Subsurface Consultants, Inc.

R. William Rudolph, P.E.
President

September 4, 1996
SCI 447.055

STID 469

Mr. George Hill
655 University Avenue, Suite 100
Sacramento, California 95825

Mr. Gordon Linden
150 LaSalle Avenue
Piedmont, California 94611



**Groundwater Monitoring**
**August 1996 Event**
**3093 Broadway**
**Oakland, California**

Dear Messers Hill & Linden:

This letter records the results of August 1996 groundwater monitoring event performed by Subsurface Consultants, Inc. (SCI) at the Connell Oldsmobile facility in Oakland, California. The facility is situated at the southwest corner of the intersection of Hawthorne Avenue and Broadway, as shown on the Site Plan, Plate 1.

## BACKGROUND

Twelve wells have been periodically sampled at the site since 1990 to evaluate impacts to groundwater due to previous underground storage tank (UST) releases. Groundwater monitoring is performed in general accordance with the program outlined in the Corrective Action Plan (CAP) dated November 6, 1995 and approved by the Alameda County Health Care Services Agency (ACHCSA) in a letter dated November 29, 1995. This event was a quarterly event as described in the CAP and involved the sampling of monitoring wells MW-7, MW-8, and MW-13.

## MONITORING EVENT RESULTS

### A. General

On August 8, 1996 depth-to-water and free product thickness were measured in all wells. Free product was removed by hand bailing methods from the wells in which appreciable free product was measured. Free product removal data are summarized in Table 1. Groundwater and free product elevation data are summarized in Table 2. Our interpretation of the flow direction and gradient for the August 1996 event are presented on Plate 2.

On August 8, 1996, monitoring wells MW-7, MW-8, and MW-13 were purged by removing water with new disposable bailers. The wells were purged until measurements of pH, temperature, and conductivity had stabilized. After the wells recharged to within 80 percent of their initial level they were sampled with new disposable bailers. Purge water was placed in a depression created on top of the existing soil stockpile and allowed to evaporate.

Samples were retained in pre-cleaned containers supplied by the analytical laboratory, and were placed in ice-filled coolers and remained iced until delivery to the analytical laboratory. Chain-of-custody records accompanied the samples to the laboratory.

Chemical characterization testing of individual samples was performed by Curtis & Tompkins, Ltd. A summary of sample preparation and test methods are presented below.

| Analysis | Sample Preparation Method | Analysis Method |
|---|---|---|
| Total Volatile Hydrocarbons (TVH) | EPA 5030 | EPA 8015 Mod. |
| Total Extractable Hydrocarbons (TEH) | EPA 3550 | EPA 8015 Mod. |
| Benzene, Toluene, Ethylbenzene, Xylene (BTEX) | EPA 5030 | EPA 8020 |
| 1,2-Dichloroethane (DCA) | EPA 5030 | EPA 8010 |
| Methyl Tert Butyl Ethylene (MTBE) | EPA 5030 | EPA 8020 |

Analytical test results are summarized in Table 3. Field sampling forms, analytical test reports and chain-of-custody documents are attached.

## CONCLUSIONS

### Free Product

The apparent lateral extent of free product has remained relatively constant when compared to the previous monitoring events. Free product continues to be present in wells MW-1, and MW-6. During the August 1996 event, no product was present in well MW-4. However, free product was detected in well MW-9 for the first time since monitoring began. There was 0.35 feet of product in well MW-9. The product thickness in well MW-4 (0.25 feet), and well MW-6 (4.6 feet) were consistent with previous events. To date, approximately 132 gallons of product have been removed as summarized in Table 2.

The changes in free product thickness, and the appearance of free product in MW-9 are, in our opinion, related to the constant redistribution of free product along preferential flow paths. The migration of free product on the site is likely to be dependent on fluctuations of the groundwater levels.

**Dissolved Product Plume**

The distribution of the dissolved product plume remains relatively the same when compared to previous events. The dissolve plume at the site does not seem to have migrated significantly since monitoring began in March 1991. Samples from MW-8, situated at the downgradient property consistently contains low concentrations of petroleum hydrocarbons. Samples from well MW-13, the farthest downgradient well, contained 1,2-DCA, and benzene at concentrations of 6.4 ug/l and 32 ug/l respectively.

**Future Monitoring**

The next monitoring event will occur in November 1996. During this semi-annual event, monitoring wells MW-1, MW-4, MW-6, MW-7, MW-8, MW-9, and MW-13 will be sampled.

**Product Removal**

SCI is in the process of obtaining an air permit from the Bay Area Air Quality Management District (BAAQMD) for the interim product removal system. SCI will use an internal combustion engine for removing free product from well MW-6. SCI plans to install the product removal system by mid-October 1996.

If you have any questions, please call.

Yours very truly,

Subsurface Consultants, Inc.

Samuel C. Won
Project Engineer

Jeriann N. Alexander
Civil Engineer 40469 (expires 3/31/99)
Registered Environmental Assessor 03130 (exp. 6/30/97)

Attachments: Table 1 - Free Product Recovery
Table 2 - Groundwater Elevation Data
Table 3 - Summary of Contaminant Concentrations in Groundwater
Plate 1 - Site Plan
Plate 2 - Groundwater Surface Elevation Contours. 8/8/96
Field forms
Analytical test reports
Chain-of-custody documents

1 copy submitted

cc: ✓ Ms. Susan Hugo
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JRH:SCW:JNA:sld

# TABLE 1
# FREE PRODUCT RECOVERY
# 3093 BROADWAY
# OAKLAND, CALIFORNIA

| Well | Removal Date | Product Removed (gallons) | Cumulative Product Removed (gallons) |
|---|---|---|---|
| MW-1 | 12/23/91 | 2.00 | 2.00 |
| | 12/26/91 | 0.50 | 2.50 |
| | 1/13/92 | 1.00 | 3.50 |
| | 2/28/92 | 2.00 | 5.50 |
| | 11/9/93 | 0.50 | 6.00 |
| | 11/3/95 | 0.25 | 6.75 |
| | 11/30/95 | 0.25 | 7.00 |
| | 1/3/96 | 0.53 | 7.53 |
| | 2/2/96 | 0.75 | 8.28 |
| | 3/1/96 | 0.10 | 8.38 |
| | 4/4/96 | 0.00 | 8.38 |
| | 5/2/96 | 0.00 | 8.38 |
| | 6/5/96 | 0.10 | 8.48 |
| | 7/9/96 | 0.10 | 8.58 |
| | 8/8/96 | 0.05 | 8.63 |
| MW-4 | 12/23/91 | 2.50 | 2.50 |
| | 12/26/91 | 6.00 | 8.50 |
| | 1/10/92 | 5.00 | 13.50 |
| | 2/28/92 | 4.00 | 17.50 |
| | 3/11/92 | 3.50 | 21.00 |
| | 3/13/92 | 3.50 | 24.50 |
| | 3/17/92 | 2.25 | 26.75 |
| | 3/18/92 | 2.50 | 29.25 |
| | 3/19/92 | 1.50 | 30.75 |
| | 3/23/92 | 4.00 | 34.75 |
| | 3/24/92 | 1.50 | 36.25 |
| | 3/25/92 | 1.00 | 37.25 |
| | 3/26/92 | 1.00 | 38.25 |
| | 3/27/92 | 0.50 | 38.75 |
| | 3/31/92 | 0.50 | 39.25 |
| | 4/1/92 | 0.25 | 39.50 |

**TABLE 1**
**FREE PRODUCT RECOVERY**
**3093 BROADWAY**
**OAKLAND, CALIFORNIA**

| | | | |
|---|---|---|---|
| MW-4 | 4/2/92 | 0.13 | 39.63 |
| | 4/6/92 | 0.13 | 39.76 |
| | 4/10/92 | 0.25 | 40.01 |
| | 4/13/92 | 0.25 | 40.26 |
| | 4/20/92 | 0.13 | 40.39 |
| | 5/4/92 | 0.13 | 40.52 |
| | 5/18/92 | 0.13 | 40.65 |
| | 5/26/92 | 0.13 | 40.78 |
| | 6/1/92 | 0.06 | 40.84 |
| | 6/29/92 | 0.25 | 41.09 |
| | 7/29/92 | 1.11 | 42.20 |
| | 8/28/92 | 1.68 | 43.88 |
| | 4/3/93 | 0.13 | 44.01 |
| | 11/9/93 | 0.03 | 44.04 |
| | 8/30/95 | 1.75 | 45.79 |
| | 10/2/95 | 0.50 | 46.29 |
| | 11/3/95 | 0.25 | 46.54 |
| | 11/30/95 | 0.25 | 46.79 |
| | 1/3/96 | 0.05 | 46.84 |
| | 2/2/96 | 0.10 | 46.94 |
| | 3/1/96 | 0.20 | 47.14 |
| | 4/4/96 | 0.20 | 47.34 |
| | 5/2/96 | 0.20 | 47.54 |
| | 6/5/96 | 0.15 | 47.59 |
| | 7/9/96 | 0.16 | 47.75 |
| | 8/8/96 | 0.00 | 47.75 |
| MW-6 | 12/23/91 | 7.50 | 7.50 |
| | 12/26/91 | 2.00 | 9.50 |
| | 1/10/92 | 1.00 | 10.50 |
| | 2/4/92 | 2.00 | 12.50 |
| | 2/28/92 | 3.00 | 15.50 |
| | 3/10/92 | 2.75 | 18.25 |
| | 3/12/92 | 2.00 | 20.25 |
| | 3/23/92 | 1.00 | 21.25 |
| | 3/30/92 | 0.50 | 21.75 |

# TABLE 1
# FREE PRODUCT RECOVERY
# 3093 BROADWAY
# OAKLAND, CALIFORNIA

| | | | |
|---|---|---|---|
| MW-6 | 4/10/92 | 0.25 | 22.00 |
| | 4/13/92 | 0.13 | 22.13 |
| | 4/20/92 | 0.13 | 22.26 |
| | 5/4/92 | 0.13 | 22.39 |
| | 5/8/92 | 0.06 | 22.45 |
| | 5/26/92 | 0.13 | 22.58 |
| | 6/1/92 | 0.06 | 22.64 |
| | 6/29/92 | 0.19 | 22.83 |
| | 7/29/92 | 0.60 | 23.43 |
| | 8/28/92 | 2.40 | 25.83 |
| | 12/2/92 | (obstruction in well) | - - |
| | 4/3/93 | 1.75 | 27.58 |
| | 11/9/93 | 0.83 | 28.41 |
| | 8/30/95 | 4.50 | 32.91 |
| | 10/2/95 | 4.0 | 36.91 |
| | 11/3/95 | 3.00 | 39.91 |
| | 11/30/95 | 2.50 | 42.41 |
| | 1/3/96 | 2.50 | 44.91 |
| | 2/2/95 | 5.00 | 49.90 |
| | 3/1/96 | 4.00 | 53.90 |
| | 4/4/96 | 5.00 | 58.90 |
| | 5/2/96 | 4.50 | 63.40 |
| | 6/5/96 | 4.00 | 67.40 |
| | 7/9/96 | 4.50 | 71.90 |
| | 8/8/96 | 4.00 | 75.90 |
| MW-9 | 8/8/96 | 0.10 | 0.10 |
| | **Cumulative Total of Product Removed** | | 132.38 |

# TABLE 2
# GROUNDWATER AND FREE PRODUCT ELEVATION DATA
# 3093 BROADWAY
# OAKLAND, CALIFORNIA

| Well | TOC Elevation (feet) | Date | Groundwater Depth (feet) | Groundwater Elevation (feet) | Product Thickness (feet) | Product Elevation (feet) |
|---|---|---|---|---|---|---|
| MW-1 | 94.48 | 10/3/90 | 26.40 | 68.08 | NM | -- |
| | | 3/5/91 | 27.46 | 67.02 | NM | -- |
| | | 3/18/91 | 26.88 | 67.60 | NM | -- |
| | | 4/12/91 | 25.49 | 68.99 | NM | -- |
| | | 12/23/91 | 26.86 | 67.62 | 1.15 | 68.77 |
| | | 12/26/91 | 26.08 | 68.40 | 0.22 | 68.63 |
| | | 1/13/92 | 26.53 | 67.95 | 0.66 | 68.61 |
| | | 2/28/92 | 27.75 | 66.73 | 0.42 | 67.15 |
| | | 5/18/92 | 24.75 | 69.73 | NM | -- |
| | | 6/29/92 | 25.09 | 69.39 | 0.04 | 69.43 |
| | | 7/29/92 | 25.46 | 69.02 | 0.15 | 69.17 |
| | | 8/28/92 | 25.56 | 68.92 | 0.29 | 69.21 |
| | | 10/28/92 | 26.44 | 68.04 | 0.52 | 68.56 |
| | | 11/24/92 | 26.63 | 67.85 | NM | -- |
| | | 12/22/92 | 26.37 | 68.11 | NM | -- |
| | | 4/5/93 | 23.77 | 70.71 | 0.00 | -- |
| | | 7/20/93 | 24.51 | 69.97 | 0.60 | 70.57 |
| | | 11/9/93 | 26.06 | 68.42 | 1.17 | 69.59 |
| | | 8/30/95 | 21.73 | 72.75 | 0.23 | 72.98 |
| | | 9/15/95 | 21.88 | 72.61 | 0.15 | 72.75 |
| | | 10/2/95 | 22.42 | 72.06 | 0.42 | 72.48 |
| | | 11/3/95 | 23.10 | 72.74 | 0.76 | 73.50 |
| | | 11/30/95 | 23.38 | 72.54 | 0.70 | 73.24 |
| | | 1/3/96 | 23.30 | 72.62 | 0.78 | 73.40 |
| | | 2/2/96 | 22.96 | 72.28 | 0.84 | 74.12 |
| | | 3/1/96 | 21.69 | 72.79 | 0.14 | 72.65 |
| | | 4/4/96 | 21.11 | 73.67 | 0.00 | -- |
| | | 5/2/96 | 20.96 | 73.83 | 0.00 | -- |
| | | 6/5/96 | 20.98 | 73.81 | 0.04 | 73.85 |
| | | 7/9/96 | 21.64 | 72.84 | 0.20 | 73.04 |
| | | 8/8/96 | 22.43 | 72.05 | 0.33 | 72.38 |
| MW-2 | 94.81 | 3/5/91 | 27.86 | 66.95 | 0.00 | -- |
| | | 3/18/91 | 27.46 | 67.35 | 0.00 | -- |
| | | 4/12/91 | 26.98 | 67.83 | 0.00 | -- |
| | | 5/18/92 | 26.50 | 68.31 | 0.00 | -- |

# TABLE 2
## GROUNDWATER AND FREE PRODUCT ELEVATION DATA
## 3093 BROADWAY
## OAKLAND, CALIFORNIA

| Well | TOC Elevation (feet) | Date | Groundwater Depth (feet) | Groundwater Elevation (feet) | Product Thickness (feet) | Product Elevation (feet) |
|---|---|---|---|---|---|---|
| MW-2 | 94.81 | 6/29/92 | 26.80 | 68.01 | 0.00 | -- |
| | | 7/29/92 | 27.08 | 67.73 | 0.00 | -- |
| | | 8/28/92 | 27.33 | 67.48 | 0.00 | -- |
| | | 10/28/92 | 27.65 | 67.16 | 0.00 | -- |
| | | 11/24/92 | 27.91 | 66.90 | 0.00 | -- |
| | | 12/22/92 | 27.74 | 67.07 | -- | -- |
| | | 4/5/93 | 25.95 | 68.86 | 0.00 | -- |
| | | 7/20/93 | 25.59 | 69.22 | 0.00 | -- |
| | | 11/9/93 | 26.72 | 68.09 | 0.00 | -- |
| | | 8/30/95 | 25.75 | 69.06 | 0.00 | -- |
| | | 10/2/95 | 25.10 | 69.71 | 0.00 | -- |
| | | 11/3/95 | 25.73 | 69.02 | 0.00 | -- |
| | | 11/30/95 | 25.34 | 69.41 | 0.00 | -- |
| | | 1/3/96 | 25.32 | 69.43 | 0.00 | -- |
| | | 2/2/96 | 25.10 | 69.65 | 0.00 | -- |
| | | 3/1/96 | 24.05 | 70.76 | 0.00 | -- |
| | | 4/4/96 | 23.41 | 71.49 | 0.00 | -- |
| | | 5/2/96 | 23.37 | 71.53 | 0.00 | -- |
| | | 6/5/96 | 23.75 | 71.11 | 0.00 | -- |
| | | 7/9/96 | 23.79 | 71.02 | 0.00 | -- |
| | | 8/8/96 | 24.27 | 70.54 | 0.00 | -- |
| MW-3 | 90.08 | 3/6/91 | 23.17 | 66.91 | NM | -- |
| | | 3/18/91 | 22.76 | 67.32 | NM | -- |
| | | 4/12/91 | 22.51 | 67.57 | NM | -- |
| | | 5/12/92 | 23.17 | 66.91 | NM | -- |
| | | 6/29/92 | 22.90 | 67.18 | NM | -- |
| | | 7/29/92 | 22.17 | 67.91 | NM | -- |
| | | 8/28/92 | 22.28 | 67.80 | NM | -- |
| | | 10/28/92 | 22.67 | 67.41 | 0.00 | -- |
| | | 11/24/92 | 23.01 | 67.07 | 0.00 | -- |
| | | 12/22/92 | 22.91 | 67.17 | -- | -- |
| | | 4/5/93 | 22.11 | 67.97 | 0.00 | -- |
| | | 7/20/93 | 23.93 | 66.15 | 0.00 | -- |
| | | 11/9/93 | 23.14 | 66.94 | 0.00 | -- |
| | | 8/29/95 | 20.61 | 69.47 | 0.00 | -- |

# TABLE 2
# GROUNDWATER AND FREE PRODUCT ELEVATION DATA
# 3093 BROADWAY
# OAKLAND, CALIFORNIA

| Well | TOC Elevation (feet) | Date | Groundwater Depth (feet) | Groundwater Elevation (feet) | Product Thickness (feet) | Product Elevation (feet) |
|---|---|---|---|---|---|---|
| MW-3 | 90.08 | 10/2/95 | 21.18 | 68.90 | 0.00 | -- |
| | | 11/3/95 | 20.74 | 69.60 | 0.00 | -- |
| | | 11/30/95 | 20.68 | 69.66 | 0.00 | -- |
| | | 1/3/96 | 20.58 | 69.76 | 0.00 | -- |
| | | 2/2/96 | 20.43 | 69.91 | 0.00 | -- |
| | | 3/1/96 | 20.24 | 69.84 | 0.00 | -- |
| | | 4/4/96 | 18.50 | 71.58 | 0.00 | -- |
| | | 5/2/96 | 18.43 | 71.65 | 0.00 | -- |
| | | 6/5/96 | 18.51 | 71.57 | 0.00 | -- |
| | | 7/9/96 | 18.97 | 71.11 | 0.00 | -- |
| | | 8/8/96 | 19.51 | 70.57 | 0.00 | -- |
| MW-4 | 88.84 | 3/5/91 | 23.79 | 65.05 | NM | -- |
| | | 3/18/91 | 22.30 | 66.54 | NM | -- |
| | | 4/12/91 | 21.85 | 66.99 | NM | -- |
| | | 12/23/91 | 22.63 | 66.22 | 0.98 | 67.19 |
| | | 12/26/91 | 22.52 | 66.32 | 0.96 | 67.28 |
| | | 1/10/92 | 22.74 | 66.10 | 0.99 | 67.09 |
| | | 2/28/92 | 22.00 | 66.84 | 0.67 | 67.51 |
| | | 3/11/92 | 21.71 | 67.13 | 0.55 | 67.68 |
| | | 3/13/92 | 21.56 | 67.28 | 0.49 | 67.77 |
| | | 3/17/92 | 25.46 | 63.38 | 0.44 | 63.82 |
| | | 3/18/92 | 21.38 | 67.47 | 0.44 | 67.90 |
| | | 3/19/92 | 21.33 | 67.51 | 0.48 | 67.99 |
| | | 3/23/92 | 21.29 | 67.55 | 0.42 | 67.97 |
| | | 3/24/92 | 21.31 | 67.53 | 0.38 | 67.90 |
| | | 3/25/92 | 21.17 | 67.67 | 0.36 | 68.04 |
| | | 3/26/92 | 21.08 | 67.76 | 0.35 | 68.11 |
| | | 3/27/92 | 20.92 | 67.92 | 0.26 | 68.18 |
| | | 3/31/92 | 21.15 | 67.69 | 0.44 | 68.13 |
| | | 4/1/92 | 20.90 | 67.94 | 0.24 | 68.18 |
| | | 4/2/92 | 20.90 | 67.94 | 0.17 | 68.11 |
| | | 4/10/92 | 20.91 | 67.93 | 0.33 | 68.26 |
| | | 4/13/92 | 21.04 | 67.80 | 0.42 | 68.22 |
| | | 4/20/92 | 20.74 | 68.10 | 0.19 | 68.29 |
| | | 5/4/92 | 20.83 | 68.01 | 0.33 | 68.34 |

# TABLE 2
## GROUNDWATER AND FREE PRODUCT ELEVATION DATA
## 3093 BROADWAY
## OAKLAND, CALIFORNIA

| Well | TOC Elevation (feet) | Date | Groundwater Depth (feet) | Groundwater Elevation (feet) | Product Thickness (feet) | Product Elevation (feet) |
|---|---|---|---|---|---|---|
| MW-4 | 88.84 | 5/18/92 | 21.33 | 67.51 | 0.23 | 67.74 |
| | | 5/26/92 | 20.83 | 68.01 | 0.17 | 68.18 |
| | | 6/1/92 | 20.85 | 67.99 | 0.19 | 68.17 |
| | | 6/29/92 | 21.38 | 67.46 | 0.53 | 67.99 |
| | | 7/29/92 | 21.69 | 67.15 | 0.56 | 67.71 |
| | | 8/28/92 | 21.35 | 67.49 | 0.63 | 68.12 |
| | | 10/28/92 | 22.48 | 66.36 | 0.84 | 67.20 |
| | | 11/24/92 | 22.60 | 66.24 | NM | -- |
| | | 12/22/92 | 22.47 | 66.37 | NM | -- |
| | | 4/3/93 | 20.11 | 68.73 | 0.51 | 69.24 |
| | | 7/20/93 | 20.48 | 68.36 | 0.52 | 68.88 |
| | | 11/9/93 | 21.71 | 67.13 | 0.63 | 67.76 |
| | | 8/30/95 | 19.90 | 68.94 | 2.20 | 71.14 |
| | | 9/15/95 | 18.76 | 70.08 | 0.57 | 70.65 |
| | | 10/2/95 | 19.17 | 69.67 | 0.65 | 70.32 |
| | | 11/3/95 | 19.45 | 69.39 | 0.44 | 69.83 |
| | | 11/30/95 | 19.50 | 69.44 | 0.32 | 69.76 |
| | | 1/3/96 | 19.31 | 69.53 | 0.20 | 69.73 |
| | | 2/2/96 | 18.91 | 69.93 | 0.20 | 70.13 |
| | | 3/1/96 | 18.25 | 70.59 | 0.19 | 70.78 |
| | | 4/4/96 | 17.53 | 71.31 | 0.18 | 71.47 |
| | | 5/2/96 | 17.50 | 71.34 | 0.25 | 71.59 |
| | | 6/5/96 | 17.67 | 71.17 | 0.39 | 71.56 |
| | | 7/9/96 | 18.29 | 70.55 | 0.50 | 71.05 |
| | | 8/8/96 | 18.84 | -18.84 | 0.00 | -- |
| MW-5 | 84.84 | 3/18/91 | 26.31 | 58.53 | NM | -- |
| | | 3/12/91 | 26.41 | 58.43 | NM | -- |
| | | 5/18/92 | 26.75 | 58.09 | NM | -- |
| | | 6/29/92 | 26.73 | 58.11 | NM | -- |
| | | 7/29/92 | 26.66 | 58.18 | NM | -- |
| | | 8/28/92 | 26.90 | 57.94 | NM | -- |
| | | 10/28/92 | 26.39 | 58.45 | 0.00 | -- |
| | | 11/24/92 | 26.83 | 58.01 | 0.00 | -- |
| | | 12/22/92 | 27.33 | 57.51 | -- | -- |
| | | 4/3/93 | 26.62 | 58.22 | 0.00 | -- |

# TABLE 2
## GROUNDWATER AND FREE PRODUCT ELEVATION DATA
## 3093 BROADWAY
## OAKLAND, CALIFORNIA

| Well | TOC Elevation (feet) | Date | Groundwater Depth (feet) | Groundwater Elevation (feet) | Product Thickness (feet) | Product Elevation (feet) |
|---|---|---|---|---|---|---|
| MW-5 | 84.84 | 7/20/93 | 26.60 | 58.24 | 0.00 | -- |
| | | 11/9/93 | 27.24 | 57.60 | 0.00 | -- |
| | | 8/30/95 | 27.46 | 57.38 | 0.00 | -- |
| | | 10/2/95 | 26.85 | 57.99 | 0.00 | -- |
| | | 11/3/95 | 26.67 | 58.87 | 0.00 | -- |
| | | 11/30/95 | 27.05 | 58.49 | 0.00 | -- |
| | | 1/3/96 | 26.60 | 59.04 | 0.00 | -- |
| | | 2/2/96 | 26.70 | 59.14 | 0.00 | -- |
| | | 3/1/96 | 26.00 | 58.84 | 0.00 | -- |
| | | 4/4/96 | 26.20 | 58.64 | 0.00 | -- |
| | | 5/2/96 | 26.02 | 58.82 | 0.00 | -- |
| | | 6/5/96 | 25.91 | 58.93 | 0.00 | -- |
| | | 7/9/96 | 26.20 | 58.64 | 0.00 | -- |
| | | 8/8/96 | 26.38 | 58.46 | 0.00 | -- |
| MW-6 | 85.62 | 3/18/91 | 25.82 | 59.80 | NM | -- |
| | | 4/12/91 | 27.23 | 58.39 | NM | -- |
| | | 12/23/91 | 28.40 | 57.22 | 3.21 | 60.44 |
| | | 12/26/91 | 27.25 | 58.37 | 1.67 | 60.04 |
| | | 1/10/92 | 27.23 | 58.39 | 0.90 | 59.29 |
| | | 2/4/92 | 27.71 | 57.91 | 2.04 | 59.95 |
| | | 2/28/92 | 27.92 | 57.70 | 3.00 | 60.70 |
| | | 3/10/92 | 27.16 | 58.46 | 2.06 | 60.53 |
| | | 3/12/92 | 25.96 | 59.66 | 0.52 | 60.18 |
| | | 3/13/92 | 25.70 | 59.92 | 0.21 | 60.13 |
| | | 3/23/92 | 26.34 | 59.28 | 1.09 | 60.37 |
| | | 3/30/92 | 25.73 | 59.89 | 0.35 | 60.25 |
| | | 4/10/92 | 25.29 | 60.33 | 0.05 | 60.38 |
| | | 4/13/92 | 25.52 | 60.10 | 0.21 | 60.31 |
| | | 4/20/92 | 25.38 | 60.25 | 0.10 | 60.35 |
| | | 5/4/92 | 25.40 | 60.22 | NM | -- |
| | | 5/18/92 | 25.50 | 60.12 | 0.17 | 60.29 |
| | | 5/26/92 | 25.46 | 60.16 | 0.13 | 60.29 |
| | | 6/1/92 | 25.46 | 60.16 | 0.09 | 60.26 |
| | | 6/29/92 | 25.59 | 60.03 | 0.14 | 60.17 |
| | | 7/29/92 | 26.90 | 58.72 | 1.71 | 60.43 |

# TABLE 2
## GROUNDWATER AND FREE PRODUCT ELEVATION DATA
## 3093 BROADWAY
## OAKLAND, CALIFORNIA

| Well | TOC Elevation (feet) | Date | Groundwater Depth (feet) | Groundwater Elevation (feet) | Product Thickness (feet) | Product Elevation (feet) |
|---|---|---|---|---|---|---|
| MW-6 | 85.62 | 8/28/92 | 25.09 | 60.53 | 2.62 | 63.15 |
| | | 10/28/92 | 25.02 | 60.60 | 3.94 | 64.54 |
| | | 11/24/92 | 28.87 | 56.75 | NM | -- |
| | | 4/3/93 | 26.96 | 58.66 | 2.86 | 61.52 |
| | | 7/20/93 | 26.17 | 59.45 | 2.60 | 62.05 |
| | | 11/9/93 | 27.51 | 58.11 | 3.06 | 61.17 |
| | | 8/30/95 | 28.00 | 57.62 | 7.96 | 65.58 |
| | | 9/15/95 | 28.24 | 57.38 | 6.14 | 63.52 |
| | | 10/2/95 | 28.39 | 57.23 | 6.13 | 63.36 |
| | | 11/3/95 | 26.91 | 58.71 | 3.44 | 62.15 |
| | | 11/30/95 | 27.58 | 58.04 | 4.41 | 62.45 |
| | | 1/3/96 | 27.58 | 58.04 | 4.37 | 62.41 |
| | | 2/2/96 | 27.96 | 57.68 | 5.15 | 62.83 |
| | | 3/1/96 | 27.96 | 57.68 | 5.41 | 63.09 |
| | | 4/4/96 | 27.69 | 57.93 | 5.69 | 63.62 |
| | | 5/2/96 | 26.83 | 58.79 | 4.66 | 63.45 |
| | | 6/5/96 | 27.15 | 58.47 | 5.17 | 63.64 |
| | | 7/9/96 | 27.08 | 58.54 | 4.86 | 63.40 |
| | | 8/8/96 | 26.71 | -26.71 | 4.05 | 62.96 |
| MW-7 | 85.41 | 3/18/91 | 21.63 | 63.78 | NM | -- |
| | | 4/12/91 | 22.13 | 63.28 | NM | -- |
| | | 5/18/92 | 21.67 | 63.74 | NM | -- |
| | | 6/29/92 | 20.75 | 64.66 | NM | -- |
| | | 7/29/92 | 21.07 | 64.34 | NM | -- |
| | | 8/28/92 | 21.35 | 64.06 | NM | -- |
| | | 10/28/92 | 21.81 | 63.60 | 0.00 | -- |
| | | 11/24/92 | 21.52 | 63.89 | 0.00 | -- |
| | | 12/22/92 | obstructed | - | 0.00 | -- |
| | | 4/3/93 | 20.08 | 65.33 | 0.00 | -- |
| | | 7/20/93 | 19.59 | 65.82 | 0.00 | -- |
| | | 11/9/93 | 20.65 | 64.76 | 0.00 | -- |
| | | 8/30/95 | 18.78 | 66.63 | 0.00 | -- |
| | | 10/2/95 | 18.73 | 66.68 | 0.00 | -- |
| | | 11/3/95 | 19.23 | 66.18 | 0.00 | -- |
| | | 11/30/95 | 19.47 | 65.94 | 0.00 | -- |

# TABLE 2
## GROUNDWATER AND FREE PRODUCT ELEVATION DATA
## 3093 BROADWAY
## OAKLAND, CALIFORNIA

| Well | TOC Elevation (feet) | Date | Groundwater Depth (feet) | Groundwater Elevation (feet) | Product Thickness (feet) | Product Elevation (feet) |
|---|---|---|---|---|---|---|
| MW-7 | 85.41 | 1/3/96 | 18.52 | 66.89 | 0.00 | -- |
| | | 2/2/96 | 17.83 | 67.58 | 0.00 | -- |
| | | 3/1/96 | 17.61 | 67.80 | 0.00 | -- |
| | | 4/4/96 | 17.28 | 68.13 | 0.00 | -- |
| | | 5/2/96 | 17.15 | 68.26 | 0.00 | -- |
| | | 6/5/96 | 17.47 | 67.94 | 0.00 | -- |
| | | 7/9/96 | 18.06 | 67.35 | 0.00 | -- |
| | | 8/8/96 | 18.48 | -18.48 | 0.00 | -- |
| MW-8 | 85.50 | 10/28/92 | 27.70 | 57.80 | 0.00 | -- |
| | | 11/24/92 | 27.62 | 57.88 | 0.00 | -- |
| | | 12/22/92 | 27.40 | 58.10 | -- | -- |
| | | 4/3/93 | 26.64 | 58.86 | 0.00 | -- |
| | | 7/20/93 | 26.60 | 58.90 | 0.00 | -- |
| | | 11/9/93 | 27.18 | 58.32 | 0.00 | -- |
| | | 8/30/95 | 26.35 | 59.15 | 0.00 | -- |
| | | 10/2/95 | 26.60 | 58.90 | 0.00 | -- |
| | | 11/3/95 | 26.62 | 58.88 | 0.00 | -- |
| | | 11/30/95 | 26.72 | 58.78 | 0.00 | -- |
| | | 1/3/96 | 26.64 | 58.86 | 0.00 | -- |
| | | 2/2/96 | 26.28 | 59.22 | 0.00 | -- |
| | | 3/1/96 | 25.81 | 59.69 | 0.00 | -- |
| | | 4/4/96 | 25.81 | 59.69 | 0.00 | -- |
| | | 5/2/96 | 26.15 | 60.03 | 0.00 | -- |
| | | 6/5/96 | 26.17 | 60.01 | 0.00 | -- |
| | | 7/9/96 | 26.32 | 59.18 | 0.00 | -- |
| | | 8/8/96 | 26.41 | 59.09 | 0.00 | -- |
| MW-9 | 90.37 | 10/28/92 | 23.37 | 67.00 | 0.00 | -- |
| | | 11/24/92 | 23.51 | 66.86 | 0.00 | -- |
| | | 12/22/92 | 23.31 | 67.06 | -- | -- |
| | | 4/3/93 | 21.14 | 69.23 | 0.00 | -- |
| | | 7/20/93 | 21.54 | 68.83 | 0.00 | -- |
| | | 11/9/93 | 27.53 | 62.84 | 0.00 | -- |
| | | 8/30/95 | 19.59 | 70.78 | 0.00 | -- |
| | | 10/2/95 | 20.05 | 70.32 | 0.00 | -- |

# TABLE 2
## GROUNDWATER AND FREE PRODUCT ELEVATION DATA
## 3093 BROADWAY
## OAKLAND, CALIFORNIA

| Well | TOC Elevation (feet) | Date | Groundwater Depth (feet) | Groundwater Elevation (feet) | Product Thickness (feet) | Product Elevation (feet) |
|---|---|---|---|---|---|---|
| MW-9 | 90.37 | 11/3/95 | 20.40 | 69.97 | 0.00 | -- |
| | | 11/30/95 | 20.65 | 69.72 | 0.00 | -- |
| | | 1/3/96 | 20.73 | 69.64 | 0.00 | -- |
| | | 2/2/96 | 20.19 | 70.18 | 0.00 | -- |
| | | 3/1/96 | 19.53 | 70.84 | 0.00 | -- |
| | | 4/4/96 | 18.74 | 71.63 | 0.00 | -- |
| | | 5/2/96 | 18.63 | 71.74 | 0.00 | -- |
| | | 7/9/96 | 19.15 | 71.22 | 0.00 | -- |
| | | 8/8/96 | 19.89 | -19.89 | 0.35 | 70.83 |
| MW-10 | 88.60 | 10/28/92 | 21.55 | 67.05 | 0.00 | -- |
| | | 11/24/92 | 21.86 | 66.74 | 0.00 | -- |
| | | 12/22/92 | 21.68 | 66.92 | -- | -- |
| | | 4/3/93 | 19.14 | 69.46 | 0.00 | -- |
| | | 7/20/93 | 19.79 | 68.81 | 0.00 | -- |
| | | 11/9/93 | 20.83 | 67.77 | 0.00 | -- |
| | | 8/30/95 | 17.99 | 70.61 | 0.00 | -- |
| | | 10/2/95 | 18.42 | 70.18 | 0.00 | -- |
| | | 11/3/95 | 18.82 | 69.78 | 0.00 | -- |
| | | 11/30/95 | 19.03 | 69.57 | 0.00 | -- |
| | | 1/3/96 | 18.96 | 69.64 | 0.00 | -- |
| | | 2/2/96 | 18.55 | 70.05 | 0.00 | -- |
| | | 3/1/96 | 17.81 | 70.79 | 0.00 | -- |
| | | 4/4/96 | 17.11 | 71.49 | 0.00 | -- |
| | | 5/2/96 | 17.04 | 71.56 | 0.00 | -- |
| | | 6/5/96 | 17.11 | 71.49 | 0.00 | -- |
| | | 7/9/96 | 17.64 | 70.96 | 0.00 | -- |
| | | 8/8/96 | 18.24 | 70.36 | 0.00 | -- |
| MW-11 | 102.06 | 11/24/92 | 33.65 | 68.41 | 0.00 | -- |
| | | 12/22/92 | 33.37 | 68.69 | -- | -- |
| | | 4/5/93 | 31.03 | 71.03 | 0.00 | -- |
| | | 7/20/93 | 31.90 | 70.16 | 0.00 | -- |
| | | 11/9/93 | 32.60 | 69.46 | 0.00 | -- |
| | | 8/29/95 | 28.92 | 73.14 | | |
| | | 10/2/95 | 29.48 | 72.58 | 0.00 | -- |

# TABLE 2
## GROUNDWATER AND FREE PRODUCT ELEVATION DATA
## 3093 BROADWAY
## OAKLAND, CALIFORNIA

| Well | TOC Elevation (feet) | Date | Groundwater Depth (feet) | Groundwater Elevation (feet) | Product Thickness (feet) | Product Elevation (feet) |
|---|---|---|---|---|---|---|
| MW-11 | 102.06 | 11/3/95 | 29.73 | 72.33 | 0.00 | -- |
| | | 11/30/95 | 30.26 | 71.80 | 0.00 | -- |
| | | 1/3/96 | 30.06 | 72.00 | 0.00 | -- |
| | | 2/2/96 | 29.67 | 72.39 | 0.00 | -- |
| | | 3/1/96 | 28.74 | 73.32 | 0.00 | -- |
| | | 4/4/96 | 28.13 | 73.93 | 0.00 | -- |
| | | 5/2/96 | 28.26 | 74.06 | 0.00 | -- |
| | | 6/5/96 | 28.30 | 74.02 | 0.00 | -- |
| | | 7/9/96 | 28.92 | 73.14 | 0.00 | -- |
| | | 8/8/96 | 29.64 | -29.64 | 0.00 | -- |
| MW-13 | 84.06 | 11/24/92 | 26.05 | 58.01 | 0.00 | -- |
| | | 12/22/92 | 25.08 | 58.98 | -- | -- |
| | | 4/5/93 | 24.64 | 59.42 | 0.00 | -- |
| | | 7/20/93 | 24.29 | 59.77 | 0.00 | -- |
| | | 11/9/93 | 24.23 | 59.83 | 0.00 | -- |
| | | 8/29/95 | 23.30 | 60.76 | NM | -- |
| | | 10/2/95 | 23.78 | 60.28 | 0.00 | -- |
| | | 11/3/95 | 23.73 | 60.33 | 0.00 | -- |
| | | 11/30/95 | 23.80 | 60.26 | 0.00 | -- |
| | | 1/3/96 | 23.95 | 60.11 | 0.00 | -- |
| | | 2/2/96 | 23.70 | 60.36 | 0.00 | -- |
| | | 3/1/96 | 23.36 | 60.70 | 0.00 | -- |
| | | 4/4/96 | 23.27 | 60.79 | 0.00 | -- |
| | | 5/2/96 | 23.35 | 60.87 | 0.00 | -- |
| | | 6/5/96 | 23.07 | 60.99 | 0.00 | -- |
| | | 7/9/96 | 23.31 | 60.75 | 0.00 | -- |
| | | 8/8/96 | 23.44 | 60.62 | 0.00 | -- |

Reference datum: arbitrary benchmark established by Levine Fricke.
TOC = Top of casing
Groundwater depths are measured below TOC.
NM = Not measured

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**TABLE 3**
**SUMMARY OF CONTAMINANT CONCENTRATIONS IN GROUNDWATER**
**FROM MONITORING WELLS**
**3093 BROADWAY**
**OAKLAND, CALIFORNIA**

| Well | Event Date | TVH ug/l | TEH ug/l | B ug/l | T ug/l | E ug/l | X ug/l | 1,2-DCA ug/l | Other Purgeable Halocarbons ug/l | Oil & Grease mg/l | Semi-volatile Compounds ug/l | MTBE ug/l |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-1 | 10/1/90 | 620,000 | <500 | 33,000 | 50,000 | 7,900 | 41,000 | 2,900 | ND | -- | -- | -- |
| | 10/1/92 | 490,000 | -- | 51,000 | 59,000 | 5,000 | 27,000 | 1,300 | -- | -- | -- | -- |
| | 11/1/92 | 320,000 | 4,600 | 35,000 | 43,000 | 4,200 | 22,000 | 1,600 | ND | -- | -- | -- |
| | 4/1/93 | 270,000 | 25,000 | 50,000 | 58,000 | 4,600 | 25,000 | 1,800 | ND | -- | -- | -- |
| | 7/1/93 | FP | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 11/1/93 | FP | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 8/1/95 | FP | -- | -- | -- | -- | -- | -- | -- | 10 | | -- |
| | 12/1/95 | FP | -- | -- | -- | -- | -- | -- | -- | -- | ** | -- |
| | 5/1/96 | 340,000 | 32,000 | 57,000 | 73,000 | 7,200 | 38,000 | 1,200 | | <5 | ** | -- |
| MW-2 | 3/1/91 | <50 | <50 | <0.5 | <0.5 | <0.5 | <0.5 | <1 | ND | -- | -- | -- |
| | 11/1/92 | <50 | <50 | <0.5 | 1.1 | <0.5 | 1.5 | <1 | ND | -- | -- | -- |
| | 4/1/93 | <50 | 870 | <0.5 | <0.5 | <0.5 | <0.5 | <1 | ND | -- | -- | -- |
| | 7/1/93 | <50 | <50 | <0.5 | <0.5 | <0.5 | <0.5 | <1 | ND | -- | -- | -- |
| | 11/1/93 | <50 | 240 | <0.5 | <0.5 | <0.5 | <0.5 | <1 | ND | -- | -- | -- |
| | 8/1/95 | <50 | 150* | <0.5 | <0.5 | <0.5 | <0.5 | <1 | -- | -- | -- | -- |
| | 5/1/96 | <50 | <50 | <0.5 | <0.5 | <0.5 | <0.5 | <1 | ND | -- | -- | -- |
| MW-3 | 3/1/91 | <50 | <50 | <50 | 0.6 | <0.5 | <0.5 | <1 | ND | -- | -- | -- |
| | 11/1/92 | 50 | 160 | <0.5 | 0.9 | <0.5 | 2 | <1 | ND | -- | -- | -- |
| | 4/1/93 | <50 | <50 | <0.5 | <0.5 | <0.5 | <0.5 | <1 | ND | -- | -- | -- |
| | 7/1/93 | <50 | <50 | <0.5 | <0.5 | <0.5 | <0.5 | <1 | ND | -- | -- | -- |
| | 11/1/93 | <50 | <50 | <0.5 | <0.5 | <0.5 | <0.5 | <1 | ND | -- | -- | -- |

**TABLE 3**
**SUMMARY OF CONTAMINANT CONCENTRATIONS IN GROUNDWATER**
**FROM MONITORING WELLS**
**3093 BROADWAY**
**OAKLAND, CALIFORNIA**

| Well | Event Date | TVH ug/l | TEH ug/l | B ug/l | T ug/l | E ug/l | X ug/l | 1,2-DCA ug/l | Other Purgeable Halocarbons ug/l | Oil & Grease mg/l | Semi-volatile Compounds ug/l | MTBE ug/l |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-3 | 8/1/95 | <50 | <50 | <0.5 | <0.5 | <0.5 | <0.5 | <1 | -- | -- | -- | -- |
| | 5/1/96 | <50 | <50 | <0.5 | <0.5 | <0.5 | <0.5 | <1 | ND | -- | -- | -- |
| MW-4 | 3/1/91 | 150,000 | <500 | 20,000 | 38,000 | 2,800 | 14,000 | 610 | ND | -- | -- | -- |
| | 10/1/92 | 230,000 | -- | 15,000 | 32,000 | 2,500 | 14,000 | 430 | -- | -- | -- | -- |
| | 11/1/92 | 210,000 | 1,600 | 14,000 | 31,000 | 2,500 | 14,000 | 500 | ND | -- | -- | -- |
| | 4/1/93 | FP | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 7/1/93 | FP | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 11/1/93 | FP | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 8/1/95 | FP | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 12/1/95 | FP | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 5/1/96 | 140,000 | 9,200 | 24,000 | 50,000 | 3,000 | 15,100 | 420 | ND | -- | -- | -- |
| MW-5 | 3/1/91 | <50 | <50 | <0.5 | <0.5 | <0.5 | <0.5 | <1 | ND | -- | -- | -- |
| | 11/1/92 | <50 | 50 | <0.5 | <0.5 | <0.5 | <0.5 | <1 | ND | -- | -- | -- |
| | 4/1/93 | <50 | <50 | <0.5 | <0.5 | <0.5 | <0.5 | <1 | ND | -- | -- | -- |
| | 7/1/93 | <50 | 190 | <0.5 | <0.5 | <0.5 | <0.5 | <1 | ND | -- | -- | -- |
| | 11/1/93 | <50 | 170 | <0.5 | <0.5 | <0.5 | <0.5 | <1 | ND | -- | -- | -- |
| | 8/1/95 | <50 | 180* | <0.5 | <0.5 | <0.5 | <0.5 | <1 | -- | -- | -- | -- |
| | 5/1/96 | <50 | <50 | <0.5 | <0.5 | <0.5 | <0.5 | <1 | ND | -- | -- | -- |

**TABLE 3**
**SUMMARY OF CONTAMINANT CONCENTRATIONS IN GROUNDWATER**
**FROM MONITORING WELLS**
**3093 BROADWAY**
**OAKLAND, CALIFORNIA**

| Well | Event Date | TVH ug/l | TEH ug/l | B ug/l | T ug/l | E ug/l | X ug/l | 1,2-DCA ug/l | Other Purgeable Halocarbons ug/l | Oil & Grease mg/l | Semi-volatile Compounds ug/l | MTBE ug/l |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-6 | 3/1/91 | 80,000 | <50 | 12,000 | 13,000 | 1,100 | 5,400 | 1,400 | Dibromochloro- | -- | -- | -- |
| | 10/1/92 | 19,000 | -- | 3,200 | 1,400 | 200 | 560 | 840 | -- | -- | -- | -- |
| | 12/1/92 | FP | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 4/1/93 | FP | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 7/1/93 | FP | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 11/1/93 | FP | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 8/1/95 | FP | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 5/1/96 | 130,000 | 9,000 | 37,000 | 50,000 | 3,200 | 14,200 | 2,400 | ND | -- | -- | -- |
| MW-7 | 3/1/91 | <50 | <50 | <0.5 | <0.5 | <0.5 | <0.5 | <1 | ND | -- | -- | -- |
| | 11/1/92 | <50 | <50 | <0.5 | <0.5 | <0.5 | <0.5 | <1 | ND | -- | -- | -- |
| | 4/1/93 | <50 | <50 | <0.5 | <0.5 | <0.5 | <0.5 | <1 | ND | -- | -- | -- |
| | 7/1/93 | <50 | 150 | <0.5 | <0.5 | <0.5 | <0.5 | <1 | ND | -- | -- | -- |
| | 11/1/93 | <50 | 200 | <0.5 | 1 | <0.5 | 1.7 | <1 | ND | -- | -- | -- |
| | 8/1/95 | <50 | 170* | <0.5 | <0.5 | <0.5 | <0.5 | <1 | -- | -- | -- | -- |
| | 12/1/95 | <50 | <50 | <0.5 | <0.5 | <0.5 | <0.5 | <1 | ND | -- | -- | -- |
| | 5/1/96 | <50 | <50 | <0.5 | <0.5 | <0.5 | <0.5 | <1 | ND | -- | -- | -- |
| | 8/1/96 | <50 | <50 | <0.5 | <0.5 | <0.5 | <0.5 | <1 | ND | -- | -- | <2.0 |
| MW-8 | 10/1/92 | 70 | -- | 20 | 1 | 1 | 3 | 210 | -- | -- | -- | -- |
| | 11/1/92 | <50 | 170 | <0.5 | <0.5 | <0.5 | <0.5 | 200 | ND | -- | -- | -- |
| | 4/1/93 | 490 | 100 | 15 | 45 | 5.1 | 73 | 210 | ND | -- | -- | -- |
| | 7/1/93 | 180 | 90 | 2.5 | 3 | <0.5 | 1.9 | 350 | ND | -- | -- | -- |

**TABLE 3**
**SUMMARY OF CONTAMINANT CONCENTRATIONS IN GROUNDWATER**
**FROM MONITORING WELLS**
**3093 BROADWAY**
**OAKLAND, CALIFORNIA**

| Well | Event Date | TVH ug/l | TEH ug/l | B ug/l | T ug/l | E ug/l | X ug/l | 1,2-DCA ug/l | Other Purgeable Halocarbons ug/l | Oil & Grease mg/l | Semi-volatile Compounds ug/l | MTBE ug/l |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-8 | 11/1/93 | 310 | 170 | 23 | <0.5 | <0.5 | <0.5 | 240 | ND | -- | -- | -- |
| | 8/1/95 | 660 | 240* | 360 | 6.8 | 13 | 2.8 | 130 | -- | -- | -- | -- |
| | 12/1/95 | 250 | <50 | 46 | 0.9 | 4.9 | <0.5 | 94 | ND | -- | -- | -- |
| | 5/1/96 | 69 | 94 | 110 | <0.5 | <0.5 | 1.5 | 100 | ND | -- | -- | -- |
| | 8/1/96 | 120 | 250 [1,2] | 11 | <0.5 | <0.5 | <0.5 | 93 | ND | -- | -- | <2.0 |
| MW-9 | 11/1/92 | 19,000 | 320 | 180 | 590 | 23 | 2000 | 340 | Chloroform (15) | -- | -- | -- |
| | 4/1/93 | 2,300 | 920 | 48 | 4 | 0.6 | 13 | 600 | Chloroform (2) | -- | -- | -- |
| | 7/1/93 | 2,300 | 450 | 170 | 8.1 | 15 | <0.5 | 1100 | ND | -- | -- | -- |
| | 11/1/93 | 4,400 | 450 | 69 | 7.3 | 21 | 9.7 | 900 | ND | -- | -- | -- |
| | 8/1/95 | 3,200 | 680 | 3,900 | 49 | 80 | 22.8 | 960 | -- | -- | -- | -- |
| | 5/1/96 | <1300 | 710 | 2,600 | <13 | 200 | <13 | 550 | ND | -- | -- | -- |
| MW-10 | 10/1/92 | 28,000 | -- | 2,700 | 3,800 | 210 | 1,300 | 150 | -- | -- | -- | -- |
| | 11/1/92 | 130,000 | 1,300 | 9,700 | 19,000 | 1,400 | 8,400 | 370 | ND | -- | -- | -- |
| | 4/1/93 | 63,000 | 5,000 | 6,300 | 14,000 | 1,100 | 7,500 | 70 | ND | -- | -- | -- |
| | 7/1/93 | 140,000 | 20,000 | 16,000 | 31,000 | 2,200 | 13,000 | 700 | ND | -- | -- | -- |
| | 8/1/95 | 92,000 | 5,900 | 13,000 | 24,000 | 1,800 | 9,100 | 300 | -- | -- | -- | -- |
| | 5/1/96 | 81,000 | 5,600 | 17,000 | 29,000 | 2,100 | 8,500 | 320 | ND | -- | -- | -- |
| MW-11 | 11/1/92 | <50 | 220 | <0.5 | <0.5 | <0.5 | <0.5 | <1 | ND | -- | -- | -- |
| | 12/1/92 | <50 | 140 | <0.1 | <0.1 | <0.1 | <0.1 | -- | -- | -- | -- | -- |
| | 12/1/92 | <50 | 120 | <0.5 | <0.5 | <0.5 | <0.5 | -- | -- | -- | -- | -- |

# TABLE 3
# SUMMARY OF CONTAMINANT CONCENTRATIONS IN GROUNDWATER
# FROM MONITORING WELLS
# 3093 BROADWAY
# OAKLAND, CALIFORNIA

| Well | Event Date | TVH ug/l | TEH ug/l | B ug/l | T ug/l | E ug/l | X ug/l | 1,2-DCA ug/l | Other Purgeable Halocarbons ug/l | Oil & Grease mg/l | Semi-volatile Compounds ug/l | MTBE ug/l |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-11 | 4/1/93 | <50 | <50 | <0.5 | <0.5 | <0.5 | <0.5 | <1 | ND | -- | -- | -- |
| | 7/1/93 | 160 | 150 | <0.5 | 1.8 | <0.5 | <0.5 | <1 | ND | -- | -- | -- |
| | 11/1/93 | 80 | 60 | <0.5 | <0.5 | <0.5 | <0.5 | <1 | ND | -- | -- | -- |
| | 8/1/95 | <50 | 240* | <0.5 | <0.5 | <0.5 | <0.5 | <1 | -- | -- | -- | -- |
| | 5/1/96 | <50 | <50 | <0.5 | <0.5 | <0.5 | <0.5 | <1 | ND | -- | -- | -- |
| MW-13 | 11/1/92 | <50 | 3,600 | <0.5 | <0.5 | <0.5 | <0.5 | <1 | ND | -- | -- | -- |
| | 12/1/92 | <50 | 210 | <0.1 | <0.1 | <0.1 | <0.1 | -- | -- | -- | -- | -- |
| | 12/1/92 | <50 | 100 | <0.5 | <0.5 | <0.5 | <0.5 | -- | -- | -- | -- | -- |
| | 4/1/93 | <50 | <50 | <0.5 | 0.9 | <0.5 | <0.5 | <1 | ND | -- | -- | -- |
| | 7/1/93 | <50 | <50 | <0.5 | <0.5 | <0.5 | <0.5 | <1 | ND | -- | -- | -- |
| | 11/1/93 | <50 | 160 | <0.5 | <0.5 | <0.5 | <0.5 | <1 | ND | -- | -- | -- |
| | 8/1/95 | <50 | <50 | 49 | <0.5 | <0.5 | <0.5 | 3.6 | -- | -- | -- | -- |
| | 12/1/95 | <50 | <50 | <0.5 | <0.5 | <0.5 | <0.5 | 4.1 | ND | -- | -- | -- |

# TABLE 3
# SUMMARY OF CONTAMINANT CONCENTRATIONS IN GROUNDWATER
# FROM MONITORING WELLS
# 3093 BROADWAY
# OAKLAND, CALIFORNIA

| Well | Event Date | TVH ug/l | TEH ug/l | B ug/l | T ug/l | E ug/l | X ug/l | 1,2-DCA ug/l | Other Purgeable Halocarbons ug/l | Oil & Grease mg/l | Semi-volatile Compounds ug/l | MTBE ug/l |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 5/1/96 | <50 | <50 | <0.5 | <0.5 | <0.5 | <0.5 | 4 | ND | -- | -- | -- |
| | 8/1/96 | <50 | <50 | 32 | <0.5 | <0.5 | <0.5 | 6.4 | | | | <2.0 |

ug/l = micrograms per liter = parts per billion = ppb

TVH = Total Volatile Hydrocarbons

TEH = Total Extractable Hydrocarbons

BTEX = Benzene, Toluene, Ethylbenzene, Xylenes

1,2-DCA = 1,2-Dichloroethane

<0.5 = Chemical not present at a concentration in excess of detection limit shown

ND = None detected, chemicals not present at concentrations above detection limits reported on laboratory test reports

MW-1 was initially referred to as Sample 5

-- = Test not requested

FP = Free product encountered in well

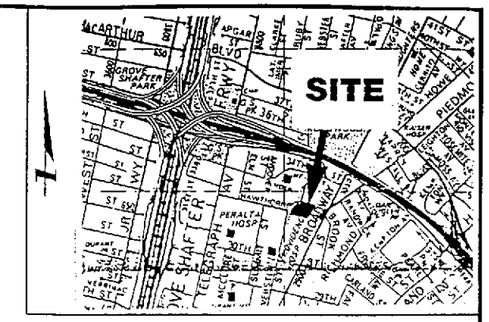
* = Suspect laboratory contamination contributing to test result.

** = 2,4-dichlorophenol (1,700), naphthalene (1,200), 2-methylnapthalene (630), bis (2-ethylhexyl) phthalate (240) detected during August 1995 event, naphthalene (640), 2-methylnapthalene (250) during the May 1996 event

[1] = Sample exibits fuel pattern which does not resemble standard

[2] = Lighter hydrocarbons tha indicated standard

f:\jobdocs\447\447.055\concen.xls




VICINITY MAP

HAWTHORNE STREET

SIDEWALK

3093 BROADWAY

WEBSTER STREET

SIDEWALK

SIDEWALK

BROOK STREET

BROADWAY

SIDEWALK

EXPLANATION

- SCI TEST BORING
- SCI MONITORING WELL
- EXTRACTION WELL
- LEVINE FRICKE MONITORING WELL
- CONE PENTRATION TEST (CPT)
- FENCE
- RETAINING WALL
- FORMER TANK LOCATION

N

APPROXIMATE SCALE (feet)

0 60 120

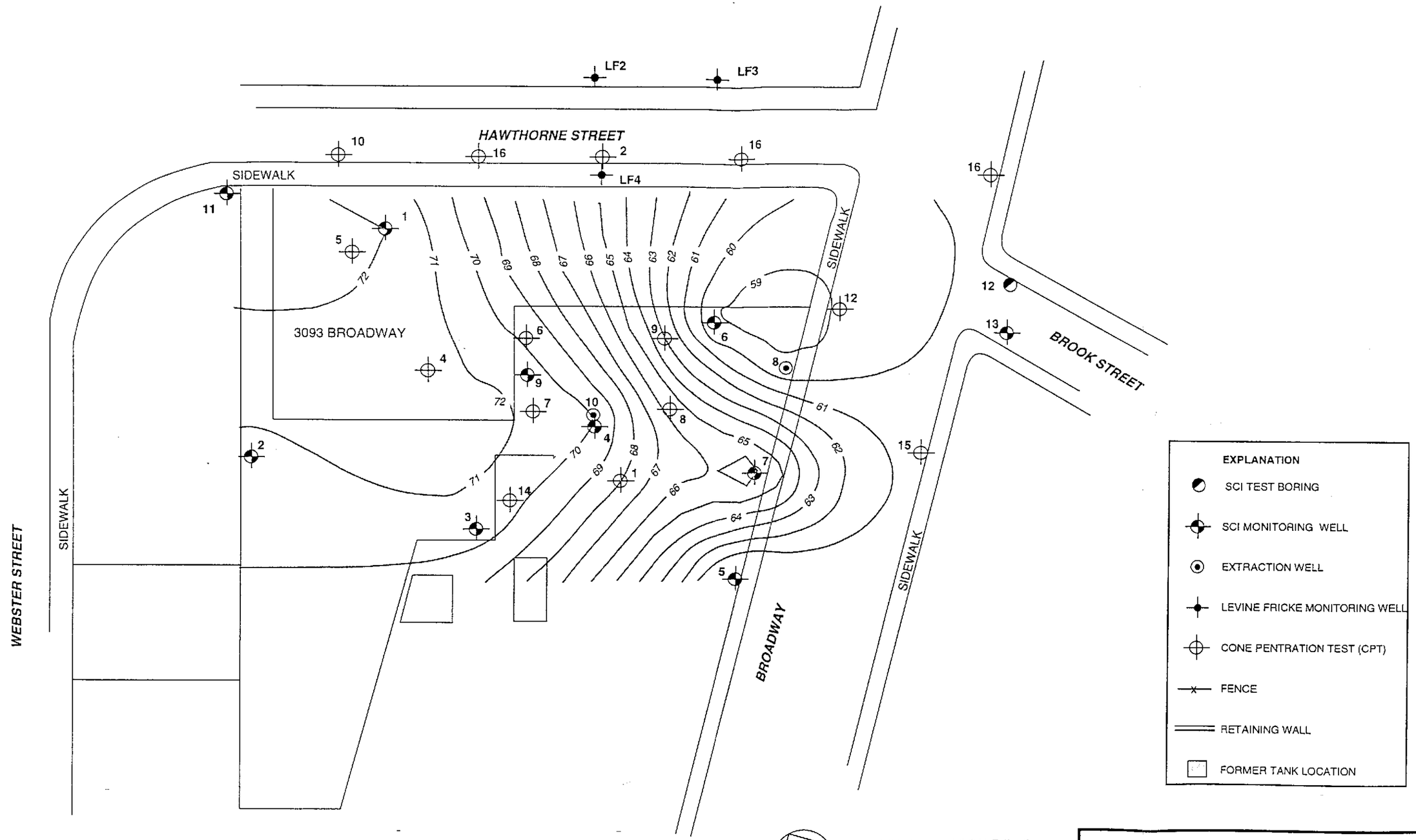
# SITE PLAN

Subsurface Consultants

CONNELL OLDSMOBILE - OAKLAND, CA

| JOB NUMBER | DATE | APPROVED |
|---|---|---|
| 447.055 | 8/15//96 | |

PLATE 1




# GROUNDWATER ELEVATION CONTOURS

Subsurface Consultants

CONNELL OLDSMOBILE - OAKLAND, CA

| JOB NUMBER | DATE | APPROVED |
|---|---|---|
| 447.055 | 8/15//96 | |

PLATE 2

# GROUNDWATER DEPTHS

Project Name: Connell olds

Job No.: 447.055

Measured by: DWA

| Well | Date | Time | Groundwater Depth (feet) | Comments |
|---|---|---|---|---|
| MW-1 | 8/8/96 | 11:35 | 22' 5⅛" | Top of Product = 22' 1⅛" product thickness = 4" " Bailed = ⅛ liter |
| MW-2 | | 1045 | 24.27 | |
| MW-3 | | 1040 | 19.51 | |
| MW-4 | | 1055 | 18' 10⅛" | ~~Top of Product~~ |
| MW-5 | | 11:20 | 26.38 | |
| MW-6 | | 12:20 | 26' 8½" | Top of Product = 22' 7⅛" product thickness = 4' 5⅛" " Bailed = 4 gals. |
| MW-7 | | 11:15 | 18.48 | |
| MW-8 | | 12:15 | 26.41 | |
| MW-9 | | ~~12:15~~ 12:10 | 19.89 ~~0' 4"~~ | Top of Product = 18' 5⅛" Product thickness = 4¼" " Bailed = ¼ liter |
| MW-10 | | 1050 | 18.24 | |
| MW-11 | | 1035 | 29.64 | |
| MW-13 | | 0935 | 23.44 | |
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## WELL SAMPLING FORM

Project Name: Connell Olds
Well Number: MW-7
Job No.: 447.055
Well Casing Diameter: 2 inches
Sampled By: DWA
Date: 8/8/96
TOC Elevation:
Weather: sunny
Depth to Casing Bottom (below TOC) 30.00 feet
Depth to Groundwater Before Purging (below TOC) 18.48 feet
Feet of Water in Well 11.52 feet
Depth to Groundwater When 80% Recovered 20.78 feet
Casing Volume (feet of water x Casing DIA $^2$ x 0.0408) 1.9 gallons
Depth Measurement Method Tape & Paste / (Electronic Sounder) / Other
Free Product none
Purge Method disposable bailer

fast recharge

### FIELD MEASUREMENTS

| Gallons Removed | Time | pH | Temp (°C / °F) | Conductivity (micromhos/cm) | Salinity S% | Comments |
|---|---|---|---|---|---|---|
| 0 | | 8.74 | 78.9 | 368 | | clear/no odor |
| 2 | | 8.17 | 75.4 | 389 | | ↓ |
| 4 | | 7.85 | 74.9 | 398 | | semi-dra |
| 6 | | 7.63 | 74.6 | 397 | | murky |
| | | | | | | |

Total Gallons Purged 6 gallons
Depth to Groundwater Before Sampling (below TOC) 20.78 feet
Sampling Method disposable bailer
Containers Used 6 (40 ml) 1 (liter) (pint)

### DRUM STATUS

Number of drums at the site 2
Date and Content 8/95 & 6/96 (product)
Condition excellent

| Subsurface Consultants | JOB NUMBER | DATE | APPROVED | PLATE |
|---|---|---|---|---|

## WELL SAMPLING FORM

Project Name: Connell Olds  Well Number: MW-8

Job No.: 447.055  Well Casing Diameter: 6 inches

Sampled By: DWA  Date: 8/8/96

TOC Elevation: _____  Weather: Sunny

Depth to Casing Bottom (below TOC) 40.00 feet

Depth to Groundwater Before Purging (below TOC) 26.41 feet

Feet of Water in Well 13.59 feet

Depth to Groundwater When 80% Recovered 29.13 feet

Casing Volume (feet of water x Casing DIA $^2$ x 0.0408) 20.6 gallons

Depth Measurement Method  Tape & Paste / (Electronic Sounder) / Other

Free Product none

Purge Method disposable bailer

moderate recharge

### FIELD MEASUREMENTS

| Gallons Removed | Time | pH | Temp (°C / (F)) | Conductivity (micromhos/cm) | Salinity S% | Comments |
|---|---|---|---|---|---|---|
| 20 | | 8.34 | 76.8 | 457 | | clean ~~moderate~~ / moderate odor |
| 30 | | 8.01 | 76.9 | 486 | | |
| 40 | | 7.98 | 76.5 | 485 | | |
| 50 | | 7.92 | 76.4 | 490 | | |
| 60 | | 7.90 | 76.1 | 482 | | |

Total Gallons Purged ~~60~~ 65 gallons

Depth to Groundwater Before Sampling (below TOC) 29.13 feet

Sampling Method disposable bailer

Containers Used 6 (40 ml) / 1 (liter) / _____ (pint) / _____

### DRUM STATUS

Number of drums at the site 2

Date and Content 8/95 & 6/96 (product)

Condition excellent

Subsurface Consultants

JOB NUMBER  DATE  APPROVED  PLATE

# WELL SAMPLING FORM

Project Name: Connell Olds
Well Number: MW-13
Job No.: 447.055
Well Casing Diameter: 2 inch
Sampled By: DWA
Date: 8/8/96
TOC Elevation:
Weather: foggy

Depth to Casing Bottom (below TOC) 40.00 feet
Depth to Groundwater (below TOC) 23.44 feet
Feet of Water in Well 16.56 feet
Depth to Groundwater When 80% Recovered 26.75 feet
Casing Volume (feet of water x Casing DIA $^2$ x 0.0408) 2.7 gallons
Depth Measurement Method Tape & Paste / (Electronic Sounder) / Other
Free Product none
Purge Method disposable bailer

fast recharge

## FIELD MEASUREMENTS

| Gallons Removed | pH | Temp (°F) | Conductivity (micromhos/cm) | Salinity S% | Comments |
|---|---|---|---|---|---|
| 1 | 8.59 | 70.1 | 567 | | clear/no odor |
| 3 | 7.94 | 68.4 | 379 | | |
| 5 | 7.67 | 68.2 | 351 | | |
| 7 | 7.53 | 67.9 | 342 | | |
| 9 | 7.48 | 67.9 | 339 | | semi-clear/no odor |

Total Gallons Purged 9 gallons
Depth to Groundwater Before Sampling (below TOC) 24.71 feet
Sampling Method disposable bailer
Containers Used 6 (40 ml) 1 (liter) (pint)

Subsurface Consultants

JOB NUMBER DATE APPROVED

PLATE

# CHAIN OF CUSTODY FORM

PAGE 1 OF

PROJECT NAME: Connell Olds
JOB NUMBER: 447.055
PROJECT CONTACT: Jim Helge
SAMPLED BY: Dennis Alexander
LAB: Curtis & Tompkins
TURNAROUND: Normal
REQUESTED BY: Jim Helge

| LABORATORY I.D. NUMBER | SCI SAMPLE NUMBER | MATRIX: WATER | SOIL | WASTE | AIR | CONTAINERS: VOA | LITER | PINT | TUBE | METHOD PRESERVED: HCL | $H_2SO_4$ | $HNO_3$ | ICE | NONE | SAMPLING DATE: MONTH | DAY | YEAR | TIME | NOTES | ANALYSIS REQUESTED: TVH/BTXE | TEH | DCA+MTBE (EPA 8020) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | MW-7 | X | | | | 6 | 1 | | | X | | | X | | 08 | 08 | 96 | 1330 | | X | X | X |
| | MW-8 | X | | | | 6 | 1 | | | X | | | X | | 08 | 08 | 96 | 1500 | | X | X | X |
| | MW-13 | X | | | | 6 | 1 | | | X | | | X | | 08 | 08 | 96 | 1015 | | X | X | X |

## CHAIN OF CUSTODY RECORD

| RELEASED BY: (Signature) | DATE / TIME | RECEIVED BY: (Signature) | DATE / TIME |
|---|---|---|---|
| Dennis Alexander | 8/8/96 3:30 pm | | |
| RELEASED BY: (Signature) | DATE / TIME | RECEIVED BY: (Signature) | DATE / TIME |
| | | | |
| RELEASED BY: (Signature) | DATE / TIME | RECEIVED BY: (Signature) | DATE / TIME |
| | | | |
| RELEASED BY: (Signature) | DATE / TIME | RECEIVED BY: (Signature) | DATE / TIME |
| | | D. Moore | 8/8/96 3:30pm |

COMMENTS & NOTES:


Subsurface Consultants, Inc.
171 12TH STREET, SUITE 201, OAKLAND, CALIFORNIA 94607
(510) 268-0461 • FAX: 510-268-0137

# Subsurface Consultants, Inc.

## EXPENSE RECORD for SCI FIELD SERVICES and FIELD SUPPLIES

PROJECT NAME: Connell olds | JOB NUMBER: 447.055 | DATE SUBMITTED: 8/9/96

SUBMITTED BY: D. Alexander | ENTERED BY:

| TYPE OF FIELD SUPPLY/FIELD SERVICE | UNIT NUMBER | NUMBER OF UNITS/DAYS | COST |
|---|---|---|---|
| | | | $ |
| Bailers | 53023 | 7 | 56.00 |
| PH/Cond. Meter | 53009 | 1 | 10.00 |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

FILE COPY

### SCI FIELD SUPPLIES

| Unit No. | Unit Name | Billing Per Unit | Cost Per Unit |
|---|---|---|---|
| 53020 | Plastic Sheet (20x100') | per roll | $100.00 |
| 53021 | Plastic Sheet (10x100' or 20x50') | per roll | 50.00 |
| 53022 | Brass Liners | each | 5.00 |
| 53023 | Disposable Bailers | each | 8.00 |
| 53024 | Keyed-Alike Locks | each | 8.00 |
| 53025 | Zip-Lock Bags - quart | per box | 2.00 |
| 53026 | Zip-Lock Bags - gallon | per box | 4.00 |
| 53027 | Portland Cement - 94# | sack | 8.95 |
| 53028 | Concrete Mix - 90# | sack | 4.05 |
| 53029 | Asphalt Mix - 90# | sack | 5.01 |
| 53030 | Bentonite Gel - 1# | sack | 6.10 |
| 53031 | Bentonite Pellets - 1/4" | bucket | 39.84 |
| 53032 | Bentonite Pellets - 3/8" | bucket | 32.37 |
| 53033 | Bentonite Pellets - 1/2" | bucket | 28.64 |
| 53034 | Sand - #3 | sack | 7.12 |
| 53035 | 2" PVC Slip Cap | each | .94 |
| 53036 | 2" PVC Screw Cap | each | 7.51 |
| 53037 | 2" Locking Cap | each | 22.91 |
| 53038 | 4" PVC Slip Cap | each | 7.53 |
| 53039 | 4" PVC Screw Cap | each | 13.25 |
| 53040 | 4" Locking Cap | each | 24.93 |
| 53041 | 2" PVC Blank Pipe - 5' section | per foot | 3.11 |
| 53042 | 2" PVC Blank Pipe - 10' section | per foot | 2.05 |
| 53043 | 2" PVC Screen Pipe - 5' section | per foot | 4.32 |
| 53044 | 2" PVC Screen Pipe - 10' section | per foot | 3.05 |
| 53045 | 4" PVC Blank Pipe - 5' section | per foot | 6.24 |
| 53046 | 4" PVC Blank Pipe - 10' section | per foot | 4.89 |
| 53047 | 4" PVC Screen Pipe - 5' section | per foot | 8.92 |
| 53048 | 4" PVC Screen Pipe - 10' section | per foot | 7.10 |
| 53049 | 55 Gallon Drum | each | 43.57 |
| 53050 | Slope Indicator Casing | 10-foot sec | 65.98 |
| 53051 | Coupling | each | 5.29 |
| 53052 | End Cap | each | 3.73 |

### FIELD SERVICES

| | | |
|---|---|---|
| 53001 | Generator | $25/day |
| 53002 | Steam Cleaner | $75/day |
| 53003 | Inclinometer | $150/day |
| 53004 | Rotary Hammer | $25/day |
| 53005 | Hand Pump | $10/day |
| 53006 | Nitrogen Pump | $50/day |
| 53007 | OVM | $25/day |
| 53008 | Gas Tech | $25/day |
| 53009 | PH Meter | $10/day |
| 53010 | Conductivity Meter | $10/day |
| 53011 | Submersible Pump | $25/day |

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

# A N A L Y T I C A L  R E P O R T

Prepared for:

Subsurface Consultants
3736 Mt. Diablo Blvd.
Suite 200
Lafayette, CA 94549

Date: 15-AUG-96
Lab Job Number: 126487
Project ID: 447.055
Location: Connell Olds

Reviewed by: _____

Reviewed by: _____

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 126487
CLIENT: SUBSURFACE CONSULTANTS
PROJECT #:447.055
LOCATION: CONNELL OLDS

DATE SAMPLED: 08/08/96
DATE RECEIVED: 08/08/96
DATE ANALYZED: 08/12-13/96
DATE REPORTED:08/15/96
BATCH #: 29110

ANALYSIS: MTBE
ANALYSIS METHOD: EPA 8020

| LAB ID | SAMPLE ID | RESULT (ug/L) | REPORTING LIMIT | SURROGATE RECOVERY (TFT) | (BFB) |
|---|---|---|---|---|---|
| 126487-001 | MW-7 | ND | 2.0 | 101 | 93 |
| 126487-002 | MW-8 | ND | 2.0 | 104 | 100 |
| 126487-003 | MW-13 | ND | 2.0 | 103 | 99 |
| METHOD BLANK | N/A | ND | 2.0 | 100 | 90 |

ND = Not detected at or above reporting limit.

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 126487-001
CLIENT: SUBSURFACE CONAULTANTS
PROJECT ID: 447.055
LOCATION: CONNELL OLDS
SAMPLE ID: MW-7

DATE SAMPLED: 08/08/96
DATE RECEIVED: 08/08/96
DATE ANALYZED: 08/12/96
DATE REPORTED: 08/15/96
BATCH NO: 29113

EPA 8010 Compound List by EPA 8240
Purgeable Halocarbons in Water

| Compound | Result ug/L | Reporting Limit ug/L |
|---|---|---|
| 1,1-Dichloroethane | ND | 1.0 |
| 1,2-Dichloroethane | ND | 1.0 |

ND = Not detected at or above reporting limit.

SURROGATE RECOVERIES

| | |
|---|---|
| 1,2-Dichloroethane-d4 | 110 % |
| Toluene-d8 | 98 % |
| Bromofluorobenzene | 103 % |

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 126487-002
CLIENT: SUBSURFACE CONAULTANTS
PROJECT ID: 447.055
LOCATION: CONNELL OLDS
SAMPLE ID: MW-8

DATE SAMPLED: 08/08/96
DATE RECEIVED: 08/08/96
DATE ANALYZED: 08/12/96
DATE REPORTED: 08/15/96
BATCH NO: 29113

EPA 8010 Compound List by EPA 8240
Purgeable Halocarbons in Water

| Compound | Result ug/L | Reporting Limit ug/L |
|---|---|---|
| 1,1-Dichloroethane | ND | 1.0 |
| 1,2-Dichloroethane | 93 | 1.0 |

ND = Not detected at or above reporting limit.

SURROGATE RECOVERIES

| | |
|---|---|
| 1,2-Dichloroethane-d4 | 108 % |
| Toluene-d8 | 98 % |
| Bromofluorobenzene | 102 % |

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 126487-003
CLIENT: SUBSURFACE CONAULTANTS
PROJECT ID: 447.055
LOCATION: CONNELL OLDS
SAMPLE ID: MW-13

DATE SAMPLED: 08/08/96
DATE RECEIVED: 08/08/96
DATE ANALYZED: 08/13/96
DATE REPORTED: 08/15/96
BATCH NO: 29113

EPA 8010 Compound List by EPA 8240
Purgeable Halocarbons in Water

| Compound | Result ug/L | Reporting Limit ug/L |
|---|---|---|
| 1,1-Dichloroethane | ND | 1.0 |
| 1,2-Dichloroethane | 6.4 | 1.0 |

ND = Not detected at or above reporting limit.

SURROGATE RECOVERIES

| | |
|---|---|
| 1,2-Dichloroethane-d4 | 109 % |
| Toluene-d8 | 99 % |
| Bromofluorobenzene | 102 % |

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 126487-METHOD BLANK
CLIENT: SUBSURFACE CONAULTANTS
PROJECT ID: 447.055
LOCATION: CONNELL OLDS
SAMPLE ID: MB

DATE ANALYZED: 08/12/96
DATE REPORTED: 08/15/96
BATCH NO: 29113

EPA 8010 Compound List by EPA 8240
Purgeable Halocarbons in Water

| Compound | Result ug/L | Reporting Limit ug/L |
|---|---|---|
| 1,1-Dichloroethane | ND | 1.0 |
| 1,2-Dichloroethane | ND | 1.0 |

ND = Not detected at or above reporting limit.

SURROGATE RECOVERIES

| | |
|---|---|
| 1,2-Dichloroethane-d4 | 105 % |
| Toluene-d8 | 98 % |
| Bromofluorobenzene | 104 % |

Curtis & Tompkins, Ltd

Curtis & Tompkins, Ltd.

8260A Laboratory Control Sample Report

Lab No: QC27920
Date Analyzed: 12-AUG-96
Matrix: WATER
Batch No: 29113 446225202013

LCS Datafile: EHC13
Operator: DM

| Compound | ug/L | SpikeAmt | % Rec | Limits |
|---|---|---|---|---|
| 1,1-Dichloroethene | 62.27 | 50 | 125 % | 51-180% |
| Trichloroethene | 51.63 | 50 | 103 % | 73-141% |
| Benzene | 54.29 | 50 | 109 % | 78-142% |
| Toluene | 51.85 | 50 | 104 % | 76-150% |
| Chlorobenzene | 53.05 | 50 | 106 % | 83-129% |
| Surrogate Recoveries | | | | |
| 1,2-Dichloroethane-d4 | 51.70 | 50 | 103 % | 68-126% |
| Toluene-d8 | 49.00 | 50 | 98 % | 87-125% |
| Bromofluorobenzene | 51.67 | 50 | 103 % | 79-122% |
| Dibromofluoromethane | 51.41 | 50 | 103 % | 71-128% |

Results within Specifications - PASS

Note: Instrument C and D surrogates based on LCS data

## TVH-Total Volatile Hydrocarbons

Client: Subsurface Consultants
Project#: 447.055
Location: Connell Olds

Analysis Method: CA LUFT (EPA 8015M)
Prep Method: EPA 5030

| Sample # | Client ID | Batch # | Sampled | Extracted | Analyzed | Moisture |
|---|---|---|---|---|---|---|
| 126487-001 | MW-7 | 29110 | 08/08/96 | 08/12/96 | 08/12/96 | |
| 126487-002 | MW-8 | 29110 | 08/08/96 | 08/13/96 | 08/13/96 | |
| 126487-003 | MW-13 | 29110 | 08/08/96 | 08/13/96 | 08/13/96 | |

Matrix: Water

| Analyte | Units | 126487-001 | 126487-002 | 126487-003 |
|---|---|---|---|---|
| Diln Fac: | | 1 | 1 | 1 |
| Gasoline | ug/L | <50 | 120 | <50 |
| Surrogate | | | | |
| Trifluorotoluene | %REC | 97 | 96 | 96 |
| Bromobenzene | %REC | 86 | 91 | 88 |

# BTXE

Client: Subsurface Consultants
Project#: 447.055
Location: Connell Olds

Analysis Method: EPA 8020
Prep Method: EPA 5030

| Sample # | Client ID | Batch # | Sampled | Extracted | Analyzed | Moisture |
|---|---|---|---|---|---|---|
| 126487-001 | MW-7 | 29110 | 08/08/96 | 08/12/96 | 08/12/96 | |
| 126487-002 | MW-8 | 29110 | 08/08/96 | 08/13/96 | 08/13/96 | |
| 126487-003 | MW-13 | 29110 | 08/08/96 | 08/13/96 | 08/13/96 | |

Matrix: Water

| Analyte | Units | 126487-001 | 126487-002 | 126487-003 |
|---|---|---|---|---|
| Diln Fac: | | 1 | 1 | 1 |
| Benzene | ug/L | <0.5 | 11 | 32 |
| Toluene | ug/L | <0.5 | <0.5 | <0.5 |
| Ethylbenzene | ug/L | <0.5 | <0.5 | <0.5 |
| m,p-Xylenes | ug/L | <0.5 | <0.5 | <0.5 |
| o-Xylene | ug/L | <0.5 | <0.5 | <0.5 |
| Surrogate | | | | |
| Trifluorotoluene | %REC | 101 | 104 | 103 |
| Bromobenzene | %REC | 93 | 100 | 99 |

Curtis & Tompkins, Ltd.

Lab #: 126487 BATCH QC REPORT 

## TVH-Total Volatile Hydrocarbons

Client: Subsurface Consultants
Project#: 447.055
Location: Connell Olds

Analysis Method: CA LUFT (EPA 8015M)
Prep Method: EPA 5030

## METHOD BLANK

Matrix: Water
Batch#: 29110
Units: ug/L
Diln Fac: 1

Prep Date: 08/12/96
Analysis Date: 08/12/96

MB Lab ID: QC27908

| Analyte | Result | |
|---|---|---|
| Gasoline | <50 | |
| **Surrogate** | **%Rec** | **Recovery Limits** |
| Trifluorotoluene | 94 | 69-120 |
| Bromobenzene | 79 | 70-122 |

Curtis & Tompkins, Ltd.

Lab #: 126487 BATCH QC REPORT 

## BTXE

Client: Subsurface Consultants
Project#: 447.055
Location: Connell Olds

Analysis Method: EPA 8020
Prep Method: EPA 5030

## METHOD BLANK

Matrix: Water
Batch#: 29110
Units: ug/L
Diln Fac: 1

Prep Date: 08/12/96
Analysis Date: 08/12/96

MB Lab ID: QC27908

| Analyte | Result |
|---|---|
| Benzene | <0.5 |
| Toluene | <0.5 |
| Ethylbenzene | <0.5 |
| m,p-Xylenes | <0.5 |
| o-Xylene | <0.5 |

| Surrogate | %Rec | Recovery Limits |
|---|---|---|
| Trifluorotoluene | 100 | 58-130 |
| Bromobenzene | 90 | 62-131 |

Curtis & Tompkins, Ltd.

Lab #: 126487 BATCH QC REPORT 

## TVH-Total Volatile Hydrocarbons

Client: Subsurface Consultants
Project#: 447.055
Location: Connell Olds

Analysis Method: CA LUFT (EPA 8015M)
Prep Method: EPA 5030

## LABORATORY CONTROL SAMPLE

Matrix: Water
Batch#: 29110
Units: ug/L
Diln Fac: 1

Prep Date: 08/12/96
Analysis Date: 08/12/96

LCS Lab ID: QC27909

| Analyte | Result | Spike Added | %Rec # | Limits |
|---|---|---|---|---|
| Gasoline | 1901 | 2000 | 95 | 80-120 |
| **Surrogate** | **%Rec** | **Limits** | | |
| Trifluorotoluene | 97 | 69-120 | | |
| Bromobenzene | 96 | 70-122 | | |

# Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits
Spike Recovery: 0 out of 1 outside limits

BTXE

Client: Subsurface Consultants
Project#: 447.055
Location: Connell Olds

Analysis Method: EPA 8020
Prep Method: EPA 5030

LABORATORY CONTROL SAMPLE

Matrix: Water
Batch#: 29110
Units: ug/L
Diln Fac: 1

Prep Date: 08/12/96
Analysis Date: 08/12/96

LCS Lab ID: QC27910

| Analyte | Result | Spike Added | %Rec # | Limits |
|---|---|---|---|---|
| Benzene | 20.2 | 20 | 101 | 80-120 |
| Toluene | 19 | 20 | 95 | 80-120 |
| Ethylbenzene | 18.8 | 20 | 94 | 80-120 |
| m,p-Xylenes | 37.9 | 40 | 95 | 80-120 |
| o-Xylene | 18.9 | 20 | 95 | 80-120 |

| Surrogate | %Rec | Limits |
|---|---|---|
| Trifluorotoluene | 104 | 58-130 |
| Bromobenzene | 95 | 62-131 |

# Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits
Spike Recovery: 0 out of 5 outside limits

Curtis & Tompkins, Ltd.

Lab #: 126487 BATCH QC REPORT 

BTXE

Client: Subsurface Consultants
Project#: 447.055
Location: Connell Olds

Analysis Method: EPA 8020
Prep Method: EPA 5030

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Field ID: MW-7
Lab ID: 126487-001
Matrix: Water
Batch#: 29110
Units: ug/L
Diln Fac: 1

Sample Date: 08/08/96
Received Date: 08/08/96
Prep Date: 08/12/96
Analysis Date: 08/12/96

MS Lab ID: QC27911

| Analyte | Spike Added | Sample | MS | %Rec # | Limits |
|---|---|---|---|---|---|
| Benzene | 20 | <0.5 | 20.3 | 102 | 75-125 |
| Toluene | 20 | <0.5 | 19.4 | 97 | 75-125 |
| Ethylbenzene | 20 | <0.5 | 19.1 | 96 | 75-125 |
| m,p-Xylenes | 80 | <0.5 | 38.8 | 97 | 75-125 |
| o-Xylene | 20 | <0.5 | 19.4 | 97 | 75-125 |

| Surrogate | %Rec | Limits |
|---|---|---|
| Trifluorotoluene | 103 | 58-130 |
| Bromobenzene | 96 | 62-131 |

MSD Lab ID: QC27912

| Analyte | Spike Added | MSD | %Rec # | Limits | RPD # | Limit |
|---|---|---|---|---|---|---|
| Benzene | 20 | 21.7 | 109 | 75-125 | 7 | 20 |
| Toluene | 20 | 20.7 | 104 | 75-125 | 7 | 20 |
| Ethylbenzene | 20 | 20.5 | 103 | 75-125 | 7 | 20 |
| m,p-Xylenes | 80 | 41.5 | 104 | 75-125 | 7 | 20 |
| o-Xylene | 20 | 20.6 | 103 | 75-125 | 6 | 20 |

| Surrogate | %Rec | Limits |
|---|---|---|
| Trifluorotoluene | 102 | 58-130 |
| Bromobenzene | 95 | 62-131 |

# Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits
RPD: 0 out of 5 outside limits
Spike Recovery: 0 out of 10 outside limits

## TEH-Tot Ext Hydrocarbons

Client: Subsurface Consultants
Project#: 447.055
Location: Connell Olds

Analysis Method: CA LUFT (EPA 8015M)
Prep Method: EPA 3520

| Sample # | Client ID | Batch # | Sampled | Extracted | Analyzed | Moisture |
|---|---|---|---|---|---|---|
| 126487-001 | MW-7 | 29059 | 08/08/96 | 08/08/96 | 08/10/96 | |
| 126487-002 | MW-8 | 29059 | 08/08/96 | 08/08/96 | 08/10/96 | |
| 126487-003 | MW-13 | 29059 | 08/08/96 | 08/08/96 | 08/10/96 | |

Matrix: Water

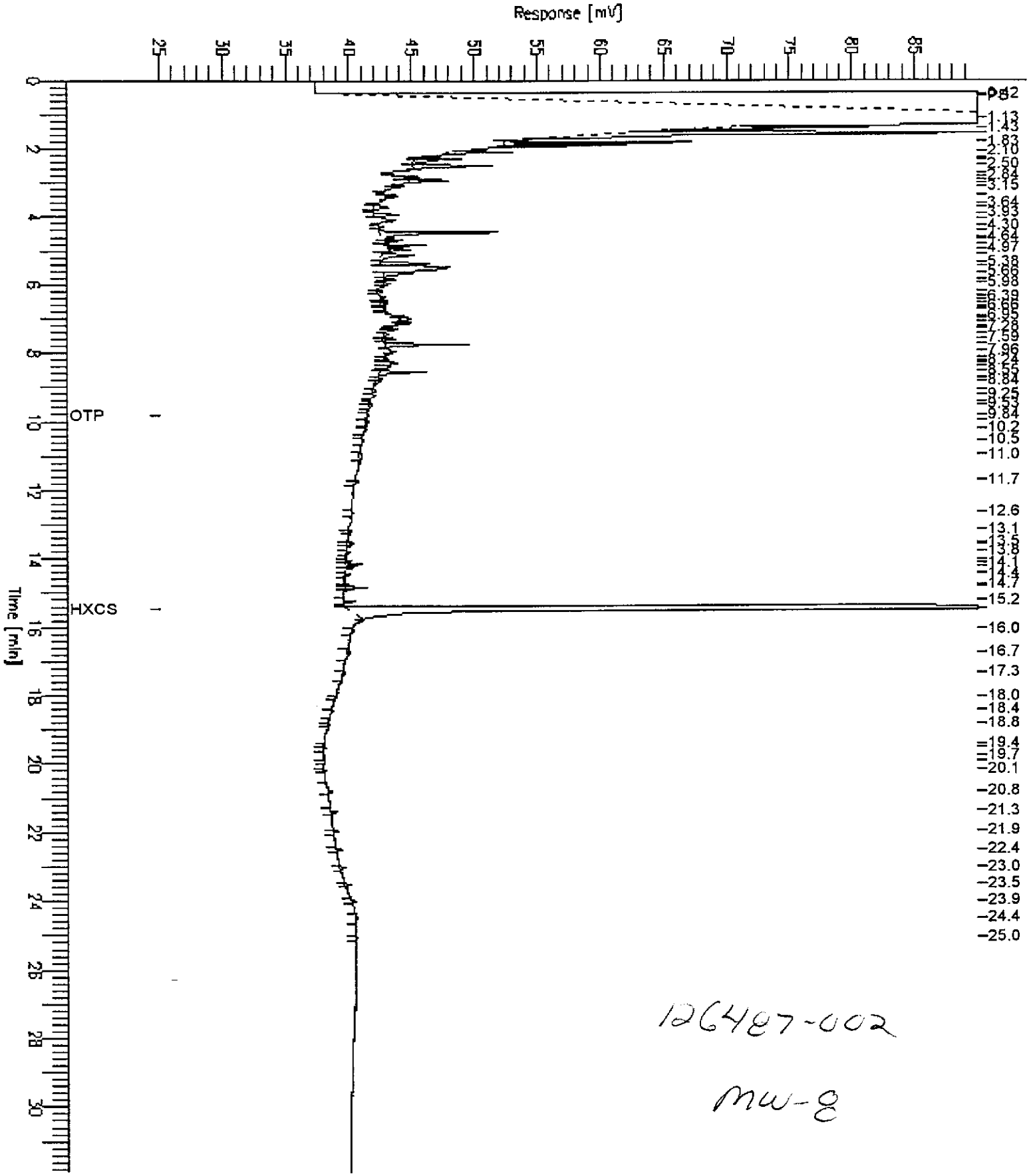
| Analyte | Units | 126487-001 | 126487-002 | 126487-003 |
|---|---|---|---|---|
| Diln Fac: | | 1 | 1 | 1 |
| Diesel C12-C22 | ug/L | <50 | 250 YL | <50 |
| Surrogate | | | | |
| Hexacosane | %REC | 90 | 96 | 94 |

Y: Sample exhibits fuel pattern which does not resemble standard
L: Lighter hydrocarbons than indicated standard

# Chromatogram

Sample Name : 126487-002,29059
FileName : G:\GC11\CHB\222B019.raw
Method : DUAL
Start Time : 0.00 min End Time : 31.90 min
Scale Factor: 0.0 Plot Offset: 25 mV

Sample #: 500:2.5 Page 1 of 1
Date : 8/10/96 09:44 AM
Time of Injection: 8/10/96 09:11 AM
Low Point : 25.00 mV High Point : 90.00 mV
Plot Scale: 65.0 mV




126487-002

MW-8

Curtis & Tompkins, Ltd.

Lab #: 126487 BATCH QC REPORT 

TEH-Tot Ext Hydrocarbons

Client: Subsurface Consultants
Project#: 447.055
Location: Connell Olds

Analysis Method: CA LUFT (EPA 8015M)
Prep Method: EPA 3520

METHOD BLANK

Matrix: Water
Batch#: 29059
Units: ug/L
Diln Fac: 1

Prep Date: 08/08/96
Analysis Date: 08/09/96

MB Lab ID: QC27715

| Analyte | Result | |
|---|---|---|
| Diesel C12-C22 | <50 | |
| Surrogate | %Rec | Recovery Limits |
| Hexacosane | 96 | 60-140 |

Curtis & Tompkins, Ltd.

Lab #: 126487 BATCH QC REPORT 

TEH-Tot Ext Hydrocarbons

Client: Subsurface Consultants
Project#: 447.055
Location: Connell Olds

Analysis Method: CA LUFT (EPA 8015M)
Prep Method: EPA 3520

BLANK SPIKE/BLANK SPIKE DUPLICATE

Matrix: Water
Batch#: 29059
Units: ug/L
Diln Fac: 1

Prep Date: 08/08/96
Analysis Date: 08/10/96

BS Lab ID: QC27716

| Analyte | Spike Added | BS | %Rec # | Limits |
|---|---|---|---|---|
| Diesel C12-C22 | 2475 | 1558 | 63 | 60-140 |
| Surrogate | %Rec | Limits | | |
| Hexacosane | 91 | 60-140 | | |

BSD Lab ID: QC27717

| Analyte | Spike Added | BSD | %Rec # | Limits | RPD # | Limit |
|---|---|---|---|---|---|---|
| Diesel C12-C22 | 2475 | 1668 | 67 | 60-140 | 7 | 35 |
| Surrogate | %Rec | Limits | | | | |
| Hexacosane | 94 | 60-140 | | | | |

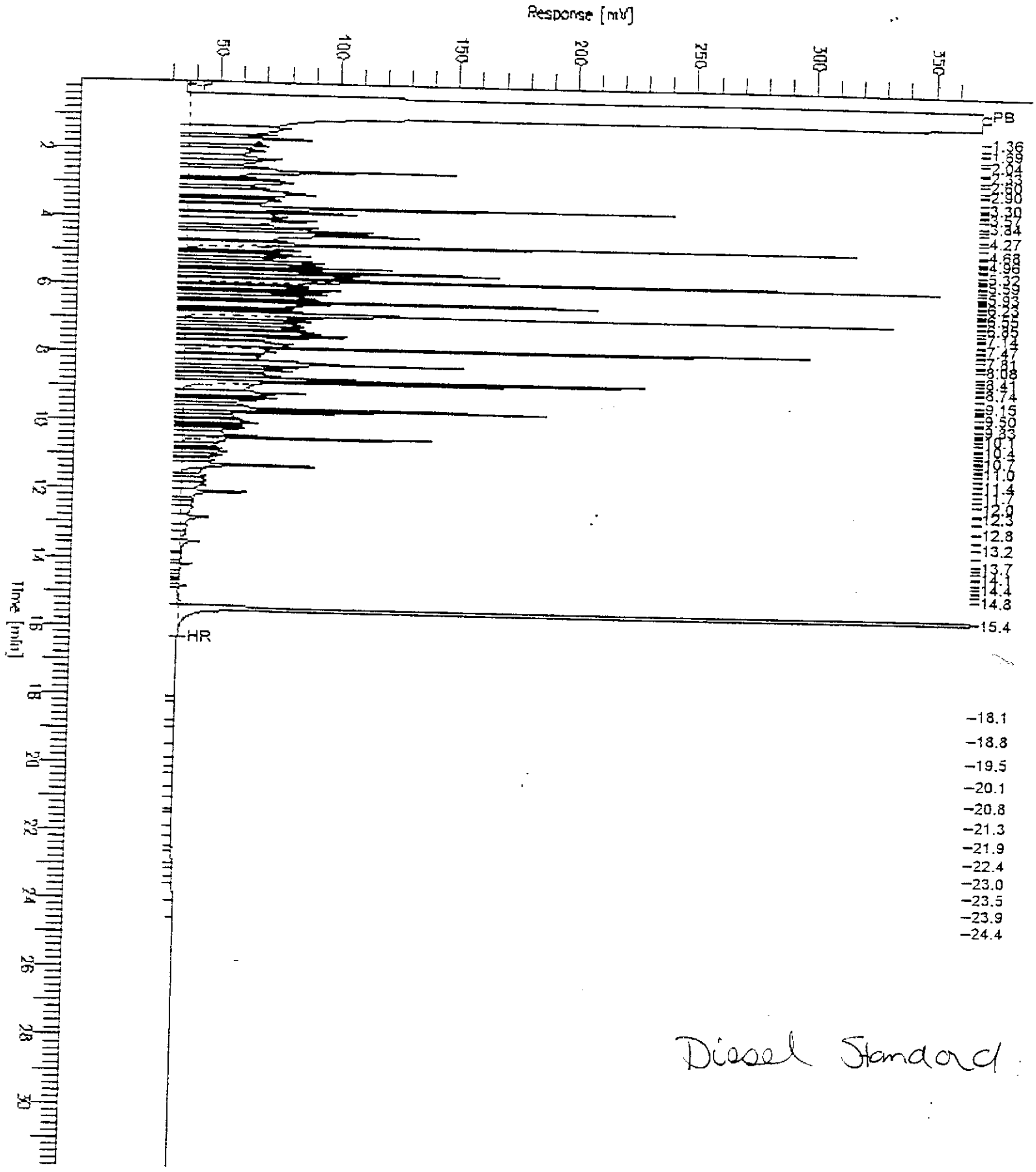
# Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits
RPD: 0 out of 1 outside limits
Spike Recovery: 0 out of 2 outside limits

# GC11

Sample Name : CCV,96WS2915,DSL
FileName : C:\GC11\CHB\2229026.RAW
Method : BTEH.MTH
Start Time : 0.01 min
Scale Factor: 0.0
End Time : 31.85 min
Plot Offset: 30 mV

Sample #: 500MG/L
Date : 8/12/96 11:54 AM
Time of Injection: 8/10/96 02:18 PM
Low Point : 29.87 mV
Plot Scale: 339.6 mV
High Point : 369.52 mV






Diesel Standard

# CHAIN OF CUSTODY FORM

126487

PAGE ___ OF ___

PROJECT NAME: Connell Olds

JOB NUMBER: 447.055 LAB: Curtis & Tompkins

PROJECT CONTACT: Jim Helge TURNAROUND: Normal

SAMPLED BY: Dennis Alexander REQUESTED BY: Jim Helge

| LABORATORY I.D. NUMBER | SCI SAMPLE NUMBER | MATRIX: WATER | SOIL | WASTE | AIR | | | CONTAINERS: VOA | LITER | PINT | TUBE | | | METHOD PRESERVED: HCL | $H_2SO_4$ | $HNO_3$ | ICE | NONE | | SAMPLING DATE: MONTH | DAY | YEAR | TIME | | | | NOTES | ANALYSIS REQUESTED: TVH/BTXE | TEH | DCA + MTBE (EPA 8020) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -1 | MW-7 | X | | | | | | 6 | 1 | | | | | X | | | X | | | 0 8 | 0 8 | 9 6 | 1 3 | 3 0 | | | | X | X | X |
| -2 | MW-8 | X | | | | | | 6 | 1 | | | | | X | | | X | | | 0 8 | 0 8 | 9 6 | 1 5 | 0 0 | | | | X | X | X |
| -3 | MW-13 | X | | | | | | 6 | 1 | | | | | X | | | X | | | 0 8 | 0 8 | 9 6 | 1 0 | 1 5 | | | | X | X | X |

## CHAIN OF CUSTODY RECORD

| RELEASED BY: (Signature) | DATE / TIME | RECEIVED BY: (Signature) | DATE / TIME |
|---|---|---|---|
| Dennis Alexander | 8/8/96 3:30 PM | | |
| RELEASED BY: (Signature) | DATE / TIME | RECEIVED BY: (Signature) | DATE / TIME |
| | | | |
| RELEASED BY: (Signature) | DATE / TIME | RECEIVED BY: (Signature) | DATE / TIME |
| | | | |
| RELEASED BY: (Signature) | DATE / TIME | RECEIVED BY: (Signature) | DATE / TIME |
| | | D. Moore | 8/8/96 3:39pm |

COMMENTS & NOTES: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