

**STATE OF CALIFORNIA
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL COAST REGION
MONITORING AND REPORTING PROGRAM
NO. R3-2020-0122 revised on September 13, 2022**

**FOR THE
PURE WATER MONTEREY
ADVANCED WATER PURIFICATION FACILITY
AND
GROUNDWATER REPLENISHMENT PROJECT
ISSUED TO
MONTEREY ONE WATER**

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I. SUBMITTAL OF REPORTS

1. Monterey One Water (hereafter M1W) shall submit the required reports outlined in the following paragraphs in the appropriate electronic format to the State Water Resources Control Board (State Water Board)'s California Integrated Water Quality System (CIWQS¹) program. Groundwater monitoring data shall also be submitted to the GeoTracker database at <http://geotracker.waterboards.ca.gov/> and to the Division of Drinking Water (DDW). The reports shall be submitted by the dates indicated unless the date falls on a legal holiday or a weekend day. Under those conditions, the reports are due on the next business day. Recycled Water Policy CEC data shall be submitted to the GeoTracker database under a site-specific global identification number. Any data will be made publicly accessible as machine readable datasets.

Advanced Water Purification Facility (AWPF)

a. **Monthly Reports:**

Consistent with section III.REPORTING REQUIREMENTS, monthly reports for monitoring and reporting requirements included in the Operation Optimization Plan shall be received by the 15th day after the end of the month in which monitoring occurred.

b. **Quarterly Monitoring:**

Quarterly Monitoring Reports shall be received by the 15th day of the second month following the end of each quarterly monitoring period according to Table M-1.

Table M-1: Quarterly Report Periods and Due Dates	
Reporting Period	Report Due
January – March	May 15
April – June	August 15
July – September	November 15
October – December	February 15

The contents of the CIWQS and GeoTracker Quarterly Monitoring Reports shall include a one-page summary of operational concerns that addresses changes in reporting conditions, including influent, recycled water, and groundwater monitoring results, since the last report.

c. **Annual Summary:**

The Annual Summary Report shall be received by April 30th of each year. This Annual Summary Report shall contain a discussion of the previous calendar year's analytical results, as well as graphical and tabular summaries of the monitoring analytical data.

Public water systems and owners of small water systems and other active production wells having downgradient sources potentially affected by the

¹ For help with CIWQS go to: http://www.waterboards.ca.gov/water_issues/programs/ciwqs/chc_npdes.shtml

M1W groundwater injection project or within 10 years groundwater travel time from the M1W groundwater injection project shall be notified by direct mail and/or electronic mail of the availability of the annual report.

d. Operation Optimization Plan

Prior to startup of the AWPf, M1W shall submit an Operation Optimization Plan (OOP) to DDW and the Central Coast Water Board for approval. The OOP must be resubmitted within 90 days after completion of startup operations. Within 6 months of optimizing treatment processes (conducted during the first year of operation), the OOP shall be updated as necessary and submitted to the Central Coast Water Board and the DDW for review and approval.

- i. The OOP covers critical operational parameters to include routine testing procedures for the ozone pre-treatment, microfiltration (MF), reverse osmosis (RO), and ultraviolet (UV)/advanced oxidation process (AOP) systems, optimization of the UV dose for disinfection and AOP for reduction of light-sensitive contaminants, and all treatment processes, maintenance and calibration schedules for all monitoring equipment, process alarm set points, and response procedures for all alarms in each treatment process of the AWPf, including responses if water quality requirements are not met, start-up, emergency response and contingency plans. During the first year of operation of the AWPf, all treatment processes shall be operated in a manner to provide optimal reduction of microbial, regulated and nonregulated contaminants. Based on this experience and anytime operational changes are made, the OOP shall be updated.
- ii. The OOP includes staffing levels with applicable certification levels for Facility operations personnel. Significant changes in the operation of any of the treatment processes shall be reported to the DDW and Central Coast Water Board. Significant changes in the approved OOP must be approved by the DDW and the Central Coast Water Board prior to instituting changes. M1W is responsible for ensuring that the OOP is, at all times, representative of the current operations, maintenance, and monitoring of the AWPf.
- iii. The OOP shall include RO monitoring program elements which include at least the following:
 - a. Determination of baseline integrity test values for intact membranes during commissioning of the AWPf;
 - b. Determination of lower and upper control limits for each surrogate to be used for integrity testing. Perform surrogate mass balance calculations for the RO treatment system to provide the basis for lower and upper control limit values. Provide a response plan for exceedances of lower and upper control limits; and
 - c. A description of the vessel EC probing (i.e. vessel integrity) sampling plan and breach response proposal.
- iv. The existing OOP shall be updated to accurately reflect the operations of the AWPf, the date the plan was last reviewed, and whether the plan is valid and current.

2. **Five-Year Engineering Report:** M1W shall update the 2019 Title 22 Engineering

Report and submit the updated report to the State Water Board's CIWQS and GeoTracker databases and to DDW, five years from the date of the DDW's acceptance of the most recent engineering report, and every five years thereafter for DDW's acceptance.

3. All reports to the State Water Board's GeoTracker shall reference Order No. R3-2017-0003. Compliance monitoring reports shall be submitted separately from other technical reports.
4. All reports shall be submitted as a portable data format file and uploaded electronically to the State Water Board's CIWQS and GeoTracker databases and provided via email to the DDW (if the file exceeds 10 MB, either a CD containing the file shall be mailed to DDW, or a link for downloading an electronic copy of the file shall be provided). Upon request the data shall be provided in excel format.
5. By the reporting due dates specified in Table M-1, groundwater data shall be uploaded electronically to the State Water Board's GeoTracker in an electronic deliverable format specified by the State Water Board. All data shall be uploaded electronically in PDF format to the CIWQS database. Upon request the data shall be provided in excel format.
6. M1W must use DDW-provided Primary Station Codes (PS Codes) to electronically submit monitoring results from the Advance Water Purification Facility (AWPF) recycled water and groundwater monitoring wells. Data produced and reports submitted for analysis required by Title 22, Division 4, Article 5.2 must be generated by a laboratory accredited by ELAP. The laboratory must hold a valid certificate of accreditation for the analytical test methods validated for intended use and approved by DDW. The laboratories performing the analyses must submit the results electronically to DDW's database by the tenth day of the following month in which analysis was completed.
7. Bacteriological data cannot at this time be transmitted electronically to DDW. A summary of bacteriological results must be e-mailed to dwpdist05@waterboards.ca.gov once a month, by the 10th of each month.

II. MONITORING REQUIREMENTS

1. M1W shall monitor the flow and quality of the following according to the manner and frequency specified in this MRP:
 - a. Influent to the AWPF - At a location before clarified secondary effluent enters the ozone pre-treatment system of the AWPF;
 - b. Prior to RO - At a location where all membrane filtration effluent streams are combined prior to RO treatment;
 - c. After RO - At a location after RO treatment where all RO effluent streams are combined prior to AOP treatment;
 - d. AWPF Recycled Water - At a location downstream of the last chemical injection point and prior to well injection;
 - e. Upon approval by the Central Coast Water Board and DDW, if potable water is used as a diluent, blend of recycled water and diluent water; and

- f. Groundwater Monitoring Wells (ID#'s) – MW-2D, MW-2AD, MW-2AS, MW-1D, MW-1S, MW-1AD, MW-1AS. (7 total).
2. Monitoring reports shall include, but not limited to, the following:
 - a. Analytical results;
 - b. Location of each sampling station where representative samples are obtained, including a map, at a scale of 1-inch equals 1,200 feet or less, that clearly identifies the locations of all injection wells, project monitoring wells, and production wells;
 - c. Analytical test methods used and the corresponding minimum reporting levels (MRLs);
 - d. Name(s) of the laboratory, which conducted the analyses;
 - e. Copy of laboratory certifications by the DDW's Environmental Laboratory Accreditation Program (ELAP);
 - f. Quality assurance and control information, including documentation of chain of custody; and,
 - g. Maximum contaminant level (MCL), notification level, response level, DDW Condition or Recycled Water Discharge Limit.
3. Though not required to be submitted in the monitoring reports unless specifically requested by the Central Coast Water Board Executive Officer or the DDW, M1W shall have in place written sampling protocols. For groundwater monitoring, the sampling protocols shall outline the methods and procedures used for measuring water levels; purging wells; collecting samples; decontaminating equipment; containing, preserving, and shipping samples, and maintaining appropriate documentation. Also, the sampling protocols shall include the procedures for handling, storing, testing, and disposing of purge and decontamination waters generated from the sampling events.
4. Where multiple EPA-approved methods are available, drinking water (500 series) or wastewater (600 series) may be used as appropriate.
5. The samples shall be analyzed using analytical methods described in 40 Code of Federal Regulations (CFR) Part 141, or where no methods are specified for a given pollutant, by methods approved by the DDW, Central Coast Water Board and/or State Water Board. M1W shall select the analytical methods that provide MRLs lower than the limits prescribed in this Order or as low as possible that will provide reliable data.
6. M1W shall instruct its laboratories to establish calibration standards so that the MRLs (or its equivalent if there is a different treatment of samples relative to calibration standards) are the lowest calibration standard. At no time shall analytical data derived from extrapolation beyond the lowest point of the calibration curve be used.
7. Upon request by M1W, the Central Coast Water Board, in consultation with the DDW and the State Water Board Quality Assurance Program, may establish MRLs, in any of the following situations:
 - a. When the pollutant has no established method under 40 CFR 141;
 - b. When the method under 40 CFR 141 for the pollutant has an MRL higher than the limit specified in this Order; or,

- c. When M1W agrees to use a test method that is more sensitive than those specified in 40 CFR Part 141.
8. For regulated constituents, the laboratory conducting the analyses shall be certified by ELAP or approved by the DDW, Central Coast Water Board, or State Water Board, for each particular pollutant or parameter.
9. Samples shall be analyzed within allowable holding time limits as specified in 40 CFR Part 141. All Quality Assurance/Quality Control (QA/QC) analyses shall be run on the same dates that samples are actually analyzed. M1W shall retain the QA/QC documentation in its files for three years and make available for inspection and/or submit them when requested by the Central Coast Water Board or the DDW. Proper chain of custody procedures shall be followed, and a copy of this documentation shall be submitted with the quarterly report.
10. For all bacterial analyses, sample dilutions shall be performed so the range of values extends from 1 to 800. The detection methods used for each analysis shall be reported with the results of the analyses.
11. Quarterly monitoring for recycled water and groundwater shall be performed during the months of February, May, August, and November. If the recycled water monitoring frequency is reduced to semi-annual, monitoring for recycled water shall be performed during the months of February and August. If the recycled water monitoring frequency is reduced to annual, monitoring shall be performed in August. Semiannual monitoring for groundwater shall be performed during the months of May and November. Should there be instances when monitoring cannot be done during these specified months, M1W shall conduct the monitoring as soon as it can and state in the monitoring report the reason monitoring could not be conducted during the specified month. Results of quarterly analyses shall be reported in the quarterly monitoring report following the analysis.
12. For unregulated chemical analyses, M1W shall select methods according to the following approach:
 - a. Use the drinking water methods or wastewater method sufficient to evaluate all water quality objectives and protect all beneficial uses;
 - b. Use DDW-recommended methods for unregulated chemicals, if available;
 - c. If there is no DDW-recommended drinking water method for a chemical, and more than a single United States Environmental Protection Agency (USEPA)-approved method is available, use the most sensitive of the USEPA-approved methods;
 - d. If there is no USEPA-approved method for a chemical, and more than one method is available from the scientific literature and commercial laboratory, after consultation with DDW, use the most sensitive method;
 - e. If no approved method is available for a specific chemical, M1W's laboratory may develop or use its own methods and should provide the analytical methods to DDW for review. Those methods may be used until DDW-recommended or USEPA-approved methods are available.
 - f. For constituents of emerging concern (CECs) subject to the State Water Board Recycled Water Policy as amended December 11, 2018, analytical methods for laboratory analysis of CECs shall be selected to achieve the reporting limits (RLs) presented in Table M-12. The analytical methods shall be based on methods published by the USEPA, methods certified by the DDW, or peer review reviewed and published methods that have been

reviewed by DDW, including those published by voluntary consensus standards bodies such as the Standards Methods Committee and the American Society for Testing and Materials International. Any modifications to the published or certified methods shall be reviewed by DDW and subsequently submitted to the Central Coast Water Board Executive Officer in an updated quality assurance project plan. A laboratory providing analyses of CECs and bioanalytical screening must hold a valid certificate of accreditation from the State of California Environmental Laboratory Accreditation Program (ELAP) for the analytical test methods or analytes selected, if such methods or analytes are accredited by ELAP at the time that monitoring is required to begin. If ELAP accreditation for analytical test methods or an analyte becomes available after monitoring is initiated, then the laboratory providing analysis of CECs shall be accredited by ELAP for those methods or analytes within one year of such accreditation becoming available. If ELAP accreditation is unavailable for a method or an analyte, the recycled water producer shall use a laboratory that has been accredited for a similar analytical method, instrumentation, or analyte until ELAP accreditation becomes available, unless otherwise approved by the regional water board or State Water Board for bioanalytical screening tools.

III. REPORTING REQUIREMENTS

1. M1W must submit a comprehensive cross-connection control program for the AWPf to DDW and the Central Coast Water Board by the end of the second week of operations. The cross-connection control program must be submitted as a standalone document, separate from and prior to the submittal of the Operation Optimization Plan.
2. **Monthly Reports:** The following monitoring and reporting requirements must be included in the OOP and reported to the DDW and the Central Coast Water Board monthly.
 - a. Membrane Filtration Effluent Monitoring - M1W will monitor the Membrane Filtration Effluent for turbidity continuously. The turbidity shall not exceed 0.2 nephelometric turbidity units (NTU) more than 5 percent of the time within a 24-hour period and 0.5 NTU at any time. Turbidity measurements shall be recorded every 15 minutes. The daily average, and daily maximum, and whether the 0.2 NTU was exceeded more than 5 percent of the time in any 24-Hour period shall be reported monthly.
 - b. The membrane filtration (MF) integrity - Daily pressure decay tests (PDTs) shall be performed on each MF membrane unit a minimum of once every 24 hours of operation based on the criteria described in the Order. Submit the results of the daily Membrane Integrity Testing (MIT) conducted during the month.
 - i. The PDT will be conducted to confirm no broken fibers or other breach of membrane integrity, based on product-specific minimum test pressure and maximum allowable pressure decay.
 - c. The Reverse Osmosis (RO) system will be credited for virus, Giardia cysts and Cryptosporidium oocysts based upon reduction demonstrated via an approved surrogates, such as conductivity, TOC or strontium. The percent of time that the reduction of surrogate is less than 1.0 log removal must be reported. The report must include calculation of minimum removal achieved at the AWPf as

described in Section IV (Reverse Osmosis System Pathogen Log Reduction Reporting). An alternative surrogate may be utilized (e.g., DOC) if approved by the DDW and the Central Coast Water Board. The proposal to change surrogates may also include different monitoring locations (e.g., combined RO permeate instead of train RO permeate), if approved by DDW and the Central Coast Water Board.

- d. On-line continuous monitoring of UV dose, UV intensity, flow, UV transmittance (UVT), and power must be provided at all times. Flow meters UV intensity sensors, and UVT monitors must be properly calibrated to ensure proper disinfection. At least monthly, all duty UV intensity sensors must be checked for calibration against a reference UV intensity sensor. The UVT meter must be inspected and checked against a reference bench-top unit weekly to document accuracy.
 - i. For AOP (UV and hydrogen peroxide at the AWPf), M1W shall report the calculated daily hydrogen peroxide dose (based on the pump speed and bulk feed concentration)
 - ii. For UV, M1W shall report the UVT (daily minimum, maximum, and average), UV dose for each reactor (daily minimum, maximum, and average), and the total flow (daily minimum, maximum, and average).
- e. Based on the calculation of log reduction achieved daily by the entire treatment facility, from the AWPf to the public water supply wells, M1W will report a "Yes" or "No" for each day as to whether the necessary log reductions (12-logs virus, 10-logs for Giardia and Cryptosporidium) have been achieved. An overall log reduction calculation will be provided only for those days when a portion of the treatment facility does not achieve the credits listed in Table 5-4 of the engineering report.
- f. M1W shall sample the monitoring wells for general mineral/physicals, inorganics with primary MCLs. M1W shall take these samples monthly for the first year of operation. M1W may request, from the DDW, a reduction in this monitoring after the first year.
- g. M1W shall monitor the RO effluent for TOC via grab sample weekly and report in the monthly report. M1W shall also monitor RO influent and effluent for TOC online and report monthly. The monitoring shall be conducted during the first 20 weeks of full-scale operation and the daily average and maximum TOC reading and the percent of time that the TOC is greater than 0.25 mg/L must be reported.
- h. M1W shall monitor AWPf recycled water daily (7 days per week) for total coliform concentrations. The AWPf recycled water 7-day median of the analyses for total coliform shall be reported monthly
- i. Product water TOC results shall be reported as follows:
 - i. Weekly average
 - a. For continuous TOC analyzer results, the weekly average shall be the arithmetic mean of the daily averages calculated within the calendar week.
 - b. For hourly grab samples, the weekly average shall be the arithmetic mean of all samples collected during the week.

- ii. The average of the last four (4) TOC results shall be the average of the last four weekly average results;
- iii. The 20-week running average of all TOC results shall be the arithmetic mean of the daily averages and hourly grab sample results collected within the past 20 calendar weeks.
- j. M1W shall continuously monitor the AWPf recycled water for temperature (in degrees C), flow (MGD), and total chlorine residual (mg/L) to calculate virus log reduction credits for pipeline chloramination.

3. Quarterly Reports: These reports shall include, at a minimum, data not already submitted in Monthly Reports and the following information:

- a. The volume of:
 - i. AWPf Influent – Secondary effluent from the RTP.
 - ii. Waste EQ effluent discharged into the RTP.
 - iii. AWPf recycled water injected into the Seaside Basin
 - iv. RO concentrate sent to the ocean outfall.
 - v. If no water was pumped, the report shall so state.
- b. The date and time of sampling and analyses.
- c. All analytical results of samples collected during the monitoring period of the:
 - i. AWPf Influent,
 - ii. RO feed water (Prior to RO),
 - iii. AWPf recycled water, and
 - iv. Groundwater.
- d. Records of any operational problems, plant upset and equipment breakdowns or malfunctions, and any diversion(s) of off-specification recycled water and the location(s) of final disposal.
- e. Discussion of compliance, noncompliance, or violation of requirements.
- f. All corrective or preventive action(s) taken or planned with schedule of implementation, if any.
- g. Certification by M1W that no groundwater for drinking purposes has been pumped from wells within the boundary representing the greatest of the horizontal and vertical distances reflecting two months.
- h. A summary of operational concerns describing changes in reporting conditions, including influent, MF filtrate, RO permeate, AWPf recycled water, and groundwater monitoring results, since the last report.
- i. Monitoring results associated with the evaluation of pathogenic microorganism removal as described in the Order.
- j. For the purpose of reporting compliance with numerical limitations, analytical data shall be reported using the following reporting protocols:
 - i. Sample results greater than or equal to the MRL must be reported “as measured” by the laboratory (i.e., the measured chemical concentration in the sample); or

- ii. Sample results less than the MRL, but greater than or equal to the laboratory's Minimum Detection Limit (MDL), shall be reported as "Detected, but Not Quantified", "DNQ". The laboratory shall write the estimated chemical concentration of the sample next to "DNQ"; or
 - iii. Sample results less than the laboratory's MDL shall be reported as "Not- Detected", or ND.
- k. If M1W samples and performs analysis on any sample more frequently than required in this MRP using approved analytical methods, the results of those analyses shall be included in the report. These results shall be reflected in the calculation of the average used in demonstrating compliance with average recycled water, receiving water, etc., limitations.
- l. The Central Coast Water Board or DDW may request supporting documentation, such as daily logs of operations

5. 4. Annual Summary Reports: shall include, at a minimum, the following information:

- a. M1W must provide a summary on the makeup of source waters (municipal wastewater, agricultural wash water, Blanco Drain, and Reclamation Ditch) entering the Regional Treatment Plant in the annual report to DDW and Central Coast Regional Board required per Title 22 section 60320.228(a). At a minimum, the summary must include discussion on the following items:
 - i. The priority of source water usage for the period reported and the basis for the priority;
 - ii. A summary of monthly volume for each source water type; and
 - iii. An evaluation of which demand scenario best fit the volumes observed during reporting period (Drought, Normal/Wet Full Reserve, Normal/Wet Building Reserve).
- b. Tabular and graphical summaries of the monitoring data obtained during the previous calendar year;
- c. A summary of compliance status with all monitoring requirements during the previous calendar year;
- d. For any non-compliance during the previous calendar year, a description of:
 - i. the date, duration, and nature of the violation;
 - ii. a summary of any corrective actions and/or suspensions of subsurface application of recycled water resulting from a violation; and
 - iii. if uncorrected, a schedule for and summary of all pending and completed remedial actions;
- e. Any detections of monitored chemicals or contaminants, and any observed trends in the monitoring wells;
- f. Information pertaining to the vertical and horizontal migration of the recharge water plume;
- g. Title 22 drinking water quality data for the nearest drinking water supply well;
- h. A description of any changes in the operation of any unit processes or facilities;
- i. The estimated quantity and quality of the recycled water to be utilized for

- the next calendar year;
- j. A list of the analytical methods used for each test and associated laboratory quality assurance/quality control procedures shall be included. The report shall identify the laboratories used by M1W to monitor compliance with this Order, their status of certification, and provide a summary of proficiency test;
 - k. A list of current operating personnel, their responsibilities, and their corresponding grade of certification.
 - l. The Annual Report shall be prepared by a properly qualified engineer registered and licensed in California and experienced in the field of wastewater or water treatment; and
 - m. A summary of monitoring reports, reporting and trend analysis, to describe the changes in water quality and contrast them to background measurements for all constituents exceeding MCLs or where concentration trends increase after the addition of recycled water. Specifically describe studies or investigations made to identify the source, fate and transport path of constituents which exceed the MCL at the monitoring wells.
 - n. M1W must submit to DDW and the Central Coast Water Board a summary of coordination activities with Marina Coast Water District on the operation and maintenance of the Product Water Pipeline and the Purified Water Reservoir necessary for protection of the product water for injection. At a minimum, M1W must be kept informed of the status of testing and maintenance of backflow preventers on the Product Water Pipeline, occurrence of backflow incidents (if any), and maintenance activities of the Purified Water Reservoir
 - o. The annual volume of AWPf recycled water injected into the Seaside Basin (based on California water year, which is October 1 – September 30)
6. **5. Five-Year Engineering Report:** Five years from the date of approval of most recent engineering report and every five years thereafter, M1W shall update the engineering report to address any project changes and submit the report to the Central Coast Water Board and the DDW. The Five-Year Engineering Report Update shall include, but not be limited to:
- a. A description of any inconsistencies between previous groundwater model predictions and the observed and/or measured values. For this requirement, M1W shall summarize the groundwater flow and transport including the injection and extraction operations for the M1W groundwater injection project during the previous five calendar years. This summary shall also use the most current data for the evaluation of the transport of recycled water; such evaluations shall include, at a minimum, the following information:
 - i. Total quantity of advanced treated recycled water injected into Seaside Basin, and quantities of water injected into each individual injection well;
 - ii. Estimates of the rate and path of flow of the injected water within the aquifer;
 - iii. Projections of the arrival time of the recycled water at all monitoring and extraction wells and the percent of recycled water at each location.

- iv. Clear presentation on any assumptions and/or calculations used for determining the rates of flow and for projecting arrival times and dilution levels;
 - v. A discussion of the underground retention time of recycled water, a numerical model, or other methods used to determine the recycled water contribution to each aquifer;
 - vi. A revised flow and transport model to match actual flow patterns observed within the aquifer if the flow paths have significantly changed; and,
 - vi. Revised estimates, if applicable, on hydrogeologic conditions including the retention time and the amount of the recycled water in the aquifers and at the production well field at the end of that calendar year. The revised estimates shall be based upon actual data collected during that year on recharge rates (including recycled water and native water), hydrostatic head values, groundwater production rates, basin storage changes, and any other data needed to revise the estimates of the retention time and the amount of the recycled water in the aquifers and at the production well field. Significant differences, and the reasons for such differences, between the estimates presented in the 2019 Engineering Report and subsequently revised estimates, shall be clearly presented. Additionally, M1W shall use the most recently available data to predict the retention time of recycled water in the subsurface.
- b. Evaluation of the ability of M1W to comply with all regulations and provisions over the following five years.
 - c. The Five-Year Engineering Report shall be prepared by a properly qualified engineer registered and licensed in California and experienced in the field of wastewater or water treatment.
6. M1W must submit reports to DDW for components described in Title 22 section 60320.201(f) and (g) within 60 days of completing the first 12-months full-scale operation and operational monitoring of the advanced treatment process.

IV. MONITORING PROGRAMS

1. AWPf Influent Monitoring

- a. Monitoring is required to determine compliance with water quality conditions and standards and assess AWPf performance.
- b. The influent sampling station is located before clarified secondary effluent from the RTP enters the ozone pre-treatment system of the AWPf. Influent samples shall be obtained on the same day that stabilized advanced treated recycled water samples are obtained. The date and time of sampling shall be reported with the analytical values determined. Table M-2 constitutes the influent monitoring program.

Table M-2: Influent Monitoring			
Constituents	Units	Type of Sample	Minimum Frequency of Analysis

Table M-2: Influent Monitoring			
Ammonia-N	mg/L	24-hour composite	Weekly
CBOD ₅	mg/L	24-hour composite	Weekly
Boron	mg/L	24-hour composite	Weekly
Chloride	mg/L	24-hour composite	Weekly
Nitrate-N	mg/L	24-hour composite	Weekly
Nitrite-N	mg/L	24-hour composite	Weekly
pH	pH units	Metered	Continuous
Sodium	mg/L	24-hour composite	Weekly
Sulfate	mg/L	24-hour composite	Weekly
Total Suspended Solids	mg/L	24-hour composite	Weekly
Total coliform	MPN/100	grab	Weekly
Total Dissolve Solids	mg/L	24-hour composite	Weekly
Total flow	mgd	Metered	Continuous ¹
Total Kjeldahl Nitrogen-N	mg/L	24-hour composite	Weekly
Total Nitrogen ²	mg/L	24-hour composite	Weekly
Total Organic Carbon (TOC)	mg/L	24-hour composite	Weekly
Turbidity	NTU	Metered	Continuous ³
UV transmittance	%	24-hour composite	Weekly

¹ For those pollutants that are continuously monitored, M1W shall report the monthly minimum and maximum, and daily average values.

² Total Nitrogen includes nitrate-N, nitrite-N, ammonia-N, and organic-N.

³ May change to grab after M1W demonstrates that grab sampling is adequate.

2. Recycled Water (AWPF Product Water) Discharge Limit Monitoring.

a. AWPF recycled water monitoring is required to:

- i. Determine compliance with the conditions of the Order;
- ii. Identify operational problems and aid in improving facility performance; and,
- iii. Provide information on recycled water characteristics and flows for use in interpreting water quality and biological data.

Samples shall be collected downstream of the last chemical injection point, with the exception of constituents specified in Tables M-12, M-12a, M-13 and M-13a. Should the need for a change in the sampling station(s) arise in the future, M1W shall seek approval of the proposed station by the Executive Officer prior to use.

Tables M-3a and Table M-3b shall constitute the recycled water monitoring program. After the first full year of monitoring, M1W shall compile results and may submit a proposed reduced monitoring program to DDW and the Central Coast Water Board for review and approval.

Table M-3a: Recycled Water Discharge Limits Monitoring				
Constituent/Parameters	Units	Type of Sample	Minimum Frequency of Analysis ⁴	Reference Table Number
Conductivity	µmhos/cm	Metered	Continuous	M-3
Total chlorine residual	mg/L	Metered	Continuous	M-3
Total recycled water flow	mgd	Metered	Continuous	M-3
UV dose for each reactor	mJ/cm ²	Metered	Continuous	-
UV Transmittance ⁵	%	Metered	Continuous	-
pH	pH units	Metered	Continuous	M-3
Arsenic	µg/L	Grab	Quarterly	M-3
Boron	µg/L	Grab	Quarterly	M-3
Chromium - Total	µg/L	Grab	Quarterly	M-3
Total Nitrogen	mg/L	Grab	Weekly ⁶	M-3
Nitrate-N	mg/L	Grab	Weekly	M-3
Total Kjeldahl Nitrogen-N	mg/L	Grab	Weekly	M-3
Total coliform	MPN/100 ml	Grab	Daily	M-3
Total Organic Carbon	mg/L	Metered ⁸	Continuous ⁷	M-3

⁴ If the results of any of the above constituents with quarterly sampling schedules exceed their respective Primary MCLs or Notification Levels, M1W shall initiate monthly monitoring for the constituent(s) that exceeded the MCL(s) or NL(s) until DDW and the Central Coast Water Board approve a reduction in monitoring.

⁵ Samples shall be collected at the influent point to the UV system.

⁶ If a weekly total nitrogen sample exceeds an average of 5 mg/L based on the past 12 months of data, or if the average of result and its confirmation sample (taken within 24 hours of receipt of the initial result) exceed 10 mg/L, M1W shall resume monitoring two samples per week at least three days apart until DDW and the Central Coast Water Board approve a reduction in monitoring.

⁷ Refer to DDW letter dated September 25, 2020. If the PWPS TOC analyzer is offline, hourly grab samples for 24 consecutive hours (collected once per week) will be accepted in lieu of continuous online TOC measurements. If the PWPS TOC analyzer is off-line for more than one (1) week, provide a discussion for the cause and steps taken to bring TOC analyzer back online in the required monthly and quarterly water quality monitoring reports.

Table M-3b: Recycled Water Discharge Limits Monitoring				
Constituents	Units	Sample Type	Sample Frequency	Table with Constituents
Turbidity	NTU	Metered	Continuous ⁸	M-3b
Remaining Inorganics with Primary MCLs	µg/L	Grab	Quarterly ⁹	M-4
Asbestos	µg/L	Grab	Once in 3 Years ¹⁰	M-3b

Constituent/Parameters with Secondary MCLs	Various	Grab	Annually	M-5
Radioactivity	pCi/L	Grab	Quarterly ¹¹	M-6
Regulated organic chemicals	µg/L	Grab	Quarterly ¹²	M-7
Disinfection byproducts	µg/L	Grab	Quarterly ¹²	M-8
General physical	various	Grab	Annually	M-9
General minerals	µg/L	Grab	Annually	M-9
Chlorate	µg/L	Grab	Monthly	M-3b
Remaining Constituents with Notification Levels	µg/L	Grab	Quarterly ¹²	M-10
Remaining Priority Pollutants	µg/L	Grab	Annually	M-11
Constituents of Emerging Concern (CECs)	ng/L	Grab	Varies	M-12
Surrogates	various	Varies	Varies	M-13
Lead and Copper	mg/L	Grab	Quarterly	M-3b

⁸ For those constituents that are continuously monitored, M1W shall report the daily minimum, maximum, and average values.

⁹ As required in Table M-3a, nitrate and total nitrogen must be sampled weekly to evaluate compliance with recycled water discharge limits. The weekly nitrite and nitrate + nitrite results used to calculate total nitrogen must be reported as individual constituent values to evaluate compliance with Primary MCLs. The remaining constituents in Table M-4 must be sampled quarterly. However, if the results of any of the above constituents exceed their respective Primary MCLs or Notification Levels, M1W shall initiate monthly monitoring for the constituent(s) that exceeded the MCL(s) or NL(s) until DDW and the Central Coast Water Board approve a reduction in monitoring.

¹⁰ If an asbestos sample exceeds the Primary MCL, M1W shall resume quarterly monitoring until DDW and the Central Coast Water Board approve a reduction in monitoring.

¹¹ If the results of Gross Alpha Particle Activity, Gross Beta Article Activity, combined Radium-226 and Radium-228, Tritium, Strontium-90, and/or Uranium exceed their respective Primary MCLs, M1W shall initiate monthly monitoring for the constituent(s) that exceeded the MCL(s) until DDW and the Central Coast Water Board approve a reduction in monitoring.

¹² If the results of any of the above constituents exceed their respective Primary MCLs or Notification Levels, M1W shall initiate monthly monitoring for the constituent(s) that exceeded the MCL(s) or NL(s) until DDW and the Central Coast Water Board approve a reduction in monitoring.

Table M-4: Remaining Inorganics with Primary MCLs

Constituents		
Aluminum	Chromium (Total)	Nitrite (as nitrogen)
Antimony	Cyanide	Nitrate + Nitrite
Arsenic	Fluoride	Perchlorate
Barium	Mercury	Selenium
Beryllium	Nickel	Thallium
Cadmium	Nitrate (as nitrogen)	

Table M-5: Constituents/Parameters with Secondary MCLs

Constituents		
Aluminum	Manganese	Sulfate
Chloride	Methyl-tert-butyl-ether (MTBE)	Thiobencarb
Color	Odor – Threshold	Total Dissolved Solids
Copper	Silver	Turbidity
Foam Agents (MBAS)	Specific Conductance	Zinc

Iron	Sodium	
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Table M-6: Radioactivity		
Constituents		
Gross Alpha Particle Activity (Including Radium-226 but Excluding Radon and Uranium)	Combined Radium-226 and Radium-228	Tritium
Gross Beta Particle Activity	Uranium	Strontium-90

Table M-7: Regulated Organics		
Constituents		
(a) Volatile Organic Chemicals	1,1,1-Trichloroethane	Diquat
Benzene	1,1,2-Trichloroethane	Endothall
Carbon Tetrachloride (CTC)	Trichloroethylene (TCE)	Endrin
1,2-Dichlorobenzene	Trichlorofluoromethane	Ethylene Dibromide (EDB)
1,4-Dichlorobenzene	1,1,2-Trichloro-1,2,2-Trifluoroethane	Glyphosate
1,1-Dichloroethane	Vinyl Chloride	Heptachlor
1,2-Dichloroethane (1,2-DCA)	Xylenes (o,m,p)	Heptachlor Epoxide
1,1-Dichloroethene (1,1-DCE)	(b) Synthetic Organic Chemicals	Hexachlorobenzene
cis-1,2-Dichloroethylene	1,2,3 Trichloropropane	Hexachlorocyclopentadiene
trans-1,2-Dichloroethylene	Alachlor	Lindane
Dichloromethane	Atrazine	Methoxychlor
1,2-Dichloropropane	Bentazon	Molinate
1,3-Dichloropropene	Benzo(a)pyrene	Oxamyl
Ethylbenzene	Carbofuran	Pentachlorophenol
Methyl-tert-butyl-ether (MTBE)	Chlordane	Picloram
Monochlorobenzene	Dalapon	Polychlorinated Biphenyls
Styrene	1,2-Dibromo-3-chloropropane (DBCP)	Simazine
1,1,1,2-Tetrachloroethane	2,4-Dichlorophenoxyacetic acid (2,4-D)	Thiobencarb
Tetrachloroethylene (PCE)	Di(2-ethylhexyl)adipate	Toxaphene
Toluene	Di(2-ethylhexyl)phthalate	2,3,7,8-TCDD (Dioxin)
1,2,4-Trichlorobenzene	Dinoseb	2,4,5-TP (Silvex)

Table M-8: Disinfection Byproducts		
Constituents		
Total Trihalomethanes ¹³ (TTHM)	Haloacetic Acid (five) (HAA5)	Bromate
Bromodichloromethane	Monochloroacetic acid	Chlorite
Bromoform	Dichloroacetic acid	
Chloroform	Trichloroacetic acid	
Dibromochloromethane	Monobromoacetic acid	
	Dibromoacetic acid	

¹³ Laboratory must report bromoform, chloroform, dichlorobromomethane, and chlorodibromomethane individually to make up the total trihalomethanes for MCL compliance determination.

Table M-9: General Physical and General Minerals
Constituents
Calcium
Potassium
Corrosivity
Total Hardness

Table M-10: Remaining Constituents with Notification Levels			
Constituents	Units	Type of Sample	Minimum Frequency of Analysis ¹⁴
Boron	µg/L	Grab	Quarterly
n-Butylbenzene	µg/L	Grab	Quarterly
sec-Butylbenzene	µg/L	Grab	Quarterly
tert-Butylbenzene	µg/L	Grab	Quarterly
Carbon disulfide	µg/L	Grab	Quarterly
2-Chlorotoluene	µg/L	Grab	Quarterly
4-Chlorotoluene	µg/L	Grab	Quarterly
Diazinon	µg/L	Grab	Quarterly
Dichlorodifluoromethane (Freon 12)	µg/L	Grab	Quarterly
1,4-Dioxane	µg/L	Grab	Quarterly
Ethylene glycol	µg/L	Grab	Quarterly
Formaldehyde	µg/L	Grab	Quarterly
HMX	µg/L	Grab	Quarterly
Isopropylbenzene	µg/L	Grab	Quarterly
Manganese	µg/L	Grab	Quarterly
Methyl isobutyl ketone (MIBK)	µg/L	Grab	Quarterly
Naphthalene	µg/L	Grab	Quarterly
n-Nitrosodiethylamine (NDEA)	µg/L	Grab	Quarterly
n-Nitrosodimethylamine (NDMA)	µg/L	Grab	Quarterly
n-Nitrosodi-n-propylamine (NDPA)	µg/L	Grab	Quarterly
Perfluorooctane sulfonate (PFOS)	µg/L	Grab	Quarterly
Perfluorooctanoic acid (PFOA)	µg/L	Grab	Quarterly
Propachlor	µg/L	Grab	Quarterly
n-Propylbenzene	µg/L	Grab	Quarterly
RDX	µg/L	Grab	Quarterly

Tertiary butyl alcohol (TBA)	µg/L	Grab	Quarterly
1,2,4-Trimethylbenzene	µg/L	Grab	Quarterly
1,3,5-Trimethylbenzene	µg/L	Grab	Quarterly
2,4,6-Trinitrotoluene (TNT)	µg/L	Grab	Quarterly
Vanadium	µg/L	Grab	Quarterly

¹⁴ If the results of any of the above constituents exceed their respective Notification Levels, M1W shall initiate monthly monitoring for the constituent(s) that exceeded the MCL(s) or NL(s) until DDW and the Central Coast Water Board approve a reduction in monitoring.

Table M-11: Remaining Priority Pollutants		
Constituents		
Pesticides	Metals	Di-n-butyl phthalate
Aldrin	Chromium III	Di-n-octyl phthalate
Dieldrin		Diethyl phthalate
4,4'-DDT	Base/Neutral Extractables	Dimethyl phthalate
4,4'-DDE	Acenaphthene	Benzo(a)anthracene
4,4'-DDD	Benzidine	Benzo(b)fluoranthene
Alpha-endosulfan	Hexachloroethane	Benzo(k)fluoranthene
Beta-endosulfan	Bis(2-chloroethyl)ether	Chrysene
Endosulfan sulfate	2-chloronaphthalene	Acenaphthylene
Endrin aldehyde	1,3-dichlorobenzene	Anthracene
Alpha-BHC	3,3'-dichlorobenzidine	1,12-benzoperylene
Beta-BHC	2,4-dinitrotoluene	Fluorene
Delta-BHC	2,6-dinitrotoluene	Phenanthrene
Acid Extractables	1,2-diphenylhydrazine	1,2,5,6-dibenzanthracene
2,4,6-trichlorophenol	Fluoranthene	Indeno(1,2,3-cd)pyrene
P-chloro-m-cresol	4-chlorophenyl phenyl ether	Pyrene
2-chlorophenol	4-bromophenyl phenyl ether	Volatile Organics
2,4-dichlorophenol	Bis(2-chloroisopropyl) ether	Acrolein
2,4-dimethylphenol	Bis(2-chloroethoxy)methane	Acrylonitrile
2-nitrophenol	Hexachlorobutadiene	Chlorobenzene
4-nitrophenol	Isophorone	Chloroethane
2,4-dinitrophenol	Nitrobenzene	1,1-dichloroethylene
4,6-dinitro-o-cresol	N-nitrosodiphenylamine	Methyl chloride
Phenol	Bis(2-ethylhexyl)phthalate	Methyl bromide
2-chloroethyl vinyl ether	Butyl benzyl phthalate	

3. CEC MONITORING REQUIREMENTS

M1W shall sample for constituents of emerging concern at the frequency and locations according to Tables M-12, M-12a, M-13, and M-13a below.

M1W shall sample for:

- a. Should the need for a change in the sampling station arise in the future, M1W shall seek approval of the proposed station by the Executive Officer of the Central Coast Water Board prior to use;

- b. Central Coast Water Board staff shall, in consultation with the State Water Board, review monitoring data uploaded to GeoTracker to allow M1W to proceed to the next phase;
- c. M1W shall follow a three-phased monitoring approach for the health-based and performance CECs, detailed below:
 - i. M1W shall conduct an initial assessment monitoring phase for one year with quarterly sampling
 - ii. M1W shall conduct a baseline monitoring phase for three years, with semi-annual sampling, except where more frequent monitoring is necessary to respond to a concern;
 - iii. M1W shall conduct a standard operation monitoring phase, with semi-annual or annual sampling, except where more frequent monitoring is necessary to respond to a concern.

After each sampling event for health-based CECs, M1W shall conduct the evaluation in g(ii) and implement appropriate response actions.

If a health-based CEC also has a notification level or maximum contaminant level pursuant to sections 60320.212, 60320.220, and 60320.201 of the California Code of Regulations, title 22, the more frequent monitoring requirements shall govern the sampling, regardless of the phase.

Table M-12: Constituents of Emerging Concern

Constituent	Relevance/ Indicator Type	Type of Sample	Minimum Frequency	Monitoring Trigger Level (µg/L)	Reporting Limit (µg/L)	Monitoring Locations	
						Prior to RO	AWPF Recycled Water
1,4-Dioxane	Health	grab	Quarterly	1	0.1	-	X
n-Nitrosodimethylamine (NDMA)	Health & Performance	grab	Quarterly	0.010	0.002	X	X
Perfluorooctane sulfonate (PFOS)	Health	grab	Quarterly	0.013	0.0065	-	X
Perfluorooctanoic acid (PFOA)	Health	grab	Quarterly	0.014	0.007	-	X
n-Nitrosomorpholine (NMOR)	Health	grab	Quarterly	0.012	0.002	-	X
Sucralose	Performance	grab	Quarterly	-	0.1	X	X
Sulfamethoxazole	Performance	grab	Quarterly	-	0.01	X	X

Table M-12a: DDW Specified Chemicals					
Constituent	Type of Sample	Minimum Frequency ¹⁵	Sample Location- Prior to RO	Sample Location- Prior to AOP	Sample Location-AWPF Recycled Water
2,3,5,6-tetrachloroterephthalate (DCPA)	grab	Quarterly	X	X	X
Albuterol	grab	Quarterly	-	-	X
Caffeine	grab	Quarterly	-	-	X
Carbadox	grab	Quarterly	-	-	X
Chloropicrin	grab	Quarterly	X	X	X
Chloropyrifos	grab	Quarterly	-	-	X
Chlorothalonil	grab	Quarterly	-	-	X
Erythromycin	grab	Quarterly	-	-	X
Fluoxetine	grab	Quarterly	-	-	X
Iohexol	grab	Quarterly	-	-	X
Quinoline	grab	Quarterly	X	X	X
Triclosan	grab	Quarterly	-	-	X

¹⁵ M1W may apply for reduced monitoring of these constituents after 1 year of data is collected

- d. M1W shall follow a three-phased monitoring approach for CEC surrogates, detailed below.
 - i. M1W shall conduct an initial assessment monitoring phase in two parts: more frequent monitoring shall be conducted in months 1 – 3 and then will decrease for months 4 – 12.
 - ii. M1W shall evaluate data from the initial assessment phase and those that exhibited reduction by unit processes and/or provided an indication of operational performance shall be selected for monitoring in the baseline monitoring phase at a frequency determined by the Regional Water Board.
 - iii. M1W shall evaluate data from the initial assessment phase and those that exhibited reduction by unit processes and/or provided an indication of operational performance shall be selected for monitoring in the standard operation monitoring phase at a frequency determined by the Regional Water Board.

Table M-13 : Surrogates for CECs

Constituent	Type of Sample	Minimum Frequency	Monitoring Locations	
			Prior to RO	AWPF Recycled Water
Electrical Conductivity	Online	Continuous	X	X
UV Absorbance	Grab	Quarterly	-	X
Total Organic Carbon (TOC)	Grab	Quarterly	-	X

- e. M1W shall follow a three-phased monitoring approach for CEC monitoring by bioanalytical screening tools, detailed below.
 - i. M1W shall initiate an initial assessment phase by April 8, 2020 and sample quarterly for three years to gather data for ER- α and AhR bioanalytical screening tools and determine the range of responses for the bioassays.
 - ii. M1W shall conduct a baseline monitoring phase for one year and sample quarterly. After each sampling event, M1W shall conduct the evaluation in IV.c and implement appropriate response actions.
 - iii. M1W shall conduct a standard operation monitoring phase sampling semi-annually or annually, except where more frequent monitoring is necessary to respond to a concern as stated in Attachment A section 4.2. After each sampling event, M1W shall conduct the evaluation in IV.c and implement appropriate response actions.

f. Quality Assurance Project Plan

M1W shall develop a quality assurance project plan (QAPP) and submit it to the Regional Water Board no later than 60 days after startup of injection operations. The QAPP shall be developed in accordance with the requirements of section 1 of Attachment A of the Recycled Water Policy in order to ensure that data collected pursuant to this MRP are of known, consistent, and documented quality. The QAPP will be used for all data collection for the purposes of CEC monitoring

Table M-13a : Bioanalytical Screening Tools				
Constituent	Minimum Frequency	Reporting Limit (ng/L)	Monitoring Trigger Level (ng/L)	Monitoring Locations
Estrogen receptor- α (ER- α)	Quarterly	0.5	3.5	AWPF Recycled Water.
Aryl hydrocarbon receptor (AhR)	Quarterly	0.5	0.5	AWPF Recycled Water.

V. DATA ANALYSIS

1. Removal Percentage

During the initial assessment, M1W shall monitor performance to determine removal percentages for performance indicator CECs and surrogates. The removal percentages shall be confirmed during the baseline monitoring phase. The removal percentage is the difference in the concentration of a compound in recycled water prior to and after a treatment process (e.g., soil aquifer treatment or Prior to RO vs. AWPf recycled water), divided by the concentration prior to the treatment process and multiplied by 100.

$$\text{Removal Percentage} = \frac{[X_{in} - X_{out}]}{X_{in}} (100)$$

X_{in} - Concentration in recycled water prior to a treatment process

X_{out} - Concentration in recycled water after a treatment process

The established removal percentages shall be used to evaluate treatment effectiveness and operational performance and will be submitted to the Regional Water Board and DDW with the initial assessment monitoring data.

2. Measured Environmental Concentrations

M1W shall evaluate health-based CEC monitoring results. To determine the appropriate response actions, M1W shall compare measured environmental concentrations (MECs) to their respective monitoring trigger levels (MTLs), in table M-12 to determine MEC/MTL ratios. M1W shall compare the calculated MEC/MTL ratio to the thresholds in Table M-13c and implement the response actions corresponding to the threshold.

Table M-13b : MEC/MTL Thresholds and Response Actions for Health-based CECs	
MEC/MTL Threshold	Response Action ¹⁶
If greater than 75 percent of the MEC/MTL ratio results for a CEC are less than or equal to 0.1 during the baseline monitoring phase and/or subsequent monitoring	A) After completion of the baseline monitoring phase, consider requesting removal of the CEC from the monitoring program.
If MEC/MTL ratio is greater than 0.1 and less than or equal to 1	B) Continue to monitor.
If MEC/MTL ratio is greater than 1 and less than or equal to 10	C) Check the data. Continue to monitor
If MEC/MTL ratio is greater than 10 and less than or equal to 100	D) Check the data, resample within 72 hours of notification of the result and analyze to confirm CEC result. Continue to monitor

If MEC/MTL ratio is greater than 100	E) Check the data, resample within 72 hours of notification of the result and analyze to confirm CEC result. Continue to monitor. Contact the regional water board and the State Water Board to discuss additional actions. (Additional actions may include, but are not limited to, additional monitoring, toxicological studies, engineering removal studies, modification of facility operation, implementation of a source identification program, and monitoring at additional locations.)
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¹⁶If a CEC also has a notification level, additional follow-up monitoring may be required by the State Water Board or regional water board per requirements in California Code of Regulations, title 22.

3. Bioanalytical Equivalent Concentrations

M1W shall evaluate bioanalytical assay monitoring results. During the baseline and standard operation monitoring phases M1W shall determine the appropriate response actions. M1W shall compare bioanalytical equivalent concentrations (BEQs) to their respective MTLs, found in table M-13a, to determine BEQ/MTL ratios. M1W shall compare the calculated MEC/MTL ratio to the thresholds in Table M-13c and implement the response actions corresponding to the threshold. The evaluation of BEQ/MTL ratios in the initial assessment phase is not required.

Table M-13c : BEQ/MTL Thresholds and Response Actions for Bioanalytical Screening Tools	
BEQ/MTL Threshold	Response Action
If BEQ/MTL ratio is consistently less than or equal to 0.15 for ER- α or 1.0 for AhR	A) After completion of the baseline monitoring phase, consider decreasing monitoring frequency or requesting removal of the endpoint from the monitoring program.
If BEQ/MTL ratio is greater than 0.15 and less than or equal to 10 for ER- α or greater than 1.0 and less than or equal to 10 for AhR	B) Continue to monitor.
If BEQ/MTL ratio is greater than 10 and less than or equal to 1,000	C) Check the data, resample within 72 hours of notification of the result and analyze to confirm bioassay result. Continue to monitor. Contact the Central Coast Water Board and State the Water Board to discuss additional actions, which may include, but are not limited to, targeted analytical chemistry monitoring, increased frequency of bioassay monitoring, and implementation of a source identification program.
If BEQ/MTL ratio is greater than 1,000	D) Check the data, resample within 72 hours of notification of the result and analyze to confirm bioassay result. Continue to monitor. Contact the Regional Water Board and the State Water Board to discuss additional actions, which may include, but are not limited to, targeted and/or non-targeted analytical chemistry monitoring, increased frequency of bioassay monitoring, toxicological studies, engineering removal studies, modification of facility operation, implementation of a source identification program, and monitoring at additional locations.

4. Treatment Conditions

- a. If a result of the monitoring performed pursuant to Title 22 section 60320.201 (i) or section 60320.212 exceeds a contaminant's primary MCL or action level (for lead and copper), M1W shall collect another sample within 72 hours of notification of the result and then have it analyzed for the contaminant as

confirmation. If the average of the initial and confirmation sample exceeds the MCL or action level, or the confirmation sample is not collected and analyzed pursuant to section 60320.212, M1W must notify DDW and the Central Coast Water Board and perform subsequent monitoring in accordance with section 60320.212(d).

- b. If the annual average of the results of the monitoring performed pursuant to Title 22 section 6030.201(i) or section 60320.212 exceeds a contaminant's secondary MCL, M1W must initiate quarterly monitoring of the advanced treated recycled water for the contaminant and perform subsequent actions in accordance with section 60320.212(e).
- c. If a result of the monitoring performed pursuant to Title 22 section 60320.201 (i) or section 60320.220(b) exceeds a contaminant's notification level (NLs), M1W shall collect another sample within 72 hours of notification of the result and then have it analyzed for the contaminant as confirmation. If the average of the initial and confirmation sample exceeds the NLs, or the confirmation sample is not collected and analyzed pursuant to section 60320.220(b), M1W must notify DDW and the Central Coast Water Board and perform subsequent monitoring in accordance with section 60320.220(b).

5. Reverse Osmosis System Pathogen Log Reduction Reporting

M1W will follow a tiered monitoring approach for the reverse osmosis (RO) system, defined below. M1W must report calculated surrogate reduction values from all tiers and indicate which tier is used for reporting pathogen log reduction, and include an example form and sample calculation for the surrogate reduction in the Operations and Optimization Plan for DDW acceptance.

All three tiers do not need to be reported each day. Reporting will be done on a form approved by DDW and submitted as a .pdf attachment. If monitoring is not performed for a particular tier (e.g. strontium), M1W may indicate "Not Applicable" on the reporting form.

Tier 1: Daily samples of the combined RO feed stream and effluent stream of each RO train must be analyzed at least every 24 hours for strontium. The RO log reduction value (LRV) credit will be calculated daily by the reduction in strontium concentration demonstrated by the lowest LRV from the RO trains (i.e. using the highest RO effluent strontium concentration). DDW Environmental Laboratory Accreditation Program (ELAP) has updated FOT 103 Toxic Chemical Elements in Drinking Water to include Elemental Strontium. Strontium analysis must be performed by laboratories with current ELAP accreditation². The results of strontium analysis must be available within 24 hours. If strontium data are unavailable, the RO LRV credit must be determined by the second tier (TOC) or third tier (EC).

Tier 2: Continuous TOC monitoring (at least once every 15-minutes) of the combined RO feed stream and the combined RO effluent stream. The RO LRV credit will be calculated based on the average daily reduction in TOC. If first tier (strontium) and second tier (TOC) data

² M1W will obtain total strontium results the same day of sampling and the measured RO LRV will be reported for that calendar day.

are unavailable, the RO LRV credit must be determined by the third tier.

Tier 3: Continuous electrical conductivity (EC) monitoring (at least once every 15- minutes) of the combined RO feed stream and effluent stream of each RO train. The RO LRV credit must be calculated based on the minimum daily EC reduction, if first tier (strontium) and second tier (TOC) data are unavailable.

6. Evaluation of Pathogenic Microorganism Removal

For the purposes of evaluating the performance of the following treatment facilities/units with regards to pathogenic microorganism removal, M1W shall include the results of the monitoring specified below in its monthly compliance monitoring reports:

- a. For the purpose of demonstrating that the necessary log reductions are achieved at the AWPf, M1W shall report the daily average and maximum turbidity, percent of time more than 5 nephelometric turbidity units (NTU), and daily coliform results measured in the recycled water (as specified in Tables M-3a and M-3b);
- b. Advanced Oxidation Process (AOP) - (UV and hydrogen peroxide at the AWPf): For each day of operation, M1W shall report the calculated daily peroxide dose (based on the peroxide pump speed and bulk feed concentration). For UV, M1W shall report the UV system dose (expressed as greater than a certain threshold such as 300 milli-joules/cm²), UV transmittance (daily minimum, maximum, and average), UV intensity for each reactor (daily minimum, maximum, and average) and the total UV power applied; and
- c. Based on the calculation of log reduction achieved each day by the entire treatment system, M1W shall report the value and "Yes" or "No" for each day as to whether the necessary log reductions (i.e. 10-logs for Giardia, 10-logs for Cryptosporidium, and 12-logs for virus) have been attained. An overall log reduction calculation shall be provided only for those days when a portion of the treatment system does not achieve the credits proposed in Table 5-4 of the 2019 engineering report.

7. Groundwater Monitoring

- a. As required by Title 22, Section 60320.226, prior to operating any injection well, a M1W shall site and construct at least two monitoring wells downgradient of the injection well, such that:
 - i. At least one monitoring well is located;
 - a. No less than two weeks but no more than six months of travel time from the injection wells, and
 - b. at least 30 days upgradient of the nearest drinking water well;
 - ii. In addition the well(s) in paragraph (i) and after consultation with DDW, at least two monitoring wells will be located between the injection wells and the nearest downgradient drinking water well; and
 - iii. samples from the monitoring wells in paragraphs (i) and (ii) can be;
 - a. obtained independently from each aquifer, initially receiving the

water used as a source of drinking water supply, that will receive the injection wells recharge water, and

- b. validated as receiving recharge water from the injection well.
- b. In addition to the monitoring required pursuant to section 60320.220, from each monitoring well in subsection (a)(1), and each monitoring well in subsection (a)(2) that has recharge water located within one year travel time of the well(s), M1W shall collect two samples prior to injection well operation and at least one sample each quarter after operations begins. Each sample shall be analyzed for nitrogen, nitrate, nitrite and constituents with secondary MCL's.

Monitoring wells have been installed to ensure ongoing project performance and to comply with the Title 22 Criteria. The objectives of the groundwater monitoring well program are to demonstrate compliance with the Title 22 and Basin Plan groundwater criteria and applicable state policies regarding protection of groundwater by:

- i. Siting one downgradient well with groundwater travel times (underground retention time) no less than two weeks and no more than six months from the injection wells (well also has to be greater than 30 days travel time from the nearest drinking water source).
- ii. Siting an additional downgradient well between the Injection Facilities and the nearest downgradient potable water supply (in addition to the downgradient monitoring well used to demonstrate retention time as described in the bullet point above).
- iii. Monitoring groundwater levels and water quality; the well design will allow for sample collection from each aquifer receiving recycled water.
- iv. Collecting baseline water quality samples prior to startup of the Project operation.

For the injection well cluster at the DIW-2 site, no adjacent shallow monitoring well is proposed. Travel times from this well are very long and one monitoring well is presumed sufficient to document performance of this eastern-most injection well cluster. A tracer test will confirm whether or not one monitoring well is sufficient associated with the DIW-2 injection well cluster.

Representative samples of groundwater shall be collected from all monitoring wells installed for this project. Table M-14 sets forth the minimum constituents and parameters for monitoring groundwater quality in M1W monitoring wells.

M1W shall implement the following groundwater monitoring program as described in Tables M-14, M-15, and M-16. Some constituents may be eligible for reduced monitoring due to the consistent historic lack of detection, upon approval by the Executive Officer.

If any of the monitoring results indicate that an MCL has been exceeded or coliforms are present in the monitoring wells at the M1W groundwater injection project as a result of the use of the recycled water, M1W shall notify the DDW and Central Coast Water Board within 72 hours of receiving the results and make note of any positive finding in the next monitoring report submitted to the Central Coast Water Board.

Upon an exceedance of 10 ng/L for NDMA in monitoring samples in groundwater wells and within 30 days, M1W shall notify DDW and the Central Coast Water Board and begin monthly sampling of groundwater for

NDMA from the well with the exceedance. Groundwater sampling may return to the frequency stated in this MRP if the average of three consecutive monthly samples is 10 ng/L or below.

Table M-14: Groundwater Monitoring				
Constituents/Parameters	Units	Type of Sample	Minimum Frequency of Analysis	Reference Table Number
Water level elevation ¹⁷	Feet	---	Quarterly	M-14
Chlorine residual	mg/L	Grab	Quarterly	M-14
Chloride	mg/L	Grab	Quarterly	M-14
Nitrate-N	mg/L	Grab	Quarterly	M-14
Nitrite-N	mg/L	Grab	Quarterly	M-14
Nitrate plus Nitrite	mg/L	Grab	Quarterly	M-14
pH	pH units	Grab	Quarterly	M-14
Sodium	mg/L	Grab	Quarterly	M-14
Sulfate	mg/L	Grab	Quarterly	M-14
TOC	mg/L	Grab	Quarterly	M-14
Total coliform	MPN/100ml	Grab	Quarterly	M-14
BOD ₅ 20°C	mg/L	Grab	Semi-annually	M-14
Oil and grease	mg/L	Grab	Quarterly	M-14
Total nitrogen	mg/L	Grab	Quarterly	M-14
Total Suspended Solids	mg/L	Grab	Semi-annually	M-14
Turbidity	NTU	Grab	Quarterly	M-14
Remaining Inorganics with primary MCLs	µg/L	Grab	Quarterly	M-4
Radioactivity	pci/L	Grab	Quarterly	M-15
Regulated organics	µg/L	Grab	Quarterly	M-15
Disinfection byproducts (DBPs)	µg/L	Grab	Quarterly	M-15
Remaining General physical		Grab	Quarterly	M-16
Remaining General minerals	µg/L	Grab	Quarterly	M-16
Chemicals with NLs	µg/L	Grab	Quarterly	M-15
N-Nitrosopyrrolidine	µg/L	Grab	Annually	M-14
Remaining priority pollutants	µg/L	Grab	Quarterly	M-15
Silver	mg/L	Grab	Quarterly	M-14

¹⁷Water level elevations shall be measured to the nearest 0.01 feet, and referenced to mean sea level.

Table M-15: Groundwater Monitoring Frequency	
Constituent	Frequency
Radioactivity	
Gross Alpha Particle Activity (including Radium-226 but excluding radon and uranium)	Quarterly
Gross Beta Particle Activity	Quarterly

Table M-15: Groundwater Monitoring Frequency	
Constituent	Frequency
Radium-226	Quarterly
Radium-226 & Radium-228 (Combined)	Quarterly
Radium-228	Quarterly
Strontium-90	Quarterly
Tritium	Quarterly
Uranium	Quarterly
Organic Chemicals	
<i>(a) Volatile Organic Chemicals</i>	
1,1,1-Trichloroethane	Quarterly
1,1,2,2-Tetrachloroethane	Quarterly
1,1,2-Trichloro-1,2,2- Trifluoroethane	Quarterly
1,1,2-Trichloroethane	Quarterly
1,1-Dichloroethane	Quarterly
1,1-Dichloroethene (1,1 DCE)	Quarterly
1,2,4-Trichlorobenzene	Quarterly
1,2-Dichlorobenzene	Quarterly
1,2-Dichloroethane (1,2 DCA)	Quarterly
1,2-Dichloropropane	Quarterly
1,3-Dichloropropene	Quarterly
1,4-Dichlorobenzene	Quarterly
Benzene	Quarterly
Carbon Tetrachloride (CTC)	Quarterly
cis-1,2-Dichloroethylene	Quarterly
Dichloromethane	Quarterly
Ethylbenzene	Quarterly
Methyl-tert-butyl-ether (MTBE)	Quarterly
Monochlorobenzene	Quarterly
Styrene	Quarterly

Table M-15: Groundwater Monitoring Frequency	
Tetrachloroethylene (PCE)	Quarterly
Toluene	Quarterly
trans-1,2-Dichloroethylene	Quarterly
Trichloroethylene (TCE)	Quarterly
Trichlorofluoro-methane	Quarterly
Vinyl Chloride	Quarterly
Xylenes (m, p)	Quarterly
(b) Synthetic organic chemical	
1,2-Dibromo-3-Chloropropane (DBCP)	Quarterly
1,2,3-Trichloropropane	Quarterly
2,3,7,8-TCDD (Dioxin)	Quarterly
2,4,5-TP (Silvex)	Quarterly
2,4-Dichlorophenoxyacetic acid (2,4-D)	Quarterly
2,3,5,6-tetrachloroterephthalate (DCPA)	Quarterly
Alachlor	Quarterly
Albuterol	Quarterly
Atrazine	Quarterly
Bentazon	Quarterly
Benzo (a) pyrene	Quarterly
Caffeine	Quarterly
Carbadox	Quarterly
Carbofuran	Quarterly
Chlordane	Quarterly
Chloropicrin	Quarterly
Dalapon	Quarterly
Di (2-ethylhexyl) adipate	Quarterly
Di (2-ethylhexyl) phthalate	Quarterly
Dinoseb	Quarterly
Diquat	Quarterly
Endothal	Quarterly
Endrin	Quarterly
Erythromycin	Quarterly
Ethylene Dibromide (EDB)	Quarterly
Fluoxetine	Quarterly
Glyphosate	Quarterly
Heptachlor	Quarterly
Heptachlor Epoxide	Quarterly
Hexachlorobenzene	Quarterly

Table M-15: Groundwater Monitoring Frequency	
Hexachlorocyclo-pentadiene	Quarterly
Iohexol	Quarterly
Lindane (Gamma BHC)	Quarterly
Methoxychlor	Quarterly
Molinate	Quarterly
Oxamyl	Quarterly
PCB 1016	Quarterly
PCB 1221	Quarterly
PCB 1232	Quarterly
PCB 1242	Quarterly
PCB 1248	Quarterly
PCB 1254	Quarterly
PCB 1260	Quarterly
Pentachlorophenol	Quarterly
Picloram	Quarterly
Quinoline	Quarterly
Simazine	Quarterly
Thiobencarb	Quarterly
Toxaphene	Quarterly
Triclosan	Quarterly
Disinfection Byproducts	
Bromate	Quarterly
Bromodichloro-methane	Quarterly
Bromoform	Quarterly
Chlorite	Quarterly
Chloroform	Quarterly
Dibromoacetic Acid	Quarterly
Dibromochloro-methane	Quarterly
Dichloroacetic Acid	Quarterly
Haloacetic Acid (Five) (HAA5)	Quarterly
Monobromoacetic Acid	Quarterly
Monochloroacetic Acid	Quarterly
Total Trihalomethanes	Quarterly
Trichloroacetic Acid	Quarterly

Table M-15: Groundwater Monitoring Frequency	
Chemicals with Notification Levels	
1,2,4-Trimethylbenzene	Quarterly
1,3,5-Trimethylbenzene	Quarterly
1,4-Dioxane	Quarterly
2-Chlorotoluene	Quarterly
2,4,6-Trinitrotoluene (TNT)	Quarterly
4-Chlorotoluene	Quarterly
Boron	Quarterly
Carbon Disulfide	Quarterly
Chlorate	Quarterly
Diazinon	Quarterly
Dichlorodifluoro-methane (Freon 12)	Quarterly
Ethylene Glycol	Quarterly
Formaldehyde	Quarterly
HMX	Quarterly
Isopropylbenzene	Quarterly
Manganese	Quarterly
Methyl-isobutyl-keytone (MIBK)	Quarterly
Naphthalene	Quarterly
n-Butylbenzene	Quarterly
n-Nitrosodiethyl-amine (NDEA)	Quarterly
n-Nitrosodimethylamine (NDMA)	Quarterly
n-Nitrosodi-n-propylamine (NDPA)	Quarterly
Perfluorooctanoic acid (PFOA)	Quarterly
Perfluorooctane sulfonate (PFOS)	Quarterly
n-Propylbenzene	Quarterly
Propachlor	Quarterly
RDX	Quarterly
sec-Butlybenzene	Quarterly
tert-Butylbenzene	Quarterly
Tertiary-butyl-alcohol (TBA)	Quarterly
Vanadium	Quarterly

Table M-15: Groundwater Monitoring Frequency	
Remaining Priority Pollutants	
<i>Pesticides</i>	
4,4'-DDD	Quarterly
4,4'-DDE	Quarterly
4,4' -DDT	Quarterly
Aldrin	Quarterly
Alpha BHC	Quarterly
Alpha Endosulfan	Quarterly
Beta BHC	Quarterly
Beta Endosulfan	Quarterly
Chloropyrifos	Quarterly
Chlorothalonil	Quarterly
Chromium III	Quarterly
Chromium VI	Quarterly
Delta BHC	Quarterly
Dieldrin	Quarterly
Endosulfan Sulfate	Quarterly
Endrin Aldehyde	Quarterly
<i>Acid Extractables</i>	
2,4,6-Trichlorophenol	Quarterly
2,4-Dichlorophenol	Quarterly
2,4-Dimethylphenol	Quarterly
2,4-Dinitrophenol	Quarterly
2-Chlorophenol	Quarterly
2-Nitrophenol	Quarterly
4,6-Dinitro-o-Cresol (2-Methyl-4,6-Dinitrophenol)	Quarterly
4-Nitrophenol	Quarterly
p-Chloro-m-Cresol (3-Methyl-4-Chlorophenol)	Quarterly
Phenol	Quarterly
<i>Base/Neutral Extractables</i>	
1,12-Benzoperylene (Benzo(g,h,i)-perylene)	Quarterly
1,2,5,6-Dibenzanthracene (Dibenzo(a,h) anthracene)	Quarterly
1,2-Diphenylhydrazine	Quarterly
1,3-Dichlorobenzene	Quarterly
2,4-Dinitrotoluene	Quarterly
2,6-Dinitrotoluene	Quarterly
2-Chloronaphthalene	Quarterly
3,3'-Dichlorobenzidine	Quarterly

Table M-15: Groundwater Monitoring Frequency	
4-Bromophenyl phenyl ether	Quarterly
4-Chlorophenyl phenyl ether	Quarterly
Acenaphthene	Quarterly
Acenaphthylene	Quarterly
Anthracene	Quarterly
Benzidine	Quarterly
Benzo(a)anthracene	Quarterly
Benzo(b)fluoranthene	Quarterly
Benzo(k)fluoranthene	Quarterly
Bis(2-chloroethoxy)-methane	Quarterly
Bis(2-chloroethyl)ether	Quarterly
Bis(2-chloroisopropyl)ether	Quarterly
Butyl benzyl phthalate	Quarterly
Chrysene	Quarterly
Di(2-ethylhexyl) phthlate	Quarterly
Dimethyl phthalate	Quarterly
Di-n-butyl phthalate	Quarterly
Di-n-octyl phthalate	Quarterly
Fluoranthene	Quarterly
Fluorene	Quarterly
Hexachlorobutadiene	Quarterly
Hexachloroethane	Quarterly
Indeno(1,2,3-cd) pyrene	Quarterly
Isophorone	Quarterly
Nitrobenzene	Quarterly
n-Nitrosodi-n-propylamine	Quarterly
n-Nitrosodiphenylamine	Quarterly
Phenanthrene	Quarterly
Pyrene	Quarterly
1,1-Dichloroethylene	Quarterly
2-Chloroethyl vinyl ether	Quarterly
Acrolein	Quarterly
Acrylonitrile	Quarterly
Chlorobenzene	Quarterly
Chloroethane	Quarterly
Methyl bromide	Quarterly
Methyl chloride	Quarterly

Table M-16: General Physical and General Minerals		
Constituents		
Asbestos	Potassium	Foaming Agents
Calcium	Sodium	Odor
Chloride	Sulfate	Specific Conductance
Copper	Zinc	Total Dissolved Solids
Iron	Color	Total Hardness
Manganese	Corrosivity	

V. CERTIFICATION STATEMENT

M1W must submit all requested information electronically in a searchable PDF format via email (use centralcoast@waterboards.ca.gov) using the Central Coast Water Board’s current transmittal sheet found at the link below as the cover page.

https://www.waterboards.ca.gov/centralcoast/water_issues/programs/wastewater_permitting/docs/transmittal_sheet.pdf

VI. OTHER MONITORING REQUIREMENTS

M1W shall submit written documentation identifying the responsible party who certifies the perjury document.

VII. MONITORING PARAMETER & FREQUENCY REDUCTIONS

1. The list of parameters and monitoring frequencies may be adjusted by the Executive Officer if M1W makes a request and the Executive Officer determines that the modification is adequately supported by statistical trends of monitoring data submitted.
2. Per Title 22 section 60320.201(i), after 12 consecutive months with no results exceed an NL or MCL, M1W may apply for a reduced monitoring frequency of recycled water. The reduced monitoring frequency shall be no less than quarterly.
3. Per Title 22 section 60320.212(f), if four consecutive quarterly results for asbestos are below the detection limits, monitoring in recycled water may be reduced to one sample every three years.
4. Per Title 22 section 60320.220 (c) states PP, NLs, DDW-specified chemicals can be reduced from quarterly to annually in recycled water and groundwater within 1-year travel time after DDW review of most recent two years of results.
5. Per Title 22 section 60320.226(e) indicates groundwater monitoring for Priority Pollutants, NLs, DDW-specified chemicals can be “discontinued” following DDW approval of the most recent 2 years of monitoring results.
6. The following chemicals detected in RO Permeate; quinoline, 2,3,5,6-tetrachloroterephthalate (DCPA), chloropicrin, albuterol, erythromycin, carbadox, fluoxetine, caffeine, iohexol, and triclosan, and the pesticides chlorpyrifos and chlorothalonil may be reduced or eliminated after 4 quarters of monitoring, and after DDW review and approval.

VIII. CERTIFICATION

Ordered by:

Matthew T. Keeling
Executive Officer