



# California Regional Water Quality Control Board



Linda S. Adams  
Secretary for  
Environmental Protection

Los Angeles Region  
320 West 4th Street, Suite 200, Los Angeles, California 90013  
Phone (213) 576-6600 • FAX (213) 576-6640 • Internet <http://www.waterboards.ca.gov/losangeles>

Arnold Schwarzenegger  
Governor

February 24, 2009

Mr. Don Pratt  
Atlantic Richfield Company  
4 Centerpointe Drive  
La Palma, CA 90623

**GENERAL WASTE DISCHARGE REQUIREMENTS FOR GROUNDWATER CLEANUP AT PETROLEUM HYDROCARBON FUEL, VOLATILE ORGANIC COMPOUND AND/OR HEXAVALENT CHROMIUM IMPACTED SITES – ARCO STATION NO. 1695, 600 MOORPARK ROAD, THOUSAND OAKS (ORDER NO. R4-2007-0019; CI NO. 9486)**

Dear Mr. Pratt:

We have completed our review of your application for coverage under the General Waste Discharge Requirements to inject hydrogen peroxide at the site referenced above in Thousand Oaks for groundwater cleanup and remediation.

Multiple phases of assessment have been conducted at the site, which includes the installation of 11 groundwater monitoring wells (MW-1 through MW-11) and 6 vapor extraction wells (VW-1 and VW-6). Results of the pre-remediation assessment activities indicated that maximum TPH as gasoline, benzene, and MTBE concentrations in groundwater were 23,000, 4,300, and 580  $\mu\text{g/L}$ , respectively.

Vapor extraction had been conducted at the site from March 1996 to August 2005. However, there is residual groundwater contamination in wells EMW-2, MW-6 and MW-9. To further remediate groundwater contamination beneath the site, you propose to the County of Ventura, Environmental Health Division (VCEHD) in the Interim Remedial Action Plan dated December 22, 2008, to conduct an in-situ hydrogen peroxide injection pilot study. Two dual-zone dedicated injection wells (SGI-INJ-1A/B and SGI-INJ2A/B) will be installed at the site and used to inject hydrogen peroxide into the subsurface in the vicinity of existing groundwater monitoring well EMW-2. In addition, one dual-zone groundwater monitoring well (SGI-MW-12A/B) will be installed down-gradient of the injection wells. It is anticipated that a bulk injection of diluted hydrogen peroxide solution on the order of 1,500 gallons will be injected into the subsurface during the first injection event. However, the specific details still need to be finalized. You will provide details for the final proposed protocol to VCEHD prior to the start of injection.

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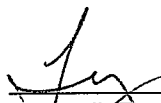
*Our mission is to preserve, enhance, and restore water quality in the Los Angeles Region for the benefit of present and future generations*

Order No. R4-2007-0019  
Monitoring & Reporting Program No. CI-9486

February 24, 2009

If you have any questions, please contact Dr. Rebecca Chou at (213) 620-6156 for WDRs administration matters, or Mr. Gregg Kwey at (213) 576-6702 for technical matters.

Sincerely,

  
\_\_\_\_\_  
Tracy J. Egoscue  
Executive Officer

Enclosures: 1. Board Order No. R4-2007-0019  
2. Standard Provisions for Reporting and Monitoring  
3. Monitoring and Reporting Program No. CI-9486

cc: Mr. David Salter, Ventura County Division of Environmental Health  
Mr. Theodore Lizée, The Source Group, Inc.

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STATE OF CALIFORNIA  
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
LOS ANGELES REGION

MONITORING AND REPORTING PROGRAM NO. CI-9486

FOR

ARCO STATION NO. 1695  
600 MOORPARK ROAD, THOUSAND OAKS

(HYDROGEN PEROXIDE INJECTION FOR GROUNDWATER CLEANUP)  
(ORDER NO. R4-2007-0019, SERIES NO. 088)

I. REPORTING REQUIREMENTS

- A. Atlantic Richfield Company (hereinafter Discharger) shall implement this monitoring program on the effective date of Regional Board Order No. R4-2007-0019. The first monitoring report under this program, for April to June 2009, shall be received at the Regional Board by July 15, 2009. Subsequent monitoring reports shall be received at the Regional Board according to the following schedule:

<u>Monitoring Period</u>	<u>Report Due</u>
January – March	April 15
April – June	July 15
July – September	October 15
October – December	January 15

If there is no discharge or injection during any reporting period, the report shall so state. Monitoring reports must be addressed to the Regional Board, Attention: Information Technology Unit.

- B. By March 1<sup>st</sup> of each year, the Discharger shall submit an annual summary report to the Regional Board. The report shall contain both tabular and graphical summaries of the monitoring data obtained during the previous calendar year. In addition, the Discharger shall explain the compliance record and the corrective actions taken, or planned, which may be needed to bring the discharge into full compliance with the waste discharge requirements (WDRs).

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than required by this Order using approved analytical methods, the results of those analyses shall be included in the report.

- J. In reporting the monitoring data, the Discharger shall arrange the data in tabular form so that the date, the constituents, and the concentrations are readily discernible. The data shall be summarized to demonstrate compliance with the requirements and, where applicable, shall include results of receiving water observations.
- K. The Discharger should not implement any changes to the Monitoring and Reporting Program prior to receiving Executive Officer's written approval.

## II. HYDROGEN PEROXIDE INJECTION MONITORING REQUIREMENTS

The quarterly reports shall contain the following information regarding injection activities:

1. Location map showing injection points used for the hydrogen peroxide injection. Groundwater monitoring wells shall not be used as injection points to avoid reduction of groundwater monitoring network, data bias, well screen clogging and alteration. Two dual-zone injection wells (SGI-INJ-1A/B, and SGI-INJ-2A/B) are currently proposed that can be referenced in Figure 3. Additional injection points should be reviewed and approved by the County of Ventura, Environmental Health Division (VCEHD) and Regional Board prior to full scale implementation.
2. Written and tabular summary defining the quantity of hydrogen peroxide injected per month to the groundwater and a summary describing the days on which the injection system was in operation.

## III. GROUNDWATER MONITORING PROGRAM

The Discharger shall conduct groundwater monitoring at the site. Groundwater samples shall be collected from one up-gradient groundwater monitoring well EMW-4; one source area groundwater monitoring well EMW-2; and one down-gradient dual-zone groundwater monitoring well SGI-MW-12A/B on a quarterly basis to monitor the effectiveness of the in-situ groundwater remediation. Additional monitoring wells for full scale implementation may be required if VCEHD and Regional Board deemed they are necessary. The injection points shall not be used as monitoring points. Groundwater shall be monitored for the duration of the remediation in accordance with the following discharge monitoring program:

- <sup>2</sup> The Discharger is required to monitor for total chromium and chromium six in the baseline, second and fourth quarterly sampling. If detected at any of these sampling events, the total chromium and chromium six must be monitored quarterly thereafter.

All groundwater monitoring reports must include, at a minimum, the following:

- a. Well identification, date and time of sampling;
- b. Sampler identification, and laboratory identification;
- c. Quarterly observation of groundwater levels, recorded to 0.01 feet mean sea level and groundwater flow direction.

IV. MONITORING FREQUENCIES

Monitoring frequencies may be adjusted to a less frequent basis or parameters dropped by the Executive Officer if the Discharger makes a request and the Executive Officer determines that the request is adequately supported by statistical trends of monitoring data submitted.

V. CERTIFICATION STATEMENT

Each report shall contain the following declaration:

"I certify under penalty of law that this document, including all attachments and supplemental information, was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of a fine and imprisonment.

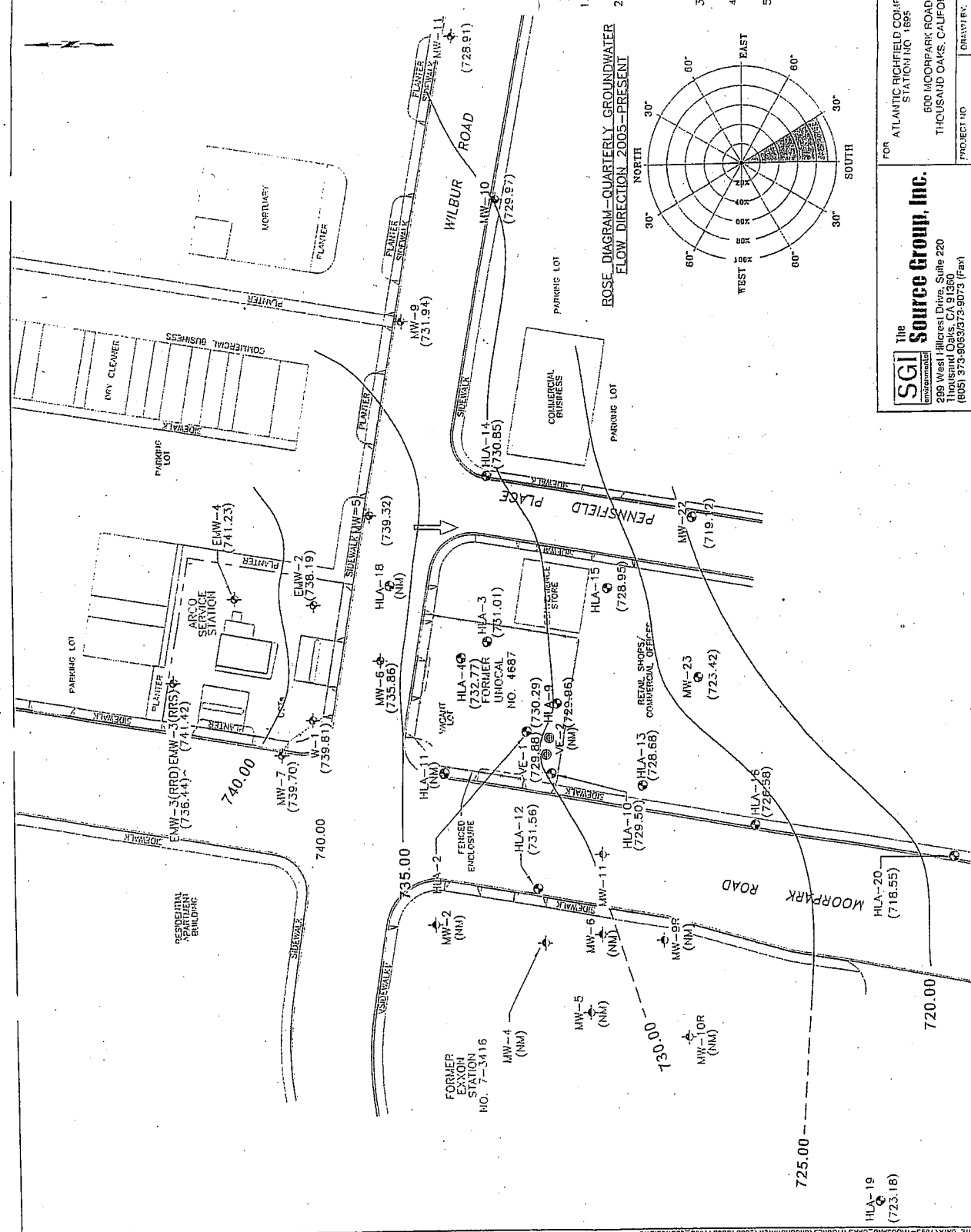
Executed on the \_\_\_\_\_ day of \_\_\_\_\_ at \_\_\_\_\_.

\_\_\_\_\_  
(Signature)

\_\_\_\_\_  
(Title)"

**LEGEND**

- SITE PROPERTY LINE
- ARCO GROUNDWATER MONITORING WELL LOCATION
- FORMER UNOCAL GROUNDWATER MONITORING WELL LOCATION
- FORMER UNOCAL VAPOR EXTRACTION WELL LOCATION
- FORMER EXXON GROUNDWATER MONITORING WELL LOCATION
- GROUNDWATER ELEVATION (FEET ABOVE MEAN SEA LEVEL)
- GROUNDWATER ELEVATION CONTOUR LINE (DASHED WHERE UNCERTAIN)
- GROUNDWATER FLOW DIRECTION
- DEEPER WATER BEARING ZONE ELEVATION DATA: NOT USED FOR CONTOURING
- NOT MEASURED



**NOTES:**

1. SOURCE OF MAP: SECOR INTERNATIONAL INC., 2006
2. ARCO MONITORING WELLS SURVEYED BY WJI HOLDINGS INC. ON MAY 2, 2003. (BENCHMARK NO. 33-1; ELEVATION 753.415 FT ABOVE SEA LEVEL) OTHER WELL LOCATION SURVEYED BY WJI HOLDINGS BOUNDARY SPECIALISTS, AUGUST 28, 1995 AND REVISED ON NOVEMBER 10, 1995. SITE FEATURES AND LOCATIONS ARE APPROXIMATE.
3. GROUNDWATER MONITORING WELL ANNOTATED AS HLA ARE PROPERTY OF UNOCAL CORPORATION.
4. ARCO & UNOCAL WELLS GAUGED AND SAMPLED AUGUST 12, 2008. EXXON DID NOT PARTICIPATE. THE COORDINATED EVENT QUARTERLY BEARING ZONE CONTOUR MAP DATA WAS USED TO CONTOUR.

APPROXIMATE SCALE (FEET):

<p>295 West Hillcrest Drive, Suite 220 Thousand Oaks, CA 91320 (805) 373-9063/373-3073 (Fax)</p>		<p>FOR ATLANTIC RICHFIELD COMPANY STATION NO. 1695 600 MOORPARK ROAD THOUSAND OAKS, CALIFORNIA</p>	<p>PROJECT NO. 06-0970-1695</p>	<p>DRAWN BY: R. EDELL/LL</p>	<p>CHECKED BY: T. LEESE</p>	<p>APPROVED BY: D. DUNN/LL</p>	<p>DATE: 10/15/16</p>
<p><b>GROUNDWATER ELEVATION CONTOUR MAP</b></p>			<p>3</p>				