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# **SECOND QUARTER 2008 GROUNDWATER MONITORING REPORT**

**2836 UNION STREET  
OAKLAND, CALIFORNIA**

*Prepared for:*

**ESTATE OF LARRY M. WADLER  
2525 MANDELA PARKWAY  
OAKLAND, CA 94607**

**April 25, 2008**

**SECOND QUARTER 2008  
GROUNDWATER MONITORING  
REPORT**

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OAKLAND, CALIFORNIA**

*Prepared for:*

**ESTATE OF LARRY M. WADLER  
2525 MANDELA PARKWAY  
OAKLAND, CA 94607**

*Prepared by:*

**STELLAR ENVIRONMENTAL SOLUTIONS, INC.  
2198 SIXTH STREET, SUITE 201  
BERKELEY, CALIFORNIA 94710**

**April 25, 2008**

April 25, 2008

Ms Donna Drogos  
(formerly Mr. Barney Chan)  
Alameda County Environmental Health Care Services Agency  
Department of Environmental Health – Local Oversight Program  
1131 Harbor Bay Parkway, Suite 250  
Alameda, California 94502

Subject: Second Quarter 2008 Groundwater Monitoring Report  
Former Modern Mail Service, 2836 Union Street, Oakland, California  
Alameda County Environmental Health Department Fuel Leak Case No. RO2901

Dear Mr. Chan:

On behalf of the property owner and “Responsible Party” (Estate of Lawrence M. Wadler), Stellar Environmental Solutions, Inc. (SES) is submitting this Second Quarter 2008 Groundwater Monitoring Report for the former Modern Mail Service Facility at 2836 Union Street, Oakland, California. The report documents the Q2-2008 groundwater monitoring event related to petroleum contamination from a former underground fuel storage tank. This is the 7th consecutive quarterly groundwater monitoring event conducted at this site. The report has been uploaded to Alameda County Environmental Health and to the State Water Resources Control Board’s GeoTracker system.

I declare, under penalty of perjury, that the information and/or recommendations contained in the attached document or report are true and correct to the best of my knowledge. If you have any questions regarding this report, please contact us at (510) 644-3123.

Sincerely,



Henry Pietropaoli, R.G., R.E.A.  
Project Manager



Richard S. Makdisi, R.G., R.E.A.  
Principal



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# 1.0 INTRODUCTION

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## PROJECT BACKGROUND

Stellar Environmental Solutions, Inc. (SES) was contracted by Mr. Lawrence Wadler (property owner currently referred to as the Estate of Lawrence Wadler) to conduct corrective actions related to soil and groundwater contamination associated with a 10,000-gallon underground fuel storage tank (UFST) at 2836 Union Street in Oakland, California. A list of all known environmental reports is included in Section 6.0.

This report discusses the Second Quarter 2008 activities for the period between April 1st and June 30, 2008; specifically the groundwater monitoring event conducted on April 10, 2008. Figure 1 shows the site location. Figure 2 shows the site plan with the locations of groundwater wells, borings, and the former UFST.

## SITE DESCRIPTION AND HISTORY

The approximately 7,200-square foot rectangular subject property is developed with one approximately 1,500-square foot two-story building. A narrow driveway borders the building to the north, and the rear of the property is undeveloped (paved). Adjacent uses include:

- A residence (to the north);
- A paved parking area (to the east);
- A residence (to the south); and
- A sidewalk, then Union Street, then an auto body repair facility (to the west).

The property operated as an express courier facility (Modern Mail Services, Inc.) between 1951 and 2003. One 10,000-gallon gasoline UFST was installed in the late 1970s. The UFST operated under an Alameda County Environmental Health permit (permit No. STID 4065) until it was removed in 1998. The tank closure report was submitted to the Oakland Fire Department (Golden Gate Tank Removal, 1998).

An initial site characterization conducted by SES in November 2005, which included the advancement of four borings, revealed gasoline and associated aromatic hydrocarbons at elevated levels in both soil and groundwater. That investigation was summarized in a technical report (SES, 2005b).



**SITE LOCATION ON U.S.G.S. TOPOGRAPHIC MAP**

**2836 Union Street  
Oakland, CA**

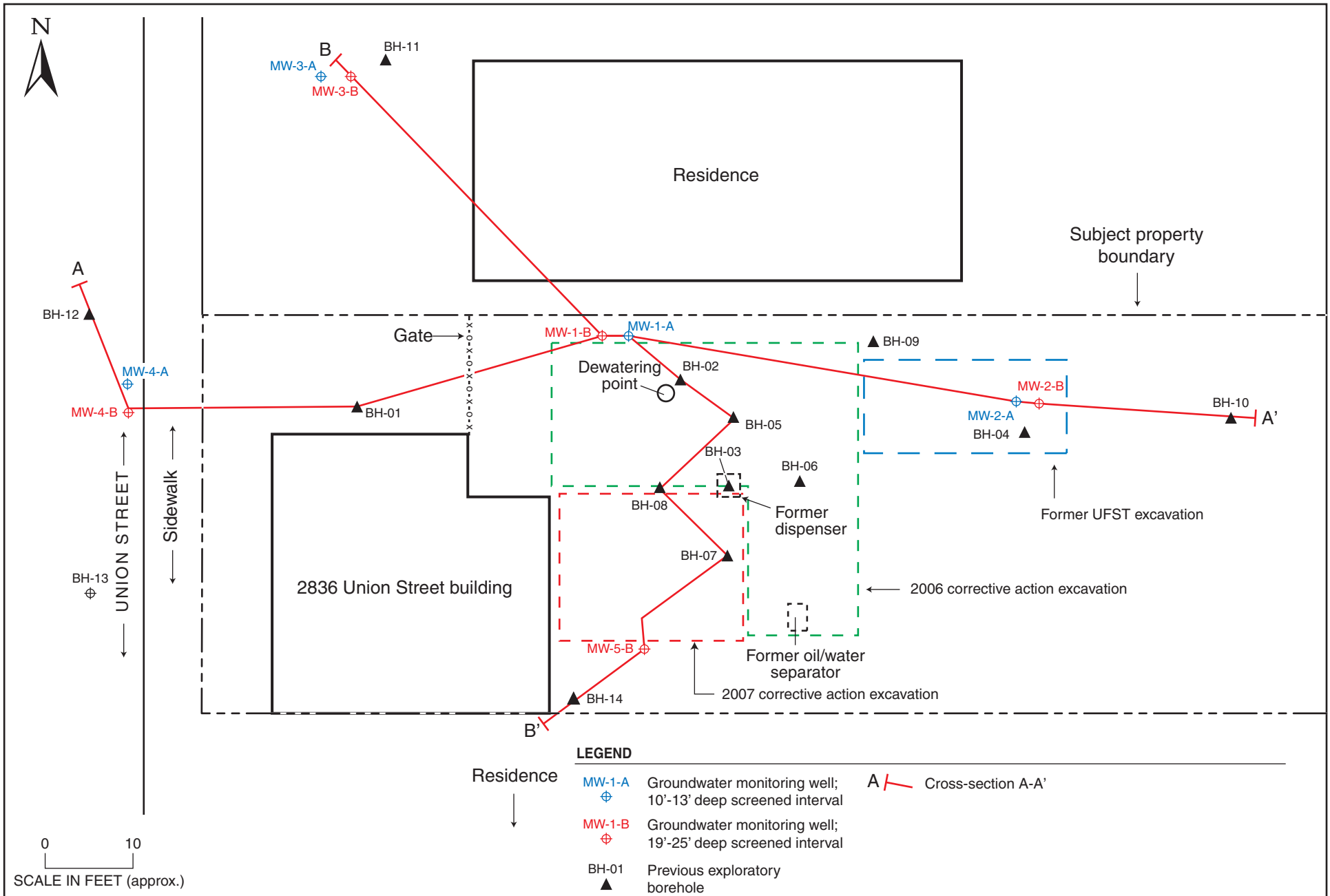
By: MJC

NOVEMBER 2005

**Figure 1**



2005-65-01



**SITE PLAN SHOWING LOCATIONS OF SOIL BORINGS AND MONITORING WELLS**  
**2836 Union Street, Oakland, CA**

**Figure 2**

by: MJC

DECEMBER 2007



Additional site investigations in April 2006 involved the advancement of nine exploratory boreholes to determine the areal and vertical extent of soil and groundwater contamination. Site data indicated the presence of petroleum hydrocarbons in soil and groundwater. Actions such as groundwater monitoring, and the removal of any remaining (accessible) contaminated soils by excavation, were recommended as an interim corrective action. The April 2006 investigation is summarized in a technical report (SES, 2006b).

A corrective action which implemented the April 2006 recommendations was conducted between September and December 2006. This involved the installation of ten monitoring wells, the advancement of one soil boring, the removal of 398 tons of contaminated soil, and the pumping of 5,100 gallons of contaminated groundwater from the backfilled excavation. Some residual contaminated soil was inaccessible for removal, and remained beneath the onsite building. Removal of this portion of the building and the previously inaccessible soil was conducted in November 2007. This corrective action was effective in removing 212 tons of contaminated soil; and included purging contaminated groundwater and applying ORC Advanced™ product into the open excavation. Monitoring well MW-5A was destroyed by excavation during the November 2007 activity. These investigations are summarized in SES technical reports (SES, 2006d and 2007f).

## **REGULATORY STATUS**

The Alameda County Environmental Health Care Services Agency, Department of Environmental Health Services (Alameda County Environmental Health) is the lead regulatory agency for the case, acting as a Local Oversight Program (LOP) for the Regional Water Quality Control Board – San Francisco Bay Region (Water Board). There are no Alameda County Environmental Health or Water Board cleanup orders for the site; however, all site work has been conducted under the oversight of Alameda County Environmental Health Services assigned the site to its fuel leak case system (RO#2901), and the case officer assigned was Mr. Barney Chan. However, Mr. Chan transferred to another Alameda County department in 2007 and he is no longer providing oversight of the site. Ms. Donna Drogos, head of the Alameda County Environmental Health Services unit, has not informed SES of any replacement for Mr. Chan as of yet.

The case has been assigned No. T0600105641 in the Water Board's GeoTracker system. Electronic uploads of required data/reports are submitted to both agencies. The site has been granted a Letter of Commitment (and has been receiving financial reimbursement) from the California Underground Storage Tank Cleanup Fund.

## **2.0 PHYSICAL SETTING**

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### **TOPOGRAPHY AND DRAINAGE**

The mean elevation of the property is approximately 18 feet above mean sea level (amsl), and the general topographic gradient in the site vicinity is slight and to the west-southwest (toward San Francisco Bay). The site itself has no discernible slope. The nearest downgradient (to the west) permanent surface water body is the Airport Channel of San Leandro Bay (which is connected to San Francisco Bay), approximately 2 miles west of the subject property. According to the commercially available database, the site is not located within a flood zone or wetland.

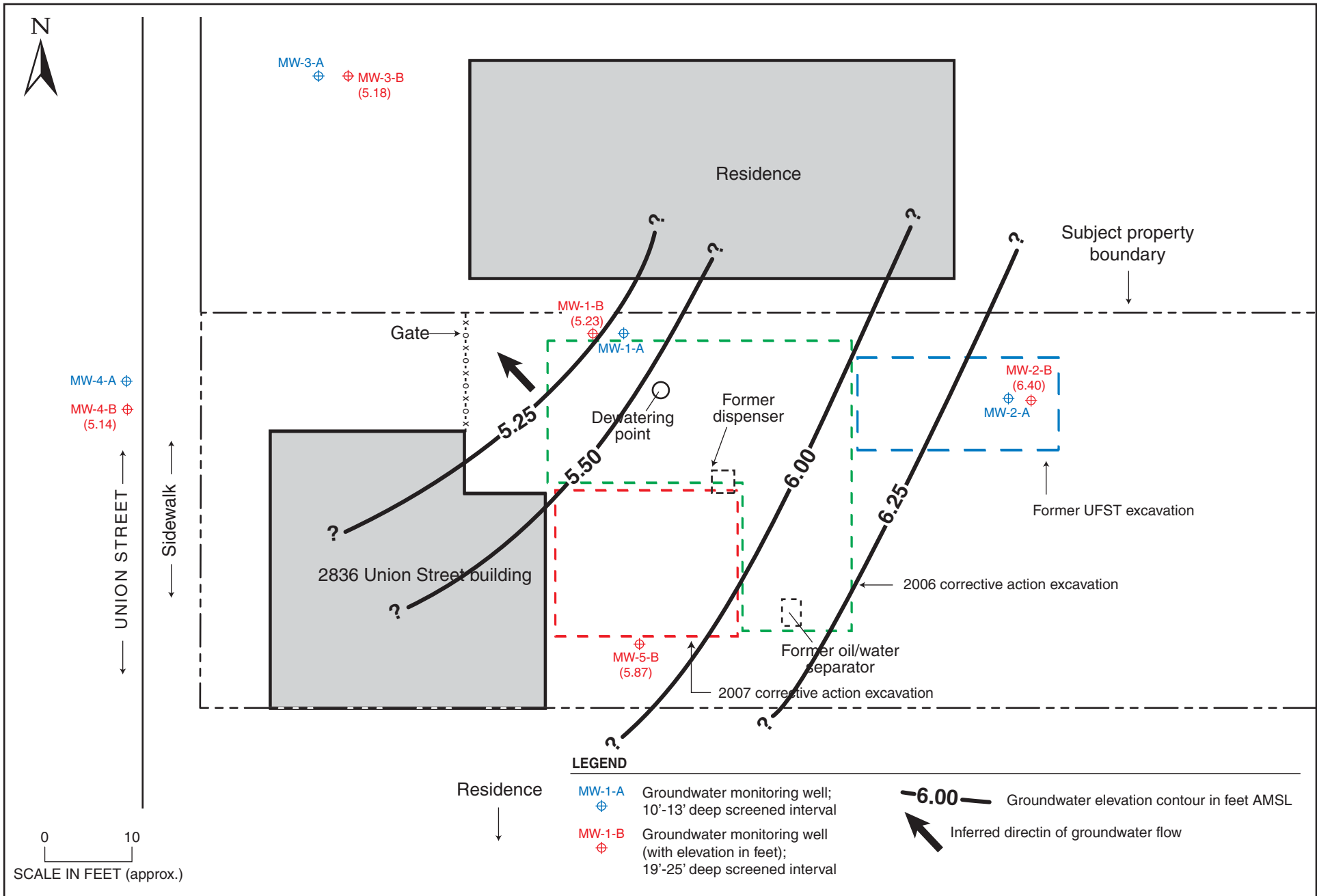
### **LITHOLOGY AND HYDROGEOLOGY**

The predominant soil type in all site boreholes was generally firm and plastic silty clay. Several of the boreholes had no obvious sand or gravel units, although minor amounts of sand and gravel were occasionally present in the overall clay matrix. Groundwater occurred in these units with higher sandy-gravel than clay content. Local heterogeneities in shallow lithology and groundwater levels are typical of the alluvial deposits in this area.

Local groundwater flow direction is generally to the west (toward San Francisco Bay and following local topography) in this area of west Oakland. Groundwater in the immediate vicinity of the former UFST occurs at a depth of less than 10 feet, and appears to be under semi-confining conditions, rising from approximately 20 feet below ground surface to as high as 6 feet below grade such that groundwater is in contact with residual contaminated soil. The groundwater contaminant plume has not been fully delineated, but appears to have an elliptical configuration with the long axis trending east to west-northwest.

### **GROUNDWATER FLOW DIRECTION**

Figure 3 is a groundwater elevation map based on the April 10, 2008 groundwater elevation measurements. The flow direction during the April 2008 event was found to be toward the west-northwest (toward San Francisco Bay), generally parallel to the long dimension of the groundwater contaminant plume. The subject property groundwater gradient ranged from approximately 0.001 feet/foot on the western side of the property to 0.011 feet/foot on the eastern side of the property. The groundwater gradient has varied since October 2006 between approximately 0.006 feet/foot and 0.01 feet/foot, averaging approximately 0.008 feet/foot.



2005-65-66

### **3.0 SECOND QUARTER 2008 GROUNDWATER MONITORING**

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This section presents the groundwater sampling and analytical methods for the most recent event (Second Quarter 2008), conducted on April 10, 2008.

#### **GROUNDWATER MONITORING**

Groundwater monitoring well water level measurements, sampling, and field analyses were conducted by Blaine Tech Services (San Jose, California) on April 10, 2008, under the direct supervision of SES personnel. To minimize the potential for cross-contamination, wells were purged and sampled in order of anticipated increasing contamination (based on analytical results from the previous quarter).

As the first monitoring task, static water levels were measured in the nine site wells using an electric water level indicator. Monitoring well MW-5A was destroyed by excavation during the November 2007 corrective action and thus is no longer available for monitoring. The wells were then sampled with a peristaltic pump, during which the groundwater quality parameters of temperature, pH, conductivity, and turbidity were field-measured using daily-calibrated instruments. Approximately 11.59 gallons of sampling purge water was generated and containerized onsite, and will be disposed of at later date after subsequent monitoring events and additional purge water has accumulated. The samples were placed in an ice chest with ice at approximately 4°C and transported to the analytical laboratory under chain-of-custody the same day. Laboratory analysis was conducted by Curtis and Tompkins, Ltd. (Berkeley, California), an analytical laboratory certified by the State of California Environmental Laboratory Accreditation Program (ELAP).

The locations of all site monitoring wells are shown on Figure 2. Well construction information and groundwater elevation data are summarized in Table 1. Appendix A contains the groundwater monitoring field records for the current event. Appendix B outlines SES's standard sampling protocol for groundwater. Groundwater analytical results are presented and discussed in Section 4.0. Historical groundwater elevation data is contained in Appendix D.

**Table 1**  
**Monitoring Well Groundwater Elevation Data – April 10, 2008**  
**2836 Union Street, Oakland, California**

Well	Well Depth Below TOC	Rim Elevation	TOC Elevation	Groundwater Elevation (4/10/08)
MW-1A	12.59	12.52	12.25	5.93
MW-1B	22.52	12.48	12.05	5.23
MW-2A	12.69	13.06	12.82	5.96
MW-2B	24.59	13.16	12.96	6.40
MW-3A	13.06	11.76	11.59	5.65
MW-3B	25.06	12.10	11.95	5.18
MW-4A	12.28	11.25	11.02	5.46
MW-4B	24.32	11.25	11.04	5.14
MW-5B	25.39	12.57	12.38	5.87

Notes:

TOC = top of casing

Wells are 1-inch diameter.

All elevations are in feet above mean sea level.

## 4.0 REGULATORY CONSIDERATIONS, ANALYTICAL RESULTS, AND DISCUSSION OF FINDINGS

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### REGULATORY CONSIDERATIONS AND SCREENING LEVELS

The Water Board has established Environmental Screening Levels (ESLs) for evaluating the likelihood of environmental impact. ESLs are conservative screening-level criteria for soil and groundwater, designed to be generally protective of both drinking water resources and aquatic environments; they incorporate both environmental and human health risk considerations. ESLs are not cleanup criteria (i.e., health-based numerical values or disposal-based values). Rather, they are used as a preliminary guide in determining whether additional remediation and/or investigation may be warranted. Exceedance of ESLs suggests that additional investigation and/or remediation is warranted.

Different ESLs are published for commercial/industrial vs. residential land use, for sites where groundwater is a potential drinking water resource vs. is not a drinking water resource, and the type of receiving water body. A Water Board-published map of the East Bay shows areas where groundwater is, and is not, a potential drinking water resource.

In our professional opinion, the appropriate ESLs for the subject site are based on the following:

- Residential land use (due to the residence adjoining the property) and commercial/industrial use (for the subject property itself). Note that, for both soil and groundwater contaminants, all ESLs for site contaminants are the same for both residential and commercial/industrial land use.
- Groundwater is a potential drinking water resource. In our professional opinion, the appropriate ESLs for the subject site are *commercial/industrial land use* and *groundwater is a potential drinking water resource*. This is based on both the property zoning status (commercial/industrial) and the designation of this area of Oakland as “Zone A – Significant Drinking Water Resource (Water Board, 1999).
- The receiving body for groundwater discharge is an estuary (San Francisco Bay).

The State of California has also promulgated drinking water standards (Maximum Contaminant Levels [MCLs]) for some of the site contaminants. Drinking water standards may also be utilized by regulatory agencies to evaluate the potential risk associated with groundwater

contamination. For the site contaminants, MCLs are generally the same as the ESLs (except that there is no MCL for gasoline).

Once ESLs or drinking water standards are exceeded, the need for and type of additional investigative and corrective actions are generally driven by the potential risk associated with the contamination. Minimum regulatory criteria generally applied to fuel leak cases in groundwater include:

- The contaminant source has been removed, including reasonably accessible contaminated soils that pose a long-term impact to groundwater.
- The extent of residual contamination has been fully characterized, to obtain sufficient lithologic and hydrogeologic understanding (generally referred to as a Site Conceptual Model).
- Groundwater wells have been installed and are monitored periodically to evaluate groundwater contaminant concentrations and hydrochemical trends.
- The stability of the contaminant plume has been evaluated to determine whether it is moving or increasing in concentration.
- A determination has been made as to whether the residual contamination poses an unacceptable risk to sensitive receptors.

As stated above, ESLs are used as a preliminary guide in determining whether additional remediation or other action is warranted. Exceedance of ESLs may warrant additional actions, such as monitoring plume stability to demonstrate no risk to sensitive receptors in the case of sites where drinking water is not threatened.

## **ANALYTICAL METHODS**

The initial site characterization documented contamination by the following LUFT-related constituents: gasoline; benzene toluene, ethyl benzene, and xylenes (BTEX); and methyl *tertiary*-butyl ether (MTBE). In addition, several other contaminants were analyzed (as required by Alameda County Environmental Health)—ethanol; fuel oxygenates (*tertiary*-butyl alcohol [TBA], di-isopropyl ether [DIPE], ethyl *tertiary*-butyl ether [ETBE], and *tertiary*-amyl methyl ether [TAME]); and lead scavengers (1,2-dichloroethane [EDC] and 1,2-dibromoethane [EDB]). Fuel oxygenates and lead scavengers were analyzed in monitoring wells for which there were no data, or in those that showed previous laboratory detectable concentrations for these constituents.

Groundwater samples were analyzed using the following methods for:

- Total volatile hydrocarbons (TVH) gasoline range by EPA Method 8015M;
- BTEX and MTBE by EPA Method 8260;

- TBA, DIPE, ETBE, and TAME by EPA Method 8260B (in accordance with Alameda County Environmental Health requirement); and
- EDC and EDB by EPA Method 8260B (in accordance with Alameda County Environmental Health requirement).

All groundwater samples were analyzed by Curtis & Tompkins, Ltd. (Berkeley, California) which maintains current ELAP certifications for all the analytical methods utilized in this investigation.

## **QUALITY CONTROL SAMPLE ANALYTICAL RESULTS**

Laboratory quality control (QC) samples (e.g., method blanks, matrix spikes, surrogate spikes) were analyzed by the laboratory in accordance with requirements of each analytical method. All laboratory QC sample results and sample holding times were within the acceptance limits of the methods (see Appendix C).

## **ANALYTICAL RESULTS AND DISTRIBUTION OF CONTAMINANTS**

Tables 2 and 3 summarize the groundwater monitoring analytical results for TVHg, and associated constituents. Table 3 presents the analytic results of the fuel oxygenates and lead scavengers analysis. The certified analytical results and chain of custody record are contained in Appendix C. Historical analytical results are contained in Appendix E.

### **Groundwater Analytical Results**

TVHg was detected above the ESL of 100 µg/L in monitoring wells MW-1B, MW-2A, MW-3B, MW-4B, and MW-5B. TVHg was also detected in monitoring well MW-2B, but below the ESL. No other monitoring wells had detections of TVHg above the laboratory detection limit. Benzene was not detected above the laboratory detection limit in any of the monitoring wells. MTBE was detected above its ESL in wells MW-3A, MW-4A, and MW-5B. MTBE was also detected in MW-1B, MW-2A, and MW-2B but below the ESL. Benzene, toluene, ethyl benzene, and xylenes were not detected above the laboratory detection limit in any of the monitoring wells. The lead scavenger 1,2-dichloroethane was detected above its ESL in wells MW-1B and MW-3A. Monitoring well MW-1A could not be sampled due to insufficient groundwater volume.

Figure 4 shows an isoconcentration contour map of TVHg concentrations in groundwater based on the April 2008 monitoring well analytical results. The plume geometry indicates a west-by-northwest migrational pattern, which is in line with general groundwater flow direction in this area.



Comparison of the Q1-2008 plume map to the Q-2 2008 plume map shows significant decreases in the concentrations in the source area, demonstrated by a shrinking back of the 1,000 µg/L TVHg isoconcentration contour. The decrease in TVHg was most pronounced in well MW-5B, which was reported at 1,200 µg/L in the Q1-2008 monitoring event versus 240 µg/L in the Q2-2008 monitoring event. Dissolved gasoline concentration reductions were also observed in MW-1B, MW-2B, and MW-3B which were reported at 400 µg/L, 780 µg/L, and 2,100 µg/L respectively in Q1 2008; compared to 350 µg/L, 92 µg/L, and 1,800 µg/L respectively in Q2 2008. The reduction in dissolved gasoline concentrations are attributed to the recent additional soil removal remediation in the area of well MW-5. The TVHg concentration in offsite well MW-4B remained the same as the Q1 2008 concentration, 1,500 µg/L.

**Table 2**  
**Groundwater Sample Analytical Results - April 10, 2008**  
**TVHg, BTEX, and MTBE,**  
**2836 Union Street, Oakland, California**

Sample	TVHg	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE
<b>Monitoring Wells</b>						
MW-1A	NS	NS	NS	NS	NS	NS
MW-1B	<b>350</b>	<0.5	<0.5	<0.5	<0.5	7.8
MW-2A	<b>160</b>	<0.5	<0.5	<0.5	<0.5	3.0
MW-2B	92	<0.5	<0.5	<0.5	<0.5	2.4
MW-3A	<50	<0.5	<0.5	<0.5	<0.5	<b>77</b>
MW-3B	<b>1,800</b>	<0.5	<0.5	<0.5	<0.5	<2.0
MW-4A	<50	<0.5	<0.5	<0.5	<0.5	<b>61</b>
MW-4B	<b>1,500</b>	<0.5	<0.5	<0.5	<0.5	<2.0
MW-5B	<b>240</b>	<0.5	<0.5	<0.5	<0.5	<b>65</b>
<b>Groundwater ESLs</b>	100 / 100	1.0 / 500	150 / 500	300 / 400	420 / 420	13 / 100

Notes:

ESLs = Water Board Environmental Screening Levels for residential sites where groundwater *is/is not* a potential drinking water resource (Water Board 2007). Sample concentrations in **bold-face** type exceed the ESL criterion where groundwater is a potential resource.

MTBE = methyl tertiary-butyl ether

TVHg = total volatile hydrocarbons as gasoline

NA = not analyzed for this constituent; NS = not sampled, insufficient sample amount

All concentrations are in micrograms per liter (µg/L).

**Table 3**  
**Groundwater Sample Analytical Results - April, 10 2008**  
**Lead Scavengers and Fuel Oxygenates,**  
**2836 Union Street, Oakland, California**

Sample I.D.	EDC	EDB	ETBE	DIPE	TAME	TBA
<b>Groundwater Analyses (µg/L)</b>						
MW-1A	NS	NS	NS	NS	NS	NS
MW-1B	<b>4.8</b>	<0.5	<0.5	<0.5	<0.5	<10
MW-2A	NA	NA	NA	NA	NA	NA
MW-2B	<0.5	<0.5	<0.5	<0.5	<0.5	<10
MW-3A	<b>1.3</b>	<0.5	<0.5	<0.5	<0.5	<10
MW-3B	NA	NA	NA	NA	NA	NA
MW-4A	NA	NA	NA	NA	NA	NA
MW-4B	NA	NA	NA	NA	NA	NA
MW-5B	NA	NA	NA	NA	NA	NA
<b>Groundwater ESLs</b>	0.5 / 690	0.05 / 510	NLP	NLP	NLP	NLP/100

Notes:

ESLs = Water Board Environmental Screening Levels for residential sites where groundwater *is/is not* considered a potential drinking water resource. (Water Board, 2007).

Sample concentrations in **bold-face** type exceed the ESL criterion where groundwater is considered a potential drinking water resource.

EDB = ethylene dibromide (1,2-dibromoethane)

EDC = ethylene dichloride (1,2-dichloroethane).

ETBE = ethyl tertiary-butyl ether

DIPE = isopropyl ether

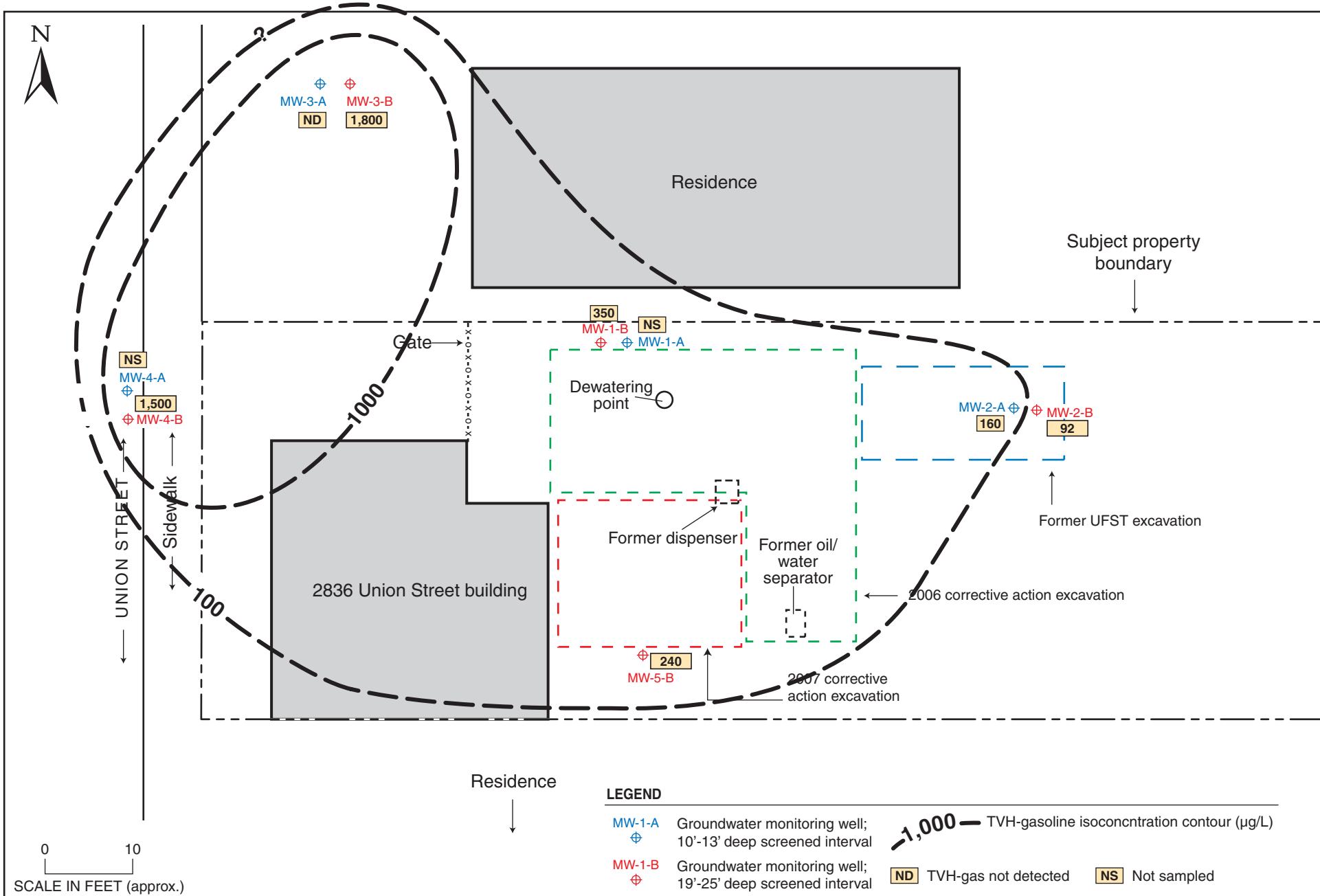
TAME = tertiary-amyl methyl ether

TBA = tertiary-butyl alcohol

NA = not analyzed for this constituent

NS = not sampled

NLP = no level published



## **5.0 SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS**

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### **SUMMARY AND CONCLUSIONS**

- One 10,000-gallon gasoline UFST was installed in the late 1970s. The UFST operated under an Alameda County Environmental Health permit until its removal in 1998.
- A preliminary investigation was conducted in August 2005, additional site characterization investigations were conducted in October 2005 and April 2006, and corrective action entailing contaminated soil excavation and the installation of ten monitoring wells was conducted in September to October 2006. The remaining accessible contaminated soil was removed in November 2007 from beneath the former garage building, and the excavation area was treated with ORC® product. The November 2007 corrective action also entailed destruction by excavation of monitoring well MW-5A.
- The primary source (UFST) and secondary source (contaminated soil) have been remediated by excavation. All known accessible residual contaminated soil has been excavated from this site. Residual TVHg soil contamination (790 to 270 mg/kg) above regulatory ESLs was documented during the October 2006 corrective action along the northern property boundary, but is inaccessible for removal over the property line.
- Decreases in TVHg were most pronounced in well MW-5B during this event, which was reported at 1,200 µg/L in the Q1-2008 monitoring event versus 240 µg/L in the Q2-2008 monitoring event. Dissolved gasoline concentration reductions were also observed in MW-1B, MW-2B, and MW-3B which were reported at 400 µg/L, 780 µg/L, and 2,100 µg/L respectively in Q1 2008; compared to 350 µg/L, 92 µg/L, and 1,800 µg/L respectively in Q2 2008. The reduction in dissolved gasoline concentrations is attributed to the recent additional soil removal in the area of well MW-5.
- TVHg was detected above the ESL in monitoring wells MW-1B, MW-3B, MW-4B, and MW-5B. TVHg was also detected in monitoring wells MW-2A and MW-2B, but below the ESL.
- Benzene was not detected above the laboratory detection limit in any of the monitoring wells.
- MTBE was detected above its ESL in wells MW-3A, MW-4A, and MW-5B. MTBE was also detected in MW-1B, MW-2A, and MW-2B but below the ESL.

- Benzene, toluene, ethyl benzene, and xylenes were not detected above the laboratory detection limit in any of the monitoring wells.
- The lead scavenger 1,2-dichloroethane was detected above its ESL in wells MW-1B and MW-3A.
- A slight reduction in TVHg concentration in the offsite monitoring well MW-3B was observed during this sampling event, and the concentration in the other offsite well MW-4B remained unchanged from the last monitoring event. It appears as if the offsite migration is being controlled by the periodic pumping at the dewatering point.
- The groundwater contaminate plume has not been fully delineated, but appears to be in elliptical configuration with its long axis trending east by west-northwest.
- Subject property groundwater gradient in the current event ranged from approximately 0.001 feet/foot on the western side of the property to 0.011 feet/foot on the eastern side of the property.

## **RECOMMENDATIONS**

- We recommend following up with Alameda County Environmental Health following its receipt of this report, to discuss the requirements to move the site toward regulatory closure. We further recommend that the Alameda County Environmental Health-requested work be implemented, and that all future technical reports be provided to the appropriate regulatory agencies, including electronic uploads to Alameda County Environmental Health's "ftp" system and the State Water Board's GeoTracker system.
- A replacement for Mr. Barney Chan, the former case officer for Alameda County Environmental Health, needs to be assigned to the case.
- Quarterly groundwater monitoring of site wells should be continued to determine the effectiveness of the November 2007 corrective action and monitor the level of breakdown accomplished by the ORC application.
- Consider an additional dewatering episode to control the offsite migration should the next quarterly monitoring event show an increase in concentration in the offsite wells MW-3 and MW-4 compared to the same quarter last year.
- In our professional opinion, quarterly groundwater monitoring is the appropriate action to further evaluate the magnitude and stability of the contaminant plume over time, and to determine whether site closure criteria can be met.

## 6.0 REFERENCES

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- Alameda County Environmental Health, 2006. Letter approving technical workplan for corrective action investigation at 2836 Union Street, Oakland, California. March 20.
- BP Oil – Environmental Technology Branch, 1993. TPH in Soil Primer (Analysis of Total Petroleum Hydrocarbons in Soil). September 1.
- Golden Gate Tank Removal, 1998. Tank Closure Report – 2836 Union Street, Oakland, California. July 31.
- Lawrence Livermore National Laboratory, 1995. California Leaking Underground Fuel Tank Historical Case Analyses (UCRL-AR-121762).
- Regional Water Quality Control Board – San Francisco Bay Region (Water Board), 1999. East Bay Plains Beneficial Use Study, San Francisco Bay. June 15.
- Regional Water Quality Control Board – San Francisco Bay Region (Water Board), 2007. Screening for Environmental Concerns at Sites With Contaminated Soil and Groundwater. November.
- Stellar Environmental Solutions, Inc. (SES), 2005a. Workplan for Initial Site Characterization – 2836 Union Street, Oakland, California. October 25.
- Stellar Environmental Solutions, Inc. (SES), 2005b. Technical Documentation Report for Initial Site Characterization – 2836 Union Street, Oakland, California. December 14.
- Stellar Environmental Solutions, Inc. (SES), 2005c. Workplan for Corrective Action Investigation – 2836 Union Street, Oakland, California. December 22.
- Stellar Environmental Solutions, Inc. (SES), 2006a. Workplan for Groundwater Characterization and Interim Corrective Actions – 2836 Union Street, Oakland, California. May 3, 2006.
- Stellar Environmental Solutions, Inc. (SES), 2006b. Corrective Action Investigation: 2836 Union Street, Oakland, California, Alameda County Environmental Health Case No. RO0002901. May 3.

- Stellar Environmental Solutions, Inc. (SES), 2006c. Underground Fuel Storage Tank-Related Corrective Action Report – 2836 Union Street, Oakland, California, Alameda County Environmental Health Case No. RO0002901. May 3.
- Stellar Environmental Solutions, Inc. (SES), 2006d. Underground Fuel Storage Tank-Related Corrective Action Report – 2836 Union Street, Oakland, California, Alameda County Environmental Health Case No. RO0002901. December 3.
- Stellar Environmental Solutions, Inc. (SES), 2007a. First Quarter 2007 Groundwater Monitoring Report – 2836 Union Street, Oakland, California. February 6.
- Stellar Environmental Solutions, Inc. (SES), 2007b. Second Quarter 2007 Groundwater Monitoring Report – 2836 Union Street, Oakland, California. April 6.
- Stellar Environmental Solutions, Inc. (SES), 2007c. Third Quarter 2007 Groundwater Monitoring Report – 2836 Union Street, Oakland, California. July 23.
- Stellar Environmental Solutions, Inc. (SES), 2007d. Work Plan for Additional Interim Corrective Actions – 2836 Union Street, Oakland, California. August 31.
- Stellar Environmental Solutions, Inc. (SES), 2007e. Fourth Quarter 2007 Groundwater Monitoring Report – 2836 Union Street, Oakland, California. December 18.
- Stellar Environmental Solutions, Inc. (SES), 2007f. Underground Fuel Storage Tank-Related Corrective Action Report – 2836 Union Street, Oakland, California. December 31.
- Stellar Environmental Solutions, Inc. (SES), 2008. Second Quarter 2008 Groundwater Monitoring Report – 2836 Union Street, Oakland, California. January 31.

## **7.0 LIMITATIONS**

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This report has been prepared for the exclusive use by the Estate of Mr. Lawrence Wadler (subject property owner), the regulatory agencies, and their authorized assigns and/or representatives. No reliance on this report shall be made by anyone other than those for whom it was prepared.

The findings and conclusions presented in this report are based solely on the findings of the investigations discussed herein. This report has been prepared in accordance with generally accepted methodologies and standards of practice of the area. The personnel performing this assessment are qualified to perform such investigations and have accurately reported the information available, but cannot attest to the validity of that information. No warranty, expressed or implied, is made as to the findings, conclusions, and recommendations included in the report.



## **APPENDIX A**

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# **GROUNDWATER MONITORING AND SAMPLING FIELD REPORT**

# H or Purge Water Drum Log

Client: STELLAR ENV.  
 Site Address: 2836 UNION ST., OAKLAND

STATUS OF DRUM(S) UPON ARRIVAL							
Date	4/10/08						
Number of drum(s) empty:	1						
Number of drum(s) 1/4 full:	1						
Number of drum(s) 1/2 full:	1						
Number of drum(s) 3/4 full:							
Number of drum(s) full:	1						
Total drum(s) on site:	4						
Are the drum(s) properly labeled?	Y						
Drum ID & Contents:	purge H <sub>2</sub> O						
If any drum(s) are partially or totally filled, what is the first use date:	—						

- If you add any SPH to an empty or partially filled drum, drum must have at least 20 gals. of Purgewater or DI Water.
- If drum contains SPH, the drum MUST be steel AND labeled with the appropriate label.
- All BTS drums MUST be labeled appropriately.

STATUS OF DRUM(S) UPON DEPARTURE							
Date	4/10/08						
Number of drums empty:	1						
Number of drum(s) 1/4 full:	1						
Number of drum(s) 1/2 full:	1						
Number of drum(s) 3/4 full:							
Number of drum(s) full:	1						
Total drum(s) on site:	4						
Are the drum(s) properly labeled?	Y						
Drum ID & Contents:	purge H <sub>2</sub> O						

**LOCATION OF DRUM(S)**  
 Describe location of drum(s): ALONG THE SOUTH FENCE BEHIND THE BUILDING

FINAL STATUS							
Number of new drum(s) left on site this event	0						
Date of inspection:	4/10/08						
Drum(s) labelled properly:	Y						
Logged by BTS Field Tech:	IN						
Office reviewed by:	RU						

## WELL GAUGING DATA

Project # 080410-1W-1 Date 4/10/08 Client STELLAR ENV.

Site 2836 UNION ST., OAKLAND

Well ID	Time	Well Size (in.)	Sheen / Odor	Depth to Immiscible Liquid (ft.)	Thickness of Immiscible Liquid (ft.)	Volume of Immiscibles Removed (ml)	Depth to water (ft.)	Depth to well bottom (ft.)	Survey Point: TOB or <u>TOC</u>	Notes
MW-4A	0900	3/4"					5.56	12.15	↓	
MW-2A	0952	3/4"					6.86	12.55		
MW-1B	0936	3/4"					6.82	22.40		
MW-1A	0943	3/4"					6.32	12.45		
MW-4B	0959	3/4"					5.90	24.18		
MW-3B	1008	3/4"					6.77	24.96		
MW-2B	0955	3/4"					6.56	24.45		
MW-5B	1016	3/4"					6.51	25.28		
MW-3A	1021	3/4"					5.94	12.86		
TEST EQUIPMENT CALIBRATION										
EQUIPMENT NAME	EQUIPMENT NO.	DATE TIME	STANDARDS USED	ACTUAL READING	WITHIN 10%?	TEMP.				
MYRON L ULTRAMETER	6212448	4/10/08	4.0 7.0 PH 10.0	4.03 PH 7.00 9.98	Y	58.9				
MYRON L ULTRAMETER	6212448	4/10/08	CONDUCTIVITY 3900µS	3896µS	Y	58.9				
HACH TURBIDIMETER	46500-20	4/10/08	20 NTUS 100 300	21 103 NTUS 812	Y	59.1				
* GATE FOUND WITH ONLY A NO. 5 MASTER LOCK ON THE CHAIN. THE NO. 1 MASTER LOCK HAD BEEN REMOVED, AND WAS HANGING OPEN FROM THE FENCE. UPON LEAVING, BOTH LOCKS WERE DAISY-CHAINED.										

# WELLHEAD INSPECTION CHECKLIST

Date 4/10/08 Client STELLAR ENV.

Site Address 2830 UNION ST., OAKLAND

Job Number 080410-1W-1 Technician IW

Well ID	Well Inspected - No Corrective Action Required	Water Bailed From Wellbox	Wellbox Components Cleaned	Cap Replaced	Debris Removed From Wellbox	Lock Replaced	Other Action Taken (explain below)	Well Not Inspected (explain below)
MW-4A	X							
MW-2A	X		X		X			
MW-1B	X							
MW-1A	X							
MW-4B	X							
MW-3B	X							
MW-2B	X		X		X			
MW-5B	X							
MW-3A	X							

NOTES: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

## WELL MONITORING DATA SHEET

Project #: 080410-1W-1	Client: STELLAR ENV.
Sampler: 1W	Date: 4/10/08
Well I.D.: MW-1A	Well Diameter: 2 3 4 6 8 <u>3/4"</u>
Total Well Depth (TD): 12.45	Depth to Water (DTW): 6.32
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: <u>PVC</u> Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 7.55	

Purge Method: Bailer Disposable Bailer Positive Air Displacement Electric Submersible	Waterra <input checked="" type="checkbox"/> Peristaltic Extraction Pump Other _____	Sampling Method: Bailer Disposable Bailer Extraction Port Dedicated Tubing Other: <u>NEW TUBING</u>
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(539ml)

0.14 (Gals.) X 3 = 0.42 Gals.

1 Case Volume      Specified Volumes      Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius <sup>2</sup> * 0.163

Time	Temp (F or °C)	pH	Cond. (mS or μS)	Turbidity (NTUs)	Gals. Removed	Observations
1144	63.2	7.47	1249	96	0.14	
1146	63.4	7.08	1231	27	0.28	
1148	63.5	6.99	1240	87	0.42	
1150	63.7	6.94	1246	86	0.56	DTW = 12.30
1541	INSUFFICIENT WATER TO SAMPLE					DTW = 12.20

Did well dewater?	<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<u>1W</u>	Gallons actually evacuated:	<u>0.56</u>
Sampling Date:	<u>4/10/08</u>	Sampling Time:	<u>WAITED</u>	
Sample I.D.:	<u>MW-1A</u>	Laboratory:	Kiff CalScience	Other <u>C+T</u>
Analyzed for:	<input checked="" type="checkbox"/> TPH-G <input checked="" type="checkbox"/> BTEX <input checked="" type="checkbox"/> MTBE <input type="checkbox"/> TPH-D	Oxygenates (5)	Other: _____	
EB I.D. (if applicable):	@ Time	Duplicate I.D. (if applicable):	_____	
Analyzed for:	TPH-G BTEX MTBE TPH-D	Oxygenates (5)	Other: _____	
D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

## WELL MONITORING DATA SHEET

Project #: 080410-1W-1	Client: STELLAR ENV.
Sampler: 1W	Date: 4/10/08
Well I.D.: MW-1B	Well Diameter: 2 3 4 6 8 <u>3/4"</u>
Total Well Depth (TD): 22.40	Depth to Water (DTW): 6.82
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: <u>PVC</u> Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 9.94	

Purge Method: Bailer	Waters	Sampling Method: Bailer
Disposable Bailer	<input checked="" type="checkbox"/> Peristaltic	Disposable Bailer
Positive Air Displacement	Extraction Pump	Extraction Port
Electric Submersible	Other _____	Dedicated Tubing
		Other: <u>NEW TUBING</u>

(1386 ml)

0.36 (Gals.) X 3 = 1.08 Gals.

1 Case Volume      Specified Volumes      Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius <sup>2</sup> * 0.163

Time	Temp (F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
1326	64.7	7.30	1241	22	0.36	
1329	63.9	7.06	1233	54	0.72	
1332	64.2	6.96	1222	55	1.08	
1334	64.3	6.96	1216	50	1.44	

Did well dewater? Yes  No       Gallons actually evacuated: 1.44

Sampling Date: 4/10/08      Sampling Time: 1339      Depth to Water: 9.63

Sample I.D.: MW-1B      Laboratory: Kiff CalScience Other C+T

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

EB I.D. (if applicable): @ Time      Duplicate I.D. (if applicable):

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

D.O. (if req'd): Pre-purge: \_\_\_\_\_ mg/L      Post-purge: \_\_\_\_\_ mg/L

O.R.P. (if req'd): Pre-purge: \_\_\_\_\_ mV      Post-purge: \_\_\_\_\_ mV

## WELL MONITORING DATA SHEET

Project #: <u>080410-1W-1</u>	Client: <u>STELLAR ENV.</u>
Sampler: <u>1W</u>	Date: <u>4/10/08</u>
Well I.D.: <u>MW-2A</u>	Well Diameter: 2 3 4 6 8 <u>3/4"</u>
Total Well Depth (TD): <u>12.55</u>	Depth to Water (DTW): <u>6.86</u>
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: <u>PVC</u> Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: <u>8.00</u>	

Purge Method: Bailer	Waterra	Sampling Method: Bailer
Disposable Bailer	<input checked="" type="checkbox"/> Peristaltic	Disposable Bailer
Positive Air Displacement	Extraction Pump	Extraction Port
Electric Submersible	Other _____	Dedicated Tubing
		Other: <u>NEW TUBING</u>

(500 ml)

0.13 (Gals.) X 3 = 0.39 Gals.

1 Case Volume      Specified Volumes      Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius <sup>2</sup> * 0.163

0.023

Time	Temp ( <del>°F</del> or °C)	pH	Cond. (mS or <del>µS</del> )	Turbidity (NTUs)	Gals. Removed	Observations
1237	<u>63.6</u>	<u>7.32</u>	<u>912</u>	<u>63</u>	<u>0.13</u>	
1238	<u>63.5</u>	<u>7.25</u>	<u>908</u>	<u>36</u>	<u>0.26</u>	
1239	<u>63.4</u>	<u>7.23</u>	<u>904</u>	<u>34</u>	<u>0.39</u>	

Did well dewater? Yes  No  Gallons actually evacuated: 0.39

Sampling Date: 4/10/08 Sampling Time: 1245 Depth to Water: 6.88

Sample I.D.: MW-2A Laboratory: Kiff CalScience Other C+T

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

EB I.D. (if applicable): @ \_\_\_\_\_ Time Duplicate I.D. (if applicable):

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

D.O. (if req'd):	Pre-purge:		mg/L	Post-purge:		mg/L
O.R.P. (if req'd):	Pre-purge:		mV	Post-purge:		mV

# WELL MONITORING DATA SHEET

Project #: <u>080410-1W-1</u>	Client: <u>STELLAR ENV.</u>
Sampler: <u>1W</u>	Date: <u>4/10/08</u>
Well I.D.: <u>MW-2B</u>	Well Diameter: 2 3 4 6 8 <u>3/4"</u>
Total Well Depth (TD): <u>24.45</u>	Depth to Water (DTW): <u>6.56</u>
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: <u>PVC</u> Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: <u>10.14</u>	

Purge Method: Bailer	Waterra	Sampling Method: Bailer
Disposable Bailer	<input checked="" type="checkbox"/> Peristaltic	Disposable Bailer
Positive Air Displacement	Extraction Pump	Extraction Port
Electric Submersible	Other _____	Dedicated Tubing
		Other: <u>NEW TUBING</u>

(1580ml)

<u>0.41</u> (Gals.)	X	<u>3</u>	=	<u>1.23</u> Gals.
1 Case Volume		Specified Volumes		Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius <sup>2</sup> * 0.163

0.023

Time	Temp (°F or °C)	pH	Cond. (mS or <del>µS</del> )	Turbidity (NTUs)	Gals. Removed	Observations
1205	65.7	7.25	925	45	0.41	
1208	64.4	7.23	906	19	0.82	ODOR
1212	64.1	7.22	903	24	1.23	ODOR
1215	63.9	7.20	899	22	1.64	ODOR

Did well dewater? Yes  No  Gallons actually evacuated: 1.64

Sampling Date: 4/10/08 Sampling Time: 1220 Depth to Water: 6.89

Sample I.D.: MW-2B Laboratory: Kiff CalScience Other C+T

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

EB I.D. (if applicable): @ Time Duplicate I.D. (if applicable):

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
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O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV
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**WELL MONITORING DATA SHEET**

Project #: 080410 - 1W - 1	Client: STELLAR ENV.
Sampler: 1W	Date: 4/10/08
Well I.D.: MW-3A	Well Diameter: 2 3 4 6 8 <u>3/4"</u>
Total Well Depth (TD): 12.86	Depth to Water (DTW): 5.94
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: <u>PVC</u> Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 7.32	

Purge Method: Bailer Disposable Bailer Positive Air Displacement Electric Submersible	Wattera <input checked="" type="checkbox"/> Peristaltic Extraction Pump Other _____	Sampling Method: Bailer Disposable Bailer Extraction Port Dedicated Tubing Other: <u>NEW TUBING</u>
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(616ml)

0.16 (Gals.) X 3 = 0.48 Gals.

1 Case Volume      Specified Volumes      Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius <sup>2</sup> * 0.163

Time	Temp (°F or °C)	pH	Cond. (mS or <u>µS</u> )	Turbidity (NTUs)	Gals. Removed	Observations
1302	63.0	7.25	1398	37	0.16	ODOR
1303	WELL	DEWATERED		@	0.20 gal	
1615	66.7	7.38	1266	25	GRAB	DTW = 10.04

Did well dewater?  Yes    No    Gallons actually evacuated: 0.20

Sampling Date: 4/10/08    Sampling Time: 1615    Depth to Water: WAITED 10.04

Sample I.D.: MW-3A    Laboratory: Kiff    CalScience    Other: C+T

Analyzed for: TPH-G BTEX MTBE    TPH-D    Oxygenates (5)    Other:

EB I.D. (if applicable): @ Time    Duplicate I.D. (if applicable):

Analyzed for: TPH-G    BTEX    MTBE    TPH-D    Oxygenates (5)    Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

**WELL MONITORING DATA SHEET**

Project #: <u>080410-1W-1</u>	Client: <u>STELLAR ENV.</u>
Sampler: <u>1W</u>	Date: <u>4/10/08</u>
Well I.D.: <u>MW-3B</u>	Well Diameter: 2 3 4 6 8 <u>3/4"</u>
Total Well Depth (TD): <u>24.96</u>	Depth to Water (DTW): <u>6.77</u>
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: <u>PVC</u> Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: <u>10.41</u>	

Purge Method: Bailer Disposable Bailer Positive Air Displacement Electric Submersible	Waterra <input checked="" type="checkbox"/> Peristaltic Extraction Pump Other _____	Sampling Method: Bailer Disposable Bailer Extraction Port Dedicated Tubing Other: <u>NEW TUBING</u>
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(1617ml)

0.42 (Gals.) X 3 = 1.26 Gals.

1 Case Volume      Specified Volumes      Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius <sup>2</sup> * 0.163

0.023

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
<u>1422</u>	<u>68.1</u>	<u>7.61</u>	<u>947</u>	<u>20</u>	<u>0.42</u>	
<u>1425</u>	<u>67.6</u>	<u>7.66</u>	<u>954</u>	<u>10</u>	<u>0.84</u>	
<u>1428</u>	<u>65.2</u>	<u>7.48</u>	<u>953</u>	<u>5</u>	<u>1.26</u>	
<u>1431</u>	<u>65.1</u>	<u>7.45</u>	<u>952</u>	<u>6</u>	<u>1.68</u>	

Did well dewater? Yes  No  Gallons actually evacuated: 1.68

Sampling Date: 4/10/08 Sampling Time: 1438 Depth to Water: 9.27

Sample I.D.: MW-3B Laboratory: Kiff CalScience Other C+T

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

EB I.D. (if applicable): @ Time Duplicate I.D. (if applicable):

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

### WELL MONITORING DATA SHEET

Project #: <u>080410-1W-1</u>	Client: <u>STELLAR ENV.</u>
Sampler: <u>1W</u>	Date: <u>4/10/08</u>
Well I.D.: <u>MW-4A</u>	Well Diameter: 2 3 4 6 8 <u>3/4"</u>
Total Well Depth (TD): <u>12.15</u>	Depth to Water (DTW): <u>5.56</u>
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: <u>PVC</u> Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: <u>6.88</u>	

Purge Method: Bailer Disposable Bailer Positive Air Displacement Electric Submersible	Waterra <input checked="" type="checkbox"/> Peristaltic Extraction Pump Other _____	Sampling Method: Bailer Disposable Bailer Extraction Port Dedicated Tubing Other: <u>NEW TUBING</u>
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(580ml)

0.15 (Gals.) X 3 = 0.45 Gals.

1 Case Volume      Specified Volumes      Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius <sup>2</sup> * 0.163

Time	Temp (F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
1126	61.8	7.44	1280	736	0.45	
1129	61.9	7.07	1281	133	0.90	
1130	WELL DEWATERED @ 0.40 gal					DTW = 11.12
1600	67.3	7.31	1299	81	GRAB	DTW = 10.96

Did well dewater? <input checked="" type="radio"/> Yes No	Gallons actually evacuated: <u>0.40 gal</u>
Sampling Date: <u>4/10/08</u>	Sampling Time: <u>1600</u> Depth to Water: <u>WAITED 10.96</u>
Sample I.D.: <u>MW-4A</u>	Laboratory: Kiff CalScience Other <u>C+T</u>
Analyzed for: <u>TPH-G</u> <u>BTEX</u> <u>MTBE</u> TPH-D Oxygenates (5) Other:	
EB I.D. (if applicable): @ Time	Duplicate I.D. (if applicable):
Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:	
D.O. (if req'd): Pre-purge: _____ mg/L	Post-purge: _____ mg/L
O.R.P. (if req'd): Pre-purge: _____ mV	Post-purge: _____ mV

## WELL MONITORING DATA SHEET

Project #: <u>080410-1W-1</u>	Client: <u>STELLAR ENV.</u>
Sampler: <u>1W</u>	Date: <u>4/10/08</u>
Well I.D.: <u>MW-4B</u>	Well Diameter: 2 3 4 6 8 <u>3/4"</u>
Total Well Depth (TD): <u>24.18</u>	Depth to Water (DTW): <u>5.90</u>
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: <u>PVC</u> Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: <u>9.56</u>	

Purge Method: Bailer	Waterra	Sampling Method: Bailer
Disposable Bailer	<input checked="" type="checkbox"/> Peristaltic	Disposable Bailer
Positive Air Displacement	Extraction Pump	Extraction Port
Electric Submersible	Other _____	Dedicated Tubing
		Other: <u>NEW TUBING</u>

(1617ml)

0.42 (Gals.) X 3 = 1.26 Gals.  
 1 Case Volume      Specified Volumes      Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius <sup>2</sup> * 0.163

0.023

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
<u>1350</u>	<u>65.0</u>	<u>7.67</u>	<u>950</u>	<u>25</u>	<u>0.42</u>	
<u>1353</u>	<u>64.8</u>	<u>7.20</u>	<u>934</u>	<u>14</u>	<u>0.84</u>	
<u>1356</u>	<u>65.1</u>	<u>6.95</u>	<u>929</u>	<u>9</u>	<u>1.26</u>	
<u>1359</u>	<u>65.0</u>	<u>6.93</u>	<u>928</u>	<u>NOT RECORDED</u>	<u>1.68</u>	

Did well dewater? Yes  No  Gallons actually evacuated: 1.68

Sampling Date: 4/10/08 Sampling Time: 1404 Depth to Water: 5.91

Sample I.D.: MW-4B Laboratory: Kiff CalScience Other C+T

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

EB I.D. (if applicable): @ Time Duplicate I.D. (if applicable):

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:

D.O. (if req'd): Pre-purge: \_\_\_\_\_ mg/L Post-purge: \_\_\_\_\_ mg/L

O.R.P. (if req'd): Pre-purge: \_\_\_\_\_ mV Post-purge: \_\_\_\_\_ mV

# WELL MONITORING DATA SHEET

Project #: <u>080410-1W-1</u>	Client: <u>STELLAR ENV.</u>
Sampler: <u>1W</u>	Date: <u>4/10/08</u>
Well I.D.: <u>MW-5B</u>	Well Diameter: 2 3 4 6 8 <u>3/4"</u>
Total Well Depth (TD): <u>29.28</u>	Depth to Water (DTW): <u>6.51</u>
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: <u>PVC</u> Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: <u>10.26</u>	

Purge Method: Bailer Disposable Bailer Positive Air Displacement Electric Submersible	Waterra <input checked="" type="checkbox"/> Peristaltic Extraction Pump Other _____	Sampling Method: Bailer Disposable Bailer Extraction Port Dedicated Tubing Other: <u>NEW TUBING</u>
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(1062ml)

$$0.43 \text{ (Gals.)} \times 3 = 1.29 \text{ Gals.}$$
 1 Case Volume                      Specified Volumes                      Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius <sup>2</sup> * 0.163

Time	Temp ( <u>F</u> or °C)	pH	Cond. (mS or <u>µS</u> )	Turbidity (NTUs)	Gals. Removed	Observations
1450	67.4	7.76	214	17	0.43	ODOR
1453	67.6	7.50	286	17	0.86	"
1456	66.4	7.09	793	14	1.29	"
1459	66.4	7.04	950	11	1.82	"
1502	66.3	7.08	966	10	2.15	"

Did well dewater? Yes  No  Gallons actually evacuated: 2.15

Sampling Date: 4/10/08      Sampling Time: 1510      Depth to Water: 8.02

Sample I.D.: MW-5B      Laboratory: Kiff    CalScience    Other: C+T

Analyzed for: TPH-G BTEX MTBE    TPH-D    Oxygenates (5)    Other:

EB I.D. (if applicable): @ \_\_\_\_\_ Time      Duplicate I.D. (if applicable):

Analyzed for: TPH-G    BTEX    MTBE    TPH-D    Oxygenates (5)    Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
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O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV
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## **APPENDIX B**

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# **SES GROUNDWATER STANDARD SAMPLING PROTOCOLS**

## **APPENDIX B SES GROUNDWATER STANDARD SAMPLING PROTOCOLS**

### **SAMPLING AND ANALYSIS PERSONNEL**

Sampling and analysis is conducted by Blaine Tech Services, a subcontractor to SES, which uses appropriately trained personnel to perform the water level measurements, sampling, and analyses of key natural attenuation indicators.

### **SUMMARY OF SAMPLING PROCEDURES**

Activities that will occur during groundwater sampling are summarized as follows:

- Pre-arrangement with testing laboratory
- Assembly and preparation of equipment and supplies
- Groundwater sampling
  - water-level measurements
  - immiscible material measurements (with an interface probe, if applicable)
  - visual inspection of borehole water
  - well bore evacuation
  - sampling
- Sample preservation and shipment
  - sample preparation
  - onsite measurement of parameters using direct read instruments
  - sample labeling
- Completion of sample records
- Completion of chain-of-custody records
- Samples placed in chilled cooler
- Sample shipment

Detailed sampling and analysis procedures are presented in the following sections.

## **ARRANGEMENTS WITH ANALYTICAL LABORATORY**

Prior to sampling, arrangements will be made with an analytical laboratory to conduct the sample analyses. Samples will be analyzed by Curtis and Tompkins, Ltd. (C&T), an analytical laboratory in Berkeley, California. C&T has the required Department of Toxic Substances Control (DTSC) certification to perform the analyses, and will provide a sufficient number of sample containers for the wells to be sampled and the blanks to be included. C&T will determine the proper type and size for the containers based on the analyses requested. For samples requiring chemical preservation, preservatives will be added to containers by the C&T prior to shipping containers to the facility. Shipping containers (ice chests with adequate container padding) will be sent to the facility with the sample containers.

## **PREPARATION FOR SAMPLING**

Prior to the sampling episode, equipment to be used will be assembled and its operating condition verified, calibrated (if required), and properly cleaned (if required). In addition, all record-keeping materials will be prepared.

### **Equipment Calibration**

Where appropriate, equipment will be calibrated according to the manufacturer's specifications prior to field use. This applies to the equipment for making onsite chemical measurements of pH, conductivity, water temperature, and photoionization detector (PID).

### **Equipment Cleaning**

Portions of sampling and test equipment that will come into contact with the sample will be thoroughly cleaned before use. Such equipment includes water-level probe, bailers, lifting line, and other equipment or portions thereof that may be immersed. The procedure for cleaning non-dedicated equipment is as follows:

- Clean with potable water and phosphate-free detergent;
- Rinse with potable water;
- Rinse with distilled or deionized water; and
- Air dry the equipment prior to use.

Any deviations from these procedures will be documented in the permanent record of the sampling event.

Laboratory-supplied sample containers will be cleaned and sealed by the laboratory before shipping. The type of container provided and the method of container cleaning should be in the laboratory's permanent record of the sampling event.



Sampling equipment to be disposed of after use will be cleaned with potable water and phosphate-free detergent before disposal as solid waste. Rinse water will be stored in properly labeled 55-gallon drums for proper disposal, pending receipt of laboratory results of groundwater and soil sample analyses with assistance from SES.

## **SAMPLING PROCEDURES**

Special care will be exercised to prevent contamination of the groundwater and extracted samples during the sampling activities. Contamination of a sample can occur through contact with improperly cleaned equipment. Cross-contamination of the groundwater can occur through insufficient cleaning of equipment between wells. Pre-cleaned disposable sampling equipment will be rinsed with distilled water prior to use. Sampling equipment and sample containers will be thoroughly cleaned before and after field use and between uses at different sampling locations according to the procedures discussed above. In addition to the use of properly cleaned equipment, two further precautions will be taken:

- A new pair of clean, disposable latex (or similar) gloves will be worn each time a different well is sampled.
- Sample collection activities will progress from the least affected (upgradient) area to the most affected (downgradient) area. Wells described as “background” or “upgradient” wells will be sampled first.

The following paragraphs present procedures for the several activities that comprise groundwater sample acquisition. These activities will be performed in the same order as presented below. Exceptions to this procedure will be noted in the permanent sampling record.

### **Preparation of Location**

Prior to starting the sampling procedure, the area around the well will be cleared of foreign materials, such as brush, rocks, debris, etc. A clean (new) disposable plastic sheet will be placed around the well casing so that the sheet is flat on the ground. The sheet will be placed such that the flush-mount well projects through the center of the sheet. This preparation will prevent sampling equipment from inadvertently contacting the ground or exterior parts of the well.

### **Water-Level Measurement**

The first sampling operation is water-level measurement. An electrical probe or a weighted tape will be used to measure the depth to groundwater below the datum to the nearest 0.01 foot. The datum, usually the top of the inner casing (inside and below the protective steel cover), will be described in the monitoring well records. A permanent mark or scribe will be marked on the inner casing.

If the wells to be sampled are closely spaced, the water levels at all of the closely-spaced wells will be measured before any of the wells are evacuated. The water-level probe or weighted tape will be cleaned with phosphate-free detergent in distilled water and with a distilled water rinse between usage at different wells.

### **Total Depth Measurement**

Once the water level and immiscible material thickness is measured and recorded, the water-level probe or weighted tape will be slowly lowered to the bottom of the well. The depth to the bottom will be measured and recorded. The probe or tape will then be slowly withdrawn from the well. The bottom of the probe or tape will be observed after withdrawal to determine any evidence of viscous, heavy contaminants. Descriptions (and measurements, if possible) of such materials will be made from observation of the probe or tape.

### **Visual Inspection of Well Water**

Prior to well evacuation, a small quantity of water will be removed with a bailer that is not completely immersed. The recovered sample is representative of the top of the water column in the well casing. If immiscible materials are present as measured by the interface probe at the top of the water column, this technique can allow their detection. The water will be observed for the presence of any floating films or other indications of immiscible materials. Any sample odors will be noted. Observations regarding odor or visual evidence of immiscible materials will be recorded in the sampling record.

The well water sample will be discarded unless the site-specific protocol calls for retention of this sample. The sample will be placed in a labeled container for proper disposal.

### **Well Bore Evacuation**

Water contained within and adjacent to the well casing can potentially reflect chemical interaction with the atmosphere (by diffusion of gases down the casing) or the well construction materials (through prolonged residence adjacent to the casing).

Observations of this water will be recorded during removal and prior to it being discarded. Onsite parameter measurements of the purged water, as described in this section, will indicate when water-quality parameters have stabilized, and also will be recorded.

The volume of water contained within the well bore at the time of sampling will be calculated, and 4 times the calculated water volume will be removed from the well and discarded. A bailer will be used for well evacuation. The volume of water to be evacuated will be calculated as follows:

Number of Bailers:

$$\text{Number of bailers} = 4 \times \frac{\text{Volume of water in well (Vw)}}{\text{Volume of bailer (Vb)}}$$

Volume of Water in Well:

$$V_w = \frac{3.142 \times d_w^2 \times L_w}{4}$$

where:  $V_w$  = water volume in well (ft<sup>3</sup>)  
 $d_w$  = inside diameter of well (ft)  
 $L_w$  = length of water column in well (ft)

Volume of Water in Full Bailer:

$$V_b = \frac{3.142 \times d_b^2 \times L_b}{4}$$

where:  $V_b$  = water volume in bailer (ft<sup>3</sup>)  
 $d_b$  = inside diameter of bailer (ft)  
 $L_b$  = length of bailer (ft)

Wells that can be evacuated to a dry state will be evacuated completely; samples will be taken as soon as sufficient water for sampling is present. Sample compositing—sampling over a lengthy period by accumulating small volumes of water at different times to eventually obtain a sample of sufficient volume—will not be conducted.

Water produced during well evacuation will be contained in a suitable container and temporarily stored onsite pending proper disposal.

Some chemical and physical parameters in water can change significantly within a short time of sample acquisition. The following parameters cannot be accurately measured in a laboratory located more than a few hours from the facility, and will be measured onsite with portable equipment:

- pH
- Specific conductance
- Temperature
- Turbidity units

These parameters will be measured in unfiltered, unpreserved, “fresh” water, using the same sampling technique as for laboratory analyses. The measurements will be made in a clean glass container separate from those intended for laboratory analyses. The tested sample will be discarded after use. The measured values will be recorded in the sampling record.

### **Natural Attenuation Field Measurements**

In addition to the meter reading above, following the indicators that groundwater has been purged sufficiently to represent water within the water bearing materials, natural attenuation parameters were measured by the Blaine Tech sampling personnel. These include meter readings for:

- Oxidation reduction potential;
- Dissolved oxygen; and
- Dissolved ferrous iron.

### **Sample Extraction**

Natural attenuation parameters are measured before the water is purged and sampled. Care will be taken during insertion of sampling equipment to prevent undue disturbance of water in the well.

The pump or bailer will be lowered into the water gently to prevent splashing, and extracted gently to prevent creation of an excessive vacuum in the well. The sample will be transferred directly into the appropriate container. While pouring water from a bailer, the water will be carefully poured down the inside of the sample bottle to prevent significant aeration of the sample. Unless other instructions are given by the analytical laboratory, the sample containers will be completely filled so that no air space remains in the container. Excess water taken during sampling will be placed in a container for proper disposal.

## **SAMPLE HANDLING**

### **Sample Preservation**

Water samples will be properly prepared for transportation to the laboratory by refrigeration and chemical preservation, as necessary. The laboratory providing sample containers will add any necessary chemical preservatives to the sealed containers provided prior to shipment.

### **Container and Labels**

Glass containers and appropriate container lids will be provided by the laboratory. The containers will be filled and container lids tightly closed. Sample container lids will be sealed so as to make obvious any seal tampered with or broken. The label will be firmly attached to the container side (rather than the lid). The following information will be written with permanent marker on the label:

- Facility name;
- Sample identification;
- Sample type (groundwater, surface water, etc.);
- Sampling date;
- Sampling time; and
- Preservatives added, and sample collector's initials.

### **Sample Shipment**

In most instances, the concentration and type of compounds present in the groundwater are considered by the U.S. Department of Transportation to be non-hazardous. Thus, the following packaging and labeling requirements for the sample materials are appropriate for shipping the sample to the testing laboratory:

- Package sample so that it does not leak, spill, or vaporize from its packaging
- Label package with:
  - sample collector's name, address, and telephone number
  - laboratory's name, address, and telephone number
  - description of sample
  - quantity of sample
  - date of shipment

To comply with packaging regulations and prevent damage to expensive groundwater samples, SES will follow packaging and shipping instructions supplied by the certified testing laboratory.

### **Chain-of-Custody Control**

After samples are obtained, chain-of-custody procedures will be followed to establish a written record concerning sample movement between the sampling site and the testing laboratory. Each shipping container will contain a chain-of-custody form to be completed by the sampling personnel packing the samples. The chain-of-custody form for each container will be completed in triplicate. One copy of this form will be maintained at the site; the other two copies will remain at the laboratory. One of the laboratory copies will become a part of the permanent record for the sample and will be returned with the sample analyses.

The record will contain the following minimum information:

- Collector's sample number
- Signature of collector
- Date and time of collection
- Place and address of collection
- Material type
- Preservatives added
- Analyses requested
- Signatures involved in the chain of possession
- Inclusive dates of possession

The shipping container will be sealed so as to make obvious any seal tampered with or broken. The chain-of-custody documentation will be placed inside the container so that it is immediately apparent to the laboratory personnel receiving the container, but could not be damaged or lost during shipping.

### **SAMPLING RECORDS**

To provide complete documentation of sampling, detailed records containing the following information will be maintained during sampling:

- Sample location (facility name)
- Sample identification (name and sample number)
- Sample location map or detailed sketch
- Date and time of sampling

- Sampling method
- Field observations of sample appearance and odor
- Weather conditions
- Samples identification
- Any other significant information

## **APPENDIX C**

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# **CERTIFIED ANALYTICAL LABORATORY REPORTS AND CHAIN-OF-CUSTODY DOCUMENTATION**





Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

Laboratory Job Number 202562  
ANALYTICAL REPORT

Stellar Environmental Solutions  
2198 6th Street  
Berkeley, CA 94710

Project : 2005-65  
Location : USTCF Claim #018639  
Level : II

<u>Sample ID</u>	<u>Lab ID</u>
MW-1B	202562-001
MW-2A	202562-002
MW-2B	202562-003
MW-3A	202562-004
MW-3B	202562-005
MW-4A	202562-006
MW-4B	202562-007
MW-5B	202562-008

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature:   
Project Manager

Date: 04/17/2008

Signature:   
Quality Assurance Director

Date: 04/18/2008

**CASE NARRATIVE**

Laboratory number: 202562  
Client: Stellar Environmental Solutions  
Project: 2005-65  
Location: USTCF Claim #018639  
Request Date: 04/11/08  
Samples Received: 04/11/08

This hardcopy data package contains sample and QC results for eight water samples, requested for the above referenced project on 04/11/08. The samples were received cool, but above 6 degrees C, and intact.

**TPH-Purgeables and/or BTXE by GC (EPA 8015B and EPA 8021B):**

No analytical problems were encountered.

**Volatile Organics by GC/MS (EPA 8260B):**

No analytical problems were encountered.

**Curtis & Tompkins Laboratories Analytical Report**

Lab #:	202562	Location:	USTCF Claim #018639
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2005-65		
Matrix:	Water	Batch#:	137044
Units:	ug/L	Sampled:	04/10/08
Diln Fac:	1.000	Received:	04/11/08

Field ID:	MW-1B	Lab ID:	202562-001
Type:	SAMPLE	Analyzed:	04/15/08

Analyte	Result	RL	Analysis
Gasoline C7-C12	350 Y	50	EPA 8015B
MTBE	3.6	2.0	EPA 8021B
Benzene	ND	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	ND	0.50	EPA 8021B
m,p-Xylenes	ND	0.50	EPA 8021B
o-Xylene	ND	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	108	69-140	EPA 8015B
Bromofluorobenzene (FID)	134	73-144	EPA 8015B
Trifluorotoluene (PID)	108	60-146	EPA 8021B
Bromofluorobenzene (PID)	120	65-143	EPA 8021B

Field ID:	MW-2A	Lab ID:	202562-002
Type:	SAMPLE	Analyzed:	04/15/08

Analyte	Result	RL	Analysis
Gasoline C7-C12	160 Y	50	EPA 8015B
MTBE	3.0	2.0	EPA 8021B
Benzene	ND	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	ND	0.50	EPA 8021B
m,p-Xylenes	ND	0.50	EPA 8021B
o-Xylene	ND	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	106	69-140	EPA 8015B
Bromofluorobenzene (FID)	127	73-144	EPA 8015B
Trifluorotoluene (PID)	95	60-146	EPA 8021B
Bromofluorobenzene (PID)	114	65-143	EPA 8021B

Y= Sample exhibits chromatographic pattern which does not resemble standard  
 ND= Not Detected  
 RL= Reporting Limit

### Curtis & Tompkins Laboratories Analytical Report

Lab #:	202562	Location:	USTCF Claim #018639
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2005-65		
Matrix:	Water	Batch#:	137044
Units:	ug/L	Sampled:	04/10/08
Diln Fac:	1.000	Received:	04/11/08

Field ID:	MW-2B	Lab ID:	202562-003
Type:	SAMPLE	Analyzed:	04/15/08

Analyte	Result	RL	Analysis
Gasoline C7-C12	92 Y	50	EPA 8015B
MTBE	2.4	2.0	EPA 8021B
Benzene	ND	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	ND	0.50	EPA 8021B
m,p-Xylenes	ND	0.50	EPA 8021B
o-Xylene	ND	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	110	69-140	EPA 8015B
Bromofluorobenzene (FID)	130	73-144	EPA 8015B
Trifluorotoluene (PID)	96	60-146	EPA 8021B
Bromofluorobenzene (PID)	117	65-143	EPA 8021B

Field ID:	MW-3A	Lab ID:	202562-004
Type:	SAMPLE	Analyzed:	04/16/08

Analyte	Result	RL	Analysis
Gasoline C7-C12	ND	50	EPA 8015B
MTBE	35	2.0	EPA 8021B
Benzene	ND	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	ND	0.50	EPA 8021B
m,p-Xylenes	ND	0.50	EPA 8021B
o-Xylene	ND	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	89	69-140	EPA 8015B
Bromofluorobenzene (FID)	109	73-144	EPA 8015B
Trifluorotoluene (PID)	79	60-146	EPA 8021B
Bromofluorobenzene (PID)	101	65-143	EPA 8021B

Y= Sample exhibits chromatographic pattern which does not resemble standard

ND= Not Detected

RL= Reporting Limit

**Curtis & Tompkins Laboratories Analytical Report**

Lab #: 202562	Location: USTCF Claim #018639
Client: Stellar Environmental Solutions	Prep: EPA 5030B
Project#: 2005-65	
Matrix: Water	Batch#: 137044
Units: ug/L	Sampled: 04/10/08
Diln Fac: 1.000	Received: 04/11/08

Field ID: MW-3B                      Lab ID: 202562-005  
 Type: SAMPLE                      Analyzed: 04/15/08

Analyte	Result	RL	Analysis
Gasoline C7-C12	1,800 Y	50	EPA 8015B
MTBE	ND	2.0	EPA 8021B
Benzene	ND	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	ND	0.50	EPA 8021B
m,p-Xylenes	ND	0.50	EPA 8021B
o-Xylene	ND	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	115	69-140	EPA 8015B
Bromofluorobenzene (FID)	134	73-144	EPA 8015B
Trifluorotoluene (PID)	139	60-146	EPA 8021B
Bromofluorobenzene (PID)	117	65-143	EPA 8021B

Field ID: MW-4A                      Lab ID: 202562-006  
 Type: SAMPLE                      Analyzed: 04/15/08

Analyte	Result	RL	Analysis
Gasoline C7-C12	ND	50	EPA 8015B
MTBE	61	2.0	EPA 8021B
Benzene	ND	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	ND	0.50	EPA 8021B
m,p-Xylenes	ND	0.50	EPA 8021B
o-Xylene	ND	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	96	69-140	EPA 8015B
Bromofluorobenzene (FID)	126	73-144	EPA 8015B
Trifluorotoluene (PID)	87	60-146	EPA 8021B
Bromofluorobenzene (PID)	106	65-143	EPA 8021B

Y= Sample exhibits chromatographic pattern which does not resemble standard  
 ND= Not Detected  
 RL= Reporting Limit

### Curtis & Tompkins Laboratories Analytical Report

Lab #: 202562	Location: USTCF Claim #018639
Client: Stellar Environmental Solutions	Prep: EPA 5030B
Project#: 2005-65	
Matrix: Water	Batch#: 137044
Units: ug/L	Sampled: 04/10/08
Diln Fac: 1.000	Received: 04/11/08

Field ID: MW-4B                      Lab ID: 202562-007  
 Type: SAMPLE                        Analyzed: 04/15/08

Analyte	Result	RL	Analysis
Gasoline C7-C12	1,500 Y	50	EPA 8015B
MTBE	ND	2.0	EPA 8021B
Benzene	ND	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	ND	0.50	EPA 8021B
m,p-Xylenes	ND	0.50	EPA 8021B
o-Xylene	ND	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	114	69-140	EPA 8015B
Bromofluorobenzene (FID)	130	73-144	EPA 8015B
Trifluorotoluene (PID)	131	60-146	EPA 8021B
Bromofluorobenzene (PID)	116	65-143	EPA 8021B

Field ID: MW-5B                      Lab ID: 202562-008  
 Type: SAMPLE                        Analyzed: 04/15/08

Analyte	Result	RL	Analysis
Gasoline C7-C12	240 Y	50	EPA 8015B
MTBE	65	2.0	EPA 8021B
Benzene	ND	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	ND	0.50	EPA 8021B
m,p-Xylenes	ND	0.50	EPA 8021B
o-Xylene	ND	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	111	69-140	EPA 8015B
Bromofluorobenzene (FID)	127	73-144	EPA 8015B
Trifluorotoluene (PID)	96	60-146	EPA 8021B
Bromofluorobenzene (PID)	115	65-143	EPA 8021B

Y= Sample exhibits chromatographic pattern which does not resemble standard  
 ND= Not Detected  
 RL= Reporting Limit

**Curtis & Tompkins Laboratories Analytical Report**

Lab #:	202562	Location:	USTCF Claim #018639
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2005-65		
Matrix:	Water	Batch#:	137044
Units:	ug/L	Sampled:	04/10/08
Diln Fac:	1.000	Received:	04/11/08

Type: BLANK Analyzed: 04/15/08  
 Lab ID: QC437402

Analyte	Result	RL	Analysis
Gasoline C7-C12	ND	50	EPA 8015B
MTBE	ND	2.0	EPA 8021B
Benzene	ND	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	ND	0.50	EPA 8021B
m,p-Xylenes	ND	0.50	EPA 8021B
o-Xylene	ND	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	104	69-140	EPA 8015B
Bromofluorobenzene (FID)	120	73-144	EPA 8015B
Trifluorotoluene (PID)	93	60-146	EPA 8021B
Bromofluorobenzene (PID)	109	65-143	EPA 8021B

Y= Sample exhibits chromatographic pattern which does not resemble standard  
 ND= Not Detected  
 RL= Reporting Limit

## Batch QC Report

**Curtis & Tompkins Laboratories Analytical Report**

Lab #:	202562	Location:	USTCF Claim #018639
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2005-65	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC437403	Batch#:	137044
Matrix:	Water	Analyzed:	04/15/08
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1,000	940.7	94	80-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	123	69-140
Bromofluorobenzene (FID)	123	73-144



## Batch QC Report

**Curtis & Tompkins Laboratories Analytical Report**

Lab #:	202562	Location:	USTCF Claim #018639
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2005-65	Analysis:	EPA 8015B
Field ID:	MW-1B	Batch#:	137044
MSS Lab ID:	202562-001	Sampled:	04/10/08
Matrix:	Water	Received:	04/11/08
Units:	ug/L	Analyzed:	04/16/08
Diln Fac:	1.000		

Type: MS Lab ID: QC437404

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	351.7	2,000	2,195	92	67-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	123	69-140
Bromofluorobenzene (FID)	139	73-144

Type: MSD Lab ID: QC437405

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	2,172	91	67-120	1	20

Surrogate	%REC	Limits
Trifluorotoluene (FID)	127	69-140
Bromofluorobenzene (FID)	144	73-144

RPD= Relative Percent Difference

## Batch QC Report

**Curtis & Tompkins Laboratories Analytical Report**

Lab #:	202562	Location:	USTCF Claim #018639
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2005-65	Analysis:	EPA 8021B
Matrix:	Water	Batch#:	137044
Units:	ug/L	Analyzed:	04/15/08
Diln Fac:	1.000		

Type: BS Lab ID: QC437465

Analyte	Spiked	Result	%REC	Limits
MTBE	10.00	10.95	110	70-129
Benzene	10.00	9.602	96	80-120
Toluene	10.00	9.521	95	80-120
Ethylbenzene	10.00	10.53	105	80-120
m,p-Xylenes	10.00	10.17	102	80-120
o-Xylene	10.00	9.780	98	80-120

Surrogate	%REC	Limits
Trifluorotoluene (PID)	97	60-146
Bromofluorobenzene (PID)	114	65-143

Type: BSD Lab ID: QC437466

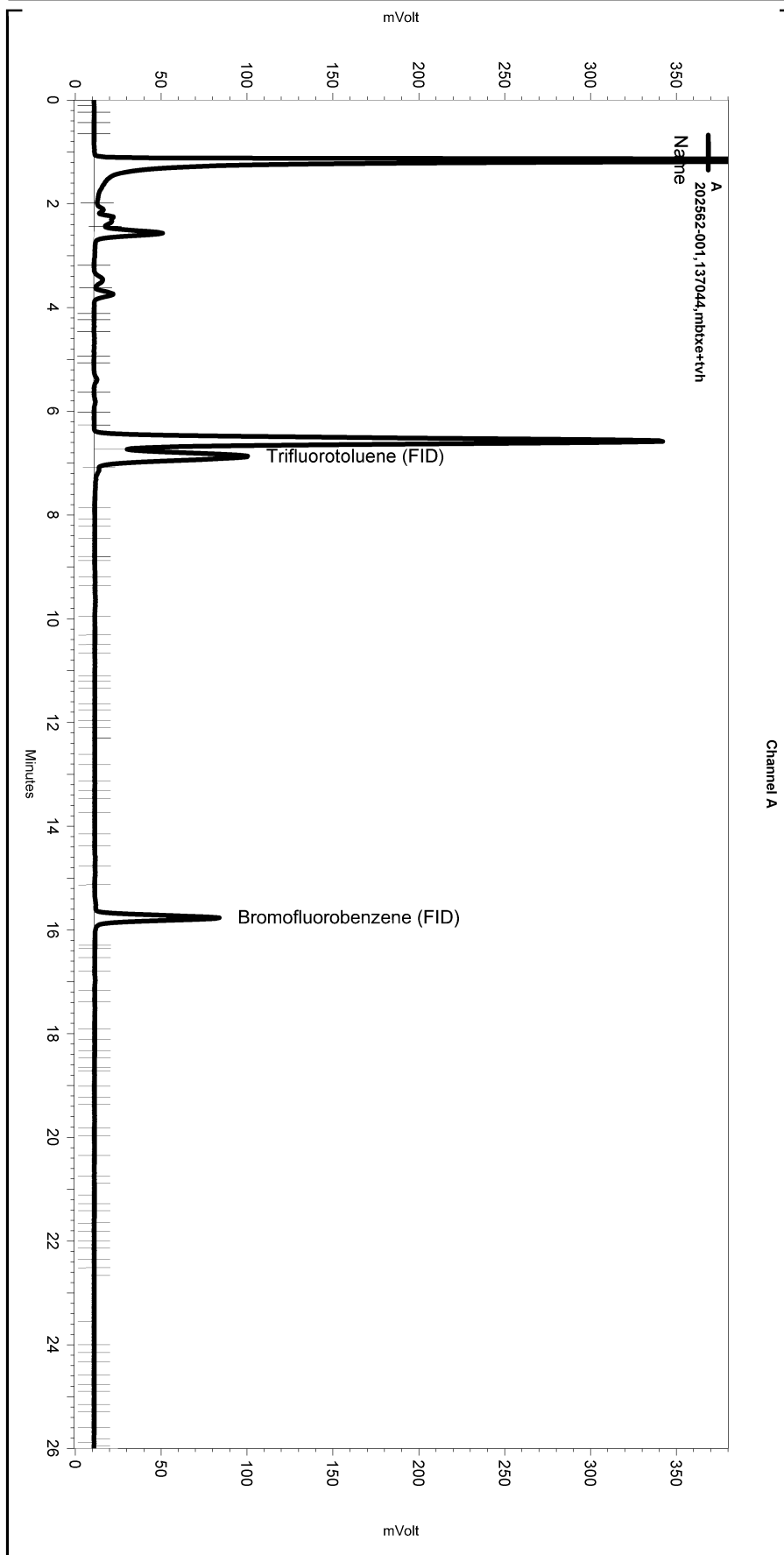
Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	20.00	19.78	99	70-129	10	21
Benzene	20.00	18.52	93	80-120	4	20
Toluene	20.00	18.44	92	80-120	3	20
Ethylbenzene	20.00	20.50	102	80-120	3	20
m,p-Xylenes	20.00	19.68	98	80-120	3	20
o-Xylene	20.00	18.94	95	80-120	3	20

Surrogate	%REC	Limits
Trifluorotoluene (PID)	94	60-146
Bromofluorobenzene (PID)	111	65-143

RPD= Relative Percent Difference

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 Instrument: GC19 (Offline) Vial: N/A Operator: Tvh 2. Analyst (lims2k3\tvh2)  
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Software Version 3.1.7  
 Run Date: 4/15/2008 3:37:52 PM  
 Analysis Date: 4/16/2008 11:51:34 AM  
 Sample Amount: 5 Multiplier: 5  
 Vial & pH or Core ID: a1.3



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Integration Events

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Yes	Threshold	0	0	50

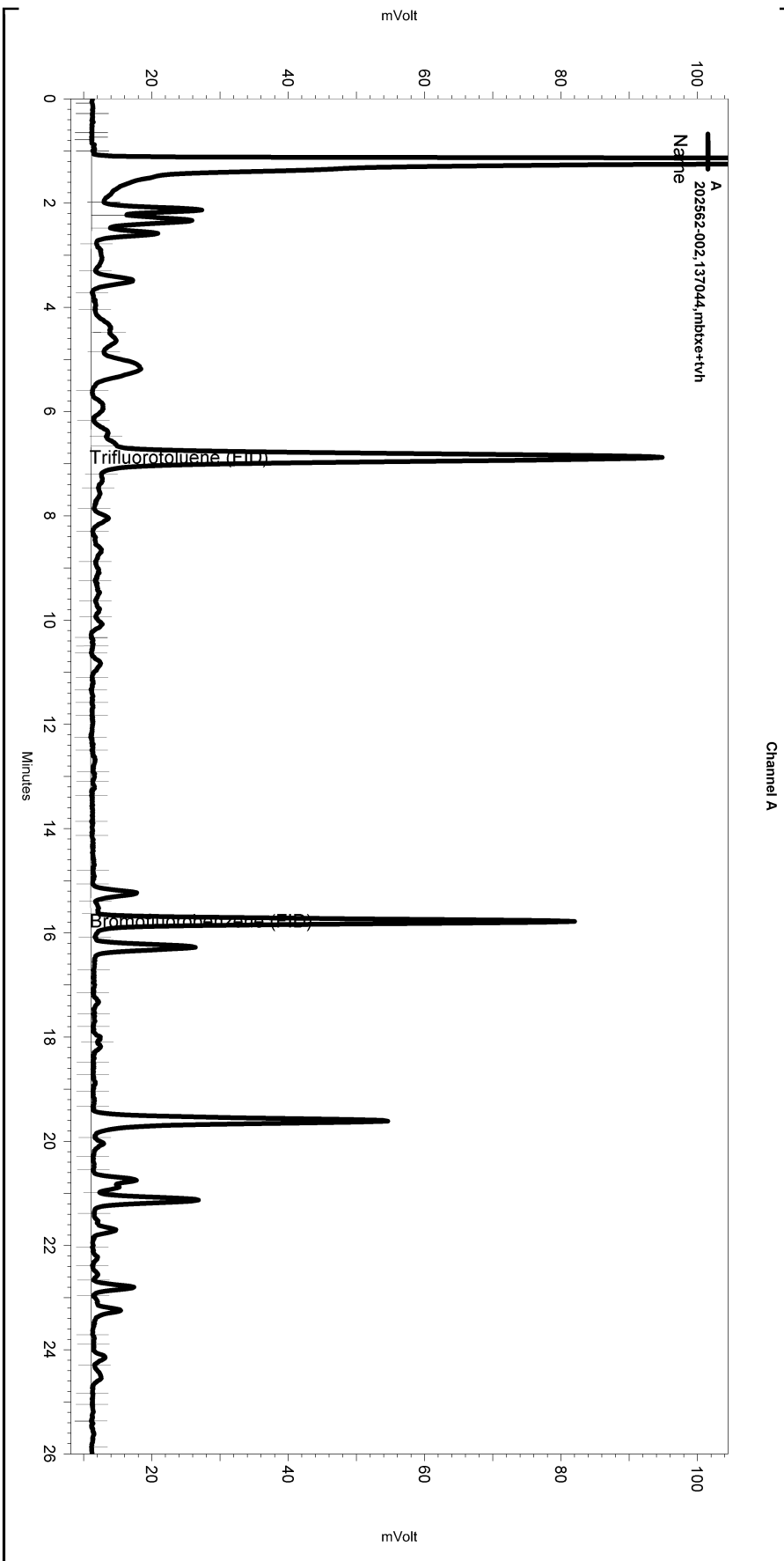
Manual Integration Fixes

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Yes	Split Peak	7.078	0	0

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 Data File: \\Lims\gdrive\ezchrom\Projects\GC19\Data\106\_009  
 Instrument: GC19 (Offline) Vial: N/A Operator: Tvh 2. Analyst (lims2k3\tvh2)  
 Method Name: \\Lims\gdrive\ezchrom\Projects\GC19\Method\tvhbtxe079.met

Software Version 3.1.7  
 Run Date: 4/15/2008 4:15:20 PM  
 Analysis Date: 4/16/2008 11:54:24 AM  
 Sample Amount: 5 Multiplier: 5  
 Vial & pH or Core ID: a1.3



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Integration Events

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Yes	Threshold	0	0	50

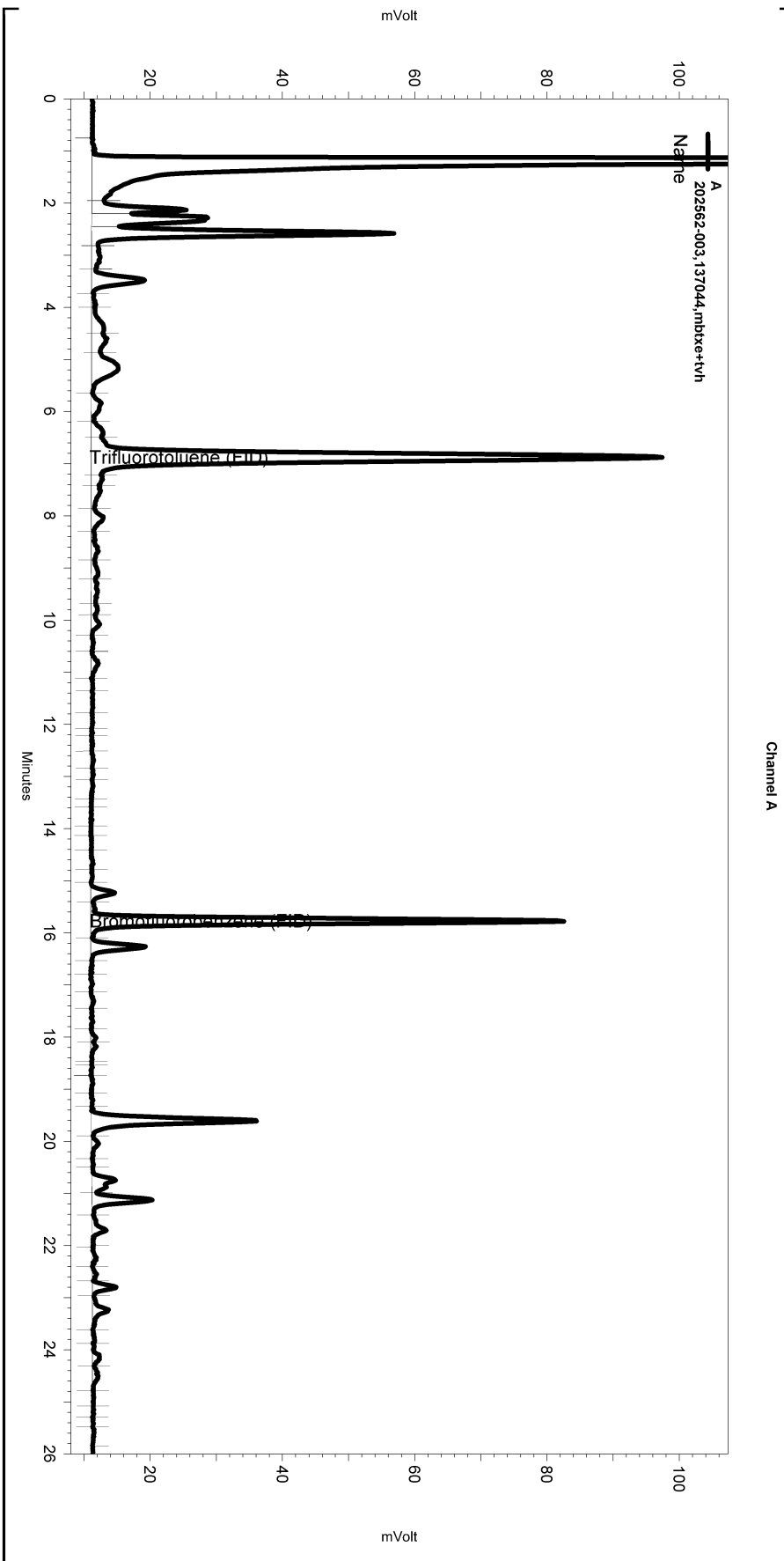
Manual Integration Fixes

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Yes	Split Peak	6.662	0	0
Yes	Split Peak	15.631	0	0

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 Sample Name: 202562-003,137044,mbtxe+tvh  
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 Instrument: GC19 (Offline) Vial: N/A Operator: Tvh 2. Analyst (lims2k3\tvh2)  
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Software Version 3.1.7  
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 Vial & pH or Core ID: a1.3



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Integration Events

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Yes	Threshold	0	0	50

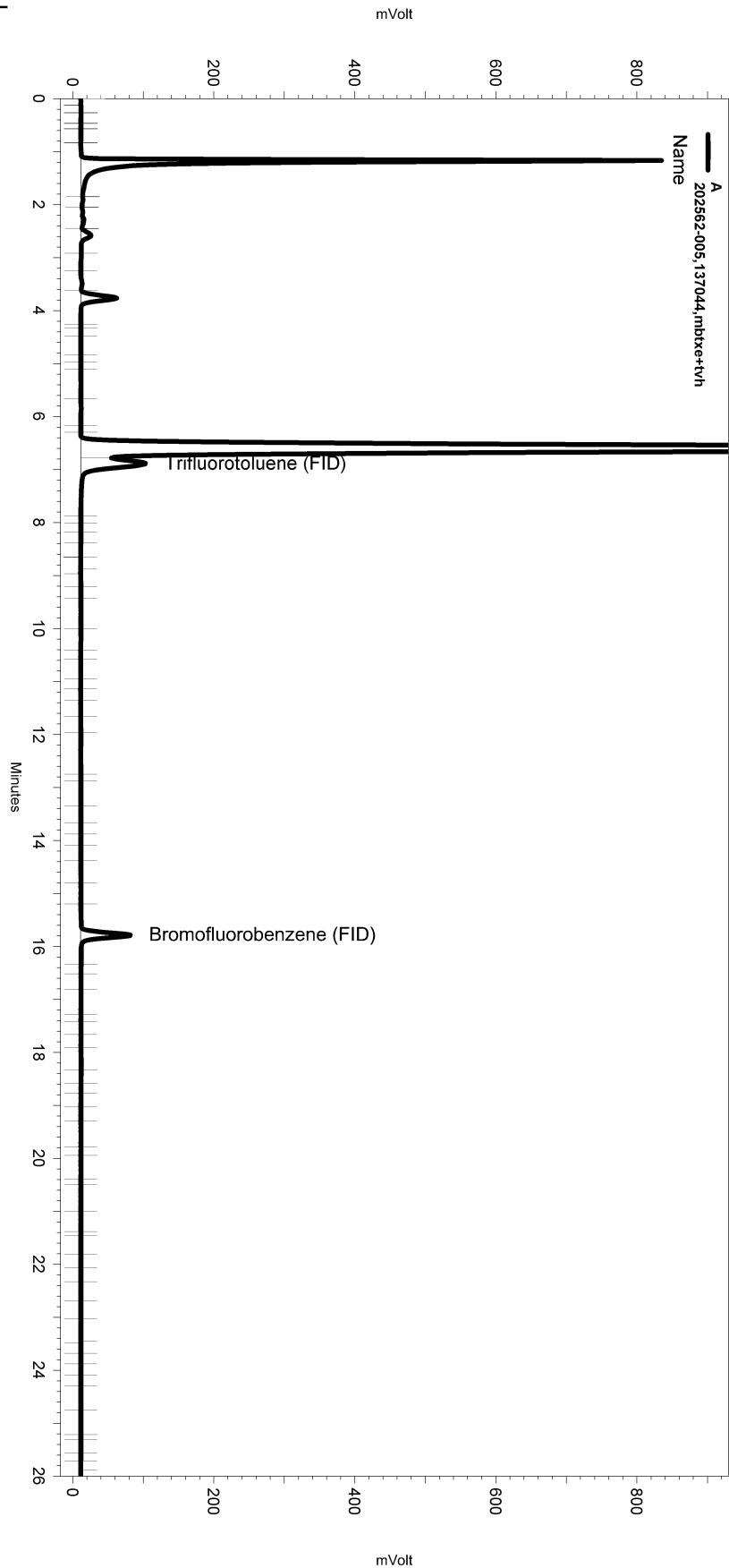
Manual Integration Fixes

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 Data File: \\Lims\gdrive\ezchrom\Projects\GC19\Data\106\_012  
 Instrument: GC19 (Offline) Vial: N/A Operator: Tvh 2. Analyst (lims2k3\tvh2)  
 Method Name: \\Lims\gdrive\ezchrom\Projects\GC19\Method\tvhbtXe079.met

Software Version 3.1.7  
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 Analysis Date: 4/16/2008 8:04:32 AM  
 Sample Amount: 5 Multiplier: 5  
 Vial & pH or Core ID: a1.3



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Integration Events

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Yes	Threshold	0	0	50

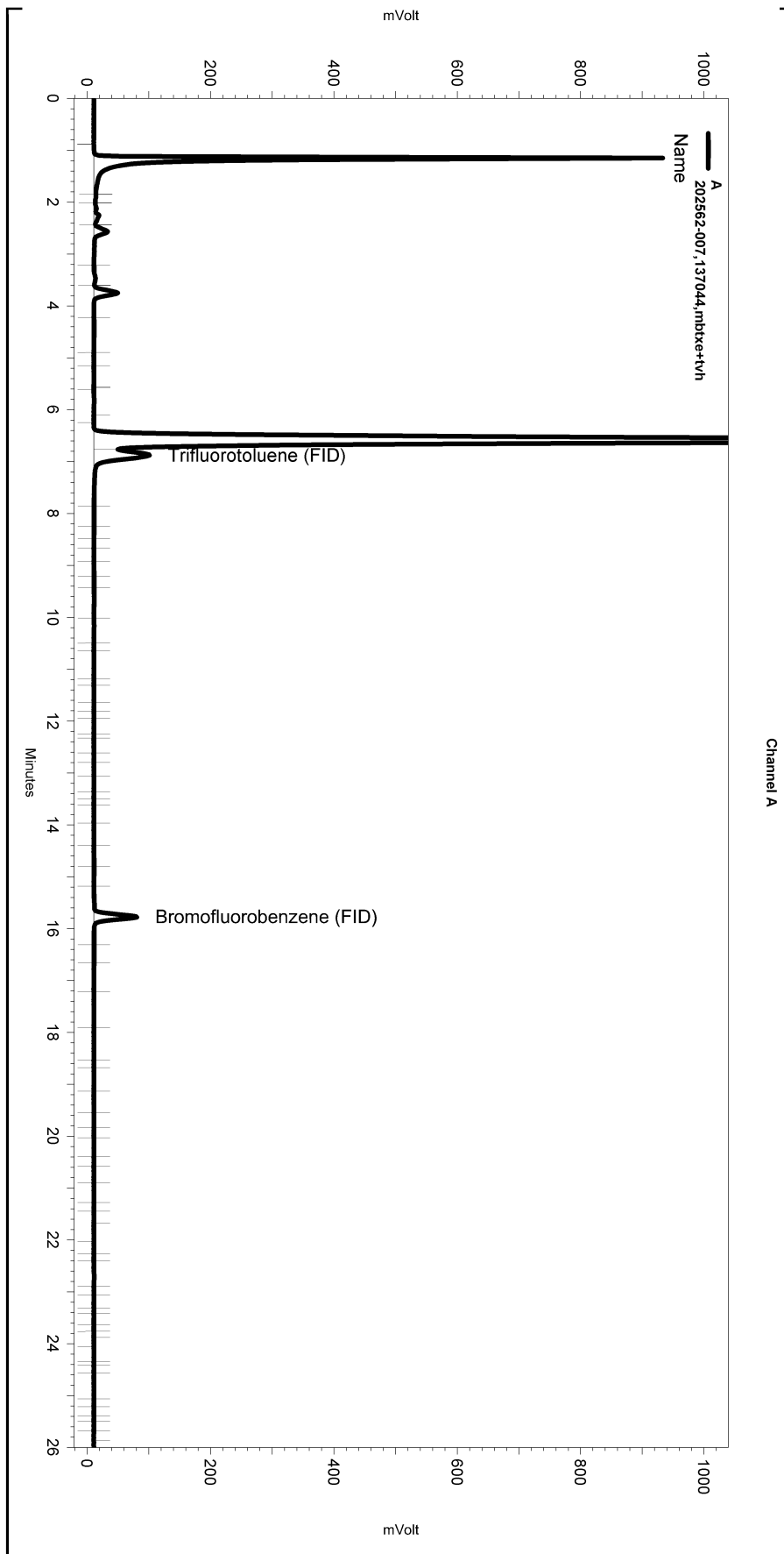
Manual Integration Fixes

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 Sample Name: 202562-007,137044,mbtixe+tvh  
 Data File: \\Lims\gdrive\ezchrom\Projects\GC19\Data\106\_019  
 Instrument: GC19 (Offline) Vial: N/A Operator: Tvh 2. Analyst (lims2k3\tvh2)  
 Method Name: \\Lims\gdrive\ezchrom\Projects\GC19\Method\tvhbtixe079.met

Software Version 3.1.7  
 Run Date: 4/15/2008 10:30:33 PM  
 Analysis Date: 4/16/2008 8:04:58 AM  
 Sample Amount: 5 Multiplier: 5  
 Vial & pH or Core ID: a1.3



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Integration Events

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Yes	Threshold	0	0	50

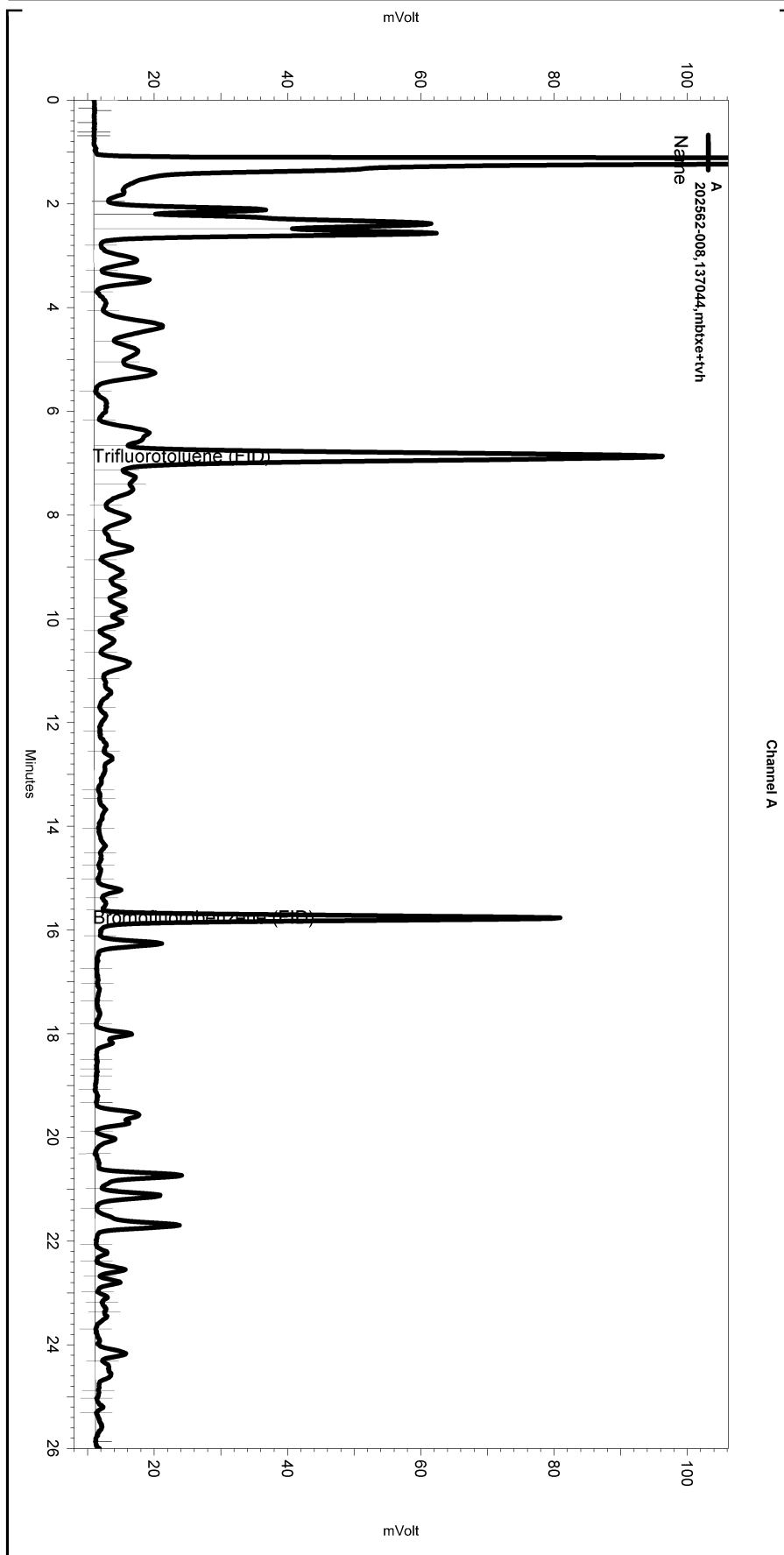
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 Data File: \\Lims\gdrive\ezchrom\Projects\GC19\Data\106\_020  
 Instrument: GC19 (Offline) Vial: N/A Operator: Tvh 2. Analyst (lims2k3\tvh2)  
 Method Name: \\Lims\gdrive\ezchrom\Projects\GC19\Method\TVHBTXE079.met

Software Version 3.1.7  
 Run Date: 4/15/2008 11:08:06 PM  
 Analysis Date: 4/16/2008 8:05:01 AM  
 Sample Amount: 5 Multiplier: 5  
 Vial & pH or Core ID: a1.3



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 Integration Events  
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Yes	Threshold	0	0	50

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 Manual Integration Fixes  
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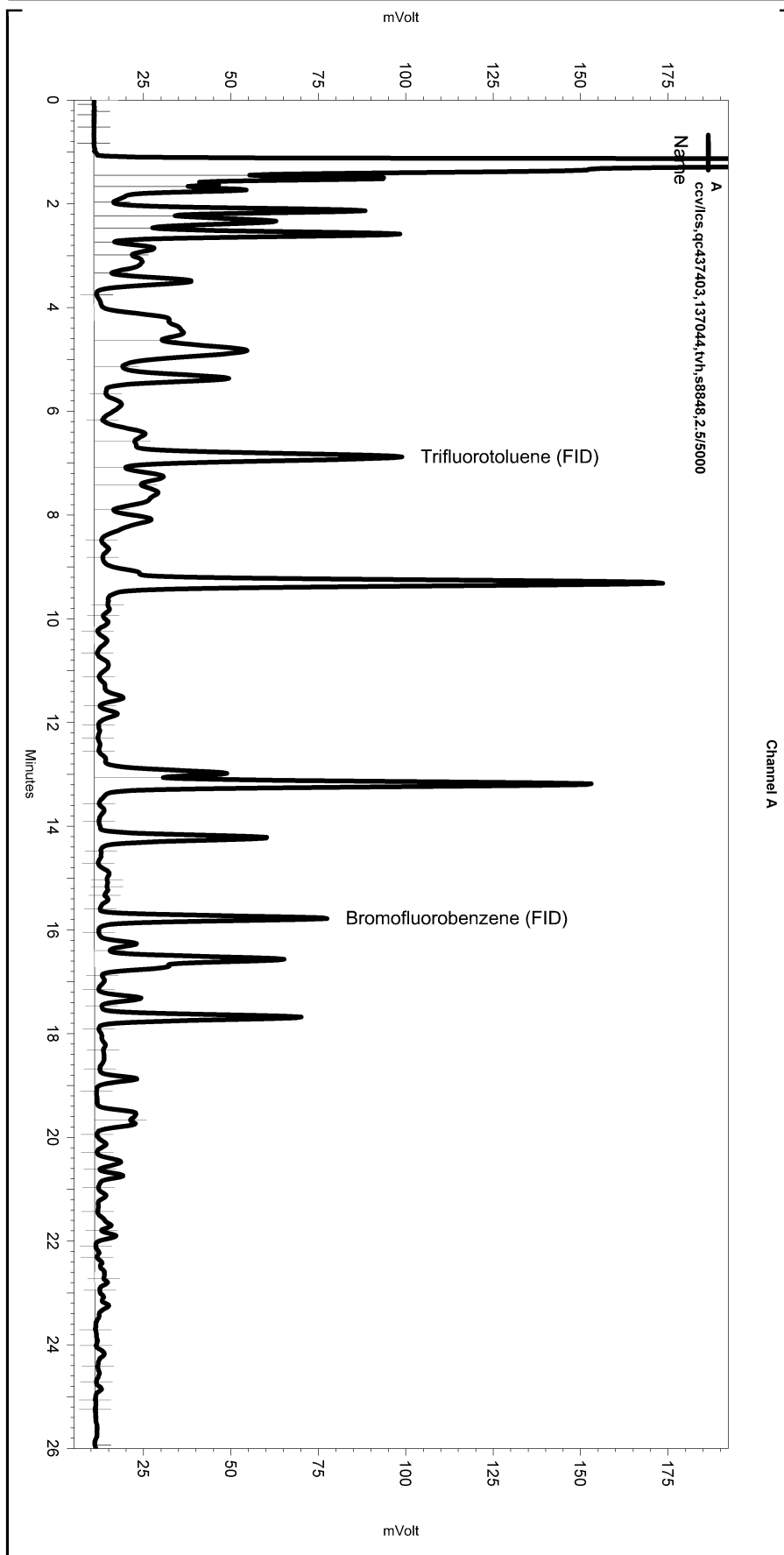
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 Data File: \\Lims\gdrive\ezchrom\Projects\GC19\Data\106\_005  
 Instrument: GC19 (Offline) Vial: N/A Operator: Tvh 2. Analyst (lims2k3\tvh2)  
 Method Name: \\Lims\gdrive\ezchrom\Projects\GC19\Method\tvhbtxe079.met

Software Version 3.1.7  
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 Analysis Date: 4/16/2008 8:04:05 AM  
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 Vial & pH or Core ID: {Data Description}



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Integration Events

Enabled	Event Type	Start (Minutes)	Stop (Minutes)	Value
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Yes	Threshold	0	0	50

Manual Integration Fixes

Data File: \\Lims\gdrive\ezchrom\Projects\GC19\Data\106\_005

Enabled	Event Type	Start (Minutes)	Stop (Minutes)	Value
None				

### Gasoline Oxygenates by GC/MS

Lab #: 202562	Location: USTCF Claim #018639
Client: Stellar Environmental Solutions	Prep: EPA 5030B
Project#: 2005-65	Analysis: EPA 8260B
Matrix: Water	Sampled: 04/10/08
Units: ug/L	Received: 04/11/08
Diln Fac: 1.000	

Field ID: MW-1B	Batch#: 137008
Type: SAMPLE	Analyzed: 04/14/08
Lab ID: 202562-001	

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	ND	10
MTBE	7.8	0.5
Isopropyl Ether (DIPE)	ND	0.5
Ethyl tert-Butyl Ether (ETBE)	ND	0.5
Methyl tert-Amyl Ether (TAME)	ND	0.5
1,2-Dichloroethane	4.8	0.5
1,2-Dibromoethane	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	106	80-123
1,2-Dichloroethane-d4	115	76-138
Toluene-d8	105	80-120
Bromofluorobenzene	112	80-120

Field ID: MW-2B	Batch#: 136999
Type: SAMPLE	Analyzed: 04/13/08
Lab ID: 202562-003	

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	ND	10
MTBE	1.7	0.5
Isopropyl Ether (DIPE)	ND	0.5
Ethyl tert-Butyl Ether (ETBE)	ND	0.5
Methyl tert-Amyl Ether (TAME)	ND	0.5
1,2-Dichloroethane	ND	0.5
1,2-Dibromoethane	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	100	80-123
1,2-Dichloroethane-d4	105	76-138
Toluene-d8	102	80-120
Bromofluorobenzene	109	80-120

ND= Not Detected  
 RL= Reporting Limit



### Gasoline Oxygenates by GC/MS

Lab #: 202562	Location: USTCF Claim #018639
Client: Stellar Environmental Solutions	Prep: EPA 5030B
Project#: 2005-65	Analysis: EPA 8260B
Matrix: Water	Sampled: 04/10/08
Units: ug/L	Received: 04/11/08
Diln Fac: 1.000	

Type: BLANK	Batch#: 137008
Lab ID: QC437239	Analyzed: 04/14/08

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	ND	10
MTBE	ND	0.5
Isopropyl Ether (DIPE)	ND	0.5
Ethyl tert-Butyl Ether (ETBE)	ND	0.5
Methyl tert-Amyl Ether (TAME)	ND	0.5
1,2-Dichloroethane	ND	0.5
1,2-Dibromoethane	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	106	80-123
1,2-Dichloroethane-d4	115	76-138
Toluene-d8	103	80-120
Bromofluorobenzene	110	80-120

ND= Not Detected  
 RL= Reporting Limit

**Batch QC Report**

<b>Gasoline Oxygenates by GC/MS</b>			
Lab #:	202562	Location:	USTCF Claim #018639
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2005-65	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	136999
Units:	ug/L	Analyzed:	04/13/08
Diln Fac:	1.000		

Type: BS Lab ID: QC437207

Analyte	Spiked	Result	%REC	Limits
tert-Butyl Alcohol (TBA)	46.88	48.35	103	55-158
MTBE	9.375	9.327	99	60-136
Isopropyl Ether (DIPE)	9.375	9.270	99	63-122
Ethyl tert-Butyl Ether (ETBE)	9.375	9.319	99	62-133
Methyl tert-Amyl Ether (TAME)	9.375	9.794	104	69-137

Surrogate	%REC	Limits
Dibromofluoromethane	102	80-123
1,2-Dichloroethane-d4	111	76-138
Toluene-d8	103	80-120
Bromofluorobenzene	108	80-120

Type: BSD Lab ID: QC437208

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
tert-Butyl Alcohol (TBA)	46.88	46.38	99	55-158	4	20
MTBE	9.375	9.298	99	60-136	0	20
Isopropyl Ether (DIPE)	9.375	9.421	100	63-122	2	20
Ethyl tert-Butyl Ether (ETBE)	9.375	9.182	98	62-133	1	20
Methyl tert-Amyl Ether (TAME)	9.375	9.707	104	69-137	1	20

Surrogate	%REC	Limits
Dibromofluoromethane	102	80-123
1,2-Dichloroethane-d4	108	76-138
Toluene-d8	102	80-120
Bromofluorobenzene	108	80-120

RPD= Relative Percent Difference

Batch QC Report

Gasoline Oxygenates by GC/MS			
Lab #:	202562	Location:	USTCF Claim #018639
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2005-65	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	137008
Units:	ug/L	Analyzed:	04/14/08
Diln Fac:	1.000		

Type: BS Lab ID: QC437240

Analyte	Spiked	Result	%REC	Limits
tert-Butyl Alcohol (TBA)	50.00	50.08	100	55-158
MTBE	10.00	9.774	98	60-136
Isopropyl Ether (DIPE)	10.00	9.831	98	63-122
Ethyl tert-Butyl Ether (ETBE)	10.00	9.674	97	62-133
Methyl tert-Amyl Ether (TAME)	10.00	10.24	102	69-137

Surrogate	%REC	Limits
Dibromofluoromethane	103	80-123
1,2-Dichloroethane-d4	111	76-138
Toluene-d8	102	80-120
Bromofluorobenzene	107	80-120

Type: BSD Lab ID: QC437241

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
tert-Butyl Alcohol (TBA)	50.00	48.94	98	55-158	2	20
MTBE	10.00	9.855	99	60-136	1	20
Isopropyl Ether (DIPE)	10.00	9.921	99	63-122	1	20
Ethyl tert-Butyl Ether (ETBE)	10.00	9.861	99	62-133	2	20
Methyl tert-Amyl Ether (TAME)	10.00	10.33	103	69-137	1	20

Surrogate	%REC	Limits
Dibromofluoromethane	103	80-123
1,2-Dichloroethane-d4	112	76-138
Toluene-d8	101	80-120
Bromofluorobenzene	108	80-120

RPD= Relative Percent Difference

# 202562 Chain of Custody Record

Laboratory Curtis & Thompkins  
 Address 2323 Fifth St.  
Berkeley, CA  
 Project Owner Larry Wadler  
 Site Address 2836 Union St.  
Oakland CA  
 Project Name USTCF CLAIM # 018639  
 Project Number 2025-65

Method of Shipment LAB PICKUP  
 Shipment No. \_\_\_\_\_  
 Airbill No. \_\_\_\_\_  
 Cooler No. \_\_\_\_\_  
 Project Manager R. Makdisi  
 Telephone No. (510) 644-3123  
 Fax No. (510) 644-3859  
 Samplers: (Signature) [Signature]

Lab job no. 080410-1W-1  
 Date 4/10/08  
 Page 1 of 1

Filtered	No. of Containers	Analysis Required										Remarks	
		TPH	LE	BTX	MTBE	EDC	FDS	by 8015B	by 8260B	by 8260B	by 8260B		by 8260B
X	X	X	X	X	X	X	X	X	X	X	X		
X	X	X	X	X	X	X	X	X	X	X	X		
X	X	X	X	X	X	X	X	X	X	X	X		
X	X	X	X	X	X	X	X	X	X	X	X		
X	X	X	X	X	X	X	X	X	X	X	X		
X	X	X	X	X	X	X	X	X	X	X	X		
X	X	X	X	X	X	X	X	X	X	X	X		
X	X	X	X	X	X	X	X	X	X	X	X		

-1  
-2  
-3  
-4  
-5  
-6  
-7  
-8

Field Sample Number	Location/Depth	Date	Time	Sample Type	Type/Size of Container	Preservation										
						Cooler	Chemical									
MW-1B		4/10/08	1339	W	6 HCL VOAS	X	HCL									
MW-2A			1245		6 HCL VOAS	X	HCL									
MW-2B			1220		6 HCL VOAS	X	HCL									
MW-3A			1619		6 HCL VOAS	X	HCL									
MW-3B			1438		6 HCL VOAS	X	HCL									
MW-4A			1600		1 HCL VOA	X	HCL									
MW-4B			1404		6 HCL VOAS	X	HCL									
MW-5B			1510		6 HCL VOAS	X	HCL									

Relinquished by: Signature <u>[Signature]</u> Printed <u>IAN WILLIAMS</u> Company <u>BLAINETECH SERVICES</u>	Date <u>4/10/08</u> Time <u>1820</u>	Received by: Signature <u>[Signature]</u> Printed <u>IAN WILLIAMS</u> Company <u>BLAINETECH SERVICES</u>	Date <u>4/10/08</u> Time <u>1920</u>	Relinquished by: Signature <u>[Signature]</u> Printed <u>Michael Alambata</u> Company <u>BTS</u>	Date <u>4/10/08</u> Time <u>1240</u>	Received by: Signature <u>[Signature]</u> Printed <u>APRIL POWELL</u> Company <u>CFT</u>	Date <u>4/10/08</u> Time <u>1240</u>				
Turnaround Time: _____ Comments: _____				Relinquished by: Signature _____ Printed _____ Company _____				Received by: Signature _____ Printed _____ Company _____			

★ Stellar Environmental Solutions

2198 Sixth Street #201, Berkeley, CA 94710

TEMP = 9.2°C  
 KWW 4/10/08 1445

2000-00-01

# COOLER RECEIPT CHECKLIST



Curtis & Tompkins, Ltd.

Login # 202562 Date Received 4/11/08 Number of coolers 1  
 Client Stellar Project WSTCF Claim # 018639

Date Opened 4/11 By (print) K Wellbrock (sign) [Signature]  
 Date Logged in ↓ By (print) K Wellbrock (sign) [Signature]

1. Did cooler come with a shipping slip (airbill, etc)?..... YES  NO

Shipping info \_\_\_\_\_

2A. Were custody seals present? ....  YES (circle) on cooler on samples  NO  
 How many \_\_\_\_\_ Name \_\_\_\_\_ Date \_\_\_\_\_

2B. Were custody seals intact upon arrival? ..... YES NO  N/A

3. Were custody papers dry and intact when received?.....  YES NO

4. Were custody papers filled out properly (ink, signed, etc)?.....  YES NO

5. Is the project identifiable from custody papers? (If so fill out top of form).....  YES NO

6. Indicate the packing in cooler: (if other, describe) \_\_\_\_\_

- Bubble Wrap       Foam blocks       Bags       None
- Cloth material       Cardboard       Styrofoam       Paper towels

7. If required, was sufficient ice used? Samples should be < or = 6°C ..... YES NO N/A

Type of ice used:  WET     BLUE     NONE      Temp(°C) 9.5

SAMPLES RECEIVED ON ICE DIRECTLY FROM FIELD. COOLING PROCESS HAD BEGUN.

*temp began upon courier pick-up of samples*

8. Were soil Encore sampling devices present? ..... YES  NO

If YES, what time were they transferred to freezer? \_\_\_\_\_

9. Did all bottles arrive unbroken/unopened?.....  YES NO

10. Are samples in the appropriate containers for indicated tests? .....  YES NO

11. Are sample labels present, in good condition and complete? .....  YES NO

12. Do the sample labels agree with custody papers? .....  YES NO

13. Was sufficient amount of sample sent for tests requested? .....  YES NO

14. Are the samples appropriately preserved? .....  YES NO N/A

15. Are bubbles absent in VOA samples?.....  YES NO N/A

16. Was the client contacted concerning this sample delivery?..... YES NO

If YES, Who was called? \_\_\_\_\_ By \_\_\_\_\_ Date: \_\_\_\_\_

## COMMENTS

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**APPENDIX D**

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**HISTORICAL GROUNDWATER  
ELEVATION DATA**

**TABLE A**  
**Historical Groundwater Monitoring Well Elevation Data**  
**2836 Union Street, Oakland, California**

MW-1A			
Sampling Event No.	Date Measured	Water Level Depth (a)	Water Level Elevation (b)
1	Oct-06	dry	dry
2	Jan-07	9.80	2.45
3	Apr-07	7.49	4.76
4	Jul-07	7.16	5.09
5	Oct-07	7.29	4.96
6	Jan-08	6.82	5.70
7	Apr-08	6.32	5.70

MW-1B			
Sampling Event No.	Date Measured	Water Level Depth (a)	Water Level Elevation (b)
1	Oct-06	7.44	4.56
2	Jan-07	6.40	5.65
3	Apr-07	6.42	5.63
4	Jul-07	7.19	4.86
5	Oct-07	7.10	4.95
6	Jan-08	5.81	6.67
7	Apr-08	6.82	5.23

MW-2A			
Sampling Event No.	Date Measured	Water Level Depth (a)	Water Level Elevation (b)
1	Oct-06	7.93	4.87
2	Jan-07	6.58	6.24
3	Apr-07	6.52	6.30
4	Jul-07	7.37	5.45
5	Oct-07	7.33	5.49
6	Jan-08	5.50	7.56
7	Apr-08	6.86	5.96

Notes:

(a) Feet below top of well casing.

(b) Relative to mean sea level.

<b>MW-2B</b>			
<b>Sampling Event No.</b>	<b>Date Measured</b>	<b>Water Level Depth (a)</b>	<b>Water Level Elevation (b)</b>
1	Oct-06	7.90	5.06
2	Jan-07	6.59	6.37
3	Apr-07	6.20	6.76
4	Jul-07	7.33	5.63
5	Oct-07	7.12	5.84
6	Jan-08	5.51	7.65
7	Apr-08	6.56	6.4

<b>MW-3A</b>			
<b>Sampling Event No.</b>	<b>Date Measured</b>	<b>Water Level Depth (a)</b>	<b>Water Level Elevation (b)</b>
1	Oct-06	dry	dry
2	Jan-07	6.32	5.27
3	Apr-07	5.75	5.84
4	Jul-07	6.19	5.40
5	Oct-07	6.50	5.09
6	Jan-08	5.69	6.07
7	Apr-08	5.94	5.65

<b>MW-3B</b>			
<b>Sampling Event No.</b>	<b>Date Measured</b>	<b>Water Level Depth (a)</b>	<b>Water Level Elevation (b)</b>
1	Oct-06	7.34	4.61
2	Jan-07	6.41	5.54
3	Apr-07	6.39	5.56
4	Jul-07	7.15	4.80
5	Oct-07	7.11	4.84
6	Jan-08	5.60	6.50
7	Apr-08	6.77	5.18

<b>MW-4A</b>			
<b>Sampling Event No.</b>	<b>Date Measured</b>	<b>Water Level Depth (a)</b>	<b>Water Level Elevation (b)</b>
1	Oct-06	9.74	1.28
2	Jan-07	5.64	5.38
3	Apr-07	5.34	5.68
4	Jul-07	5.71	5.31
5	Oct-07	6.09	4.93
6	Jan-08	5.53	5.72
7	Apr-08	5.56	5.46

Notes:

(a) Feet below top of well casing.

(b) Relative to mean sea level.

<b>MW-4B</b>			
<b>Sampling Event No.</b>	<b>Date Measured</b>	<b>Water Level Depth (a)</b>	<b>Water Level Elevation (b)</b>
1	Oct-06	6.63	4.41
2	Jan-07	5.55	5.49
3	Apr-07	5.45	5.59
4	Jul-07	6.28	4.76
5	Oct-07	6.13	4.91
6	Jan-08	4.81	6.44
7	Apr-08	5.90	5.14

<b>MW-5A</b>			
<b>Sampling Event No.</b>	<b>Date Measured</b>	<b>Water Level Depth (a)</b>	<b>Water Level Elevation (b)</b>
1	Oct-06	9.60	2.82
2	Jan-07	6.72	6.10
3	Apr-07	5.74	6.68
4	Jul-07	6.98	5.44
5	Oct-07	8.32	4.10
<i>Well Destroyed November 2007</i>			

<b>MW-5B</b>			
<b>Sampling Event No.</b>	<b>Date Measured</b>	<b>Water Level Depth (a)</b>	<b>Water Level Elevation (b)</b>
1	Oct-06	9.07	3.31
2	Jan-07	6.45	5.93
3	Apr-07	6.45	5.93
4	Jul-07	7.15	5.23
5	Oct-07	7.28	5.10
6	Jan-08	4.94	7.63
7	Apr-08	6.51	5.87

Notes:

(a) Feet below top of well casing.

(b) Relative to mean sea level.

## **APPENDIX E**

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# **HISTORICAL ANALYTICAL RESULTS**

**TABLE B**  
**Historical Groundwater Monitoring Well Groundwater Analytical Results**  
**Petroleum and Aromatic Hydrocarbons (µg/L)**  
**2836 Union Street, Oakland, California**

MW-1A							
Sampling Event No.	Date Sampled	TVH-g	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE
1	Oct-06	NS	NS	NS	NS	NS	NS
2	Jan-07	790	94	< 0.5	8.6	< 0.5	100
3	Apr-07	760	63	<0.5	1.9	<0.5	150
4	Jul-07	NS	NS	NS	NS	NS	NS
5	Oct-07	830	28	<0.7	13	<0.7	110
6	Jan-08	720	8.1	< 0.5	< 0.5	< 0.5	130
7	Apr-08	NS	NS	NS	NS	NS	NS

MW-1B							
Sampling Event No.	Date Sampled	TVH-g	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE
1	Oct-06	350	<1.3	<1.3	<1.3	<1.3	2.7
2	Jan-07	350	<1.3	<1.3	<1.3	<1.3	3.6
3	Apr-07	320	<0.5	<0.5	<0.5	<0.5	4.2
4	Jul-07	200	<1.3	<1.3	<1.3	<1.3	3.2
5	Oct-07	230	<0.7	<0.7	<0.7	<0.7	6.0
6	Jan-08	400	< 0.5	< 0.5	< 0.5	< 0.5	6.2
7	Apr-08	350	<0.5	<0.5	<0.5	<0.5	7.8

MW-2A							
Sampling Event No.	Date Sampled	TVH-g	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE
1	Oct-06	80	<0.5	<0.5	<0.5	<0.5	<0.5
2	Jan-07	490	<0.5	<0.5	<0.5	<0.5	<0.5
3	Apr-07	83	<0.5	<0.5	<0.5	<0.5	<0.5
4	Jul-07	<50	<0.5	<0.5	<0.5	<0.5	<0.5
5	Oct-07	<50	<0.5	<0.5	<0.5	<0.5	<0.5
6	Jan-08	<50	<0.5	<0.5	<0.5	<0.5	<2.0
7	Apr-08	160	<0.5	<0.5	<0.5	<0.5	3.0

MW-2B							
Sampling Event No.	Date Sampled	TVH-g	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE
1	Oct-06	NS	NS	NS	NS	NS	NS
2	Jan-07	2,000	<0.5	1.1	6.7	0.8	19
3	Apr-07	84	<0.5	<0.5	<0.5	<0.5	18
4	Jul-07	580	<0.5	<0.5	<0.5	<0.5	6.0
5	Oct-07	1,700	<0.5	<0.5	<0.5	<0.5	83
6	Jan-08	780	< 0.5	< 0.5	< 0.5	< 0.5	32
7	Apr-08	92	<0.5	<0.5	<0.5	<0.5	2.4

MW-3A							
Sampling Event No.	Date Sampled	TVH-g	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE
1	Oct-06	NS	NS	NS	NS	NS	NS
2	Jan-07	NS	NS	NS	NS	NS	NS
3	Apr-07	<50	<0.5	<0.5	<0.5	<0.5	75
4	Jul-07	NS	NS	NS	NS	NS	NS
5	Oct-07	<50	<0.5	<0.5	<0.5	<0.5	<0.5
6	Jan-08	<50	<0.5	<0.5	<0.5	<0.5	70
7	Apr-08	<50	<0.5	<0.5	<0.5	<0.5	77

MW-3B							
Sampling Event No.	Date Sampled	TVH-g	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE
1	Oct-06	1,900	<10	<10	<10	<10	<10
2	Jan-07	1,900	<8.3	<8.3	<8.3	<8.3	<8.3
3	Apr-07	1,900	<0.5	<0.5	<0.5	<0.5	<0.5
4	Jul-07	1,200	<2.0	<2.0	<2.0	<2.0	<2.0
5	Oct-07	2,100	<7.1	<7.1	<7.1	<7.1	<7.1
6	Jan-08	2,100	<0.5	<0.5	<0.5	<0.5	<2.0
7	Apr-08	1,800	<0.5	<0.5	<0.5	<0.5	<2.0

MW-4A							
Sampling Event No.	Date Sampled	TVH-g	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE
1	Oct-06	NS	NS	NS	NS	NS	NS
2	Jan-07	<50	<0.5	<0.5	<0.5	<0.5	72
3	Apr-07	<50	<0.5	0.6	<0.5	0.6	77
4	Jul-07	<50	<0.5	<0.5	<0.5	<0.5	64
5	Oct-07	<50	<0.5	<0.5	<0.5	<0.5	73
6	Jan-08	NS	NS	NS	NS	NS	NS
7	Apr-08	<50	<0.5	<0.5	<0.5	<0.5	61

MW-4B							
Sampling Event No.	Date Sampled	TVH-g	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE
1	Oct-06	1,100	<2.5	<2.5	<2.5	<2.5	<2.5
2	Jan-07	1,300	<4.2	<4.2	<4.2	<4.2	<4.2
3	Apr-07	1,300	<0.5	<0.5	<0.5	<0.5	<0.5
4	Jul-07	1,000	<4.2	<4.2	<4.2	<4.2	<4.2
5	Oct-07	1,400	<4.2	<4.2	<4.2	<4.2	<4.2
6	Jan-08	1,500	<0.5	<0.5	<0.5	<0.5	<2.0
7	Apr-08	1,500	<0.5	<0.5	<0.5	<0.5	<2.0

MW-5A							
Sampling Event No.	Date Sampled	TVH-g	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE
1	Oct-06	NS	NS	NS	NS	NS	NS
2	Jan-07	NS	NS	NS	NS	NS	NS
3	Apr-07	1,000	6.6	<0.5	29	7.6	79
4	Jul-07	NS	NS	NS	NS	NS	NS
5	Oct-07	820	6.6	<0.5	6.6	1.8	78
<i>Well Destroyed in November 2007</i>							

MW-5B							
Sampling Event No.	Date Sampled	TVH-g	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE
1	Oct-06	13,000	9.6	0.6	21	1.9	37
2	Jan-07	6,600	4.0	<0.5	10	1.0	22
3	Apr-07	3,300	0.7	<0.5	2.7	<0.5	<0.5
4	Jul-07	2,000	1.1	<0.5	2.2	<0.5	26
5	Oct-07	1,200	<0.5	<0.5	<0.5	<0.5	45
6	Jan-08	1,200	<0.5	<0.5	4.1	<0.5	69
7	Apr-08	240	<0.5	<0.5	<0.5	<0.5	65

Notes:

All concentrations reported in micrograms per liter.

TVH-g = Total volatile hydrocarbons – gasoline range.

NS = Not sampled