BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

Application of California-American Water Company (U210W) to Obtain Approval of the Amended and Restated Water Purchase Agreement for the Pure Water Monterey Groundwater Replenishment Project, Update Supply and Demand Estimates for the Monterey Peninsula Water Supply Project, and Cost Recovery	Application No. 21-11-024 (Filed November 29, 2021)

PHASE 2 DIRECT TESTIMONY OF JONATHAN LEAR

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PHASE 2 DIRECT TESTIMONY OF JONATHAN LEAR

I. INTRODUCTION

Q1: What is your name and address?

A1: My name is Jonathan Lear, and my address is 5 Harris Court, Building G, Monterey, CA 93940.

Q2: By whom are you employed and in what capacity?

A2: I am employed by the Monterey Peninsula Water Management District (MPWMD) as its Water Resources Division Manager.

Q3: Please briefly describe your current responsibilities as they relate to this testimony.

A3: I manage the Water Resources Division. My duties include managing operator of MPWMD's Aquifer Storage and Recovery Project as well as its compliance officer to the Regional Water Quality Control Board and State Water Resources Control Board (SWRCB). I maintain the

monitoring networks and technical databases related to project operations and maintenance, climate, wells, water production, streamflow, and water quality and level data. I prepare the Quarterly Water Budget for the Quarterly Water Budget Group which consists of the California Department of Fish and Wildlife, National Marine Fisheries Service, the Regional Water Quality Control Board, Cal-Am, and MPWMD. The Quarterly Water Budget assigns production from the various sources of the Monterey Peninsula Water Resource System in a manner that will cause the least stress on the resource system and will comply with SWRCB Orders and Seaside Groundwater Basin Adjudication Decision. I am the Chair of Seaside Watermaster Technical Advisory Committee. I build finite-element computerized groundwater models and perform simulations to evaluate the short- and long-term feasibility of water resources projects by evaluating the effects they have on the water resource system and apply statistical methods to evaluate model results.

Q4: Can you briefly describe your educational background?

A4: I have a Bachelor of Science and a Master of Science degree in Earth Science from the University of California at Santa Cruz. I am a Registered Geologist and a Certified Hydrogeologist with the California Department of Consumer Affairs. I have a water treatment license from the California Department of Drinking Water.

Q5: Do you have professional experience with operating utilities and public infrastructure?

A5: Yes, I have over 23 years of experience designing, permitting, performing construction management, and operating conjunctive use - managed aquifer recharge projects to provide both drinking and irrigation waters to residential and farming communities.

I have operated MPWMD's Aquifer Storage and Recovery (ASR) Project for the past 14 years. Prior to that, I operated Pajaro Valley Water Management Agency's Harkins Slough Recharge Project and Coastal Distribution System to offset the effects of seawater intrusion.

II. PURPOSE OF TESTIMONY

Q6: What is the purpose of your testimony?

A6: The purpose of my testimony is to provide background data on (a) the current limitations of the ASR program, (b) provide some history of how the limitations to the ASR program developed, and (c) document some of the incorrect assumptions made by Paul Findley in his assessment of the ASR program and to provide statistical analysis of his estimated ASR annual totals. Hopefully, such information and analysis will help the Commission better understand the mechanics and limitations of the ASR program and average annual yield that should be expected.

III. CARMEL VALLEY PRODUCTION

Q7: In Table 1 of the Findley ASR Memo[1], the capacities of the Lower Carmel Valley wells are listed and summed to show a capacity of 19 acre-feet (AF) per day and a Firm Capacity of 15 AF per day. The table cites an email from Mike Magretto of Cal-Am to Ian Crooks of Cal-Am dated May 7, 2021 as the source of the data presented. Is it your understanding that this table represents the capacities of the Lower Carmel Valley wellfield that should be used for ASR estimation calculations?

A7: No. While the capacity numbers listed in the memo's Table 1 are consistent with numbers that Cal-Am reports annually to the CPUC for their Consumer Confidence Report, those capacities are calculated by dividing the total production from a well over the days in the reporting period, hence, the numbers do not reflect the instantaneous pumping capacities of the Lower Carmel Valley wells, especially if the wells were not producing water on any given single day. It is more appropriate to use the instantaneous pumping capacities for these wells to evaluate capacity of the well field as a supply for ASR diversions. There are also seasonal fluctuations in well capacity; the well capacities are lower in the summertime because water levels in the Carmel Valley Alluvial

[1] Phase 2 Direct Testimony of Paul Findley, Attachment 1 – ASR Availability and Reliability Analysis Technical Memorandum dated July 15, 2022.

Aquifer are lower in the summer. ASR diversions occur in winter months when the aquifer is full and the wells are at their highest instantaneous capacity.

Q8: Are the well capacities higher during the winter when they are used for ASR diversions than the values reported in Table 1?

A8: Yes. MPWMD receives daily pumping values for all Cal-Am wells and pumping values reported during ASR diversions are approximately 10% higher than the values shown in Table 1, which leads me to believe the numbers in Table 1 were generated using the CPUC reporting methodology.

Q9: On page 3 of the Findley ASR memo, a statement is made that during an ASR diversion event, it is possible that the Upper Carmel Valley wells are not producing water to support ASR diversions. Have recent ASR operations shown this statement to be true?

A9: No. The Seaside Middle School Site that contains ASR 3 and ASR 4 was completed in 2015 bringing the total injection capacity of the ASR wells to 6,000 GPM. Since 2015, the Upper Carmel Valley wells have produced during every ASR injection event. In addition, the ASR diversion permits do not control when the Upper Carmel Valley wells can be used. State Water Board Order 2002-04 states that the wells cannot be used during the "Low Flow" period as defined as 5 consecutive days of flow less than 20 cfs at the Don Juan Stream Gage. One day of flow above 20 cfs at the Don Juan Stream Gage will allow production from the Upper Carmel Valley wells. This threshold in flow is much less than any of the flow thresholds in the ASR diversion permits and always occurs prior to reaching diversion limits for ASR. Finally, the Quarterly Water Budget (QWB) Group decides the preferred operation of wells for each Quarter of the Water Year. The QWB Group has recommended the use of the Upper Carmel Valley Wells to support ASR diversions for the past 7 years. The Quarterly Water Budgets are adopted by the District Board and filed as a CEQA document with the Monterey County Clerk.

Q10: The Findley ASR memo states that even if the Upper Carmel Valley wells are running during an ASR injection event, they may be supplying water to the Table 13 Water Right rather than the ASR diversions. Is this consistent with past operations?

A 10: No. Table 13 is a Water Right that allows diversion from the Carmel Valley wells for direct consumption in Carmel Valley and Carmel and ASR is operated under a Water Right that allows diversion to storage in the Seaside Groundwater Basin. The instream flow requirements for ASR diversion and Table 13 are almost identical and often they are triggered on the same day. The difference is that local demand was already being met by the Carmel Valley wells the day before entering ASR and Table 13 permitted diversions. Therefore, the well capacity that was previously meeting demand in the system is still meeting demand but is simply re-labeled as "Table 13" diversions, rather than diversions against the other 3,376 AF of Carmel River water rights Cal-Am holds. However, the ASR diversions rely on the capacity in the Carmel Valley wells that are not being used to meet system demand. Hence, the statement in the Findley memo claiming the capacity of the Upper Carmel Valley wells may be needed to meet Table 13 and may not be available for ASR diversions is not consistent with how the water rights work together. Additional well capacity is not required for Table 13 diversions at the expense of ASR diversions.

Q11: Does the Carmel Valley well field have enough capacity to support the maximum daily diversion rate of 29 AF?

A11: No. Currently the production from the Carmel Valley well field cannot support diversion of the maximum daily diversion value. If there were no limitations due to transmission in the Cal-Am system, the production from the Carmel Valley Wells would be the limiting component of the ASR Program. In my testimony to the Commission in the 2019 General Rate Case,[2] I identified the need to develop more production capacity in the Carmel Valley to support ASR diversions and license the Water Rights at the maximum diversion rates.

[2] A.19-07-004, Direct Testimony of Jonathan Lear dated February 27, 2020, pp. 5-8.

IV. ASR TRANSMISSION

Q12: On page 2 of the Findley ASR Memo, the statement is made that the only way water can be transmitted to the ASR wells is via the Crest Pipeline and that daily value is limited to 17 Acre Feet per Day. Is this consistent with your understanding of the ASR Program and recent ASR Operations?

A12: Prior to the construction of the Monterey Pipeline in 2018, this was a true statement. Water was produced and treated in Carmel Valley and moved through the Crest Pipeline to the ASR wells. The Crest Pipeline has shown the ability to transmit up to 20 Acre Feet per Day to the ASR Wells. There have been many operational events when the Crest Pipeline was used exclusively that show an average of over 19 AF per day injected into the ASR wells. There are also "Pipeline Losses" that are assumed in his analysis that are not consistent with the loss rate of the Main System that is reported to the CPUC in Cal-Am's General Rate Case.[3] So, while 17 AF per day as a limitation to injection while using the Crest Pipeline is close, our historical operational data show the limitation at a slightly higher daily value, but still less than the maximum permitted diversion rate.

Q13: Has the transfer pipeline been used to support ASR injections as outlined in the 2016 Testimony?

A13: Yes, but not as planned or promised by Cal-Am. In 2016, a Joint Motion to the CPUC stated "the Monterey pipeline would also be used to transport water for ASR and the Monterey pump station would allow California American Water to maximize its existing ASR facilities."[4] In the supporting testimony of then Cal-Am President, Richard Svindland stated, "Currently the existing distribution system prevents the full utilization of the water rights obtained for ASR. Thus,

[3] Attachment A hereto, A.22-07-001, California-American Water Company 2022 General Rate Case, Exhibit B, MDR II.E.4 - Cost/Benefit Analysis for Reducing Unaccounted for Water.
[4] A.12-04-019, Joint Motion for Separate Phase 2 Decision, April 18, 2016, p. 3.

proceeding with the California American Water only facilities[5] could potentially allow the injection of more water into ASR."[6]

The Monterey Pipeline was used to transmit water to the ASR wells from Carmel Valley during 2018 to 2021, however Cal-Am's operational plan moving forward is to return to solely using the Crest Pipeline to support ASR injection. This is contrary to testimony in 2016: "Cal-Am proposes to use the Monterey Pipeline to eliminate the existing system constraint by providing a large, dedicated transmission main to move water supply efficiently across the system from the Carmel Valley to the Monterey Pump Station where it is boosted to the appropriate pressure for delivery to the ASR Project wells for injection."[7]

During the years where the Monterey Pipeline was being used for ASR injection, the production capacities of the Carmel Valley Wells was the limiting factor, but without the Monterey Pipeline to support ASR the Crest Pipeline will return to being the limiting factor for ASR. The 2016 testimony stated "Due to the 16-inch size of the Crest Pipeline, Cal-Am is unable to divert the maximum rate allowable under the permits for ASR injections, 6,500 gpm (9.4 MGD). Depending on system conditions and demands, the Crest Pipeline can transfer up to 3,000 to 4,000 gpm (4.3 MGD to 5.8 MGD) to the ASR Project wells for injection which leaves approximately 2,500 to 3,000 gpm (3.6 MGD to 4.3 MGD) not available for ASR injection."[8] To my knowledge the Monterey Pipeline and Pump Station was only ever used once for testing at the full capacity of ASR of 6,000-6,500 gallons per minute (gpm), and that for a period of only approximately a half an hour.

[5] A.12-04-019, Joint Motion for Separate Phase 2 Decision, April 18, 2016 "Cal-Am only facilities refers to the Monterey Pipeline and the pump station facilities (Hilby Pump Station).
[6] A.12-04-019, Direct Testimony of Richard C. Svindland, p. 20, line 16.
[7] A.12-04-019, Joint Supplemental Testimony of California American Water, Monterey Peninsula Water Management District, and Monterey Regional Water Pollution Control Agency (Corrected Version), May 18,2016, p. 15, beginning at line 3.
[8] Id., p. 14, beginning at line 16.

V. ASR WATER RIGHTS ANALYSIS

Q14: In the Findley ASR memo there are statements made about the limitation of 1.9 cfs available to Permit 20808C and that this permit is more restrictive than Permit 20808A. Is this your understanding of how the water rights are used for ASR diversions?

A14: No. This is not how the District uses the water rights for ASR diversions. In Findley's analysis, he assumes 20808A is always used before 20808C, whereas historical diversion data filed at the SWRCB does not bolster Findley's approach to using the water rights. MPWMD staff is working with the State Water Board to create a history of use under the water rights permits that will result in licensing the water rights at the maximum permitted diversion rates. Therefore, there are days in the historic record where maximum diversion has occurred under both permits. It does not appear that the historic diversion data available on the SWRCB website was used to formulate the assumptions used for the water rights permits in the Findley ASR memo.

Q15: Does Findley's statement that 20808C is more flow restricted match with your understanding of this Permit?

A15: No. While the water rights have different flow thresholds, they also have different times of the year where the flow thresholds change, but it has not been the experience in ASR operations that 20808C is greatly flow limited over 20808A. Table 3 in the Findley memo shows the number of operational days assumed for each permit by Water Year. The assumptions made about the flow thresholds in 20808C are estimating 30% to 50% less days where injection is allowed under 20808C when compared to 20808A. MPWMD has also performed this analysis by historical water year and our results are very similar to Findley's for Permit 20808A; however, our longstanding interpretation of Permit 20808C allows for many more operational days in any given Water Year than is reported in the Findley memo. For example, I have included below in Table 1 the number of diversion days as calculated by MPWMD for the most recent Water Years. In Findley's analysis, if injection was not simulated for the days MPWMD believes were permitted, but were not counted

in Findley's Table 3, then the injection volumes calculated under Permit 20808C would be lower in Findley's memo than the way MPWMD operates ASR under Permit 20808C.

Table 1

Number of Diversion Days as Calculated by MPWMD

Water Year	20808A Permit Days	20808C Permit Days	Rain Year Type
2015	19	9	Dry
2016	44	44	Below Normal
2017	156	146	Extremely Wet
2018	30	25	Dry then Below Normal
2019	131	141	Extremely Wet
2020	86	60	Normal
2021	4	7	Extremely Dry

Q16: Findley uses an average flow over the period of December 1 to May 30 for each water year to show the variance between decades in Table 2 of his memo. Is this a good proxy for evaluating theoretical ASR operations?

A16: While the average flow averaged over the entire ASR injection season does give a proxy for how wet a Water Year was, this method is not as robust an analysis as using daily flow values at the gages listed in the water rights permits. Average flow values over the entire permit time window can be skewed by large storms or drier springs. Water years with similar average values can have vastly different numbers of operational days based on how the winter storms deliver rainfall to the watershed. In fact, the best water years for ASR operations are many smaller storms that do not cause flooding, but keep instream flow conditions over permit thresholds for long periods of time rather than years with large storms that would generate a higher average flow value. In Table 3 of Findley's memo, he reports simulated operational day by water year. The downward decadal trend in *the average* flow Findley reported earlier in the memo is not seen in the estimated operational day data. This is also not quite a fair comparison due to the discrepancy between Findley's Permit 20808C operational assumptions and MPWMD's historical operations.

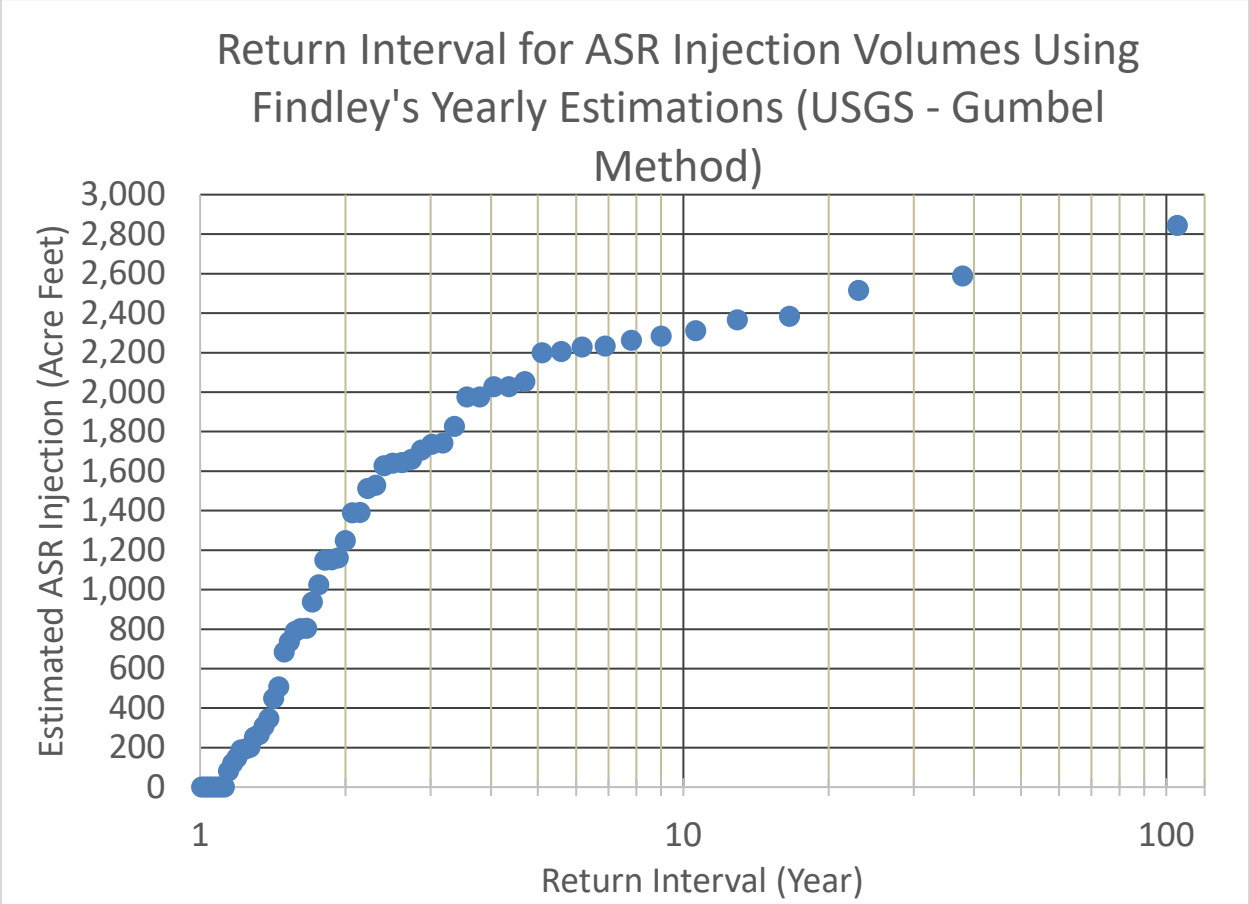
Q17: Findley comes to 5 conclusions from his analysis related to the supply of water that should be expected from the ASR Program. Do you also come to the same conclusions?

A17: I do think that overall, the use of the Water Rights Permits flow requirements and historic streamflow records is a good approach to estimating ASR yields, but I do have some differing opinions regarding the assumptions Findley used and different interpretation of the results. I will go through his conclusions in the order presented in his memo:

Conclusion 1 – Findley concludes that the capacity of the Cal-Am system to deliver water to the ASR wells is 17 AF per day due to his analysis of using solely the Crest Pipeline. I agree that if only the Crest Pipeline is used to support ASR, it will be the limiting factor; however, historic injection data shows that 19 to 20 AF per day can be delivered to the ASR wells via the Crest Pipeline.

Conclusion 2 – Findley states that the average operational days over the period of his analysis was 79 days and had a range from zero to 181 days. I agree that climate is variable which leads to large variance in operational days. Because MPWMD and Findley have approached the assumptions to Permit 20808C differently, MPWMD believes there was 30% to 50% more operational days Findley's analysis should have counted as days injection was allowed under 20808C and therefore his estimated yields are low.

Conclusion 3 – Findley concludes that because 12% of the Water Years included in his analysis had negligible injection totals, there is a 12% chance any future water year could have low injection volumes. I agree that the climate is variable and there are dry years in the climate record, however there are also wet years, and I believe his analysis was not carried out to address all of the variability and return interval in the climate. I performed an USGS – Gumbel return interval analysis on the estimated ASR yields presented in Findley's Memo. The chart from this analysis is presented below.



The 2-year return interval is the appropriate indicator of average long-term yield. The 2-year return interval in the estimated ASR yields is in excess of the annual yield needed from ASR and allows for banking. The 3-year return interval allows for banking of over half of the yield for the next year. The concept of year over year storage of excess water was ignored in the Findley memo but is the core functionality of the ASR Program. Even with Findley's ASR yield estimates being 10% to 15% low, the return interval of annual yields show that water can be banked as the project operates over many years. This supports using the average long term estimated operational yield for ASR when planning for supply.

Conclusion 4 - Findley concludes that for any 5-year period, ASR average yearly injection will exceed 240 Acre Feet per Year with a 95% confidence interval and exceed 470 Acre Feet per Year with a 90% confidence interval. I believe that this conclusion also does not tell the story of

the return intervals of the wet years included in my analysis. When comparing this conclusion to Table 5 in the Findley memo, there are only 5 instances of a 5-year consecutive average equaling these totals over the 59-year record. In contrast, the 2-year return interval of the estimated ASR yield shows entering any water year there is a 50% chance water can be banked in that year. A continuity calculation of inputs verses outputs over the climate cycle would have addressed this point and would have been a better representation of how ASR is operated. According to Findley's estimation, there were 32 years out of 59 that more water than was needed from ASR was produced. This excess would allow for banking. This also shows that there is a 2-year return interval where banking of ASR for drought is possible. And due to the assumptions made by Findley regarding the limitations of the Crest Pipeline and operations under Permit 20808C, MPWMD believes the annual totals reported in Findley's memo for ASR yields are 10 to 15 percent low and therefore more water will be available for banking than is presented in the memo.

Conclusion 5 – The memo concludes that without ASR, the sources available to Cal-Am are not enough to meet the demand in the 2020 UWMP and the probability ASR can meet this demand is 39% for the period 2026 to 2030. For the periods of 2031 to 2035 and 2036 to 2040, the memo concludes that ASR cannot meet the supply gap. I do agree that if a drought reserve is needed from ASR and it has yet to be built up, there is not water from the ASR project, but as indicated in the Phase 2 Direct Testimony of David J. Stoldt, there will be significant excess water available from Pure Water Monterey Expansion. Conversely, I believe that because an analysis of ASR utilizing year over year storage was not performed, the probability stated in the report is not reflective of how ASR will be operated. The assumption that ASR is designed to meet the gap in 2031 to 2040 needs is incorrect; Pure Water Monterey Expansion is the supply identified to meet this gap. Also, I am not familiar with all the assumptions that are used in the UWMP, but I am aware that Stoldt's Phase 2 Direct Testimony identifies a significant number of errors in the UWMP forecast.

Q18: Does that conclude your direct testimony?

A18: Yes, it does. Thank you.

Dated: August 19, 2022

Attachment A

(Phase 2 Direct Testimony of Jonathan Lear)

CALIFORNIA AMERICAN WATER **EXHIBIT: B**
2022 GENERAL RATE CASE
SUPPLY AND DISTRIBUTION INFRASTRUCTURE STATUS AND PLANNING

MINIMUM DATA REQUIREMENT

General Rate Case Application – Testimony/Results of Operation Requirements
II.E.4 – Cost/Benefit Analysis for Reducing Unaccounted For Water

In connection with the water loss audit required by Minimum Data Requirement II.E.3, the Results of Operation Report must contain evidence the utility conducted a cost/benefit analysis for reducing the level of unaccounted for water reported in its water loss audit. If unaccounted for water is more than approximately 7% for each district or service area, the utility must submit a plan to reduce unaccounted water to a specific amount.

Response:

As noted in MDR II.E.5, the term, "unaccounted for water" has been formally abandoned by AWWA as an effective tool for managing system losses due to its unreliable application and inconsistent definition. The California Department of Water Resources' Water Audit Manual, Appendix B, issued in February 2019, refers to this example when illustrating the problematic nature of using percentages rather than volumes (see attachment, p.62):

> For example:
>
> As shown in Table 15 below, Utility A had a Water Supplied volume of 100 MG for Year 1. Authorized Consumption was 90 MG. Water Losses were 10 MG, consisting entirely of Real Losses (no Apparent Losses). Thus, Utility A had Real Losses of 10.0% for Year 1.
>
> Year 2 was especially dry, and witnessed increased irrigation use. As a result, customers used 10 MG more water, while the leakage volume remained the same. Thus, Utility A had a Water Supplied volume of 110 MG and Authorized Consumption of 100 MG for Year 2. Just like Year 1, Water Losses (all Real Losses) were 10 MG. However, the percent losses decreased to 9.1%—suggesting that the utility's performance improved—when in fact, the volume of Real Losses did not actually change at all.

Limits of Percentages as Performance Indicators Example			
		Year 1	Year 2
A	Water Supplied	100 MG	110 MG
B	Authorized Consumption	90 MG	100 MG
C = A - B	Water Losses (all Real Losses)	10 MG	10 MG
D = C / A	Water Losses (all Real Losses)	10.0%	9.1%

Table 15

However, California American Water submits this analysis in compliance with the MDR request per the Rate Case Plan, to calculate the unaccounted for water (interpreted as "real losses" under AWWA water loss terminology) as a

percentage and highlight those areas where the percentage exceeds 7 percent. Programs to target non revenue water reduction have been noted in accordance with the exceedances.

For all Districts, please reference AWWA audits in MDR II.E.3. As noted in MDR II.E.3, in compliance with the updated regulations, California American Water timely submitted a total of 29 Water Audit Reports (by PWSID in the reporting year) using the AWWA M36 methodology for Water Audits and Loss Control Programs.

However, in response to the Deficiency Review received on 5/31/22, audits have been re-generated for all systems originally submitted with the May 1, 2022 draft GRC filing (with the exception of Bishop and Ryan Ranch, whose systems have since been combined with the Monterey Main system and now operate as a single system) for the non-calendar period of May 2021 through April 2022 in line with the notation above. CAW notes that these audits have not been validated and will not comport with the validated 2020 NRW audits submitted to DWR, nor will they comport with the future 2021 submissions, as those are produced on a calendar year basis. In addition, audit inputs such as unbilled unmetered consumption, length of mains, number of service connections, annual operating costs, customer retail unit cost, and variable production costs were not updated in this May 2021 – April 2022 revision due to their being reported on a calendar year basis solely.

As noted in the above-mentioned Deficiency Review, CAW has generated the % real losses on the district level utilized the revised, unvalidated 2021-2022 NRW audits.

The results of the analysis reveal real losses over 7 percent in Larkfield District (8.11%), Los Angeles County District (7.81%), San Diego County District (7.39%) and Ventura County District (7.18%). Although this MDR only necessitates a plan to reduce unaccounted for water to a specific amount for those areas whose percentages exceed 7, California American Water is in the process of engaging WSO (E Source) to assist in developing a comprehensive, statewide water loss control program.

The water loss control program is designed to dovetail with the State Water Resources Control Board model, which will determine targets to establish compliance with the water loss targets in 2028. The main components of the loss control program are refinement of company-wide practices for water audit compilation and improvement of data accuracy; customer meter testing and replacement, leak detection, pressure management, and production meter replacement, which are reflected in this rate case in capital and operating budgets. For further details on the proposed water loss control program, please refer to the testimony of Patrick Pilz, Section X.

CENTRAL DIVISION

MONTEREY COUNTY DISTRICT:

Monterey Main (Includes Bishop, Ryan Ranch) System Cost Benefit Worksheet

May 2021 - April 2022 Audit	Production (Million Gallons)	2,910.324	Real Losses (Million Gallons)	23.495
	Variable Production Cost Per Million Gallons $	1,733.23	Cost of Real losses	$40,722

Ambler Cost Benefit Worksheet

May 2021 - April 2022 Audit	Production (Million Gallons)	49.794	Real Losses (Million Gallons)	2.193
	Variable Production Cost Per Million Gallons $	907.46	Cost of Real losses	$1,990

Chualar Cost Benefit Worksheet**

May 2021 - April 2022 Audit	Production (Million Gallons)	29.851	Real Losses (Million Gallons)	1.863
	Variable Production Cost Per Million Gallons $	781.48	Cost of Real losses	$1,456

Garrapata Benefit Cost Worksheet

May 2021 - April 2022 Audit	Production (Million Gallons)	6.474	Real Losses (Million Gallons)	0.013
	Variable Production Cost Per Million Gallons $	899.29	Cost of Real losses	$12

Hidden Hills Cost Benefit Worksheet

May 2021 - April 2022 Audit	Production (Million Gallons)	47.072	Real Losses (Million Gallons)	15.287
	Variable Production Cost Per Million Gallons $	1,383.88	Cost of Real losses	$21,155

Ralph Lane Cost Benefit Worksheet

May 2021 - April 2022 Audit	Production (Million Gallons)	3.215	Real Losses (Million Gallons)	1.165
	Variable Production Cost Per Million Gallons $	956.29	Cost of Real losses	$1,114

Toro Cost Benefit Worksheet

May 2021 - April 2022 Audit	Production (Million Gallons)	59.790	Real Losses (Million Gallons)	10.490
	Variable Production Cost Per Million Gallons $	487.20	Cost of Real losses	$5,111

Monterey County District Real Losses & Targeted Reduction

Monterey Combined Real Losses	54.51	Million Gallons
Monterey Combined Production	3,106.52	Million Gallons
Monterey Combined % Real Losses*	1.75%	
Monterey Combined Value of Real Losses ($)	$71,560	Annually
Targeted amount of reduction, % Real Losses	N/A (below 7%)	Please refer to discussion in MDR II.E.4
Targeted amount of reduction, Volume of Real Losses	N/A (below 7%)	Million Gallons

* Real losses are considered "unaccounted for water." Note that percentages are no longer calculated as the industry norm.

** Chualar production values here correspond to the validated audit which incorporated the production meter in the "meter error" section of the audit, rather than in the production value itself.