



California Regional Water Quality Control Board Central Valley Region

Katherine Hart, Chair



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Arnold
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31 August 2010

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NOTICE OF APPLICABILITY - ORDER R5-2008-0149-010, CIRCLE K STORE NO. 1205, 16470 CAMBRIDGE ROAD, LATHROP, SAN JOAQUIN COUNTY

On 26 February 2010 and 7 April 2010, Stantec Consulting Corporation submitted a Notice of Intent (NOI) and supporting technical information in order to obtain coverage under Waste Discharge Requirements General Order R5-2008-0149 (the General Order) on your behalf for your site at 16470 Cambridge Road in Lathrop. Central Valley Water Board staff determined that the NOI and supporting technical information were complete on 20 April 2010. On 16 June 2010, the 45-day Public Participation was completed with no comments received by this agency.

The NOI describes the discharge of injected ozone into groundwater from an ozone generation and injection system. The treatment system has been designed to remove petroleum hydrocarbon contaminants, including methyl tertiary butyl ether (MTBE), in groundwater. In addition to ozone, mildly acidic amendments such as vinegar or citric acid may be used in the ozone injection points to control biofouling.

The General Order includes a Monitoring and Reporting Program (MRP) that prescribes minimum monitoring requirements. The MRP requires sampling and analytical testing for specific petroleum hydrocarbon and secondary constituents in monitoring wells. Additions and/or modifications to the MRP are included in the Additional Requirement section of this Notice of Applicability (NOA).

Based on our review of the information provided, we have determined this project meets the required conditions to be approved under the General Order. All requirements contained in the General Order and/or modified by this NOA are applicable to your project. You are hereby assigned **General Order R5-2008-0149-010** to regulate the injection of ozone and biofouling amendments into groundwater at the Circle K Store No. 1205 site.

PROJECT LOCATION

The Circle K Store No. 1205 site is located at 16470 Cambridge Drive in Lathrop, California. The legal description for the site is: Assessor's Parcel Number 196-430-32, Township/Range/Section 1S, 6E, S26. The closest surface water body is the San Joaquin River located approximately 1.5 miles from the site.

PROJECT DESCRIPTION

Circle K Store No. 1205 will inject ozone from an onsite ozone generator into ozone sparge wells SP-1, SP-2, SP-4, and SP-5 for a six-month pilot study. Upon completion of the pilot study, it is anticipated that a recommendation for full-scale ozone injection will include a total of 15 sparge wells (SP-1 through SP-15). Ozone injection will run concurrently with the SJCEHD approved soil remediation by soil vapor extraction. The remedial process will remove the petroleum hydrocarbons. Analytical testing will be performed on nearby monitoring wells per the attached Monitoring and Reporting Program (MRP), to determine if ozone injection is effective in destroying petroleum hydrocarbons and to monitor for increases in dissolved levels of specified metals, which may be caused by oxidation of native metals in soil. There are no surface waters associated with this project.

ADDITIONAL REQUIREMENTS

1. The NOI does not list the Maximum Practical Quantitation limit (MPQLs) for each analysis. You are to use the MPQLs listed in Table 2 of the enclosed Monitoring and Report Program (MRP) of **General Order R5-2008-0149**.
2. Modifications to sampling frequency, after completion of the pilot study, may be directed by Central Valley Water Board staff as appropriate.
3. The required annual fee (as specified in the annual billing invoice to be issued by the State Water Resources Control Board) shall be submitted until this NOA is officially withdrawn. The 2010 fee was submitted on 26 February 2010.

If you have any questions regarding this NOA, please telephone James Barton at (916) 464-4615, or by e-mail at jbarton@waterboards.ca.gov.

PAMELA CREEDON
Executive Officer

Enclosure: General Order R5-2008-0149 and MRP

cc: w/ encl: Robert L'Heurieux, SWRCB, UST Cleanup Fund, Sacramento
Michael Infurna, San Joaquin County Environmental Health Department, Stockton
Hardev and Amarjit Kinda Etal, 27000 S. Leeward Wy., Tracy, CA 95304
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cc: w/o encl: U.S. Environmental Protection Agency, San Francisco
California Dept. of Fish and Game, Rancho Cordova

APPROVED

Author _____

Senior _____

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2008-0149-010

FOR
IN-SITU GROUNDWATER REMEDIATION AT SITES WITH VOLATILE ORGANIC
COMPOUNDS, NITROGEN COMPOUNDS, PERCHLORATE, PESTICIDES,
SEMI-VOLATILE COMPOUNDS AND/OR PETROLEUM HYDROCARBONS
FOR
CIRCLE K STORE #1205
16470 CAMBRIDGE DRIVE, LATHROP
SAN JOAQUIN COUNTY

This Monitoring and Reporting Program (MRP) describes requirements for monitoring a groundwater extraction and/or treatment system. This MRP is issued pursuant to Water Code Section 13267, and has been prepared based on Attachment C, a part of General Order R5-2008-0149.

No changes to this MRP shall be implemented unless and until a revised MRP is issued by the Executive Officer of the Central Valley Water Quality Control Board (Board). As appropriate, Board staff shall approve specific sample station locations prior to implementation of sampling activities.

PROJECT

1. **Parties Submitting a Notice of Intent under General Order R5-2008-0149:**
ConocoPhillips (hereafter referred to as the "Discharger").
2. **Project Location:** The project is a service station/convenience store in the city of Lathrop, San Joaquin County, Township/Range/Section 1S, 6E, S26, Mount Diablo Base & Meridian. The assessor parcel number is 196-430-32.
3. **Project Description:** Vehicle fueling operations at the Circle K Store # 1205 have caused pollution of soil and groundwater by petroleum constituents. The primary constituents are total petroleum hydrocarbons as gasoline (TPHg), benzene, toluene, ethylbenzene, and xylenes (BTEX), and methyl tert-butyl ether (MtBE). The petroleum impacts were found during removal of underground storage tanks (UST) at the site in 1997. From 1997 to present, a number of soil and groundwater investigations have been completed. Limited remedial measures have been conducted in the past that include soil overexcavation. Although the previous remedial efforts were moderately successful, it has been determined that additional remedial efforts are required to more expeditiously and cost-effectively clean up the impacts to groundwater.

The Discharger proposes to conduct a limited pilot study, to be followed by full implementation depending upon the success of the pilot study, for remediating the existing petroleum impacts using in-situ chemical oxidation, to run concurrently with the proposed soil vapor extraction system. The Discharger proposes to inject ozone, and an approved

biocide should biological fouling of the injection wells occur, at various locations within the identified boundary seen in the attached Figure 4. The Discharger will also be conducting the applicable sampling and reporting. Pilot test and sampling results will be evaluated by San Joaquin County Environmental Health Department Staff (Lead Regulatory Agency) with Board staff concurrence, prior to approval to proceed with full remedial implementation. Adequate fail-safe alternates (stop ozone injection and monitor as aquifer conditions return to baseline) are to be contained within the Discharger's proposal, should adverse water quality conditions, such as the creation of hexavalent chromium (Cr+6), occur.

LEGAL REQUIREMENTS

4. CWC section 13267 states, in relevant part:

(a) A regional board ... in connection with any action relating to any plan or requirement authorized by this division, may investigate the quality of any waters of the state within its region.

(b)(1) In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge waste within its region ... shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports. In requiring those reports, the regional board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports.

The Discharger has submitted a Notice of Intent to the Board indicating that they are responsible for the project subject to Order R5-2008-0149. The reports required herein are necessary to ensure compliance with Order R5-2008-0149.

5. CWC section 13268 states, in relevant part:

(a)(1) Any person failing or refusing to furnish technical or monitoring program reports ... or falsifying any information provided therein, is guilty of a misdemeanor, and may be liable civilly in accordance with subdivision (b).

...

(b)(1) Civil liability may be administratively imposed by a regional board in accordance with Article 2.5 (commencing with Section 13323) of Chapter 5 for a violation of subdivision (a) in an amount which shall not exceed one thousand dollars (\$1,000) for each day in which the violation occurs.

...

(c) Any person discharging hazardous waste, as defined in Section 25117 of the Health and Safety Code, who knowingly fails or refuses to furnish technical or monitoring program reports as required by subdivision (b) of Section 13267, or who knowingly falsifies any information provided in those technical or monitoring program reports, is guilty of a misdemeanor, may be civilly liable in accordance with subdivision (d)...

(d)(1) Civil liability may be administratively imposed by a regional board in accordance with Article 2.5 (commencing with Section 13323) of Chapter 5 for a violation of subdivision (c) in an amount which shall not exceed five thousand dollars (\$5,000) for each day in which the violation occurs.

It is Hereby Ordered that the Discharger shall comply with the following Monitoring and Reporting Program requirements:

GENERAL REQUIREMENTS

1. 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 legal chain of custody form.

GROUNDWATER MONITORING

2. As shown on Figure 4, there are 26 groundwater monitoring wells (MW-1 through MW-26), three vapor extraction wells (VE-1 through VE-3), and four injection wells (SP-1, SP-2, SP-4, and SP-5) at the site. The groundwater monitoring and reporting program (MRP) for the groundwater monitoring wells and any groundwater monitoring wells installed subsequent to the issuance of this MRP, shall follow the schedule below. Groundwater monitoring wells with free-phase petroleum product or visible sheen shall be monitored, at a minimum, for product thickness and depth-to-water (DTW). Sample collection and analysis shall follow standard Environmental Protection Agency (EPA) protocol.

Currently there are two background wells (MW-8 and MW-10), ten treatment zone wells (MW-1 through MW-4, MW-20 through MW-26) three transition zone wells (MW-5, MW-7, and MW-21), and three compliance zone wells (MW-6, MW-9, MW-15).

The groundwater monitoring 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
MW-6, MW-9, MW-15	Semi-annual ⁸	Suite A and B	Compliance ⁴
MW-1 through MW-4, MW-20 through MW-26	Monthly ⁹	Suites A and B	Treatment Zone ⁵
MW-5, MW-7, and MW-21	Monthly	Suites A and B	Transition Zone ⁶
MW-8 and MW-10	Semi-annual ⁸	Suite A and B	Background ⁷

¹ Well numbers as shown on Figures 4 .

² i.e., weekly, monthly, quarterly, annually, other.

³ Constituent suite components listed in Table 2.

⁴ Wells used to determine compliance with water 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.

⁷ Wells used to develop background concentrations.

⁸ To be sampled before and after, and/or monthly, during the pilot study as indicated; then during the first and third quarters during full scale implementation of the corrective action.

⁹ Sample MW-1 through MW4, MW-20, and MW-26 during pilot study; then sample MW-1 through MW-4, MW-20 through MW-26 during full scale implementation of the corrective action.

Table 2: Analytical Methods

Constituent	Method ¹	Maximum Practical Quantitation Limit (µg/L) ²	Frequency
Suite A			
TPHg	GC/MS	50	As indicated in Table 1
BTEX, MTBE, TBA	EPA 8260B	0.50 (1.0 for total xylenes, 5.0 for TBA)	
Suite B			
Metals, dissolved ⁴	EPA 6010B	2.0	Seven times ³
Total Chromium	EPA 200.7 ¹ or 200.8 ¹	10	Seven times ³
Hexavalent Chromium	EPA 7199	2.0	Seven times ³
Bromide	EPA 300.0	100	Seven times ³
Bromate	EPA 300.1	10	Seven times ³

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 Will be sampled seven times: one baseline sample prior to remediation and monthly samples during the six month pilot test

⁴ Metals include barium cadmium, calcium, copper, lead, magnesium, manganese, mercury, molybdenum, and nickel.

FIELD SAMPLING

- In addition to the above sampling and analysis, groundwater elevation, electrical conductivity, DO, pH, and water temperature will be measured and analyzed in the field during the semi-annual groundwater sampling activities each time a monitoring well is sampled. The sampling and analysis of field parameters is specified in Table 3.

Table 3: Field Sampling Requirements

Parameters	Units	Type of Sample
Groundwater Elevation	Feet, Mean Sea Level	Measurement
Water Temperature	Degrees Celsius	Grab
Electrical Conductivity	uhmos/cm	Grab
Dissolved Oxygen	mg/L	Down hole
pH	pH Units (to 0.1 units)	Grab

An ozone detection meter (field test instrument) will be continuously monitoring the breathing zones inside the remediation equipment area and at each injection wellhead during maintenance and monitoring field activities. 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

4. The Discharger shall monitor the 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. Periods when the ozone treatment system is inoperative shall be noted with dates and times in the monitoring report.

Table 4: Discharge Monitoring Requirements

Parameters	Units	Type of Sample
Ozone Gas Injected	grams per day	Measured
Biocide Added	grams per day	Measured

REPORTING

5. 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.
6. 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.
7. 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 30th day of the month following the end of each calendar quarter, **30 April 30 July, 30 October, and 30 January**, until such time as site conditions and Regional Board staff determine that modification to the reporting requirements are

applicable. And, hard copies of quarterly reports shall also be submitted to the Board by the **30th day of the month following the end of each calendar quarter**. 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
 - d) pollutant concentration maps for all groundwater zones
 - e) cumulative data tables containing the water quality analytical results and depth to groundwater
 - f) a copy of the laboratory analytical data report, which may be submitted in an electronic format
 - g) 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
 - h) 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
 - i) tabular and graphical summaries of all data obtained during the year
 - j) groundwater contour maps and pollutant concentration maps containing all data obtained during the previous year
 - k) a discussion of the long-term trends in the concentrations of the pollutants in the groundwater monitoring wells
 - l) an analysis of whether the pollutant plume is being effectively treated
 - m) 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
 - n) an identification of any data gaps and potential deficiencies/redundancies in the monitoring system or reporting program
 - o) desired, a proposal and rationale for any revisions to the groundwater sampling plan frequency and/or list of analytes.
8. 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.

Ordered by:

PAMELA C. CREEDON Executive Officer

(Date)