

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2009-XXXX

FOR
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BEHELLI CLEANERS,
AND BEHELLI CLEANERS, INC.
REDDING,
SHASTA COUNTY

This Monitoring and Reporting Program (MRP) describes requirements for monitoring associated with in situ injection of soybean oil as a voluntary effort by the Dischargers to remediate impacted groundwater. This MRP is issued pursuant to Water Code Section 13267. The Dischargers shall not implement any changes to this MRP unless and until a revised MRP is issued by the Executive Officer. As appropriate, 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.

GROUNDWATER MONITORING

As shown on Attachment C of the Waste Discharge Requirements, there are four monitoring wells and nine to eleven injection wells associated with this injection site. Further monitoring wells are down-gradient, subject only to monitoring for volatile organic compounds. 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 Dischargers shall propose changes to the groundwater monitoring plan as needed to reasonably evaluate the effectiveness of in situ treatment. Routine private well and soil gas sampling activities are detailed in the Dischargers' Contingency Plan dated April 28, 2009.

The monitoring 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 Frequency and Constituent Suite

Well Number¹	Frequency²	Constituent Suite(s)³	Monitoring Objective
TW-7 ⁴	Quarterly	A, C, and D	Compliance ⁵
IW-3 and IW-6	Month 1, Month 2, and Quarterly	A, C, and D	Treatment Zone ⁶
TW-14, TW-15	Month 1, Month 2, and Quarterly	A, B, C, and D	Transition Zone ⁷
TW-10	Annual	A, C, and D	Background ⁸
Soil Gas Location (Intersection of Leila and Ramona)	Semi-Annual	A	Compliance

- ¹ Well numbers as shown on Attachment C of the Waste Discharge Requirements.
² i.e., weekly, monthly, quarterly, annually, other.
³ Constituent suite components listed in Table 2. Constituents not detected above the laboratory method detection limit in samples collected from a monitoring well for three consecutive quarterly/semi-annual/annual sampling events will be removed from the constituent suite.
⁴ Additional compliance wells (TW-6, TW-8, and TW-9) will be included in the monitoring and sampling program, if results of compliance samples collected from TW-7 indicate elevated levels of general geochemistry and VOCs.
⁵ Wells used to determine compliance with water groundwater limitations.
⁶ Wells sampled to evaluate in-situ bioremediation progress inside the treatment zone.
⁷ Wells sampled to evaluate migration of pollutants within the transition zone.
⁸ Wells used to develop background concentrations.

Table 2: Analytical Methods

Constituent	Method ¹	Maximum Practical Quantitation Limit (µg/L) ²
Suite A		
Volatile Organic Compounds	EPA 8260B	0.5
Suite B		
CCR –17 Priority Pollutant Metals		
Barium, Beryllium, Cadmium, Chromium, Cobalt, Copper, Molybdenum, Silver	EPA 6010 B	5
Antimony	EPA 6010B	20
Arsenic, Nickel, Vanadium, Zinc	EPA 6010B	10
Lead, Selenium	EPA 6010 B	15
Mercury	EPA 7470 A	0.20
Thallium	EPA 6010 B	25
Suite C		
Dissolved Methane	RSK 175	1.5
Iron II	EPA 6010B	100
Sulfate	EPA 300.0	400
Nitrate	EPA 353.2	50
Alkalinity as CaCO ₃	SM2320B	5000
Suite D		
Carbon Dioxide	EPA SM 4500-CO2 C	1,000
TOC	SM 55310C	1,000
Total Dissolved Solids	SM 2540 C	6,000

- 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.
³ Metals include barium cadmium, calcium, total chromium, copper, lead, magnesium, manganese, mercury, molybdenum, nickel and silica.

Constituent	Method	Maximum Practical Quantitation Limit (µg/L-gas)
Volatile Organic Compounds	TO-15	0.05

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
Oxidation-Reduction Potential	Millivolts	Field Test
Electrical Conductivity	uhmos/cm	Field Test
Dissolved Oxygen	mg/L	Field Test
pH	pH Units (to 0.1 units)	Field Test

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 Dischargers 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 day	Meter
Amendment(s) Added	kilograms per day	Measured
Biocide Added (if used)	kilograms per day	Measured

ESTABLISHMENT OF BACKGROUND CONCENTRATION VALUES

The Dischargers shall develop background values for concentrations of dissolved iron, dissolved manganese, 17 priority pollutant metals (antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, selenium, silver, vanadium, zinc, total dissolved solids and electrical conductivity in groundwater following the procedures found in CCR Section 20415(e)(10). Background concentrations are outlined in *Order R5-2009-XXXX Groundwater Remediation Waste Discharge Requirements*. Staff will

require appropriate statistical analyses and updates of ambient background general geochemistry prior to, during, and following injections. Staff will also require periodic comparisons of up-gradient and treatment zone geochemistry and accompanying predictions of time until aquifer restoration to background.

REPORTING

When reporting the data, the Dischargers 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 Dischargers 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 Dischargers 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.

Hard copies of 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, water quality parameters measured before, during, and after purging, method of purging, depth of water, volume of water purged, etc.;
- (c) groundwater contour maps for all groundwater zones, if applicable;
- (d) 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 report, which may be submitted in an electronic format;
- (i) the status of any ongoing remediation, including an estimate of the cumulative 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.

An Annual Report shall be submitted to the Regional Board by **1 February (1 November 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 fourth quarter (**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 effectively treated;
- (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 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 Dischargers have 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 Dischargers, or the Dischargers' authorized agent, as described in the Standard Provisions General Reporting Requirements Section B.3.

The Dischargers 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)

EJR: sae