

California Regional Water Quality Control Board  
North Coast Region

Monitoring and Reporting Program No. R1-2010-0091  
(Rescinding and Replacing Monitoring and Reporting Program No. R1-2008-0099)

Chevron Environmental Management Company

Former Redwood Oil/Chevron Bulk Plant  
258 Roseland Avenue  
Santa Rosa, California

Sonoma County

### **MONITORING**

This Monitoring and Reporting Program is issued pursuant to California Water Code Section 13267 (b) and requires monitoring of groundwater and submission of technical reports. The objective of monitoring conducted under this program is to monitor and determine the remedial effectiveness of surfactant flushing into DHS-8, MW-2, and MW-10 and to monitor any unwanted migration of surfactant or petroleum hydrocarbons during activities conducted under Waste Discharge Requirements (WDR) Order No. R1-2008-0099. This Monitoring and Reporting Program is required in conjunction with existing Monitoring and Reporting Program Order No. R1-2007-0052.

#### **Pre-Surfactant Injection Monitoring**

1. The following monitoring activities must be conducted prior to surfactant injection into monitoring wells DHS-8, MW-2 and MW-10 as follows:
  - a) Groundwater monitoring wells DHS-8, MW-2, MW-4, MW-5, MW-9, MW-10, MW-14, and MW-16A shall be checked for the presence of separate phase hydrocarbons (SPH). If present, the thickness shall be measured to at least 0.01-foot increments.
  - b) Prior to purging, the depth to groundwater in monitoring wells DHS-8, MW-2, MW-4, MW-5, MW-9, MW-10, MW-14, and MW-16A shall be determined to at least 0.01 foot increments. The depth to water in these wells shall also be determined 24 hours prior to injection activities.
  - c) Groundwater samples from MW-4, MW-5, MW-9, MW-14, and MW-16A will be field screened for the presence of surfactant using qualitative field methods and observations.
  - d) Groundwater samples from monitoring wells DHS-8, MW-2, MW-4, MW-5, MW-9, MW-10, MW-14, and MW-16A shall be measured in the field for pH, temperature, conductivity, dissolved oxygen, and oxidation-reduction potential.

- e) Groundwater samples from DHS-8, MW-2, MW-4, MW-5, MW-9, MW-10, MW-14, and MW-16A shall be collected and analyzed by a state certified laboratory for total petroleum hydrocarbons (TPH) as gasoline, TPH as diesel, benzene, toluene, ethylbenzene, xylenes, and methyl tertiary butyl ether. Additionally, samples from DHS-8, MW-2, and MW-10 shall be analyzed for foaming agents/dissolved non-ionic/CTAS surfactants and phosphate.

### **Injection Monitoring**

2. During surfactant injection activities, depth to water measurements shall take place in monitoring wells DHS-8, MW-2, MW-4, MW-5, MW-9, MW-10, MW-14, and MW-16A every two hours. Depth to water measurements will not be collected from monitoring wells actively used as injection points.
3. During surfactant injection activities, every two hours groundwater samples from DHS-8, MW-2, MW-4, MW-5, MW-9, MW-10, MW-14, and MW-16A shall be field screened for the presence of surfactant using qualitative field methods and observations. The presence of surfactant will not be field screened in monitoring wells actively used as injection points.

### **Extraction Monitoring**

4. Samples shall be collected from DHS-8, MW-2, and MW-10 after the designated amount of fluid is extracted from each well. Samples shall be analyzed for foaming agents/dissolved non-ionic/CTAS surfactants.
5. If additional extraction is necessary based on remaining concentrations of surfactant, continued monitoring of surfactants will be required until conditions of the WDR Order No. R1-2008-0099 are met.

### **Post-Remedial Monitoring**

6. Following injection/extraction activities, groundwater monitoring wells DHS-8, MW-2, and MW-10 shall be checked for the presence of separate phase hydrocarbons (SPH) at a monthly frequency, for three months. If present, the thickness shall be measured to at least 0.01-foot increments.
7. Post-remedial sampling shall be conducted at a quarterly frequency, for two quarters following the completion of surfactant flushing activities. Sampling activities will be incorporated into routine monitoring events conducted under Monitoring & Reporting Program Order No. R1-2007-0052. Requirements specific to post-remedial monitoring includes the following:
  - a) Groundwater samples from DHS-8, MW-2, MW-4, MW-5, MW-9, MW-10, MW-14, and MW-16A shall be collected and analyzed by a state certified laboratory for TPH as gasoline, TPH as diesel, benzene, toluene, ethylbenzene, xylenes, and methyl tertiary butyl ether. Additionally, samples from DHS-8, MW-2, and

MW-10 shall be analyzed for foaming agents/dissolved non-ionic/CTAS surfactants and phosphate.

### REPORTING

8. All pre-injection, injection and extraction monitoring and analytical data collected as described in this monitoring and reporting program shall be submitted collectively in a final remedial system summary report as specified in WDR Order No. R1-2008-0099 Provision C) 4.
9. Post-remedial monitoring and sampling data as described in No. 6 & 7 above shall be incorporated into routine monitoring reports and submitted as described in Monitoring and Reporting Program Order No. R1-2007-0052.
10. All reports, data and depth to groundwater measurements shall also be submitted electronically to the State Water Resources Control Board's Geographic Environmental Information Management System database (GeoTracker) as required by Title 23, Division 3, Chapter 16, Article 12 of the California Code of Regulations (i.e. AB2886 electronic reporting requirements).<sup>1</sup>

Ordered By \_\_\_\_\_  
Catherine Kuhlman  
Executive Officer

October 7, 2010

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<sup>1</sup> Information on AB2886 electronic reporting can be obtained on the Internet by following the Electronic Submittal of Information link on the GeoTracker home page at <http://geotracker.waterboards.ca.gov>.