

DRAFT

STATE WATER RESOURCES CONTROL BOARD MONITORING AND REPORTING PROGRAM GENERAL WASTE DISCHARGE REQUIREMENTS FOR AQUIFER STORAGE AND RECOVERY PROJECTS THAT INJECT DRINKING WATER INTO GROUNDWATER

This Monitoring and Reporting Program (MRP) allows determination of the potential for groundwater degradation and incorporates requirements for monitoring of injected water and groundwater. This MRP is issued pursuant to Water Code section 13267. The Permittee shall not implement any changes to this MRP unless and until a revised MRP is issued by the Executive Officer.

All samples shall be representative of the volume and nature of the monitored medium. The time, date, and location of each grab sample shall be recorded on the sample chain of custody form. Injection flow monitoring shall be conducted continuously using a flow meter and shall be reported in gallons per day and cumulative totals.

Field test instruments (such as those used to monitor pH) may be used provided that:

1. The operator is trained in the proper use of the instrument;
2. The instruments are field calibrated prior to each use;
3. Instruments are serviced and/or calibrated by the manufacturer at the recommended frequency; and
4. Field calibration reports are submitted as described in the "Reporting" section of this MRP.

INJECTION WELL MONITORING

Injection wells shall be monitored when water is being injected into the aquifer. Monitoring of the injection wells shall include, at a minimum, the following

<u>Constituent/Parameter</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
Well Operational Status ¹	N/A	Recorded	Daily	Quarterly
Daily Average Injection Rate	gpd ²	Meter	Continuous	Quarterly
Injected Water, cumulative total for year to date	ac•ft/yr	Meter	Continuous	Quarterly
Extracted Water, cumulative total for year to date	ac•ft/yr	Meter	Continuous	Quarterly

¹ Well Operational Status shall be reported for each well associated with the ASR project. Injection activity shall be recorded on a daily basis.

² Alternative units may be used to report the data.

INJECTED WATER MONITORING

Injected water is limited to potable water that the Permittee produces through its CDPH permitted domestic water supply permit. Section 116470 of the California Health and Safety Code requires:

1. An Annual Water Quality Report (AWQR). The AWQR characterizes the injected water.
2. Public water systems that serve more than 10,000 service connections and that detect one or more contaminants in drinking water that exceed the applicable public health goal, are required to prepare a report that addresses the contaminant issue.

Both of the reports shall be submitted as part of the Annual Report.

Additionally, potable water used as injected water shall be monitored during periods when injection is occurring. Monitoring of the injected water shall include at least the following:

<u>Constituent</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u> ¹	<u>Reporting Frequency</u> ¹
pH	pH units	Grab	Quarterly	Quarterly
Arsenic	mg/L	Grab	Quarterly	Quarterly
Iron	mg/L	Grab	Quarterly	Quarterly
Manganese	mg/L	Grab	Quarterly	Quarterly
Nitrate (as Nitrogen)	mg/L	Grab	Quarterly	Quarterly
Total Dissolved Solids	mg/L	Grab	Quarterly	Quarterly

¹ The sampling and reporting frequency shall be quarterly for one year, commencing on the first date of injection under this Order. Thereafter, sampling is not required.

EXTRACTION WELL MONITORING

The following extraction wells shall be monitored if water was injected in the previous calendar year:

1. An extraction well used for injection in the previous calendar year.
2. An extraction well that is pumping a substantial amount of previously injected water.

Monitoring of the extraction wells shall include at least the following:

<u>Constituent</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
Well Activity ¹	N/A	Recorded	Daily	Quarterly
Average Pumping Rate	gpd ²	Meter	Continuous	Quarterly
Extracted Water/Year ³	ac•ft/yr	Meter	Continuous	Quarterly
Electrical Conductivity	umhos/cm	Grab	Quarterly ⁴	Quarterly ⁴
pH	pH units	Grab	Quarterly ⁴	Quarterly ⁴
Arsenic	mg/L	Grab	Quarterly ⁴	Quarterly ⁴
Iron	mg/L	Grab	Quarterly ⁴	Quarterly ⁴
Manganese	mg/L	Grab	Quarterly ⁴	Quarterly ⁴
Nitrate (as Nitrogen)	mg/L	Grab	Quarterly ⁴	Quarterly ⁴
Total Dissolved Solids	mg/L	Grab	Quarterly ⁴	Quarterly ⁴

¹ Well Activity shall be reported for all wells associated with the ASR project. Injection/extraction activity shall be recorded on a daily basis.

² Alternative units may be used to report the data.

³ Extracted Water/Year represents the total amount of water extracted from a well for the calendar year.

⁴ The sampling and reporting frequency shall be quarterly for one year, commencing on the first date of injection under this Order. Thereafter, sampling is not required.

GROUNDWATER AQUIFER MONITORING

If the Permittee proposes to monitor the target zone using wells other than those designated as injection or extraction wells, the monitoring wells shall be monitored in accordance with the following.

Prior to construction and/or sampling of any groundwater monitoring wells, the Permittee shall submit plans and specifications to the Regional Water Board for approval. Once installed, all new wells shall be added to the monitoring network and shall be sampled and analyzed according to the schedule presented below. All samples shall be collected using approved EPA methods. Groundwater elevations shall be calculated to determine groundwater gradient and direction of flow.

Prior to sampling, the groundwater elevations shall be measured and the wells shall be purged of at least three well volumes until temperature, pH, and electrical conductivity have stabilized. Use of low flow or passive sampling methods that do not require well purging are acceptable if described in the approved Sampling and Analysis Plan (SAP). Samples shall be filtered using a 0.45 micron filter if required by the SAP. Depth to groundwater shall be measured to the nearest 0.01 feet. Groundwater monitoring shall include, at a minimum, the following:

<u>Constituent</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u> ¹	<u>Reporting Frequency</u> ¹
Electrical Conductivity	umhos/cm	Grab	Quarterly	Quarterly
pH	pH units	Grab	Quarterly	Quarterly
Arsenic	mg/L	Grab	Quarterly	Quarterly
Iron	mg/L	Grab	Quarterly	Quarterly
Manganese	mg/L	Grab	Quarterly	Quarterly
Nitrogen (as Nitrate)	mg/L	Grab	Quarterly	Quarterly
Total Dissolved Solids	mg/L	Grab	Quarterly	Quarterly

¹ The sampling and reporting frequency shall be quarterly for one year, commencing on the first date of injection under this Order. Thereafter, sampling is not required.

REPORTING

In reporting monitoring data, the Permittee shall arrange the data in tabular form so that the date, sample type (e.g., source water, injection well, extraction well, etc.), and reported analytical result for each sample are readily discernible. The data shall be summarized in such a manner to clearly illustrate compliance with the Order, NOA, and Basin Plan. The results of any monitoring done more frequently than required at the locations specified in the Monitoring and Reporting Program shall be reported in the next scheduled monitoring report.

As required by the California Business and Professions Code sections 6735, 7835, and 7835.1, all groundwater monitoring reports shall be prepared under the supervision of a registered professional engineer or geologist and signed by the registered professional.

A. QUARTERLY MONITORING REPORT

For the first year commencing with the date of first injection under this Order, the Permittee shall establish a quarterly sampling schedule for injection well, injected water, extraction well, and receiving water (groundwater) monitoring such that samples are obtained as required. For subsequent years, quarterly monitoring reports are not required. Quarterly monitoring reports shall be submitted to the Regional Water Board by the **1st day of the second month after the quarter** (e.g. the January-March quarter is due by May 1st) each year. The quarterly monitoring report shall include the following:

1. A discussion of the status (dates of injection, extraction, and idle time) for all extraction/injection wells associated with the ASR project.
2. A narrative description of all preparatory, monitoring, sampling, and analytical testing activities for the injection, extraction, receiving water (groundwater aquifer) monitoring. The narrative shall be sufficiently detailed to verify compliance with the Order, the NOA, this MRP, and the Standard Provisions and Reporting Requirements. The narrative shall be supported by field logs for each monitoring well documenting depth to groundwater; parameters measured before, during, and after purging; method of purging; calculation of casing volume; and total volume of water purged (if applicable, see notes on passive sampling in the Receiving Water section).
3. Calculation of groundwater elevations, an assessment of groundwater flow direction and gradient on the date of measurement, comparison of previous flow direction and gradient data, and discussion of seasonal trends if any.
4. Results of groundwater monitoring (analytical results tabulated with reporting limits for non-detectable results).
5. A narrative discussion of the analytical results for all groundwater locations monitored including spatial and temporal trends, with reference to summary data tables, graphs, and appended analytical reports (as applicable).
6. A comparison of monitoring data to the groundwater limitations presented in the NOA and an explanation of any violation of those requirements. Any other violation of the Order with explanation and corrective action to prevent future violations.
7. Summary data tables of historical and current water table elevations and analytical results.
8. A scaled map showing relevant structures and features of the facility, the locations of monitoring wells and any other sampling stations, and groundwater elevation contours referenced to mean sea level datum.
9. Copies of laboratory analytical report(s) for groundwater monitoring.

B. Annual Monitoring Report

For the first year commencing with the date of first injection under this Order, an annual monitoring report shall be prepared in addition to the quarterly monitoring reports. For subsequent years, only the annual monitoring report is required. The annual monitoring report shall be submitted to the Regional Water Board by **1 February** each year. The annual monitoring report shall include the following:

1. The annual water quality report and public health goal report (if required by CDPH).
2. For the first year only, tabular and graphical summaries of all monitoring data collected during the year.

3. Projected ASR project activity for the next calendar year.
4. A discussion of compliance and corrective actions taken, as well as any planned or proposed actions needed to bring the discharge into full compliance with the Order, the Notice of Applicability, and/or the applicable Basin Plan.

A letter transmitting the self-monitoring reports shall accompany each report. Such a letter shall include a discussion of violations found during the reporting period, and actions taken or planned for correcting noted violations. If the Permittee has previously submitted a report describing corrective actions and/or a time schedule for implementing the corrective actions, reference to the previous correspondence will be satisfactory. The transmittal letter shall contain a statement by the Permittee, or the Permittee's authorized agent, under penalty of perjury, that to the best of the signer's knowledge the report is true, accurate and complete.

The Permittee shall implement the above monitoring program as of the date of this Order.

Ordered by: _____
Executive Officer

Date