



California Regional Water Quality Control Board Central Valley Region

Karl E. Longley, ScD, P.E., Chair



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Linda S. Adams
Secretary for
Environmental Protection

22 September 2009

Mr. Brad Langner
Alpha Explosives
P.O. Box 310
Lincoln, CA 95648-0310

NOTICE OF APPLICABILITY OF GENERAL ORDER NO. R5-2008-0149-003 ALPHA EXPLOSIVES AND HERCULES INCORPORATED, 3400 NADER ROAD, IN-SITU REMEDIATION OF PERCHLORATE, NITRATE AND AMMONIUM, PLACER COUNTY

Alpha Explosives and Hercules Incorporated (Discharger) submitted a completed Notice of Intent, dated 13 August 2009, requesting coverage under General Order No. R5-2008-0149, General Waste Discharge Requirements for In-situ Groundwater Remediation at Sites with Volatile Organic Compounds, Nitrogen Compounds, Perchlorate, Pesticides, Semi-Volatile Compounds and/or Petroleum Compounds. Based on information in your submittal, it is our determination that this project meets the required conditions to be approved under Order No. R5-2008-0149. All of the requirements contained in the general order are applicable to your project. You are assigned Order No. R5-2008-0149-003

Project Location:

The project is in Placer County, Township 13N, Range 6E, Section 30, Mount Diablo Baseline & Meridian; Assessor's Parcel No. 020-150-041-000; Latitude 38.945, Longitude: -121.340.

Project Description:

Historical operations at site of Alpha Explosives caused pollution of the soil and groundwater. The primary pollutants of concern are nitrate, ammonium, and perchlorate. Since 2002, Alpha Explosives has been conducting various in-situ pilot studies that have demonstrated that perchlorate, nitrate, and ammonium are biologically degraded in shallow groundwater when a carbon substrate is added. Acetate, ethanol and molasses have been tested at this site, and all have been successful. In 2006, Alpha and Hercules Incorporated (a wholly owned subsidiary of Ashland Inc.) began a phased implementation of full scale in-situ remediation as prescribed in Waste Discharge Requirements (WDRs) No. R5-2006-0110. The actions permitted under the General Order incorporate the actions permitted under WDRs No. R5-2006-0110. Therefore, WDRs R5-2006-0110 are proposed for rescission by the California Regional Water Quality Control Board, Central Valley Region (Central Valley Water Board) at the next scheduled meeting.

The Discharger will inject sodium acetate in the mix building and former evaporation pond areas, and will conduct a pilot test with emulsified oil at an area of the former evaporation pond. Emulsified oil was successful in developing reducing conditions in similar stratigraphy at Beale Air Force Base. Since perchlorate and nitrate are being degraded at Alpha Explosives under reducing conditions, it is expected that emulsified oil will also promote perchlorate and nitrate reduction.

California Environmental Protection Agency

If the assumptions of insitu degradation of emulsified oil are incorrect, the sustained presence of total organic carbon in any well at concentrations greater than or equal to 10,000 mg/L will trigger the contingency plan. The contingency plan will also be implemented if ammonium is generated at a concentration greater than 100 mg/L above pre-injection amounts within 50 feet of an injection point, or if ammonium is greater than 10 mg/L beyond 50 feet from an injection point. The contingency plan includes supplemental sampling and analyses to identify the extent of the exceedance, identify if nutritional deficiencies are limiting degradation, correction of deficiencies, or, if necessary, removal of excess carbon or ammonium. Aeration of the area of exceedance would remove excess carbon and ammonium.

On 27 July 2009, the Discharger circulated a fact sheet describing the project. No comments were received in the 30-day comment period. The Discharger will be conducting sampling and reporting the results as described in the attached Groundwater Monitoring and Reporting Program.

General Information:

1. The project will be operated in accordance with the requirements contained in the General Order and in accordance with the information submitted in the completed Notice of Intent. The completed Notice of Intent includes the June 2009 Phase 1C Injection Work Plan, and the 1 September 2009 conditional concurrence letter.
2. The required annual fee (as specified in the annual billing you will receive from the State Water Resources Control Board) shall be submitted until this Notice of Applicability is officially revoked.
3. Injection of materials other than acetate and Emulsified Oil Substrate into the subsurface is prohibited. Injection of Emulsified Vegetable Oil (EVO) is permitted provided Central Valley Water Board staff review the chemical analysis and concur that EVO is appropriate for injection.
4. Failure to abide by the conditions of the General Order could result in an enforcement action as authorized by provisions of the California Water Code.
5. The project will implement the final contingency plan included as part of the Notice of Intent within 30-days of it being triggered.
6. The Discharger shall comply with the attached Monitoring and Reporting Program, Order No. R5-2008-0149-003, and any revisions thereto as ordered by the Executive Officer.

If you have any questions regarding this matter, please call Ms. Amy Terrell at (916) 464-4680.

/s/

PAMELA C. CREEDON
Executive Officer

Attachment

cc: Ms. Della Kramer, Regional Water Quality Control Board, Sacramento
Mr. West Bourgault, Placer County Environmental Health Department, Auburn
Public Works Director, City of Lincoln, Lincoln
Mr. Kent Nakata, Council Member, City of Lincoln
Mr. Kent Thygerson, Alpha Explosives, Lincoln
Mr. Bruce Hough, Ashland-Hercules, Wilmington DE
Mr. Bill Thompson, Hydrometrics, Helena, MT
Mr. Mark Reinsel, Apex Engineering, Helena MT

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2008-0149-003

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

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. As appropriate, California Regional Water Quality Control Board, Central Valley Region 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.

GROUNDWATER MONITORING

As shown on Figure 1, there are 5 monitor wells, 6 test wells, and 8 injection wells associated with this site. One monitoring well and one test well also serve as injection wells. The groundwater monitoring program for these wells and any treatment system wells installed subsequent to the issuance of this MRP, shall follow the schedule below. Sample collection and analysis shall follow standard EPA protocol.

The monitor wells, test wells, and injection wells shall be sampled according to the schedule in Table 1 and the samples analyzed by the methods in Table 2, as follows:

Table 1: Sampling Frequency² and Constituent Suites³

Well Number ¹	Pre-injection	2 weeks post-injection	1 st Quarter 2010	2 nd Quarter 2010	3 rd Quarter 2010	Monitoring Objective
TW-0, TW-1, TW-2, TW-4	A & B	A	A & B	A & B	A & B	EOS Treatment ⁵
TW-3	A, B & D		A & B	A, B & D		EOS Transition ⁶
MW-2, MW-3, MW-18, MW-19	A & B	A	A & B	A & B		Acetate Treatment ⁵
TW-5, MW-6	A & B	A	A & B	A & B		Acetate Transition ⁶
MW-9	C		C		C	Compliance ⁴

Footnotes on following page.

Footnotes to Table 1.

- ¹ Well numbers as shown on Figure 1.
- ² 1st quarter (January-March); 2nd quarter (April-June); 3rd quarter (July-September).
- ³ Constituent suite components listed in Table 2.
- ⁴ Wells used to determine compliance with groundwater limitations.
- 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.

Table 2: Analytical Methods

Constituent	Method ¹	Maximum Practical Quantitation Limit (ug/L) ²
Suite A		
Ammonium	EPA 350.1	100
Nitrate/nitrite as N	EPA 300.0	400
Total organic carbon	EPA 415	1,000
Suite B		
Perchlorate	EPA 314.0	4
Alkalinity	SM 2310B	5000
Suite C		
Total organic carbon	EPA 415	1,000
Suite D		
Methane	RSK-175	1

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 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 3: Field Sampling Requirements

Parameters	Units	Type of Sample
Groundwater Elevation	Feet, Mean Sea Level	Measurement
Depth to Groundwater	Feet	Measurement
Temperature	° F	Measurement
Electrical Conductivity	uhmos/cm	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 item (b) of the "Reporting" section of this MRP.

DISCHARGE MONITORING

The Discharger shall monitor daily the discharge of water and amendments that are injected into the groundwater according to the requirements specified in Table 4. Each amendment addition shall be recorded individually, along with information regarding the time period over which the amendment was injected into the aquifer.

Table 4: Discharge Monitoring Requirements

Parameters	Units	Type of Sample
Injected Volume	Gallons per well per event	Measured
Amendment(s) Added	Pounds per well per event	Measured

AMENDMENT ANALYSIS

Prior to use, amendments shall be analyzed for the constituents listed in Table 5. The analysis should be done on the pure amendment and on a mixture of the amendment and deionized water at the estimated concentration that would be injected during the pilot project. The Discharger has been using sodium acetate as provided by previous WDRs R5-2006-0110. Additional analysis of sodium acetate is not required.

Table 5: Amendment Analytical Requirements

Constituent	Method ¹	Maximum Practical Quantitation Limit (µg/L) ²
Volatile Organic Compounds	EPA 8020 or 8260B	0.5
General Minerals ³	Various	Various
Metals, Total and Dissolved ⁴	EPA 200.7, 200.8	Various
Semi-Volatile Organic Compounds	EPA Method 8270	5.0
Total Dissolved Solids	EPA 160.1	10,000
pH	meter	NA
Electrical Conductivity	meter	NA

Footnotes on following page.

Footnotes to Table 5.

- 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 Alkalinity, bicarbonate, potassium, chloride, sulfate, total hardness, nitrate, nitrite, ammonia.
- ⁴ 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 has conducted sampling for background concentrations of perchlorate, nitrate, ammonium, total organic carbon, and specific conductance through historical sampling at multiple monitoring wells. By **1 December 2009**, the Discharger shall sample MW-1 and MW-9 for TDS and by **1 June 2010**, provide a table of background concentrations of these constituents in groundwater following the procedures found in CCR Section 20415(e)(10).

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 any soil vapor and/or 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 data reports shall be submitted electronically over the internet to the Geotracker database system by **1 December, 1 June, 1 September, and 1 December** until such time as the Executive Officer determines that the reports are no longer necessary. No routine monitoring is scheduled in the fourth quarter.

The quarterly data reports should include the following information:

- (a) Amendments injected, dates, volume, and injection locations.
- (b) Tabulated sample locations, analyses and results.
- (c) A figure showing injection and sample locations.

An Annual Report shall be submitted to the Regional Board by **1 December 2010**. This report shall contain an evaluation of the effectiveness and progress of the preceding investigation and remediation. The content of the Annual Report may be combined with the Annual Report required by Monitoring and Reporting Program No. R5-2005-0838. The Annual Report shall contain the following minimum information:

- (a) Tabular summaries of all bioremediation data collected.
- (b) Graphical summaries of remedial progress, including nitrate, perchlorate, and total organic carbon concentration changes with time.
- (c) An evaluation of the performance of the enhanced bioremediation project and an analysis of the effectiveness in destroying the pollutants.
- (d) A discussion of compliance and the corrective action taken, if any, as well as any planned or proposed actions needed to bring the discharge into full compliance with the General Order.
- (e) A discussion of any data gaps and potential deficiencies/redundancies in the monitoring system or reporting program.

A letter transmitting the 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 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.

/s/
Ordered by: _____
PAMELA C. CREEDON Executive Officer

22 September 2009
(Date)

