June 3, 2016

Valerie Keisler
Manager, Energy and Environmental Services
Real Estate Services Division
Project Management and Development Branch
State of California Department of General Services
707 Third Street, 4th floor
West Sacramento, CA 95605

NOTICE OF APPLICABILITY OF GENERAL ORDER NO. R5-2015-0012-019, PILOT TEST, FORMER MERCURY CLEANERS, 1419 16TH STREET, SACRAMENTO, SACRAMENTO COUNTY

The State of California Department of General Services (Discharger) submitted a Notice of Intent, dated March 4, 2016, requesting coverage under Order No. R5-2015-0012, *Waste Discharge Requirements General Order for In-situ Groundwater Remediation and Discharge of Treated Groundwater to Land*. Based on information in the submittal, it is our determination that this project meets the required conditions to be approved under Order No. R5-2015-0012. All of the requirements contained in the general order are applicable to this project. The project is assigned Order No. R5-2015-0012-019.

Project Location:

The project is in Sacramento County, Township 8N, Range 4E, Section 1, Mount Diablo Baseline & Meridian. Sacramento County Assessor's Parcels Nos. (APNs) 006-0233-023 and 006-0233-026; Latitude 38°34'22.7" N, Longitude 121°29'14" W and Latitude 38°34'22.5" N, Longitude 121°29'12.6" W.

Project Description:

The Mercury Cleaners business operated as a dry cleaner from 1947 through August 2014 on APN 006-0233-0023. The facility used a variety of dry cleaning solvents including tetrachloroethene (PCE) and the petroleum based Stoddard Solvent. Soil, soil-vapor, and groundwater are impacted from former operations and releases at the dry cleaner. Remediation began in 2015 with a soil vapor extraction system pilot test, which is currently operating. The primary pollutants of concern are PCE and its breakdown products trichloroethene, and cis-1,2-dichloroethene. DGS is proposing a field pilot test to evaluate the effectiveness of in-situ bioremediation in cleaning up areas of elevated PCE and its breakdown products in locations outside of the primary source area.

The in-situ injection field scale pilot test will be conducted at two locations outside of the source area including on the Former Mercury Cleaners Property and in the Terraces at Capitol Park Apartment Complex Parking Lot (APN 006-0233-026). Each pilot test location will consist of one monitoring well and 5 injection borings. At each of the two test locations, the injection borings will be used to inject 1,200 pounds (144 gallons) of 3-D Microemulsion®, which is an electron donor that provides lactic and fatty acids, and 18 liters Bio-Dechlor Inoculum® Plus, which contains species of Dehalococcoides bacteria that can fully break down PCE and its daughter products, mixed with 3,451 gallons of anoxic water. The monitoring wells will be sampled before and after the injections to evaluate the effectiveness of the pilot test injections. Pilot test injection borings will be spaced differently at each of the locations to evaluate optimal spacing for potential future full-scale application.

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 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.

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 3-D Microemulsion®, Bio-Dechlor Inoculum® Plus, and water into the subsurface is prohibited.

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 Department of General Services shall comply with the attached Monitoring and Reporting Program, Order No. R5-2015-0012-019 and any revisions thereto as ordered by the Executive Officer.

If you have any questions regarding this matter, please call Nathan Casebeer at (916) 464-4665.

Original signed by

PAMELA C. CREEDON
Executive Officer

Attachment

cc: Della Kramer, Regional Water Quality Control Board, Rancho Cordova
James Helge, Fugro Consultants, Inc., Sacramento

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2015-0012-019

FOR
IN-SITU GROUNDWATER REMEDIATION
AND DISCHARGE OF TREATED GROUNDWATER TO LAND

IN-SITU REMEDIATION PILOT TEST
FORMER MERCURY CLEANERS
1419 16TH STREET
SACRAMENTO, SACRAMENTO COUNTY

This Monitoring and Reporting Program (MRP) describes requirements for monitoring a groundwater remediation 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

Monitoring wells associated with this pilot study are shown on Plate H-1 and listed in Table 1 below. 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 monitoring 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 2, as follows:

Table 1: Sampling Schedule

	Well Number[1]	Frequency[2,3]	Monitoring Objective
Test Area 1	TW-1	Semi-annual	Treatment Zone[4]
	FMW-5	Semi-annual	Background[5]
	FMW-7	Semi-annual	Background[5]
	FMW-8	Semi-annual	Background[5]
Test Area 2	TW-2	Semi-annual	Treatment Zone[4]
	FMW-11	Semi-annual	Background[5]
	FMW-15	Semi-annual	Background[5]

[1] Well numbers as shown on Plate H-1.
[2] Sampling will also include baseline sampling prior to injections, sampling one month after injections, and sampling three months after injections.
[3] Constituent suite components listed in Table 2.
[4] Wells sampled to evaluate remediation progress inside the treatment zone.
[5] Wells used to develop background concentrations.

Table 2: Analytical Methods

Constituent	Method[1]	Maximum Practical Quantitation Limit (µg/L)[2]
Volatile Organic Compounds	EPA 8020 or 8260B	0.5
Ethane	Modified EPA 602	0.1
Ethene	Modified EPA 602	0.1
Methane	Modified EPA 602	0.1
Total Dissolved Solids	EPA 160.1	10,000
Total Organic Carbon	EPA 415	300
Sulfate	EPA 6500	200
Sulfide	Hach Method 8131	30
Iron, Total and Dissolved	EPA 200.7	100
Chemical Oxygen Demand	EPA 410.4	varies
Carbon Dioxide	APHA 4500-Co2C	varies
Alkalinity	Hach Method 8203	10,000
Arsenic, Total and Dissolved	EPA 200.7	10
Manganese, Total and Dissolved	EPA 200.7	100

[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 monitoring 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	Grab
Electrical Conductivity	uhmos/cm	Grab
Dissolved Oxygen	mg/L	Grab
pH	pH Units (to 0.1 units)	Grab
Temperature	Degrees Celcius	Grab
Turbidity	NTU	Grab

All wells that are purged shall be purged until pH, temperature, conductivity and dissolved oxygen are within 10% of the previous value.

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 during injection, 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 or Measured
Amendment(s) Added	pounds per day	Measured
Biocide Added	pounds per day	Measured

AMENDMENT ANALYSIS

Prior to use, amendments shall be analyzed for the constituents listed in Table 5. The analysis should be done on a mixture of the amendment and deionized water at the estimated concentration that would be injected during the pilot project.

Table 5: Amendment Analytical Requirements

Constituent	Method[1]	Maximum Practical Quantitation Limit (ug/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

[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 shall develop background values for concentrations of constituents such as dissolved iron, dissolved manganese, total dissolved solids and electrical conductivity 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 Central Valley Water 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 Central Valley 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 Civil Engineer or Geologist 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. The semi-annual reports shall be submitted electronically over the internet to the Geotracker database system by **1 March** and **1 September**, until such time as the Executive Officer determines that the reports are no longer necessary.

Each semi-annual 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;

(i) A discussion of the long-term trends in the concentrations of the pollutants in the groundwater monitoring wells;

(j) An analysis of whether the pollutant plume is being effectively treated;

(k) 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;

(l) The status of any ongoing remediation, including an estimate of the cumulative mass ofpollutant 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

(m)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.

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.

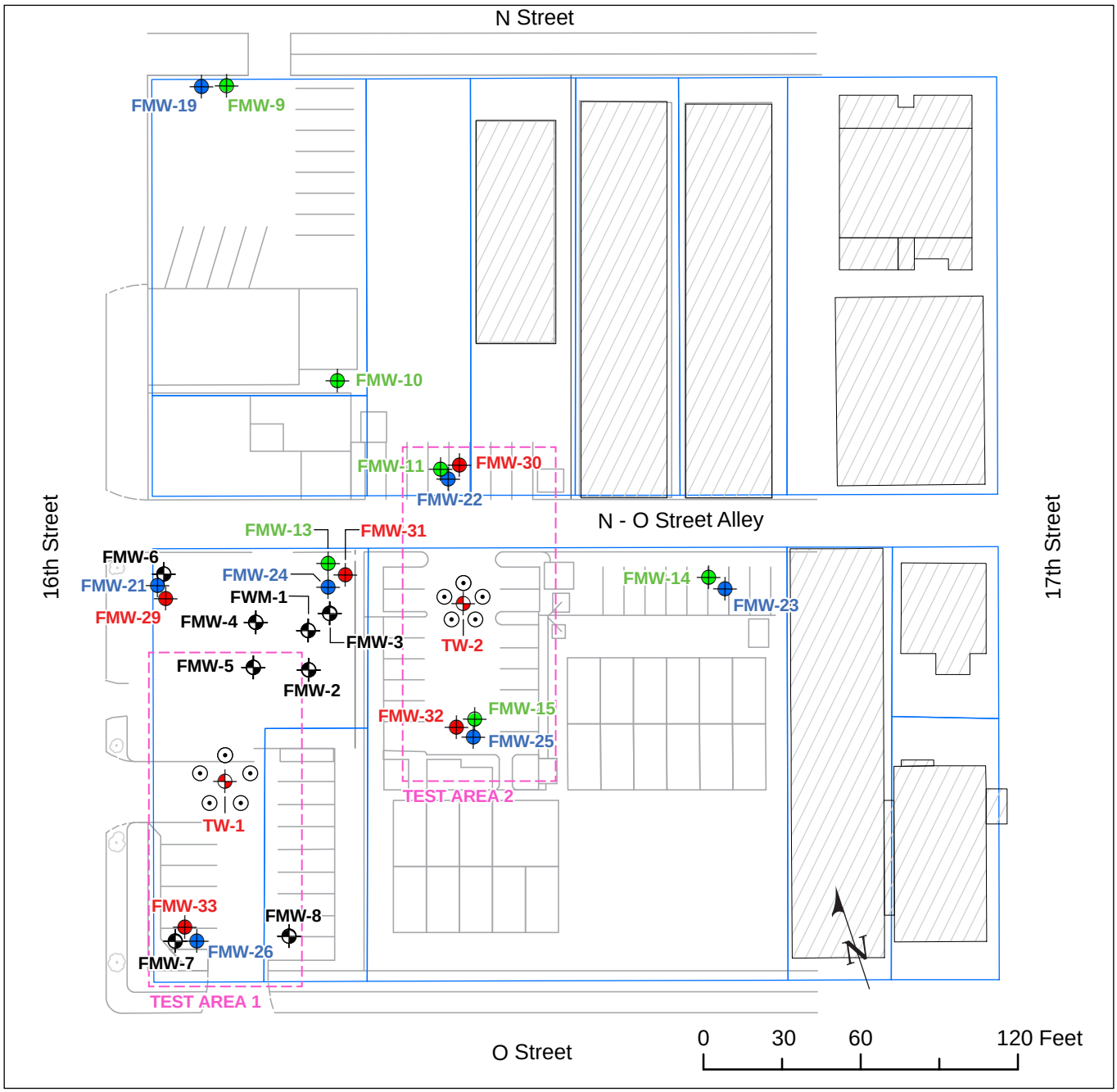
The Discharger shall implement the above monitoring program on the first day of the month following adoption of this Order.

Ordered by: Original signed by

PAMELA C. CREEDON, Executive Officer

3 June 2016

(Date)



Legend

- FMW-13 — Shallow (~10-25' screen) [10]
- FMW-22 — Intermediate (~40-50' screen) [10]
- FMW-29 — Deep (~60-70' screen) [5]
- FMW-8 — Existing shallow groundwater monitoring well
- Approximate building location
- Parcel/property boundary
- Injection point
- TW-1 — Test well

PROPOSED INJECTION FIELD SCALE TEST LOCATIONS
Mercury Cleaners
Sacramento, California

PLATE H-1

/fwla-wc-file1/project/Projects/72_0000/72_140056_Mercury_Cleaners_Remedial_Invest/05_Graphics/72_140056_Mercury-Pilot Test