

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2010-xxxx

FOR
WASTE DISCHARGE REQUIREMENTS
AEROJET-GENERAL CORPORATION
PROPELLANT BURN AREA AND FORMER GET F SPRAYFIELD
GROUNDWATER REMEDIATION PROJECT
INACTIVE RANCHO CORDOVA TEST SITE
SACRAMENTO COUNTY

This Monitoring and Reporting Program (MRP) describes requirements for monitoring a groundwater extraction and treatment system. This MRP is issued pursuant to Water Code Section 13267. The Discharger shall not implement any changes to this MRP unless and until a revised MRP is issued by the Executive Officer. Regional Board staff shall approve specific sample station locations prior to implementation of sampling activities.

All samples should be representative of the volume and nature of the discharge or matrix of material sampled. The time, date, and location of each grab sample shall be recorded on the sample chain of custody form.

TREATMENT SYSTEM MONITORING

Each treatment system consisting of granular activated carbon (if volatile organics are present), a modular treatment cell (MBC) for perchlorate removal and an aeration system to re-oxygenate the water is required to be monitored to assure compliance with effluent limitations. Each treatment system shall be sampled as follows using the analytical methods found in Table 3:

**Table 1: SAMPLING FREQUENCY AND
CONSTITUENT SUITE FOR TREATMENT SYSTEMS**

Monitor Point	Units	Frequency
Influent Monitoring- Extraction Wells		
Perchlorate	µg/L	Monthly
Volatile Organics	µg/L	Monthly
Total Dissolved Solids	µg/L	Monthly
Effluent Monitoring		
Perchlorate	µg/L	Monthly ¹
Volatile Organics	µg/L	Monthly
Chloride	mg/L	Monthly
Total Dissolved Solids	mg/L	Monthly
Dissolved Oxygen ²	mg/L	Monthly
Total Organic Carbon	mg/L	Monthly
Oxidation/Reduction Potential ³	millivolts	Monthly
Electrical Conductivity ²	µmhos/cm	Monthly
Flow - average	gallons per minute	Monthly
Flow – cumulative	total gallons per month	Monthly

Monitor Point	Units	Frequency
Electron Donor - cumulative	total gallons per month	Monthly
Location of Discharge	NA	Monthly

- ¹ During operations testing, sampling is done hourly using a perchlorate-specific probe.
² Field measurements.
³ As ORP is data is being collected frequently, the range of ORP measurements should be reported.

GROUNDWATER MONITORING

As shown on Attachment B, there are numerous existing groundwater monitor wells and up to nine groundwater extraction wells that may be installed for the project. The groundwater monitoring program for these wells and any wells installed subsequent to the issuance of this MRP, shall follow the schedule below. The volume of extracted groundwater shall also be provided in quarterly monitoring reports. Sample collection and analysis shall follow standard EPA protocol.

The monitor wells, extraction wells and/or injection wells shall be sampled according to the schedule in Table 1 and the samples analyzed by the methods in Table 3, as follows:

Table 2: SAMPLING FREQUENCY AND CONSTITUENT SUITE¹

Well ¹ Number	Quarterly Sampling ²	Monitoring Objective
STSW-29A	Perchlorate, Total Dissolved Solids, Dissolved Iron, Dissolved Manganese	Compliance
STSW-3B	Perchlorate, Total Dissolved Solids, Dissolved Iron, Dissolved Manganese	Compliance
1251	Perchlorate, Total Dissolved Solids, Dissolved Iron, Dissolved Manganese	Compliance
1350	Perchlorate, Total Dissolved Solids, Dissolved Iron, Dissolved Manganese	Compliance
1294	Perchlorate, Total Dissolved Solids, Dissolved Iron, Dissolved Manganese	Compliance
I-16	Perchlorate, Total Dissolved Solids, Dissolved Iron, Dissolved Manganese	Compliance
New Wells	Perchlorate, Total Dissolved Solids, Dissolved Iron, Dissolved Manganese	Various

¹ Well numbers as shown on Attachment C.

² Wells shall be sampled quarterly. Sampling shall initially be only on well number STSW-29A and other wells will be added as needed upon request of Regional Board staff. Additional monitoring will be conducted according to the program approved to establish background values as required below.

Table 3: ANALYTICAL METHODS

Constituent	Method¹	Maximum Practical Quantitation Limit (µg/L)²
Perchlorate	EPA 314.1	4.0
Total Dissolved Solids	EPA 160.1	10,000
Total Organic Carbon	EPA 415	300
Chloride	EPA 6500	300
Iron, Total and Dissolved	EPA 200.7	100
Manganese, Total and Dissolved	EPA 200.7	25

¹ Or an equivalent EPA Method that achieves the maximum Practical Quantitation Limit.

² All concentrations between the Method Detection Limit and the Practical Quantitation Limit shall be reported, and reported as an estimated value.

FIELD SAMPLING

In addition to the above sampling and analysis, field sampling and analysis shall be conducted each time a monitor well or extraction well is sampled. The sampling and analysis of field parameters shall be as specified in Table 3.

Table 4: FIELD SAMPLING REQUIREMENTS

Parameters	Units	Type of Sample
Groundwater Elevation	Feet, Mean Sea Level	Grab
Electrical Conductivity	µmhos	Grab
Dissolved Oxygen	mg/L	Grab
pH	pH Units (to 0.1 units)	Grab

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

1. The operator is trained in proper use and maintenance of the instruments;
2. The instruments are calibrated prior to each monitoring event;
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.

Electron Donor Analysis

Prior to use, the electron donor shall be analyzed for the constituents listed in Table 5. The analysis should be done on the pure donor, to the extent feasible, or as a mixture with deionized water at a concentration that would be used in the project.

Table 5: ELECTRON DONOR ANALYTICAL REQUIREMENTS

Constituent	Method ¹	Maximum Practical Quantitation Limit (µg/L) ²
Volatile Organic Compounds	EPA 8020 or 8260B	0.5
General Minerals		
Metals, Total and Dissolved ³	EPA 200.7, 200.8	Various
Semi-Volatile Organic Compounds	EPA Method 8270	5.0
Total Dissolved Solids	EPA 160.1	10,000
pH	EPA 9040	NA
Electrical Conductivity	EPA 120.1	NA

- ¹ Or an equivalent EPA Method that achieves the maximum Practical Quantitation Limit.
- ² All concentrations between the Method Detection Limit and the Practical Quantitation Limit shall be reported, and reported as an estimated value.
- ³ Metals include arsenic, barium, cadmium, calcium, total chromium, copper, iron, lead, manganese, magnesium, mercury, molybdenum, nickel, selenium and silica.

Establishment of Background Concentration Values

The Discharger shall develop background values for concentrations of dissolved iron, dissolved manganese, total dissolved solids and electrical conductivity in groundwater following the procedures found in CCR Section 20415(e)(10). The Discharger shall submit a proposal to develop the background concentrations by **no later than 30 days prior to commencement of operation.**

REPORTING

When reporting the data, the Discharger shall arrange the information in tabular form so that the date, the constituents, and the concentrations are readily discernible. The data shall be summarized in such a manner as to illustrate clearly the compliance with this Order. In addition, the Discharger shall notify the Regional Board within 48 hours of any unscheduled shutdown of a groundwater extraction system. The results of any monitoring done more frequently than required at the locations specified in the Monitoring and Reporting Program shall also be reported to the Regional Board.

As required by the California Business and Professions Code Sections 6735, 7835, and 7835.1, all reports shall be prepared by a registered professional or their subordinate and signed by the registered professional.

The Discharger shall submit quarterly electronic data reports, which conform to the requirements of the California Code of Regulations, Title 23, Division 3, Chapter 30. The quarterly reports shall be submitted electronically over the internet to the Geotracker database system by the 1st day of the second month following the end of each calendar quarter by **1 February, 1 May, 1 August, and 1 November** until such time as the Executive Officer determines that the reports are no longer necessary.

Quarterly reports shall be submitted to the Regional Board by the **1st day of the second month following the end of each calendar quarter (i.e., by 1 February, 1 May, 1 August, and 1 November)**. Each quarterly report shall include the following minimum information:

- (a) a description and discussion of the groundwater sampling event and results, including trends in the concentrations of pollutants and groundwater elevations in the wells, how and when samples were collected, and whether the pollutant plume(s) is delineated;
- (b) field logs that contain, at a minimum, sampling method, water quality parameters measured during purging (if purging is necessary for the sample method) or sampling, method of purging, depth of water, volume of water purged, etc.;
- (c) groundwater contour maps for all groundwater zones, if applicable;
- (d) isocontour pollutant concentration maps for all groundwater zones, if applicable;
- (e) a table showing well construction details such as well number, groundwater zone being monitored, coordinates (longitude and latitude), ground surface elevation, reference elevation, elevation of screen, elevation of bentonite, elevation of filter pack, and elevation of well bottom;
- (f) a table showing historical lateral and vertical (if applicable) flow directions and gradients;
- (g) cumulative data tables containing the water quality analytical results and depth to groundwater;
- (h) a copy of the laboratory analytical data reports;
- (i) if applicable, the status of any ongoing remediation, including cumulative information on the mass of pollutant removed from the subsurface, system operating time, the effectiveness of

the remediation system, and any field notes pertaining to the operation and maintenance of the system; and

- (j) if applicable, the reasons for and duration of all interruptions in the operation of any remediation system, and actions planned or taken to correct and prevent interruptions; and
- (k) A log of GAC replacement, if applicable along with transportation date(s) and destination of disposal.

An Annual Report shall be submitted to the Regional Board by **1 May (1 August for semi-annual monitoring)** of each year. This report shall contain an evaluation of the effectiveness and progress of the investigation and remediation, and may be substituted for the concurrent quarterly report (**or second semi-annual**) monitoring report. The Annual Report shall contain the following minimum information:

- (a) both tabular and graphical summaries of all data obtained during the year;
- (b) groundwater contour maps and pollutant concentration maps containing all data obtained during the previous year;
- (c) a discussion of the long-term trends in the concentrations of the pollutants in the groundwater monitoring wells;
- (d) an analysis of whether the pollutant plume is being captured by an extraction system or is continuing to spread;
- (e) a description of all remedial activities conducted during the year, an analysis of their effectiveness in removing the pollutants, and plans to improve remediation system effectiveness;
- (f) an identification of any data gaps and potential deficiencies/redundancies in the monitoring system or reporting program; and
- (g) if desired, a proposal and rationale for any revisions to the groundwater sampling plan frequency and/or list of analytes.

A letter transmitting the self-monitoring reports shall accompany each report. Such a letter shall include a discussion of requirement violations found during the reporting period, and actions taken or planned for correcting noted violations, such as operation or facility modifications. If the Discharger 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 the penalty of perjury

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statement by the Discharger, or the Discharger's authorized agent, as described in the Standard Provisions General Reporting Requirements Section B.3.

The Discharger shall implement the above monitoring program on the first day of the month following adoption of this Order.

Ordered by: _____
PAMELA C. CREEDON Executive Officer

(Date)

3/24/2010:AMM