

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

MONITORING AND REPORTING PROGRAM NO. CI-8916  
FOR  
CONOCOPHILLIPS COMPANY  
(76 STATION 4432)

(FILE NO. 809150152) (ORDER NO. R4-2005-0030, SERIES NO. 018; CI NO. 8916)

**I. REPORTING REQUIREMENTS**

- A. ConocoPhillips Company (hereinafter Discharger) shall implement this monitoring program on the effective date of this enrollment (June 25, 2005) under Regional Board Order No. R4-2005-0030.

Monitoring reports shall be received by the dates in the following schedule:

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

The first monitoring report under this Program is due by October 15, 2005.

- B. If there is no discharge or injection during any reporting period, the report shall so state.
- C. By January 30 of each year, beginning January 30, 2006, 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).
- D. Each monitoring report shall contain a separate section titled "Summary of Non-Compliance" which discusses the compliance record and the corrective actions taken or planned that may be needed to bring the discharge into full compliance with WDRs. This section shall be located at the front of the report and shall clearly list all non-compliance with discharge requirements, as well as all excursions of effluent limitations.
- E. The Discharger shall comply with requirements contained in Section G of Order No. R4-2005-0030 "Monitoring and Reporting Requirements" in addition to the aforementioned requirements.

**II. INJECTION MONITORING REQUIREMENTS**

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

1. Location Map showing injection points and groundwater depths.
2. Written summary defining:
  - Depth of injection points;
  - Quantity of ozone solutions injected per injection point; and
  - Total amount of ozone injected at site.
3. Monthly visual inspection at each injection well shall be conducted to evaluate the well casing integrity for a period of three months after each injection. The quarterly report shall include a summary of the visual inspection.

**III. GROUNDWATER MONITORING PROGRAM**

A groundwater-monitoring program shall be designed to detect and evaluate impacts associated with the injection activities. The following shall constitute the monitoring program for upgradient well MW-12, downgradient wells MW-1 and MW-14, and source wells MW-9 and MW-10 (Figure 3). These sampling stations shall not be changed and any proposed change of monitoring locations shall be identified and approved by the Regional Board Executive Officer (Executive Officer) prior to their use.

The Discharger shall conduct baseline sampling from wells MW-1, MW-9, MW-10, MW-12, and MW-14 one or two weeks prior to injection of ozone and regular samplings for the duration of remediation in accordance with the following monitoring program:

<u>CONSTITUENT</u>	<u>UNITS</u>	<u>TYPE OF SAMPLE</u>	<u>MINIMUM FREQUENCY OF ANALYSIS</u>
pH <sup>1</sup>	pH units	grab	Bi-weekly <sup>2</sup> /Monthly <sup>3</sup> /Quarterly <sup>4</sup>
Temperature <sup>1</sup>	°F	grab	Bi-weekly <sup>2</sup> /Monthly <sup>3</sup> /Quarterly <sup>4</sup>
Oxidation-reduction potential <sup>1</sup>	millivolts	grab	Bi-weekly <sup>2</sup> /Monthly <sup>3</sup> /Quarterly <sup>4</sup>
Specific conductivity <sup>1</sup>	µmhos/cm	grab	Bi-weekly <sup>2</sup> /Monthly <sup>3</sup> /Quarterly <sup>4</sup>
Ferrous iron	µg/L	grab	Bi-weekly <sup>2</sup> /Monthly <sup>3</sup> /Quarterly <sup>4</sup>
Dissolved Oxygen <sup>1</sup>	µg/L	grab	Bi-weekly <sup>2</sup> /Monthly <sup>3</sup> /Quarterly <sup>4</sup>
Total petroleum hydrocarbons (as gasoline and as diesel)	µg/L	grab	Bi-weekly <sup>2</sup> /Monthly <sup>3</sup> /Quarterly <sup>4</sup>
Benzene	µg/L	grab	Bi-weekly <sup>2</sup> /Monthly <sup>3</sup> /Quarterly <sup>4</sup>
Ethylbenzene	µg/L	grab	Bi-weekly <sup>2</sup> /Monthly <sup>3</sup> /Quarterly <sup>4</sup>
Toluene	µg/L	grab	Bi-weekly <sup>2</sup> /Monthly <sup>3</sup> /Quarterly <sup>4</sup>

Total xylenes	µg/L	grab	Bi-weekly <sup>2</sup> /Monthly <sup>3</sup> /Quarterly <sup>4</sup>
MTBE	µg/L	grab	Bi-weekly <sup>2</sup> /Monthly <sup>3</sup> /Quarterly <sup>4</sup>
TBA	µg/L	grab	Bi-weekly <sup>2</sup> /Monthly <sup>3</sup> /Quarterly <sup>4</sup>
TAME	µg/L	grab	Bi-weekly <sup>2</sup> /Monthly <sup>3</sup> /Quarterly <sup>4</sup>
DIPE	µg/L	grab	Bi-weekly <sup>2</sup> /Monthly <sup>3</sup> /Quarterly <sup>4</sup>
ETBE	µg/L	grab	Bi-weekly <sup>2</sup> /Monthly <sup>3</sup> /Quarterly <sup>4</sup>
Ethanol	µg/L	grab	Bi-weekly <sup>2</sup> /Monthly <sup>3</sup> /Quarterly <sup>4</sup>
Methane	µg/L	grab	Bi-weekly <sup>2</sup> /Monthly <sup>3</sup> /Quarterly <sup>4</sup>
Formaldehyde	µg/L	grab	Bi-weekly <sup>2</sup> /Monthly <sup>3</sup> /Quarterly <sup>4</sup>
Acetates	µg/L	grab	Bi-weekly <sup>2</sup> /Monthly <sup>3</sup> /Quarterly <sup>4</sup>
Total organic carbon	µg/L	grab	Bi-weekly <sup>2</sup> /Monthly <sup>3</sup> /Quarterly <sup>4</sup>
Total dissolved solids	mg/L	grab	Quarterly
Sulfate	mg/l	grab	Quarterly
Chloride	mg/L	grab	Quarterly
Boron	mg/L	grab	Quarterly
Sodium	mg/L	grab	Quarterly
Carbon dioxide	mg/L	grab	Quarterly
Manganese	µg/L	grab	Quarterly
Total iron	µg/L	grab	Quarterly
Alkalinity	µg/L	grab	Quarterly
Total Coliform	MPN/100 mL	grab	Quarterly
Total chromium <sup>5</sup>	µg/L	grab	Quarterly
Chromium six <sup>5</sup>	µg/L	grab	Quarterly
1,2-Dichloroethane <sup>5</sup>	µg/L	grab	Quarterly
1,1,1-Trichloroethane <sup>5</sup>	µg/L	grab	Quarterly
Tetrachloroethylene (PCE) <sup>5</sup>	µg/L	grab	Quarterly
Trichloroethylene (TCE) <sup>5</sup>	µg/L	grab	Quarterly

Carbon Tetrachloride <sup>5</sup>	µg/L	grab	Quarterly
Vinyl Chloride <sup>5</sup>	µg/L	grab	Quarterly

- <sup>1</sup> Field instrument may be used to measure this parameter.  
<sup>2</sup> Bi-weekly sampling is required for the first month of injection.  
<sup>3</sup> Monthly sampling is required for the next two months of injection.  
<sup>4</sup> Quarterly sampling is required thereafter.  
<sup>5</sup> Monitoring is required only for the well(s) in which this constituent is detected in the baseline sample(s).

All groundwater monitoring reports must include, at 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**

Specifications in this monitoring program are subject to periodic revisions. Monitoring requirements may be modified or revised by the Executive Officer based on review of monitoring data submitted pursuant to this Order. Monitoring frequencies may be adjusted to a less frequent basis or parameters and locations dropped by the Executive Officer if the Discharger makes a request and the request is backed by statistical trends of monitoring data submitted.

**V. CERTIFICATION STATEMENT**

Each report shall contain the following completed 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)"


All records and reports submitted in compliance with this Order are public documents and

ConocoPhillips Co.  
(76 Station 4432)  
Monitoring and Reporting Program No. CI-8916

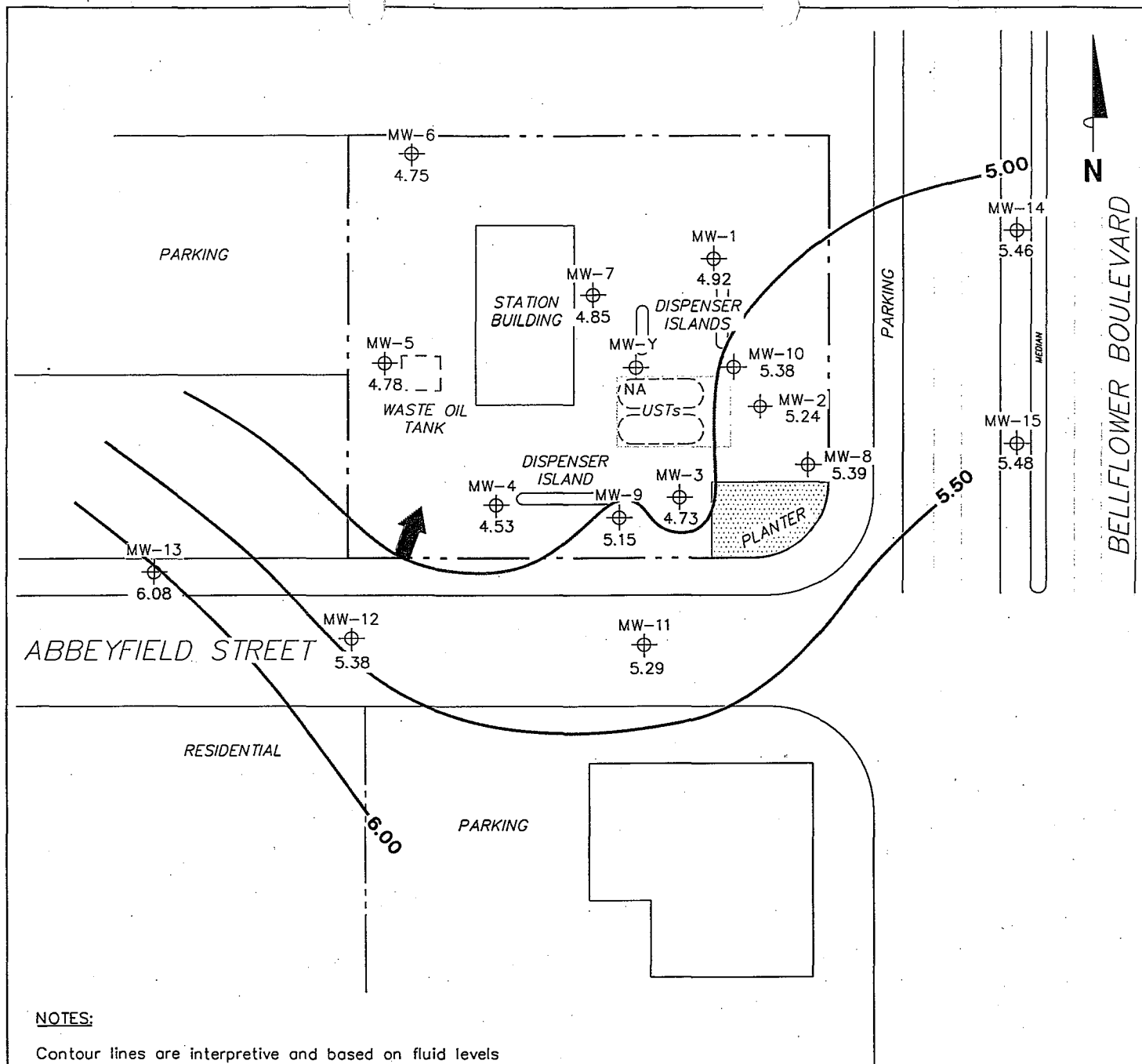
UST File No. 908150152  
Order No. R4-2005-0030

will be made available for inspection during business hours at the office of the California Regional Water Quality Control Board, Los Angeles Region, upon request by interested parties. Only proprietary information, and only at the request of the Discharger, will be treated as confidential.

Ordered by:

  
Jonathan S. Bishop  
Executive Officer

Date: July 8, 2005



**NOTES:**

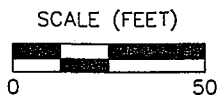
Contour lines are interpretive and based on fluid levels measured in monitoring wells. Elevations are in feet above mean sea level. NA = not analyzed, measured or collected.

**LEGEND**

- MW-15 Monitoring Well with Groundwater Elevation (feet)
- 6.00 Groundwater Elevation Contour
- General Direction of Groundwater Flow

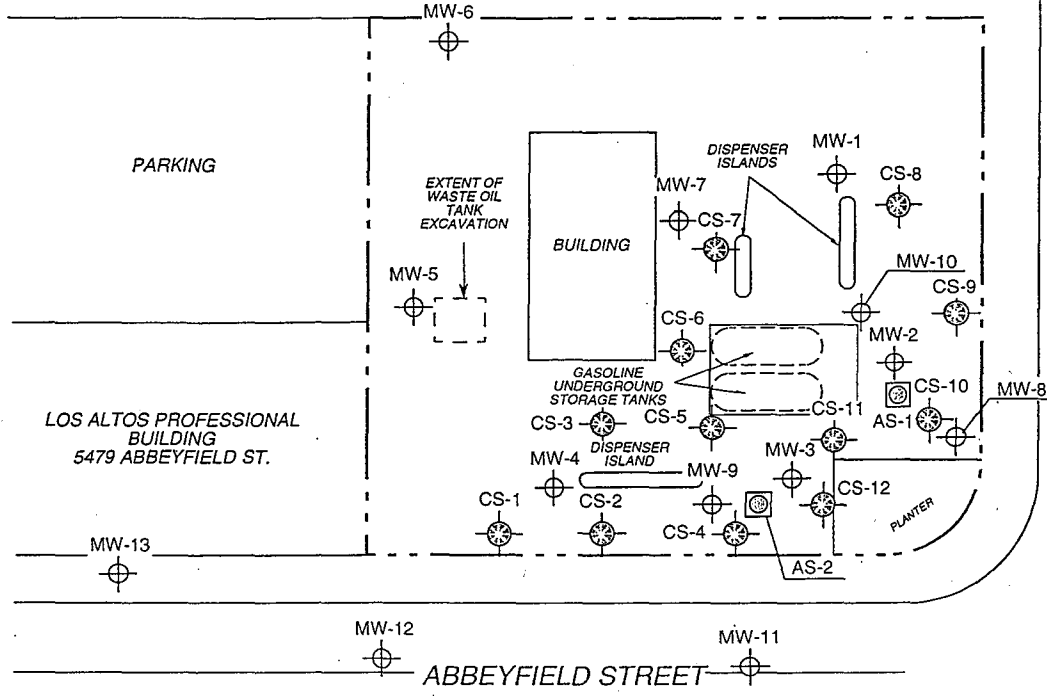
**GROUNDWATER ELEVATION  
CONTOUR MAP  
March 8, 2005**

76 Station 4432  
2103 Bellflower Boulevard  
Long Beach, California



**FIGURE 2**

PS=1:1 4432-003



LOS ALTOS PROFESSIONAL BUILDING  
5479 ABBEYFIELD ST.

BELLFLOWER BOULEVARD

ABBEYFIELD STREET

RESIDENTIAL

PARKING

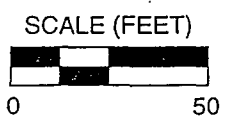
BEST PLACE CAFE

**LEGEND**

- CS-12 Proposed C-Sparge™ Point
- AS-2 Air Sparge Well
- MW-10 Groundwater Monitoring Well

**SITE PLAN SHOWING C-SPARGE™ POINTS**

76 Station 4432  
2103 Bellflower Boulevard  
Long Beach, California



**FIGURE 2**



# California Regional Water Quality Control Board

## Los Angeles Region



Alan C. Lloyd, Ph.D.  
Agency Secretary

Recipient of the 2001 Environmental Leadership Award from Keep California Beautiful

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

Arnold Schwarzenegger  
Governor

July 8, 2005

Mr. Chris Swartz  
ConoPhillips Company  
3611 Harbor Boulevard, Suite 200  
Santa Ana, CA 92704

### GENERAL WASTE DISCHARGE REQUIREMENTS FOR INJECTION OF OZONE INTO GROUNDWATER – 76 STATION 4432, 2103 BELLFLOWER BL., LONG BEACH (FILE NO. 809150152) (ORDER NO. R4-2005-0030, SERIES NO. 018; CI NO. 8916)

Dear Mr. Swartz:

On November 16, 2004, you submitted an application for waste discharge requirements for the injection of ozone into groundwater. The injection of ozone is for remediation of petroleum hydrocarbon impacted groundwater at the subject site.

Your Report of Waste Discharge (ROWD) stated that the site is an active service station located on the northwest corner of the Bellflower Boulevard and Abbeyfield Street intersection in Long Beach, in the Central Groundwater Basin of the Coastal Plain of Los Angeles County. The Artesia aquifer underlies 80 feet beneath the site. There are seven groundwater production wells within one-mile radius of the site.

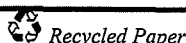
The station currently maintains two 10,000-gallon gasoline underground storage tanks (USTs), one 550-gallon waste oil UST, and three dispenser islands. The area immediately surrounding the site is commercial. Beyond the commercial properties are residential areas.

In September 1989, two steel 10,000-gallon UST and one 550-gallon waste oil UST were removed from the site. Analytical results indicated that soil samples collected during excavation contained TPH and benzene up to 114,000 and 28.4 mg/kg; respectively. During April 1990-May 2003, fifteen groundwater monitoring wells were installed to define the extent of petroleum hydrocarbons and to characterize soil and groundwater beneath the site. The highest concentrations of TPH, benzene, and MTBE detected in soil during these investigations were 6,000; 8.3; and 19 mg/kg; respectively. Groundwater monitoring also recorded TPH, benzene, MTBE, and TBA at concentrations up to 130,000; 12,000; 99,000; and 50,000 µg/L; respectively.

To remediate the petroleum hydrocarbon impacted soil and groundwater beneath the site, in April 2004, you submitted a remedial action plan in which you proposed to utilize a C-Sparge system. The proposed C-Sparge system includes installation/construction of twelve sparge wells and a control panel with built in compressor and ozone generator. The Regional Board approved the remedial action plan on July 14, 2004.

The C-Sparge technology combines low-flow (3 to 5 cfm) air sparging with ozonation. Microbubbles (10 to 50 µm) of encapsulated ozone will be introduced below the water table

*California Environmental Protection Agency*



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Mr. Chris Swartz  
ConocoPhillips Company  
(76 Station 4432)

- 2 -

July 8, 2005

through sparge points to oxidize contaminants into benign byproducts. These byproducts and residuals include acetate, butyrate, formate, propionate, carboxylic acids, tertiary butyl formate, formaldehyde, carbon dioxide, hydrogen peroxide, and oxygen. The release of oxygen and hydrogen peroxide to groundwater promotes aerobic bacterial growth that will enhance the biodegradation process.

We have reviewed the information provided and have determined that the proposed discharge meets the conditions specified in Order No. R4-2005-0030, "*General Waste Discharge Requirements for Groundwater Remediation at Petroleum Hydrocarbon Fuel and/or Volatile Organic Compound Impacted Sites*," adopted by this Regional Board on May 5, 2005.

Enclosed are your Waste Discharge Requirements, consisting of Regional Board Order No. R4-2005-0030, Monitoring and Reporting Program No. CI-8916, and Standard Provisions.

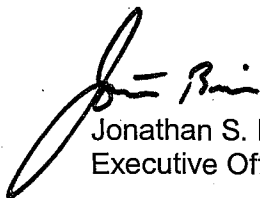
The Monitoring and Reporting Program requires you to implement the monitoring program on the effective date of this enrollment (June 24, 2005) under Regional Board Order No. R4-2005-0030. All monitoring reports shall be sent to the Regional Board, ATTN: Information Technology Unit.

When submitting monitoring or technical reports to the Regional Board per these requirements, please include a reference to Compliance File No. CI-8916, which will assure that the reports are directed to the appropriate file and staff. Do not combine other reports with your monitoring reports. Submit each type of report as a separate document.

We are sending a copy of Order No. R4-2005-0030 only to the applicant. A copy of the Order can be download from [www.waterboards.ca.gov/losangeles](http://www.waterboards.ca.gov/losangeles) or will be furnished upon request.

If you have any questions, please contact Mr. Rodney Nelson at (213) 620-6119.

Sincerely,

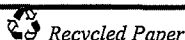


Jonathan S. Bishop  
Executive Officer

Enclosures: 1. Board Order No. R4-2002-0030  
2. Monitoring and Reporting Program No. CI-8916

cc: Ms. Yvonne Shanks, SWRCB, Underground Storage Tank Cleanup Fund  
Mr. Jeff Benedict, City of Long Beach, Department of Health and Human Services  
Ms. Nancy Matsumoto, Water Replenishment District of Southern California  
Mr. Mark Stewart, Central Basin Watermaster, California Department of Water Resources  
Mr. Bryen Woo, TRC Customer-Focused Solutions

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