source, must be reduced in accordance with a cease-and-desist order from the State Water Resources Control Board. The original order, issued in 1995, determined that Cal-Am was extracting over 14,000 acre-feet per year from the river when it had a legal right to 3,376 acre-feet. The State Water Resources Control Board determined that these excess withdrawals were adversely affecting the river's population of federally threatened Central Coast steelhead and riparian habitat. The Board ordered Cal-Am to develop or purchase alternative water supplies so it could end its excess withdrawals. Subsequent orders issued by the Board have included additional requirements, with Cal-Am currently required to end its excess withdrawals and be able to rely on a new source of water by December 2021.

Figure 7 and Table 6 show Carmel River production reducing to the mandated 3,376 AF in 2022. This is the volume to which Cal-Am has a legal right and is comprised of 2,179 AF from License 11866; 1,137 AF of pre-1914 appropriative rights; and 60 AF of riparian rights.[37]

Figure 7 also shows an additional 300 AF of Carmel River supply based on Permit 21330.[38] Cal-Am's annual reports to the State Water Resources Control Board show that it has withdrawn an average of 428 AF per year from 2017-2019 under this permit.

Seaside Groundwater Basin – Native Groundwater

Along with the Carmel River, the withdrawals of native groundwater from the Seaside Groundwater Basin must also be reduced soon which impacts Cal-Am Monterey. The Seaside Basin was over pumped for many years prior to the issuance of the 2006 Seaside Groundwater Basin adjudication which imposed triennial reductions in operating yield until the basin's "Natural Safe Yield" is achieved. For Cal-Am, the last reduction will occur in 2021 and Cal-Am will have rights to 1,474 acre-feet per year.

Figure 7 and Table 6 show 774 AF of supply available from the Seaside Basin from 2022 – 2040. This reflects the agreement with the Watermaster to leave 700 AF per year of the 1,474 AF it is entitled to for at least 25 years as payback for Cal-Am's over-pumping in the Seaside Basin. For the purposes of this analysis it was assumed that this obligation is triggered once Cal-Am obtains a permanent replacement supply of water (e.g. Pure Water Monterey Expansion or the proposed desalination project).

[37] MPWMD Report (p.3)

[38] "In 2013, Cal-Am received Permit 21330 from the State Water Board for 1,488 AFA from the Carmel River. However the permit is seasonally limited to December 1 through May 31 each year and subject to instream flow requirements." MPWMD Report (p.3)

The Seaside Basin Watermaster states Cal-Am's "payback amount is currently estimated to be 18,000 acre-feet", thus 25.7 years of 700 AF per year re-payments would complete the payback.[39]

The Seaside Basin Watermaster's 2019 report to the Court overseeing the groundwater adjudication states that the total usable storage space in the entire Seaside Groundwater Basin is 52,030 AF. The report also describes the current allocation of that usable storage space among the Seaside Basin pumpers and Cal-Am is allocated 28,733 acre-feet.[40] The annual report aligns with the Watermaster's January 2020 letter regarding the Pure Water Monterey Expansion which reiterates the importance of the groundwater payback program. The letter also notes the direct ties between the Seaside Basin and the Pure Water Monterey Expansion project and identifies that "on the order of 25,000 acre-feet of additional storage would need to be injected and left in the Seaside Basin over a period of years in order to achieve protective elevations along the coastline."[41]

After the payback is complete, Cal-Am will be able to produce the full 1,474 AF if needed. During a drought or in the event another supply became impaired, Cal-Am could (with permission from the Seaside Basin Watermaster) utilize its full 1,474 AF in any year or series or years and then extend the payback period.

Aquifer Storage and Recovery

Cal-AM participates in an aquifer storage and recovery (ASR) project that allows for the capture of excess Carmel River winter flows through wells along the river. This river water is then transferred through existing conveyance facilities, including the new Monterey Pipeline and Pump Station, and stored in the Seaside Groundwater Basin for later extraction. This project operates with four ASR well sites capable of both injection and extraction. Ownership and operation of this source water project has various components split between Cal-Am and the Monterey Peninsula Water Management District.[42]

There are two water rights that support the ASR system: Permit 20808A which allows maximum diversion of 2,426 AF and Permit 20808C which allows up to 2,900 AF for a total potential maximum annual diversion of 5,326 AF.[43] But in reality Cal-Am will only be able to divert, inject, and store the maximum permitted volume in the wettest of years.

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[39] Seaside Basin Watermaster Jan. 8, 2020 Letter to Rachel Gaudion. Subject: Draft Supplemental Environmental Impact Report for the Proposed Modifications to the Pure Water Monterey Groundwater Replenishment Project (Draft Supplemental EIR)

[40] Seaside Basin Watermaster Annual Report – 2019, December 5, 2019

[41] Seaside Basin Watermaster Jan. 8, 2020 Letter to Rachel Gaudion.

[42] California-American Water Company. 2019. (U-210-W) Update to General Rate Case Application, A.19-07-004. Direct Testimony of Christopher Cook. (p.7)

[43] MPWMD Report (p.3)

Based on long-term historical precipitation and streamflow data, the ASR system is designed to allow an average of 1,920 AF per year to be recovered. Figure 7 and Table 6 assume a more conservative 1,300 AF of ASR production per year for 2020 – 2030 as does the MPWMD Report. With the addition of the Pure Water Expansion, Cal-Am will have additional opportunity to inject and store water in the Seaside Groundwater Basin which may allow for increased annual recovery over time.

Cal-Am is allocated 28,777 AF of total storage in the Seaside Groundwater Basin.[44] Careful management of the Seaside Groundwater Basin and optimizing the storage opportunities it provides will help ensure a long-term reliable supply for the Cal-Am Monterey service area. Once the storage reserve is established, Cal-Am could withdraw 1,920 AF (or more) on a regular basis.

Sand City Desalination Plant

Cal-Am has an operating agreement for the Sand City Desalination Plant, a small facility designed to produce 300 acre-feet of water per year. Due to source water quality issues and discharge permit requirements to date the Sand City plant has never produced the full 300 AF and the maximum that is has ever produced was 276 AF in 2011. Over the life of the plant it has averaged 209 AF of production per year but it has only averaged 188 AF per year of production from 2016 – 2019.[45] Figure 7 and Table 6 conservatively includes 150 AF per year of production well below the long-term average of 209 AF per year.

Pure Water Monterey

Monterey One Water in partnership with the Monterey Peninsula Water Management District developed the Pure Water Monterey Groundwater Replenishment Project to create a reliable source of water supply to replace existing water supply sources for the Monterey Peninsula.

The primary objective of the Pure Water Monterey Project is to replenish the Seaside Groundwater Basin with 3,500 acre-feet per year of purified recycled water to compose a portion of Cal-Am's water supply and to assist in complying with the State Water Resources Control Board orders. The source water for the Pure Water Monterey Project is wastewater flows from the members of Monterey One Water.

The Pure Water Monterey Project (as initially approved and constructed) includes a 4 million gallon per day capacity water purification facility for treatment and production of purified recycled water that is conveyed and stored in the Basin using a series of shallow and deep injection wells. Project conveyance facilities include ten miles of pipeline from the purification facility to injection wells in the Seaside Groundwater Basin. This pipeline is owned and operated by the Marina Coast Water District.

[44] Seaside Basin Watermaster Annual Report – 2019, December 5, 2019

[45] MPWMD Report

Once injected, the purified recycled water augments existing groundwater supplies and is capable of providing 3,500 acre-feet per year of water for extraction. Pure Water Monterey is operational in 2020 and Figure 7 includes 3,500 AF per year from the Pure Water Monterey project starting in 2022.

Pure Water Monterey Expansion

Monterey One Water and the MPWMD have proposed expansion of the Pure Water Monterey project to increase the capacity available to Cal-Am. The Pure Water Monterey Expansion is expected to provide an additional 2,250 acre-feet per year to augment existing groundwater supplies.

The source water for the Pure Water Monterey Expansion is municipal wastewater and agricultural drainage water. Analysis of the water sources under four conditions including drought concluded that the project can reliably produce water under each circumstance.[46]

The analysis concluded Monterey One Water would have rights to a sufficient quantity of source water to produce the yield in advanced treated, product water that is anticipated to be produced by the Pure Water Monterey Expansion regardless of whether or not the conditions precedent are met and whether or not it is a dry or drought year or a normal or wet year.[47]

The analysis shows that the Pure Water Monterey Expansion can reliably produce water as proposed. Figure 7 includes 2,250 acre-feet per year from the Pure Water Monterey Expansion project becoming available to Cal-Am in 2022.

With the addition of the Pure Water Monterey Expansion project providing an additional 2,250 acre-feet per year of supply to Cal-Am, the combination of Cal-Am's available and projected water resources total 11,650 acre-feet of reliable supply. This provides sufficient supply potential to meet annual future demand in 2040 by more than 1,200 acre-feet than WaterDM's most-likely "Continued efficiency" demand forecast.

Peak Capacity

Peak capacity planning is typically based on metered measurements of peak day and peak hour production maintained by the water provider. To my knowledge, Cal-Am does not publicly report its actual peak day or peak hour demands for the Monterey system. Rather than producing actual measurements, Cal-Am relies on a calculated approach to estimate future peak day usage. This approach was described and carried out in both the MPWMD Report and the MPWMD response, using slightly different assumption.

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[46] April 11, 2020. Source Water Operational Plan Technical Memorandum. Prepared by Bob Holden, PE, and Alison Imamura, PE, Monterey One Water

[47] April 2020. Comments on Water Supply and Source Water Availability. FINAL Supplemental Environmental Impact Report for the Proposed Modifications to the Pure Water Monterey Groundwater Replenishment Project. P 3-8

Analyses in the MPWMD Report and MPWMD Response show that Cal-Am has the ability to produce 19.41 million gallons per day and 0.81 million gallons per hour. Calculations of future Maximum Daily Demand (MDD) and Peak Hour Demand (PHD) show that Cal-Am must support an MDD of 19.01 MG/day and a PHD of 0.792 MG/hour (based on a July 2012 maximum month demand). Revised analysis in the MPWMD Response and Final analysis using slightly different demand data showed that Cal-Am must support an MDD of 16.13 MG/day and a PHD of 0.672 MG/hour (based on an August 2014 maximum month demand). Under either demand assumption, from an infrastructure standpoint alone, Cal-Am has sufficient capacity to meet future peak day and peak hour demands even under the highly conservative assumptions embedded in the calculated approach.

If managing the peak day or peak hour becomes an issue in the future, Cal-Am has several options it has yet to implement. From an infrastructure standpoint, Cal-Cam could increase pumping capacity and add finished water storage. Cal-Am could also choose to implement low-cost peak day and peak hour demand management measures such as prohibiting automatic irrigation at certain times or on certain days or by re-assigning irrigation days of the week to distribute the summertime peak. Sophisticated approaches using smart irrigation controllers could also be employed to ensure optimal irrigation scheduling (Mayer et. al. 2018).

The Hazen Peer Review Report

As part of my investigation I was asked to review and comment on a peer review report prepared by Hazen and Sawyer (Hazen Report) which critiqued the MPWMD Report and the subsequent MPWMD Response.

- *California American Water Peer Review of Supply and Demand for Water on the Monterey Peninsula prepared by Kevin Alexander, P.E. and Cindy Miller, P.E., Hazen and Sawyer (Hazen Report)*
- *MPWMD's March 6 response to the Hazen Report including supporting exhibits prepared by David Stoldt (MPWMD Response)*

The Hazen & Sawyer peer review report is rife with misleading statements leading to incorrect conclusions regarding California codes, Cal-Am's likely water demand in 2040, and the availability and reliability of future water supply sources. MPWMD's March 6 response to the Hazen Report identifies line by line these errors and misleading statements. In this report I focus on the following problems:

Water Planning

The Hazen Report repeatedly confuses and conflates peak demand and annual demand planning requirements and offers numerous misleading statements about California codes and standards and AWWA water planning guidance.

Throughout the Hazen Report the authors confuse and conflate requirements for meeting the peak demand and annual demand planning practices. Planning the infrastructure and treatment capacity requirements for a community to meet the peak day and peak hours of

demand is distinctly different from planning for an adequate long-term water supply for the same community. In my judgement, the MPWPD Report and Response adhered to all applicable codes and industry standards and practices.

I will specifically address the Hazen Report's assertions regarding the following:

- California Code of Regulations (CCR) section 64554
- California Health and Safety Code (CHSC) section 116555
- California Water Code (CWC) sections 10635 and 10631
- American Water Works Association "Water Resource Planning" guidance M50

CCR §64554

On page 3 the Hazen Report states, "CCR §64554(b), establishes the requirements that California water utilities must use to project demands. This regulation requires that the public water system identify the day, month, and year with 'the highest water usage during at least the most recent ten years of operation.'"[48]

CCR §64554 specifically establishes the requirements for "New and Existing Source Capacity" and provides methods for calculating the Maximum Daily Demand (MDD) for a water system. MDD or peak capacity planning is typically based on metered measurements of peak day and peak hour production maintained by the water provider and 64554 states that, "If daily water usage data are available, identify the day with the highest usage during the past ten years to obtain MDD".[49]

To my knowledge, Cal-Am does not publicly report its actual peak day or peak hour demands for the Monterey system. Rather than producing actual measurements, Cal-Am relies on the calculated approach (method 2 in CCR 64554) to estimate future peak day usage. This approach was described and carried out in both the MPWMD Report and the MPWMD Response, using slightly different assumptions. I reviewed these calculations and under both sets of assumptions Cal-Am has sufficient capacity to meet MDD.

If peak day or peak hour demands were to increase in the Cal-Am system over the next 20 years, additional pumping and local storage capacity could be added to the system to meet the requirements of CCR §64554.

The Hazen Report repeatedly confuses the peak capacity calculation of MDD as specified in CCR §64554 with the very different task of planning for an adequate future water supply on an annual basis. CCR 64554 does not make any provisions for estimating current annual demand or future annual demand. The Hazen Report improperly connects 64554 with annual demand

[48] Hazen Report (p. 3).

[49] CCR §64554(b)(1)

planning on page 3 and page 6 and lacks proper specificity when referring to peak vs. annual supply and demand.

CHSC 116555

California Health and Safety Code section 116555 states simply that California water suppliers must provide, "a reliable and adequate supply of pure, wholesome, healthful, and potable water."[50]

The MPWMD Report correctly concluded that either project could provide the reliable water supply for the region. The MPWMD's revised analysis shows that even under conservative, randomized climate assumptions, ASR storage will build up a sufficient reserve to meet a 5-year drought.[51]

CWC Sections 10635 and 10631

Section 10635 of the California Water Code states that, "every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry water years. This water supply and demand assessment shall compare the total water supply sources available to the water supplier with the long-term total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and a drought lasting five consecutive water years."

Section 10631 reiterates this requirement in the plan and also requires analysis by the utility of (i) Water waste prevention ordinances; (ii) Metering; (iii) Conservation pricing; (iv) Public education and outreach; (v) Programs to assess and manage distribution system real loss; (vi) Water conservation program coordination and staffing support; and (vii) Other demand management measures.[52]

The Hazen Report implies that the Pure Water Monterey Expansion is speculative and unproven and suggests it should not be considered "as a permanent reliable water source" and instead should be considered a "backup" supply.[53] There are many problems with this analysis specifically:

i. The Hazen Report notably fails to apply the same scrutiny regarding reliability to the proposed desalination project. Frequently desalination delivers less supply than promised at a higher cost than anticipated.[54]
ii. The Hazen Report considers unrealistic and unsubstantiated current and future demand projections based on outdated demand information.

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[50] CHSC 116555 https://codes.findlaw.com/ca/health-and-safety-code/hsc-sect-116555.html

[51] MPWMD Response (Note 15)

[52] http://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=WAT&sectionNum=10631

[53] Hazen Report (p.8)

[54] https://www.voiceofsandiego.org/topics/science-environment/desal-plant-producing-less-water-promised/

iii. Revised analysis from the MPWMD, which I have confirmed, shows that even under conservative, randomized climate assumptions, ASR storage will be built-up and sufficient to deliver forecast volumes through a 5-year drought. If Pure Water Monterey Expansion is completed there will likely be additional water available for injection and carryover storage.

iv. The Hazen Report fails to take into consideration Cal-Am's compliance with Section 10631 and implementation of effective efficiency and conservation measures that have successfully reduced demands and will continue to do so in the future.

American Water Works Association (AWWA)[55] Manual M50, Water Resource Planning

The Hazen Report repeatedly asserts that analysis in the MPWMD Report is inconsistent with "engineering best-practices" published in the AWWA Manual M50 Water Resources. The M50 is planning guidance manual which offers a broad range of approaches and invites utilities to choose the one that best fits their needs, requirements, and available data. As it strains to defend Cal-Am's outdated "current demand" forecast, the Hazen Report manages to mis-represent both the framework and content of the M50 manual. The Hazen Report assertions are incorrect and misleading for the following reasons.

First, the Hazen Report misrepresents the M50 as a set of "engineering best practices."[56] AWWA Manuals are not "best-practices" documents, but rather are "Manuals of Water Supply Practices" which are distinct and different from "best-practices" in that they offer utilities a wide range of solutions rather than a single "best" approach. AWWA Manuals are "consensus documents focused on providing strategies and steps for water system optimization. They are written, reviewed and approved by members of AWWA volunteer committees."[57]

Second, the Hazen Report cites an old and outdated version of the M50. The most current AWWA Manual M50 Water Resources, 3rd edition was published in 2017, but the citations in the Hazen Report are from the discontinued 2nd edition published in 2007.

Third, regardless of the outdated citation, the Hazen Report critically misinterprets and misrepresents identical guidance provided in the both versions of the M50 manual. Both editions of M50 include the same following language regarding the need for a variety of methods to forecast demand:

> *"No single method of forecasting will satisfy the varied needs of all utilities. The forecasting method used and the data needed to correctly apply the method depend on the situation.*

[55] The American Water Works Association (AWWA) is an international non-profit, scientific and educational association founded to improve water quality and supply. Established in 1881, it has a membership (as of 2012) of around 50,000 members worldwide, including the author of this report.

[56] Hazen Report (p.3)

[57] https://www.awwa.org/Publications/Manuals-of-Practice

For example, when a forecast of average annual demand is the primary requirement, a simple per capita approach might be sufficient."[58]

Both versions of the M50 describe the same six approaches to preparing a demand forecast. Based on my review, the MPWMD Report incorporated four of the accepted methods to some degree:

- per capita models
- extrapolation models
- disaggregate water use models
- land-use models

The forecast prepared by WaterDM described earlier in this report also incorporate three of these approaches:

- per capita models
- extrapolation models
- disaggregate water use models

Similar forecasting approaches are regularly employed by Cal-Am as described in sworn Testimony from Ian Crooks.[59]

Finally, the Hazen Report asserts that the M50 manual specifies a 10-year or even 20-year retrospective analysis to establish a demand baseline for a forecast. The Hazen Report then uses this unfounded notion to defend Cal-Am's "current demand" forecast of 12,350 AF submitted to the CPUC in support of the desalination plant application. The quote cited in the Hazen Report in support of this approach[60] appears only in the 2007 edition and was not included in the current edition of M50. Furthermore, the Hazen Report misinterprets the meaning which does not specify a calculation method or planning period, but instead recommends the analysis of 10 years or more of historic data to understand trends and drought impacts.

Water Conservation and Demand Management

The Hazen Report makes incorrect statements about water conservation programs and planning and without offering data or analysis and even suggests that per capita water use will increase substantially despite Cal-Am's demand management efforts and prevailing state policy and regulations.

[58] American Water Works Association (2017, 2007) Manual of Water Supply Practices-M50, Third Edition

[59] Direct Testimony of Ian Crooks Before the Public Utilities Commission of the State of California. Application 12-04-019 (Filed April 23, 2012) (p.7)

[60] Hazen Report (p.3)

Starting on page 1, the Hazen Report makes factually incorrect statements about water conservation programs and policies in California and the Monterey region. The Hazen report states, "MPMWD staff also assumes continued implementation of tiered rates, conservation restrictions, and enforced water use reductions ... all of which have the potential to do continuing harm to the area's businesses and residential customers."[61]

This sentence confuses and conflates on-going water conservation measures such as tiered rates with mandatory curtailment measures that are only implemented when necessary during a declared drought. This error is repeated throughout the Hazen Report.

The MPWMD Report correctly assumed the continuation of tiered water rates and water conservation programs as described earlier in my report. These are ongoing features of the local water supply system and are mandated by California state law. Tiered rates have been implemented by Cal-Am in the Main system and across its other Cal-Am systems (and throughout California) for many years and the Hazen Report presents no evidence in support of the notion that continued implementation of tiered rates will cause "continuing harm" to the community.

The Hazen Report is also incorrect regarding "restrictions" and "enforced reductions". Neither the MPWMD Report or the demand forecasts I prepared for in this report assumed demand restrictions or enforcement beyond the measures Cal-Am already implements during a normal year. Mandatory curtailment is typically only necessary during a declared drought such as 2014 -2017 and was not considered in the WaterDM forecasts or in the MPWMD Report.

On page 4 the Hazen Report repeats the error and includes additional unsupported and incorrect statements:

> *"The conservation and moratorium measures that were implemented in response to drought conditions, including tiered rates, conservation restrictions, and enforced water use reductions, were effective in lowering demand. However, no additional methods are presented in the memo to indicate how further reductions in demands would occur; absent any* ***, it is reasonable to assume everything has already been done on the demand side to reduce levels and further reductions should not be considered in demand forecasting for determining water supply sufficiency****."*[62]

The Hazen Report is again incorrect regarding "restrictions" and "enforced reductions". Neither the MPWMD Report or the demand forecasts I prepared for in this report assumed demand restrictions or enforcement beyond the measures Cal-Am already implements during a normal year. The moratorium on new connections was implemented in response to the cease and desist order. It can be lifted once Cal-Am certifies (and the State Water Resources Control Board concurs) that it has a sufficient permanent replacement supply for its illegal Carmel River diversions.

[61] Hazen Report (p.1)

[62] Hazen Report (p.4) *emphasis added.*

The Hazen Report remarkably ignores the extensive on-going water conservation program being implemented across the Monterey Peninsula and California and the impact these measures are likely to have into the future. Both Cal-Am and the Monterey Peninsula Water Management District implement active, far-reaching, and effective water demand management programs that address all five of these core components outlined earlier in this report. The Monterey region has been regarded as a model for water conservation programs for many years.

Cal-Am acknowledged the level of effort, significance, and impact of this conservation program in recent testimony. "California American Water has expended significant effort and resources to encourage conservation in the Monterey County District through a variety of methods. Most important has been the tiered rate design, which features steeply inclining block rates to encourage efficient water use." – Direct Testimony of Christopher Cook, July 1, 2019.

Mr. Cook's testimony is backed up by testimony from Stephanie Locke, Water Demand Manager for the Monterey Peninsula Water Management District, and the significant financial resources Cal-Am continues to apply toward water conservation in the region. In its most recent General Rate Case, Cal-Am proposed a $1.845 million three-year budget ($615,132 per year) to fund water conservation programs in the Monterey service area. Locke's testimony notes that many of the conservation programs budgeted in the General Rate Case and in the prior Cal-Am rate filings focus on reductions in outdoor water use, on reductions in demand areas that have not previously been extensively targeted, and on maintaining the current low water use fixtures that have been installed to date.

Cal-Am's local efforts are in parallel to broader policy measures at the state level, designed to further increase efficiency. The State of California has implemented a series of laws and directives to ensure future water efficiency across the state including Assembly Bill 1668 and Senate Bill 60. These laws and directives effectively mandate an ongoing reduction in per capita use. Cal-Am's continued compliance with these regulations and its active efforts to reduce customer water demand in the future are likely to gradually further decrease per capita water use across the service area.

Current Annual Demand

The Hazen Report asserts that "current" demand in the Cal-Am Main System must be assumed to be 12,350 acre-feet per year. This is far higher than actual current demand and contradicts Cal-Am's own most recent General Rate Case filing which forecasts 2022 demand to be 9,789 acre-feet per year.

The Hazen Report criticizes the MPWMD Report for developing a demand forecast based on a starting point (aka current annual demand) significantly lower than the value proposed by Cal-

Am to the CPUC.[63] As shown in Figure 6, the Cal-Am "current annual demand" forecast of 12,350 acre-feet is about 2,500 acre-feet higher than Cal-Am's actual annual demand. Based on demand trends in the region 12,350 acre-feet is a gross over-estimate of the actual demand in the Monterey Main System. The authors of the MPWMD Report has good reason to choose a different starting point for the demand forecast and there is nothing incorrect or wrong about their approach.

The "Current Annual Demand" section of the Hazen Report is another place where the authors confuse and conflate requirements for meeting the peak demand and annual demand planning practices as explained earlier in this section. Planning the infrastructure and treatment capacity requirements for a community to meet the peak day and peak hours of demand is distinctly different for planning for an adequate long-term water supply for the same community. In my judgement, the MPWPD Report and Response adhered to all applicable codes and industry standards and practices.

The Hazen Report fails to mention that Cal-Am, in its most recent General Rate Case Application, forecast demand for 2021 and 2022 at 9,789 acre-feet per year.[64] Thus Cal Am's own most recent forecast estimates 2022 demand to be 20% lower than "current" demand in the CPUC decision. Independent estimates of demand developed for the MPWMD Report and developed separately for this report, align closely with Cal Am's recent rate case forecast.

Water Supply Reliability

The Hazen Report mischaracterizes the likely future reliability of water supplies available to Cal-Am and in particular the beneficial impacts of the ASR system over time. The Hazen Report ignores the future reliability (and cost) of desalination

The Hazen Report expresses "concern" about the reliability of the ASR system which it seeks to dismiss as merely "an alternative or backup supply source" and not a reliable long-term supply and it also describes the Pure Water Monterey Expansion as "speculative".[65] The Hazen Report contains inaccuracies and mischaracterizations and notably neglects to apply similar scrutiny to potential reliability issues and construction delays that could be part of the proposed desalination project.

ASR

Cal-AM participates in an aquifer storage and recovery project that allows for the capture of excess Carmel River winter flows through wells along the river. WaterDM assumed a conservative 1,300 AF of ASR production per year for 2020 – 2030 like the MPWMD Report. The system has already proven capable of producing near this volume. Cal-Am chose to recover 1,196 acre-feet from the ASR system in 2017, 1,210 acre-feet in 2018, and 744 AF in 2019. Cal-

[63] Hazen Report (p.3)

[64] California-American Water Company. 2019. (U-210-W) Update to General Rate Case Application, A.19-07-004.

[65] Hazen Report (pp.6-9)

Am ended 2019 with 1,317 acre-feet in ASR storage. With the addition of the Pure Water Monterey Expansion supply in many years Cal-Am will be able to inject and store additional carryover water through this system.

ASR systems, when managed properly, improve groundwater basin management by acting like an underground reservoir where water can be stored during periods of excess supply and withdrawn during periods of short supply.[66] Analysis in the MPWMD Response, confirmed by WaterDM, shows that a build-up of ASR storage based on historical data including wet, normal, and dry years would be sufficient to allow Cal-Am to recover at least 1,300 acre-feet each year during a hypothetical 5-year drought.[67] This analysis is further supported by a Technical Memorandum prepared by Montgomery Associates in late 2019.[68]

During 2020 and 2021 Cal-Am must prepare to wean itself of reliance on the Carmel River and must manage its system differently as it comes to rely on the recently completed Pure Water Monterey supply. The ASR system provides Cal-Am the ability to store excess supply for the future. If the Monterey Peninsula were simultaneously to experience drought during the "buildup period" following the completion of new water supply and assuming the cease and desist order is lifted, ASR might be delayed in building up a drought reserve.[69] However, in reviewing the ASR system, the Hazen Report neglected to consider the impact of the Pure Water Monterey Expansion and the additional water it will make available for injection. Available excess water for injection from the Pure Water Monterey Expansion will enable Cal-Am to store additional water in the Seaside Basin.[70] The proper management of this storage potential and the water supply from the expansion could provide drought-resilience to the Monterey Peninsula for years to come.[71]

Pure Water Monterey Expansion

The sources of water for the Pure Water Monterey Expansion are municipal wastewater and agricultural drainage water which are currently discharged to the ocean. The mix of these sources may vary from year to year thus Monterey One Water prepared examples showing the likely annual mixes of source water. In one example the source water consisted of discharge

[66] American Water Works Association (2017) Manual of Water Supply Practices-M50, Third Edition

[67] MPWMD Response (Note 15)

[68] Montgomery and Associates. 2019. Technical Memorandum. Expanded PWM/GWR Project SEIR: Groundwater Modeling Analysis

[69] MPWMD Response (Note 15)

[70] The Seaside Basin Watermaster's 2019 report to the Court overseeing the groundwater adjudication states that the total usable storage space in the entire Seaside Groundwater Basin is 52,030 AF. The report also describes the current allocation of that usable storage space among the Seaside Basin pumpers and Cal-Am is allocated 28,733 acre-feet.

[71] This finding is confirmed by the Montgomery and Associates 2019 memo which demonstrates, ASR is drought-resilient and Pure Water Monterey Expansion provides an additional factor of safety against drought impacts to ASR.

from the Regional Treatment Plant (54%), the Reclamation Ditch (5%), Blanco Drain (10%), wastewater outside the prior M1W boundaries (30%), and summer water rights from the County Water Resource Agency (1%).[72]

The Hazen Report questions the reliability of the Monterey Pure Water Expansion project and ignores analysis by the staff of Monterey One Water. This analysis shows that none of the source water for expansion of Pure Water Monterey is speculative, nor comes from Salinas-area wastewater or Salinas valley sources for which Monterey One Water doesn't already have rights.[73]

The source water for the Pure Water Monterey Expansion is municipal wastewater and agricultural drainage water. Analysis of the water sources under four conditions including drought concluded that the project can reliably produce water under each circumstance.[74] The analysis concluded Monterey One Water would have rights to a sufficient quantity of source water to produce the yield in advanced treated, product water that is anticipated to be produced by the Pure Water Monterey Expansion regardless of whether or not the conditions precedent are met and whether or not it is a dry or drought year or a normal or wet year.[75]

The Hazen Report was prepared prior to the release of the April Final Supplemental Environmental Impact Statement for the Monterey Pure Water Expansion and thus the authors may not have had accesses to the full analysis of the reliability of supplies available.

Reliability and Cost of Desalination Not Considered

The Hazen Report applies intense scrutiny to the future reliability of the Pure Water Monterey Expansion yet fails to consider the future reliability and cost of the desalination facility Cal-Am has proposed.

Recent desalination projects in California have sometimes failed to produce expected volumes[76] and there many examples world-wide of production problems associated with desalination projects. Cal-Am need look no farther than the local Sand City Desalination plant on which it relies for an example of a facility that has failed to produce at its designed capacity. WaterDM's forecast includes only 150 acre-feet of annual production from the Sand City facility designed to produce 300 acre-feet annually.

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[72] November 12, 2019 M1W presentation to the Monterey County Farm Bureau and the Grower-Shipper Association and the September 30-2019 M1W board meeting

[73] MPWMD Response (Note 19).

[74] April 11, 2020. Source Water Operational Plan Technical Memorandum. Prepared by Bob Holden, PE, and Alison Imamura, PE, Monterey One Water

[75] April 2020. Comments on Water Supply and Source Water Availability. FINAL Supplemental Environmental Impact Report for the Proposed Modifications to the Pure Water Monterey Groundwater Replenishment Project. P 3-8

[76] https://www.voiceofsandiego.org/topics/science-environment/desal-plant-producing-less-water-promised/

Desalination is also the most expensive supply option currently available on the Monterey Peninsula and water from Cal-Am's proposed desalination project would cost at least three times as much as water from the Pure Water Monterey Expansion. The economic track record of desalination is problematic. Desalination plants must be paid for even if they do not produce any water. Victoria Australia's desalination facility, built in response to an intense drought, resulted in ongoing annual service payments of $649 million (Australian dollars), and "annual service payments rise every year, even if no water is ordered."[77]

The Hazen Report chooses to ignore the economic realities of desalination and is disingenuous when it asserts the recycled water proposal is less reliable than the desalination proposal without applying similar levels of scrutiny to both supplies.

Erroneous Findings in the Hazen Report

The Hazen Report reaches erroneous conclusions regarding the reliability of future water supplies based on inflated hypothetical demands, misleading statements about planning requirements, and inaccurate characterization of future water supply reliability.

The Hazen Report includes numerous misleading statements leading to incorrect conclusions regarding California codes, Cal-Am's likely water demand in 2040, and the availability and reliability of future water supply sources. MPWMD's March 6 response to the Hazen Report identifies line by line these errors and misleading statements. In this report I focused on the following problems:

- The Hazen Report repeatedly confuses and conflates peak demand and annual demand planning requirements and offers numerous misleading statements about California codes and standards and AWWA water planning guidance.
- The Hazen Report makes incorrect statements about water conservation programs and planning and without offering data or analysis, and it even suggests that per capita water use will increase substantially despite Cal-Am's demand management efforts and state policy requirements and regulations.
- The Hazen Report asserts that "current" demand in the Cal-Am Main System must be assumed to be 12,350 acre-feet per year. This is far higher than actual current demand and contradicts Cal-Am's own most recent General Rate Case filing which forecasts 2022 demand to be 9,789 acre-feet per year.
- The Hazen Report mischaracterizes the likely future reliability of water supplies available to Cal-Am and in particular the beneficial impacts of the ASR system over time.
- The Hazen Report applies intense scrutiny to the future reliability of the Pure Water Monterey yet fails to consider the future reliability and cost of the desalination facility Cal-Am has proposed.

[77] https://www.dailymail.co.uk/news/article-5749621/Melbourne-desalination-plant-costs-tax-payers-eye-watering-649-million-year-operate.html

Conclusions

WaterDM conducted an analysis of the historic production trends in the Cal-Am service area and forecast growth in the service area. WaterDM developed an independent forecast of future water requirements based on the Associated Monterey Bay Area Governments (AMBAG) 2018 forecast of future population growth for the Cal-Am service area.

The WaterDM analysis supports the conclusions in the Staff Report projecting 2040 demands in the Cal-Am service area to be much lower than the CPUC's certificating decision. California Coastal Commission staff have correctly concluded that the Pure Water Monterey Expansion project provides an available, feasible water supply alternative for Cal-Am.

With the addition of the Pure Water Monterey Expansion project providing an additional 2,250 acre-feet per year of supply to Cal-Am, the combination of Cal-Am's available and projected water resources provides sufficient supply potential to meet annual future requirements in 2040 by more than 1,200 acre-feet (an 11.9% surplus).

The CPUC, in its September 2018 Decision accepted that Cal-Am's "current" demand was 12,350 acre-feet per year and the future demand in 2040 will be approximately 14,000 acre-feet per year. This appears outdated and therefore unreasonably high based on my analysis, the MPWMD Report and Cal Am's most recent forecasts. Cal-Am, in its most recent General Rate Case Application, forecast demand for 2021 and 2022 at 9,789 acre-feet per year. Cal Am's own most recent forecast estimates 2022 demand to be 20% lower than "current" demand in the CPUC decision. Independent estimates of demand developed for the MPWMD Report and developed separately for this report, align closely with Cal Am's recent rate case forecast.

The Pure Water Monterey Expansion provides enough available supply to meet the likely 20-year demands, but it is still reasonable to expect Cal-Am may need to seek to secure additional supplies in the future to meet demand beyond 2040. Much will depend upon what happens to the local economy and climate over the coming decade and over-building infrastructure such as the proposed desalination facility (at its current size) would be an expensive error. The future is uncertain and the impact of COVID 19 and other economic unknowns could well be to reduce future demand in the Monterey Main System from current levels, lessening or eliminating the need for securing additional supply.

Cal-Am's existing peak capacity is sufficient to meet anticipated future maximum daily demand (MDD) and peak hour demand (PHD) and Cal-Am has yet to avail itself of additional low/no-cost peak demand management measures that could reduce future peaks, if necessary.

Analyses in the MPWMD Report and MPWMD Response show that Cal-Am has the ability to produce 19.41 million gallons per day and 0.81 million gallons per hour. Calculations of future Maximum MDD and PHD show that Cal-Am must support an MDD of 19.01 MG/day and a PHD of 0.792 MG/hour (based on a July 2012 maximum month demand). Revised analysis in the

MPWMD Response using slightly different demand data showed that Cal-Am must support an MDD of 16.13 MG/day and a PHD of 0.672 MG/hour (based on an August 2014 maximum month demand). Under either demand assumption, from an infrastructure standpoint alone, Cal-Am has sufficient capacity to meet future peak day and peak hour demands even under the highly conservative assumptions embedded in the calculated approach.

If managing the peak day or peak hour becomes an issue in the future, Cal-Am has several options it has yet to implement. From an infrastructure standpoint, Cal-Cam could increase pumping capacity and add finished water storage. As an option, Cal-Am could also choose to implement low-cost peak day and peak hour demand management measures such as prohibiting automatic irrigation at certain times or on certain days or by re-assigning irrigation days of the week to distribute the summertime peak. Sophisticated approaches using smart irrigation controllers could also be employed to ensure optimal irrigation scheduling (Mayer et. al. 2018).

The Hazen Report contains numerous errors, mischaracterizations, and incorrect conclusions regarding Cal-Am's likely demand in 2040 and the availability and reliability of future water supply sources.

The WaterDM analyses show that the staff of the California Coastal Commission correctly utilized more recent information on available future water supplies and likely future demands in its analysis. Cal-Am's per capita use is likely to decrease between now and 2040 due to ongoing conservation program implementation, conservation pricing, and statewide policy directives to reduce indoor and outdoor use and improve utility water loss control measures. I agree with the staff findings that concluded there exists an available, feasible water supply alternative to Cal-Am's proposed desalination project.

Appendix A – Materials Considered[78]

Literature, Reports & Publicly Available Sources

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[78] Materials Considered also includes all materials cited in the footnotes of this Report.

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Montgomery and Associates. 2019. Technical Memorandum. Expanded PWM/GWR Project SEIR: Groundwater Modeling Analysis

Monterey One Water. May 28, 2010 Progress Report on Pure Water Monterey Expansion.

Monterey One Water. November 12, 2019 M1W presentation to the Monterey County Farm Bureau and the Grower-Shipper Association and the September 30-2019 M1W board meeting

Monterey One Water. April 2020. FINAL Supplemental Environmental Impact Report for the Proposed Modifications to the Pure Water Monterey Groundwater Replenishment Project.

Monterey One Water. April 11, 2020. Source Water Operational Plan Technical Memorandum. Prepared by Bob Holden, PE, and Alison Imamura, PE.

Monterey Peninsula Water Management District. 2020. Supply and Demand for Water on the Monterey Peninsula prepared by David Stoldt. (3-13-2020, 12-3-2019, and 9-16-2019)

Monterey Peninsula Water Management District. 2020. March 6 response to the Hazen Report including supporting exhibits prepared by David Stoldt.

Monterey Peninsula Water Management District. Map created by Eric Sandoval. 2/17/2006.

Seaside Basin Watermaster Annual Report – 2019, December 5, 2019

Seaside Basin Watermaster Jan. 8, 2020 Letter to Rachel Gaudion. Subject: Draft Supplemental Environmental Impact Report for the Proposed Modifications to the Pure Water Monterey Groundwater Replenishment Project (Draft Supplemental EIR)

Voice of San Diego. 8/29/2017. Desal Plant Is Producing Less Water Than Promised. https://www.voiceofsandiego.org/topics/science-environment/desal-plant-producing-less-water-promised/ (Accessed 4/9/2020).

Appendix B - Summary of Qualifications and Experience - Peter Mayer, P.E.

PETER W. MAYER, P.E.
Principal
Water Demand Management
1339 Hawthorn Ave.
Boulder, CO 80304
720-318-4232
peter.mayer@waterdm.com

WORK EXPERIENCE

Principal, WaterDM - 2013-present. (Registered Professional Engineer, Colorado, PE 0038126)
- Vice President, Partner, and Senior Project Engineer, Aquacraft, Inc. 1995-2012
- Editor, Calvert Independent, 1988-1990
- Coordinator, University of Wisconsin, College Year in India Program, Madurai, India 1991-92
- Educator-Fellow, Oberlin Shansi Memorial Association, Madurai, India 1986-88
- Station Manager, WOBC-FM, Oberlin, Ohio 1985-86

AFFILIATIONS

American Water Works Association
- Associate Editor AWWA Water Science
- Member– Customer Metering Practices Committee, Distribution and Plant Operations Division
- Chair – M22 manual 3rd and 4th ed. re-write sub-committee
- Member – M6 manual 6th ed. Re-write sub-committee
- Former Trustee – Water Conservation Division

American Water Resources Association
American Society of Civil Engineers
Alliance for Water Efficiency
Colorado River Water Users Association
Colorado Water Wise
Colorado Water Congress

EDUCATION

Master of Science, 1995, Water Resources Engineering, Department of Civil, Environmental and Architectural Engineering, University of Colorado, Boulder.

Bachelor of Arts, 1986, Oberlin College, Oberlin Ohio. Anthropology (Honors).

SELECTED PROJECTS

City of Tucson Water Conservation and Integrated Water Resources Plan (2019-2020)

Peter Mayer is working with Tucson staff to develop a 10-year water conservation implementation plan to integrate this work with the City's long-term integrated water resources plan being conducted by a large consulting team.

California DWR Research and Development of Indoor Residential Water Use Standards (2019-2021)

Peter Mayer is advising the California Department of Water Resources on a series of research projects to investigate indoor residential per capita use for the purpose of reporting to the legislature on future efficiency standards.

Metropolitan Water District of Southern California Demand Management Cost Functional Assignment (2018 – 2019)

Peter Mayer developed an analysis of Metropolitan's demand management and local resources development programs for the purpose of functional cost assignment in the ratemaking process.

New York City Integrated Water Resources Plan (2018 – 22)

Peter Mayer is leading the water conservation task of this five-year planning project awarded to a team lead by Hazen and Sawyer.

Northglenn Colorado Integrated Water Resources Plan (2019-20)

WaterDM is teamed with ELEMENT Water Consulting to prepare an integrated water resources plan for the City of Northglenn, a suburb of Denver.

Northern Water Conservation Program Planning (2017-18)

Peter Mayer worked closely with the Northern Colorado Water Conservancy District to plan for the future of their regional conservation program.

Westminster Rate and Fee Cost of Service Study (2017-18)

Peter Mayer was a member of the Raftelis Consulting team which developed this extensive cost of service analysis for this Colorado utility.

Rachio Water Management Implementation and Research (2016 –18)

Peter Mayer served as an expert advisor and technical consultant to the Rachio irrigation control and technology company. Together, they implemented peak day water management programs.

FL v. GA, 142, Original (2016)

Peter Mayer testified as an expert witness on municipal and industrial water use on behalf of the State of Georgia at the US Supreme Court trial held in November 2016. Peter prepared an expert report, expert testimony, testified at the trial, and was deposed in this case.

Water Resource Foundation #4689 Assessing Water Demand Patterns to Improve Sizing of Water Meters and Service Lines (2016-20)

Peter Mayer was the Principal Investigator for this research study taking place in Colorado and Arizona that closely examined meter and service line sizing.

Austin Water Integrated Water Resources Plan (2016-17)

Peter Mayer was an expert advisor to the CDM/Smith team on water demand and conservation and assisted in preparation of the Austin Integrated Water Resources Plan.

Colorado State Water Supply Initiative (2009-10, 2016-19)
Peter Mayer was part of a team that prepared technical analysis of future water demands and requirements in Colorado as part of the State's ongoing planning efforts.

New York City Water Board Water Demand Management Planning (2014 – 2019)
Peter Mayer was the lead for this project that prepared ten water conservation plans for wholesale customers of the NYC Water Board located in Westchester County and other upstate NY locations.

Outdoor Water Savings Initiative, Alliance for Water Efficiency (2014 – present)
Peter Mayer is the director of research for the Alliance for Water Efficiency's Outdoor Water Savings Initiative. Peter completed a literature review project in 2015, managed the landscape transformation study (2019) and is currently managing the drought response and water savings study (2020).

Residential End Uses of Water Study Update, Water Research Foundation (2010 – 2016)
Peter Mayer was the co-principal investigator of this research study that measured residential water use in 25 cities across he US and Canada. Final report is available from the Water Research Foundation.

Hilton Head PSD Water Demand Management Plan (2015)
Peter Mayer lead a team that prepared a long term water demand management plan for this coastal island community.

City of Arvada Expert Witness Services (2016)
Peter Mayer was hired as an expert witness on municipal and industrial water demands by the City of Arvada. Peter prepared and submitted an expert report in preparation for trial. The report was accepted by both sides and deposition and testimony were not required.

City of Arvada Water Supply and Demand Study (2014 –2016)
Peter Mayer led a team that evaluated future water supply and demands for this Denver suburb, under climate change conditions.

Roaring Fork Regional Water Conservation Planning (2014 - 2015)
Working with ELEMENT Water Consulting, Peter Mayer prepared a series of water conservation plans for Aspen, Basalt, Carbondale, and Glenwood Springs, Colorado and a regional conservation plan for the entire Roaring Fork Valley. An important goal of these plans was to ensure adequate environmental flows in local rivers and creeks.

City of Louisville Water Conservation Plan (2015)

Peter Mayer worked with CH2M to prepare a state approved water conservation plan for the City of Louisville Colorado.

City of Greeley Water Conservation Plan and Avoided Cost Analysis (2014 –2015)
Peter Mayer worked closely with the City of Greeley staff to update their water conservation plan for the next 7 years and to complete an avoided cost analysis that evaluates the impact of Greeley's water efficiency efforts since 1992 on customer water rates.

Senior Technical Advisor, Alliance for Water Efficiency (2007 – 2019)
The Alliance for Water Efficiency is a national NGO focused on promoting water conservation and efficiency. Peter Mayer helped found the organization and now served as a senior technical advisor and the newsletter editor for 12 years.

G480 Water Conservation Program Operation and Management Standard (2011-2013, 2018-19)
The G480 is a voluntary water conservation program operation and management standard approved by AWWA and ASNSI in 2013. Peter Mayer chaired the subcommittee that created the standard and was a key author of the document. He is a member of the subcommittee developing version 2.0.

Eastern Municipal Water District – Water Efficient Guidelines for New Development (2012-13)
Peter Mayer prepared a set of detailed, voluntary water efficiency guidelines for new construction in the Eastern Municipal Water District that go beyond current building codes and standards to increase water use efficiency.

City of Westminster Residential Demand Study and Conservation Plan Preparation (2012)
Peter Mayer and Aquacraft conducted a residential end use study in Westminster, Colorado to determine water use patterns and the level of water efficiency achieved. This information was then used in support of preparation of new water conservation plan for the City.

Northern Water Conservation Survey and Plan Development (2011)
The Northern Colorado Water Conservancy District hired Peter Mayer and Aquacraft to conduct a survey of its' 45 municipal members. The results of the survey were used to update Northern's water conservation plan for the Bureau of Reclamation.

Colorado Water Supply Initiative Municipal and Industrial Conservation Strategies (2010)
In support of the Statewide Water Supply Initiative (SWSI), the Interbasin Compact Committee (IBCC), and other water conservation efforts throughout the state, the CWCB contracted with Peter Mayer and Aquacraft to develop the conservation strategies section of the 2010 SWSI update.

Best Practices Guide for Colorado Water Conservation (2010)

Colorado Water Wise contracted with Peter Mayer and Aquacraft to research and produce a guidebook on water conservation best practices for Colorado. The guide was published in 2010 and is available for free download.

Evaluation of California Weather-Based "Smart" Irrigation Controller Programs (2005-2009)
Smart irrigation controllers that use prevailing weather conditions to adapt water applications to the actual needs of plants represent a significant advancement. Peter Mayer was the principal investigator on this study for the California Department of Water Resources, the California Urban Water Conservation Council, and approximately 30 participating water agencies examined the impact of 3,112 smart controllers on water use in northern and southern California.

Water Conservation: Customer Behavior and Effective Communications (2006 – 2009)
Peter Mayer and Aquacraft subcontracted to ICF International on this AwwaRF research project which examined water conservation social marketing programs and measured the impact of utility outreach efforts on customer behavior. The study examined water conservation communication campaigns in terms of customer recognition, attitudinal changes, behavior modification, and verifiable water use reductions and recommended the most effective methods and techniques for designing and implementing water conservation social marketing campaigns.

Water Budgets and Rate Structures: Innovative Management Tools (2005-2007)
Water budget rate structures are an innovative and increasingly popular tool for water utilities trying to convey an effective water efficiency message. This AwwaRF Tailored Collaboration project co-lead by Aquacraft and A&N Technical Services examined all aspects of water budgets and how they fit into the pantheon of water rate structures.

Water Conservation Plan Development and Demand Forecasting (2006–2010)
The State of Colorado requires that utilities seeking loans file a water conservation plan that includes detailed demand forecasts that incorporate water conservation. Aquacraft has developed conservation plans and demand forecasts for the cities of Aurora, Fort Collins, Glenwood Springs, Westminster, and Greeley, Colorado. In addition, Peter Mayer was contracted by the Colorado Water Conservation Board to review submitted conservation plans for compliance with statute.

Expert Testimony NEORSD Wastewater Case (2008)
Working with the Department of Justice, Peter Mayer developed a detailed research plan for the City of Cleveland to help them determine the contribution of wastewater flows from single-family, multi-family, and non-residential customers.

US EPA National Water Efficiency Market Enhancement Program (2004-2005)
The EPA is interested in starting a water efficiency program comparable the Energy STAR program. This project involves investigating potential product categories and product lines that

improve water efficiency and could be including the EPA program, such as weather-based irrigation control technology.

City of Carnation Water Conservation Demand Analysis (2004-2005)
In late 2004 Peter Mayer worked with the Pacific Institute, Carollo Engineers, and King County, Washington to determine the conservation potential evaluate the cost-effectiveness of water conservation in new and existing homes and businesses in the City of Carnation. Carnation is a small town that is currently not sewered. The County and the City are working together to provide a sanitary sewer system and treatment facility.

National Multiple Family Submetering and Allocation Billing Program Study (2002-2004)
Charging residents in multi-family house separately for water is growing trend in the United States. Peter Mayer was the principal investigator for this study which looked at the entire phenomena of submetering and allocation billing techniques and examined the potential water savings, regulatory issues, utility concerns, water rates, and regulatory climate.

Tampa Retrofit Project (2002-2003)

Colorado Department of Human Services Water Rights Study (2003)

Pinellas County Utilities Water Conservation Opportunities Study, (2002)
Virtual Water Efficient Home Web Site, (2001-2002)

East Bay MUD Conservation Retrofit Study, (2001-02)

CII Demand Assessment and Conservation Plan, Westminster, CO, (2000-01)

Seattle Home Water Conservation Study, Seattle Public Utilities and EPA, (1999-2000)

Commercial and Institutional End Uses of Water, AWWARF, (1998-2000)

Water Conservation Plan, City of Thornton, CO, (1998-2000)

Demand Analysis for the University of Colorado, (2000)

Water Conservation Futures Study, City of Boulder, CO, (1998-1999)

Water Efficiency in Water Wise and Standard New Homes, (1999-2000)

Residential End Uses of Water Study, AWWARF, (1996-1999)

Comparison of Demand Patterns among CI and SF Customers, Westminster, (1997-1998)

Analysis of Southern Nevada Xeriscape Project, (1998-2000)

Westminster, Peak Use Study, (1996)

Westminster Residential Water Use Study, (1995-1996)

PUBLICATIONS AND PRESENTATIONS

Rupprecht, C., M.M. Hamilton, and P.W. Mayer. 2020. Tucson Examines the Rate Impacts of Increased Water Efficiency and Finds Customer Savings. Journal of the American Water Works Association. January 2020, pp. 33-39. https://awwa.onlinelibrary.wiley.com/doi/10.1002/awwa.1429

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Douglas, C., S. Buchberger, and P. Mayer. Systematic Oversizing of Water Meters. 2019. AWWA Water Science Journal. December 2019. https://awwa.onlinelibrary.wiley.com/doi/abs/10.1002/aws2.1165

Mayer, P.W. 2019. Water Demand Trends, Efficiency and the Future of American Water Use. Keynote Address. University Council on Water Resources (UCOWR) Annual Conference. Snowbird, UT.

Mayer, P.W. 2018. Water Management's Quiet Hero – the Water Meter. Contractor Magazine. November, 2018.

Mayer, P.W., et. al. 2018. Peak Day Water Demand Management Study Heralds Innovation, Connection, Cooperation. Journal of the American Water Works Association. May 2018 110:5.

Mayer, P.W. 2018. Water Demand Trends, Efficiency and the Future of Urban Water Use. Keynote Address. Next Generation Water Summit 2018. Santa Fe, NM.

Mayer, P.W., and R. Smith. 2017. Peak Day Water Demand Management Study. Alliance for Water Efficiency. Chicago, IL.

Mayer, P.W., et. al. 2017. Peer Review of the Water Conservation Programs of the Metropolitan Water District of Southern California. Alliance for Water Efficiency. Chicago, IL.

Mayer, P.W. 2017. Water Conservation Keeps Rates Low in Tucson, Arizona. Alliance for Water Efficiency. Chicago, IL.

Mayer, P.W. 2017. Water Conservation Keeps Rates Low in Gilbert, Arizona. Alliance for Water Efficiency. Chicago, IL.

Mayer, P.W. 2016. Water Research Foundation Study Documents Water Conservation Potential and More Efficiency in Households. Journal of the American Water Works Association. October 2016 108:10.

Mayer, P.W. 2016. American Water Demand Trends and the Future of Conservation. Keynote Address- Gulf Coast Water Conservation Symposium, Houston, TX.

DeOreo, W.B., P. Mayer, J. Kiefer, and B. Dziegielewski. 2016. Residential End Uses of Water, Version 2. Water Research Foundation. Denver, CO.

Shimabuku, M., D. Stellar, and P. Mayer. 2016. Impact Evaluation of Residential Irrigation Audits on Water Conservation in Colorado. Journal of the American Water Works Association. May 2016, 108:5. Denver, Colorado.

Mayer, P.W., P. Lander, and D. Glenn. 2015. *Outdoor Water Use: Abundant Savings, Scant Research.* Journal of the American Water Works Association. February 2015, 107:2. Denver, Colorado.

Mayer, P.W. 2015. American Water Use Trends 1995-2015 and Future Conservation Potential. WaterSmart Innovations Conference. Las Vegas, NV.

Mayer, P.W. 2015. Introducing AWWA's New M22 Manual - Sizing of Water Service Lines and Meters. Proceedings of the AWWA Annual Conference and Exposition. Anaheim, CA. and North American Water Loss Conference. Atlanta, GA.

Mayer, P.W. et. al. 2014. *Conservation Efforts Limit Rate Increases for Colorado Utility*. Journal of the American Water Works Association. April 2014, 106:4. Denver, Colorado.

Mayer, P.W. et. al. 2013. Conservation Limits Rate Increases for a Colorado Utility. Alliance for Water Efficiency, Chicago, IL.

Mayer, P.W. 2013. Residential Water Use Trends in North America: Results from the Residential End Uses of Water Study Update. Proceedings of the AWWA Annual Conference and Exposition. Denver, Colorado.

ANSI/AWWA. 2013. G480 *Water Conservation Program Operation and Management* Standard (First Edition). American Water Works Association. Denver, CO.

Suero F., P.W. Mayer, and D. Rosenberg. 2012. *Estimating and Verifying United States Households' Potential to Conserve Water*. Journal of Water Resources Planning and Management. 138(3), 299–306.

DeOreo, W., & P.W. Mayer. 2012. *Insights into Declining Single Family Residential Water Demands*. Journal of the American Water Works Association. June 2012. Vol. 104, No. 6.

Mayer, P.W. and S. Feinglas. 2012. Evaluating Changes in Water Use and Conservation Effectiveness. WaterSmart Innovations Conference. Las Vegas, NV.

Maddaus. M. and P.W. Mayer. 2011. Demand Hardening: Assessing Potential Impacts with End Use Models. WaterSmart Innovations Conference. Las Vegas, NV.

Mayer, P.W. and M. Dickinson. 2011. The Alliance for Water Efficiency's Home Water Works Website. WaterSmart Innovations Conference. Las Vegas, NV.

Mayer, P.W. 2010. Demand Hardening: Big Myth, Small Reality. WaterSmart Innovations Conference. Las Vegas, NV.

Mayer, P.W. 2010. Guidebook of Best Practices for Municipal Water Conservation in Colorado. WaterSmart Innovations Conference. Las Vegas, NV.

Mayer, P.W., et. al. 2010. *Improving Urban Irrigation Efficiency By Using Weather-Based "Smart" Controllers.* Journal of the American Water Works Association. February 2010. Vol. 102, No. 2.

Mayer, P.W. 2009. Do Weather-Based Irrigation Controllers Save Water? Results from a large field study in California. American Water Works Association 2009 Annual Conference and Exposition. San Diego, CA.

Mayer, P.W. et. al. 2009. Water Efficiency Benchmarks for New Single-Family Homes. WaterSmart Innovations Conference. Las Vegas, NV.

Mayer, P.W. et. al. 2009. Evaluation of California Weather-Based "Smart" Controller Programs Results and Perspective on a Large Field Study. WaterSmart Innovations Conference. Las Vegas, NV.

Mayer, P.W. 2009. Benefit-Cost Analysis for Water Conservation Planning. Colorado Water Wise Annual Event. Denver, CO.

Mayer, P.W. et. al. 2009. Evaluation of California Weather-Based "Smart" Irrigation Controller Programs. California Department of Water Resources, Sacramento, CA.

Mayer, P.W., et. al. 2008. *Water Budgets and Rate Structures: Innovative Management Tools*. American Water Works Association Research Foundation. Denver, CO.

Mayer, P.W. et. al. 2008. The California Water Smart Irrigation Controller Project Results and Perspective on a Large Field Study of an Important Emerging Technology. WaterSmart Innovations Conference. Las Vegas, NV.

Mayer, P.W. et. al. 2008. *Water Budgets and Rate Structures: Innovative Management Tools*. Journal of the American Water Works Association. May 2008. Vol. 100, No. 5.

Mayer, P.W., et. al. 2008. Cost Effective Conservation Programs. Proceedings of the AWWA Water Sources Conference. Reno, NV.

Mayer, P.W., et. al. 2008. Water Use in New and Existing Single-Family Homes - Update on EPA Benchmarking Study. Proceedings of the AWWA Water Sources Conference. Reno, NV.

Mayer, P.W., et. al. 2007. Water Budgets and Rate Structures – Innovative Management Tools. Proceedings of the AWWA Annual Conference, Toronto, Ontario.

Mayer, P.W. 2007. *Saving Water Indoors.* Home Energy Magazine. Special Issue.

Mayer, P.W., et. al. 2006. *Third-party Billing of Multifamily Customers Presents New Challenges to Water Providers.* Journal AWWA. August 2006, Vol. 98, No. 8.

Mayer, P.W. 2006. Submetering Billing Programs in Multi-Family Housing. Proceedings of the Water Sources Conference 2006, Albuquerque, NM.

Mayer, P.W. 2006. WaterWiser - Progress and Change, Benefits and Capabilities of an On-Going On-Line Resource. Proceedings of the Water Sources Conference 2006, Albuquerque, NM.

Mayer, P.W. 2005. End Uses of Water: Practical Data Collection, Analysis, and Utility. Arab Water World. May/June 2005.

Mayer, P.W, et. al. 2004. National Submetering and Allocation Billing Program Study – Project Overview and Preliminary Results. Proceedings of the Water Sources Conference 2004, Austin, TX., Proceedings of the AWWA Annual Conference, Orlando, FL.

Towler, E., P.W. Mayer, et. al. 2004. *Completing the Trilogy – Impact and Acceptance of Retrofit Conservation Products.* Proceedings of the Water Sources Conference 2004, Austin, TX.

Chesnutt, T.W., and P.W. Mayer, 2004. *Water Budget-Based Rate Structures: A New Look at an Old Idea.* Proceedings of the Water Sources Conference 2004, Austin, TX.

DeOreo, W.B., M. Gentili, and P.W. Mayer, 2004. *Advanced Cooling Water Treatment Pays for Itself in Urban Supermarkets.* Proceedings of the Water Sources Conference 2004, Austin, TX.

Mayer, P.W., W. DeOreo, and W. West, 2003. *Conservation Opportunities - A Florida Community Takes Stock*. Proceedings of the AWWA Annual Conference Anaheim, CA.

Mayer, P.W. et. al. 2002. *Great Expectations – Actual Water Savings with the Latest High-Efficiency Residential Fixtures and Appliances.* Proceedings of the Water Sources Conference 2002, Las Vegas, NV.

Mayer, P.W., W.B. DeOreo, & D. Kaunisto. 2002. *Raw Water Irrigation – System Sizing Poses an Interesting Problem.* AWWA Annual Conference Proceedings. Denver, CO.

Mayer, P.W., W.B. DeOreo, A. Dietemann, and T. Skeel. 2001*. Residential Efficiency: The Impact of Complete Indoor Retrofits*. AWWA Annual Conference Proceedings, Washington, D.C.

Maddaus, L.A., & P.W. Mayer. 2001 *Splash or Sprinkler? Comparing Water Use of Swimming Pools and Irrigated Landscapes.* AWWA Annual Conference Proceedings, Washington D.C.

W.B. DeOreo, A. Dieteman, T. Skeel, P. Mayer, et. al. 2001. *Retrofit Realities.* Journal American Water Works Association, March 2001.

DeOreo, W.B., P.W. Mayer, J. Rosales, et.al. 2000. *Impacts of Xeriscape on Single Family Residential Water Use.* Proceedings of Fourth Decennial National Irrigation Symposium, Phoenix, AZ.

Mayer, P.W., K. DiNatale, and W.B. DeOreo. 2000. *Show Me the Savings: Do New Homes Use Less Water?* AWWA Annual Conference Proceedings. Denver, CO.

Mayer, P.W., W.B. DeOreo, et. al. 1999. *Residential End Uses of Water.* American Water Works Association Research Foundation, Denver, Colorado.

Mayer, P.W. and W.B. DeOreo. 1999. *Conservation Potential in Outdoor Residential Water Use.* AWWA Annual Conference Proceedings. Chicago, IL.

Dziegielewski, B., W.Y. Davis, and P.W. Mayer. 1999. *Existing Efficiencies in Residential Indoor Water Use.* AWWA Conserv99 Proceedings. Monterey, CA.

Mayer, P.W., W.B. DeOreo, et. al. 1998. *Residential End Use Study Progress Report: Year 2*. AWWA Annual Conference Proceedings. Dallas, TX.

Mayer, P.W., W.B. DeOreo, R. Allen, et. al. 1997. *North American Residential End Use Study: Progress Report*. AWWA Annual Conference Proceedings. Atlanta, GA.

Mayer, P.W., J.P. Heaney and W.B. DeOreo. 1996. *Conservation Retrofit Effectiveness: A Risk Based Model Using Precise End Use Data.* AWWA Conserv96 Proceedings.

DeOreo, W.B., P. Lander, and P.W. Mayer. 1996. *New Approaches in Assessing Water Conservation Effectiveness*. AWWA Conserv '96 Proceedings.

DeOreo, W.B., J.P. Heaney, and P.W. Mayer. 1996. *Flow Trace Analysis to Assess Water Use.* Journal of the American Water Works Association. Vol.88, No. 1, Jan.

Mayer, P.W. and W.B. DeOreo. 1995. *A Process Approach for Measuring Residential Water Use and Assessing Conservation Effectiveness*. AWWA Annual Conference Proceedings. Anaheim, California.

Mayer, P.W. 1995. *Residential Water Use and Conservation Effectiveness: A Process Approach*. Master's Thesis. University of Colorado, Boulder.

AWARDS

- 2019 AWE Distinguished Service Award – "In Recognition and with Appreciation for His 12 Years as Editor of the Water Efficiency Watch Newsletter 2007 – 2019).
- 2013 AWWA Water Conservation Division Best Paper Award – "Insights into Declining Single Family Residential Water Demands."
- 2013 Quentin Martin Best Research-Oriented Paper Award, ASCE-EWRI Journal of Water Resources Planning and Management, March 2013. Awarded for "Estimating and Verifying United States Households' Potential to Conserve Water" by Franciso J. Suero, A.M.ASCE;

Peter W. Mayer; David E. Rosenberg, A.M.ASCE

- 2010 AWWA Water Conservation Division Best Paper Award – "Improving Urban Irrigation Efficiency by using Weather-Based 'Smart' Irrigation Controllers."
- 2008 AWWA Water Conservation Division Best Paper Award – "Water Budgets and Rate Structures: Innovative Management Tools."
- 2006 AWWA Water Conservation Division Best Paper Award – "Third Party Billing of Multi-family Customers Presents New Challenges to Water Providers"
- 1996 Montgomery-Watson Master's Thesis Award, Second Place
- 1996 American Water Works Association Academic Achievement Award, Honorable Mention

CORRESPONDENCE FROM MARINA COAST WATER DISTRICT TO STATE WATER RESOURCES CONTROL BOARD MEMBERS

ATTACHMENT 2a

MARINA COAST WATER DISTRICT

11 RESERVATION ROAD, MARINA, CA 93933-2099
Home Page: www.mcwd.org
TEL: (831) 384-6131 FAX: (831) 883-5995

April 21, 2020

Via E-Mail Only:

Tom Luster
California Coastal Commission
45 Freemont, Suite 2000
San Francisco, CA 94105-2219

Subject: MCWD's Supplemental Comments Regarding Proposed Scope of Work to Address Area Aquifer Impacts Related to California American Water's Proposed Monterey Peninsula Water Supply Project, Prepared by Weiss Associates on behalf of California Coastal Commission, 11 March 2020 Public Review Draft

Dear Mr. Luster:

Marina Coast Water District (MCWD) submits these supplemental comments regarding the March 11, 2020 Public Review Draft – Proposed Scope of Work to Address Area Aquifer Impacts Related to California American Water's Proposed Monterey Peninsula Water Supply Project prepared by Weiss Associates for the California Coastal Commission. These comments address the California State Water Resources Control Board (SWRCB) response/comment dated February 10, 2020 and the Hydrogeologic Working Group (HWG) letter dated April 6, 2020 which commented on the Weiss proposed Scope of Work. As explained below and in the attached comments from EKI Environment & Water, Inc. (EKI) and Hopkins Groundwater Consultants, Inc. (Hopkins), MCWD continues to believe that the proposed scope of work will aid the Commission in addressing many of the issues that have been raised regarding the potential impacts of the Monterey Peninsula Supply Project (MPWSP) on groundwater resources, including significant new information that has become available since the California Public Utilities Commission (CPUC) certified the Environmental Impact Report (EIR) for the MPWPS. In fact, without completing the full scope of work, we do not believe there would be sufficient information for the Commission to render an informed decision regarding the MPWPS's potential impacts on groundwater or coastal resources.

As explained in detail in the attached comments from EKI and Hopkins, it does not appear that the SWRCB had complete information in rending its conclusions. Specifically, it appears the SWRCB was not provided with the evidence submitted by MCWD that demonstrates: (1) the importance of fresh water recharge from Dune Sand Aquifer in protecting and maintaining water quality in the Upper 180-Foot Aquifer south of the Salinas River; (2) the importance of this recharge to the Salinas Valley Groundwater Basin (SVGB); (3) water quality information from Airborne Electromagnetics (AEM) Studies, groundwater sampling at Fort Ord; (4) resistivity data from geophysical logs obtained at Monitoring Well MW-7; (5) recharge (mounding) of salt water in the vicinity of the TSW and Monitoring Wells MW-1 and MW-3 from CEMEX operations; and,

(6) pumping of shallow groundwater from the Dune Sand Aquifer (DSA) in the vicinity of Monitoring Well MW-4S which depresses local water levels. Without addressing this evidence, both the HWG and SWRCB comments disregard the importance of the Dune Sand Aquifer as a groundwater resource. Moreover, the HWG and SWRCB comments are inconsistent with the Basin Plan and fly in the face of mandates by federal and state regulatory agencies, including the Central Coast Regional Water Quality Control Board, to remediate groundwater to drinking water standards in the Dune Sand and Upper-180 Foot Aquifer zones at Fort Ord, which has led to the expenditure of three hundred and twenty million dollars of tax payer dollars.

We also take this opportunity to address several mischaracterizations included in the HWG's letter regarding the adequacy of the CPUC EIR modeling, and public comment and peer review during the CPUC's process. The HWG suggests that the Weiss SOW is inappropriate because in their words it would "duplicate/replace the work conducted in the MPWSP FEIR on potential groundwater impacts, and would not be subject to all the public review and peer review included in the [FEIR]." This suggestion is both factually and legally incorrect. First, there was no peer review of the superposition model included in the FEIR except by the HWG, which only represents MPWSP proponents, not the public or any public agencies.[1] While peer review was conducted on Geoscience's original modelling for the CPUC, that peer review determined the modelling was inadequate. Second, the Weiss SOW is not only appropriate, it is legally required before the Commission can make a decision regarding the MPWSP's potential impacts on groundwater resources. (See Pub. Resources Code, § 21166 [addressing subsequent environmental review]; CEQA Guidelines, § 15162, subd. (a) [same].). And contrary to the HWG's suggestion, the Commission must provide for public review and comment as the CPUC did under CEQA.

Finally, it should not be lost on the Commission that the HWG contends on the one hand that Weiss does not need to address new information regarding groundwater conditions because the superposition model in the MPWSP EIR adequately addresses the MPWSP's hydrogeologic impacts while on the other hand it argues that a lack of data in the project area prevents calibration of the North Marina Groundwater Model (NMGWM2016) . The HWG contends that, by relying on a superposition version of the NMGWM2016, its model somehow overcame the lack of calibration. As explained in attached and prior EKI, Hopkins, and GeoHydros comments, this contention is unsupportable. The superposition version of the NMGWM2016 relies on the hydraulic parameters (hydraulic conductivities, recharge, boundary conditions, etc.) contained in the NMGWM2016 to render its predictions of drawdowns and areas of influence that will arise in all of the aquifers at the site as a consequence of the proposed pumping. Therefore, the two models

[1] It is important to note that, while the HWG states its responses to Weiss' technical questions were provided by it on February 20, 2020 jointly with the CPUC "FEIR/EIS team," which the responses indicated includes Eric Zigas of ESA and Steve Deverel of HydroFocus, neither Mr. Zigas nor Mr. Deveral, nor their organizations, ESA and HydroFocus, nor any other consultants, speak for the CPUC. Only the five members of CPUC, through their decisions and orders, speak for the CPUC. As the CPUC's legal counsel stated to the Coastal Commission during the November 14, 2019 hearing on Cal-Am's CDP appeal/application, the CPUC is neither "a proponent nor opponent" of the proposed MPWSP and makes no recommendation to the Coastal Commission on the matter. To the extent the CPUC's consultants ESA and HydroFocus can shed light on the Commission's technical questions regarding prior groundwater investigation, it may be appropriate for the Commission to consider their comments on the Scope of Work. However, it would be incorrect to impute the HWG's opinions, or any responses from the "FEIR/EIS team" to the CPUC itself.

cannot be separated in the manner proposed by the HWG. They are in fact merely two different versions of the same poorly calibrated groundwater model. Therefore, it is critical that the two modeling phases indicated in the proposed Scope of Work be consolidated and that Weiss's focus be directed on achieving improved calibration as has been proposed by GeoHydros (2020).

We appreciate the opportunity to comment on the proposed permit amendments. Please contact me if you have any questions.

Very truly yours,

Keith Van Der Maaten
General Manager

Enc.

List of Attachments

Attachment 1 – EKI Environment & Water, Inc., Vera H. Nelson, P.E., *Comments Regarding 6 April 2020 Hydrologic Working Group Response to Weiss Associates Public Review Draft Proposed Scope of Work for the Monterey Peninsula Water Supply Project*, April 21, 2020.

Attachment 2 – Hopkins Groundwater Consultants, Inc., *Comments Regarding SWRCB and Hydrogeologic Work Group Letters Concerning the Public Review Draft – Proposed Scope of Work to Address Area Aquifer Impacts Related to California American Water's Proposed Monterey Peninsula Water Supply Project*, April 20, 2020.

cc: EKI Environment & Water, Inc.
Hopkins Groundwater Consulting
Ruth Stoner Muzzin
Howard Wilkins

CORRESPONDENCE FROM MARINA COAST WATER DISTRICT TO STATE WATER RESOURCES CONTROL BOARD MEMBERS

ATTACHMENT 2b

21 April 2020

MEMORANDUM

To: Keith Van Der Maaten, P.E., Marina Coast Water District

From: Vera Nelson, P.E., EKI Environment & Water, Inc.
Tina Wang, EKI Environment & Water, Inc.

Subject: Comments Regarding 6 April 2020 Hydrogeologic Working Group Response to Weiss Associates Public Review Draft Proposed Scope of Work for the Monterey Peninsula Water Supply Project, dated 11 March 2020
Marina Coast Water District, California
(EKI B60094.09)

EKI Environment & Water, Inc. ("EKI"), has prepared this memorandum on behalf of the Marina Coast Water District ("MCWD" or "District"). This memorandum addresses the Hydrogeologic Working Group's ("HWG") letter, dated 6 April 2020 ("HWG Letter"), which responds to *Weiss Associates Public Review Draft proposed Scope of work for the Monterey Peninsula Water Supply Project* ("MPWSP or the Project"), dated 11 March 2020 ("Weiss SOW"). Comments on the State Water Resources ("SWRCB") Memorandum, dated 10 February 2020, cited in the HWG Letter are also provided.

1.0 COMMENTS BY STATE WATER RESOURCES CONTROL BOARD ("SWRCB")

The HWG Letter cites comments made by the State Water Resources Control Board ("SWRCB") GAMA division on *Weiss Associates, 1 November 2019, Independent hydrogeological Review of Recent Data and Studies Related to California American Water's Proposed Monterey Regional Water Supply Project* ("Independent Hydrogeologic Review"). These SWRCB comments are summarized in a memorandum dated 10 February 2020 ("SWRCB Memorandum"). The SWRCB Memorandum evaluates the continuity of the Fort Ord/Salinas Valley Aquitard ("FO-SVA") between the MW-7 well cluster and inland areas based

on hydrographs from wells MW-1 through MW-9. Based upon an analysis of these hydrographs, the SWRCB concludes the following:

> "Because there are strong indications that well MW7 location is underlain by FO-SVA we do not recommended additional monitoring well(s) up and downgradient of MW7 for more "accurate" delineation of the FO-SVA in this area.
>
> Based on hydrographs the shallow groundwater perched at the top of the FO-SVA flows into the deeper zones (180-foot aquifer) somewhere between well MW4 and MW7 where it is captured by the deeper groundwater with a landward hydraulic gradient. This deeper groundwater is significantly affected by seawater intrusion. These data indicate that the relatively small volume of a fresh water percolating from the perched zone has no significant effect on groundwater quality within the 180-foot aquifer."

Although we concur that well MW-7 is underlain by FO-SVA, we strongly disagree with SWRCB conclusion that additional wells are not needed to understand hydrogeologic and water quality conditions in this area. The SWRCB memorandum states that:

> "deeper groundwater is significantly affected by seawater intrusion. These data indicate that the relatively small volume of a fresh water percolating from the perched zone has no significant effect on groundwater quality within the 180-foot aquifer."

The SWRCB evaluation does not consider multiple lines of evidence provided by MCWD that demonstrate the importance of fresh water recharge from Dune Sand Aquifer in protecting and maintaining water quality in the Upper 180-Foot Aquifer south of the Salinas River, and the importance of this recharge to the Salinas Valley Groundwater Basin ("SVGB"). The SWRCB memorandum does not consider water quality information from Airborne Electromagnetics ("AEM") Studies, groundwater sampling at Fort Ord, and resistivity data from geophysical logs obtained at MW-7. Lithologic and chemical data from Fort Ord demonstrate that the 180-Foot Aquifer zone is separated into two aquifer zones, the Upper and Lower 180-Foot Aquifer zones beneath Fort Ord. The Upper 180-Foot Aquifer zone contains fresh groundwater even in the northern portion of Fort Ord. Water level data and chemical data from monitoring wells at Fort Ord show that water levels in this aquifer are below sea level and are flowing inland (See Section 1.1). Unfortunately, many of the 180-Foot Aquifer monitoring wells installed by Cal Am (e.g., MW-7) have very long screens and in some cases do not monitor water levels or water quality in the Upper 180-Foot Aquifer zone (See Section 1.2). Therefore, it is impossible to assess if this same stratigraphy exists in the vicinity of the Project. However available information obtained from AEM Surveys and resistivity logs of MW-7 indicates that fresh water is present in the Upper 180-Foot Aquifer zone near the Project. An overview of this information is provided in Sections 1.1 and 1.2 below. We believe that this information provides compelling evidence that significant fresh water exists in the Upper 180-Foot Aquifer zone in the vicinity of the project, which, if reviewed and considered by the SWRCB, would lead to the conclusion that that

the Dune Sand Aquifer is an important and significant source of recharge to the SVGB and potential impacts by the Project to this zone and the Upper 180-foot zone need to be accurately evaluated.

1.1 AEM and Fort Ord Salinity Data

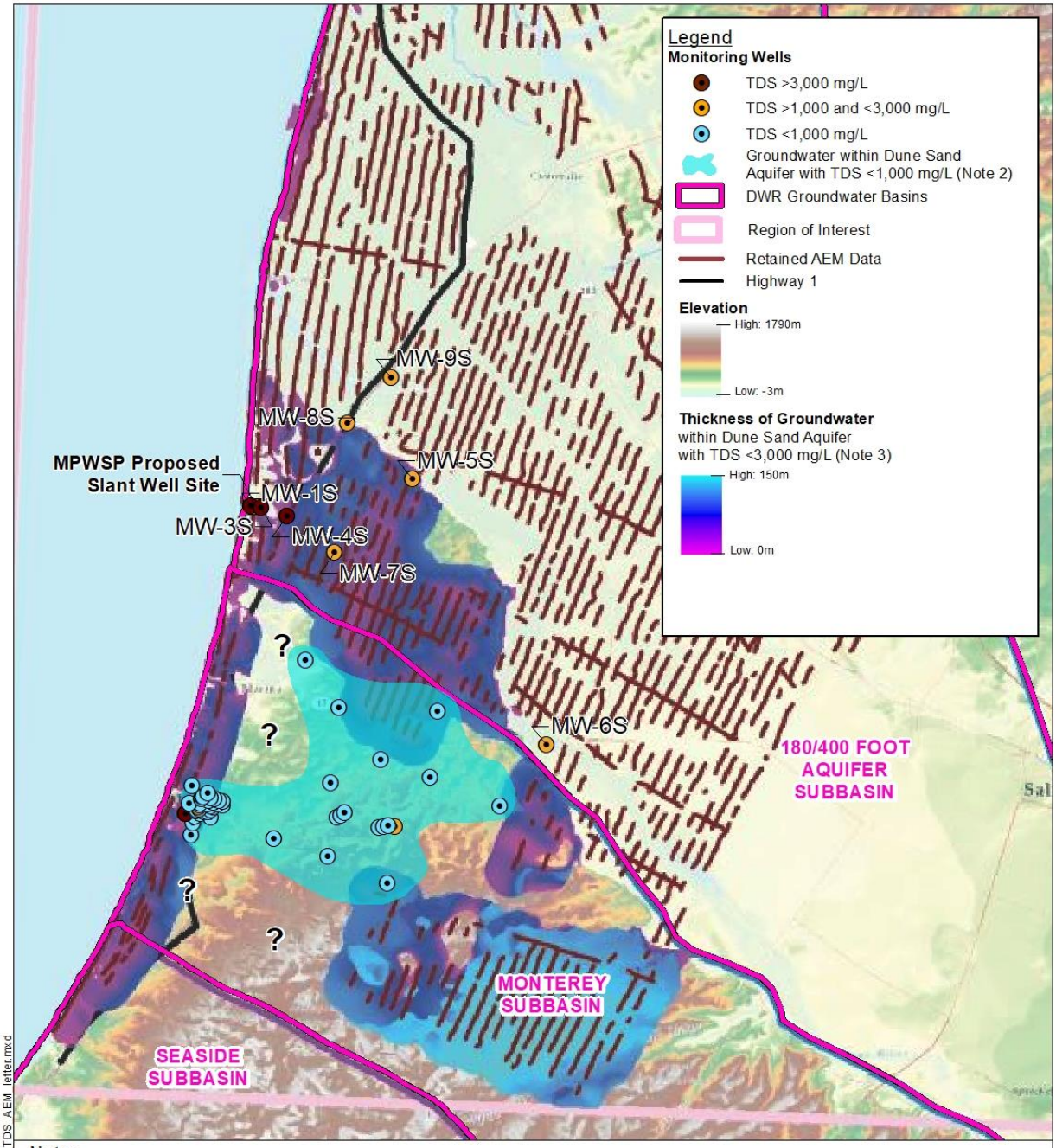
Results of the 2017 and 2019 Airborne Electromagnetics ("AEM") Studies conducted by Stanford University ("Stanford") and Aqua Geo Frameworks ("AGF"),(Stanford/Aqua Geo Frameworks, 2018)[1] (AGF, 2019)[2] show that substantial quantities of water containing TDS concentrations less than 3,000 milligrams per liter ("mg/L") exist in both the Dune Sand Aquifer and the Upper-180 Foot Aquifer. This groundwater meets the SWRCB Resolution No. 88-63 criteria for *potentially suitable, for municipal or domestic water supply.*

This salinity information is supported by data collected from Fort Ord monitoring wells, which are summarized in EKI Environment & Water, Inc.'s ("EKI") report entitled *Fresh Groundwater in Dune Sand and 180-Foot Aquifer Zones South of Salinas River, 180/400 Foot Aquifer & Monterey Subbasins, dated 20 December 2019 (EKI, 2019)* [3] (Attachment A). These data demonstrate that TDS concentrations in groundwater within the Dune Sand Aquifer, known as the A-Aquifer at Fort Ord, and the Upper-180 Foot Aquifer are consistently below 1,000 mg/L across Fort Ord. These conditions are consistent with results of the AEM study which show that similar conditions exist north of Fort Ord all the way to the Salinas River (see Figures 1 and 2 below).

[1] Stanford/Aqua Geo Frameworks, 2018. *Interpretation of Hydrostratigraphy and Water Quality from AEM Data Collected in the Northern Salinas Valley, CA*, Ian Gottschalk, Rosemary Knight, Stanford University, Stanford, CA; Ted Asch, Jared Abraham, Jim Cannia, Aqua Geo Frameworks, Mitchell, NE, dated 15 March 2018.

[2] Aqua Geo Frameworks, 2019. *Final Report on the 2019 Airborne Electromagnetic Survey of Selected Areas Within the Marina Coast Water District*, dated 14 November 2019.

[3] EKI, 2019. *Fresh Groundwater in Dune Sand and 180-Foot Aquifer Zones South of Salinas River, 180/400 Foot Aquifer & Monterey Subbasins, dated 20 December 2019*.



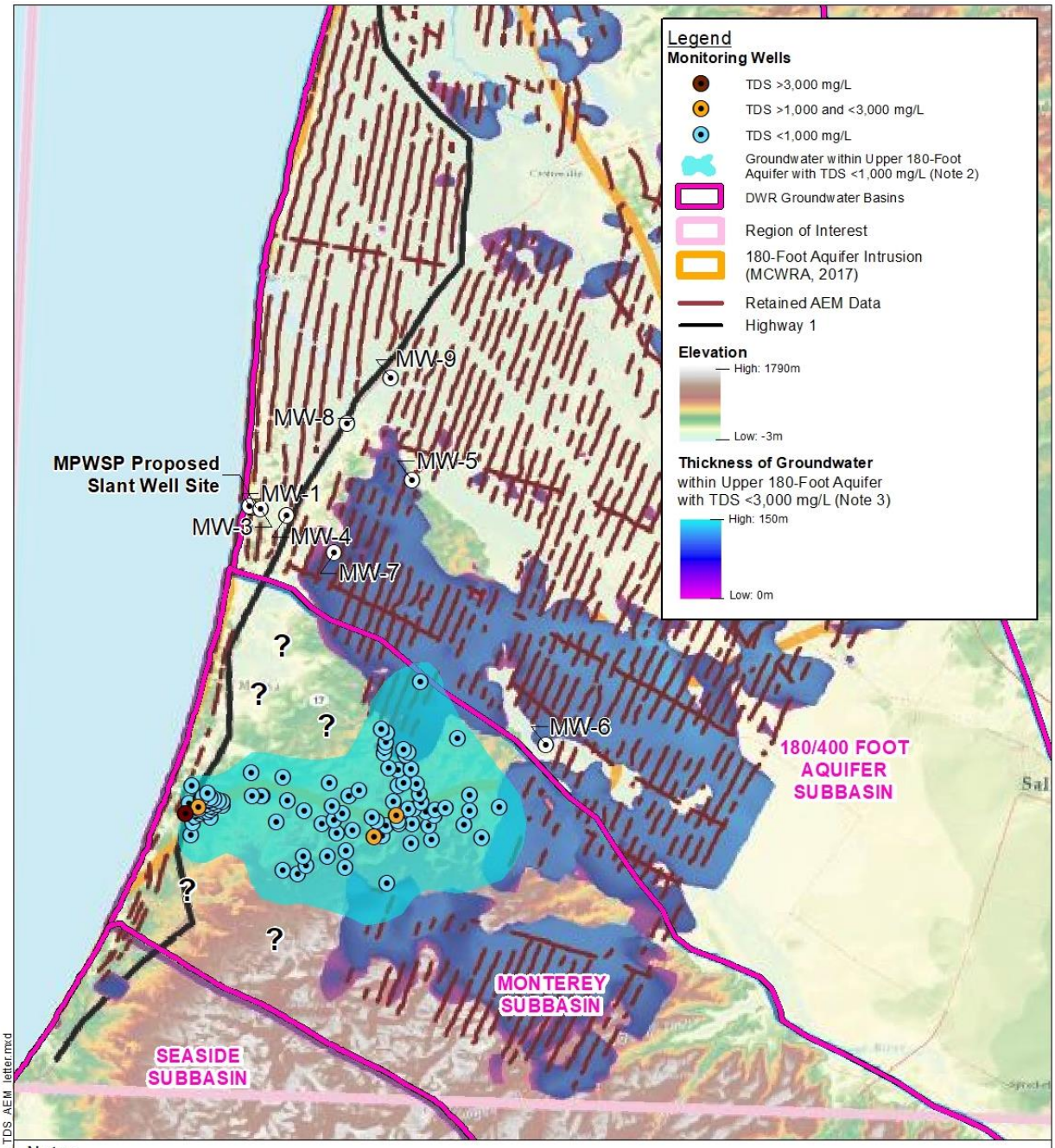
Notes
1. All locations are approximate.
2. TDS data shown were obtained from Fort Ord wells during December 2018 (EKI, 2019) and MPWSP monitoring wells during April 2018 (MPWSP, 2018).
3. Airborne Magnectic data are retained in May 2017 (Stanford/Aqua Geo Framworks, 2018). Source of drinking water identified for areas with TDS <3,000 mg/L.
4. Wells screend in the Unconfined Upper 180-Foot Aquifer are shown for areas near the coast beyond the boundary of the Fort Ord - Salinas Valley Aquitard.

N
0 1.5 3
(Scale in Miles)

AEM Data and 2018 TDS Data
Dune Sand Aquifer

Marina Coast Water District
Monterey County, CA
April 2020
B60094.09
Figure 1

Path: X:\B60094\Maps\20200415Fig1_DuneSandAquifer_TDS_AEM_letter.mxd



Notes
1. All locations are approximate.
2. TDS data shown were obtained from Fort Ord wells during December 2018 (EKI, 2019).
3. Airborne Magnectic data are retained in May 2017 (Stanford/Aqua Geo Framworks, 2018). Source of drinking water identified for areas with TDS <3,000 mg/L.
4. Water quality data for MW-1 through MW-9 not shown as data from these wells likely not representative of Upper 180-Foot Aquifer.

N
0 1.5 3
(Scale in Miles)

AEM Data and 2018 TDS Data
Upper 180-Foot Aquifer

Marina Coast Water District
Monterey County, CA
April 2020
B60094.09
Figure 2

Path: X:\B60094\Maps\20200415\Fig2_Upper180ftAquifer_TDS_AEM_letter.mxd

The total saturated thickness of the Dune Sand and Upper 180-foot Aquifers is generally greater than 100 feet south of the Salinas River in the 180/400 Foot Aquifer Subbasin and in the Monterey Subbasin[4]. Therefore, these data, in conjunction with AEM data, show that large volumes of groundwater that meet the beneficial use standard for drinking water of <3,000 mg/L TDS (i.e., approximately 440,000 AF[5]) exist within Dune Sand and Upper-180 Foot Aquifer within this area. The new data obtained from Fort Ord wells indicates that TDS concentrations in groundwater within the Dune Sand Aquifer and Upper-180 Foot Aquifer beneath Fort Ord also meets the secondary drinking standard of 500 mg/L (see Table A-1 included in Attachment A). The majority of this groundwater will infiltrate into underlying deeper aquifers and recharge the Monterey Subbasin, the 180/400 Foot Aquifer Subbasin, and ultimately the greater SVGB.

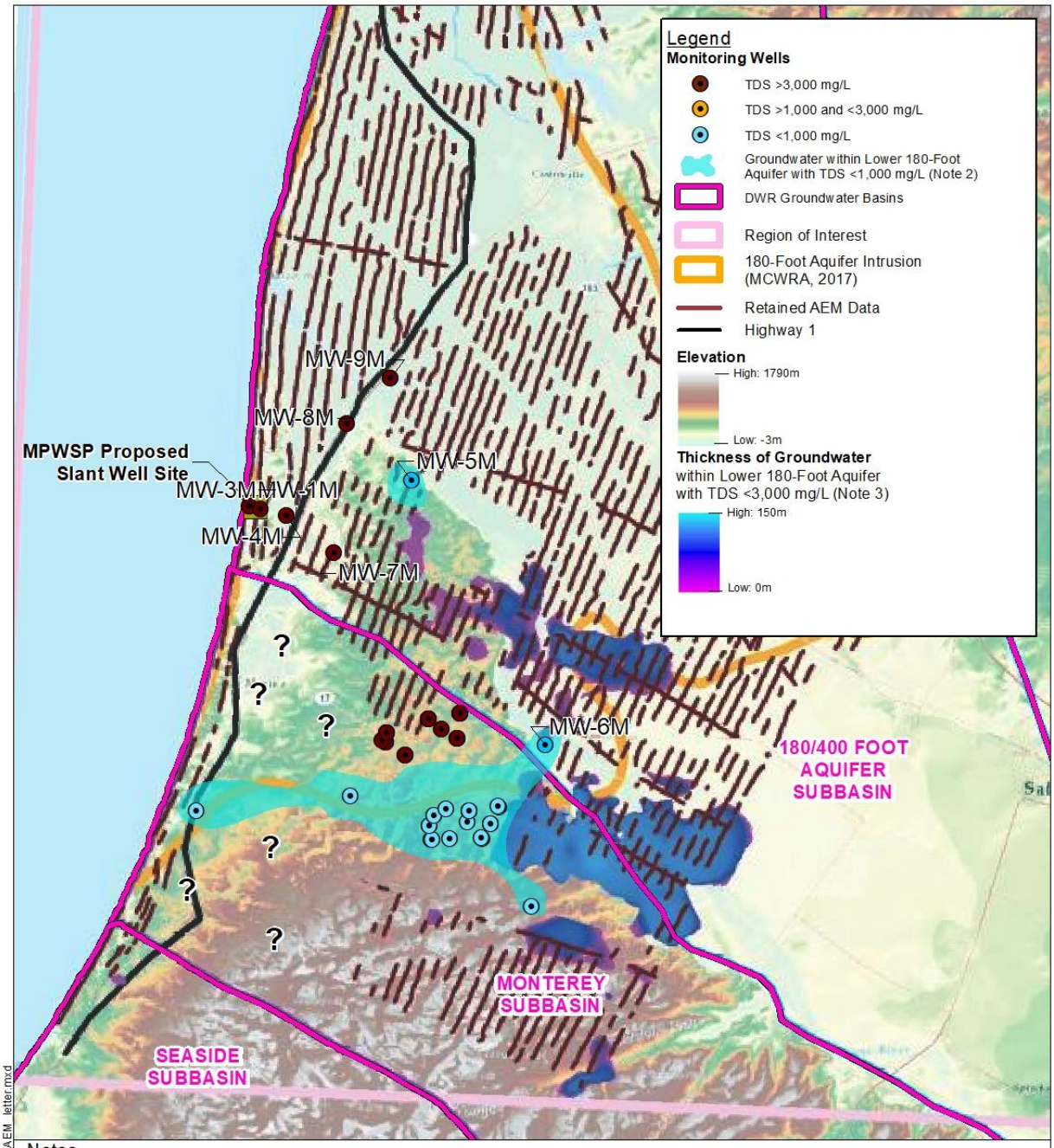
AEM and Fort Ord Data show that the Lower 180-Foot Aquifer is much more seawater intruded (Figure 3). As such, wells that are screened through the Lower 180-Foot Aquifer or through both the Upper and Lower 180-Foot Aquifer, are likely to show more saline conditions (e.g., MW-7M). Water level maps produced for Fort Ord show that water levels and gradients in the Upper and Lower 180-Foot Aquifer zones differ (See Attachment D). Water levels and gradients in the Lower 180-Foot aquifer zone are more similar to the 400-Foot Aquifer zone, which also show greater seawater intrusion.

These data demonstrate seepage from the Dune Sand Aquifer near Monterey Bay (where water levels are above sea level) into the underlying Upper 180-Foot Aquifer (where water levels are below sea level) has effectively stopped seawater intrusion in this aquifer zone. These data show that the Dune Sand Aquifer and Upper 180-Foot Aquifer are an important source of water to the SVGB. The AEM study indicates that similar sources of low TDS groundwater exist in the Dune Sand and Upper 180-Foot Aquifer in the southern portion of the 180/400 Foot Aquifer Subbasin where the Project slant wells will be located. The cross section developed from 2017 AEM data collected in the vicinity of the MPWSP wells demonstrates the recharge of fresh water from the Dune Sand into the Upper-180 Foot Aquifer and into the SVGB (see Figures 4 and 5).

---

[4] Harding ESE, 2001. Hydrogeologic Investigation of the Salinas Valley Basin in the Vicinity of Fort Ord and Marina, Salinas Valley, California, dated 12 April 2001.

[5] The AEM study estimated approximately 188,000 acre-feet ("AF") and 291,000 AF of groundwater with TDS < 3,000 mg/L exists in the Dune Sand Aquifer and the Upper 180-Foot Aquifer, respectively. In the Dune Sand Aquifer, all of this groundwater is located south of the Salinas River. In the Upper 180-Foot Aquifer, approximately two thirds of this groundwater exist south of the Salinas River. The additional fresh groundwater volume identified by the December 2018 Fort Ord sampling event was approximately 57,000 AF, based on a saturated thickness of 100 feet within the Dune Sand and Upper 180-Foot Aquifers and estimated porosity of 0.2 over 2,800 acres.



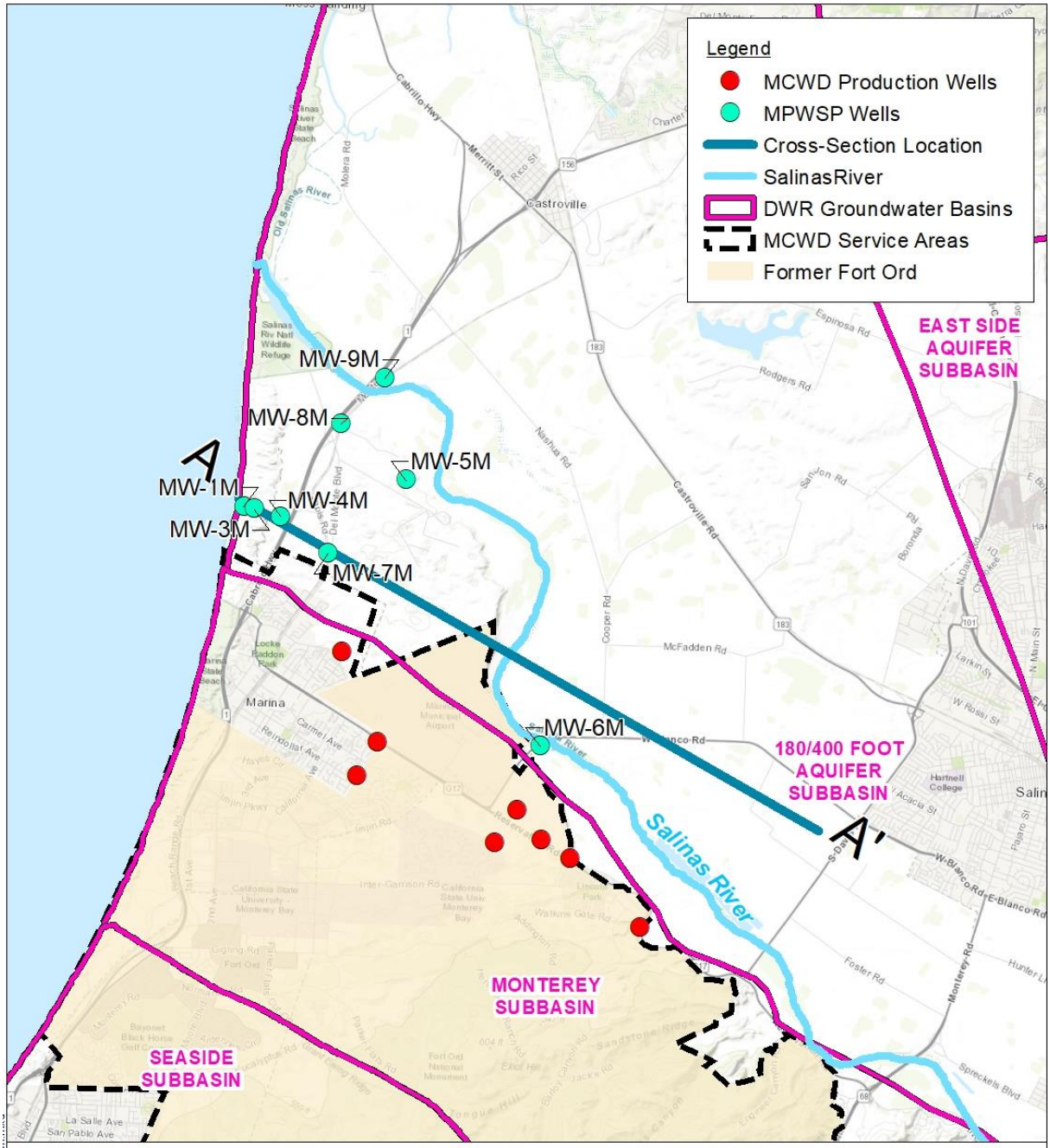
Notes
1. All locations are approximate.
2. TDS data shown were obtained from Fort Ord wells during December 2018 (EKI, 2019) and MPWSP monitoring wells during April 2018 (MPWSP, 2018).
3. Airborne Magnectic data are retained in May 2017 (Stanford/Aqua Geo Framworks, 2018). Source of drinking water identified for areas with TDS <3,000 mg/L.

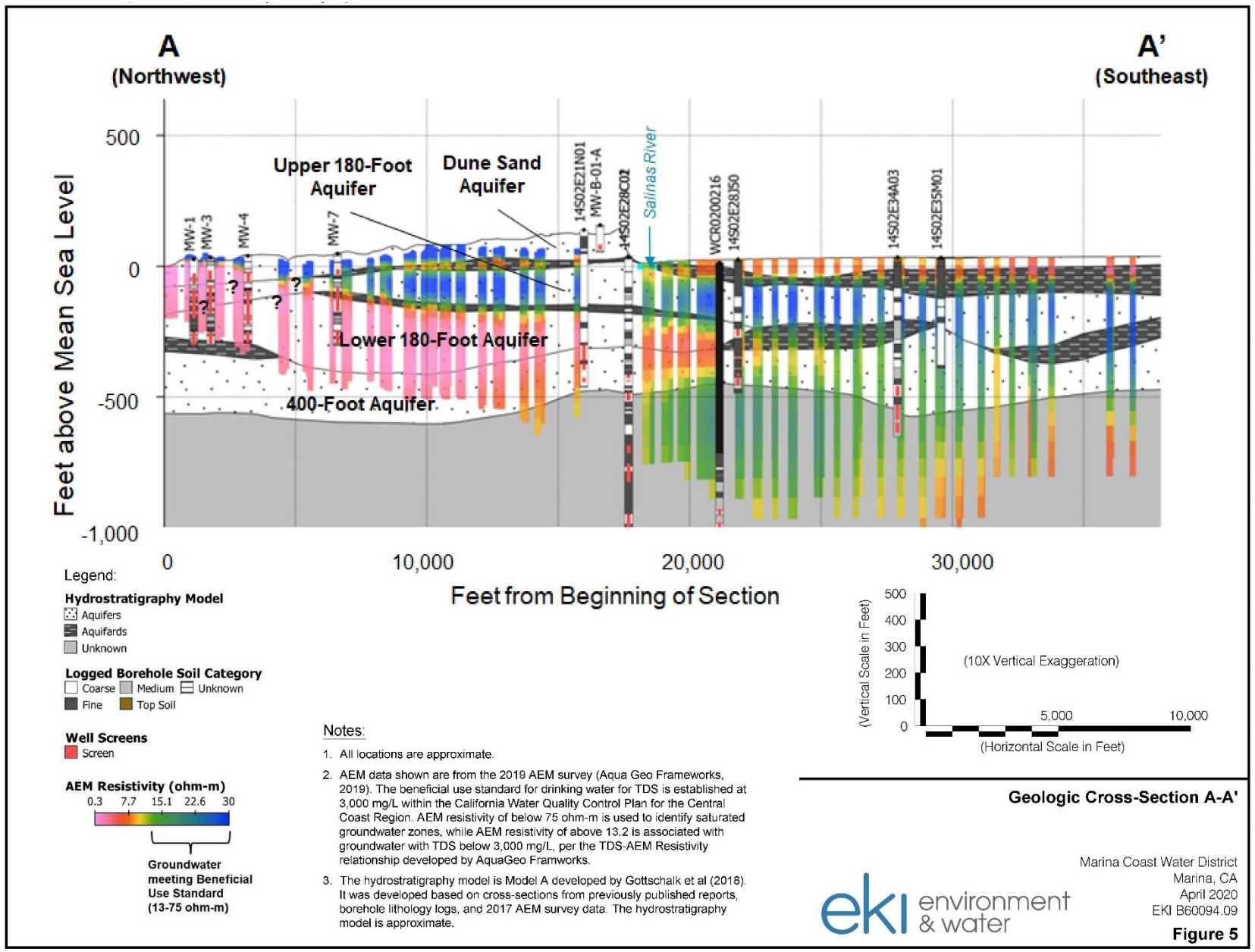
N
0 1.5 3
(Scale in Miles)

AEM Data and 2018 TDS Data
Lower 180-Foot Aquifer

Marina Coast Water District
Monterey County, CA
April 2020
B60094.09
Figure 3

Path: X:\B60094\Maps\2020\04\Fig3_Lower180Ft_TDS_AEM_letter.mxd


Legend
MCWD Production Wells
MPWSP Wells
Cross-Section Location
SalinasRiver
DWR Groundwater Basins
MCWD Service Areas
Former Fort Ord
MW-9M
MW-8M
MW-5M
MW-1M
MW-4M
MW-3M
MW-7M
MW-6M
A
A'
EAST SIDE AQUIFER SUBBASIN
180/400 FOOT AQUIFER SUBBASIN
MONTEREY SUBBASIN
SEASIDE SUBBASIN
Salinas River
Castroville
Marina
Notes
1. All locations are approximate.
N
0
1.5
3
(Scale in Miles)
Cross-Section Location
Marina Coast Water District
Monterey County, CA
April 2020
B60094.09
Figure 4

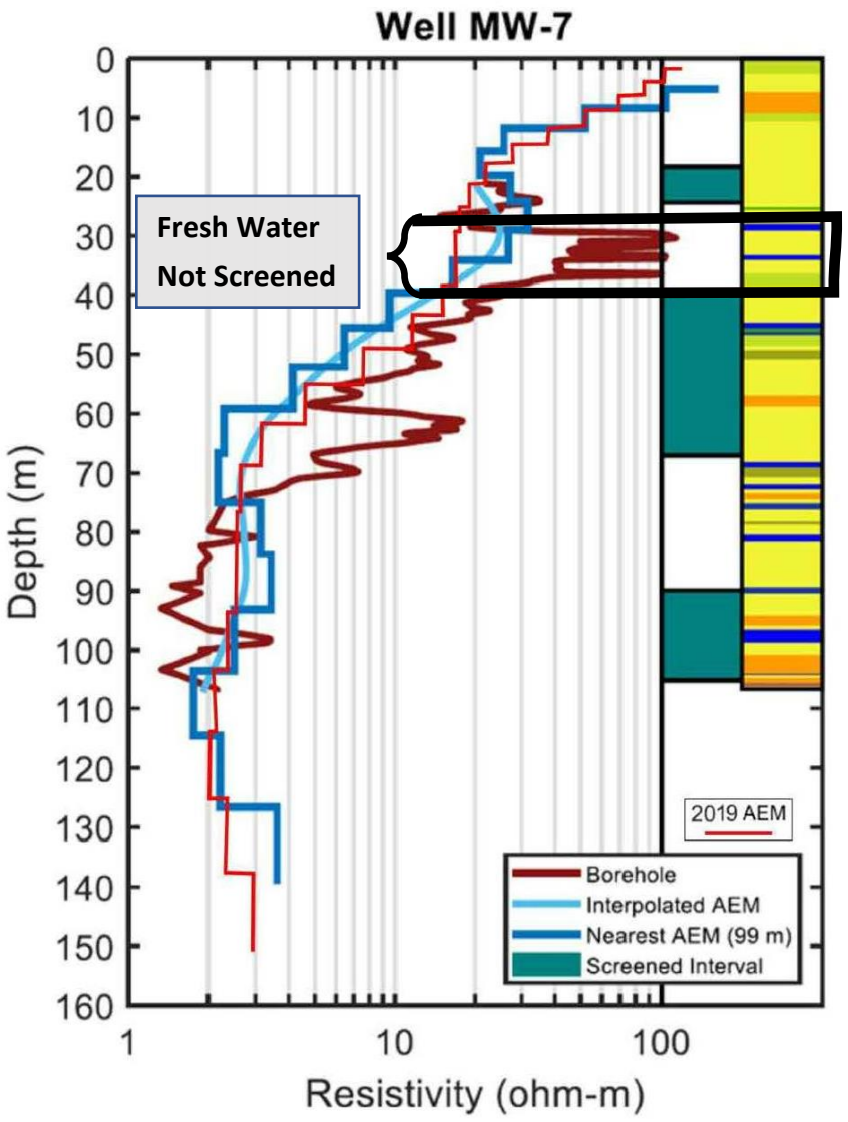

A
(Northwest)
A'
(Southeast)
Feet above Mean Sea Level
500
0
-500
-1,000
Upper 180-Foot Aquifer
Dune Sand Aquifer
Lower 180-Foot Aquifer
400-Foot Aquifer
Salinas River
MW-1
MW-3
MW-4
MW-7
14S02E21N01
MW-B-01-A
14S02E28C02
WCR0200216
14S02E28J50
14S02E34A03
14S02E35M01
0
10,000
20,000
30,000
Feet from Beginning of Section
Legend:
Hydrostratigraphy Model
Aquifers
Aquifards
Unknown
Logged Borehole Soil Category
Coarse
Medium
Unknown
Fine
Top Soil
Well Screens
Screen
AEM Resistivity (ohm-m)
0.3
7.7
15.1
22.6
30
Groundwater meeting Beneficial Use Standard (13-75 ohm-m)
(Vertical Scale in Feet)
500
400
300
200
100
0
(10X Vertical Exaggeration)
5,000
10,000
(Horizontal Scale in Feet)
Notes:
1. All locations are approximate.
2. AEM data shown are from the 2019 AEM survey (Aqua Geo Frameworks, 2019). The beneficial use standard for drinking water for TDS is established at 3,000 mg/L within the California Water Quality Control Plan for the Central Coast Region. AEM resistivity of below 75 ohm-m is used to identify saturated groundwater zones, while AEM resistivity of above 13.2 is associated with groundwater with TDS below 3,000 mg/L, per the TDS-AEM Resistivity relationship developed by AquaGeo Framworks.
3. The hydrostratigraphy model is Model A developed by Gottschalk et al (2018). It was developed based on cross-sections from previously published reports, borehole lithology logs, and 2017 AEM survey data. The hydrostratigraphy model is approximate.
Geologic Cross-Section A-A'
Marina Coast Water District
Marina, CA
April 2020
EKI B60094.09
Figure 5

Although data collected during the drought indicate that this natural barrier has likely been undermined at the CEMEX Plant, it would almost certainly be further disturbed by the MPWSP. As concluded by Weiss, additional data and modeling is required to assess the hydrostratigraphy in this area and determine the potential extent of the MPWSP on groundwater resources.

1.2 Geophysical Log MW-7

Additional wells are needed in the vicinity of well MW-7, because geophysical logs indicate that a freshwater zone exists at the location of MW-7 between the depths of 95 to 125 feet (29 to 38 meters), which is below the well screen interval of MW-7S and above the well screen interval of MW-7M (see Figure 6) (further discussion provided in HGC, 2019[6], see page 15, Figure 5, Attachment B). The resistivity of this zone indicates it contains freshwater that has even lower TDS concentrations than MW-7S.

[6] HGC, 2019. *Response to Comments For Consideration by City of Marina Planning Commission Regarding CALAM Monterey Peninsula Water Supply Project, dated 14 February 2019.*



Source: From Figure 4-6 of Aqua Geo Framework, 2019.

MW-7 Lithologic, Geophysical Resistivity, and AEM Data

Marina Coast Water District
Marina, CA
April 2020
EKI B60094.09

Figure 6

20200413.173735 G:\B60094.09\2020-04\Figure 1.dwg Layout1

Such a freshwater zone would be consistent with the hydrostratigraphy at Fort Ord, which shows that groundwater present in the Upper-180 Foot Aquifer has TDS concentrations less than 1,000 mg/L (EKI, 2019; Attachment A) [7]. Water level data from Fort Ord show that gradients in this aquifer are landward (Attachment D). However, water quality data demonstrate that this aquifer is being recharged by the Dune Sand Aquifer. Additional wells in this area, as requested by Weiss, will provide important information regarding the western extent of the FO-SVA, water quality, gradients, and connectivity to the Dune Sand Aquifer to lower aquifers, which is critical to understanding the hydrostratigraphy in this area and the potential impacts of the MPWSP.

2.0 ABSENCE OF CONSENSUS ON HYDROGEOLOGIC CONCEPTUAL MODEL ("HCM")

The HWG Letter illustrate there is no consensus regarding the hydrogeologic conceptual model in the vicinity of the MPWSP and that Weiss' request for additional field work is warranted.

The HWG argues that no additional field work is needed but provides no evidence to support its HCM. For example, the HWG continues to argue that there is no Upper-180 Foot Aquifer that contains freshwater in the vicinity of the Project and that groundwater from the perched Dune Sand Aquifer "waterfalls" into the lower aquifer, and therefore will not be impacted by the slant wells. These hypotheses are unsupported. HWG's HCM is also inconsistent with (a) conditions observed at Fort Ord where hundreds of monitoring wells have been installed and monitored for decades and (b) information obtained from the Airborne Electromagnetics ("AEM") study which indicates that conditions south of the Salinas River (i.e., in the vicinity of the MPWSP) are similar to those at Fort Ord.

For example, water level data and chemical data from Fort Ord indicates that fresh groundwater present in the perched Dune Sand Aquifer flows seaward (west of the topographic divide) into the non-perched Dune Sand Aquifer (MACTEC, 2006)[8]; (Ahtna Environmental, 2019) [9]. The non-perched Dune Sand Aquifer also flows seaward until it reaches the end of the FO-SVA (see Attachment C). Extensive chemical and water data are available from wells in the Operable Unit Carbon Tetrachloride Plume ("OUCTP") and Operable Unit 1 ("OU1"), that show that although steep gradients exist in the vicinity of this juncture, groundwater appears to migrate unimpeded between these portions of the Dune Sand Aquifer as

[7] EKI, 2019. *Fresh Groundwater in Dune Sand and 180-Foot Aquifer Zones South of Salinas River, 180/400 Foot Aquifer & Monterey Subbasins, dated 20 December 2019*.

[8] MACTEC, 2006. *Final Operable Unit Carbon Tetrachloride Plume Groundwater Remedial Investigation/Feasibility Study, Former Fort Ord, California, prepared for the United States Army Corps of Engineers, 19 May 2006*.

[9] Ahtna Environmental, 2019. *Operable Unit Carbon Tetrachloride Plume Fourth Quarter 2017 through Third Quarter 2018 Groundwater Monitoring Report, Former Fort Ord, California, prepared for the United States Army Corps of Engineers, 2 August 2019*.

demonstrated by the cross sections through this area and continuity of the carbon tetrachloride plume ((MACTEC, 2006); (Ahtna Environmental, 2019) (See Attachments C and D). There is no data between project wells MW-5 and MW-7 that demonstrates that similar conditions do not exist inland of the Project Site. There is also no data to support HWG's conclusion that groundwater from the perched Dune Sand Aquifer is hydraulically disconnected (i.e., "waterfalls") between the perched Dune Sand Aquifer and the non-perched Dune Sand Aquifer.

If the HWG, believes conditions are fundamentally different in the vicinity of the Project than those observed at Fort Ord, they should not be reluctant to obtain the data needed to demonstrate these differences and confirm the HCM that they postulate.

2.1 Western Extent of FO-SVA

AEM data indicate that western extent of the FO-SVA likely occurs somewhere between MW-7 and MW-4, as significant volumes of fresh water appear in the Upper 180-foot Aquifer in this area (see Figure 2 above). The installation of additional wells in this area, as proposed by Weiss would however aid in the understanding of hydraulic gradients and water quality in this area, particularly given HWG's reluctance to accept any information from the AEM study. Also, as discussed in EKI's comments on the Weiss SOW (EKI, 2019), such wells will serve as critical tools in the assessment of groundwater conditions inland of the Project if it goes forward. In the absence of such additional field information, we concur with Weiss' suggested approach, that the model be run utilizing the following conservative assumptions, until such field work can be completed:

(a) That the FO-SVA extends westward to MW-4; and
(b) That groundwater from the perched Dune Sand Aquifer is hydraulically connected to the non-Perched Dune Sand Aquifer, which in turn is hydraulically connected to Upper 180-Foot Aquifer zone at the western edge of the FO-SVA (e.g., no "waterfalls" exist).

2.2 Field Work – Cone Penetrometer Testing

Weiss recommends the use of Cone Penetrometer Testing ("CPT") to identify the depth and western extent of the FO-SVA. We believe that CPT can be highly effective tool for mapping stratigraphy. However, as noted by HWG, CPT can have difficulty penetrating to depths of 120 feet if dense materials are encountered. In the event that CPT cannot be completed to such depths, alternative field methods should be employed to log stratigraphy.

During field investigations conducted by Todd Engineers ("Todd") in 2008, CPT was proposed to evaluate the stratigraphy of the Dune Sand Aquifer and the depth of the underlying FO-SVA at Armstrong Ranch. However, CPT could not be advanced to depths greater than approximately 55 feet. As such Todd,

completed borings adjacent to CPT locations utilizing a hollow stem auger, which allowed logging of sediments (Todd,2008[10]; see Attachment E pages 6 through 8). The following is a description of the methods used by Todd to complete this work:

> "Soil borings were dilled with 4.25-in diameter augers with 8-inch diameter flights. During drilling, formation samples were collected off the auger flights in 5-foot intervals and logged. In addition, discrete, generally undisturbed formation samples were collected in 2.5-inch diameter sampling tubes using a standard Shelby tube sampler. An automatic drop hammer was used to conduct a standard penetration test (SPT) during discrete sampling. The number of blows required to drive the 1.5-foot long Shelby tube sampler in 6-inch intervals was recorded to evaluate sediment density. Selected discrete formation samples were submitted to Cooper Testing Laboratories (Palo Alto, CA) for analysis of porosity (total, effective, air-filled, water-filled) and saturated vertical hydraulic conductivity (KV). Criteria for selecting samples for laboratory analysis were based on texture, density (interpreted from blow counts and CPT results), and degree of saturation."

Further information regarding the field methods used is provided in Attachment E. Such methods should be considered in the event that CPT cannot be advanced to depths of 120 feet bgs at locations identified by Weiss.

2.3 HWG Characterization of Groundwater Quality Inconsistent with Central Coast Basin Plan and Fort Ord Cleanup

The HWG continues to characterize all groundwater in the Dune Sand Aquifer and 180-Foot Aquifer in the vicinity of the Project as "brackish" and of no current or future "beneficial use" to those that overly the Monterey and 180/400 Foot Aquifer Subbasins. Conclusions made by HWG regarding the water quality in the 180-Foot Aquifer and the lack of importance of the Dune Sand Aquifer as a groundwater resource, appear to disregard AEM data and water quality data from Fort Ord, as discussed in Section 2.0 above.

HWG's characterization of these aquifer zones also disregards the provisions of Water Quality Control Plan for the Central Coastal Basin ("Basin Plan"; Regional Water Quality Control Board, Central Coast Region ["RWQCB"], 2017), which designates all groundwater within the SVGB as potential drinking water source and references SWRCB Resolution No. 88-63, which identifies groundwater and surface water with

[10] Todd, 2008. *Todd Engineers, May 2008, Final Technical Memorandum, Phase I Investigation Armstrong Ranch Groundwater Storage Project, Prepared for Marina Coast Water District, Marina, CA.*

TDS levels less than 3,000 mg/L as suitable, or potentially suitable for *potentially suitable, for municipal or domestic water supply.*

Three hundred and twenty million dollars[11] have been spent remediating soil and groundwater contamination within the Dune Sand and 180-Foot Aquifer zones at former Fort Ord. Such remedial actions are being implemented in areas within 1,200 feet of the coastline. Conclusions made by both HWG and SWRCB regarding the lack of importance of the Dune Sand Aquifer as a groundwater resource, are not only inconsistent with the Basin Plan, but fly in the face of mandates by federal and state regulatory agencies, including the Central Coast Regional Water Quality Control Board, to remediate groundwater to drinking water standards in the Dune Sand and Upper-180 Foot Aquifer zones at Fort Ord, which has led to the expenditure of hundreds of millions of tax payer dollars.

3.0 RECALIBRATION OF EXISTING NUMERICAL GROUNDWATER MODEL

HWG's comments 9, 11, 16, 20, 21, 22, 26 state that it will be difficult if not impossible to calibrate the existing model and that much more time is needed to complete the work. These statements Illustrate the existing inaccuracies and issues that exist with the current modeling efforts. Comments submitted on the Weiss SOW (Weiss, 2020) on behalf of MCWD by EKI (EKI, 2020)[12], Hopkins Groundwater consultants, Inc. ("Hopkins") (Hopkins, 2020)[13], and GeoHydros, LLC ("GeoHydros") (GeoHydros, 2020) [14], provide specific recommendations regarding modeling efforts and model structure that should aid in future calibration efforts. In particular, abandoning reliance on the Salinas Valley Integrated Ground and Surface Water

[11]The Report to Congress Fiscal Year 2015, provided by William K. Collins Environmental Coordinator, Fort Ord BRAC Field Office by e-mail on 6/8/2017. The costs specifically related to groundwater contamination versus soil are not identified, but likely represent a significant portion of overall costs given groundwater remedial actions have been ongoing for over 25 years and requirements for soil remediation are often driven by concerns over chemicals leaching to groundwater.

[12] EKI, 2020. Memorandum dated 1 April 2020 Re: Comments Regarding *Proposed Scope of Work to Address Area Aquifer Impacts Related to California American Water's Proposed Monterey Peninsula Water Supply Project*, Prepared by Weiss Associates on behalf of California Coastal Commission, 11 March 2020 Public Review Draft

[13] Hopkins, 2020. Technical Memorandum dated 9 March 2020 re: Comments Regarding Public Review Draft – Proposed Scope of Work to Address Aquifer Impacts Related to California American Water's Proposed Monterey Peninsula Water Supply Project Dated March 11, 2020

[14] GeoHydros, 2020. Comments dated 9 April 2020 Re: Proposed Scope of Work to Address Aquifer Impacts Related to California American Water's Proposed Monterey Peninsula Water Supply Project Dated March 11, 2020

Model (SVIGSM) as the source for recharge and boundary condition assignments. The SVIGM was not intended to and does not simulate the Dune Sand Aquifer.

In addition, as discussed in EKI and Hopkins Comments submitted on the Weiss SOW (EKI, 2020) (Hopkins, 2020), particular attention should be paid to impacts of CEMEX operations in evaluating water level responses and assessing the ocean water percentage ("OWP") estimates Test Slant Well pumping.

3.1 Two Phased Modeling Approach

HWG's comment 17 states that a two phased modeling approach as suggested by Weiss will lead to additional time and effort. We concur with this conclusion, given the likelihood that changes in boundary conditions will affect modeling results (see EKI and GeoHydros comments on the Weiss SOW (EKI, 2020) (GeoHydros, 2020)). As such, we recommend that Weiss SOW Tasks 4 and 5 be implemented concurrently.

3.2 Modeling Requested under Weiss SOW Task 5.7

The Weiss SOW calls for the completion of model simulations that incorporate flat and seaward gradients in the 180- and 400-Foot Aquifer zones, based upon Sustainable Groundwater Management Act ("SGMA") requirements to halt seawater intrusion within the SVGB. In Comment 28, HWG states that it is more likely that an extraction barrier will be implemented to mitigate seawater intrusion rather than creation of flat or seaward gradients. An extraction barrier is one of the potential projects identified in the 180/400 Foot Aquifer Subbasin Groundwater Sustainability Plan ("GSP")[15]. MCWD supports the modeling of such a barrier, as long as it supplements modeling of MPWSP impacts under flat and seaward gradients that could be established through management actions or increased groundwater recharge. The efficacy of an extraction barrier has yet to be demonstrated and costs for construction and operation of such an extraction barrier are estimated over 30 million dollars[16]. Therefore, unless Cal Am is willing to demonstrate its efficacy and provide funding for such a barrier project, it cannot rely on its implementation. Further, as discussed in EKI's Comments on the Weiss SOW, the measurable objective for seawater intrusion in the Final Groundwater Sustainability Plan adopted for the 180/400-Foot Aquifer

[15] https://svbgsa.org/groundwater-sustainability-plan/180-400-ft-aquifer/

[16] https://svbgsa.org/groundwater-sustainability-plan/180-400-ft-aquifer/

Subbasin[17] in January 2020 is to "move the 500 mg/L chloride isocontour to the line defined by Highway 1." Highway 1 is located between Project monitoring wells MW-4 and MW-7 and less than 3,000 feet from the TSW. Therefore, in the absence of an extraction barrier, numerical modeling should assume that seaward gradients will need to be established within 3,000 feet of the slant wells in both the 180- and 400-Foot Aquifer zones. In order to meet GSP interim milestones reversal of the hydraulic gradient will need to begin to occur over the next 10 years.

ATTACHMENTS

ATTACHMENT A: EKI Memorandum to MCWD Re: Fresh Groundwater in Dune Sand and 180-Foot Aquifer Zones South of Salinas River, 180/400 Foot Aquifer & Monterey Subbasins, dated 20 December 2019. (without attachments)

ATTACHMENT B: Hopkins Groundwater Consultants, Inc. Response to Comments for Consideration by City of Marina Planning Commission Regarding CALAM Monterey Peninsula Water Supply Project, dated 14 February 2019. (without attachments) ***SEE PAGE 15 and Figure 5***

ATTACHMENT C: MACTEC Report prepared for the U.S. Army Corps of Engineers: Final Operable Unit Carbon Tetrachloride Plume Groundwater Remedial Investigation/Feasibility Study, Former Fort Ord, California, dated 19 May 2006.

Plate 9 – Groundwater Elevation Contour Map, A-Aquifer and Upper 180-Foot Aquifers, September 2004.
Plate 4 – Cross Section A-A'.
Plate 15A– Upgradient Portion of A-Aquifer Carbon Tetrachloride Plume, September 2004.
Plate 15B– Downgradient Portion of A-Aquifer Carbon Tetrachloride Plume, September 2004.

[17] https://svbgsa.org/groundwater-sustainability-plan/180-400-ft-aquifer/ (see Chapter 8.8 Seawater Intrusion SMC)

ATTACHMENT D: Ahtna Environmental Report prepared for the U.S. Army Corps of Engineers: Operable Unit Carbon Tetrachloride Plume Fourth Quarter 2017 through Third Quarter 2018 Groundwater Monitoring Report, Former Fort Ord, California, dated 2 August 2019

Figure 20 – Groundwater Elevations, Upper 180-Foot Aquifer, Third Quarter 2018.

ATTACHMENT E: Todd Engineers Final Technical Memorandum, Phase I Investigation Armstrong Ranch Groundwater Storage Project, Prepared for Marina Coast Water District, Marina, CA, dated May 2008. (selected pages)

CORRESPONDENCE FROM MARINA COAST WATER DISTRICT TO STATE WATER RESOURCES CONTROL BOARD MEMBERS

ATTACHMENT 2c

HOPKINS
GROUNDWATER
CONSULTANTS, INC.
THE WATER RESOURCE SPECIALISTS

TECHNICAL MEMORANDUM

To: Mr. Keith Van Der Maaten
General Manager, Marina Coast Water District

From: Curtis J. Hopkins
Principal Hydrogeologist, Hopkins Groundwater Consultants, Inc.

Date: April 20, 2020

Subject: Comments Regarding SWRCB and Hydrogeologic Work Group Letters Concerning the Public Review Draft – *Proposed Scope of Work to Address Area Aquifer Impacts Related to California American Water's Proposed Monterey Peninsula Water Supply Project*, Dated March 11, 2020.

As requested, Hopkins Groundwater Consultants, Inc. (Hopkins) reviewed the California State Water Resources Control Board (SWRCB) letter dated February 10, 2020 and the Hydrogeologic Work Group (HWG) letter dated April 6, 2020 which commented on the March 11, 2020 Public Review Draft – *Proposed Scope of Work to Address Area Aquifer Impacts Related to California American Water's Proposed Monterey Peninsula Water Supply Project*, (Scope of Work) prepared by Weiss Associates for the California Coastal Commission. This memorandum is provided to inform the Marina Coast Water District (MCWD) of several salient points regarding both documents and supplements our prior comments regarding the Scope of Work (SOW).

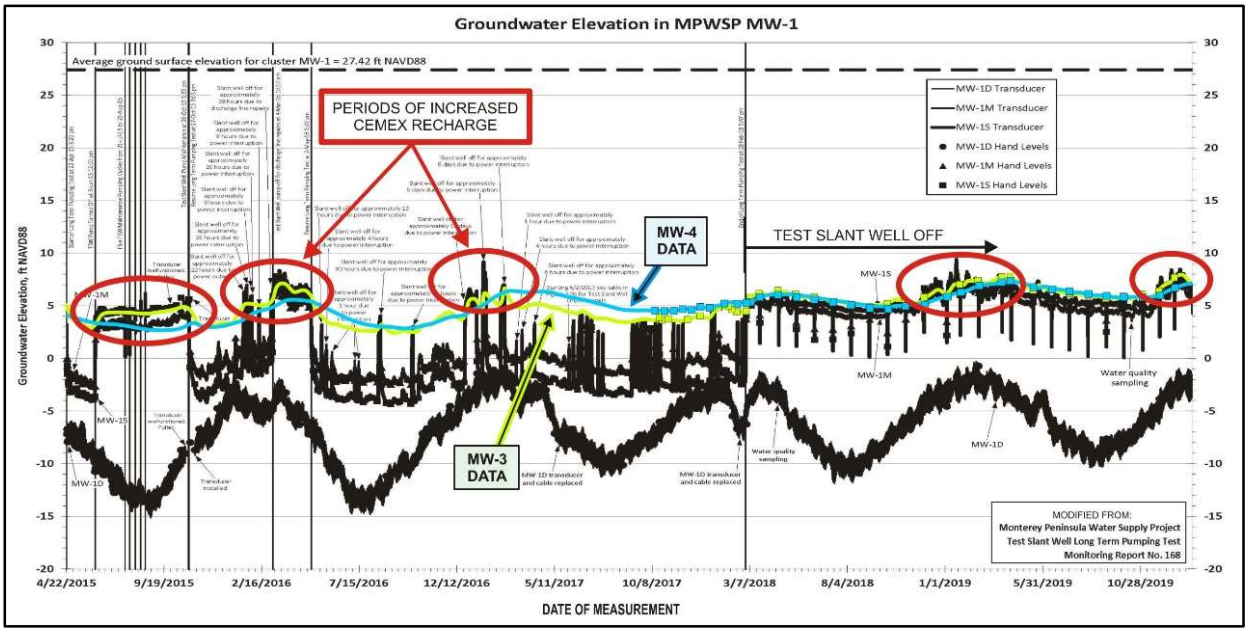
Discounted Effects of CEMEX Operations on Test Slant Well Data and the Dune Sand Aquifer Conditions

As we explained in our prior comments, all available data demonstrates that the CEMEX operations bias the Test Slant Well (TSW) data through recharge of saline water landward of the TSW location (HGC, 2020). Not only does this affect the water quality test results, it effects the shallow groundwater elevations primarily in two ways; **1)** recharge (mounding) of salt water in the vicinity of the TSW and Monitoring Wells MW-1 and MW-3 and, **2)** pumping of shallow groundwater from the Dune Sand Aquifer (DSA) in the vicinity of Monitoring Well MW-4S which depresses local water levels. As explained below, neither the SWRCB nor the HWG letters address these conditions. In fact, it does not appear the SWRCB had any information on the CEMEX operations based on its comments.

Figure 1 – Overlay of Groundwater Elevations From MW-3S and MW-4S on MW-1 Data shows the relationship of DSA water level measurements. These data indicate that during times of static water levels (no TSW pumping) there is little difference in the shallow groundwater levels. A foot of mounding and a foot of depression from unnatural influences makes a difference in the coastal groundwater gradient. These data also show when CEMEX operations change to provide

greater recharge and have a greater influence on MW-1 and MW-3 elevations (see Figure 1 or Plate 1). Because the CEMEX operations are not well documented, the SWRCB review of water level data could not and did not account for these influences on the local water levels near the coastline in reaching the conclusions in its letter. These data also show that after pumping stopped, the groundwater at MW-3S and MW-4S were higher than MW-1S, which indicates an offshore gradient a majority of the time even with CEMEX recharge. Of note, more recent data that has just been made available on the Monterey Peninsula Water Supply Project (MPWSP) website are consistent with prior observations on this point as also shown in Figure 1.

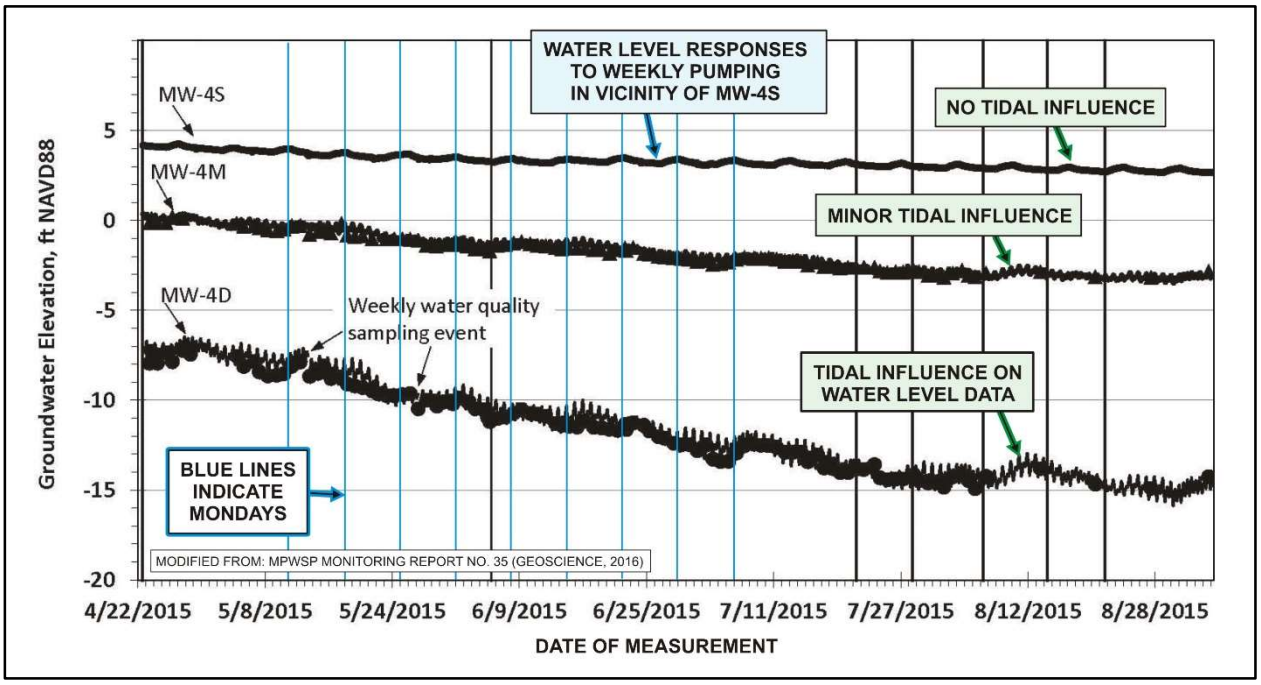
Figure 1 – Overlay of Groundwater Elevations From MW-3S and MW-4S on MW-1 Data



FOR AN ENLARGED VIEW SEE PLATE 1

As shown in Figure 2 (Monitoring Well Data From MW-4), a number of conditions at the CEMEX site that the Weiss team must address in evaluating/modeling the MPWSP's groundwater impacts. First, MW-4D shows a strong tidal influence in the 400-Foot Aquifer which is indicative of a confined aquifer condition which transmits pressure changes on a daily basis from tidal loading. Second, the 180-Foot Aquifer which is screened by MW-4M also shows tidal influence, but not at the same magnitude as MW-4D. This is indicative of a leaky confined/semi-confined aquifer condition. Finally, MW-4S data from the DSA does not display any tidal influence at this distance from the ocean and indicates an unconfined aquifer condition that does not transmit a pressure response from tidal loading on the offshore portion of the aquifer.

Figure 2 – Monitoring Well Data From MW-4



Just as important as the mounding effects of groundwater recharge from the CEMEX operations in the vicinity of MW-1S and MW-3S discussed above are the effects of shallow groundwater pumping in the vicinity of MW-4S that the HWG never addressed and continues to ignore. The early-time data in Figure 1 show a weekly cycle of drawdown in the DSA. The blue lines on the graph were added to show that cumulative residual drawdown (on the order of 1 foot) began on Monday and continued through the week until Friday when water levels were observed to recover over the weekend. This steady apparent year-round extraction of shallow groundwater depresses the water table in the vicinity of MW-4S and changes the natural gradient that would otherwise occur if CEMEX were not operating. The source and magnitude of the pumping is not identified or addressed in previous project studies. It must be located relatively close to MW-4 to cause this impact in the unconfined aquifer. Therefore, it would appear to be from well(s) on the CEMEX property

The Dune Sand Aquifer is Not Perched in the Vicinity of Monitoring Well MW-7

The HWG misconstrues our prior comments in contending that we agree the DSA is perched at MW-7 and hydraulically disconnected from the DSA. The "waterfall" described in the HWG April 6, 2020 letter referenced by the HWG in its comments, is recharge from the overlying DSA into the underlying 180-foot aquifer. As discussed in more detail below, the data from MW-7 does not support the presence of perched conditions in the DSA as the HWG contend. Therefore,

it's reasonable to expect that adequate modeling of the DSA should be able to calibrate to the observed groundwater levels in this area.

The water level in MW-7S (10 feet above mean sea level) which is screened between the depths of approximately -10 to -30 feet below mean sea level is indicative of the DSA which has a saturated thickness of about 40 feet. At this location, the DSA is unconfined and hydraulically connected to the regional water table. The underlying aquitard that separates it from the upper 180-Foot aquifer may or may not be continuous or have the same hydraulic conductivity as adjacent areas. While the geometry and hydraulic properties of the confining layer will affect where the vertical movement of groundwater within the saturated coastal DSA moves down into the underlying 180-Foot aquifer, it does not prevent horizontal movement within the aquifer toward the coastline. More importantly, pumping affects from the MPWSP at the coastline can impact groundwater levels in this section of the unconfined DSA.

As shown by recent data, the groundwater elevations during wet and average rainfall years has remained at approximately 10 feet above mean sea level (NAVD88). This freshwater head provides protection from seawater intrusion into shallow aquifer zones. MW-7 borehole geophysical data indicate freshwater to a depth of 124 feet below ground surface, which is approximately -75 feet below mean sea level (HGC, 2019). Below that depth, there is sufficient confinement and the fresh water head at this location does not provide the direct benefit of elevating heads in the deeper zones.

The Occurrence of Fresh Water in the Vicinity of the MPWSP is Appropriately Recognized as Drinking Water Quality

The HWG letter also makes a number of nonsensical comments about the definition or freshwater – and incorrectly implies that groundwater with TDS greater than 500 to 1,000 mg/L or with elevated nitrates has no beneficial uses. While the dictionary definition of fresh water may state that it is water with a total dissolved solids (TDS) concentration of up to 1,000 milligrams per liter (mg/l), groundwater with concentrations over this limit are safe for drinking without treatment to remove TDS. Figure 3 – City of Ventura Drinking Water Analyses of Water Supply Sources shows that a portion of its water is supplied by wells that produce groundwater with an average of 1,350 mg/l. This average results from wells producing groundwater with TDS concentrations ranging between 1,280 to 1,660 mg/l. By the strict definition proposed by the HWG, this is not fresh water or drinking water quality, but that is not true. Groundwater with TDS values greater than 1,000 mg/l is currently being used as drinking water supplies in the State of California.

Figure 3 – City of Ventura Drinking Water Analyses of Water Supply Sources

Ventura's Water Quality Summary 2018 — **DATA CONTINUED**

SECONDARY DRINKING WATER STANDARDS

AESTHETIC STANDARDS	UNITS	SECONDARY MCL	VENTURA RIVER AVERAGE	VENTURA RIVER RANGE	GROUND WATER AVERAGE	GROUND WATER RANGE	CMWD AVERAGE	CMWD RANGE
Boron	ppm	Notification Level = 1	0.52	0.32 - 0.64	0.55	0.33 - 0.76	0.20	0.20
Chloride	ppm	500	58	50 - 63	72	46 - 85	24	24
Corrositivity (Langlier Index)	no units	None	0.61	0.37 - 0.81	0.28	0.04 - 0.41	0.005	0.005
pH	pH units	6.5 - 8.5	7.6	7.3 - 7.8	7.2	6.9 - 7.5	7.8	7.8
Specific Conductance	µmhos	1,600	1,120	1,030 - 1,170	1,770	1,300 - 1,980	652	652
Sulfate	ppm	500	271	239 - 301	604	241 - 745	163	163
Total Dissolved Solids	ppm	1,000	822	716 - 880	1,350	1,280 - 1,660	390	390
Turbidity	NTU	5	0.20	0.10 - 0.50	0.21	0.10 - 0.30	0.20	0.20

FROM CITY OF VENTURA 2019 CONSUMER CONFIDENCE REPORT

The state of California promotes development of high-quality sources for drinking water that is served to the public and has developed water quality standards to which the water agencies are expected to comply. Table 1 – Maximum Contaminant Level Ranges shows the allowable concentrations for select constituents, including TDS, which demonstrate that, contrary to HWG contentions, water with TDS levels greater than 500 mg/l can be considered a drinking water supply.

Table 1 – Maximum Contaminant Level Ranges

CONSTITUENT	UNITS	RECOMMENDED	UPPER	SHORT TERM
TOTAL DISSOLVED SOLIDS	MG/L	500	1,000	1,500
SPECIFIC CONDUCTANCE	µS/CM	900	1,600	2,200
CHLORIDE	MG/L	250	500	600
SULFATE	MG/L	250	500	600

Title 22, Article 16. Secondary Drinking Water Standards, Table 64449-B, Secondary Maximum Contaminant Levels, "Consumer Acceptance Contaminant Level Ranges"

Furthermore, the HWG claims that if groundwater has a chemical constituent in a concentration that exceeds the maximum contaminant level (MCL) for drinking water, it cannot be considered a drinking water/freshwater source. Iron and manganese are common constituents

in groundwater at concentrations that exceed the MCL's. The concentration of these constituents, similar to nitrate, can be lowered by treatment or more cost effectively reduced by blending with another supply. The presence of high concentrations of constituents like nitrate and TDS do not automatically render the groundwater unusable as the HWG contends. Therefore, as we have noted in our prior comments, use of the Basin Plan standards is the most appropriate way to define freshwater.

The Proposed Modeling in the SOW is Necessary for Accurate Simulations of Project Related Impacts

The HWG appears to contend that Weiss does not need to address new information regarding groundwater conditions, because the superposition model in the MPWSP EIR adequately addresses the MPWSP's hydrogeologic impacts. A poorly calibrated groundwater model, however, cannot be reliably used to predict future impacts from a proposed action. The HWG pointed out that the North Marina Groundwater Model ($NMGWM^{2016}$) could not be adequately calibrated in the project area in the DSA where the proposed MPWSP will produce a large portion or a majority of its groundwater. The HWG contends that, by relying on a superposition version of the $NMGWM^{2016}$, it somehow overcomes the poor calibration. This contention is wrong. The superposition version of the $NMGWM^{2016}$ relies on the hydraulic parameters (hydraulic conductivities, recharge, boundary conditions, etc.) contained in the $NMGWM^{2016}$ to render its predictions of drawdowns and areas of influence that will arise in all of the aquifers at the site as a consequence of the proposed pumping. The two models cannot be separated in the manner proposed by the HWG. They are in fact merely two different versions of the same poorly calibrated groundwater model.

The SOW appropriately includes model revisions to include better parameters for recharge to the DSA and not just hydraulic conductivities. It also includes work to address boundary condition limitations created by the linkage to the Salinas Valley Integrated Ground and Surface Water Model (SVIGSM) that affect the simulated impacts of the proposed MPWSP operations (GeoHydros, 2017; 2020). The results of the TSW pumping test cannot be reliably used to predict the extent of future impacts to groundwater levels in the key aquifers beneath the site, particularly the DSA. Reliable model-predictions therefore remain the best method for assessing and mitigating against probable impacts from the proposed pumping. It is therefore imperative that the $NMGWM^{2016}$ be further revised until acceptable calibration to observed conditions is achieved, particularly in, and certainly not excluding, the DSA. The SOW appears to include substantial efforts that should work in this direction. It seems clear, however, that the proposed phased approach under-estimates the effort that will likely be required to achieve acceptable calibration in the DSA. We contend, that the two phases should be consolidated and the new effort focus more directly on achieving improved calibration as has been proposed by GeoHydros (2020).

We further note that part of the revised modeling effort that has not been specifically included in the SOW, should focus on better estimations and assignments of recharge in the project area. GeoHydros (2017; 2020) reports that failure to achieve calibration in the DSA could be

significantly caused by the reliance on the SVIGSM for recharge assignments because that model did not include the DSA in its conceptual framework. GeoHydros contends that model-assigned recharge should instead be included in the calibration effort. We contend that this should be explored in the revised modeling effort and regardless of the ultimate manner in which recharge is assigned that the values be demonstrated to be consistent with estimates rendered from site- and time-appropriate data that reflects the presence of the DSA.

The Airborne Electromagnetic Survey Has Provided Competent Collection and Interpretation of Project Area Resistivity Data

Finally, we note that the Airborne Electromagnetic (AEM) data provide valid, indications of the distribution of freshwater and saltwater in the coastal aquifers. These data must be used in the revision of the conceptual model on which the proposed revised groundwater modeling will be based. These data can and must also be used or addressed by any new dual density modeling that is performed to estimate the degree to which the proposed pumping will affect saltwater intrusion into the aquifers underlying the site.

The data clearly show that there is substantially more freshwater within the DSA and 180-foot aquifers than the HWG has contended exists. Consequently, the AEM data indicate that the HWG's predicted impacts to freshwater resources in the vicinity of the proposed pumping under-estimate the likely reality. Choosing to ignore or disregard these data therefore unreasonably biases the predicted impacts in favor of the proposed pumping.

REFERENCES

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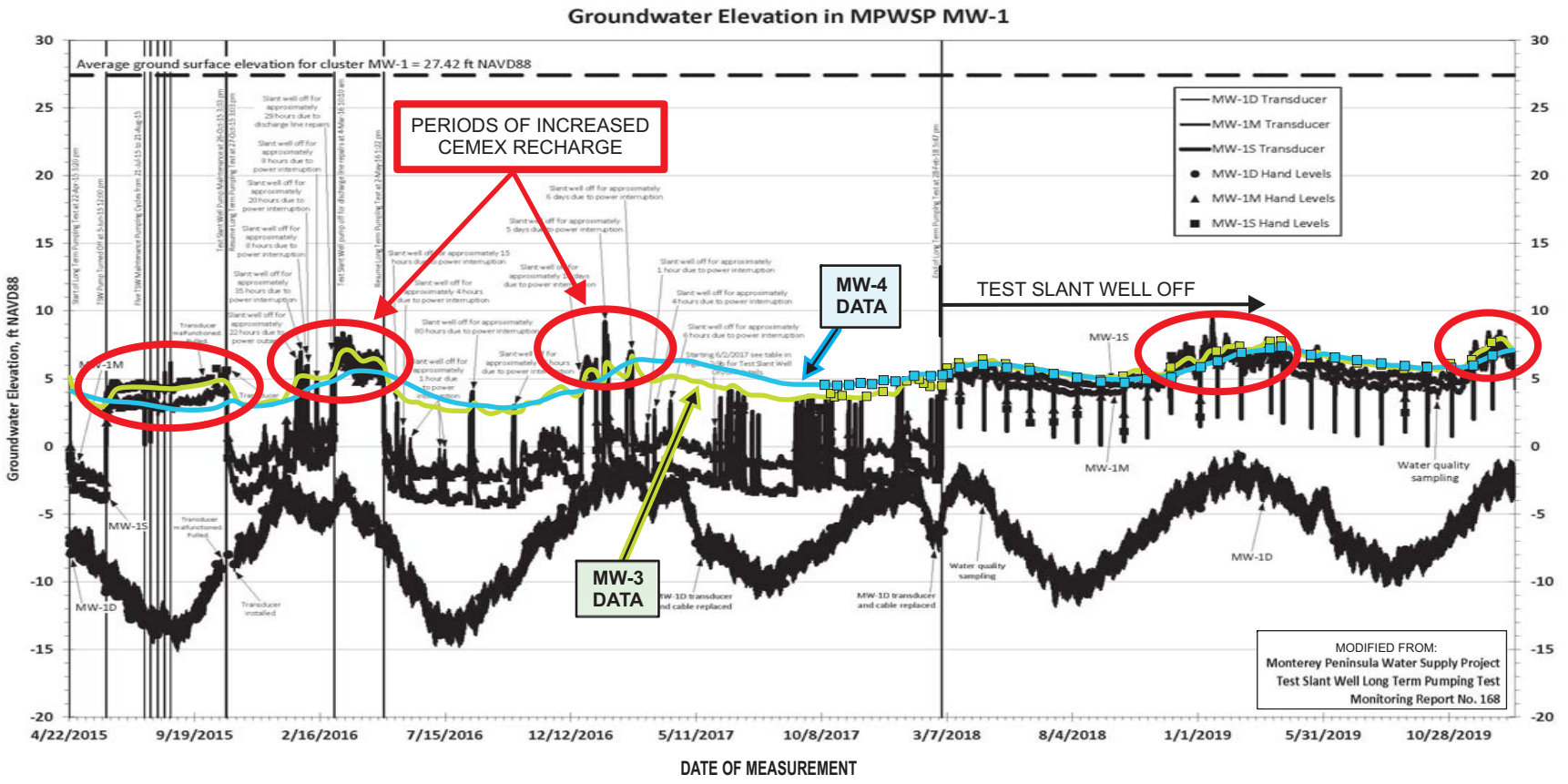
Hydrogeologic Working Group (2020), *Response to Tom Luster Email Dated January 30, 2020*, Dated February 20.

Hydrogeologic Working Group (2020a), *HGC Comments on Weiss Public Review Draft Proposed Scope of Work to Address Area Aquifer Impacts Related to California American Water's Proposed Monterey Peninsula Water Supply Project Weiss Job No. 466-2148, Dated March 11,* Dated April 6.

Weiss Associates (2020), *Letter Addressed to Tom Luster California Coastal Commission regarding: Public Review Draft – Proposed Scope of Work to Address Area Aquifer Impacts Related to California American Water's Proposed Monterey Peninsula Water Supply Project Weiss Job No. 466-2148*, Dated March 11.

PLATES



OVERLAY OF GROUNDWATER ELEVATIONS FROM MW-3 AND MW-4 ON MW-1 DATA

PLATE1

Project No. 15-004-01

HOPKINS GROUNDWATER CONSULTANTS

CORRESPONDENCE FROM MARINA COAST WATER DISTRICT TO STATE WATER RESOURCES CONTROL BOARD MEMBERS

ATTACHMENT 2d

April 9, 2020

Keith Van Der Maaten
General Manager
Marina Coast Water District

Subject: Comments Regarding *Proposed Scope of Work to Address Area Aquifer Impacts Related to California American Water's Proposed Monterey Peninsula Water Supply Project*, prepared by Weiss Associates for the California Coastal Commission and dated March 11, 2020.

Dear Mr Van Der Maaten,

As requested, I have reviewed the *Proposed Scope of Work to Address Area Aquifer Impacts Related to California American Water's Proposed Monterey Peninsula Water Supply Project* (SOW), prepared by Weiss Associates (Weiss) for the California Coastal Commission and dated March 11, 2020[1], and prepared recommendations for your consideration. Each of the recommendations addresses issues that GeoHydros identified in our review of the 2016 version of the North Marina Groundwater Model (NMGWM-2016) and presented in our report and letters to the Marina Coast Water District in 2017[2,3].

I was glad to see that the proposed SOW specifically referenced deficiencies in the NMGWM-2016 with respect to the simulation of recharge to and flow in the Dune Sand Aquifer (DSA) and its hydraulic connectivity to the lower 180-foot aquifer. Reliable predictions of impacts to the quantity and quality of groundwater in the DSA demand that the revised model achieve a much better calibration in the DSA than was achieved by the NMGWM-2016. In this regard, I am concerned by the proposed phased approach because the model domain is already likely too small to achieve the needed calibration in the DSA. This is evidenced by the mounding in the DSA in the final timestep of the NMGWM-2016 being bounded by the model boundary (Figure 1). Adequately simulating groundwater contributions from the DSA to the lower aquifers and to the proposed slant wells under pumping conditions will be predicated on reasonably simulating the aerial extent of mounding occurring in the DSA due to seasonal rainfall fluctuations. Shrinking the focus area, as is proposed for Phase I, will likely fail to adequately account for the mounding. Eliminating the phased approach and focusing on improving the model as a whole, particularly the calibration in the DSA will result in more reliable predictions and better decisions regarding the proposed pumping.

If the phased approach is maintained, the following issues should trigger initiation of the Phase 2 effort.

1. *Realistic simulation of recharge to the DSA and aerial extent of mounding*
   Figure 1 depicts mounding that is bounded on the southeast by the model boundary. In the NMGWM-2016, the boundary condition setting, which was taken from the Salinas Valley

[1] *Letter to Tom Luster, California Coastal Commission, dated March 11, 2020 from Weiss Associates regarding Public Review Draft – Proposed Scope of Work to Address Area Aquifer Impacts Related to California American Water's Proposed Monterey Peninsula Water Supply Project. Weiss Job No. 466-2148.*
[2] *Report to the Marina Coast Water District from GeoHydros dated March 27, 2017 and entitled: Review of the 2016 Version of the North Marina Groundwater Model Marina Coast California.*
[3] *Technical Memorandum submitted to the Marina Coast Water District by GeoHydros on December 7, 2017 regarding California American Water / Hydrogeologic Working Group, Monterey Peninsula Water Supply Project, HWG Hydrogeologic Investigation Technical Report, October 2, 2017.*

Integrated Ground and Surface Water Model (SVIGSM), forced the mounding to fall off by over 60 feet, which unrealistically limits the aerial extent over which appreciable vertical gradients could be contributing groundwater flow to the underlying aquifers and the proposed pumping. The revised model needs to more reasonably simulate this mounding and demonstrate that the aerial extent is not constrained by assigned boundary condition values. If this cannot be demonstrated after Phase-1, Phase-2 should be initiated.

2. *Number of wells in the DSA*
   Only one of the six wells reporting heads for the DSA used for calibration of the NMGWM-2016 fall within a 3-mile radius of the proposed pumping and none fall within a 2-mile radius (Figure 2). The mound simulated in the final timestep of the NMGWM-2016 straddles the 3-mile radius from the proposed pumping (Figure 2), which means that a substantial portion of the simulated aerial extent over which the DSA could be contributing groundwater flow to the lower aquifers and the proposed pumping falls outside of the 3-mile radius. Simulations of the mound produced by the revised model need to be calibrated against observed heads in a sufficient number of wells to demonstrate that the simulated aerial extent and magnitude of the mound reasonably represents observed conditions. If this cannot be achieved after Phase-1, Phase-2 should be initiated.

In addition to the issues related to the DSA, the SOW should specifically define the calibration criteria against which model calibration will be graded, and the use of the revised model to estimate OWP (ocean water percentage) and FWP (freshwater percentage) in the proposed pumping. I've described these as well as the DSA issues in the following recommendations for modifications to the proposed SOW.

1. Develop a consensus on the definition of the calibration criteria to be applied to the revised model and have the criteria defined prior to the commencement of modeling work. The 2015 version of the NMGWM used 10% of the measured head variation[4]. The 2016 version of the NMGWM used 15% of the measured head variations[5]. In our experience, 5% of the measured head variations would be more consistent with modeling endeavors of this nature and the variation should be calculated and the criteria applied to each of the simulated aquifers independently. The revised model would then be considered "well calibrated" only when these criteria are met for each of the simulated aquifers, including the DSA. Inability to meet the criteria in any of the aquifers necessitates a discussion of the likely reasons contributing to the larger residuals, how such residuals effect the reliability of the model predictions, and may indicate the need for additional data and study.

2. Abandon the reliance on the Salinas Valley Integrated Ground and Surface Water Model (SVIGSM) as the source for recharge and boundary condition assignments. The SVIGM[6] was not intended to and does not simulate the Dune Sand Aquifer (DSA). Our 2017 review indicated that this likely resulted in an under-estimation of recharge within the NMGWM domain. Instead, consider the following.

   a. Include the variation of recharge in the model calibration process and revise those assignments along with horizontal and vertical hydraulic conductivity assignments as needed, but within reasonable limits, to achieve acceptable calibration.

[4] *Appendix E2 of the 2015 Draft EIR/EIS entitled: Monterey Peninsula Water Supply Project Groundwater Modeling and Analysis, April 17, 2015, prepared by GeoScience, Inc.*
[5] *Appendix E2 of the 2017 Draft EIR/EIS entitled: North Marina Groundwater Model Review, Revision, and Implementation for Slant Well Pumping Scenarios, November 23, 2016, prepared by HydroFocus, Inc.*
[6] *Montgomery Watson, 1997, "Salinas Valley Integrated Ground Water and Surface Model Update, Final Report," May 1997.*

b. Define reasonable limits across which recharge can be varied in advance of the modeling effort based on data and/or other studies that are appropriately inclusive of the hydrogeologic conditions within the model area.

3. Achieve consensus on how the coastal boundary condition will be defined prior to the commencement of modeling. Our concern based on our 2017 review centered on the use of equivalent freshwater heads for only the offshore portion of the model domain. Equivalent freshwater heads are heads adjusted for salinity and are typically used when trying to account for saltwater intrusion without specifically simulating dual-density groundwater flow. Our contention in 2017 was that, since appreciable salinities occur in groundwater both offshore and onshore, by using equivalent freshwater heads only in the offshore component of the model, the predictions favored landward gradients and thus elevated estimations of OWP (ocean water percentage) of the proposed pumping. The Weiss SOW recommends the use of +3 feet for the ocean head assignments but did not specify if or how equivalent freshwater heads would be applied. I recommend abandoning the equivalent freshwater head assignments all together but, if they're used, rendering more uniform assignments across the model domain that are consistent with observed salinities.

4. Expand the model domain to the south such that the simulated mounding in the DSA is not impacted by the boundary condition assignments (Figure 1), as was indicated in our 2017 review. The SOW addresses this concern with their proposal to abandon the boundary condition assignments that had been defined from the SVIGSM. Presumably, this will be achieved by using head data from wells along or close to the model boundaries. It doesn't appear that a sufficient number of wells exist along the southern model boundary to establish defensible boundary condition values meaning that simulated mounding in the DSA will likely continue to be significantly controlled by the assigned boundary condition values. If so, and if such control cannot be verified by head data, the model boundaries should be expanded sufficiently to render the simulated mounding insensitive to the assigned boundary condition values.

5. Develop a consensus on which wells will be included in the calibration process for each aquifer. For the NMGWM-2016, HydroFocus contended that poor calibration in the DSA was due to perched aquifer conditions but failed to identify which of the wells and/or data in the calibration dataset represented perched conditions. If perched conditions that eliminate hydraulic connectivity between the DSA and the underlying 180-foot aquifer exist, the data representing these conditions need to be identified and excluded from the calibration effort. The possible presence of perched conditions cannot be used to alleviate the need to meet the calibration criteria in the DSA. In order to produce reliable predictions of impacts to the DSA from the proposed pumping, the model must acceptably calibrate to the relevant data. Vetting and developing relevant calibration datasets for each aquifer and achieving agreement on those datasets from the stakeholders must therefore be a requisite component of the SOW.

6. Render OWP and FWP estimates for the proposed pumping using water budget analyses performed on the calibrated and pumping versions of the revised model. We included such analyses in our 2017 review (Figure 3). Water budget analyses will reveal the sources of water for the proposed pumping: infiltration from the ocean, recharge and groundwater flow from within the model area, and/or recharge and groundwater flow from beyond the model area. If other methods are used to estimate OWP and FWP, those values should be compared against the values derived from the water budget analyses performed with the revised model. A justification needs to be presented for why one set is superior to the other or how the final estimations are defined.

7. Groundwater models are non-unique meaning that two, independently developed models will likely deliver different results and predicted impacts. Given this, consider using the North Salinas

Valley (NSV) Model[7] as an independent check on the results obtained from the revise NMGWM. The NSV model covers an aerial extent inclusive of the NMGWM, even if expanded to the south, and simulates the same hydrostratigraphy. It should therefore be possible to add the proposed pumping to that model and then render an independent set of predicted impacts. Comparison of the predictions would help to depict the probable uncertainty in the predicted impacts of the proposed pumping.

Should you have any questions, I'd be happy to discuss these in more detail with you and/or your team.

Sincerely,

Todd R Kincaid, Ph.D.
President, Principal Hydrogeologist

CC: H. Wilkins III
C. Hopkins

[7] *Montgomery & Associates, 2020. Appendix 9D: Modeling and Analytical Tools for Analyzing Project Benefits; Salinas Valley Groundwater Basin 180/400-Foot Aquifer Subbasin Groundwater Sustainability Plan.*

FIGURES

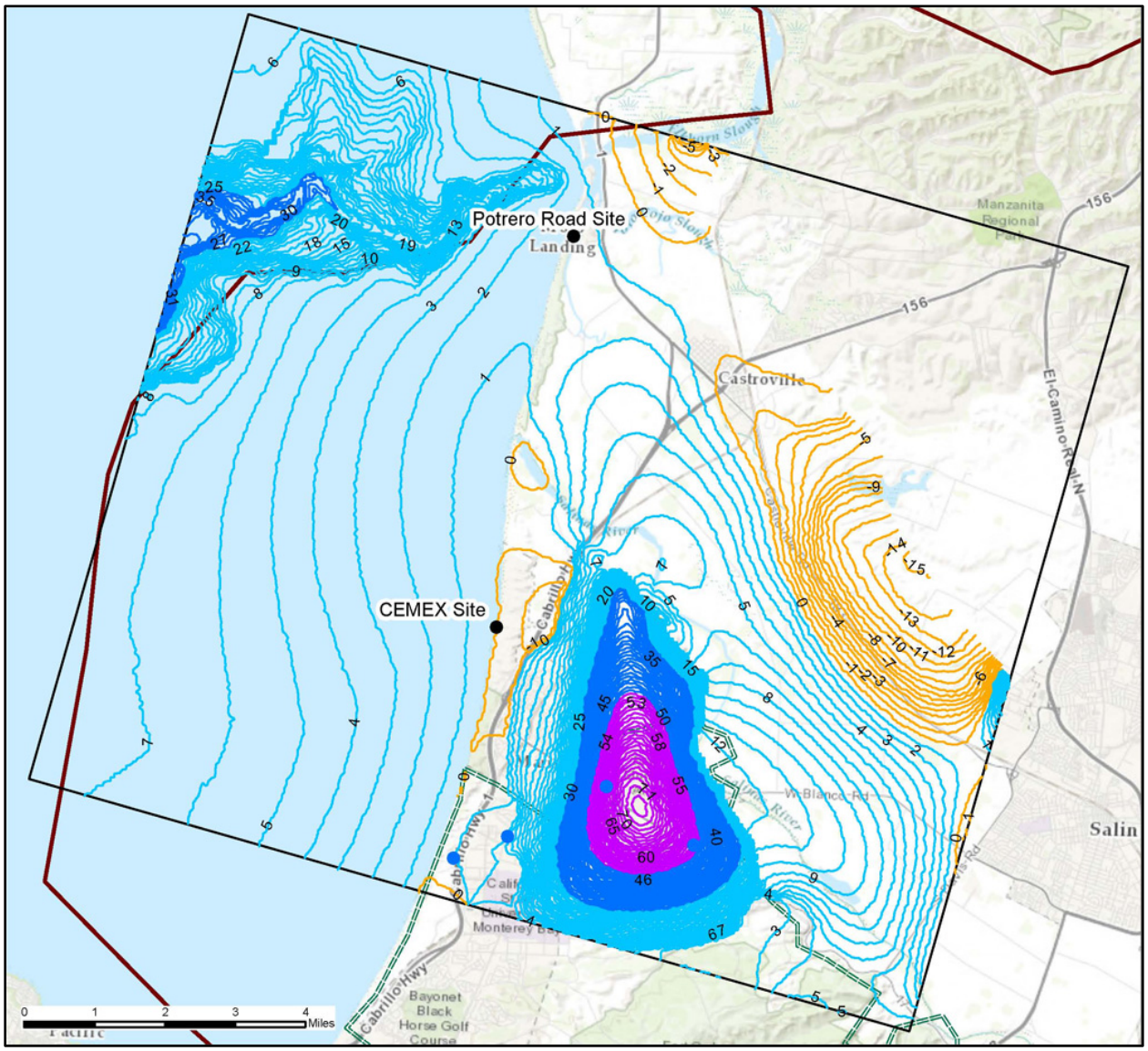


Figure 1. Simulated water table surface in the Dune Sand Aquifer (Layer 2) as portrayed by the calibrated version of the NMGWM-2016 showing mounding due to recharge in the Dune Sand Aquifer and equivalent fresh water heads assigned as constant values in the ocean[8]. Contour lines depict simulated lines of equal head where the highest head is >70 feet (purple area) and the low is <-15 feet (brown area). The mounding can be seen to drop off precipitously to the south and terminate against the southern model boundary, which indicates that the aerial extent of mounding is determined by the assigned boundary condition values along the southern model boundary.

[8] *Report to the Marina Coast Water District from GeoHydros dated March 27, 2017 and entitled: Review of the 2016 Version of the North Marina Groundwater Model Marina Coast California.*

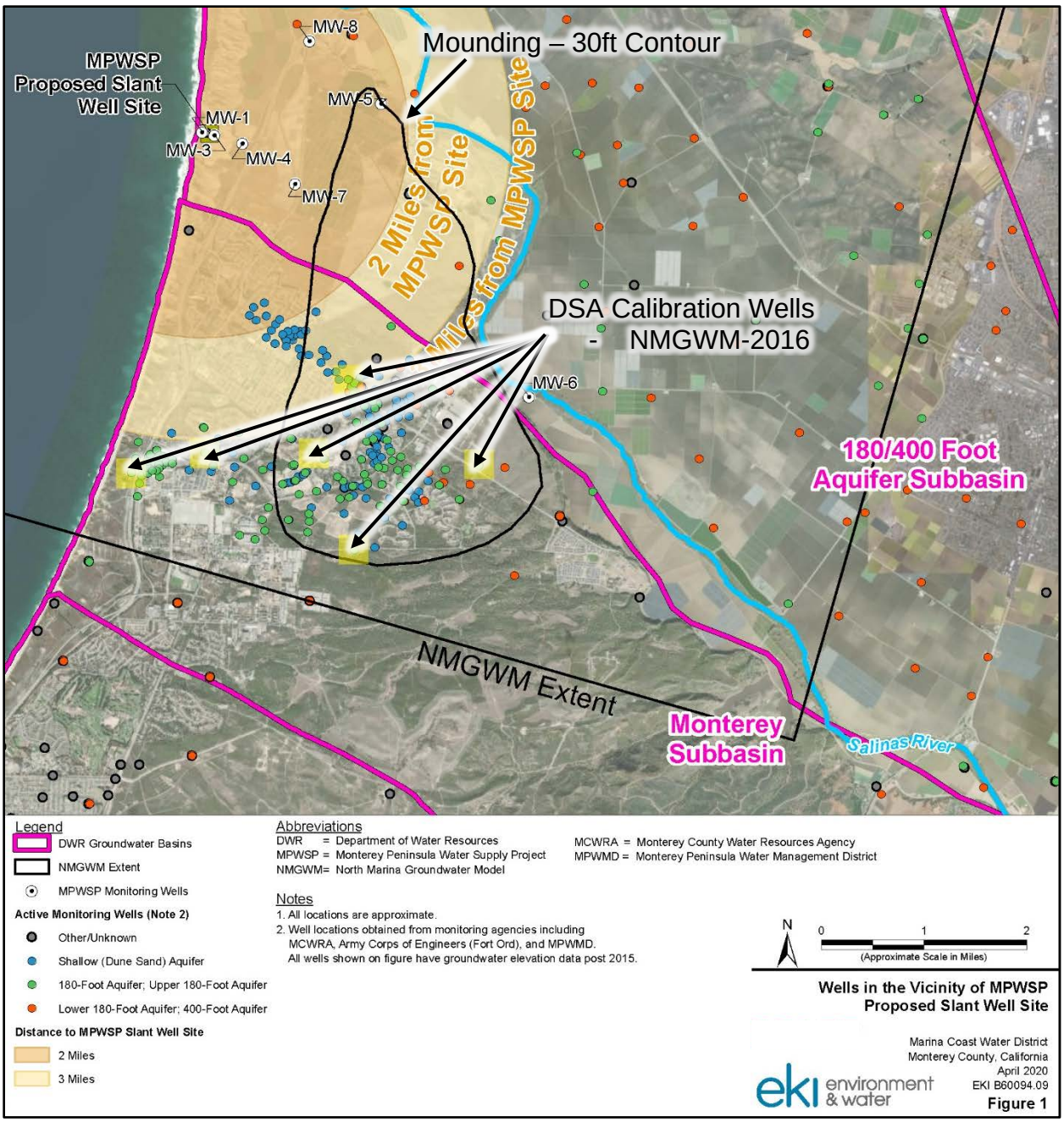


Figure 2. Map depicting the location of wells in and beyond the NMGWM-2016 boundaries and the location of wells used reporting DSA heads that were used in the calibration of the NMGWM-2016 relative to 2-mile and 3-mile radii around the proposed pumping project described in the proposed SOW. Note that approximately ½ of the depicted mounding area (heads >30 feet) falls outside of the 3-mile radius and that all but one of the DSA wells used in the calibration of the NMGWM-2016 fall outside of the 3-mile radius.

– adapted from a map provided by EKI.

	Changes to the Water Budget (CFD) after Specified Timesteps				
Source/Sink	TS-01	TS-YR01	TS-YR02	TS-YR10	TS-Final
Increased Inflow from Storage:	635,888	37,439	12,907	1,550	-1,220
Decreased Outflow to Storage:	283,852	33,804	11,785	246	19
Increased Ocean Inflow:	2,201,807	2,787,850	2,816,520	2,848,200	2,737,204
Decreased Ocean Outflow:	25,414	82,248	76,582	54,399	167,494
Increased Bndy Inflow:	47,136	163,713	179,681	136,078	183,288
Decreased Bndy Outflow:	30,142	116,688	124,231	181,237	135,005
Total	*3,224,240*	*3,221,741*	*3,221,706*	*3,221,710*	*3,221,790*
% of Proposed Extractions:	*100.1%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*
	Source/Sink Contributions to the Proposed Extractions after Specified Timesteps				
Source/Sink	*TS-01*	*TS-YR01*	*TS-YR02*	*TS-YR10*	*TS-Final*
Increased Inflow from Storage:	*19.7%*	*1.2%*	*0.4%*	*0.0%*	*0.0%*
Decreased Outflow to Storage:	*8.8%*	*1.0%*	*0.4%*	*0.0%*	*0.0%*
Increased Ocean Inflow:	*68.3%*	*86.5%*	*87.4%*	*88.4%*	*85.0%*
Decreased Ocean Outflow:	*0.8%*	*2.6%*	*2.4%*	*1.7%*	*5.2%*
Increased Bndy Inflow:	*1.5%*	*5.1%*	*5.6%*	*4.2%*	*5.7%*
Decreased Bndy Outflow:	*0.9%*	*3.6%*	*3.9%*	*5.6%*	*4.2%*
Total	*100.1%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*

Figure 3. Summary of water budget analyses performed using reports generated from the calibrated and DD1-44/56 scenarios of the NMGWM-2016[9]. In each timestep, appreciable quantities of water flow across the inland model boundaries as a consequence of the proposed pumping. The NMGWM-2016 therefore indicates that the proposed pumping will induce groundwater flow from inland areas (in and beyond the boundaries of the NMGWM-2016) into the capture zone. If the proposed pumping could be exclusively supplied by infiltration from the ocean and local recharge and groundwater flow, cross-boundary flows would be negligible or zero.

[9] *Report to the Marina Coast Water District from GeoHydros dated March 27, 2017 and entitled: Review of the 2016 Version of the North Marina Groundwater Model Marina Coast California.*

CORRESPONDENCE FROM MARINA COAST WATER DISTRICT TO STATE WATER RESOURCES CONTROL BOARD MEMBERS

ATTACHMENT 3

CALIFORNIA AMERICAN WATER

Richard Svindland
President
California American Water
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P 619-446-4761
F 619-230-1096

May 9, 2020

VIA ELECTRONIC MAIL

Board of Directors
Monterey One Water
5 Harris Court, Building D
Monterey, CA 93940

RE: Pure Water Monterey Project—Cost, Operational Performance and Status

Dear Chair Stefani and M1W Board Members:

We are writing this letter to you to express our concerns about certain cost overruns, delays, and operational issues associated with the Phase 1 Pure Water Monterey Project (intended to provide 3,500 afy of recycled water as part of the Monterey Peninsula Water Supply Project portfolio). Although we have made several requests for information to Monterey One Water (M1W) and Monterey Peninsula Water Management District (MPWMD) staff, we have yet to obtain a clear understanding of these issues, as well as sufficient detailed cost documentation necessary for California American Water (Cal Am) to make the necessary filings with the California Public Utilities Commission (CPUC) in order to determine and authorize recovery of the Company Water Rate, as established by the Water Purchase Agreement (WPA) among Cal Am, M1W, and MPWMD.

As you know, on July 2, 2019, Cal Am provided MPWMD and M1W with notice that an Event of Default had occurred in that the Delivery Start Date had not occurred as required in the WPA. Cal Am was told in general terms at that time that the project was in its final stages, the Delivery Start Date was anticipated to occur by mid-October, and Cal Am would receive periodic updates on the proposed start date. This did not formally occur. Then, on January 2, 2020, Cal Am provided notice that a second Event of Default had occurred in that the Performance Start Date had not been achieved. In these Notices, as well as in correspondence dated December 12, 2019, and January 22, 2020, Cal Am has repeatedly requested detailed information about the current status of the project, anticipated start dates, and any issues that may further delay the project. Additionally, Cal Am has repeatedly and specifically requested current and anticipated total capital costs, operation and maintenance costs, and purchase water costs per acre-foot compared to and shown against the original cost estimate used before the CPUC to develop the WPA. Although Cal Am has been provided some information in the past, that information has lacked sufficient detail or clarity to submit to the CPUC for review.

The Pure Water Monterey Project is a critical component of the Monterey Peninsula Water Supply Project, and as the purchaser of the project's product water, and the water supplier to the Monterey Peninsula, Cal Am must receive detailed and timely information about the project as it is being developed in order to plan for water supplies. Cal Am also has an obligation to review the financial aspects of the project to ensure that its ratepayers are not overcharged, do not bear a disproportionate burden, or face any other issues. As described in more detail below, Cal Am requests a full and complete report on projected costs, projected schedule, and current performance. Finally, given these outstanding concerns with the Pure Water Monterey Project, Cal Am remains even more concerned about the viability of the Expanded Pure Water Monterey Project (Expansion Project), should that project proceed despite the insufficiency of its environmental review. These concerns are also detailed below.

A. Pure Water Monterey Cost Analysis

In CPUC proceeding A.12-04-019, to respond to the CPUC's questions about certain aspects of the Pure Water Monterey Phase 1 Water Purchase Agreement, Cal Am, M1W and MPWMD submitted Joint Supplemental Testimony on the Phase 2 decision in 2016. To address specific concerns about the cost of water and an annual true-up, the parties provided the CPUC with Attachment 4 to the Joint Supplemental Testimony, an Example Budget for Year 1 Cost of Water showing the calculation for a year 1 water rate of $1,720 per acre-foot and listing separately various fixed project costs and operation and maintenance expenses. Attachment 4 also included an Example of True-Up for Year 2 revising the calculation to support a year 2 rate of $1,677 per acre-foot, and an estimated cost of operation for each new facility. Ultimately, the CPUC did not approve an actual rate of $1,720; rather, it approved a rate of $1,720 or less, and Cal Am is required to include with its Tier 1 advice letter support for a rate of at least $1,720 per acre-foot.

In early March 2020, M1W and MPWMD staff presented to Cal Am a new cost summary for water years 2019-20, 2020-21 and 2021-22, projecting annual costs per acre-foot of $2,198, $2,398 and $2,599 respectively. Despite repeated requests to match the cost analysis presented to the CPUC in Attachment 4 to the Joint Supplemental Testimony, the new summary deviated from this format, making it very difficult to understand the cost increases. Then, in a letter dated April 29, 2020, Cal Am was advised of a further increase in the Company Water Rate, to $2,442 for FY 2020-21, and $2,639 for 2021-2022. The April 29, 2020 letter also noted that construction costs are just now being calculated, and other costs having a bearing on the rate are being estimated. Again, the April 29, 2020 letter failed to present cost components in the format previously presented to the CPUC, and does not allow for a comparison of current cost components to those previously provided. We therefore request an update to Attachment 4 be prepared, with a new column showing the current estimate of each cost component previously submitted to the CPUC. Additionally, Cal Am notes that the April 29, 2020 letter assumes delivery of 3,700 acre-feet per year (3,500 afy allocated to Cal Am; 200 afy for drought reserve), but based on Pure Water Monterey performance deficiencies to date (see Section C below), the rates could be dramatically higher if delivery of 3,700 acre-feet per year is not realized.

Finally, the April 29, 2020 letter concludes that, after the Performance Start Date, billing for the amounts injected into the Basin will be sent by MPWMD to Cal Am for review and payment. Please note that under the WPA, Cal Am has "no obligation to make Company Water Payments unless and until the CPUC approves payment and recovery of those payments in rates…" (WPA §18.) First, Cal Am must file a Tier 1 advice letter seeking approval and recovery of the $1,720 per acre-foot rate. This advice letter is effective upon filing pending CPUC approval. In order to file the Tier 1 advice letter, Cal Am requires detailed information relating to the fixed project

costs and the estimated operation and maintenance expenses to be incurred in the upcoming fiscal year to support the $1,720 per acre-foot rate, as well as the projected and actual Performance Start Date. Cal Am has no obligation to make Company Water Payments until the CPUC approves the Tier 1 advice letter.

To the extent that Pure Water Monterey seeks to charge an amount in excess of the soft cap of $1,720 per acre-foot, Cal Am will have to file a Tier 2 advice letter seeking approval of the higher rate. As Cal Am has noted in previous correspondence, in order to file the Tier 2 advice letter Cal Am will need information supporting the higher Company Water Rate, including detailed information related to fixed project costs and estimated operations and maintenance expenses, as well as data regarding the initial performance of Pure Water Monterey project. Unless and until the Tier 2 advice letter is approved by the CPUC, Cal Am is only required to pay an amount equal to the soft cap of $1,720 per acre-foot as the Company Water Rate. (WPA §16.)

B. Pure Water Monterey Performance Start Date

The April 29, 2020 letter informs Cal Am of an estimated Performance Start Date of August 10, 2020, a nearly eight-month delay from WPA's Performance Start Date of January 1, 2020. That letter also notes that this date may continue to vary due to injection rates and well performance. As noted below, Cal Am has significant concerns about both injection rates and well performance, and given the reliance the CPUC, Cal Am and the public have placed on Pure Water Monterey's ability to serve water, Cal Am requests a detailed explanation of the Pure Water Monterey Project's current and projected performance status.

C. Pure Water Monterey Current Operational Status

Cal Am has recently become aware of certain operational problems that could jeopardize M1W and MPWMD's ability to comply with the terms of the WPA. Specifically, we are aware of sinkholes or subsidence affecting the shallow wells that may not be repairable, that certain deep wells are experiencing injection refusal and are functioning at rates of 60% or less, and that not all of the source waters identified and intended for treatment by the Pure Water Monterey facility have been utilized since startup. Additionally, just this past Monday, May 4, 2020, during a public meeting of the MPWMD Water Supply Planning Committee, we learned that the monthly injection volume for April was only 214 acre-feet, which equates to an annual volume of 2,568 afy. This is far less than the 3,500 afy allocated for Cal Am and much less than the 5,600 afy design capacity of the Pure Water Monterey Project. In order to gain a full understanding of the true status of the project and its likelihood of success, we request the following information:

- Please provide the Pure Water Monterey treatment facility monthly production volumes since start-up.
- Please identify, and provide the monthly volumes of, each source water that has been diverted and treated through the Pure Water Monterey facility since start-up (i.e., agricultural wash water, Reclamation Ditch, Blanco Drain, etc.)
- Please provide the capacity utilization factors for each of the injection wells (shallow and deep wells) versus design capacity. Please also provide the individual well injection rates in gallons per minute, volumes per month, and well run time. Please fully explain any reasons for not achieving full capacity and the corrective action plan to address.

- Please indicate and explain based on actual achieved injection well rates, if there is sufficient capacity to meet the Pure Water Monterey treatment design capacity and contractual supply obligations, and whether there exists sufficient injection well redundancy to achieve full capacity on a consistent and sustainable basis anticipating well downtime, maintenance, and the natural decline of well capacity over time.
- Please provide the proposed remedies, estimated costs, and schedule to address deficiencies in performance as compared to the basis of design for the source water facilities, treatment plant, and/or wells.

Cal Am, the CPUC, the State Water Board, and Cal Am's customers on the Monterey Peninsula are all relying on M1W to timely deliver 3,500 afy from Pure Water Monterey as part of the MPWSP. However, M1W and MPWMD staff have not provided clarity or transparency into the project's technical difficulties, or the reasons for the added costs and delay.

D. Expanded Pure Water Monterey Project

With the ongoing delays, cost overruns and feasibility issues plaguing the Pure Water Monterey project, and especially with the deficiencies in the Expansion Project SEIR recognized by M1W in the Board's decision to deny the SEIR's certification, Cal Am remains concerned with the overall feasibility of the Expansion Project if it ever moves forward. The M1W Board has consistently taken the position that the Expansion Project is a backup to desalination, but at the same time M1W and MPWMD staff continue to advocate to the Coastal Commission, other agencies, and the public that the Expansion Project is a viable alternative to desalination. But whether a backup to supplement desalinated water supplies, a backup interim supply to be shut down when the desalination plant is operational, or an alternative to desalination, Cal Am does not believe the Expansion Project to be feasible.

- <u>As a backup project to supplement desalination</u>

As you know, in its 2018 Decision, the CPUC ordered Cal Am to investigate whether ***in conjunction with the MPWSP*** the Expansion Project could provide an affordable, specific, concrete, safe, reliable ***additional or supplemental*** source water supply for Cal Am's ratepayers. Notably, the Expansion Project's SEIR failed to analyze the cumulative impacts of the Expansion Project and the MPWSP, and so Cal Am is unable to review potential environmental impacts of the operation of both projects. Cal Am has also raised concerns about the reliability of the Expansion Project. In any event, with information currently available about schedule delays, performance issues, and cost overruns of the Phase 1 project, Cal Am believes it is highly unlikely that the Expansion Project combined with desalination would provide an affordable water supply.

- <u>As a replacement or alternative to desalination</u>

Disregarding both the CPUC's decision and the M1W board's resolution that the Expansion Project was to serve as a backup water supply to desalination, certain staff members of both M1W and the MPWMD have repeatedly advocated for the Expansion Project as a replacement to desalination, urging the Coastal Commission and other agencies to reject desalination. Moreover, relying solely on a speculative report prepared by MPWMD's general manager, Mr. Stoldt, the Expansion Project SEIR states, contrary to the findings of the CPUC, that either the desalination plant or the Expansion Project can meet the long term demands of the Monterey Peninsula, and either option would be sufficient to lift the SWRCB Cease and Desist Order. Cal

Am has repeatedly expressed its disagreement with the analysis and conclusions made by Mr. Stoldt, and given the deficiencies in the availability, reliability, and adequacy of source water, it is very likely that the Cease and Desist Order will remain in place if the Expansion Project moves forward and takes the place of desalination.[1]

Condition 15 of State Water Board Order 2016-0016 makes clear what is needed to lift the CDO:

> The conditions of this Order, State Water Board Order WR 2009-0060 and State Water Board Order 95-10 shall remain in effect until (a) Cal-Am certifies, with supporting documentation, that it has obtained a permanent supply of water that has been substituted for the water illegally diverted from the Carmel River and (b) the Deputy Director for Water Rights concurs, in writing, with the certification.

The Expansion Project is neither an adequate nor a permanent water supply sufficient to meet the needs of the Peninsula, and the water rights it claims are merely interruptible use entitlements, not permanent water rights. Those claimed entitlements are also disputed by the actual holders of the water rights, as set forth in comment letters submitted to M1W by the City of Salinas, Monterey County Water Resources Agency, Castroville Community Services District, and Monterey County Farm Bureau, among others. As Cal Am has advised M1W in the past, any water purchase agreement for the Expansion Project as a replacement to desalination would require M1W to guarantee the full production volume, and provide a full indemnification to Cal Am against any risk, liability or penalties in the event the Pure Water Monterey Project fell short for any reason.

- <u>As a backup to desalination to be shut down when desalination is online</u>

The Final SEIR takes the position that "M1W will cease treating and delivering the expanded quantities of water associated with operation of the Proposed Modifications once CalAm's MPWSP desalination project operates to deliver the same or more water to the CalAm Monterey District service area." Any water purchase agreement for the Expansion Project as a temporary backup while permitting and construction of the desalination plant is underway would necessarily have a very short term, and as such would likely not be feasible for M1W. And in the event that the Coastal Commission denies Cal Am's application for a slant well permit, any such water purchase agreement would then need to revert to the concrete terms described above in order for the Expansion Project to operate as a permanent water supply and a replacement to desalination.

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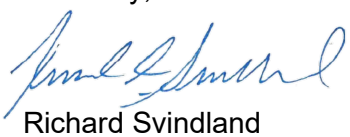
[1] The State Water Board does not support Mr. Stoldt's conclusions on Monterey Peninsula water demand. As stated in its May 8, 2020 letter to the California Coastal Commission (attached hereto), the State Water Board concludes as follows: "State Water Board staff has also reviewed the available documents regarding Monterey Peninsula water supply and demand and has discussed drinking water requirements, including standards for new and existing water source capacity, with Coastal Commission staff and other parties. Even though actual water use within Cal-Am's Monterey District service area in recent years has been lower than the Public Utilities Commission's estimated current demand, ***State Water Board staff does not have a basis to conclude that the Public Utilities Commission's prior analysis and determinations regarding the water demand, sizing, reliability, or diversity of supply were unreasonable, invalid, or outdated.***" (Emphasis added.)

E. Conclusion

The Pure Water Monterey Project is a critical component of Cal Am's planned portfolio to serve the Monterey Peninsula and reduce Carmel River diversions. To date, Cal Am has not received from M1W and MPWMD staff the detailed information and timely updates about the project it needs to fully understand the ability of the project to serve Cal Am's customers. Therefore, in addition to the information specifically requested in this letter, Cal Am requests that the M1W Board authorize an independent audit into the current status of the project, its expected cost and completion date, and its ability to fully deliver the potable water promised.

Sincerely,



Richard Svindland
President
California-American Water Company

cc (by email): David Stoldt, General Manager, MPWMD
Paul Sciuto, General Manager, M1W

ATTACHMENT

State Water Resources Control Board

May 8, 2020

Mr. John Ainsworth
Executive Director
California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105

John.Ainsworth@coastal.ca.gov

RE: Application No. 9-19-0918 and Appeal No. A-3-MRA-19-0034 (California American Water Company)

Dear Mr. Ainsworth:

I write to express the State Water Resources Control Board's (State Water Board) interests in the Coastal Commission's timely action on the above-referenced proceedings, regarding California American Water Company's (Cal-Am) consolidated application and appeal for a coastal development permit for its proposed 6.4-million-gallon-per-day desalination project, the Monterey Peninsula Water Supply Project (Project). As I explained in oral comments to the Coastal Commission at the November 14, 2019 meeting, the State Water Board's efforts to resolve long-standing problems caused by excessive diversions from the Carmel River depend on prompt resolution of Cal-Am's application and appeal. We therefore urge the Coastal Commission to act on the permit at its meeting in August 2020.

Background on Long-standing Unlawful Diversions from the Carmel River

As summarized in the Coastal Commission's staff report dated October 28, 2019, the State Water Board has ordered Cal-Am to terminate its unauthorized diversions from Carmel River no later than December 31, 2021. The State Water Board is concerned not only about longstanding and continuing violations of state water rights law but also the diversions' negative impacts on public trust resources of Carmel River, which provides habitat for the federally threatened South-Central California Coast Steelhead Distinct Population Segment, the federally threatened California red-legged frog, and the candidate western pond turtle, and which also supports coastal wetlands and riparian vegetative communities.

Since 1995, Cal-Am has been required to "diligently implement . . . actions to terminate its unlawful diversions," and its inadequate progress led the State Water Board to issue a cease and desist order in 2009 requiring Cal-Am's full compliance by the end of 2016. (State Water Board Order WR 95-10, p. 40; State Water Board Order WR 2009-0060, p. 57.) Most recently, after additional setbacks in the development of a local water supply project to replace Cal-Am's continuing unauthorized Carmel River diversions, the State Water Board extended the compliance deadline to the end of 2021. At the same time, the State Water Board established enforceable interim milestones and effective diversion limits to ensure "that the State Water Board will not again find itself in the same position of again extending the compliance deadlines . . . ." (State Water Board Order WR 2016-0016, pp. 9, 19-24 [Order WR 2016-0016].) The State Water Board identified the Project, together with the 3,500-acre-feet-per-year Pure Water Monterey project and Cal-Am's existing rights to Carmel River and the Seaside Basin, as a viable path to ending Cal-Am's unlawful diversions from Carmel River by the end of 2021.

The State Water Board set milestones based on development of the Pure Water Monterey project and the Project accordingly, and it indicated that it would consider modifying the order's milestones if another feasible, larger-scale water supply project were to emerge to terminate Cal-Am's unauthorized diversions by the end of 2021. (Order WR 2016-0016, pp. 15-16 & 20, fn. 17.) But the State Water Board has also established conditional reductions in Cal-Am's interim effective diversion limit, to ensure that "diversion limits are ratcheted down such that unlawful diversion end by December 31, 2021 regardless of whether Cal-Am meets the milestones." (*Id.*, p. 13.) The cease and desist order, including the prohibition against new service connections and against certain increased water deliveries to existing service connections, will only be resolved or "lifted" after Cal-Am satisfactorily demonstrates that it has "obtained a *permanent* supply of water that has been substituted for water illegally diverted from the Carmel River." (*Id.*, ordering paragraph 15 [p. 27], italics added.)

Cal-Am has satisfied all milestones to date and in recent years obtained important approvals to construct the Project, including the Public Utilities Commission's certification of the final environmental impact report (Final EIR)[1] and issuance of a certificate of public convenience and necessity, as well as the County of Monterey's issuance of a development permit for the desalination plant. This trend shifted beginning in the later part of 2019.

Recent Developments Have Caused Delay

[1] Because a portion of the Project is proposed within the Monterey Bay National Marine Sanctuary (MBNMS), the Public Utilities Commission and the National Oceanic and Atmospheric Administration (NOAA), the lead agency under the National Environmental Policy Act, prepared a joint Final EIR and Environmental Impact Statement (EIS). MBNMS Superintendent Paul Michel stated at the Coastal Commission's November 19, 2019 meeting that NOAA worked with the Public Utilities Commission and the consultant team to "ensure that the Final EIR/EIS identified all potential impacts and met all levels of NEPA sufficiency."

Since the Commission's November 14, 2019 meeting in Half Moon Bay, the scheduled date for completion of the hearing and Coastal Commission action on the Project application and appeal has shifted from March 2020, to June 2020, and now given extensions related to the COVID-19 emergency, to August or September 2020. Coastal Commission staff has indicated a continued desire for Cal-Am to withdraw its application, thereby removing any deadline for Coastal Commission action on the Project, until after Coastal Commission completes an extended review and investigation of various issues, including the Project's groundwater impacts and the Monterey Peninsula's projected water supply and demand.

The Coastal Commission states that the delay is due to a need to resolve these remaining technical questions. But these issues have already been resolved by the Public Utilities Commission, after extensive environmental review and consideration of evidence and testimony over a multi-year adjudicative proceeding. (See Public Utilities Commission Decision 18-09-017 & Decision 19-01-051. See also *Marina Coast Water District v. Public Utilities Commission*, review den. Dec. 12, 2018, S251935; *City of Marina and Marina Coast Water District v. Public Utilities Commission*, review den. Aug. 28, 2019, S253585.) Importantly, several of the Coastal Commission staff's recommendations and findings from November 2019 regarding the Project are contrary to the Public Utilities Commission's determinations. Coastal Commission staff suggests the Public Utilities Commission acted on either incomplete or outdated information regarding these issues. The State Water Board does not agree.

State Water Board staff has reviewed the existing hydrogeologic studies and reports, including Weiss Associates' independent hydrogeological review of more recent data and studies dated November 1, 2019 (Coastal Commission, Items Th8a & Th9a, Exhibit 7) and Weiss Associates' proposed scope of work for an additional "aquifer impacts" analysis dated March 11, 2020. State Water Board staff has concluded that the North Marina Groundwater Model already conducted, revised, and relied upon by the Public Utilities Commission as part of its certified Final EIR (see, e.g., Section 4.4, Section 5.5.4, and Appendices E2 and E3), provides a conservative overprediction of the volume of shallow, inland water that the Project would capture during full operation.

The Project's test slant well was operated for over two years and has shown minimal impacts to groundwater levels approximately 2,100 ft from the well (at MW-4) and little to no impacts to groundwater levels further inland (at MW-7). The existing model predicts hydraulic impacts much farther inland than has been observed during actual operation. Efforts to calibrate the model to better match observed data would result in an increase in the simulated extraction of seawater and *less* simulated capture of inland groundwater compared to existing modeling results. Accordingly, even if the additional investigation, monitoring, and modeling could provide some instructive data or information, any new information obtained from this work would not undermine or substantially change the current understanding of the hydrogeologic system. State Water Board staff's opinion remains that the groundwater impacts of the Project will not be any greater than those stated, analyzed, and mitigated under the Public Utilities Commission's certified Final EIR.

Furthermore, the additional groundwater analysis proposed to be conducted by Weiss Associates would focus on an area of approximately two square miles, which is approximately 1% of the area covered by the existing model. Refinement of the model in this relatively small area would not result in substantial differences in the model output. Given that the additional information will not further inform the Coastal Commission's decision regarding the Project's alleged "depletion of ground water supplies" (Pub. Resources Code, § 30231)[2], the additional six months (or more) this work is expected to take is not necessary.

State Water Board staff has also reviewed the available documents regarding Monterey Peninsula water supply and demand and has discussed drinking water requirements, including standards for new and existing water source capacity, with Coastal Commission staff and other parties. Even though actual water use within Cal-Am's Monterey District service area in recent years has been lower than the Public Utilities Commission's estimated current demand, State Water Board staff does not have a basis to conclude that the Public Utilities Commission's prior analysis and determinations regarding the water demand, sizing, reliability, or diversity of supply were unreasonable, invalid, or outdated.

The delays in proceedings before the Coastal Commission and the resulting effects on other proceedings, including the State Land Commission's processing of Cal-Am's general lease application and the Superior Court of Monterey County's prolonged stay of the County's issued development permit, will almost certainly prevent Cal-Am from meeting the 2020 and 2021 milestones for construction and completion of the Project under Order WR 2016-0016. In the State Water Board's observation, further Coastal Commission delay will also limit Cal-Am's ability or willingness to consider and pursue, let alone fund and construct, other short-term or long-term water supply alternatives to terminate unauthorized diversions from Carmel River as required no later than December 31, 2021.

For example, the proposed schedule for implementing a 2,250 acre-foot-per-year Pure Water Monterey expansion has itself already been delayed well beyond December 31, 2021, and requires approvals and funding for which the details are uncertain and the timeline is indefinite. In practice, Pure Water Monterey expansion appears to be viewed by the Coastal Commission and others not merely as a "back-up" to, but rather as a potential full substitute for, the Project. It is uncertain whether or when the proposed

[2] Despite Coastal Commission staff's reliance on section 30231 of the California Coastal Act of 1976 in its November 4, 2019 addendum as the basis for recommending additional groundwater modeling, it is unclear whether Coastal Commission staff asserts, or has any factual basis for asserting, that the Project could potentially impact groundwater resources in a manner that would affect the coastal resources protected by that provision. The statute specifies the Coastal Commission shall maintain and, if feasible, restore the "biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate *to maintain optimum populations of marine organisms and for the protection of human health . . .*" (Pub. Resources Code, § 30231, italics added.)

Pure Water Monterey expansion project may proceed beyond its currently pending environmental review, but significant additional progress appears unlikely while the Project is still pending.

Furthermore, as the NOAA Fisheries Central Coast Branch Chief publicly commented before the Coastal Commission in March, there could be dire consequences for the steelhead and other public trust resources if a reliable and sustainable water supply allowing Cal-Am to terminate its unlawful diversions is not promptly developed. For all of these reasons, the State Water Board urges the Coastal Commission to consider whether it actually requires additional information or investigation regarding the Project, and to then promptly complete any additional work so it can issue a final decision on Cal-Am's application and appeal no later than is currently planned at the August 2020 meeting.

We appreciate your attention to these important issues and remain available to discuss any of this with you or your staff if further discussion would be helpful.[3]

Sincerely,

Eileen Sobeck, Executive Director
State Water Resources Control Board

cc: **[via email only]**
Alison Dettmer, Senior Deputy Director, Coastal Commission
Kate Huckelbridge, Deputy Director of Energy, Ocean Resources, & Federal Consistency, Coastal Commission
Tom Luster, Senior Environmental Scientist, Coastal Commission
Rich Svindland, President, California American Water
Layne Long, City Manager, City of Marina

[3] These comments regard technical and legal matters that are within the State Water Board's purview and expertise. They should not be interpreted by the Coastal Commission or any other parties as support for or opposition to the Project, Pure Water Monterey expansion, or any other efforts that will permanently end Cal-Am's unauthorized diversion from Carmel River as soon as possible. The Regional Water Quality Control Board, Central Coast Region (Central Coast Water Board) also has permitting authority over the Project, and will apply subdivision (b) of section 13142.5 of the Water Code and the California Ocean Plan in the exercise of that authority. These comments may not necessarily reflect the positions of the Central Coast Water Board.