

California Regional Water Quality Control Board  
North Coast Region

MONITORING AND REPORTING PROGRAM NO. R1-2012-0037

FOR

CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY

Unocal # 2672  
1075 Santa Rosa Avenue  
Santa Rosa, California

Sonoma County

This Monitoring and Reporting Program (MRP) is issued pursuant to California Water Code Section 13267(b) and requires monitoring of groundwater and submission of technical reports. Routine groundwater monitoring reports are required to be submitted semiannually. The objective of monitoring conducted under this MRP is to provide the Discharger and the Regional Water Board with information concerning groundwater quality and contaminant trends at the site. The monitoring, sampling and analysis requirements specified in this MRP are also summarized in Table 1, which is incorporated as Appendix A.

Under the authority of the California Water Code Section 13267, the Discharger named above is required to comply with the following:

**GROUNDWATER MONITORING, SAMPLING, AND ANALYSIS**

1. All analyses shall be performed by a laboratory certified for those analyses by the California Department of Health Services.
2. The presence of floating product shall be evaluated in all monitoring wells prior to well purging. If detected, the thickness shall be measured to nearest 0.01 foot increment.
3. The depth to groundwater shall be measured to the nearest 0.01 foot increment in all monitoring wells and piezometers prior to purging wells for sampling. The data generated from the measurements shall be referenced to mean sea level.
4. The depth to groundwater at piezometers P-1 through P-5 and wells MW-1, MW-3, and MW-16 shall be measured and recorded at least one time per hour commencing at startup, during, and until the cessation of any groundwater amendment injections.
5. Prior to the injection of groundwater amendments, the injection fluids shall be analyzed for the water quality parameters identified in Table 1.

6. Groundwater samples shall be collected from monitoring wells and tested according to the schedule and list of parameters identified in Table 1.
7. Laboratory analytical reports shall be submitted to the North Coast Regional Water Quality Control Board office within thirty days of their receipt.
8. Semiannual groundwater monitoring reports shall be submitted to the North Coast Regional Water Quality Control Board office according to the following schedule:

<u>Report</u>	<u>Reporting Period</u>	<u>Required Submittal Date</u>
First Semi-Annual Report	October through March	April 30th
Second Semi-Annual Report	April through September	October 31 <sup>st</sup>

9. The groundwater monitoring reports shall include the following elements:
  - a. A narrative description of the work conducted; reports describing groundwater amendment injection events must include an assessment of groundwater mounding and displacement during the injections.
  - b. A groundwater elevation map for each sampling and injection event;
  - c. A contaminant distribution map showing isograms for the constituents of concern detected in groundwater during the monitoring event;
  - d. Analytical data tables including both current and historical analytical results;
  - e. Interpretation of the data; and
  - f. Copies of the well purging and sampling field logs; chain of custody documents; and signed laboratory reports including quality control data and explanations of analytical anomalies, if any. These supporting documents may be included as appendices to the report.
10. Monitoring data and reports 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 30, Article 2, Sections 3890-3895 of the California Code of Regulations.

Ordered by Original Signed By David F. Leland  
Catherine Kuhlman  
Executive Officer

February 15, 2012

Table 1: Groundwater Sampling and Analysis Schedule for the Unocal #2672 Site

Sample Location	Monitoring Frequency	Required Analyses and Water Quality Parameters
MW-1 Treatment-zone Well	<ul style="list-style-type: none"> <li>Baseline Pre-injection;</li> <li>Post Injection: Monthly for 4 months;</li> <li>Quarterly thereafter</li> </ul>	Baseline and Process Control Parameters <sup>3</sup> Depth to Groundwater During Injection Events <sup>5</sup>
MW-2E Treatment-zone Well	<ul style="list-style-type: none"> <li>Baseline Pre-injection;</li> <li>Post Injection: Monthly for 4 months;</li> <li>Quarterly thereafter</li> </ul>	Baseline and Process Control Parameters <sup>3</sup>
MW-3 Treatment-zone Well	<ul style="list-style-type: none"> <li>Baseline Pre-injection;</li> <li>Post Injection: Monthly for 4 months;</li> <li>Quarterly thereafter</li> </ul>	Baseline and Process Control Parameters <sup>3</sup> Depth to Groundwater During Injection Events <sup>5</sup>
MW-4E Down-gradient Transition Zone Well	Quarterly	Baseline and Process Control Parameters <sup>3</sup>
MW-5 Up-gradient Background Well	Annual <sup>2</sup>	Petroleum Constituents Only
MW-6 Up-gradient Background Well	Annual <sup>2</sup>	Baseline and Process Control Parameters <sup>3</sup>
MW-7 Up-gradient/Cross-gradient Well	Quarterly	Baseline and Process Control Parameters <sup>3</sup>
MW-8 Down-gradient Transition Zone Well	Quarterly	Baseline and Process Control Parameters <sup>3</sup>
MW-9 Off-site Monitoring Well	Contingency Monitoring Only	Compliance Monitoring Parameters <sup>4</sup>
MW-10 Off-site Monitoring Well	Contingency Monitoring Only	Compliance Monitoring Parameters <sup>4</sup>
MW-11 Down-gradient/Cross-gradient Monitoring Well	Quarterly	Compliance Monitoring Parameters <sup>4</sup>
MW-12A Intermediate Depth Monitoring Well	Semi-Annual <sup>1</sup>	Petroleum Constituents Only
MW-12B Deep Zone Monitoring Well	Annual <sup>2</sup>	Petroleum Constituents Only
MW-13A Intermediate Depth Down-gradient Well	Quarterly	Compliance Monitoring Parameters <sup>4</sup>
MW-13B Deep Zone Down-gradient Well	Annual <sup>2</sup>	Compliance Monitoring Parameters <sup>4</sup>
MW-14A Intermediate Zone Monitoring Well	Semi-Annual <sup>1</sup>	Petroleum Constituents Only
MW-14B Deep Zone Monitoring Well	Annual <sup>2</sup>	Petroleum Constituents Only
MW-15 Shallow Zone Down-gradient Well	Semi-Annual <sup>1</sup>	Compliance Monitoring Parameters <sup>4</sup>
MW-16 Treatment-zone Well	<ul style="list-style-type: none"> <li>Baseline Pre-injection;</li> <li>During Injection Activities</li> <li>Then Monthly for 4 months;</li> <li>Quarterly thereafter</li> </ul>	Baseline and Process Control Parameters <sup>3</sup> Depth to Groundwater During Injection Events <sup>5</sup>
VE-2 Down-gradient Monitoring Well	<ul style="list-style-type: none"> <li>Baseline Pre-injection;</li> <li>During Injection Activities</li> <li>Then Monthly for 4 months;</li> <li>Quarterly thereafter</li> </ul>	Fluorescein Depth to Groundwater During Injection Events <sup>5</sup>
<u>Piezometers:</u> PZ-1 through PZ-5	During injection activities	Depth to Groundwater During Injection Events <sup>5</sup>
<u>Injection Fluids:</u> <ul style="list-style-type: none"> <li>Potable Water Source for Injection Solution;</li> <li>Fluorescein dye &amp; Sulfate Solution</li> </ul>	Pre-injection	Sulfate; Volatile and Semi-volatile Organic Compounds; Total Dissolved Solids; pH; and Specific Conductivity
<b>Footnotes:</b>		
<sup>1</sup> Semi-Annual	Semi-annual sampling shall be conducted during the first and third calendar quarters	
<sup>2</sup> Annual	Annual sampling shall be conducted during the first calendar quarter.	
<sup>3</sup> Baseline and Process Control Parameters	Depth to groundwater; Cobalt Thiocyanate Active Substances Test (CTAS); Gasoline-range Petroleum Hydrocarbons; Volatile Organic Compounds; Total Organic Carbon; Fluorescein; Sulfate; Nitrate; Total Nitrogen (Kjeldahl); Total And Dissolved Iron And Manganese; Sulfide; Methane; Specific Conductivity; Oxidation-Reduction Potential; Dissolved Oxygen; Temperature; pH	
<sup>4</sup> Compliance Monitoring Parameters	Fluorescein; Sulfate; Cobalt Thiocyanate Active Substances; Gasoline-range Total Petroleum Hydrocarbons; Volatile Organic Compounds	
<sup>5</sup> Depth to Groundwater During Injection Events	Depth to groundwater shall be measured at least once every hour and recorded with the time of measurement until the cessation of injection	