

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

REVISED MONITORING AND REPORTING PROGRAM NO. R5-2008-0149-003 Rev. 3

FOR
IN SITU GROUNDWATER REMEDIATION AT SITES WITH VOLATILE ORGANIC
COMPOUNDS, NITROGEN COMPOUNDS, PERCHLORATE, PESTICIDES,
SEMI-VOLATILE COMPOUNDS AND/OR PETROLEUM HYDROCARBONS

FOR
ALPHA EXPLOSIVES
AND HERCULES, LLC

ALPHA EXPLOSIVES' LINCOLN FACILITY
PLACER COUNTY

Alpha Explosives currently owns and operates, and Hercules Incorporated (now Hercules, LLC) formerly operated, an explosives manufacturing and retail operation at 3400 Nader Road in Lincoln. Alpha Explosives and Hercules, LLC are collectively referred to as Discharger. Perchlorate, nitrate and ammonium are present in elevated concentrations in groundwater, which seasonally and spatially varies between 10 and 45 feet below ground surface. These constituents impair the beneficial uses of this water resource. Since 2006, the Discharger has been conducting and evaluating in situ bioremediation of nitrate and perchlorate in groundwater at the two main source areas.

This Monitoring and Reporting Program (MRP) describes requirements for monitoring a groundwater treatment system and is issued pursuant to Section 13267 of the California Water Code. This MRP rescinds Revised Monitoring and Reporting Program R5-2008-0149-003 Rev. 2, which was issued on 26 July 2018. Alpha Explosives and Hercules, LLC also conduct monitoring in accordance with MRP R5-2018-0814, which remains in effect. The Discharger shall not implement any changes to this MRP unless and until a revised MRP is issued by the Executive Officer. As appropriate, California Regional Water Quality Control Board, Central Valley Region (Central Valley Water Board) staff shall approve specific sample station locations prior to implementing 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.

GROUNDWATER MONITORING

As shown in Figure 1, the groundwater remediation program is conducted in the Evaporation Pond and Mix Building areas and includes 14 monitoring wells (TW-0 through TW-5, MW-1, MW-2, MW-3, MW-4, MW-6, MW-9, MW-18 and MW-19), and 8 injection wells (EP-IW1

through EP-IW4, and MB-IW1 through MB-IW4). Use of each well for monitoring and/or injection may change in the future with written authorization from Central Valley Water Board staff. Several injection wells are no longer actively used, and several of the monitoring wells are also used for injection. The groundwater monitoring program for these wells and any treatment system wells installed subsequent to issuance of this MRP, shall follow the schedule below. Analyses that may be duplicative of the requirements of MRP R5-2005-0838 do not require two separate analyses. One sample and analysis is sufficient to satisfy both requirements. Sample collection and analysis shall follow standard EPA protocol.

The monitoring wells, test wells and injection wells shall be sampled according to the schedule in Table 1, with samples analyzed by the methods in Table 2.

Table 1. Sampling Frequency¹ and Constituent Suites

Monitoring Well ²	Monitoring Objective	Remediation Area	Ammonium	Nitrate (as N)	Perchlorate	Alkalinity	Specific Conductivity & Total Dissolved Solids ³	Total Organic Carbon
MW-1	Background Well ⁴		A	A	A		A	
TW-0 TW-1 TW-2 TW-4 TW-5 MW-6	Treatment Zone ⁵	Evaporation Pond	S	S	S	S		S
TW-3	Transition Zone ⁶	Evaporation Pond		S	S		A	S
MW-2 MW-3 MW-4 MW-19	Treatment Zone ⁵	Mix Building	S	S	S	S		S
MW-18	Transition Zone ⁶	Mix Building		S	S	S	A	S
MW-9	Compliance Well ⁷			S	S		A	S

Footnotes to Table 1 on following page.

Footnotes to Table 1.

- ¹ A – Annually in the 1st Quarter (Jan-Mar);
 S – Semi-annually in 1st and 3rd quarters (Jan-Mar, July-Sept).
- ² Monitoring well locations are shown in Figure 1.
- ³ After two consecutive annual monitoring events, Total Dissolved Solids may be removed with Central Valley Water Board staff concurrence.
- ⁴ Well used to develop background concentrations.
- ⁵ Wells sampled to evaluate in-situ bioremediation progress inside the treatment zone.
- ⁶ Wells sampled to evaluate migration of pollutants within the treatment zone.
- ⁷ Well used to determine compliance with groundwater limitations.

Table 2. Analytical Methods

Constituent	Method ¹	Maximum Practical Quantitation Limit ²
Ammonium	SM4500	1 mg/L
Nitrate (as N)	EPA 353	1 mg/L
Perchlorate	EPA 314	4 ug/L
Alkalinity	SM 2320	5 mg/L
Total Organic Carbon	SM 5310	1 mg/L
Total Dissolved Solids	SM 2540	1 mg/L

Footnotes to Table 2.

- ¹ Or an equivalent method that achieves the maximum Practical Quantitation Limit.
- ² All concentrations between the Method Detection Limit and the Practical Quantitation Limit shall be reported as an estimated value.

FIELD SAMPLING

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

Table 3. Field Sampling Requirements

Parameter	Units	Sample Type
Depth to Groundwater	Feet	Measurement
Groundwater Elevation	Feet, Mean Sea Level	Calculation
Temperature	°F	Measurement
Specific Conductance	umhos/cm	Grab
pH	Standard Units	Grab

Field instruments (such as those used to measure pH and specific conductance) 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.

INJECTION MONITORING

The Discharger shall record the quantity of amendments injected into groundwater during each injection event. Injection typically occurs semi-annually, approximately one month after semi-annual monitoring. Each amendment addition shall be recorded individually, along with the time period over which the amendment was added to the aquifer. "Injection" may refer to either pressure-injection or gravity-flow.

AMENDMENT ANALYSIS

Sodium acetate is authorized as had been permitted in preceding Waste Discharge Requirements R5-2006-0110. Additional analysis is not required. An analysis for EOS 450 has been provided to Central Valley Water Board staff.

ESTABLISHMENT OF BACKGROUND CONCENTRATION VALUES

Alpha Explosives and Hercules LLC has conducted historical sampling for background concentrations of perchlorate, nitrate, ammonium, total organic carbon, Total Dissolved Solids (TDS) and specific conductance in numerous monitoring wells. Nitrate and perchlorate background concentrations are represented by upgradient MW-1, ammonium is not detected, and Total Organic Carbon (TOC) measurements were made in October 2006. TDS is determined by measurements made in MW-9 in October 2009 and April 2011, and will be evaluated in upgradient, downgradient, and transition zone wells. Specific conductance has been measured in remediation monitoring wells prior to injections.

REPORTING

When reporting the data, the Discharger shall arrange the information in tabular form so that the date, constituents and concentrations are easily discernible. The data shall be summarized in such a manner as to illustrate clearly compliance with this Order. The results of any monitoring done more frequently than required at the locations specified in a Monitoring and Reporting Program shall also be reported to the Regional Water 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 semi-annual electronic data reports, which conform to the requirements of the California Code of Regulations, Title 23, Division 3, Chapter 30. Data reports shall be submitted electronically over the internet to the Geotracker database system by **1 June and 1 December** until such time as the Executive Officer determines that the reports are no longer necessary.

An Annual Report shall be submitted to the Regional Board by **1 December** of each year until such time as the Executive Officer determines that the reports are no longer necessary. The content of the Annual Report may be combined with the Annual Report required by Monitoring and Reporting Program No. R5-2018-0814. The Annual Report shall contain the following minimum information in addition to the requirements of MRP R5-2018-0814:

- a) Amendments injected, with volumes, dates and locations;
- b) A figure showing injection and sample locations.
- c) When two consecutive monitoring events for TDS have been completed, a discussion of the statistical relationship between Specific Conductance and TDS shall be included, including graphical representation of relationship and confidence interval.

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

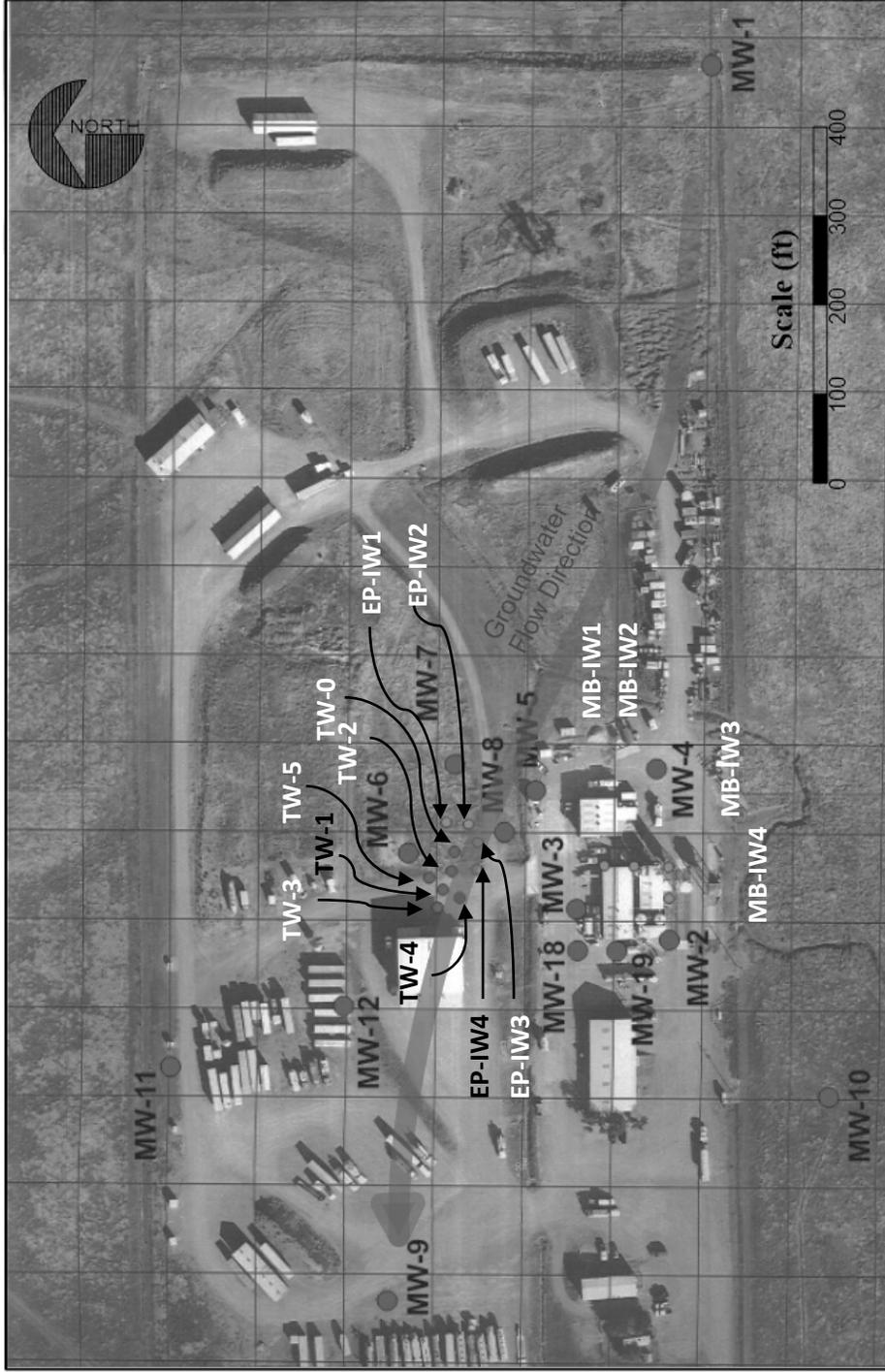
Ordered by:



ANDREW ALTEVOGT,
Assistant Executive Officer

2/4/19

(Date)



Hydrometrics, Inc.
 Consulting Scientists and Engineers
 K:\PROJECT\1148\Figure 2 Well Locations 8x10.srf

FIGURE 2
ALPHA EXPLOSIVES PLANT SITE
GROUNDWATER MONITORING
WELL LOCATIONS

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