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Alameda-Contra Costa Transit District

December 27, 2006

Mr. Stephen Plunkett
Alameda County Health Division
Division of Environmental Protection
Department of Environmental Health
1131 Harbor Bay Parkway, Second Floor
Alameda, CA 94502

Dear Mr. Plunkett:

Subject: Groundwater Monitoring Report – November 2006
AC Transit, 1177 47th Street, Emeryville

AC Transit hereby submits the enclosed groundwater monitoring report for the AC Transit facility located at 1177 47th Street in Emeryville. The report was prepared by our consultant, Esseltech, and contains the results of groundwater monitoring performed on November 13 and 16, 2006 from 13 on-site monitoring wells. Sampling was not performed on MW-10 because a storage container prevented access to the well. MW-10 will be sampled in February 2007.

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

If you have any questions or comments regarding the enclosed report, please call me at (510) 577-8869.

Sincerely,

Suzanne Chaewsky

Suzanne Chaewsky, P.E.
Environmental Engineer
enclosure

# GROUND-WATER MONITORING
# IN
# NOVEMBER 2006
# ALAMEDA CONTRA COSTA
# TRANSIT DISTRICT FACILITY
# 1177 47TH STREET
# EMERYVILLE, CALIFORNIA

*Prepared for*

**Alameda Contra Costa Transit District**
**10626 International Boulevard**
**Oakland, California 94603**

*Prepared by*

**Essel Technology Services, Inc.**
**9778 Broadmoor Drive**
**San Ramon, California 94583**
**(925) 833-7977**

**Project No. 0569/4**

**December 2006**

**GROUND-WATER MONITORING**
**IN**
**NOVEMBER 2006**
**ALAMEDA CONTRA COSTA**
**TRANSIT DISTRICT FACILITY**
**1177 47TH STREET**
**EMERYVILLE, CALIFORNIA**

## 1.0 INTRODUCTION

The Alameda Contra Costa Transit District (AC Transit) has contracted with Essel Technology Services, Inc. (Essel Tech) to perform ground-water monitoring and sampling at the AC Transit Division 2 facility in Emeryville, California. This report presents the results of monitoring and sampling performed in November 2006.

### 1.1 Site Location and Description

The Division 2 facility is located at 1177 47th Street in Emeryville, California and occupies nearly the entire city block that is bounded by 47th Street on the north, 45th Street on the south, San Pablo Avenue on the east, and Doyle Street on the west, as shown on Plate 1. The facility is used for storage and maintenance of AC Transit buses. The primary site feature is a maintenance building that is located in the southwestern portion of the site. Other facilities include a parking garage, a transportation building, and a bus washing structure that are located along the northern property line adjacent to 47th Street; and a tire building, an emergency generator building, a pump station, and storm water treatment facilities that are located at the western edge of the site next to Doyle Street. The site also contains underground storage tanks (USTs). The existing USTs, referred to as Tank Farm No. 1, are located near the northeastern corner of the property and just south of fuel dispenser islands. Former USTs, referred to as Tank Farm No. 2, were located near the center of the property and a short distance east of the present maintenance building. These tanks were removed in 1999. A 550-gallon UST also is located next to the southern side of the emergency generator building.

Sixteen wells used for ground-water monitoring are presently installed at the site. Thirteen of the wells (MW-1 through MW-10, MW-12, MW-13, and W-4) are spaced across the northern half of the site and monitor the ground water near and to the west (approximately downgradient) of Tank Farm No 1 and the fuel dispenser islands. Well MW-12 also serves to monitor the ground water at a location northwest of the 550-gallon UST that provides fuel for the emergency generator. Three of the 16 wells are located in the southeastern quadrant of the property. Well W-3 is at the eastern edge of the property at a location that is upgradient of Tank Farm No. 1, well W-1 is located approximately 220 feet south of Tank Farm No. 1, and MW-11 is near the southwestern corner of Tank Farm No. 2. Three additional wells, that are not part of the ground-water-monitoring program, are located adjacent to Tank Farm No. 1. These wells are referred to as E-1, E-2, and E-5. Plate 2 is a Site Plan that shows the relative locations of the AC Transit facilities, the 16 ground-water-monitoring wells, and the three additional wells.

## 2.0 FIELD AND LABORATORY WORK

### 2.1 Field Procedures

Essel Tech personnel visited the site on November 12 and 16, 2006 to measure the water level in wells MW-1 through MW-9, MW-11 through MW-13, W-1, W-3, and W-4, to measure the thickness of free petroleum product in the wells and to purge the wells for ground-water sampling. Well MW-10 was not accessible because a large storage bin was placed on top of the well. The depths to free-phase product and the static ground-water surface in each well were measured to the nearest 0.1-foot using an electronic oil-water interface probe. Following water-level measurements, 14 wells were purged of water using a submersible pump and discharge hose. Approximately three casing volumes of water were pumped from each well. Well MW-13 was not purged for sampling because of the presence of free-phase product. Field measurements of temperature, pH, electrical conductivity, dissolved oxygen, oxygen reduction potential, and ferrous iron were monitored during pumping. Measurements were recorded on field well-development and sampling forms, which are included in Appendix A.

To minimize the potential for inadvertently introducing contaminants, wells were purged in order from least contaminated to most contaminated using the analytical results from the previous monitoring event. In addition, the purge pump and attached discharge hose were cleaned before use in each well by washing the equipment in a soap solution followed by rinsing twice with clean tap water. Discharge water from well purging was directed into 55-gallon drums, which were then emptied into the maintenance building steam bay.

Essel Tech personnel collected water samples from wells MW-1, MW-5, MW-7, MW-8, MW-9, and MW-11 on November 12, 2006 and from wells MW-2, MW-3, MW-4, MW-6, MW-12, W1, W3, and W4 on November 16, 2006. A clean, disposable polyethylene bailer was lowered through the air-water interface in each well and retrieved to collect the samples. The retrieved water samples were then slowly transferred from the bailer to clean, 40-milliliter volatile organic analysis (VOA) glass vials containing hydrochloric acid as a preservative and to clean, 1-liter brown glass liter bottles containing sulfuric acid as a preservative. The various containers were filled completely to eliminate air bubbles, sealed with caps, labeled, and placed in ice storage for transport to an analytical laboratory.

### 2.2 Laboratory Analyses

Essel Tech personnel prepared Chain-of-Custody forms for the ground-water samples collected and these forms accompanied the samples to the laboratory. Copies of the Chain-of-Custody forms are included in Appendix B. The water samples were delivered to McCampbell Analytical, Inc. (McCampbell) in Pittsburg, California for analysis. McCampbell analyzed the samples for total petroleum hydrocarbons as gasoline (TPHg) and as diesel (TPHd) using Environmental Protection Agency (EPA) modified Method 8015C, and for benzene, toluene, ethylbenzene, and total xylenes (BTEX) and methyl tertiary butyl ether (MTBE) using EPA Method 8021B.

## 3.0 RESULTS OF MONITORING AND SAMPLING

### 3.1 Ground-Water Monitoring

The measured depth to the static ground-water surface in wells ranged from 2.5 to 10.8 feet below the tops of the respective well casings on November 12 and 16, 2006. A thickness of 0.017-foot of free-phase petroleum product was encountered in well MW-13. Essel Tech used wellhead elevation data and the depth-to-water measurements made on November 12 and 16 to calculate the elevation of the ground-water surface in the wells, which varied from 17.88 to 30.66 feet above mean sea level. Based on the range of elevations, ground water is estimated to flow toward the west-southwest at a gradient of 0.019 (1.9 feet vertical distance per 100 feet horizontal distance). Table 1 presents data on product thickness, depth to ground water, and ground-water elevation for the 16 wells. Plate 3 is a contour map of the shallow ground-water surface interpreted from water-level data collected on November 12 and 16.

### 3.2 Laboratory Analyses

Results of laboratory analyses show gasoline-range hydrocarbons (i.e., TPHg) were detected in five of the 14 wells sampled. The highest concentration was detected in the water sample from well W-1 (2,600 parts per billion [ppb]), which is located approximately 220 feet south of Tank Farm No. 1. Moderately high concentrations of 740 ppb and 530 ppb TPHg were found in wells MW-12 and MW-6, respectively. Well MW-12 is located near the western edge of the site and well MW-6 is located 140 feet southwest of Tank Farm No. 1. Gasoline-range hydrocarbons were also detected in water samples from wells MW-7 (120 ppb) and MW-8 (95 ppb), which are located 120 feet west of well MW-6. No TPHg was detected in samples from wells MW-1 through MW-5, located in the vicinity of Tank Farm No. 1 and the fuel dispenser islands. Total petroleum hydrocarbons as gasoline also were not detected in samples from well MW-9, located in the north-central portion of the site; well MW-11 at Tank Farm No. 2; upgradient well W-3, located at the eastern edge of the site; or W-4, located approximately 100 feet southwest of Tank Farm No. 1.

Diesel-range hydrocarbons (i.e., TPHd) were detected in nine of the 14 wells sampled. The highest concentrations were detected in wells MW-6 (2,100 ppb) and W-1 (760 ppb). In other wells, concentrations of TPHd ranged from 56 ppb (well MW-11) to 200 ppb (well MW-12). No TPHd was detected in samples from wells MW-2, MW-3, MW-4, MW-8, or W3.

The aromatic hydrocarbons BTEX were detected in wells MW-6 and W-1, which contained the highest concentrations of TPHg and TPHd. The detected concentrations of BTEX, however, were relatively low ranging from 0.58- to 19 ppb. Low concentrations of toluene (2.1 ppb) and total xylenes (6.3 ppb) were detected in the sample from well MW-12 and a trace concentration of total xylenes (0.76-ppb) was found in the sample from well MW-7. No other BTEX compounds were detected in samples from the remaining wells. The fuel oxygenate MTBE was not detected at a concentration greater than the laboratory method detection limits of 5.0 and 10 ppb in any of the 14 wells sampled. Table 2 presents the results of analyses of water samples from the 14 wells and Appendix B contains copies of the laboratory reports of analyses.

## 4.0 RECOMMENDATIONS

Essel Tech recommends that ground-water monitoring and sampling continue on a quarterly basis. The next sampling event should be scheduled for February 2007 and would include measuring depth to water and product thickness in the 16 ground-water-monitoring wells and purging and sampling wells MW-11, MW-12, and MW-13 for laboratory analysis.

Please call if you have any questions.

Sincerely;
**Essel Technology Services, Inc.**

Samhita Lahiri
Project Manager

Rodger C. Witham, P.G., C.E.G
Senior Hydrogeologist


Table 1: Well Monitoring Data
Table 2: Results of Laboratory Analyses of Ground-Water Samples

Plate 1: Site Vicinity Map
Plate 2: Site Plan

Appendix A: Well Development and Sampling Forms
Appendix B: Chain-of-Custody Form and Laboratory Report

# TABLE 1
# WELL MONITORING DATA
# Alameda Contra Costa Transit District Facility
# 1177 47th Street, Emeryville, California

| Well Number | Date | Top of Casing | Product Thickness | Depth to Ground Water | Ground-Water-Surface Elevation | Ground-Water-Surface Elevation Corrected for Product Thickness# |
|---|---|---|---|---|---|---|
| MW-1 | 11/02/05 | 32.56 | 0.00 | 5.14 | 27.42 | 27.42 |
| | 05/28/06 | 32.56 | 0.00 | 4.05 | 28.51 | 28.51 |
| | 11/12/06 | 32.56 | 0.00 | 3.36 | 29.20 | 29.20 |
| MW-2 | 11/02/05 | 32.12 | 0.00 | 4.65 | 27.47 | 27.47 |
| | 05/28/06 | 32.12 | 0.00 | 3.55 | 28.57 | 28.57 |
| | 11/16/06 | 32.12 | 0.00 | 3.60 | 28.52 | 28.52 |
| MW-3 | 11/02/05 | 34.06 | 0.00 | 6.21 | 27.85 | 27.85 |
| | 05/28/06 | 34.06 | 0.00 | 4.95 | 29.11 | 29.11 |
| | 11/16/06 | 34.06 | 0.00 | 5.50 | 28.56 | 28.56 |
| MW-4 | 11/02/05 | 34.11 | 0.00 | 6.30 | 27.81 | 27.81 |
| | 05/28/06 | 34.11 | 0.00 | 5.15 | 28.96 | 28.96 |
| | 11/16/06 | 34.11 | 0.00 | 5.40 | 28.71 | 28.71 |
| MW-5 | 11/02/05 | 31.70 | 0.00 | 4.55 | 27.15 | 27.15 |
| | 05/28/06 | 31.70 | 0.00 | 3.62 | 28.08 | 28.08 |
| | 11/12/06 | 31.70 | 0.00 | 2.50 | 29.20 | 29.20 |
| MW-6 | 11/02/05 | 31.02 | 0.00 | 4.21 | 26.81 | 26.81 |
| | 05/28/06 | 31.02 | 0.00 | 3.00 | 28.02 | 28.02 |
| | 11/16/06 | 31.02 | 0.00 | 3.30 | 27.72 | 27.72 |
| MW-7 | 11/02/05 | 29.62 | 0.00 | 5.50 | 24.12 | 24.12 |
| | 05/28/06 | 29.62 | 0.00 | 4.25 | 25.37 | 25.37 |
| | 11/16/06 | 29.62 | 0.00 | 5.70 | 23.92 | 23.92 |
| MW-8 | 11/02/05 | 29.43 | 0.00 | 5.05 | 24.38 | 24.38 |
| | 05/28/06 | 29.43 | 0.00 | 4.95 | 24.48 | 24.48 |
| | 11/12/06 | 29.43 | 0.00 | 4.70 | 24.73 | 24.73 |
| MW-9 | 11/02/05 | 29.18 | 0.00 | 4.26 | 24.92 | 24.92 |
| | 05/28/06 | 29.18 | 0.00 | 3.70 | 25.48 | 25.48 |
| | 11/12/06 | 29.18 | 0.00 | 3.50 | 25.68 | 25.68 |
| MW-10 | 11/02/05 | 29.13 | 0.00 | 9.81 | 19.32 | 19.32 |
| | 05/28/06 | 29.13 | 0.00 | 9.55 | 19.58 | 19.58 |
| | 11/16/06 | | | | Well not accessible | |
| MW-11 | 11/02/05 | 29.93 | 0.00 | 4.30 | 25.63 | 25.63 |
| | 02/22/06 | 29.93 | 0.00 | 2.50 | 27.43 | 27.43 |
| | 05/28/06 | 29.93 | 0.00 | 2.85 | 27.08 | 27.08 |
| | 08/27/06 | 29.93 | 0.00 | 3.00 | 26.93 | 26.93 |
| | 11/12/06 | 29.93 | 0.00 | 3.02 | 26.91 | 26.91 |

See notes on page 2 of 2.

# TABLE 1
# WELL MONITORING DATA
# Alameda Contra Costa Transit District Facility
# 1177 47th Street, Emeryville, California

| Well Number | Date | Top of Casing | Product Thickness | Depth to Ground Water | Ground-Water-Surface Elevation | Ground-Water-Surface Elevation Corrected for Product Thickness# |
|---|---|---|---|---|---|---|
| MW-12 | 11/02/05 | 28.68 | 0.00 | 10.76 | 17.92 | 17.92 |
| | 02/22/06 | 28.68 | 0.00 | 10.50 | 18.18 | 18.18 |
| | 05/28/06 | 28.68 | 0.00 | 10.82 | 17.86 | 17.86 |
| | 08/27/06 | 28.68 | 0.00 | 10.50 | 18.18 | 18.18 |
| | 11/16/06 | 28.68 | 0.00 | 10.80 | 17.88 | 17.88 |
| MW-13 | 11/02/05 | 22.72 | 0.063 | 9.10 | 13.62 | 13.67 |
| | 02/22/06 | 22.72 | 0.167 | NM | NM | NM |
| | 05/28/06 | 22.72 | NM | NM | NM | NM |
| | 11/16/06 | 22.72 | 0.017 | NM | NM | NM |
| W-1 | 11/02/05 | 33.43 | 0.00 | 6.59 | 26.84 | 26.84 |
| | 05/28/06 | 33.43 | 0.00 | 5.15 | 28.28 | 28.28 |
| | 11/16/06 | 33.43 | 0.00 | 5.50 | 27.93 | 27.93 |
| W-3 | 11/02/05 | 37.46 | 0.00 | 8.24 | 29.22 | 29.22 |
| | 05/28/06 | 37.46 | 0.00 | 6.32 | 31.14 | 31.14 |
| | 11/16/06 | 37.46 | 0.00 | 6.80 | 30.66 | 30.66 |
| W-4 | 11/02/05 | 31.72 | 0.00 | 4.70 | 27.02 | 27.02 |
| | 05/28/06 | 31.72 | 0.00 | 4.50 | 27.22 | 27.22 |
| | 11/16/06 | 31.72 | 0.00 | 3.90 | 27.82 | 27.82 |

Top of casing in feet above mean sea level.
Product thickness in feet.
Depth to ground water in feet below the top of the well casing.
Ground-water surface elevation in feet above mean sea level.
NM = not measured
#Multiply product thickness by specific gravity of 0.8 and add to ground-water surface elevation.

# TABLE 2
# RESULTS OF LABORATORY ANALYSES OF GROUND-WATER SAMPLES
## Alameda Contra Costa Transit District Facility
## 1177 47th Street, Emeryville, California

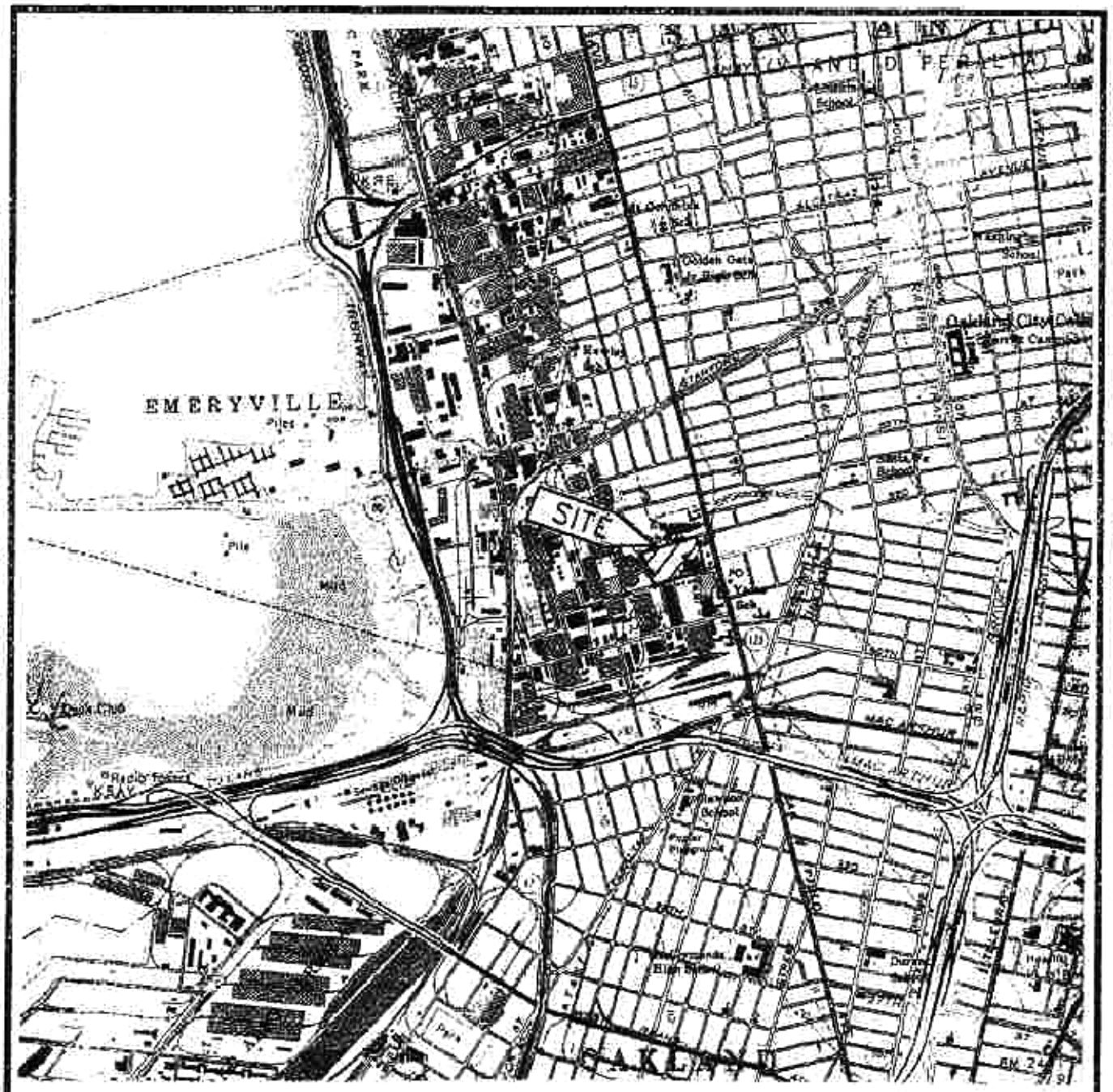
| Well No. | Date Sampled | TPHg | TPHd | TPH | Benzene | Toluene | Ethyl-benzene | Total Xylenes | MTBE | Nitrate | Sulfate | Dissolved Oxygen | Ferrous Iron |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-1 | 11/03/05 | <50 | 70 | NA | <0.5 | <0.5 | <0.5 | <0.5 | 4.5 | <100 | 56,000 | 2,330 | 0 |
| | 5/29/06 | <50 | 89 | NA | <0.5 | <0.5 | <0.5 | <0.5 | <5.0 | NA | NA | 5,400 | 0 |
| | 11/12/06 | <50 | 65 | NA | <0.5 | <0.5 | <0.5 | <0.5 | <5.0 | NA | NA | 6,520 | 0 |
| MW-2 | 11/03/05 | <50 | 110 | NA | <0.5 | <0.5 | <0.5 | <0.5 | 4.9 | 430 | 53,000 | 2,090 | 130 |
| | 5/29/06 | <50 | 70 | NA | <0.5 | <0.5 | <0.5 | <0.5 | <5.0 | NA | NA | 6,800 | 60 |
| | 11/16/06 | <50 | <50 | NA | <0.5 | <0.5 | <0.5 | <0.5 | <5.0 | NA | NA | 8,300 | 10 |
| MW-3 | 11/03/05 | <50 | 180 | NA | <0.5 | <0.5 | <0.5 | <0.5 | 3.2 | 3,500 | 67,000 | 1,850 | 0 |
| | 5/29/06 | <50 | 180 | NA | <0.5 | <0.5 | <0.5 | <0.5 | <5.0 | NA | NA | 4,600 | 0 |
| | 11/16/06 | <50 | <50 | NA | <0.5 | <0.5 | <0.5 | <0.5 | <5.0 | NA | NA | 360 | 630 |
| MW-4 | 11/03/05 | <50 | <50 | NA | <0.5 | <0.5 | <0.5 | <0.5 | 4.1 | 3,500 | 67,000 | 1,860 | 60 |
| | 5/29/06 | <50 | <50 | NA | <0.5 | <0.5 | <0.5 | <0.5 | <5.0 | NA | NA | 4,900 | 0 |
| | 11/16/06 | <50 | <50 | NA | <0.5 | <0.5 | <0.5 | <0.5 | <5.0 | NA | NA | 1,500 | 1,060 |
| MW-5 | 11/03/05 | <50 | 1,500 | NA | <0.5 | <0.5 | <0.5 | <0.5 | 5.7 | <100 | 62,000 | 1,930 | 150 |
| | 5/29/06 | <50 | 200 | NA | <0.5 | <0.5 | <0.5 | <0.5 | <5.0 | NA | NA | 4,900 | 40 |
| | 11/12/06 | <50 | 130 | NA | <0.5 | <0.5 | <0.5 | <0.5 | <5.0 | NA | NA | 4,500 | 2,170 |
| MW-6 | 11/03/05 | 750 | 2,000 | NA | 13 | 1.9 | 2.9 | 4.6 | 1.4 | <100 | 16,000 | 1,570 | 3,300 |
| | 5/29/06 | 2,700 | 12,000 | NA | 55 | 5.7 | 16 | 26 | <15 | NA | NA | 4,900 | 20 |
| | 11/16/06 | 530 | 2,100 | NA | 12 | 0.82 | 0.58 | 2.8 | <5.0 | NA | NA | 3,600 | 2,370 |
| MW-7 | 11/03/05 | 310 | 140 | NA | <0.5 | <0.5 | <0.5 | <0.5 | 2.3 | <100 | 3,100 | 3,190 | 30 |
| | 5/29/06 | 260 | 120 | NA | <0.5 | <0.5 | <0.5 | <0.5 | <5.0 | NA | NA | Anomalous | 60 |
| | 11/12/06 | 120 | 96 | NA | <0.5 | <0.5 | <0.5 | 0.76 | <5.0 | NA | NA | 1,100 | 23 |
| MW-8 | 11/03/05 | 150 | 280 | NA | <0.5 | <0.5 | <0.5 | <0.5 | 0.69 | <100 | 24,000 | 1,630 | 860 |
| | 5/29/06 | <50 | 150 | NA | <0.5 | <0.5 | <0.5 | <0.5 | <5.0 | NA | NA | 8,300 | 40 |
| | 11/12/06 | 95 | <50 | NA | <0.5 | <0.5 | <0.5 | <0.5 | <5.0 | NA | NA | 3,810 | 860 |
| MW-9 | 11/03/05 | <50 | 470 | NA | <0.5 | <0.5 | <0.5 | <0.5 | 4.8 | 110 | 28,000 | 1,720 | 450 |
| | 5/29/06 | <50 | 190 | NA | <0.5 | <0.5 | <0.5 | <0.5 | 5.2 | NA | NA | 8,600 | 0 |
| | 11/12/06 | <50 | 65 | NA | <0.5 | <0.5 | <0.5 | <0.5 | <5.0 | NA | NA | 2,470 | 570 |

See notes on page 2 of 2.

# TABLE 2
# RESULTS OF LABORATORY ANALYSES OF GROUND-WATER SAMPLES
## Alameda Contra Costa Transit District Facility
## 1177 47th Street, Emeryville, California

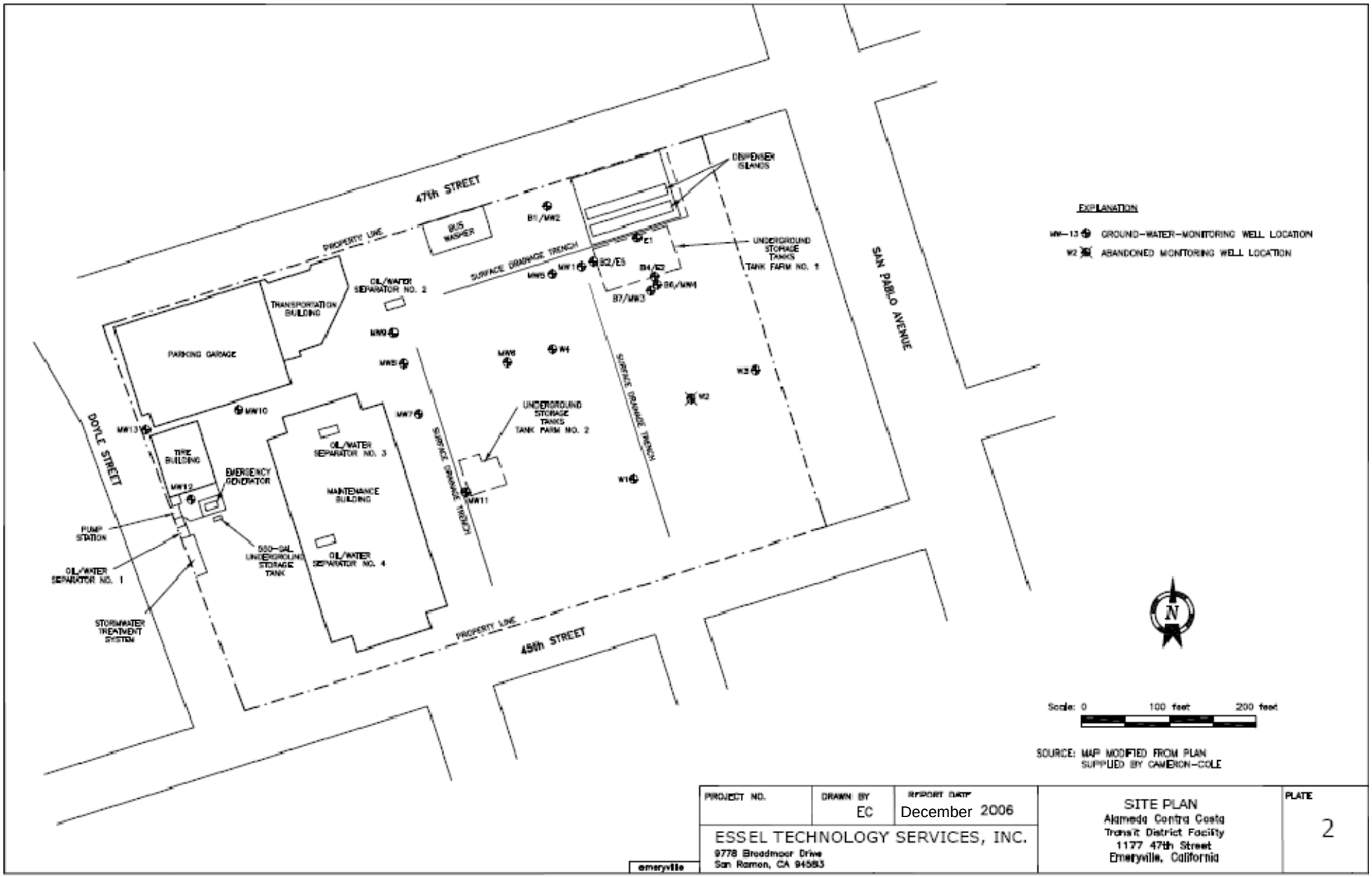
| Well No. | Date Sampled | TPHg | TPHd | TPH | Benzene | Toluene | Ethyl-benzene | Total Xylenes | MTBE | Nitrate | Sulfate | Dissolved Oxygen | Ferrous Iron |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-10 | 11/03/05 | 300 | 600 | NA | <0.5 | <0.5 | <0.5 | <0.5 | 4.1 | <100 | 780 | 2,350 | 2,670 |
| | 5/29/06 | 140 | 540 | NA | <0.5 | <0.5 | <0.5 | <0.5 | <5.0 | NA | NA | 5,600 | 10 |
| | 11/16/06 | Well Not Accessible | | | | | | | | | | | |
| MW-11 | 11/03/05 | <50 | 290 | NA | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <100 | 21,000 | 1,360 | 0 |
| | 02/22/06 | <50 | <50 | NA | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <100 | 27,000 | 100 | 0 |
| | 5/29/06 | <50 | 250 | NA | <0.5 | <0.5 | <0.5 | <0.5 | <5.0 | NA | NA | 6,000 | 100 |
| | 8/27/06 | <50 | 57 | NA | <0.5 | <0.5 | <0.5 | <0.5 | <5.0 | NA | NA | 100 | 0 |
| | 11/12/06 | <50 | 56 | NA | <0.5 | <0.5 | <0.5 | <0.5 | <5.0 | NA | NA | 2,810 | 0 |
| MW-12 | 11/03/05 | 440 | 120 | NA | <0.5 | <0.5 | <0.5 | <0.5 | 6.6 | <100 | 3,700 | 1,700 | 740 |
| | 02/22/06 | 400 | 140 | NA | <0.5 | <0.5 | <0.5 | <0.5 | 7.8 | <100 | 7,600 | 90 | NM |
| | 5/29/06 | 310 | 140 | NA | <0.5 | <0.5 | <0.5 | <0.5 | 5.7 | NA | NA | 7,200 | 10 |
| | 8/27/06 | 530 | 120 | NA | <0.5 | <0.5 | <0.5 | <0.5 | 6.6 | NA | NA | 90 | 720 |
| | 11/16/06 | 740 | 200 | NA | <0.5 | 2.1 | <0.5 | 6.3 | <10 | NM | NM | 3,700 | 680 |
| MW-13 | 11/03/05 | Not sampled - free-phase product in well | | | | | | | | | | | |
| | 02/22/06 | Not sampled - free-phase product in well | | | | | | | | | | | |
| | 5/29/06 | Not sampled - free-phase product in well | | | | | | | | | | | |
| | 11/16/06 | Not sampled - free-phase product in well | | | | | | | | | | | |
| W-1 | 11/03/05 | 6,200 | 2,400 | NA | 7.2 | 3.6 | 5.7 | 20 | 0.73 | 140 | 1,300 | 1,230 | 3,300 |
| | 5/29/06 | 4,600 | 1,700 | NA | 18 | 4.4 | 17 | 32 | <17 | NM | NM | 4,500 | 60 |
| | 11/16/06 | 2,600 | 760 | NA | 18 | 3.7 | 10 | 19 | <10 | NA | NA | 5,400 | 2,010 |
| W-3 | 11/03/05 | <50 | <50 | NA | <0.5 | <0.5 | <0.5 | <0.5 | 1.2 | 3,700 | 51,000 | 2,170 | 0 |
| | 5/29/06 | <50 | 240 | NA | <0.5 | <0.5 | <0.5 | <0.5 | <5.0 | NM | NM | Anomalous | 50 |
| | 11/16/06 | <50 | <50 | NA | <0.5 | <0.5 | <0.5 | <0.5 | <5.0 | NA | NA | 3,900 | 2,140 |
| W-4 | 11/03/05 | <50 | 66 | NA | <0.5 | <0.5 | <0.5 | <0.5 | 2.0 | <100 | 32,000 | 1,620 | 970 |
| | 5/29/06 | <50 | 110 | NA | <0.5 | <0.5 | <0.5 | <0.5 | <5.0 | NM | NM | NM | NM |
| | 11/16/06 | <50 | 72 | NA | <0.5 | <0.5 | <0.5 | <0.5 | <5.0 | NA | NA | 4,500 | 1,750 |

Results are in micrograms per liter = parts per billion; detectable results are shaded.
TPHg = total petroleum hydrocarbons as gasoline
TPHd = total petroleum hydrocarbons as diesel
TPH = total petroleum hydrocarbons as motor oil or unknown hydrocarbon
MTBE = methyl tertiary butyl ether
NA = not analyzed
NM = not measured
< = less than the laboratory method detection limit




| PROJECT NO. | DRAWN BY | REPORT DATE | SITE VICINITY MAP | PLATE |
|---|---|---|---|---|
| 05-69 | EC | December 2006 | Alameda Contra Costa Transit District Facility 1177 47th Street Emeryville, California | 1 |

ESSEL TECHNOLOGY SERVICES, INC.
9778 Broadmoor Drive
San Ramon, CA 94583



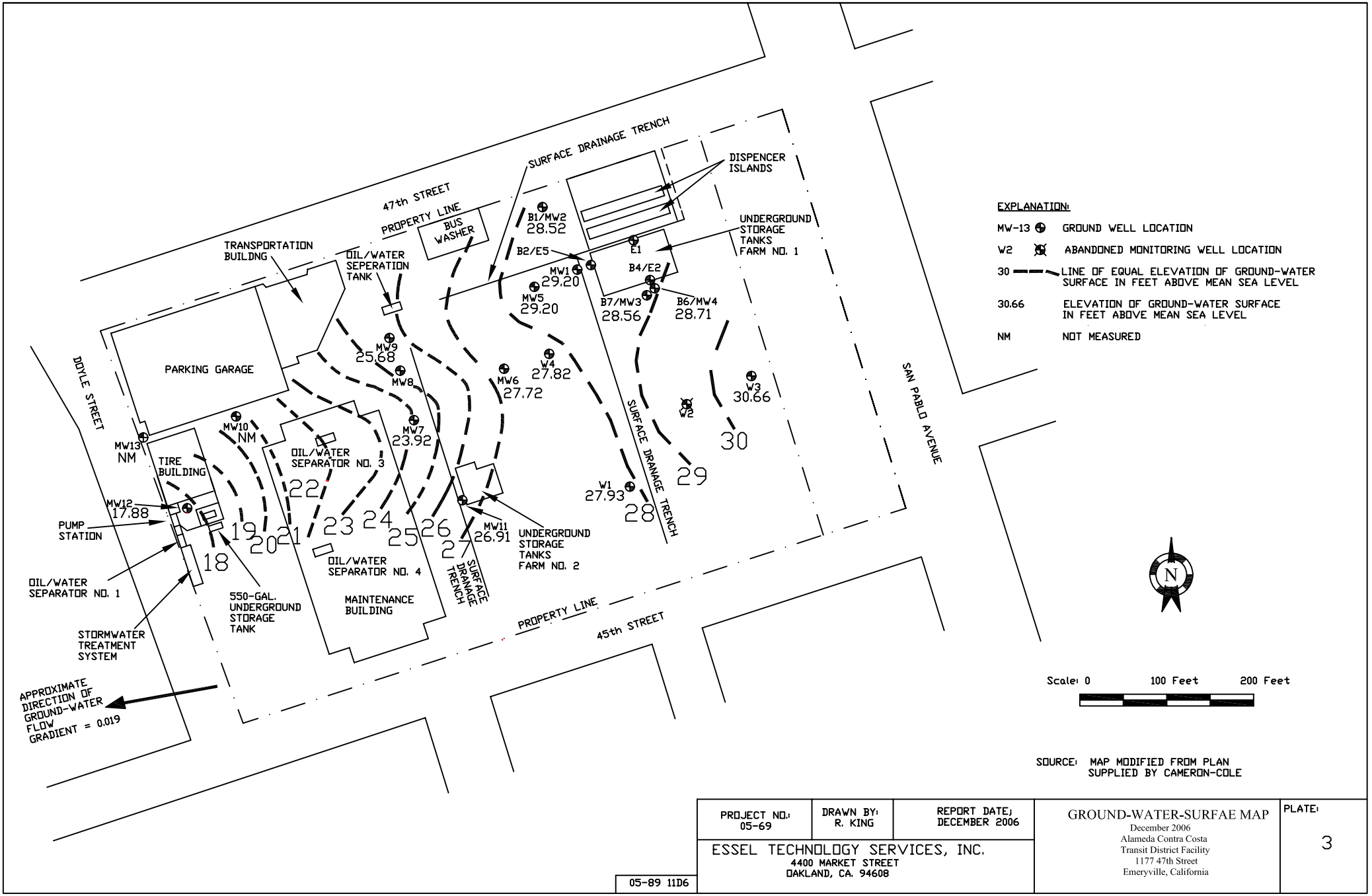

| PROJECT NO. | DRAWN BY | REPORT DATE |
|---|---|---|
| | EC | December 2006 |

ESSEL TECHNOLOGY SERVICES, INC.
9778 Broadmoor Drive
San Ramon, CA 94583

emeryville

SITE PLAN
Alameda Contra Costa
Transit District Facility
1177 47th Street
Emeryville, California

PLATE 2




| PROJECT NO.: 05-69 | DRAWN BY: R. KING | REPORT DATE: DECEMBER 2006 | GROUND-WATER-SURFAE MAP<br>December 2006<br>Alameda Contra Costa<br>Transit District Facility<br>1177 47th Street<br>Emeryville, California | PLATE: 3 |
|---|---|---|---|---|

ESSEL TECHNOLOGY SERVICES, INC.
4400 MARKET STREET
OAKLAND, CA. 94608

05-89 11D6

# APPENDIX A

## WELL DEVELOPMENT AND SAMPLING FORMS

# Well Development and Sampling Form

**Job Name** AC Transit Emeryville **Well Number** MW - 1

**Job Number** 0568-11-06 **Date** 11-12-06

**Sample By** S. Lahiri

| Purge Volume | Development/Purge Method(s) |
|---|---|
| Casing Diameter: 2-inch [✓] 4-inch [ ] Other _____ | [ ] Swab [ ] Surge Other _____ |
| Total depth (TD) of casing in feet 14.50 + | [ ] Bail Bailer Type: Disposable |
| Depth to water (DTW) in feet 3.36 | [ ] Pump |
| Purge Volume Calculation<br>(14.50 - 3.36) x 3 x .17 = 5.68 gallons | Pump Type: [✓] Submersible [ ] Centrifuge |
| TD - DTW x V x F = Purge volume | [ ] Bladder [ ] Other |

**Explanation**

For 2" diameter well: V = 5, F = 0.17 gallon/foot

For 4" diameter well: V = 3, F= 0.66 gallon/foot

V= well volume

F= gallon of water per foot of casing

**Field Parameters**

| Time AM [ ] PM [ ] | Gallons pumped | Conductivity Microhos/cm | Dissolved Oxygen | Temperature [ ]°C [ ]°F | Turbidity | pH | ORP | |
|---|---|---|---|---|---|---|---|---|
| Start | | | | | | | | |
| 11.30 | 1 | 725 | 9.92 | 21.00 | clear | 6.85 | -35.3 | Fe ion |
| 11.35 | 2 | 717 | 8.75 | 21.3 | clear | 6.76 | -30.26 | 0.00 |
| 11.40 | 3 | 707 | 7.60 | 21.5 | clear | 6.70 | -28.5 | |
| 11.42 | 4 | 692 | 6.52 | 21.67 | clear | 6.75 | -32.8 | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

**Total Gallons Pumped** 10.5 gals.

**Observations during purging (well condition, turbidity, color, odor):** Clear, good, clear, no smell.

**Discharge water disposal:** [ ] **Sanitary Sewer** [ ] **Storm Drain** [ ] **Drum** [ ] **Other** steam bay on site

**Well Sampling Date:** 11.12.06 **Time:** 11:00 AM

# Well Development and Sampling Form

**Job Name** AC Transit emeryville **Well Number** mw 2 - EMW

**Job Number** 0568-N01.06 **Date** 11.16.06

**Sample By** S. Lalwani

| Purge Volume | Development/Purge Method(s) |
|---|---|
| Casing Diameter: 2-inch [ ] 4-inch [ ] Other | [ ] Swab [ ] Surge Other |
| Total depth (TD) of casing in feet<br>Depth to water (DTW) in feet | [ ] Bail Bailer Type: Disposable |
| Purge Volume Calculation<br>( 14.6 - 3.6 ) x 3 x .17 = 5.61 gallons<br>TD - DTW x V x F = Purge volume | [ ] Pump<br>Pump Type: [ ] Submersible [ ] Centrifuge<br>[ ] Bladder [ ] Other |

**Explanation**

For 2" diameter well: V = 5, F = 0.17 gallon/foot

For 4" diameter well: V = 3, F= 0.66 gallon/foot

V= well volume

F= gallon of water per foot of casing

**Field Parameters**

| Time AM [ ] PM [X] | Gallons pumped | Conductivity Microhos/cm | Dissolved Oxygen | Temperature [ ]°C [ ]°F | Turbidity | pH | ORP |
|---|---|---|---|---|---|---|---|
| Start 2:53 | | | | | | | |
| 2:54 | 1 | 432 | 35.0 | 21.6 | dark cloudy | 7.26 | 185.9 |
| 2:55 | 2 | 480 | 19.1 | 21.99 | cloudy | 7.05 | 116.0 |
| 2:56 | 3 | 504 | 13.5 | 22.19 | light cloudy | 6.98 | 71.2 |
| 2:57 | 4.5 | 527 | 8.3 | 22.28 | clear | 6.94 | 40.9 |
| | 5 | | | | | | |
| | | | | | | | |
| | | | | | | | |

**Total Gallons Pumped** 10 gals.

**Observations during purging (well condition, turbidity, color, odor):** good, clear at the beginning then cloudy, gasoline smell.

**Discharge water disposal:** [ ] **Sanitary Sewer** [ ] **Storm Drain** [ ] **Drum** [ ] **Other** Steam bay.

**Well Sampling Date:** 11.16.06 **Time:** 2:30 pm

# Well Development and Sampling Form

**Job Name** Emeryville **Well Number** MW-3

**Job Number** 05-68-11-06 **Date** 11.16.06

**Sample By** JC

27.3
.17
1.911
273X
4.641

| Purge Volume | Development/Purge Method(s) |
|---|---|
| Casing Diameter: 2-inch [✓] 4-inch [ ] Other | [ ] Swab [ ] Surge Other |
| Total depth (TD) of casing in feet 14.6 + | [ ] Bail Bailer Type: Disposable |
| Depth to water (DTW) in feet | [ ] Pump Pump Type: [✓] Submersible [ ] Centrifuge |
| Purge Volume Calculation (14.6 - 5.5) x 3 x 0.17 = 9.1 gallons | [ ] Bladder [ ] Other |
| TD - DTW x V x F = purge volume | |

**Explanation**

For 2" diameter well: V = 5, F = 0.17 gallon/foot

For 4" diameter well: V = 3, F+ 0.66 gallon/foot

V= well volume

F= gallon of water per foot of casing

**Field Parameters**

| Time a.m. [ ] p.m. [ ] | pH | Conductivity Microhos/centimeter | Temperature [ ]°C [ ]°F | Turbidity DO | ORP | Gallons pumped |
|---|---|---|---|---|---|---|
| **Start** | | | 23.76 | = | 143.6 | Ferrous iron |
| 10.10 | 6.99 | 709 | 23.93 | 2.22 | 138.5 | .68 mg. |
| 10.15 | 6.95 | 712 | 23.80 | 2.20 | 137.2 | |
| 10.18 | 6.80 | 702 | 23.82 | 1.92 | 139.9 | |
| 10.20 | 6.79 | 665 | 23.97 | 1.75 | 133.2 | |
| 10.22 | 6.74 | 663 | 23.95 | 1.53 | 132.2 | |
| 10.20 | 6.65 | 660 | 23.90 | 0.50 | 103.2 | |
| 10.18 | 6.65 | 653 | 23.92 | 0.39 | | → Sheen |
| 10.15 | 6.60 | 642 | 23.91 | .36 | 85.8 | |
| | | | | | | |

**Total Gallons Pumped** 15 gals.

**Observations during purging (well condition, turbidity, color, odor):** good, cloudy, clear, gasoline

**Discharge water disposal:** [ ] **Sanitary Sewer** [ ] **Storm Drain** [ ] **Drum** [ ] **Other** Steam bay

**Well Sampling Date:** 11.16.06 **Time:** 10:00 Am

# Well Development and Sampling Form

**Job Name** AC Transit Emeryville **Well Number** MW-4

**Job Number** 0568-11-06 **Date** 11-16-06

**Sample By** S. Lahiri

| Purge Volume | Development/Purge Method(s) |
|---|---|
| Casing Diameter: 2-inch [✓] 4-inch [ ] Other _____ | [ ] Swab [ ] Surge Other _____ |
| Total depth (TD) of casing in feet 15.0 + <br> Depth to water (DTW) in feet 5.4 | [ ] Bail Bailer Type: Disposable |
| Purge Volume Calculation <br> ( 15.0 - 5.4 ) x 3 x .17 = 5 gallons <br> TD - DTW x V x F = Purge volume | [ ] Pump <br> Pump Type: [✓] Submersible [ ] Centrifuge <br> [ ] Bladder [ ] Other |

**Explanation**

For 2" diameter well: V = 5, F = 0.17 gallon/foot

For 4" diameter well: V = 3, F= 0.66 gallon/foot

V= well volume

F= gallon of water per foot of casing

| Field Parameters | | | | | | | |
|---|---|---|---|---|---|---|---|
| Time AM [ ] PM [ ] | Gallons pumped | Conductivity Microhos/cm | Dissolved Oxygen | Temperature [ ]°C [ ]°F | Turbidity | pH | ORP |
| **Start** | | | | | | | |
| 9.35 | 1 | 665 | 3.49 | 23.06 | clear | 7.12 | -80.4 |
| 9.38 | 2 | 628 | 5.9 | 23.08 | clear | 6.82 | -86.9 |
| 9.40 | 3 | 629 | 4.9 | 22.5 | clear | 6.77 | -90.2 |
| 9.42 | 4 | 635 | 2.50 | 22.5 | clear | 6.45 | -83.2 |
| 9.45 | 5 | 623 | 1.50 | 21.8 | clear | 6.89 | -90.5 |
| | | | | | | | |
| | | | | | | | |

Fe (II) 1.06 mg/L

**Total Gallons Pumped** 10 gal

**Observations during purging (well condition, turbidity, color, odor):** good, clear, Cloudy, Diesel

**Discharge water disposal:** [ ] **Sanitary Sewer** [ ] **Storm Drain** [ ] **Drum** [ ] **Other** Stanley @ Site - Sanitary

**Well Sampling Date:** 11-16-06 **Time:** 9:30 Am

# Well Development and Sampling Form

**Job Name** AC Transit Emeryville **Well Number** MW 5

**Job Number** 0568-11-06 **Date** 11-12-06.

**Sample By** S. Lahiri

| Purge Volume | Development/Purge Method(s) |
|---|---|
| Casing Diameter: 2-inch [✓] 4-inch [ ] Other _____ | [ ] Swab [ ] Surge Other _____ |
| Total depth (TD) of casing in feet 19.5 + <br> Depth to water (DTW) in feet 2.5 | [ ] Bail Bailer Type: Disposable |
| Purge Volume Calculation <br> (19.5 - 2.5) x 3 x .17 = 8.67 gallons <br> TD - DTW x V x F = Purge volume | [ ] Pump <br> Pump Type: [✓] Submersible [ ] Centrifuge <br> [ ] Bladder [ ] Other |

**Explanation**

For 2" diameter well: V = 5, F = 0.17 gallon/foot

For 4" diameter well: V = 3, F= 0.66 gallon/foot

V= well volume

F= gallon of water per foot of casing

**Field Parameters**

| Time AM [✓] PM [ ] | Gallons pumped | Conductivity Microhos/cm | Dissolved Oxygen | Temperature [ ]°C [ ]°F | Turbidity | pH | ORP |
|---|---|---|---|---|---|---|---|
| **Start** | | | | | | | |
| 8:00 | | | | | | | |
| 8:05 | 2 | 785 | 11.6 | 20.23 | clear | 6.09 | -6.06 |
| 8:10 | 4 | 787 | 6.4 | 20.00 | clear | 6.75 | -6.2 |
| 8:15 | 5.5 | 738 | 4.9 | 20.5 | clear | 6.60 | -7.8 |
| 8:20 | 7.00 | 725 | 4.5 | 20.20 | clear | 6.62 | -10.7 |
| | | | | | | | |
| | | | | | | | |

**Total Gallons Pumped** 10 gals.

**Observations during purging (well condition, turbidity, color, odor):** good, clear, clear, diesel

**Discharge water disposal:** [ ] **Sanitary Sewer** [ ] **Storm Drain** [ ] **Drum** [ ] **Other** _____

**Well Sampling Date:** _____ **Time:** _____

# Well Development and Sampling Form

**Job Name** AC Transit – EMV **Well Number** MW6

**Job Number** 05-68-11-06 **Date** 11/16/06

**Sample By** SL

| Purge Volume | Development/Purge Method(s) |
|---|---|
| Casing Diameter: 2-inch [✓] 4-inch [ ] Other _____ | [ ] Swab [ ] Surge Other _____ |
| Total depth (TD) of casing in feet 19.6' | [ ] Bail Bailer Type: Disposable |
| Depth to water (DTW) in feet 3.3' | [ ] Pump |
| Purge Volume Calculation (19.6 3.3) x 3 x .17 = 3.313 gallons | Pump Type: [✓] Submersible [ ] Centrifuge |
| TD - DTW x V x F = Purge volume | [ ] Bladder [ ] Other |

**Explanation**

For 2" diameter well: V = 5, F = 0.17 gallon/foot

For 4" diameter well: V = 3, F= 0.66 gallon/foot

V= well volume

F= gallon of water per foot of casing

**Field Parameters**

| Time AM [✓] PM [ ] | Gallons pumped | Conductivity Microhos/cm | Dissolved Oxygen | Temperature [✓]°C [ ]°F | Turbidity | pH | ORP | |
|---|---|---|---|---|---|---|---|---|
| Start 11:54 | 1 | 816 | 22.5 | 22.8 | Semi-clear | 6.92 | -186 | Fe 2.37 mg/L |
| | 3 | 837 | 3.5 | 22.92 | " | 6.24 | -209 | |
| | 5 | 842 | 3.8 | 22.93 | " | 6.24 | -214 | |
| | 6 | 845 | 4.3 | 22.93 | " | 6.24 | -219 | |
| | 7 | 847 | 4.0 | 22.93 | " | 6.24 | -220 | |
| 12:04 | 8.5 | 848 | 3.6 | 22.93 | " | 6.23 | -221 | |
| | | | | | | | | |
| | | | | | | | | |

**Total Gallons Pumped** 8.5

**Observations during purging (well condition, turbidity, color, odor):** Clear

**Discharge water disposal:** [ ] **Sanitary Sewer** [ ] **Storm Drain** [ ] **Drum** [ ] **Other** Steam bay

**Well Sampling Date:** 11.16.06 **Time:** 11:30 Am

# Well Development and Sampling Form

**Job Name** AC Transit Emeryville **Well Number** MW-7

**Job Number** 0568-11-06 **Date** 11-16-06

**Sample By** S. Lahr

| Purge Volume | Development/Purge Method(s) |
|---|---|
| Casing Diameter: 2-inch [✓] 4-inch [ ] Other _____ | [ ] Swab [ ] Surge Other _____ |
| Total depth (TD) of casing in feet 24.6 + | [ ] Bail Bailer Type: Disposable |
| Depth to water (DTW) in feet 5.7 | [ ] Pump |
| Purge Volume Calculation<br>(24.6 - 5.7) x 5 x .17 = 16.17 gallons | Pump Type: [✓] Submersible [ ] Centrifuge |
| TD - DTW x V x F = Purge volume | [ ] Bladder [ ] Other |

**Explanation**

For 2" diameter well: V = 5, F = 0.17 gallon/foot

For 4" diameter well: V = 3, F= 0.66 gallon/foot

V= well volume

F= gallon of water per foot of casing

| Field Parameters | | | | | | | |
|---|---|---|---|---|---|---|---|
| Time AM [ ] PM [ ] | Gallons pumped | Conductivity Microhos/cm | Dissolved Oxygen mg/L | Temperature [ ]°C [ ]°F | Turbidity | pH | ORP |
| **Start** | | | | | | | |
| 3.41 | | | | | | | |
| 3.46 | 3 | 903 | 4.60 | 21.4 | cloudy | 6.61 | -58.2 |
| 3.50 | 6 | 923 | 3.59 | 21.06 | slight cloudy | 6.63 | -78.3 |
| 3.56 | 9 | 922 | 1.93 | 21.03 | cloudy | 6.64 | -122.3 |
| 4.06 | 12 | 915 | 1.10 | 20.63 | cloudy | 6.60 | -112.1 |
| | | | | | | | |
| | | | | | | | |

**Total Gallons Pumped** 17 gals

**Observations during purging (well condition, turbidity, color, odor):** good, cloudy, cloudy, gasoline

**Discharge water disposal:** [ ] **Sanitary Sewer** [ ] **Storm Drain** [ ] **Drum** [ ] **Other** Steambay

**Well Sampling Date:** 11.16.06 **Time:** 3.00 pm

# Well Development and Sampling Form

**Job Name** AC Transit Emeryville **Well Number** MW-8

**Job Number** 0568-11-06 **Date** 11-12-06

**Sample By** S. Lahiri

| Purge Volume | Development/Purge Method(s) |
|---|---|
| Casing Diameter: 2-inch [✓] 4-inch [ ] Other _____ | [ ] Swab [ ] Surge Other _____ |
| Total depth (TD) of casing in feet 20.7 + | [ ] Bail Bailer Type: Disposable |
| Depth to water (DTW) in feet 4.7 | [ ] Pump |
| Purge Volume Calculation<br>(20.7 - _____) x 4.7 x .17 = 8.16 gallons | Pump Type: [✓] Submersible [ ] Centrifuge |
| TD - DTW x V x F = Purge volume | [ ] Bladder [ ] Other |

**Explanation**

For 2" diameter well: V = 5, F = 0.17 gallon/foot

For 4" diameter well: V = 3, F= 0.66 gallon/foot

V= well volume

F= gallon of water per foot of casing

**Field Parameters**

| Time AM [ ] PM [✓] | Gallons pumped | Conductivity Microhos/cm | Dissolved Oxygen | Temperature [ ]°C [ ]°F | Turbidity | pH | ORP |
|---|---|---|---|---|---|---|---|
| **Start** | | | | | | | |
| 16.30 | 1 | 900 | 86.5 | 20.80 | clear | 7.07 | 12.3 |
| 16.32 | 2 | 900 | 63.2 | 19.23 | clear | 6.91 | -45.9 |
| 16.35 | 3 | 903 | 57.8 | 20.00 | clear | 6.89 | -35.2 |
| 16.38 | 4 | 907 | 49.05 | 21.02 | clear | 6.87 | -42.8 |
| 16.40 | 6 | 910 | 42.07 | 19.22 | clear | 6.75 | -38.2 |
| | | | | | | | |
| | | | | | | | |

**Total Gallons Pumped** 10 gals

**Observations during purging (well condition, turbidity, color, odor):** Good, clear, diesel

**Discharge water disposal:** [ ] **Sanitary Sewer** [ ] **Storm Drain** [ ] **Drum** [ ] **Other** Steambay @ site

**Well Sampling Date:** 11-12-06 **Time:** 11:00 ~~Am~~

# Well Development and Sampling Form

**Job Name** AC Transit Emeryville **Well Number** MW-9

**Job Number** 0568-11-06 **Date** 11-12-06

**Sample By** S. Galvez

| Purge Volume | Development/Purge Method(s) |
|---|---|
| Casing Diameter: 2-inch [✓] 4-inch [ ] Other | [ ] Swab [ ] Surge Other |
| Total depth (TD) of casing in feet 20.5 + | [ ] Bail Bailer Type: Disposable |
| Depth to water (DTW) in feet 3.5 | [ ] Pump |
| Purge Volume Calculation | Pump Type: [✓] Submersible [ ] Centrifuge |
| (20.5 - 3.5) x 3 x 0.17 = 8.16 gallons | [ ] Bladder [ ] Other |
| TD - DTW x V x F = Purge volume | |

**Explanation**

For 2" diameter well: V = 5, F = 0.17 gallon/foot

For 4" diameter well: V = 3, F= 0.66 gallon/foot

V= well volume

F= gallon of water per foot of casing

**Field Parameters**

| Time AM [ ] PM [ ] | Gallons pumped | Conductivity Microhos/cm | Dissolved Oxygen | Temperature [ ]°C [ ]°F | Turbidity | pH | ORP |
|---|---|---|---|---|---|---|---|
| **Start** | | | | | | | |
| 12.05 | | | | | | | |
| 12-10 | 1 | 893 | 47.9 | 21.53 | cloudy | 6.64 | -8.8 |
| 12.15 | 2 | 894 | 48.9 | 21.41 | cloudy | 6.61 | -11.4 |
| 12.20 | 4 | 892 | 28.3 | 21.64 | clear | 6.59 | -42.3 |
| 12.25 | 6 | 893 | 28.9 | 21.64 | clear. | 6.58 | -49.4 |
| | | | | | | | |
| | | | | | | | |

**Total Gallons Pumped** 10 gals

**Observations during purging (well condition, turbidity, color, odor):** good, ~~steam~~ cloudy, clear, sand.

**Discharge water disposal:** [ ] **Sanitary Sewer** [ ] **Storm Drain** [ ] **Drum** [ ] **Other** Stockton

**Well Sampling Date:** 11-12-06 **Time:** 12:00 pm

# Well Development and Sampling Form

**Job Name** ACT Emeryville **Well Number** MW-10

**Job Number** 0568-11-06 **Date** 11-16-06

**Sample By** S. Lahiri

| Purge Volume | Development/Purge Method(s) |
|---|---|
| Casing Diameter: 2-inch [ ] 4-inch [ ] Other _____ | [ ] Swab [ ] Surge Other _____ |
| Total depth (TD) of casing in feet _____ + Depth to water (DTW) in feet _____ | [ ] Bail Bailer Type: _____ |
| Purge Volume Calculation (_____ - _____) x ____ x _____ = _____ gallons TD - DTW x V x F = purge volume | [ ] Pump Pump Type: [ ] Submersible [ ] Centrifuge [ ] Bladder [ ] Other |
| **Explanation** For 2" diameter well: V = 5, F = 0.17 gallon/foot For 4" diameter well: V = 3, F+ 0.66 gallon/foot | V= well volume F= gallon of water per foot of casing |

| Field Parameters | | | | | |
|---|---|---|---|---|---|
| Time a.m. [ ] p.m. [ ] | pH | Conductivity Microhos/centimeter | Temperature [ ] °C [ ] °F | Turbidity | Gallons pumped |
| **Start** | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Not released in storage tote

**Total Gallons Pumped** _____

**Observations during purging (well condition, turbidity, color, odor):** _____

_____

**Discharge water disposal:** [ ] **Sanitary Sewer** [ ] **Storm Drain** [ ] **Drum** [ ] **Other** _____

**Well Sampling Date:** _____ **Time:** _____

# Well Development and Sampling Form

**Job Name** AC Transit Emeryville **Well Number** MW-11

**Job Number** 0568-11-06 **Date** 11-12-06

**Sample By** S. Lahiri

| Purge Volume | Development/Purge Method(s) |
|---|---|
| Casing Diameter: 2-inch [ ] 4-inch [ ] Other | [ ] Swab [ ] Surge Other |
| Total depth (TD) of casing in feet 17.40 + | [ ] Bail Bailer Type: Disposable |
| Depth to water (DTW) in feet 3.02 | [ ] Pump |
| Purge Volume Calculation 7.33<br>(17.40 - 3.02) x 3 x .17 = ~~14.38~~ gallons | Pump Type: [✓] Submersible [ ] Centrifuge |
| TD - DTW x V x F = Purge volume | [ ] Bladder [ ] Other |

**Explanation**

For 2" diameter well: V = 5, F = 0.17 gallon/foot

For 4" diameter well: V = 3, F= 0.66 gallon/foot

V= well volume

F= gallon of water per foot of casing

**Field Parameters**

| Time AM [ ] PM [ ] | Gallons pumped | Conductivity Microhos/cm | Dissolved Oxygen | Temperature [ ]°C [ ]°F | Turbidity | pH | ORP |
|---|---|---|---|---|---|---|---|
| **Start** | | | | | | ~~6.9~~ | |
| 3 PM | 1.5 | 620 | 18.06 | 21.5 | clear | 6.9 | -31.5 |
| 3.05 | 2.5 | 610 | 6.20 | 21.23 | clear | 6.75 | -31.2 |
| 3.08 | 3.5 | 612 | 4.29 | 21.5 | clear | 6.60 | -27.8 |
| 3.12 | 4.5 | 609 | 4.00 | 21.5 | clear | 6.55 | -26.5 |
| 3.17 | 5.5 | 607 | 3.82 | 21.00 | clear | 6.52 | -19.4 |
| | 6.5 | 600 | 2.81 | 21.02 | clear | 6.32 | -19.00 |
| | | | | | | | |

**Total Gallons Pumped** 8 gals

**Observations during purging (well condition, turbidity, color, odor):** good, Turbid at beginning then clear. gasoline smell.

**Discharge water disposal:** [ ] **Sanitary Sewer** [ ] **Storm Drain** [ ] **Drum** [ ] **Other** Steamboat ateria

**Well Sampling Date:** 11-12-06 **Time:** 3 pm

# Well Development and Sampling Form

**Job Name** AC Transit Emeryville **Well Number** MW 12 - EMV

**Job Number** 0568-11-06 **Date** 11-16-06

**Sample By** S. LaRue

| Purge Volume | Development/Purge Method(s) |
|---|---|
| Casing Diameter: 2-inch [X] 4-inch [ ] Other _____ | [ ] Swab [ ] Surge Other _____ |
| Total depth (TD) of casing in feet 30.3 + <br> Depth to water (DTW) in feet 10.8 | [ ] Bail Bailer Type: Disposable |
| Purge Volume Calculation <br> (30.3 - 10.8) x 3 x .17 = 9.95 gallons <br> TD - DTW x V x F = Purge volume | [ ] Pump <br> Pump Type: [ ] Submersible [ ] Centrifuge <br> [ ] Bladder [ ] Other |

**Explanation**

For 2" diameter well: V = 5, F = 0.17 gallon/foot

For 4" diameter well: V = 3, F= 0.66 gallon/foot

V= well volume

F= gallon of water per foot of casing

**Field Parameters**

| Time AM [ ] PM [X] | Gallons pumped | Conductivity Microhos/cm | Dissolved Oxygen | Temperature [ ]°C [ ]°F | Turbidity | pH | ORP |
|---|---|---|---|---|---|---|---|
| Start 3:34 3:32 | 1.5 8 | 764 | 19.0 | 19.97 | not clear | 6.78 | -126.5 |
| 3:37 | 4 | 757 | 8.8 | 19.88 | slightly cloudy | 6.74 | -132.4 |
| 3:40 | 6 | 755 | 6.7 | 19.86 | clear | 6.72 | -129.4 |
| 3:43 | 8 | 754 | 4.7 | 19.86 | clear | 6.71 | -127.4 |
| 3:45 | 10 | 754 | 3.7 | 19.86 | clear | 6.69 | -125.6 |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

Fe 2.2 mg/L

**Total Gallons Pumped** 10.5 gals

**Observations during purging (well condition, turbidity, color, odor):** good, clear, diesel

**Discharge water disposal:** [ ] **Sanitary Sewer** [ ] **Storm Drain** [ ] **Drum** [ ] **Other** Steambay.

**Well Sampling Date:** 11-16-06 **Time:** 3:00 pm

# Well Development and Sampling Form

**Job Name** ACT emeryville **Well Number** MW-13

**Job Number** 0568-11-06 **Date** 11-16-06

**Sample By** S. Latif

| Purge Volume | Development/Purge Method(s) |
|---|---|
| Casing Diameter: 2-inch [ ] 4-inch [ ] Other _____ | [ ] Swab [ ] Surge Other _____ |
| Total depth (TD) of casing in feet _____ + <br> Depth to water (DTW) in feet _____ | [ ] Bail Bailer Type: _____ |
| Purge Volume Calculation <br> (_____ - _____) x ____ x ____ = _____ gallons <br> TD - DTW x V x F = purge volume | [ ] Pump <br> Pump Type: [ ] Submersible [ ] Centrifuge <br> [ ] Bladder [ ] Other |

**Explanation**

For 2" diameter well: V = 5, F = 0.17 gallon/foot

For 4" diameter well: V = 3, F+ 0.66 gallon/foot

V= well volume

F= gallon of water per foot of casing

| Field Parameters | | | | | |
|---|---|---|---|---|---|
| Time <br> a.m. [ ] p.m. [ ] | pH | Conductivity <br> Microhos/centimeter | Temperature <br> [ ] °C [ ] °F | Turbidity | Gallons pumped |
| **Start** | | | | | |
| | | | | | |
| | | | | | |
| Product | Thickness | of | .2 inch | on top | |
| | No | sampling | was done. | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

**Total Gallons Pumped** _____

**Observations during purging (well condition, turbidity, color, odor):** _____

_____

**Discharge water disposal:** [ ] **Sanitary Sewer** [ ] **Storm Drain** [ ] **Drum** [ ] **Other** _____

**Well Sampling Date:** _____ **Time:** _____

# Well Development and Sampling Form

**Job Name** AC Transit / Emeryville **Well Number** MW-1

**Job Number** WZP5-68-11-06 **Date** 11-16-06

**Sample By** S. Lahm

| Purge Volume | Development/Purge Method(s) |
|---|---|
| Casing Diameter: 2-inch [✓] 4-inch [ ] Other _____ | [ ] Swab [ ] Surge Other _____ |
| Total depth (TD) of casing in feet _____<br>Depth to water (DTW) in feet _____ | [ ] Bail Bailer Type: Disposable |
| Purge Volume Calculation<br>(16.8 - 5.5) x 3 x .17 = 5.76 gallons<br>TD - DTW x V x F = Purge volume | [ ] Pump<br>Pump Type: [✓] Submersible [ ] Centrifuge<br>[ ] Bladder [ ] Other |
| **Explanation**<br>For 2" diameter well: V = 5, F = 0.17 gallon/foot<br>For 4" diameter well: V = 3, F= 0.66 gallon/foot | V= well volume<br>F= gallon of water per foot of casing |

**Field Parameters**

| Time AM [ ] PM [ ] | Gallons pumped | Conductivity Microhos/cm | Dissolved Oxygen | Temperature [ ]°C [ ]°F | Turbidity | pH | ORP |
|---|---|---|---|---|---|---|---|
| Start 12:29 ~~12:40~~ ~~12:27~~ | 1 | 789 | 14.2 | 22.67 | clear | 6.84 | -194.7 |
| 12:32 | 2.5 | 791 | 9.1 | 22.68 | clear | 6.82 | -201.9 |
| 12:33 | 4 | 792 | 7.7 | 22.69 | clear | 6.82 | -204.5 |
| 12:34 | 5.5 | 792 | 5.4 | 22.68 | clear | 6.81 | -206.8 |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

fe 2.17 mg/L

**Total Gallons Pumped** 6.5 gals.

**Observations during purging (well condition, turbidity, color, odor):** Good, clear, none

**Discharge water disposal:** [ ] **Sanitary Sewer** [ ] **Storm Drain** [ ] **Drum** [ ] **Other** Steam bay.

**Well Sampling Date:** 11.16.06 **Time:** 12:00 pm

# Well Development and Sampling Form

**Job Name** AC Transit Emeryville **Well Number** W-3

**Job Number** 0568-11-06 **Date** 11-16-06

**Sample By** S. Lahiri

| Purge Volume | Development/Purge Method(s) |
|---|---|
| Casing Diameter: 2-inch [✓] 4-inch [ ] Other | [ ] Swab [ ] Surge Other |
| Total depth (TD) of casing in feet 23.6 | [ ] Bail Bailer Type: Disposable |
| Depth to water (DTW) in feet 6.8 | [ ] Pump Pump Type: [✓] Submersible [ ] Centrifuge [ ] Bladder [ ] Other |
| Purge Volume Calculation (23.6 - 6.8) x 3 x .17 = 11.12 gallons | |
| TD - DTW x V x F = Purge volume | |

**Explanation**

For 2" diameter well: V = 5, F = 0.17 gallon/foot

For 4" diameter well: V = 3, F= 0.66 gallon/foot

V= well volume

F= gallon of water per foot of casing

**Field Parameters**

| Time AM [ ] PM [✓] | Gallons pumped | Conductivity % Microhos/cm | Dissolved Oxygen | Temperature [✓]°C [ ]°F | Turbidity | pH | ORP |
|---|---|---|---|---|---|---|---|
| **Start** 12:56 | | | | | | | |
| 12:57 | 1 | 386 | 26.5 | 22.38 | cloudy | 6.95 | 96.1 |
| 12:59 | 3 | 355 | 15.0 | 22.34 | slight cloudy | 6.32 | 66.1 |
| 1:01 | 5 | 431 | 37.4 | 21.90 | dark cloudy | 6.74 | 40.7 |
| 1:04 | 8 | 450 | 5.6 | 21.91 | slight cloudy | 6.71 | 31.4 |
| 1:08 | 11 | 470 | 3.9 | 21.85 | almost clear | 6.69 | 25.3 |
| | | | | | | | |
| | | | | | | | |

2.14 mS/L

**Total Gallons Pumped** 17 gals

**Observations during purging (well condition, turbidity, color, odor):** good, cloudy, cloudy, gasoline

**Discharge water disposal:** [ ] **Sanitary Sewer** [ ] **Storm Drain** [ ] **Drum** [ ] **Other** Steamboat.

**Well Sampling Date:** 11.16.06 **Time:** 12:30 pm

# Well Development and Sampling Form

**Job Name** AC Transit / Emeryville **Well Number** W4

**Job Number** _____ **Date** 11/16/06

**Sample By** SL

| Purge Volume | Development/Purge Method(s) |
|---|---|
| Casing Diameter: 2-inch [✓] 4-inch [ ] Other _____ | [ ] Swab [ ] Surge Other _____ |
| Total depth (TD) of casing in feet 17' | [ ] Bail Bailer Type: _____ |
| Depth to water (DTW) in feet 3.9' | [ ] Pump Pump Type: [ ] Submersible [ ] Centrifuge |
| Purge Volume Calculation (17 - 3.9) x 3 x .17 = 6.7 gallons | [ ] Bladder [ ] Other |
| TD - DTW x V x F = Purge volume | |

**Explanation**

For 2" diameter well: V = 5, F = 0.17 gallon/foot — V= well volume

For 4" diameter well: V = 3, F= 0.66 gallon/foot — F= gallon of water per foot of casing

**Field Parameters**

| Time AM [ ] PM [ ] | Gallons pumped | Conductivity Microhos/cm | Dissolved Oxygen | Temperature [ ]°C [ ]°F | Turbidity | pH | ORP |
|---|---|---|---|---|---|---|---|
| Start 11:10 AM | 1 | 812 | 31.0 | 22.71 | clean | 6.97 | -77.7 |
| | 2 | 818 | 6.5 | 22.72 | " | 6.90 | -89.7 |
| | 3 | 824 | 4.0 | 22.78 | " | 6.86 | -129.0 |
| | 4 | 820 | 3.5 | 22.83 | " | 6.85 | -144.6 |
| | 5 | 814 | 4.0 | 22.84 | clean | 6.84 | -149.6 |
| 11:15 AM | 6 | 812 | 4.5 | 22.85 | " | 6.73 | -151.5 |
| | | | | | | | |
| | | | | | | | |

FC 1.75 to 1.94 mg/L

**Total Gallons Pumped** 6.5 Gallons

**Observations during purging (well condition, turbidity, color, odor):** Reasonably clean

**Discharge water disposal:** [ ] Sanitary Sewer [✓] Storm Drain [ ] Drum [ ] Other _____

**Well Sampling Date:** _____ **Time:** _____

# APPENDIX B

## CHAIN-OF-CUSTODY FORMS
## AND
## LABORATORY REPORTS

# McCAMPBELL ANALYTICAL, INC.

110 2nd AVENUE SOUTH, #D7
PACHECO, CA 94553-5560
Website: www.mccampbell.com Email: main@mccampbell.com
Telephone: (877) 798-1620 Fax: (925) 798-1622

# CHAIN OF CUSTODY RECORD

TURN AROUND TIME ☐ RUSH ☐ 24 HR ☐ 48 HR ☐ 72 HR ☑ 5 DAY
GeoTracker EDF ☑ PDF ☑ Excel ☐ Write On (DW) ☐

**Report To:** SAMHITA LAHIRI **Bill To:** ESSEL TECHNOLOGY
**Company:** ESSEL TECHNOLOGY SERVICES INC.
9778 Broadmoor Drive, San Ramon, CA 94583
**E-Mail:** ESSELTEK SERVICES
**Tele:** (415) 794-1960 **Fax:** (925) 833-7977 @AOL.COM
**Project #:** 0569-11-12-06 **Project Name:** AC Transit Div 2
**Project Location:** 1774 47th Street, Emeryville, CA
**Sampler Signature:** Samhita Lahiri / Samhita Lahiri

| | SAMPLE ID | LOCATION/ Field Point Name | SAMPLING Date | SAMPLING Time | # Containers | Type Containers | MATRIX Water | MATRIX Soil | MATRIX Air | MATRIX Sludge | MATRIX Other | METHOD PRESERVED ICE | METHOD PRESERVED HCL | METHOD PRESERVED $HNO_3$ | METHOD PRESERVED Other |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | MW-04-01 | MW-04 | 11/12 | 11:30 | 1 | VOA | X | | | | | | X | | |
| 2 | -02 | | | Acu | 1 | VOA | X | | | | | | X | | |
| 3 | -03 | | | | 1 | VOA | X | | | | | | X | | |
| 4 | MW-04-04 | | | | 1 | Amb | X | | | | | | X | | |
| 5 | MW-04-05 | | | | 1 | Amb | X | | | | | | X | | |
| 1 | MW-05-01 | MW-05 | | 11:00 | 1 | VOA | X | | | | | | X | | |
| 2 | | | | Acu | 1 | VOA | X | | | | | | X | | |
| 3 | -03 | | | | 1 | VOA | X | | | | | | X | | |
| 4 | MW-05-04 | | | | 1 | Amb | X | | | | | | X | | |
| 5 | MW-05-05 | | | | 1 | Amb | X | | | | | | X | | |

**Analysis Request**

| BTEX & TPH as Gas (602 / 8021 + 8015) / MTBE | TPH as Diesel (8015) | Total Petroleum Oil & Grease (1664 / 5520 E/B&F) | Total Petroleum Hydrocarbons (418.1) | EPA 502.2 / 601 / 8010 / 8021 (HVOCs) | MTBE / BTEX ONLY (EPA 602 / 8021) | EPA 505/ 608 / 8081 (Cl Pesticides) | EPA 608 / 8082 PCB's ONLY; Aroclors / Congeners | EPA 507 / 8141 (NP Pesticides) | EPA 515 / 8151 (Acidic Cl Herbicides) | EPA 524.2 / 624 / 8260 (VOCs) | EPA 525.2 / 625 / 8270 (SVOCs) | EPA 8270 SIM / 8310 (PAHs / PNAs) | CAM 17 Metals (200.7 / 200.8 / 6010 / 6020) | LUFT 5 Metals (200.7 / 200.8 / 6010 / 6020) | Lead (200.7 / 200.8 / 6010 / 6020) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X | | | | | X | | | | | | | | | | |
| X | | | | | X | | | | | | | | | | |
| X | | | | | X | | | | | | | | | | |
| | X | | | | | | | | | | | | | | |
| | X | | | | | | | | | | | | | | |
| | X | | | | | | | | | | | | | | |
| | X | | | | | | | | | | | | | | |

Other

Comments: Filter Samples for Metals analysis: Yes / No

| Relinquished By: | Date: | Time: | Received By: |
|---|---|---|---|
| Samhita Lahiri | 11/13/06 | 1247 | |
| Relinquished By: | Date: | Time: | Received By: |
| Relinquished By: | Date: | Time: | Received By: |

ICE/t° 6.4°C
GOOD CONDITION ✓
HEAD SPACE ABSENT ✓
DECHLORINATED IN LAB
APPROPRIATE CONTAINERS ✓
PRESERVED IN LAB

COMMENTS:

PRESERVATION VOAS ✓ O&G METALS OTHER pH<2

# McCAMPBELL ANALYTICAL, INC.

110 2nd AVENUE SOUTH, #D7
PACHECO, CA 94553-5560
Website: www.mccampbell.com Email: main@mccampbell.com
Telephone: (877) 798-1620 Fax: (925) 798-1622

# CHAIN OF CUSTODY RECORD

TURN AROUND TIME ☐ RUSH ☐ 24 HR ☐ 48 HR ☐ 72 HR ☑ 5 DAY

GeoTracker EDF ☐ PDF ☑ Excel ☐ Write On (DW) ☐

| | | | |
|---|---|---|---|
| **Report To:** | SAMHITA LAHIRI (ESSEL TECHNOLOGY | | |
| **Company:** | ESSEL TECHNOLOGY SERVICES INC. | | |
| | 9778 Broadmoor Drive, San Ramon, CA 94583 | | |
| | 510-206-0270 | **E-Mail:** | ESSELTEK SERVICES |
| **Tele:** | ~~(415) 794-1960~~ | **Fax:** | (925) 833-7977 @AOL.com |
| **Project #:** | | **Project Name:** | AC TRANSIT DIV. |
| **Project Location:** | 1774 47th Street, Emeryville, CA | | |
| **Sampler Signature:** | | | |

| SAMPLE ID | LOCATION/ Field Point Name | SAMPLING Date | SAMPLING Time | # Containers | Type Containers | MATRIX Water | MATRIX Soil | MATRIX Air | MATRIX Sludge | MATRIX Other | METHOD PRESERVED ICE | METHOD PRESERVED HCL | METHOD PRESERVED $HNO_3$ | METHOD PRESERVED Other |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-11-01 | MW-11 | 11/12/06 | 3:00 PM | 3 | VOAs | X | | | | | | X | | |
| 02 | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | | | | | | ↓ | | |
| 03 | | | | | | | | | | | | | | |
| MW-11-04 | | | | 2 | Amb | | | | | | | | | |
| 05 | | | | ↓ | ↓ | ↓ | | | | | | ↓ | | |
| MW-9-01 | MW-9 | 11/12/06 | 2:30 pm | 3 | VOAs | X | | | | | | X | | |
| 02 | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | | | | | | ↓ | | |
| 03 | | | | | | | | | | | | | | |
| MW-9-04 | | | | 2 | Amb. | | | | | | | | | |
| 05 | | | | ↓ | ↓ | ↓ | | | | | | ↓ | | |

(+) (+)

| Analysis Request | Other | Comments |
|---|---|---|
| BTEX & TPH as Gas (602 / 8021 + 8015) / MTBE | | Filter Samples for Metals analysis: Yes / No |
| TPH as Diesel (8015) | | |
| Total Petroleum Oil & Grease (1664 / 5520 E/B&F) | | |
| Total Petroleum Hydrocarbons (418.1) | | |
| EPA 502.2 / 601 / 8010 / 8021 (HVOCs) | | |
| MTBE / BTEX ONLY (EPA 602 / 8021) | | |
| EPA 505/ 608 / 8081 (Cl Pesticides) | | |
| EPA 608 / 8082 PCB's ONLY; Aroclors / Congeners | | |
| EPA 507 / 8141 (NP Pesticides) | | |
| EPA 515 / 8151 (Acidic Cl Herbicides) | | |
| EPA 524.2 / 624 / 8260 (VOCs) | | |
| EPA 525.2 / 625 / 8270 (SVOCs) | | |
| EPA 8270 SIM / 8310 (PAHs / PNAs) | | |
| CAM 17 Metals (200.7 / 200.8 / 6010 / 6020) | | |
| LUFT 5 Metals (200.7 / 200.8 / 6010 / 6020) | | |
| Lead (200.7 / 200.8 / 6010 / 6020) | | |
| MW-11-01 | | |
| MW-11-04 | | |
| MW-9-01 | | |
| MW-9-04 | | |

| | | | |
|---|---|---|---|
| **Relinquished By:** | **Date:** | **Time:** | **Received By:** |
| Samhita Lahiri | 11/13/06 | 1247 | |
| **Relinquished By:** | **Date:** | **Time:** | **Received By:** |
| | | | |
| **Relinquished By:** | **Date:** | **Time:** | **Received By:** |
| | | | |

ICE/t° _____
GOOD CONDITION ✓
HEAD SPACE ABSENT ✓ - 003 has headspace
DECHLORINATED IN LAB _____
APPROPRIATE CONTAINERS ✓
PRESERVED IN LAB _____

COMMENTS:

| | VOAS | O&G | METALS | OTHER |
|---|---|---|---|---|
| PRESERVATION | | | pH<2 | |

# McCAMPBELL ANALYTICAL, INC.

110 2nd AVENUE SOUTH, #D7
PACHECO, CA 94553-5560
Website: www.mccampbell.com Email: main@mccampbell.com
Telephone: (877) 798-1620 Fax: (925) 798-1622

# CHAIN OF CUSTODY RECORD

TURN AROUND TIME ☐ RUSH ☐ 24 HR ☐ 48 HR ☐ 72 HR ☑ 5 DAY

GeoTracker EDF ☐ PDF ☐ Excel ☐ Write On (DW) ☐

Report To: SAMHITA LAHIRI (ESSEL TECHNOLOGY)
Company: ESSEL TECHNOLOGY SERVICES INC.
9778 Broadmoor Drive, San Ramon, CA 94583
E-Mail: ESSELTEK SERVICES
Tele: (415) 794-1960 Fax: (925) 833-7977 @AOL.com
Project #: Project Name: AC Transit DIV
Project Location: 1774 47th Street, Emeryville, CA
Sampler Signature:

| SAMPLE ID | LOCATION/ Field Point Name | SAMPLING Date | SAMPLING Time | # Containers | Type Containers | MATRIX Water | MATRIX Soil | MATRIX Air | MATRIX Sludge | MATRIX Other | METHOD PRESERVED ICE | METHOD PRESERVED HCL | METHOD PRESERVED $HNO_3$ | METHOD PRESERVED Other |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-07-01 | MW-07 | 11/17/06 | 12:00 | 3 | VOAs | X | | | | | | X | | |
| | | | | | | X | | | | | | X | | |
| + -03 | | | | | | X | | | | | | X | | |
| MW-07-04 | | | | 2 | Amb | X | | | | | | X | | |
| MW-07-05 | | | | | | X | | | | | | X | | |
| MW-08-01 | MW-08 | 11-17-06 | 4:00pm | 3 | VOAs | X | | | | | | X | | |
| -02 | | | | | | X | | | | | | X | | |
| -03 | | | | | | X | | | | | | X | | |
| MW-08-04 | | | | 2 | Amb | X | | | | | | X | | |
| MW-08-05 | | | | | | X | | | | | | X | | |
| | | | | | | | | | | | | | | |
| Trip Blank 06 | Blank | | | 1 | VOA | | | | | | | | | |
| | | | | | | | | | | | | | | |

| Analysis Request | Other | Comments |
|---|---|---|
| BTEX & TPH as Gas (602 / 8021 + 8015) / MTBE | | Filter Samples for Metals analysis: Yes / No |
| TPH as Diesel (8015) | | |
| Total Petroleum Oil & Grease (1664 / 5520 E/B&F) | | |
| Total Petroleum Hydrocarbons (418.1) | | |
| EPA 502.2 / 601 / 8010 / 8021 (HVOCs) | | |
| MTBE / BTEX ONLY (EPA 602 / 8021) | | |
| EPA 505/ 608 / 8081 (Cl Pesticides) | | |
| EPA 608 / 8082 PCB's ONLY; Aroclors / Congeners | | |
| EPA 507 / 8141 (NP Pesticides) | | |
| EPA 515 / 8151 (Acidic Cl Herbicides) | | |
| EPA 524.2 / 624 / 8260 (VOCs) | | |
| EPA 525.2 / 625 / 8270 (SVOCs) | | |
| EPA 8270 SIM / 8310 (PAHs / PNAs) | | |
| CAM 17 Metals (200.7 / 200.8 / 6010 / 6020) | | |
| LUFT 5 Metals (200.7 / 200.8 / 6010 / 6020) | | |
| Lead (200.7 / 200.8 / 6010 / 6020) | | |

| Relinquished By: | Date: | Time: | Received By: |
|---|---|---|---|
| Samhita Lahiri | 11/17/06 | 1247 | |
| Relinquished By: | Date: | Time: | Received By: |
| Relinquished By: | Date: | Time: | Received By: |

ICE/t° _____
GOOD CONDITION ✓
HEAD SPACE ABSENT ✓ – T.B. has headspace
DECHLORINATED IN LAB _____
APPROPRIATE CONTAINERS ✓
PRESERVED IN LAB _____

| PRESERVATION | VOAS | O&G | METALS | OTHER |
|---|---|---|---|---|
| | ✓ | | pH<2 | |

COMMENTS:

**McCampbell Analytical, Inc.**
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Web: www.mccampbell.com E-mail: main@mccampbell.com
Telephone: 877-252-9262 Fax: 925-252-9269

| | | |
|---|---|---|
| Essel Technology Service<br>9778 Broadmoore Drive<br>San Ramon, CA 94583 | Client Project ID: #0569-11-12-06; AC Transit Div. 2 | Date Sampled: 11/10/06 |
| | | Date Received: 11/13/06 |
| | Client Contact: Samhita Lahiri | Date Reported: 11/17/06 |
| | Client P.O.: | Date Completed: 11/17/06 |

**WorkOrder: 0611269**

November 17, 2006

Dear Samhita:

Enclosed are:

1). the results of **7** analyzed samples from your **#0569-11-12-06; AC Transit Div. 2 project,**

2). a QC report for the above samples

3). a copy of the chain of custody, and

4). a bill for analytical services.

All analyses were completed satisfactorily and all QC samples were found to be within our control limits. If you have any questions please contact me. McCampbell Analytical Laboratories strives for excellence in quality, service and cost. Thank you for your business and I look forward to working with you again.

Best regards,

Angela Rydelius, Lab Manager

**McCampbell Analytical, Inc.**
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Web: www.mccampbell.com E-mail: main@mccampbell.com
Telephone: 877-252-9262 Fax: 925-252-9269

| | | |
|---|---|---|
| Essel Technology Service | Client Project ID: #0569-11-12-06; AC Transit Div. 2 | Date Sampled: 11/10/06-11/12/06 |
| 9778 Broadmoore Drive | | Date Received: 11/13/06 |
| San Ramon, CA 94583 | Client Contact: Samhita Lahiri | Date Extracted: 11/14/06-11/16/06 |
| | Client P.O.: | Date Analyzed: 11/14/06-11/16/06 |

**Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE***

Extraction method: SW5030B Analytical methods: SW8021B/8015Cm Work Order: 0611269

| Lab ID | Client ID | Matrix | TPH(g) | MTBE | Benzene | Toluene | Ethylbenzene | Xylenes | DF | % SS |
|---|---|---|---|---|---|---|---|---|---|---|
| 001A | MW-01-01-05 | W | ND | ND | ND | ND | ND | ND | 1 | 99 |
| 002A | MW-05-01-05 | W | ND | ND | ND | ND | ND | ND | 1 | 99 |
| 003A | MW-11-01-05 | W | ND | ND | ND | ND | ND | ND | 1 | 99 |
| 004A | MW-9-01-05 | W | ND | ND | ND | ND | ND | ND | 1 | 98 |
| 005A | MW-07-01-05 | W | 120,m | ND | ND | ND | ND | 0.76 | 1 | 114 |
| 006A | MW-08-01-05 | W | 95,m | ND | ND | ND | ND | ND | 1 | 114 |
| 007A | Trip Blank 6 | W | ND | ND | ND | ND | ND | ND | 1 | 107 |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
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| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Reporting Limit for DF =1; ND means not detected at or above the reporting limit | W | 50 | 5.0 | 0.5 | 0.5 | 0.5 | 0.5 | 1 | µg/L |
| | S | NA | NA | NA | NA | NA | NA | 1 | mg/Kg |

* water and vapor samples and all TCLP & SPLP extracts are reported in ug/L, soil/sludge/solid samples in mg/kg, wipe samples in µg/wipe, product/oil/non-aqueous liquid samples in mg/L.

# cluttered chromatogram; sample peak coelutes with surrogate peak.

+The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified gasoline is significant; b) heavier gasoline range compounds are significant(aged gasoline?); c) lighter gasoline range compounds (the most mobile fraction) are significant; d) gasoline range compounds having broad chromatographic peaks are significant; biologically altered gasoline?; e) TPH pattern that does not appear to be derived from gasoline (stoddard solvent / mineral spirit?); f) one to a few isolated non-target peaks present; g) strongly aged gasoline or diesel range compounds are significant; h) lighter than water immiscible sheen/product is present; i) liquid sample that contains greater than ~1 vol. % sediment; j) reporting limit raised due to high MTBE content; k) TPH pattern that does not appear to be derived from gasoline (aviation gas). m) no recognizable pattern; n) TPH(g) range non-target isolated peaks subtracted out of the TPH(g) concentration at the client's request; p) see attached narrative.

DHS ELAP Certification N° 1644

Angela Rydelius, Lab Manager

**McCampbell Analytical, Inc.**
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Web: www.mccampbell.com E-mail: main@mccampbell.com
Telephone: 877-252-9262 Fax: 925-252-9269

| | | |
|---|---|---|
| Essel Technology Service | Client Project ID: #0569-11-12-06; AC Transit Div. 2 | Date Sampled: 11/12/06 |
| 9778 Broadmoore Drive | | Date Received: 11/13/06 |
| San Ramon, CA 94583 | Client Contact: Samhita Lahiri | Date Extracted: 11/13/06 |
| | Client P.O.: | Date Analyzed 11/15/06-11/16/06 |

**Diesel Range (C10-C23) Extractable Hydrocarbons as Diesel***

Extraction method: SW3510C Analytical methods: SW8015C Work Order: 0611269

| Lab ID | Client ID | Matrix | TPH(d) | DF | % SS |
|---|---|---|---|---|---|
| 0611269-001B | MW-01-01-05 | W | 65,b | 1 | 107 |
| 0611269-002B | MW-05-01-05 | W | 130,b | 1 | 104 |
| 0611269-003B | MW-11-01-05 | W | 56,b | 1 | 104 |
| 0611269-004B | MW-9-01-05 | W | 65,b | 1 | 105 |
| 0611269-005B | MW-07-01-05 | W | 96,b | 1 | 94 |
| 0611269-006B | MW-08-01-05 | W | ND | 1 | 94 |
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|---|---|---|---|
| Reporting Limit for DF =1; ND means not detected at or above the reporting limit | W | 50 | µg/L |
| | S | NA | NA |

* water samples are reported in µg/L, wipe samples in µg/wipe, soil/solid/sludge samples in mg/kg, product/oil/non-aqueous liquid samples in mg/L, and all DISTLC / STLC / SPLP / TCLP extracts are reported in µg/L.

# cluttered chromatogram resulting in coeluted surrogate and sample peaks, or; surrogate peak is on elevated baseline, or; surrogate has been diminished by dilution of original extract.

+The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified diesel is significant; b) diesel range compounds are significant; no recognizable pattern; c) aged diesel? is significant); d) gasoline range compounds are significant; e) unknown medium boiling point pattern that does not appear to be derived from diesel; f) one to a few isolated peaks present; g) oil range compounds are significant; h) lighter than water immiscible sheen/product is present; i) liquid sample that contains greater than ~1 vol. % sediment; k) kerosene/kerosene range/jet fuel range; l) bunker oil; m) fuel oil; n) stoddard solvent/mineral spirit.

DHS ELAP Certification N° 1644

Angela Rydelius, Lab Manager

**McCampbell Analytical, Inc.**
"When Quality Counts"

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# QC SUMMARY REPORT FOR SW8015C

W.O. Sample Matrix: Water QC Matrix: Water WorkOrder: 0611269

**EPA Method SW8015C** **Extraction SW3510C** **BatchID: 24757** **Spiked Sample ID: N/A**

| Analyte | Sample | Spiked | MS | MSD | MS-MSD | LCS | LCSD | LCS-LCSD | Acceptance Criteria (%) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | µg/L | µg/L | % Rec. | % Rec. | % RPD | % Rec. | % Rec. | % RPD | MS / MSD | RPD | LCS/LCSD | RPD |
| TPH(d) | N/A | 1000 | N/A | N/A | N/A | 96.3 | 99.8 | 3.55 | N/A | N/A | 70 - 130 | 30 |
| %SS: | N/A | 2500 | N/A | N/A | N/A | 101 | 102 | 1.34 | N/A | N/A | 70 - 130 | 30 |

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:

NONE

BATCH 24757 SUMMARY

| Sample ID | Date Sampled | Date Extracted | Date Analyzed | Sample ID | Date Sampled | Date Extracted | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 0611269-001 | 1/12/06 11:30 AM | 11/13/06 | 11/15/06 1:36 PM | 0611269-002 | 1/12/06 11:00 AM | 11/13/06 | 11/16/06 4:08 PM |
| 0611269-003 | 11/12/06 3:00 PM | 11/13/06 | 11/15/06 3:51 PM | 0611269-004 | 11/12/06 2:30 PM | 11/13/06 | 11/15/06 4:58 PM |
| 0611269-005 | 1/12/06 12:00 PM | 11/13/06 | 11/15/06 3:51 PM | 0611269-006 | 11/12/06 4:00 PM | 11/13/06 | 11/16/06 5:16 PM |

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

% Recovery = 100 * (MS-Sample) / (Amount Spiked); RPD = 100 * (MS - MSD) / ((MS + MSD) / 2).

MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

N/A = not enough sample to perform matrix spike and matrix spike duplicate.

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# QC SUMMARY REPORT FOR SW8021B/8015Cm

W.O. Sample Matrix: Water QC Matrix: Water WorkOrder: 0611269

**EPA Method SW8021B/8015Cm Extraction SW5030B BatchID: 24764 Spiked Sample ID: 0611266-002A**

| Analyte | Sample | Spiked | MS | MSD | MS-MSD | LCS | LCSD | LCS-LCSD | Acceptance Criteria (%) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | µg/L | µg/L | % Rec. | % Rec. | % RPD | % Rec. | % Rec. | % RPD | MS / MSD | RPD | LCS/LCSD | RPD |
| TPH(btex)£ | ND | 60 | 101 | 103 | 2.16 | 101 | 104 | 3.20 | 70 - 130 | 30 | 70 - 130 | 30 |
| MTBE | ND | 10 | 98.4 | 96.9 | 1.53 | 113 | 100 | 12.2 | 70 - 130 | 30 | 70 - 130 | 30 |
| Benzene | ND | 10 | 98.3 | 97 | 1.31 | 105 | 98.9 | 6.02 | 70 - 130 | 30 | 70 - 130 | 30 |
| Toluene | ND | 10 | 90.4 | 89.5 | 0.998 | 98.5 | 93.4 | 5.36 | 70 - 130 | 30 | 70 - 130 | 30 |
| Ethylbenzene | ND | 10 | 96.6 | 95.1 | 1.63 | 102 | 98.3 | 3.86 | 70 - 130 | 30 | 70 - 130 | 30 |
| Xylenes | ND | 30 | 89.3 | 86 | 3.80 | 90.7 | 90.7 | 0 | 70 - 130 | 30 | 70 - 130 | 30 |
| %SS: | 101 | 10 | 106 | 102 | 3.75 | 110 | 103 | 6.20 | 70 - 130 | 30 | 70 - 130 | 30 |

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:

NONE

BATCH 24764 SUMMARY

| Sample ID | Date Sampled | Date Extracted | Date Analyzed | Sample ID | Date Sampled | Date Extracted | Date Analyzed |
|---|---|---|---|---|---|---|---|
| 0611269-001 | 11/12/06 11:30 AM | 11/14/06 | 1/14/06 10:05 PM | 0611269-002 | 11/12/06 11:00 AM | 11/14/06 | 1/14/06 10:37 PM |
| 0611269-003 | 11/12/06 3:00 PM | 11/14/06 | 1/14/06 11:10 PM | 0611269-004 | 11/12/06 2:30 PM | 11/14/06 | 1/14/06 11:42 PM |
| 0611269-005 | 11/12/06 12:00 PM | 11/16/06 | 11/16/06 7:50 PM | 0611269-006 | 11/12/06 4:00 PM | 11/15/06 | 11/15/06 6:57 AM |
| 0611269-007 | 11/10/06 | 11/15/06 | 11/15/06 7:27 AM | | | | |

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

% Recovery = 100 * (MS-Sample) / (Amount Spiked); RPD = 100 * (MS - MSD) / ((MS + MSD) / 2).

MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

£ TPH(btex) = sum of BTEX areas from the FID.

**McCampbell Analytical, Inc.**
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# CHAIN-OF-CUSTODY RECORD



**WorkOrder: 0611269** **ClientID: ETSR**

☑ EDF ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty

**Report to:**
Samhita Lahiri
Essel Technology Service
9778 Broadmoore Drive
San Ramon, CA 94583
Email:
TEL: (925) 833-7991 FAX: (925) 833-7977
ProjectNo: #0569-11-12-06; AC Transit Div. 2
PO:

**Bill to:**
Sher Guha
Essel Technology Service
9778 Broadmoore Drive
San Ramon, CA 94523

**Requested TAT:** 5 days

***Date Received:*** 11/13/2006
***Date Printed:*** 11/13/2006

| Sample ID | ClientSampID | Matrix | Collection Date | Hold | Requested Tests (See legend below) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 0611269-001 | MW-04-01-05 | Water | 11/12/06 11:30:00 | ☐ | A | A | B | | | | | | | | | |
| 0611269-002 | MW-05-01-05 | Water | 11/12/06 11:00:00 | ☐ | A | | B | | | | | | | | | |
| 0611269-003 | MW-11-01-05 | Water | 11/12/06 3:00:00 | ☐ | A | | B | | | | | | | | | |
| 0611269-004 | MW-9-01-05 | Water | 11/12/06 2:30:00 | ☐ | A | | B | | | | | | | | | |
| 0611269-005 | MW-07-01-05 | Water | 11/12/06 12:00:00 | ☐ | A | | B | | | | | | | | | |
| 0611269-006 | MW-08-01-05 | Water | 11/12/06 4:00:00 | ☐ | A | | B | | | | | | | | | |
| 0611269-007 | Trip Blank 6 | Water | 11/10/06 | ☐ | A | | | | | | | | | | | |

**Test Legend:**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | G-MBTEX_W | 2 | PREDF REPORT | 3 | TPH(D)_W | 4 | | 5 | |
| 6 | | 7 | | 8 | | 9 | | 10 | |
| 11 | | 12 | | | | | | | |

**Prepared by: Melissa Valles**

**Comments:**

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.