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76 Broadway  
Sacramento, California 95818

August 4, 2006

Mr. Jerry Wickham  
Alameda County Health Agency  
1131 Harbor Bay Parkway  
Alameda, California 94502

Re: **Report Transmittal  
Quarterly Report  
Second Quarter – 2006  
76 Service Station #4186  
1771 First Street  
Livermore, CA**

Dear Mr. Wickham:

I declare under penalty of perjury that to the best of my knowledge the information and/or recommendations contained in the attached report is/are true and correct.

If you have any questions or need additional information, please contact

Shelby S. Lathrop (Contractor)  
ConocoPhillips  
Risk Management & Remediation  
76 Broadway  
Sacramento, CA 95818  
Phone: 916-558-7609  
Fax: 916-558-7639

Sincerely,

A handwritten signature in black ink that reads "Thomas H. Kosel". The signature is written in a cursive style.

Thomas Kosel  
Risk Management & Remediation

Attachment



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August 7, 2006

Mr. Jerry Wickham  
Alameda County Health Agency  
1131 Harbor Bay Parkway, Suite 250  
Alameda, California 94502-6577

Re: **Quarterly Summary Report – Second Quarter 2006**  
Delta Project Number: C104186041

Dear Mr. Wickham:

On behalf of ConocoPhillips (COP), Delta Environmental Consultants, Inc. (Delta) is forwarding the quarterly summary report for the following location:

**Service Station**

**Location**

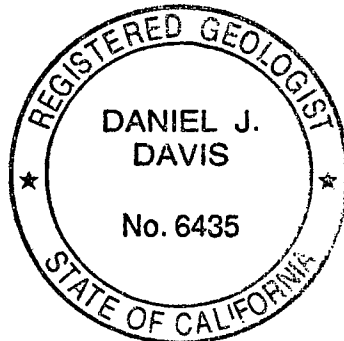
76 Service Station No. 4186

1771 First Street  
Livermore, California

Sincerely,  
**Delta Environmental Consultants, Inc.**

Ben Wright  
Staff Geologist

Daniel J. Davis, R.G.  
Project Manager



Forward: TRC - Quarterly Monitoring Report  
Environ Strategy Consultants – Quarterly Ozone Injection System O&M Report

cc: Ms. Shelby Lathrop, ConocoPhillips (electronic copy)

A member of:



**QUARTERLY SUMMARY REPORT**  
**Second Quarter 2006**  
**76 Station No. 4186**  
**1771 First Street**  
**Livermore, California**

**PREVIOUS ASSESSMENT**

This site is an operating Union 76 service station located on First Street between N Street and O Street in Livermore, California. The facility property contains the station building, four product dispenser islands, and two gasoline underground storage tanks (UST).

On June 6, 1996, six soil samples were collected from beneath the fuel dispensers and product delivery piping during dispenser and piping replacement activities. Results of soil sample analyses were reported as not detected (ND) for total petroleum hydrocarbons as gasoline (TPH-G), and benzene, toluene, ethylbenzene and total xylenes (BTEX) for each sample collected beneath the dispenser islands and product delivery piping.

On September 10, 1997, a soil gas survey was conducted as part of a baseline site evaluation associated with transfer of the property from Unocal Corporation to Tosco. Six soil gas probes were advanced and samples collected at 3 or 15 feet below ground surface (bgs) in the vicinity of the UST complex, dispenser islands, and product lines. Analytical results from the gas probes ranged from 41 to 4,500 parts per billion by volume (ppb-v) for TPHG, ND to 110 ppb-v for benzene and ND to 8,000 ppb-v for methyl tertiary butyl ether (MTBE). The area of highest soil vapor concentration was localized around the UST complex.

On April 8, 1998, the Alameda County Zone 7 Water Agency files were reviewed to identify water supply wells located within a one-half mile radius from the site. Two municipal wells were identified approximately 1,500 feet and 1,800 feet northwest of the site, and two domestic wells were located approximately 1,900 feet and 2,800 feet southwest and west of the site.

On June 16, 1998, three 2-inch diameter groundwater monitor wells (U-1 through U-3) were installed. The wells were each installed to a depth of approximately 34 feet bgs. Soil samples collected from the three well borings were reported as ND for TPH-G, benzene, and MTBE.

In May 2000, a site conceptual model (SCM) was completed for the site. In the SCM, groundwater flow velocity was calculated to determine the plume travel time to the nearest receptor. Ground water velocity was calculated at 46 feet per year. The SCM concluded that hydrocarbon impact to groundwater appears to fluctuate with the rise and fall of the groundwater surface beneath the site.

On February 21, 2001, two 2-inch diameter off-site groundwater monitor wells (U-4 and U-5) were installed. The wells were installed to depths of approximately 47 feet bgs. TPH-G, BTEX and MTBE were not detected in the soil samples analyzed. TPH-G and benzene were ND in groundwater samples analyzed from wells U-4 and U-5. MTBE was detected in groundwater samples from wells U-4 and U-5 at concentrations of 38.2 micrograms per liter ( $\mu\text{g/l}$ ) and 55.4  $\mu\text{g/l}$ , respectively; other fuel oxygenates were non-detectable. Groundwater monitoring and sampling of the wells was initiated in July 1998 and has continued on a

7@39') at concentrations ranging from 16 µg/l (B-4@43') to 1,100 µg/l (B-6@63'); and in six lower zone samples at concentrations ranging from 7.9 µg/l (B-6@63') to 630 µg/l (B-4@63').

The results of the soil and groundwater analyses are summarized in Attachment A. Site assessment findings have been submitted under separate cover.

### **MONITORING AND SAMPLING**

Groundwater is currently monitored and sampled on a quarterly basis. During the June 26, 2006 monitoring and sampling event, depth to groundwater ranged from 23.15 feet (U-2) to 29.31 feet (U-5) below top of casing (TOC). The groundwater flow direction was northwest to southwest at a gradient of 0.07 foot per foot (ft/ft). Historic groundwater flow directions are shown in Attachment A.

Maximum dissolved groundwater concentrations were present as follows: total petroleum hydrocarbons with gasoline distinction (TPH-G) (5,300 µg/L in U-6), benzene (59 µg/L in U-6), and MTBE (560 µg/L in U-3). Groundwater monitoring and sampling is conducted by TRC under direct contract to ConocoPhillips.

### **REMEDIATION STATUS**

The ozone sparge system, manufactured by KVA, was placed into operation on December 19, 2001 and is designed to cycle the ozone/oxygen injection between 10 sparge points. A typical injection schedule for this site was designed to operate at 18 times a day at 5 and 15 minutes per point per cycle. The system's current cycle frequency is 8 minutes. Remediation system operation and maintenance is conducted by Environ Strategy Consultants, Inc. (ES) under direct contract to ConocoPhillips.

For the Second Quarter 2006, the ozone sparge system operated for 551 hours, equivalent to 26% of the programmed runtime, and injected 55 pounds of ozone. System operation and maintenance (O&M) activity is conducted on a monthly to semi-monthly basis.

The system was found non-operational on April 13, April 25, May 17, May 31, June 13, and June 27, 2006 due to a tripped ozone sensor. In each instance the system was reset and restarted.

### **CHARACTERIZATION STATUS**

The furthest up-gradient monitor well, U-3, contained 560 µg/l MTBE and 2,000 µg/l TPH-G during the second quarter 2006 sampling event. The furthest offsite down-gradient well, U-5, contained 82 µg/l of MTBE and 72 µg/l TPH-G this quarter.

### **RECENT CORRESPONDENCE**

Delta received technical comments regarding the submitted Soil Boring Assessment Report dated May 26, 2006 and a request for a work plan by Alameda County to assess the vertical extent of contamination at the site.

**THIS QUARTER ACTIVITIES (Second Quarter 2006)**

1. TRC conducted the quarterly monitoring and sampling at the site.
2. ES conducted system operation and maintenance activities at the site.
3. Delta completed and submitted a report documenting an assessment to determine the extent of vertical and lateral contamination at the site.

**WASTE DISPOSAL SUMMARY**

A total of 2.2 cubic yards of soil cuttings generated during the April 2006 soil investigation was disposed of from the site during this reporting period.

June 1996 - A total of 25 cubic yards of soils was excavated and disposed.

**NEXT QUARTER ACTIVITIES (Third Quarter 2006)**

1. ES will continue operation and maintenance on the ozone/oxygen sparge system at the site.
2. TRC will conduct quarterly groundwater monitoring and sampling at the site.
3. Delta will submit a work plan to address regulatory agency technical comments and propose additional assessment to complete delineation of the extent of vertical contamination at the site.

**CONSULTANT:** Delta Environmental Consultants, Inc.

Attachment A – Soil and Groundwater Analytical Tables

Attachment B – Historic Groundwater Flow Directions

**Attachment A**  
**Soil and Groundwater Analytical Tables**

Table 1

SOIL ANALYTICAL RESULTS  
Conocophillips Station No. 4186  
1771 First Street, Livermore California

Sample ID	Date	Depth (feet)	TPH-G (mg/Kg)	TPH-D (mg/Kg)	GRO (mg/Kg)	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethyl- benzene (mg/Kg)	Total Xylenes (mg/Kg)	MTBE (mg/Kg)	TBA (mg/Kg)	ETBE (mg/Kg)	TAME (mg/Kg)	DIPE (mg/Kg)	Ethanol (mg/Kg)	Lead (mg/Kg)
<b>Soil</b>																
B-1@40'	4/20/2006	40	---	---	2.8	ND	ND	0.024	ND	ND	ND	ND	ND	ND	ND	---
B-1@45'	4/20/2006	45	---	---	450	ND	ND	ND	2.1	ND	ND	ND	ND	ND	ND	---
B-1@60'	4/20/2006	60	---	---	0.29	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	---
B-2@40'	4/19/2006	40	---	---	120	ND	ND	ND	ND	ND	ND	ND	ND	ND	64	---
B-2@45'	4/19/2006	45	---	---	180	ND	ND	ND	ND	ND	ND	ND	ND	ND	58	---
B-2@60'	4/19/2006	60	---	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	---
B-3@35'	4/20/2006	35	---	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	---
B-3@40'	4/20/2006	40	---	---	30	ND	ND	0.20	0.42	ND	ND	ND	ND	ND	ND	---
B-3@65'	4/20/2006	65	---	---	ND	ND	ND	ND	ND	0.0069	0.026	ND	ND	ND	ND	---
B-4@10'	4/26/2006	10	---	---	---	---	---	---	---	---	---	---	---	---	---	3.9
B-4@40'	4/26/2006	40	---	---	0.35	ND	ND	ND	0.031	0.019	ND	ND	ND	ND	ND	---
B-4@50'	4/26/2006	50	---	---	0.89	ND	ND	ND	0.023	0.088	0.01	ND	ND	ND	ND	---
B-4@60'	4/26/2006	60	---	---	ND	ND	ND	ND	ND	0.02	0.06	ND	ND	ND	ND	---
B-5@40'	4/25/2006	40	---	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	---
B-5@50'	4/26/2006	50	---	---	4.4	0.015	0.026	0.07	0.19	0.02	ND	ND	ND	ND	ND	---
B-5@60'	4/26/2006	60	---	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	---
B-6@25'	4/25/2006	25	---	---	0.54	ND	ND	ND	ND	0.29	0.17	ND	ND	ND	ND	---
B-6@35'	4/25/2006	35	---	---	ND	ND	ND	ND	ND	0.24	ND	ND	ND	ND	ND	---
B-6@46'	4/25/2006	46	---	---	1.2	0.069	ND	ND	ND	0.093	0.034	ND	ND	ND	ND	---
B-6@55'	4/25/2006	55	---	---	190	ND	ND	ND	3.2	ND	ND	ND	ND	ND	ND	---
B-7@35'	4/21/2006	35	---	---	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	---
B-7@45'	4/21/2006	45	---	---	700	1.3	ND	5.6	14	ND	ND	ND	ND	ND	27	---
B-7@55'	4/21/2006	55	---	---	1.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	---

TPH-G = total petroleum hydrocarbons as gasoline

TPH-D = total petroleum hydrocarbons as diesel

GRO = gasoline range organics C6-C12 by EPA Method 8260B

BTEX = benzene, toluene, ethylbenzene, total xylenes by EPA Method 8260B

MTBE = methyl tertiary butyl ether by EPA Method 8260B

TBA = tertiary butyl alcohol by EPA Method 8260B

ETBE = ethyl tertiary butyl ether by EPA Method 8260B

DIPE = di-isopropyl ether by EPA Method 8260B

TAME = tertiary amyl methyl ether by EPA Method 8260B

Ethanol was analyzed by EPA Method 8260B

Lead was analyzed by EPA Method 6010

--- = not analyzed

ND = not detected above the laboratory detection limit

**Bold** = detected compound concentration

EPA = US Environmental Protection Agency

Table 2

## GROUNDWATER ANALYTICAL RESULTS

Conocophillips Station No. 4186

1771 First Street, Livermore California

Sample ID	Date	Depth (feet)	TPH-G (µg/L)	TPH-D (µg/L)	GRO (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl- benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	TBA (µg/L)	ETBE (µg/L)	TAME (µg/L)	DIPE (µg/L)	Ethanol (µg/L)	Lead (µg/L)
<b>Upper Zone</b>																
B-1@41'	4/20/2006	41	---	---	10,000	43	ND	830	39	ND	ND	ND	ND	ND	ND	---
B-2@38'	4/19/2006	38	---	---	930	ND	0.78	ND	1.5	ND	ND	ND	ND	ND	ND	---
B-3@38'	4/20/2006	38	---	---	3,900	6.9	ND	18	14	ND	ND	ND	ND	ND	ND	---
B-4@43'	4/26/2006	43	---	---	9,700	14	ND	40	44	16	ND	ND	ND	ND	ND	---
B-5@44'	4/26/2006	44	---	---	23,000	ND	11	8.2	370	19	250	ND	ND	ND	ND	---
B-6@43'	4/25/2006	43	---	---	1,800	420	ND	35	120	1,100	250	ND	ND	ND	ND	---
B-7@39'	4/21/2006	39	---	---	9,200	6.5	1.6	90	210	790	180	ND	ND	ND	ND	---
<b>Lower Zone</b>																
B-1@62'	4/20/2006	62	---	---	100	1.4	ND	ND	ND	21	ND	ND	ND	ND	ND	---
B-2@61'	4/19/2006	61	---	---	1,300	72	ND	1.4	ND	470	290	ND	ND	ND	ND	---
B-3@62'	4/20/2006	62	---	---	660	5.7	ND	4.6	5.1	410	69	ND	ND	ND	ND	---
B-4@63'	4/26/2006	63	---	---	810	ND	ND	ND	ND	630	170	ND	ND	ND	ND	---
B-5@65'	4/25/2006	65	---	---	5,000	27	210	120	820	3.2	ND	ND	ND	ND	ND	---
B-6@63'	4/25/2006	63	---	---	1,800	15	ND	28	21	7.9	ND	ND	ND	ND	ND	---
B-7@57'	4/21/2006	57	---	---	26,000	510	ND	270	250	ND	ND	ND	ND	ND	ND	---

TPH-G = total petroleum hydrocarbons as gasoline

TPH-D = total petroleum hydrocarbons as diesel

GRO = gasoline range organics C6-C12 by EPA Method 8260B

BTEX = benzene, toluene, ethylbenzene, total xylenes by EPA Method 8260B

MTBE = methyl tertiary butyl ether by EPA Method 8260B

TBA = tertiary butyl alcohol by EPA Method 8260B

ETBE = ethyl tertiary butyl ether by EPA Method 8260B

DIPE = di-isopropyl ether by EPA Method 8260B

TAME = tertiary amyl methyl ether by EPA Method 8260B

Ethanol was analyzed by EPA Method 8260B

Lead was analyzed by EPA Method 6010

--- = not analyzed

ND = not detected above the laboratory detection limit

Bold = detected compound concentration

EPA = US Environmental Protection Agency

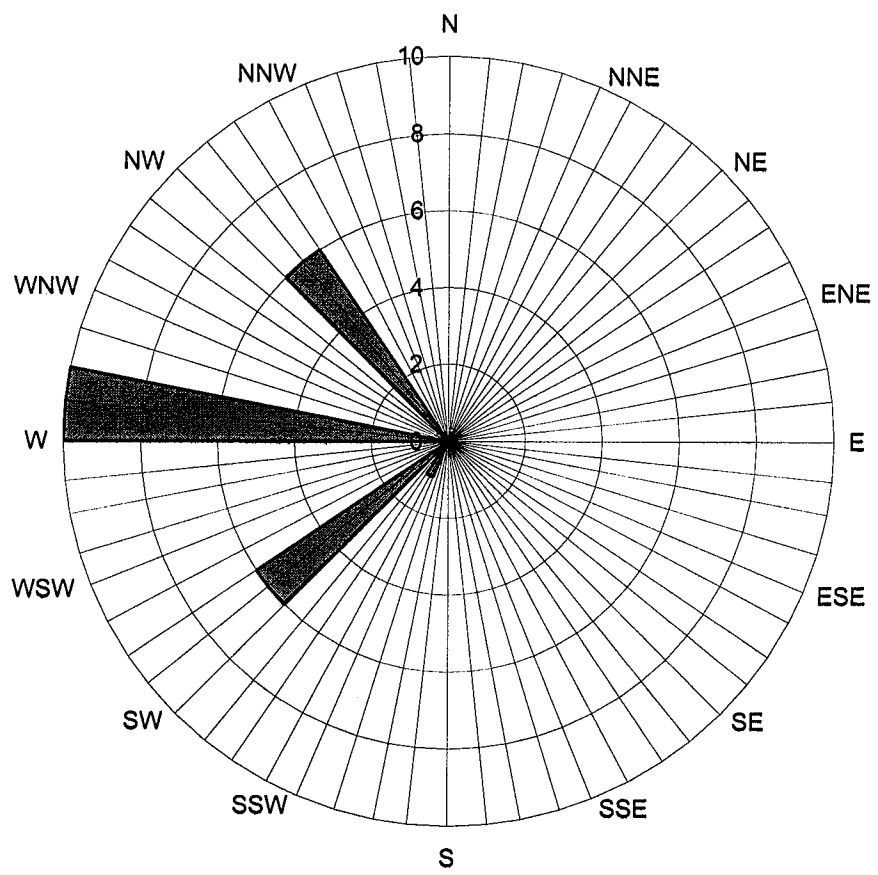
Upper zone = 36' to 43'

Lower zone = 55' to maximum depths explored



**Attachment B**  
**Historic Groundwater Flow Directions**

**Historic Groundwater Flow Directions**  
**ConocoPhillips Site No. 4186**  
 1771 First Street  
 Livermore, California



■ Groundwater Flow Direction

Legend  
 Concentric circles represent  
 quarterly monitoring events  
 Fourth Quarter 2000 through Second  
 Quarter 2006  
 23 data points shown