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# **THIRD QUARTER 2008 SITE MONITORING REPORT**

**REDWOOD REGIONAL PARK  
SERVICE YARD  
OAKLAND, CALIFORNIA**

*Prepared for:*

**EAST BAY REGIONAL PARK DISTRICT  
OAKLAND, CALIFORNIA**

**October 2008**

**THIRD QUARTER 2008  
SITE MONITORING REPORT**

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SERVICE YARD  
OAKLAND, CALIFORNIA**

*Prepared for:*

**EAST BAY REGIONAL PARK DISTRICT  
P.O. BOX 5381  
OAKLAND, CALIFORNIA 94605**

*Prepared by:*

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

**October 7, 2008**

Project No. 2008-02

October 7, 2008

Mr. Jerry Wickham, P.G.  
Hazardous Materials Specialist, Local Oversight Program  
Alameda County Department of Environmental Health  
1131 Harbor Bay Parkway, Suite 250  
Alameda, California 94502

Subject: Third Quarter 2008 Site Monitoring Report  
Redwood Regional Park Service Yard Site – Oakland, California  
ACEH Fuel Leak Case No. RO0000246

Dear Mr. Wickham:

Attached is the referenced Stellar Environmental Solutions, Inc. report for the underground fuel storage tank (UFST) site at the Redwood Regional Park Service Yard, located at 7867 Redwood Road, Oakland, California. This project is being conducted for the East Bay Regional Park District (EBRPD), and follows previous site investigation and remediation activities (conducted since 1993) associated with former leaking UFSTs. The key regulatory agencies for this investigation are the Alameda County Department of Environmental Health, the Regional Water Quality Control Board, and the California Department of Fish and Game.

This report summarizes groundwater and surface monitoring and sampling activities between July 1 and September 30, 2008 (Third Quarter 2008) with an additional discussion of purging and sampling activities on monitoring well MW-2 conducted July 7 and August 14, 2008. Remedial bioventing activities are reported in separate technical submittals; however, these activities are summarized in the quarterly groundwater monitoring report.

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

Sincerely,



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

cc: Carl Wilcox, California Department of Fish and Game  
Neal Fujita, East Bay Regional Park District  
State of California GeoTracker System  
ACEH ftp System



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## **1.0 INTRODUCTION**

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### **PROJECT BACKGROUND**

The subject property is the East Bay Regional Park District (EBRPD) Redwood Regional Park Service Yard, located at 7867 Redwood Road in Oakland, Alameda County, California. The site has undergone site investigations and remediation since 1993 to address subsurface contamination caused by leakage from one or both of two former underground fuel storage tanks (UFSTs) that contained gasoline and diesel fuel. The Alameda County Department of Environmental Health (ACEH) has provided regulatory oversight of the investigation since its inception (ACEH Fuel Leak Case No. RO0000246). Other regulatory agencies with historical involvement in site review include the Regional Water Quality Control Board (Water Board) and the California Department of Fish and Game (CDFG).

### **OBJECTIVES AND SCOPE OF WORK**

This report discusses the following activities conducted/coordinated by Stellar Environmental Solutions, Inc. (SES) between July 1 and September 30, 2008:

- Collecting water levels in site wells to determine shallow groundwater flow direction
- Sampling site wells for contaminant analysis and natural attenuation indicators
- Collecting surface water samples for contaminant analysis
- Conducting additional groundwater purging and sampling from monitoring well MW-2

### **HISTORICAL CORRECTIVE ACTIONS AND INVESTIGATIONS**

Previous SES reports have discussed previous site remediation and investigations, site geology and hydrogeology, residual site contamination, conceptual model for contaminant fate and transport, and hydrochemical trends and plume stability. Section 7.0 (References and Bibliography) of this report lists all technical reports for the site.

The general phases of site work included:

- An October 2000 Feasibility Study report for the site submitted to ACEH, which provided detailed analyses of the regulatory implications of the site contamination and an assessment of viable corrective actions (SES, 2000d).
- Two instream bioassessment events, conducted in April 1999 and January 2000, to evaluate potential impacts to stream biota associated with the site contamination. No impacts were documented.
- Additional monitoring well installations and corrective action by ORC™ injection proposed by SES and approved by ACEH in its January 8, 2001 letter to the EBRPD. Two phases of ORC™ injection were conducted—in September 2001 and July 2002.
- A total of 47 groundwater monitoring events, conducted on a quarterly basis since project inception (November 1994). A total of 11 groundwater monitoring wells are currently available for monitoring.
- A bioventing pilot test conducted in September and October 2004 to evaluate the feasibility of this corrective action strategy, and installation of the full-scale bioventing system in November and December 2005. Two additional bioventing wells (VW-4 and VW-5) were installed on March 4, 2008. However, the bioventing remedy has not been effective to date. Bioventing activities conducted to date have been, and will continue to be, discussed in bioventing-specific technical reports, and updates will be provided in groundwater monitoring progress reports as they relate to this ongoing program.

## **SITE DESCRIPTION**

Figure 1 shows the location of the project site. The site slopes to the west, from an elevation of approximately 564 feet above mean sea level (amsl) at the eastern edge of the service yard to approximately 530 feet amsl at Redwood Creek, which defines the approximate western edge of the project site with regard to this investigation. Figure 2 shows the site plan.

## **REGULATORY OVERSIGHT**

The lead regulatory agency for the site investigation and remediation is ACEH (Case No. RO0000246), with oversight provided by the Water Board (GeoTracker Global ID T0600100489). The CDFG is also involved with regard to water quality impacts to Redwood Creek. All workplans and reports have been submitted to these agencies. Historical ACEH-approved revisions to the groundwater sampling program have included:

- Discontinuing hydrochemical sampling and analysis in wells MW-1, MW-3, MW-5, and MW-6
- Discontinuing creek surface water sampling at upstream location SW-1





3-D TopoQuads Copyright © 1999 DeLorme Yarmouth, ME 04096 Source Data: USGS 750 ft Scale: 1 : 25,000 Detail: 13-0 Datum: WGS84



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

Redwood Reg. Park Service Yard  
Oakland, CA

By: MJC

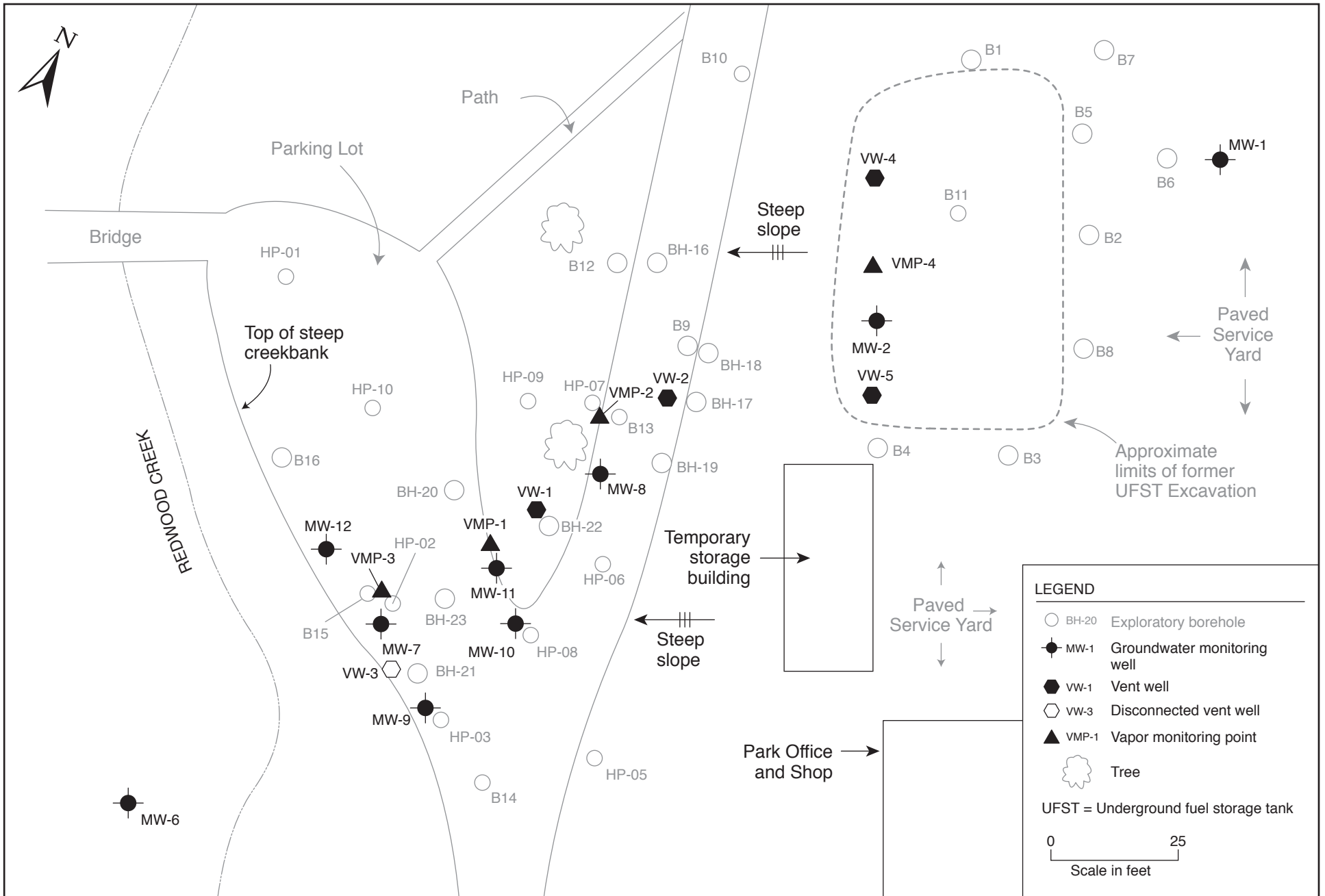
MARCH 2006

Figure 1



2006-17-01





2008-02-02

- Discontinuing field measurement and laboratory analyses for natural attenuation indicators, to be re-implemented following the bioventing corrective action
- Reducing the frequency of creek surface water sampling from quarterly to semi-annually (this recommendation has not yet been implemented due to the EBRPD's continued concern over potential impacts to Redwood Creek)

The site is in compliance with State of California GeoTracker requirements for uploading of electronic data and reports. In addition, electronic copies of technical documentation reports published since Q2-2005 have been uploaded to ACEH's file transfer protocol (ftp) system.

## 2.0 PHYSICAL SETTING

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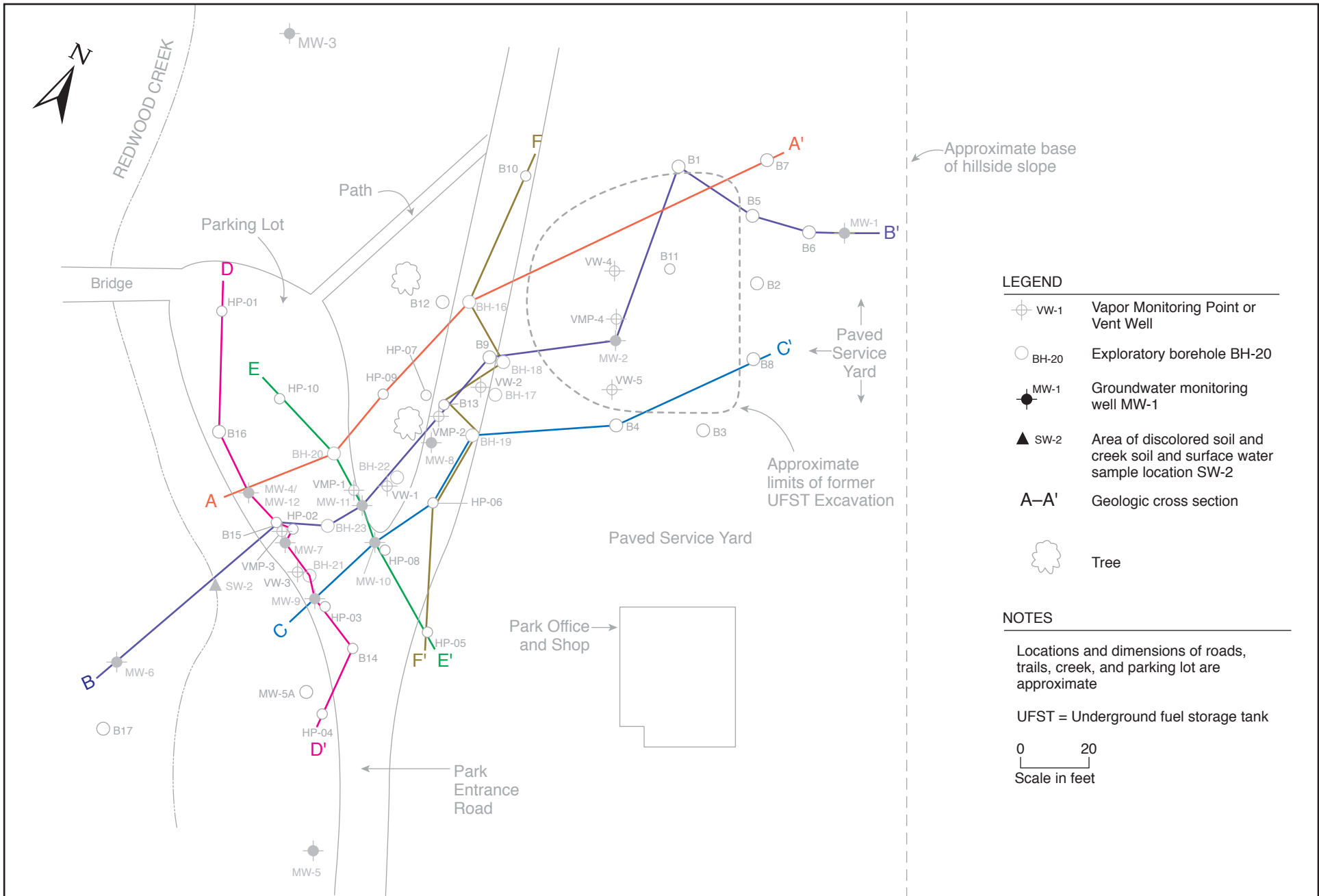
This section discusses the site hydrogeologic conditions based on geologic logging and water level measurements collected at the site since September 1993. Previous SES reports have included detailed discussions of site lithologic and hydrogeologic conditions. In May 2004, ACEH (via email) requested additional evaluation of site lithology—specifically, the preparation of multiple geologic cross-sections parallel to and perpendicular to the contaminant plume's long axis.

### SITE LITHOLOGY

Figure 3 presents the locations of the geologic cross-sections. Figure 4 shows three sub-parallel geologic cross-sections (A-A' through C-C') along the long axis of the groundwater contaminant plume (i.e., along local groundwater flow direction). Figure 5 shows three sub-parallel geologic cross-sections (D-D' through F-F') roughly perpendicular to groundwater direction. In each figure, the three sub-parallel sections are presented together for ease of comparison. Due to the small scale, these sections show only lithologic conditions (i.e., soil type and bedrock depth). Additional information on water level depths, historical range of water levels, and inferred thickness of soil contamination was presented in a previous report (SES, 2004c) for cross-section B-B'.

Shallow soil stratigraphy consists of a surficial 3- to 10-foot-thick clayey silt unit underlain by a 5- to 15-foot-thick silty clay unit. In the majority of boreholes, a 5- to 10-foot-thick clayey coarse-grained sand and clayey gravel unit that laterally grades to a clay or silty clay was encountered. This unit overlies a weathered siltstone at the base of the observed soil profile. Soils in the vicinity of MW-1 are inferred to be landslide debris.

A previous SES report (SES, 2004c) presented a bedrock surface isopleth map (elevation contours for top of the bedrock surface) in the contaminant plume area. That isopleth map, as well as Figures 4 and 5 from this report, indicate the following: the bedrock surface slopes steeply, approximately 0.3 feet/foot from east to west (toward Redwood Creek) in the upgradient portion of the site (from the service yard to under the entrance road), then gently slopes east-to-west in the downgradient portion of the site (under the gravel parking area) toward Redwood Creek. This general gradient corresponds to the local groundwater flow direction. On the southern side of the plume area, bedrock slopes gently south-to-north (the opposite of the general topographic gradient). Bedrock topography on the northern side of the plume cannot be determined from the available data.



**LEGEND**

- vw-1 Vapor Monitoring Point or Vent Well
- BH-20 Exploratory borehole BH-20
- MW-1 Groundwater monitoring well MW-1
- SW-2 Area of discolored soil and creek soil and surface water sample location SW-2
- A-A'** Geologic cross section
- Tree

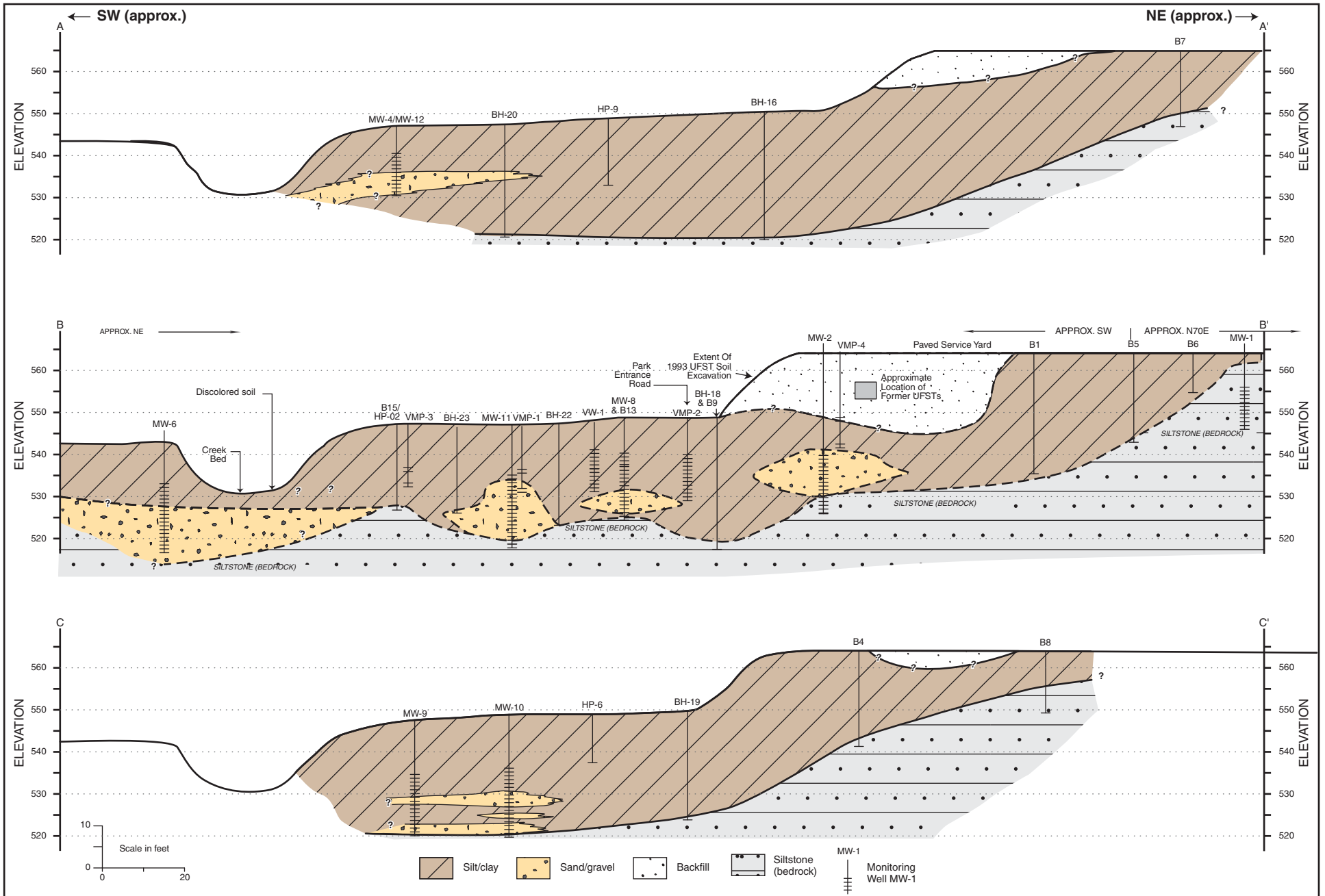
**NOTES**

Locations and dimensions of roads, trails, creek, and parking lot are approximate

UFST = Underground fuel storage tank

0 20  
Scale in feet

2008-02-05

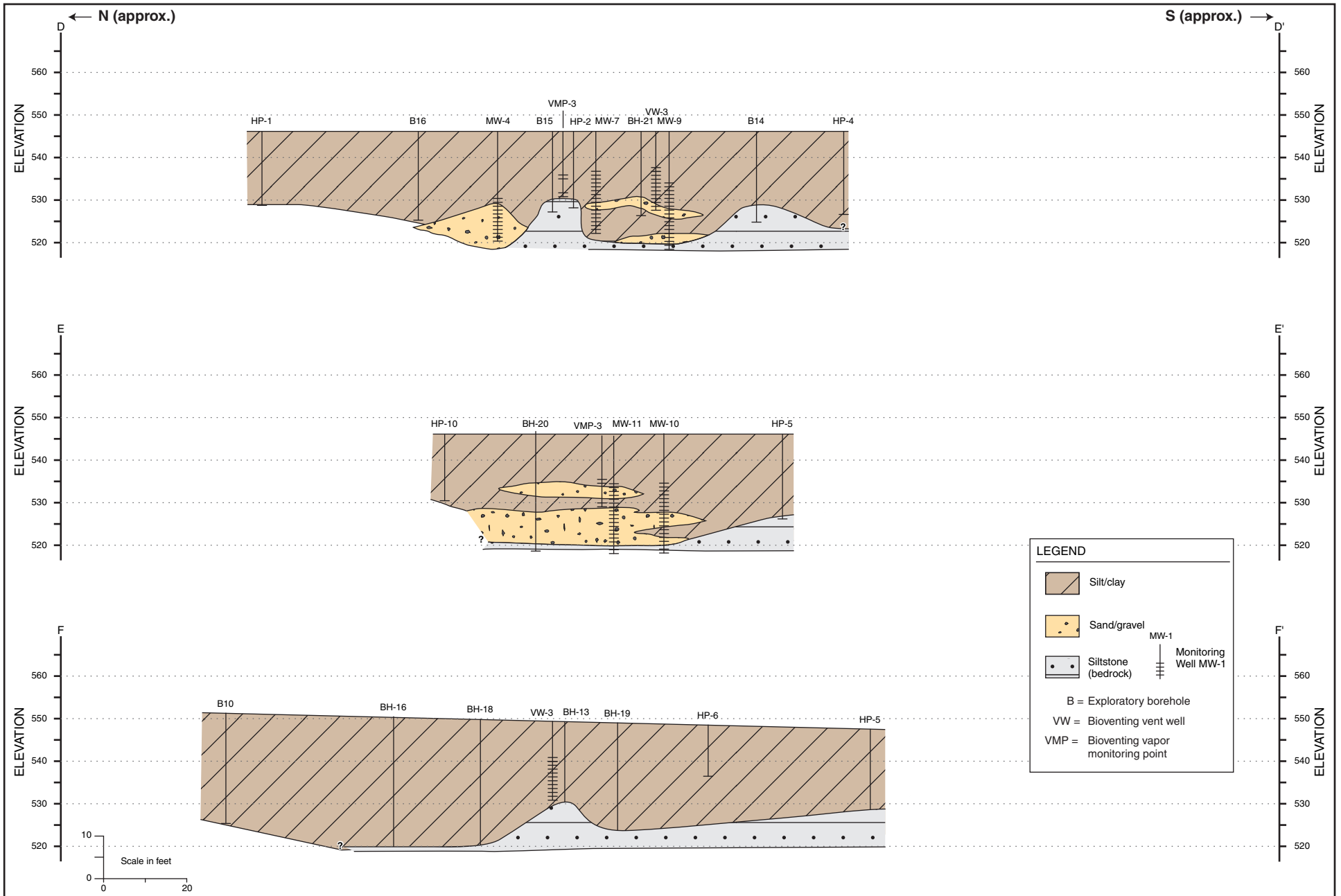


**GEOLOGIC CROSS SECTIONS — A-A' through C-C'**  
**Redwood Regional Park Service Yard, Oakland, CA**

**Figure 4**

by: MJC

DECEMBER 2007



2005-66-13



**GEOLOGIC CROSS SECTIONS — D-D' through F-F'**  
**Redwood Regional Park Service Yard, Oakland, CA**

**Figure 5**

by: MJC

DECEMBER 2005

In the central and downgradient portions of the groundwater contaminant plume (under the entrance road and the parking area), the bedrock surface has local, fairly steep elevation highs and lows, expressing a hummocky surface. Bedrock elevations vary by up to 10 feet over distances of less than 20 feet in this area. Local bedrock elevation highs are observed at upgradient location BH-13 (see cross-section F-F') and at downgradient location B15/HP-02 (see cross-section B-B'). Intervening elevation lows create troughs that trend north-south in the central portion of the plume and east-west in the downgradient portion of the plume.

The bedrock surface (and overlying unconsolidated sediment lithology) suggests that the bedrock surface may have at one time undergone channel erosion from a paleostream(s) flowing sub-parallel to present-day Redwood Creek. Because groundwater flows in the unconsolidated sediments that directly overlie the bedrock surface, it is likely that the hummocky bedrock surface affects local groundwater depth and flow direction. This is an important hydrogeologic control that should be considered in the vent of any groundwater-specific corrective action.

## **HYDROGEOLOGY**

Groundwater at the site occurs under unconfined and semi-confined conditions, generally within the clayey, silty, sand-gravel zone. The top of this zone varies between approximately 12 and 19 feet below ground surface (bgs), and the bottom of the water-bearing zone (approximately 25 to 28 feet bgs) corresponds to the top of the siltstone bedrock unit. Seasonal fluctuations in groundwater depth create a capillary fringe of several feet that is saturated in the rainy period (late fall through early spring) and unsaturated during the remainder of the year. The thickness of the saturated zone plus the capillary fringe varies between approximately 10 and 15 feet in the area of contamination. Local perched water zones have been observed well above the top of the capillary fringe.

Figure 6 is a groundwater elevation map constructed from the current event monitoring well equilibrated water levels. Table 1 (in Section 4.0) summarizes current event groundwater elevation data. Appendix A contains historical groundwater elevation data. Consistent with the bedrock isopleth map showing an elevation depression in the vicinity of MW-11, historical groundwater elevations in MW-11 are sporadically lower than in the surrounding area. As discussed in the previous sub-section, local groundwater flow direction is likely more variable than expressed by groundwater monitoring well data, due to local variations in bedrock surface topography.

In the upgradient portion of the site (between well MW-1 and MW-2, in landslide deposit and the former UFST excavation backfill), the groundwater gradient is approximately 0.21 feet per foot. Downgradient from (west of) the UFST source area (between MW-2 and Redwood Creek), the groundwater gradient is approximately 0.05 feet per foot. The direction of shallow groundwater



flow during the current event was to the west-southwest (toward Redwood Creek), which is consistent with historical site groundwater flow direction.

SES estimated the site groundwater velocity at 7 to 10 feet per year, using general look-up tables for permeability characteristics for the site-specific lithologic data obtained from site investigations. This velocity estimate is conservatively low, but does meet minimum-distance-traveled criteria from the date when contamination was first observed in Redwood Creek (1993) relative to the time of the UFST installations (late 1970s). Locally, however, the groundwater velocity could vary significantly. Calculating the specific hydraulic conductivity critical to accurately estimating site-specific groundwater velocity would require direct testing of the water-bearing zone through a slug or pumping test.

Redwood Creek, which borders the site to the west, is a seasonal creek known for the occurrence of rainbow trout. Creek flow in the vicinity of the site shows significant seasonal variation, with little to no flow during the summer and fall dry season, and vigorous flow with depths exceeding 1 foot during the winter and spring wet season. The creek is a gaining stream (i.e., it is recharged by groundwater seeps and springs) in the vicinity of the site, and discharges into Upper San Leandro Reservoir approximately 1 mile southeast of the site. During low-flow conditions, the groundwater table is below the creek bed in most locations (including the area of historical contaminated groundwater discharge); consequently, there is little to no observable creek flow at these times.

### **3.0 REGULATORY CONSIDERATIONS**

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This section summarizes the regulatory considerations with regard to surface water and groundwater contamination. There are no ACEH or Water Board cleanup orders for the site, although all site work has been conducted under oversight of these agencies.

#### **GROUNDWATER CONTAMINATION**

As specified in the Water Board's *San Francisco Bay Region Water Quality Control Plan* (Water Board, 1995), all groundwaters are considered potential sources of drinking water unless otherwise approved by the Water Board, and are also assumed to ultimately discharge to a surface water body and potentially impact aquatic organisms. While it is likely that site groundwater would satisfy geology-related criteria for exclusion as a drinking water source (excessive total dissolved solids and/or insufficient sustained yield), Water Board approval for this exclusion has not been obtained for the site. As summarized in Table 2 (in Section 5.0), site groundwater contaminant levels are compared to two sets of criteria: 1) Water Board Tier 1 Environmental Screening Levels (ESLs) for residential sites where groundwater is a current or potential drinking water source; and 2) ESLs for residential sites where groundwater is not a current or potential drinking water source.

As stipulated in the ESL guidance (Water Board, 2008), the ESLs are not cleanup criteria; rather, they are conservative screening-level criteria designed to be protective of both drinking water resources and aquatic environments in general. The groundwater ESLs are composed of multiple components, including ceiling value, human toxicity, indoor air impacts, and aquatic life protection. Exceedance of ESLs suggests that additional investigation and/or remediation is warranted. While drinking water standards [e.g., Maximum Contaminant Levels (MCLs)] are published for the site contaminants of concern, ACEH has indicated that impacts to nearby Redwood Creek are of primary importance, and that site target cleanup standards should be evaluated primarily in the context of surface water quality criteria.

#### **SURFACE WATER CONTAMINATION**

As summarized in Table 2 (in Section 5.0), site surface water contaminant levels are compared to the most stringent screening level criteria published by the State of California, U.S. Environmental Protection Agency, and U.S. Department of Energy. These screening criteria address chronic and acute exposures to aquatic life. As discussed in the ESL document (Water Board, 2008), benthic

communities at the groundwater/surface water interface (e.g., at site groundwater discharge location SW-2) are assumed to be exposed to the full concentration of groundwater contamination prior to dilution/mixing with the surface water). This was also a fundamental assumption in the instream benthic macroinvertebrate bioassessment events, which documented no measurable impacts.

Historical surface water sampling in the immediate vicinity of contaminated groundwater discharge (SW-2) has sporadically documented petroleum contamination, usually in periods of low stream flow, and generally at concentrations several orders of magnitude less than adjacent (within 20 feet) groundwater monitoring well concentrations. It is likely that mixing/dilution between groundwater and surface water precludes obtaining an “instantaneous discharge” surface water sample that is wholly representative of groundwater contamination at the discharge location. Therefore, the most conservative assumption is that surface water contamination at the groundwater/surface water interface is equivalent to the upgradient groundwater contamination (e.g., site downgradient wells MW-7, MW-9, and MW-12).

While site target cleanup standards for groundwater have not been determined, it is likely that no further action will be required by regulatory agencies when groundwater (and surface water) contaminant concentrations are all below their respective screening level criteria. Residual contaminant concentrations in excess of screening level criteria might be acceptable to regulatory agencies if a more detailed risk assessment (e.g., Tier 2 and/or Tier 3) demonstrates that no significant impacts are likely.

## 4.0 Q3 2008 ACTIVITIES

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This section presents the creek surface water and groundwater sampling and analytical methods for the most recent groundwater monitoring event (Q3 2008), conducted on September 18, 2008. Also discussed is the purging and sampling of monitoring well MW-2 conducted on July 7 and August 14, 2008. In addition, this section summarizes the bioventing-related activities.

### GROUNDWATER AND SURFACE WATER MONITORING ACTIVITIES

Groundwater and surface water analytical results are summarized in Section 5.0. Monitoring and sampling protocols were in accordance with the ACEH-approved SES technical workplan (SES, 1998a). Current event activities included:

- Measuring static water levels in all 11 site wells
- Collecting post-purge groundwater samples for laboratory analysis of site contaminants from wells located within (or potentially within) the groundwater plume (MW-2, MW-7, MW-8, MW-9, MW-10, MW-11, and MW-12)
- Collecting Redwood Creek surface water samples for laboratory analysis from locations SW-2 and SW-3

Creek sampling and groundwater monitoring/sampling was conducted on September 18, 2008. The creek sampling was conducted by the SES project manager. The locations of all site monitoring wells and creek water sampling locations are shown on Figure 2 (in Section 1.0). Table 1 summarizes the well construction information and water level data. Appendix B contains the groundwater monitoring field records for the current event.

Because it appears that the previously injected ORC™ has been depleted, continued monitoring of the natural attenuation parameters—dissolved oxygen, oxidation-reduction potential, nitrate, ferrous iron, and sulfate—is of marginal value until such time as additional corrective actions that would increase oxygen concentrations are implemented. Thus, monitoring for natural attenuation parameters was discontinued following the Q3-2004 event.

**Table 1**  
**Groundwater Monitoring Well Construction and Groundwater Elevation Data –**  
**September 18, 2008 Monitoring Event**  
**Redwood Regional Park Corporation Yard, Oakland, California**

Well	Well Depth	Screened Interval	TOC Elevation	Groundwater Elevation (9/18/08)
MW-1	18	7 to 17	565.83	560.43
MW-2	36	20 to 35	566.42	540.15
MW-3	42	7 to 41	560.81	536.41
MW-5	26	10 to 25	547.41	529.85
MW-6	26	10 to 25	545.43	531.11
MW-7	24	9 to 24	547.56	532.69
MW-8	23	8 to 23	549.13	534.15
MW-9	26	11 to 26	549.28	531.97
MW-10	26	11 to 26	547.22	532.65
MW-11	26	11 to 26	547.75	519.23
MW-12	25	10 to 25	544.67	533.12

Notes:

TOC = Top of casing.

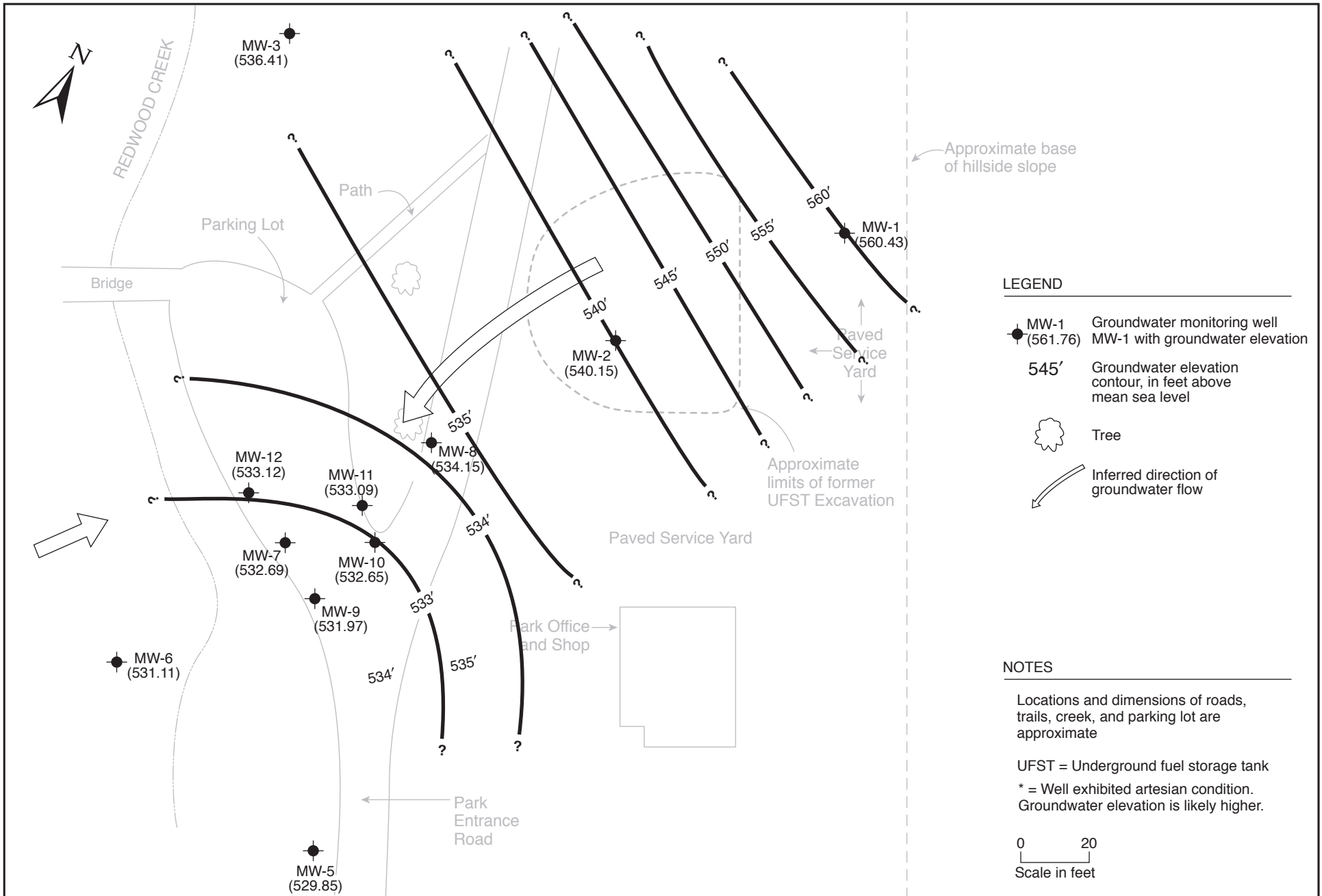
Wells MW-1 through MW-6 are 4-inch diameter; all other wells are 2-inch diameter.

All elevations are feet above U.S. Geological Survey mean sea level.

### Groundwater Level Monitoring and Sampling

Groundwater monitoring well water level measurements, purging, sampling, and field analyses were conducted by Blaine Tech Services under the supervision of SES personnel. Groundwater sampling was conducted in accordance with State of California guidelines for sampling dissolved analytes in groundwater associated with leaking UFSTs (State Water Resources Control Board, 1989), and followed the methods and protocols approved by ACEH in the SES 1998 workplan (SES, 1998a). Figure 6 is a groundwater elevation map.

As the first task of the monitoring event, static water levels were measured using an electric water level indicator. Pre-purge groundwater samples were then collected for field and laboratory analysis of natural attenuation indicators. The wells to be sampled for contaminant analyses were then purged (by bailing and/or pumping) of three wetted casing volumes. Aquifer stability parameters (temperature, pH, and electrical conductivity) were measured after each purged casing volume to ensure that representative formation water would be sampled. To minimize the potential for cross-contamination, wells were purged and sampled in order of increasing contamination (based on the analytical results of the previous quarter).



**GROUNDWATER ELEVATION MAP—September 18, 2008**  
**Redwood Regional Park Service Yard, Oakland, CA**

**Figure 6**

by: MJC

OCTOBER 2008

The sampling-derived purge water and decontamination rinseate (approximately 41 gallons) from the current event was containerized in the onsite plastic tank. Purge water from future events will continue to be accumulated in the onsite tank until it is full, at which time the water will be transported offsite for proper disposal.

### **Creek Surface Water Sampling**

Surface water sampling was conducted by SES on September 18, 2008. Surface water samples were collected from two Redwood Creek locations: SW-2 (immediately downgradient of the former UFST source area and within the area of documented creek bank soil contamination) and SW-3 (approximately 500 feet downstream of the SW-2 location). In accordance with a previous SES recommendation approved by ACEH, upstream sample location SW-1 is no longer part of the surface water sampling program.

At the time of sampling, the creek was at a very low stage; the isolated pool of water where SW-2 was sampled was only 6 inches deep, while the location at SW-3 was completely dry. At the SW-2 location, where contaminated groundwater discharge to the creek historically has been observed, an orange alga was noted growing on the saturated portion of the creek bank. This alga likely is utilizing the petroleum as a carbon source, and therefore is a good indicator of the presence of petroleum contamination. A slight sheen and hydrocarbon odor were observed on the surface of the pool of water in Redwood Creek where sample SW-2 was collected.

### **BIOVENTING-RELATED ACTIVITIES**

The bioventing system was installed and started up in December 2005/January 2006. Weekly system monitoring and air flow optimization events were conducted for 1 month in January and February 2006. Bioventing system operations and maintenance (O&M) events have been conducted monthly since March 2006. As noted previously, two new bioventing wells (VW-4 and VW-5) were installed on March 4, 2008 to augment the system, and VW-3, which historically has seen no change in pressurization, was disconnected. Bioventing activities are discussed in detail in separate technical documents.

### **MONITORING WELL MW-2 PURGING ACTIVITIES**

Starting in Q3-2007, groundwater well MW-2, which had a 14-year history of total extractable hydrocarbons as diesel (TEHd) and total volatile hydrocarbons as gasoline (TVHg) concentrations well below 2,000 micrograms per liter ( $\mu\text{g/L}$ ), showed a dramatic increase in concentrations for both TEHd and TVHg.

To ascertain whether this spike in contamination is due to an isolated spill event or a previously confined pocket of residual contamination, SES has conducted several purge events between the Q3-2007 groundwater monitoring event and the most recent Q3-2008 groundwater monitoring event. Two purge activities were conducted during the Q3-2008 groundwater monitoring event—a 66-gallon purge on July 7, 2008 and a 10-gallon purge on August 14, 2008. Section 5.0 discusses the analytical results.



## 5.0 MONITORING EVENT ANALYTICAL RESULTS

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This section presents the field and laboratory analytical results of the most recent monitoring event. Table 2 summarizes the laboratory results, and Figure 7 shows the contaminant analytical results and the inferred limits of the gasoline groundwater plume. Appendix C contains the certified analytical laboratory report and chain-of-custody record for the current event. Appendix D summarizes the historical groundwater and surface analytical results.

### CURRENT SURFACE WATER ANALYTICAL RESULTS

During the September 2008 surface water sampling event, approximately 6 inches of water was present at location SW-2. The water was essentially stagnant, and both a sheen and a hydrocarbon odor were observed. SES also noted orange algae on the stream bank just above the water level. The concentrations of contaminants detected in the surface water sample collected at SW-2 included 530 µg/L of TVHg, 690 µg/L of TEHd, and 4.3 µg/L of ethylbenzene. The hydrocarbon concentration at the surface water sample location of SW-2 showed the highest concentrations since the 1999 historical high. This is likely due to the 2 years of drought that resulted in low to no flow conditions, allowing for the isolation of the contaminant seep from the creek bank. Location SW-3 was not sampled during this event as no water was present.

### CURRENT EVENT GROUNDWATER ANALYTICAL RESULTS

Current quarter site groundwater concentrations in monitoring wells MW-2, MW-7, MW-8, MW-9, and MW-11 exceeded their respective groundwater ESLs for TEHd and TVHg under both the *groundwater is a drinking water resource* and *groundwater is not a drinking water resource* criteria. Concentrations of TVHg in MW-12 exceeded the ESL where groundwater *is* a drinking water resource; however, the TEHd concentration, at 95 µg/L, was below the drinking water ESL of 100 µg/L. Well MW-10 also contained a concentration of diesel at 80 µg/L, but was below the drinking water ESL. The concentration of TEHd in MW-10 was below the laboratory detection limit.

**Table 2**  
**Groundwater and Surface Water Sample Analytical Results – September 18, 2008**  
**Redwood Regional Park Corporation Yard, Oakland, California**

Location	Contaminant						
	TVHg	TEHd	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE
<b>GROUNDWATER SAMPLES</b>							
MW-2	<b>40,000</b>	<b>9,100</b>	<b>1.6</b>	<0.5	<b>110</b>	<b>910</b>	<b>9.5</b>
MW-7	<b>6,400</b>	<b>2,800</b>	<b>22</b>	<0.5	<b>100</b>	9.3	<2.0
MW-8	<b>5,500</b>	<b>4,400</b>	<b>89</b>	3.9	<b>630</b>	<b>194.4</b>	<2.0
MW-9	<b>4,800</b>	<b>2,700</b>	<b>53</b>	<0.5	<b>250</b>	<b>66.4</b>	<2.0
MW-10	80	<50	<b>1.6</b>	<0.5	0.52	<0.5	3.0
MW-11	<b>7,300</b>	<b>4,600</b>	<b>130</b>	<0.5	<b>110</b>	4.5	<2.0
MW-12	<b>370</b>	95	<0.50	<0.5	2.8	0.98	<2.0
<b>Groundwater ESLs<sup>(a)</sup></b>	100 / 210	100/ 210	1.0 / 46	4.0 / 130	30 / 43	20 / 100	5.0 / 1,800
<b>REDWOOD CREEK SURFACE WATER SAMPLES</b>							
SW-2	<b>530</b>	<b>690</b>	<0.5	<0.5	4.3	<0.5	<2.0
SW-3	NS	NS	NS	NS	NS	NS	NS
<b>Surface Water Screening Levels<sup>(a, b)</sup></b>	100	100	1.0	40	30	20	5.0

Notes:

<sup>(a)</sup> Water Board Environmental Screening Levels (groundwater is/is not a potential drinking water resource) (Water Board, 2008).

<sup>(b)</sup> Water Board Surface Water Screening Levels for freshwater habitats (Water Board, 2008).

MTBE = methyl *tertiary*-butyl ether

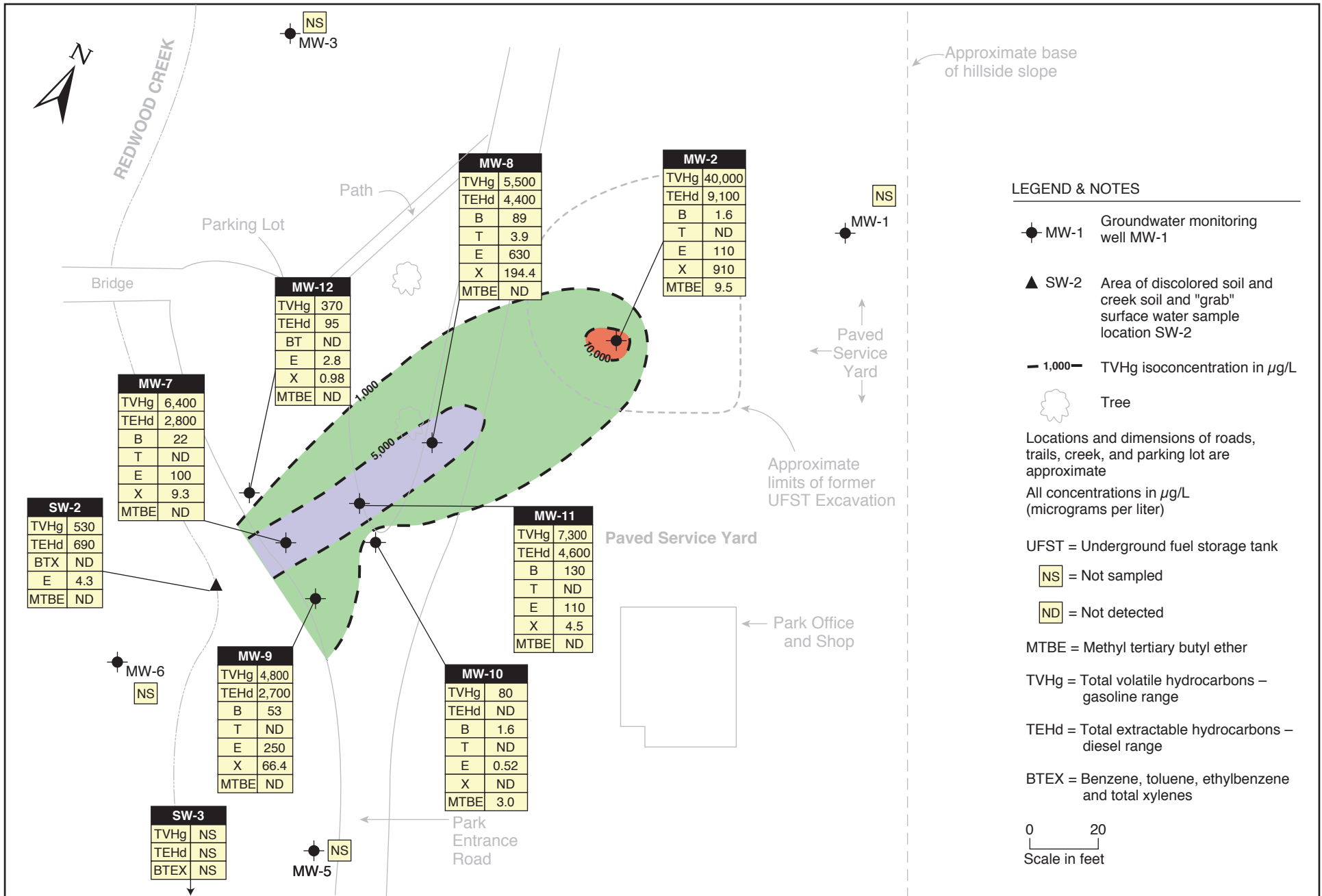
TVHg = total volatile hydrocarbons - gasoline range

TEHd = total extractable hydrocarbons - diesel range

NS = not sampled (no water present)

All concentrations expressed in micrograms per liter (µg/L), equivalent to parts per billion. Samples in **bold-face type** exceed the ESL and/or surface water screening levels where groundwater is a potential drinking water resource.

Concentrations of benzene exceeded the ESL for drinking water in all wells except MW-12, where the concentration was below the laboratory detection limit. Ethylbenzene concentrations exceeded the ESL where groundwater is and is not a drinking water resource in MW-2, MW-7, MW-8, MW-9, and MW-11. Total xylenes exceeded the groundwater ESLs under both criteria in wells MW-2, MW-8, and MW-9. Methyl *tertiary*-butyl ether (MTBE) was found above the drinking water criteria only in well MW-2, and was at or below the laboratory detection limit in all other wells. Toluene was not detected above the laboratory detection limit in any well but MW-8, where it was below the drinking water ESL of 4.0 µg/L.



**LEGEND & NOTES**

- MW-1 Groundwater monitoring well MW-1
  - SW-2 Area of discolored soil and creek soil and "grab" surface water sample location SW-2
  - 1,000 TVHg isoconcentration in µg/L
  - Tree
  - Locations and dimensions of roads, trails, creek, and parking lot are approximate
  - All concentrations in µg/L (micrograms per liter)
  - UFST = Underground fuel storage tank
  - = Not sampled
  - = Not detected
  - MTBE = Methyl tertiary butyl ether
  - TVHg = Total volatile hydrocarbons – gasoline range
  - TEHd = Total extractable hydrocarbons – diesel range
  - BTEX = Benzene, toluene, ethylbenzene and total xylenes
- 0 20  
Scale in feet

2006-17-20



**ANALYTICAL RESULTS AND GASOLINE PLUME—SEPTEMBER 2008**  
**Redwood Regional Park Service Yard, Oakland, CA**

**Figure 7**  
 by: MJC      OCTOBER 2008

Maximum TVHg, TEHd, total xylenes, and MTBE concentrations for this monitoring event were all detected in MW-2, the well located in the original source area. This anomaly is discussed in more detail in the following section. Maximum benzene and ethylbenzene concentrations were observed in MW-8. The northern edge of the plume in the downgradient area of the plume is defined by well MW-12. The southern edge of the plume in the downgradient area is not strictly defined; however, based on historical groundwater data, it appears to be located between well MW-9 and well MW-5.

## **MONITORING WELL MW-2 PURGING ANALYTICAL RESULTS**

A total of two purging events were conducted this quarter. SES sampled MW-2 before and after purging 66 gallons on July 7, 2008. Results showed concentrations dropped from 6,400 µg/L of TVHg and 2,200 µg/L of TEHd (before purging) to 390 µg/L of TVHg and 55 µg/L of TEHd (after purging). An additional 10 gallons was purged on August 14, 2008. The pre-purge samples revealed that concentrations had spiked to 28,000 µg/L of TVHg and 7,100 of TEHd from the previous sampling, but again dropped after purging to 8,700 µg/L of TVHg and 2,700 of TEHd. However, groundwater sampling results for this event showed a new historic high for MW-2 of 40,000 µg/L of TVHg and the second highest historical concentration of TEHd at 9,100 µg/L.

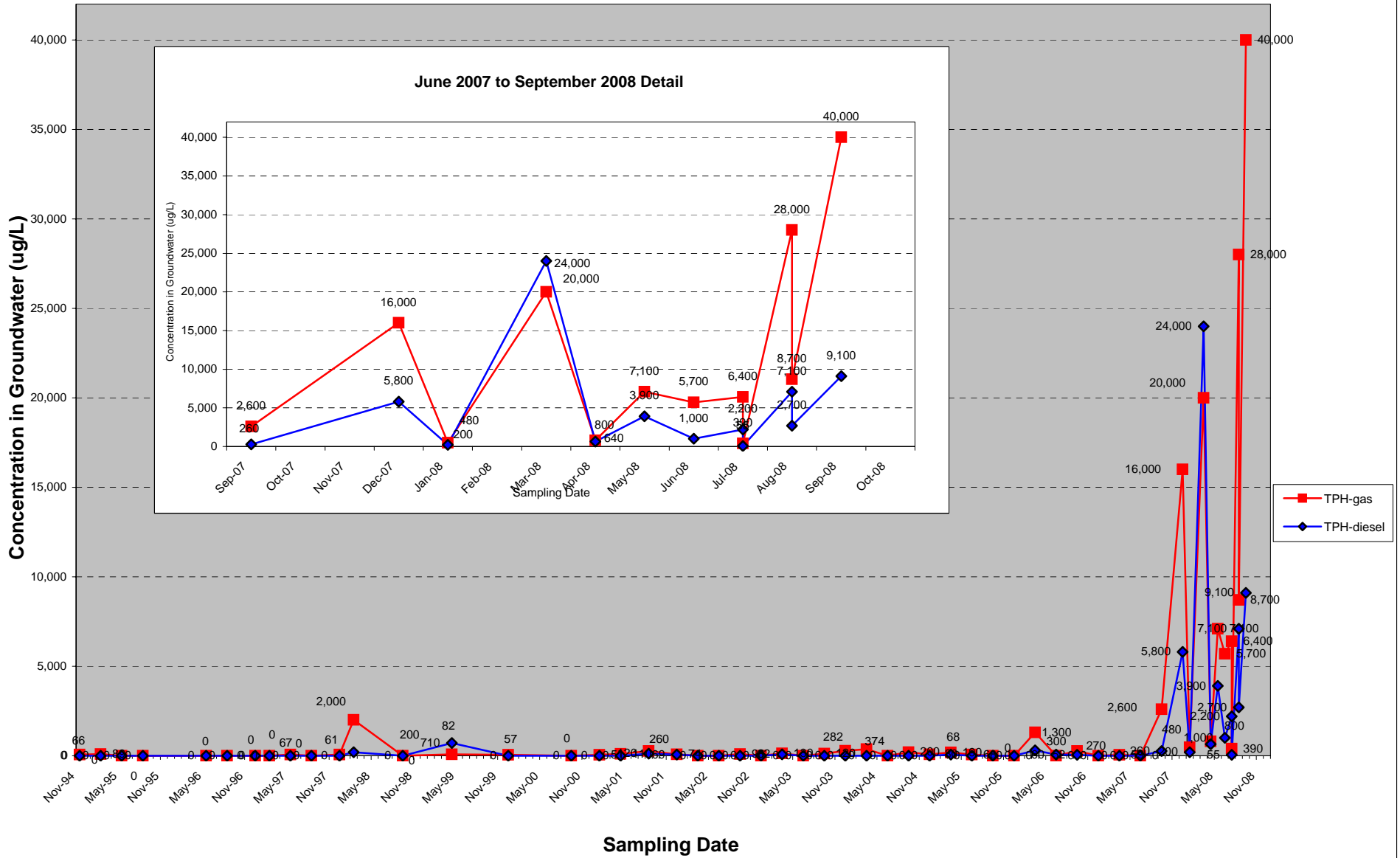
The only definitive environmental change over the past 10 years to account for the increase in concentration has been the recent (2006/2007 and 2007/2008) lower than normal rainfall. This lower groundwater elevation may have released some previously sorbed hydrocarbons; however, periods of lowered groundwater elevation in the past 10 years do not correlate with detected contaminant spikes. An alternative explanation is that the spike in contamination is due to an isolated spill event or to a confined pocket of residual contamination. In either case, the rapid reduction in concentration resulting from limited purging indicates that this dissolved fraction of contamination is not extensive, or it would remain high with sustained pumping. The quick response suggests that the contamination may be entrained in the soil and that sufficient contact with groundwater is required to increase the soluble fraction.

Figure 8 shows the TEHd and TVHg concentration plot for MW-2 over time. Appendix C contains the certified laboratory analytical reports. Appendix D includes the historical data for previous purging events.

## **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).

**Figure 8: Gasoline and Diesel Hydrochemical Trends: Well MW-2  
Redwood Regional Park Service Yard, Oakland, California**



## **6.0 SUMMARY, CONCLUSIONS, AND PROPOSED ACTIONS**

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The following conclusions and proposed actions are based on the findings of the current event activities, as well as on salient historical findings.

### **SUMMARY AND CONCLUSIONS**

- The hydrocarbon concentration at the surface water sample location of SW-2 showed the highest concentrations since the 1999 historical high, likely reflecting the 2 years of drought that allowed for the isolation of the contaminant seep from the creek bank. Location SW-3 was not sampled during this event as no water was present.
- Groundwater sampling has been conducted approximately on a quarterly basis since November 1994 (47 events in the initial site wells). A total of 11 site wells are available for monitoring; 7 of the available wells are currently being monitored for contamination.
- Site contaminants of concern include: gasoline; diesel; benzene, toluene, ethylbenzene, and xylenes (BTEX); and MTBE. Current contaminant concentrations exceed regulatory screening levels, for both groundwater and surface water.
- The primary environmental risk is discharge of contaminated groundwater to the adjacent Redwood Creek. A stream bioassessment concluded that there were no direct impacts to the surface water benthic community; however, groundwater contamination is sporadically detected in surface water samples, and there is historical visual evidence of plume discharge at the creek/groundwater interface. Surface water samples have sporadically exceeded surface water ESL criteria for gasoline, diesel, and benzene, and generally only under low creek flow conditions. An in-stream bioassessment evaluation in 1999-2000 determined that there were no impacts to the benthic macroinvertebrate community.
- The existing well layout adequately constrains the lateral extent of groundwater contamination, and the downward vertical limit is very likely the top of the near-surface (25 to 28 feet) siltstone bedrock. The saturated interval extends approximately 12 to 15 feet from top of bedrock through the capillary fringe. Groundwater elevations fluctuate seasonally, creating a capillary fringe that varies seasonally in thickness.
- The groundwater contaminant plume has become disconnected from its original source, but continues to be fed from the residual hydrocarbon concentrations in the soil. The main portion of the groundwater plume has migrated well beyond the former source area

(represented by well MW-2) toward Redwood Creek, but residual pockets of contamination appear to be releasing, as observed by recent spikes in hydrocarbon levels at MW-2.

- The plume of groundwater contamination above environmental screening levels appears to be within an area approximately 130 feet long and 25 to 50 feet wide.
- Compared to the same monitoring event a year ago, the contaminant concentrations in the downgradient wells MW-7 and MW-12, as well as in MW-10 (located between the closest downgradient and farthest downgradient wells from the source area) have decreased. Concentrations in MW-8, located just downgradient of the former source area, have decreased in general, but slightly increased for TEHd and total xylenes. Concentrations in MW-9 and MW-11 (downgradient wells) have increased for TVHg and TEHd, but decreased for BTEX and MTBE. Concentrations in monitoring well MW-2 (located in the former source area) have increased.
- Historical high concentrations of petroleum hydrocarbons have been detected in the source area monitoring well MW-2 for the past four consecutive quarters since Q3-2007. Approximately four purging events (apart from quarterly groundwater monitoring) have been conducted since the observance of the elevated contaminant concentrations. While the concentrations have been observed to decrease after purging events, they subsequently increased between purging events. It is likely that contamination in this well is due to a confined pocket of residual contamination.
- The contaminant plume is neither stable nor reducing, as groundwater contaminant concentrations fluctuate seasonally, and the center of mass of the contaminant plume (represented by maximum concentrations) has alternated between mid-plume and downgradient wells in recent history.
- Soil bioventing was implemented as a remedy in December 2005 to remediate the vadose zone soil contamination that has continued to provide an input source to the groundwater. Bioventing appears to be slowly reducing the residual contaminant mass, as seen in the dissolved hydrocarbon concentrations. Two additional bioventing wells, VW-4 and VW-5, were installed in March 2008 to augment the system in the vicinity of MW-2 where a trend of increasing high concentrations have been detected since the third quarter of 2007.

## **PROPOSED ACTIONS**

The EBRPD proposes to implement the following actions to address regulatory concerns:

- Continue the quarterly program of creek and groundwater sampling and reporting.
- Continue to inform regulators of site progress and seek their concurrence with proposed actions.
- Operate the bioventing system as a corrective action to move the site toward closure, and report those results in bioventing-specific technical reports.

- Continue to evaluate analytical results (and bioventing contaminant removal data) in the context of hydrochemical trends, impacts of groundwater contamination on Redwood Creek, and the effectiveness of the corrective action.
- Continue to make required Electronic Data Format uploads to the GeoTracker database, and upload an electronic copy of technical reports to ACEH's ftp system.



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## 8.0 LIMITATIONS

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This report has been prepared for the exclusive use of the East Bay Regional Park District, its authorized representatives, and the regulatory agencies. 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 on the review of previous investigators' findings at the site, as well as onsite activities conducted by SES since September 1998. This report provides neither a certification nor guarantee that the property is free of hazardous substance contamination. This report has been prepared in accordance with generally accepted methodologies and standards of practice. The SES personnel who performed this work 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.

The findings of this report are valid as of the present. Site conditions may change with the passage of time, natural processes, or human intervention, which can invalidate the findings and conclusions presented in this report. As such, this report should be considered a reflection of the current site conditions as based on the investigation and remediation completed.

## **APPENDIX A**

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### **Historical Groundwater Monitoring Well Water Level Data**

**HISTORICAL GROUNDWATER ELEVATIONS IN MONITORING WELLS  
REDWOOD REGIONAL PARK SERVICE YARD  
7867 REDWOOD ROAD, OAKLAND, CALIFORNIA**

Well I.D.	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11	MW-12
TOC Elevation (a)	565.83	566.42	560.81	548.10	547.41	545.43	547.56	549.13	549.28	547.22	547.75	544.67
Date Monitored	Groundwater Elevations (feet above mean sea level)											
09/18/98	563.7	544.2	540.8	534.5	531.1	545.6						
04/06/99	565.2	546.9	542.3	535.6	532.3	532.9						
12/20/99	562.9	544.7	541.5	534.9	531.2	532.2						
09/28/00	562.8	542.7	538.3	532.2	530.9	532.0						
01/11/01	562.9	545.1	541.7	535.0	531.2	532.3	534.9	538.1				
04/13/01	562.1	545.7	541.7	535.1	531.5	532.4	535.3	539.8				
09/01/01	560.9	542.0	537.7	533.9	530.7	531.8	534.0	535.6				
12/17/01	562.2	545.2	542.2	534.8	531.4	532.4	534.8	538.4	534.6	535.7	535.2	
03/14/02	563.0	547.1	542.2	535.5	532.4	533.3	535.7	541.8	535.0	537.6	536.6	
06/18/02	562.1	544.7	541.1	534.6	531.2	532.2	534.8	537.9	534.7	535.6	535.3	
09/24/02	561.4	542.2	537.3	533.5	530.6	531.8	533.5	535.5	535.3	533.8	531.7	
12/18/02	562.4	545.0	542.0	534.8	531.5	532.5	534.6	537.1	536.5	535.2	532.8	
03/27/03	562.6	545.7	541.7	534.8	531.6	532.4	535.1	539.9	537.2	536.2	533.6	
06/19/03	562.3	544.9	541.5	534.8	531.3	532.3	534.9	538.2	536.9	535.7	533.2	
09/10/03	561.6	542.1	537.9	533.8	530.8	531.9	533.7	535.6	535.6	534.1	531.9	
12/10/03	562.4	542.7	537.6	533.7	530.9	531.9	533.7	535.2	535.5	533.8	531.7	
03/18/04	563.1	546.6	541.9	535.0	531.7	532.4	535.2	540.9	537.4	536.6	533.8	
06/17/04	562.1	544.3	540.7	534.3	531.0	532.1	534.6	537.4	536.5	535.1	532.7	
09/21/04	561.5	541.1	536.5	533.1	530.5	531.6	533.1	534.7	532.7	533.2	533.2	
12/14/04	562.2	545.3	541.7	534.7	531.4	532.2	534.6	540.4	536.7	535.5	532.9	
03/16/05	563.8	547.3	541.7	535.3	532.4	532.8	535.6	541.8	538.0	537.1	534.2	
06/15/05	562.9	545.9	541.6	535.0	531.7	532.5	535.0	540.0	535.0	536.1	535.6	
09/13/05	562.3	543.5	539.7	534.4	530.9	532.2	534.3	536.7	536.1	534.7	532.4	
12/15/05	562.2	544.3	541.4	(b)	531.0	532.2	534.5	537.3	534.1	534.7	534.9	535.1
03/30/06	565.8	548.6	542.7	(b)	533.9	534.4	536.2	542.3	536.4	537.3	537.6	535.7
06/20/06	563.6	545.4	541.6	(b)	531.5	532.5	534.9	538.6	534.6	536.2	535.5	535.0
09/29/06	561.9	542.8	539.0	(b)	530.7	532.1	535.1	536.1	533.7	534.6	534.7	534.7
12/14/06	562.9	544.2	541.5	(b)	531.1	532.3	534.7	536.7	534.0	534.8	535.2	535.0
03/21/07	562.5	545.2	541.7	(b)	531.4	532.4	534.9	539.3	534.6	535.6	535.6	535.1
06/20/07	561.5	543.5	540.8	(b)	531.0	532.4	534.6	537.1	531.1	535.2	535.3	534.9
9/14/2007	560.71	541.02	536.99	(b)	530.46	531.58	533.42	534.86	532.64	533.47	533.68	533.74
12/6/2007	560.62	541.22	536.85	(b)	530.68	531.48	533.21	535.08	532.62	533.3	533.61	533.64
3/14/2008	561.76	545.73	541.63	(b)	531.34	532.30	534.88	539.30	534.67	536.04	535.89	535.72
6/13/2008	560.92	543.61	540.6	(b)	530.83	532.02	534.42	536.86	533.81	534.84	535.16	534.67
9/18/2008	560.43	540.15	536.41	(b)	529.85	531.11	532.69	534.15	531.97	532.65	533.09	533.12

TOC = Top of well casing

(a) TOC Elevations resurveyed on December 15, 2005 in accordance GeoTracker requirements.

(b) Well decommissioned and replaced by MW-12 in December 2005.



## **APPENDIX B**

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### **Groundwater Monitoring Field Documentation**

## WELL GAUGING DATA

Project # 080918.MT1 Date 09.18.08 Client Stellar

Site Redwood Regional Park, Oakland, CA

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 TOC	Notes
MW-1	845	4					5.40	19.00		G.O
MW-2	850	4	odor				26.27	38.74		1
MW-3	855	4					24.40	25.06		G.O
MW-5	900	4					17.56	26.94		G.O
MW-6	905	4					14.32	14.58		G.O
MW-7	910	2					14.87	25.39		3
MW-8	915	2					14.98	22.15		6
MW-9	920	2					17.31	30.20		5
MW-10	925	2					14.57	28.42		2
MW-11	930	2					14.66	28.52		7
MW-12	935	2					11.55	23.86		4

# WELLHEAD INSPECTION CHECKLIST

Date 09.18.08 Client Stellar

Site Address Redwood Regional Park

Job Number 080918.MTI Technician M. Todi

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-1	X							
MW-2	X							
MW-3	X							
MW-5	X							
MW-6	X							
MW-7	X							
MW-8		2/3 Bolts missing						
MW-9	X							
MW-10	X							
MW-11	X							
MW-12	X							

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

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



# WELL MONITORING DATA SHEET

Project #: <del>02</del> 2008-02	Client: Stellar
Sampler: MT	Date: 09.18.08
Well I.D.: MW-2	Well Diameter: 2 3 <u>4</u> 6 8 ___
Total Well Depth (TD): 38.74	Depth to Water (DTW): 26.27
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]: 28.77	

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

8.1 (Gals.) X 3 = 24.3 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 <u>C</u> )	pH	Cond. (mS or <u>uS</u> )	Turbidity (NTUs)	Gals. Removed	Observations
1050	15.3	6.70	847.2	65.4	8.1	
Dewatered @ 9gls						
1405	15.7	7.03	838.7	4.18	—	DTW = 28.96 @ 1401

Did well dewater? <input checked="" type="checkbox"/> Yes    No		Gallons actually evacuated: 9	
Sampling Date: 09.18.08		Sampling Time: 1405	
Depth to Water: 28.96			
Sample I.D.: MW-2		Laboratory: Kiff    CalScience    Other: C&T	
Analyzed for: TPH-G    BTEX    MTBE    TPH-D    Oxygenates (5)    Other: See COC			
EB I.D. (if applicable): @		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:
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:
			mV

## WELL MONITORING DATA SHEET

Project #: <u>2008-02</u>	Client: <u>Stellar</u>
Sampler: <u>MT</u>	Date: <u>09-18-08</u>
Well I.D.: <u>MW-7</u>	Well Diameter: <u>(2)</u> 3 4 6 8 _____
Total Well Depth (TD): <u>25.39</u>	Depth to Water (DTW): <u>14.87</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>16.97</u>	

Purge Method: Bailer  Disposable Bailer  Positive Air Displacement  Electric Submersible  Waterra Peristaltic Extraction Pump  Other \_\_\_\_\_

Sampling Method: Bailer  Disposable Bailer  Extraction Port  Dedicated Tubing  Other: \_\_\_\_\_

$\frac{1.7}{\text{I Case Volume}} \times \frac{3}{\text{Specified Volumes}} = \frac{5.1}{\text{Calculated Volume}} \text{ Gals.}$	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>Well Diameter</th> <th>Multiplier</th> <th>Well Diameter</th> <th>Multiplier</th> </tr> </thead> <tbody> <tr> <td>1"</td> <td>0.04</td> <td>4"</td> <td>0.65</td> </tr> <tr> <td>2"</td> <td>0.16</td> <td>6"</td> <td>1.47</td> </tr> <tr> <td>3"</td> <td>0.37</td> <td>Other</td> <td>radius<sup>2</sup> * 0.163</td> </tr> </tbody> </table>	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
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
1136	14.1	6.86	768.6	71000	1.7	Cloudy
1140	13.9	6.60	790.1	590	3.4	" "
1144	13.9	6.56	802.2	71000	5.1	" "

Did well dewater? Yes  No  Gallons actually evacuated: 3.4

Sampling Date: 09-18-08 Sampling Time: 1152 Depth to Water: \_\_\_\_\_

Sample I.D.: MW-7 Laboratory: Kiff CalScience Other: CET

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

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>2008-02</u>	Client: <u>Stellar</u>
Sampler: <u>MT</u>	Date: <u>09.18.08</u>
Well I.D.: <u>MU-8</u>	Well Diameter: <u>3</u> 3 4 6 8 _____
Total Well Depth (TD): <u>22.15</u>	Depth to Water (DTW): <u>14.98</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]:	

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

1.1	(Gals.) X	3	=	3.3	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
1312	16.1	6.96	901.1	<del>1000</del>	1.1	cloudy
1314	16.3	6.77	903.2	71000	2.2	cc r
1317	16.3	6.68	907.6	71000	3.3	cc r

Did well dewater? Yes  No  Gallons actually evacuated: 3.3

Sampling Date: 09.18.08 Sampling Time: 1324 Depth to Water: \_\_\_\_\_

Sample I.D.: MU-8 Laboratory: Kiff CalScience Other ERT

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

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>2008-02</u>	Client: <u>Stellar</u>
Sampler: <u>MJ</u>	Date: <u>09-18-08</u>
Well I.D.: <u>MU-9</u>	Well Diameter: <u>(2)</u> 3 4 6 8 _____
Total Well Depth (TD): <u>30.20</u>	Depth to Water (DTW): <u>17.31</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]:	

Purge Method:  Bailer  Waterra  Sampling Method:  Bailer  
 Disposable Bailer  Peristaltic  Disposable Bailer  
 Positive Air Displacement  Extraction Pump  Extraction Port  
 Electric Submersible  Other \_\_\_\_\_  Dedicated Tubing

<u>2.1</u>	(Gals.) X	<u>3</u>	=	<u>6.3</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

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
1244	<del>14.6</del> 6.43	6.43	883.5	71000	2.1	cloudy grey tint
1249	14.1	6.55	952.0	71000	4.2	" "
1256	13.9	6.61	920.2	71000	6.3	" "

Did well dewater? Yes  No  Gallons actually evacuated: 6.3

Sampling Date: 09-18-08 Sampling Time: 1305 Depth to Water:

Sample I.D.: MU-9 Laboratory: Kiff CalScience Other: CET

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

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>2008-02</u>	Client: <u>Stellar</u>
Sampler: <u>MT</u>	Date: <u>09-18-08</u>
Well I.D.: <u>MW-10</u>	Well Diameter: <u>2</u> 3 4 6 8 _____
Total Well Depth (TD): <u>28.42</u>	Depth to Water (DTW): <u>14.57</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>17.34</u>	

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

$\underline{2.2} \text{ (Gals.)} \times \underline{3} = \underline{6.6} \text{ Gals.}$ 1 Case Volume                      Specified Volumes                      Calculated Volume	<table border="1" style="width:100%; border-collapse: collapse; font-size: small;"> <thead> <tr> <th>Well Diameter</th> <th>Multiplier</th> <th>Well Diameter</th> <th>Multiplier</th> </tr> </thead> <tbody> <tr> <td>1"</td> <td>0.04</td> <td>4"</td> <td>0.65</td> </tr> <tr> <td>2"</td> <td>0.16</td> <td>6"</td> <td>1.47</td> </tr> <tr> <td>3"</td> <td>0.37</td> <td>Other</td> <td>radius<sup>2</sup> * 0.163</td> </tr> </tbody> </table>	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
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
1105	14.5	7.42	801.5	226	2.2	cloudy
1110	14.4	7.23	833.4	360	4.4	" "
1115	14.4	7.17	822.0	71000	6.6	" "

Did well dewater?    Yes <u>No</u> Gallons actually evacuated: <u>6.6</u>
Sampling Date: <u>09-18-08</u> Sampling Time: <u>1120</u> Depth to Water: <u>16.96</u>
Sample I.D.: <u>MW-10</u> Laboratory:    Kiff    CalScience    Other: <u>CTT</u>
Analyzed for:    TPH-G    BTEX    MTBE    TPH-D    Oxygenates (5)    Other: <u>see COC</u>
EB I.D. (if applicable):                      @                      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 #: <b>2008-02</b>	Client: <b>Stellar</b>
Sampler: <b>MT</b>	Date: <b>09-18-08</b>
Well I.D.: <b>mw-11</b>	Well Diameter: <b>2</b> 3 4 6 8 _____
Total Well Depth (TD): <b>28.52</b>	Depth to Water (DTW): <b>14.66</b>
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: <b>PVC</b> Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]:	

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

**2.2** (Gals.) X **3** = **6.6** 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
1335	15.1	6.66	828.0	71000	2.2	
1341	14.8	6.51	824.1	71000	4.4	
1346	14.7	6.49	812.2	71000	6.6	

Did well dewater? Yes  No  Gallons actually evacuated: **6.6**

Sampling Date: **09-18-08**      Sampling Time: **1354**      Depth to Water:

Sample I.D.: **mw-11**      Laboratory: Kiff CalScience Other **CAT**

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

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

V L MONITORING DATA SHEET

Project #: <u>2008-02</u>	Client: <u>Stellar</u>
Sampler: <u>MJ</u>	Date: <u>09-18-08</u>
Well I.D.: <u>MU-12</u>	Well Diameter: <u>2</u> 3 4 6 8
Total Well Depth (TD): <u>23.86</u>	Depth to Water (DTW): <u>11.55</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>13.95</u>	

Purge Method: Bailer  Disposable Bailer  Positive Air Displacement  Electric Submersible  Other \_\_\_\_\_

Waterra Peristaltic Extraction Pump  Other \_\_\_\_\_

Sampling Method: Bailer  Disposable Bailer  Extraction Port  Dedicated Tubing  Other: \_\_\_\_\_

2 (Gals.) X 3 = 6 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
1205	13.9	6.78	693.1	71000	2	Cloudy
1210	13.7	6.52	692.9	71000	4	Cloudy Brown tint
1215	13.7	6.47	687.6	71000	6	" "

Did well dewater? Yes  No  Gallons actually evacuated: 6

Sampling Date: 09-18-08 Sampling Time: 1220 Depth to Water:

Sample I.D.: MU-12 Laboratory: Kiff CalScience Other: C&T

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

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

## **APPENDIX C**

---

# **Analytical Laboratory Report and Chain-of-Custody Record**

# Chain of Custody Record

Lab job no. 20443A  
 Date \_\_\_\_\_  
 Page \_\_\_\_\_ of \_\_\_\_\_

Laboratory Curtis & Tompkins Method of Shipment \_\_\_\_\_  
 Address 2323 Fifth St Shipment No. \_\_\_\_\_  
Berkeley, CA 94710 Airbill No. \_\_\_\_\_  
(510) 486-0900 Cooler No. \_\_\_\_\_  
 Project Owner EBRPD Project Manager Richard Makelisi  
 Site Address 7867 Redwood Rd Telephone No. (510) 644-3123  
Oakland, CA Fax No. (510) 644-3859  
 Project Name Redwood Samplers: (Signature) \_\_\_\_\_  
 Project Number 2608-02

Filtered	No. of Containers	Analysis Required										Remarks	
TVH & MBTEX	TEL CP												

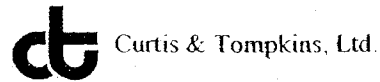
1 <  
2 <

Field Sample Number	Location/Depth	Date	Time	Sample Type	Type/Size of Container	Preservation											
						Cooler	Chemical										
MW-2A		7/7/08		W	VOA 40ml	✓	HCL	2B	X								
MW-2A		7/7/08		W	Amber L	✓		1	X								
MW-2B		7/7/08		W	VOA 40ml	✓	HCL	2	X								
MW-2B		7/7/08		W	Amber L	✓		1	X								

Relinquished by: Signature <u>Steve Bittman</u> Printed <u>Steve Bittman</u> Company <u>SES</u>	Date <u>7/7/08</u> Time <u>1505</u>	Received by: Signature <u>Sam Evans</u> Printed <u>Sam Evans</u> Company <u>CAT</u>	Date <u>7/7</u> Time <u>1505</u>	Relinquished by: Signature _____ Printed _____ Company _____	Date _____ Time _____	Received by: Signature _____ Printed _____ Company _____	Date _____ Time _____		
Turnaround Time: <u>STD</u> Comments: _____ _____ _____				Relinquished by: Signature _____ Printed _____ Company _____				Received by: Signature _____ Printed _____ Company _____	

2000-00-01

COOLER RECEIPT CHECKLIST



Login # 204434 Date Received 7-7-08 Number of coolers 2
Client SES Project Redwood Regional Park

Date Opened 7-7-08 By (print) Faith Nichols (sign) [Signature]
Date Logged in [Arrow] By (print) [Arrow] (sign) [Arrow]

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

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) Ambient

Samples Received on ice & cold without a temperature blank

Samples received on ice directly from the field. Cooling process had begun

8. Were Method 5035 sampling containers 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 > 6mm 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



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

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

Laboratory Job Number 204434  
ANALYTICAL REPORT

Stellar Environmental Solutions  
2198 6th Street  
Berkeley, CA 94710

Project : 2008-02  
Location : Redwood Regional Park  
Level : II

Sample ID

Lab ID

MW-2A

204434-001

MW-2B

204434-002

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: 07/17/2008

Signature:   
Senior Program Manager

Date: 07/18/2008

### CASE NARRATIVE

Laboratory number: 204434  
Client: Stellar Environmental Solutions  
Project: 2008-02  
Location: Redwood Regional Park  
Request Date: 07/07/08  
Samples Received: 07/07/08

This hardcopy data package contains sample and QC results for two water samples, requested for the above referenced project on 07/07/08. The samples were received intact at ambient temperature.

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

MW-2A (lab # 204434-001) and MW-2B (lab # 204434-002) had pH greater than 2. No other analytical problems were encountered.

**TPH-Extractables by GC (EPA 8015B):**

High recovery was observed for diesel C10-C24 in the MSD for batch 140055; the parent sample was not a project sample, the LCS was within limits, and the associated RPD was within limits. No other analytical problems were encountered.





**Curtis & Tompkins Laboratories Analytical Report**

Lab #: 204434	Location: Redwood Regional Park
Client: Stellar Environmental Solutions	Prep: EPA 5030B
Project#: 2008-02	
Matrix: Water	Sampled: 07/07/08
Units: ug/L	Received: 07/07/08
Diln Fac: 1.000	Analyzed: 07/09/08
Batch#: 140090	

Field ID: MW-2B    Lab ID: 204434-002  
 Type: SAMPLE

Analyte	Result	RL	Analysis
Gasoline C7-C12	390	50	EPA 8015B
MTBE	9.0	2.0	EPA 8021B
Benzene	1.3 C	0.50	EPA 8021B
Toluene	0.77	0.50	EPA 8021B
Ethylbenzene	4.6	0.50	EPA 8021B
m,p-Xylenes	37	0.50	EPA 8021B
o-Xylene	7.4	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	102	69-140	EPA 8015B
Bromofluorobenzene (FID)	101	73-144	EPA 8015B
Trifluorotoluene (PID)	85	60-146	EPA 8021B
Bromofluorobenzene (PID)	91	65-143	EPA 8021B

Type: BLANK    Lab ID: QC449869

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)	96	69-140	EPA 8015B
Bromofluorobenzene (FID)	98	73-144	EPA 8015B
Trifluorotoluene (PID)	85	60-146	EPA 8021B
Bromofluorobenzene (PID)	88	65-143	EPA 8021B

C= Presence confirmed, but RPD between columns exceeds 40%  
 ND= Not Detected  
 RL= Reporting Limit

## Batch QC Report

**Curtis & Tompkins Laboratories Analytical Report**

Lab #:	204434	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2008-02	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC449870	Batch#:	140090
Matrix:	Water	Analyzed:	07/09/08
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	2,000	1,796	90	80-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	104	69-140
Bromofluorobenzene (FID)	98	73-144

## Batch QC Report

**Curtis & Tompkins Laboratories Analytical Report**

Lab #:	204434	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2008-02	Analysis:	EPA 8021B
Matrix:	Water	Batch#:	140090
Units:	ug/L	Analyzed:	07/09/08
Diln Fac:	1.000		

Type: BS Lab ID: QC449871

Analyte	Spiked	Result	%REC	Limits
MTBE	20.00	19.75	99	70-129
Benzene	20.00	20.85	104	80-120
Toluene	20.00	20.28	101	80-120
Ethylbenzene	20.00	21.78	109	80-120
m,p-Xylenes	20.00	21.87	109	80-120
o-Xylene	20.00	21.67	108	80-120

Surrogate	%REC	Limits
Trifluorotoluene (PID)	89	60-146
Bromofluorobenzene (PID)	92	65-143

Type: BSD Lab ID: QC450034

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	20.00	18.31	92	70-129	8	21
Benzene	20.00	20.98	105	80-120	1	20
Toluene	20.00	20.73	104	80-120	2	20
Ethylbenzene	20.00	22.28	111	80-120	2	20
m,p-Xylenes	20.00	22.54	113	80-120	3	20
o-Xylene	20.00	22.02	110	80-120	2	20

Surrogate	%REC	Limits
Trifluorotoluene (PID)	89	60-146
Bromofluorobenzene (PID)	90	65-143

RPD= Relative Percent Difference

## Batch QC Report

**Curtis & Tompkins Laboratories Analytical Report**

Lab #:	204434	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2008-02	Analysis:	EPA 8015B
Field ID:	MW-2B	Diln Fac:	1.000
MSS Lab ID:	204434-002	Batch#:	140090
Matrix:	Water	Sampled:	07/07/08
Units:	ug/L	Received:	07/07/08

Type: MS Analyzed: 07/09/08  
 Lab ID: QC450035

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	385.9	2,000	1,958	79	67-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	114	69-140
Bromofluorobenzene (FID)	105	73-144

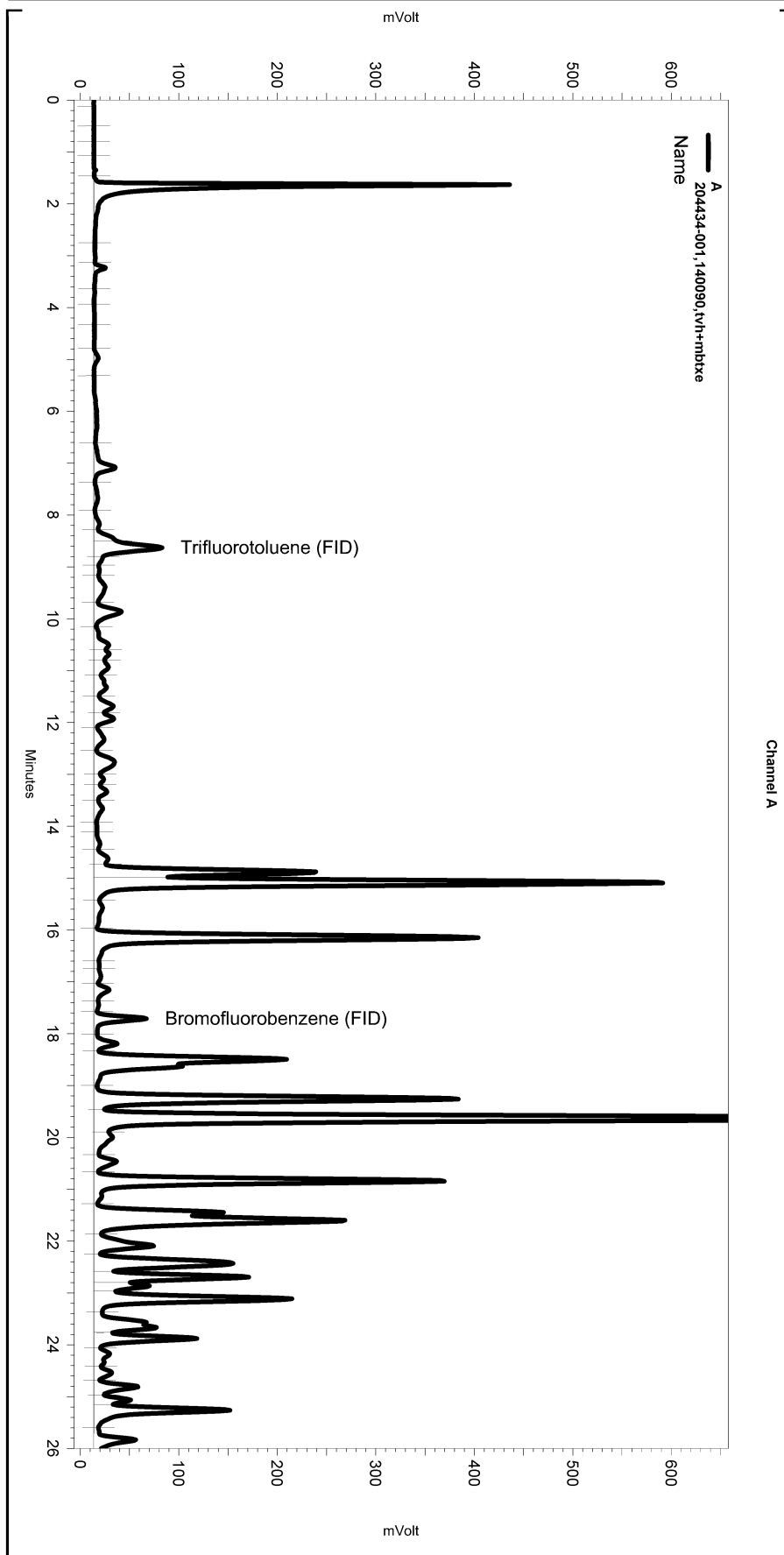
Type: MSD Analyzed: 07/10/08  
 Lab ID: QC450036

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	1,919	77	67-120	2	20

Surrogate	%REC	Limits
Trifluorotoluene (FID)	113	69-140
Bromofluorobenzene (FID)	103	73-144

Sequence File: \\Lims\gdrive\ezchrom\Projects\GC19\Sequence\191.seq  
 Sample Name: 204434-001,140090,tvh+mbtxe  
 Data File: \\Lims\gdrive\ezchrom\Projects\GC19\Data\191\_023  
 Instrument: GC19 (Offline) Vial: N/A Operator: Tvh 2. Analyst (lims2k3\tvh2)  
 Method Name: \\Lims\gdrive\ezchrom\Projects\GC19\Method\tvhbtxe143.met

Software Version 3.1.7  
 Run Date: 7/9/2008 10:30:32 PM  
 Analysis Date: 7/10/2008 10:18:06 AM  
 Sample Amount: 5 Multiplier: 5  
 Vial & pH or Core ID: B3



---< General Method Parameters >---

No items selected for this section

---< A >---

No items selected for this section

Integration Events

Enabled	Event Type	Start (Minutes)	Stop (Minutes)	Value
Yes	Width	0	0	0.2
Yes	Threshold	0	0	50

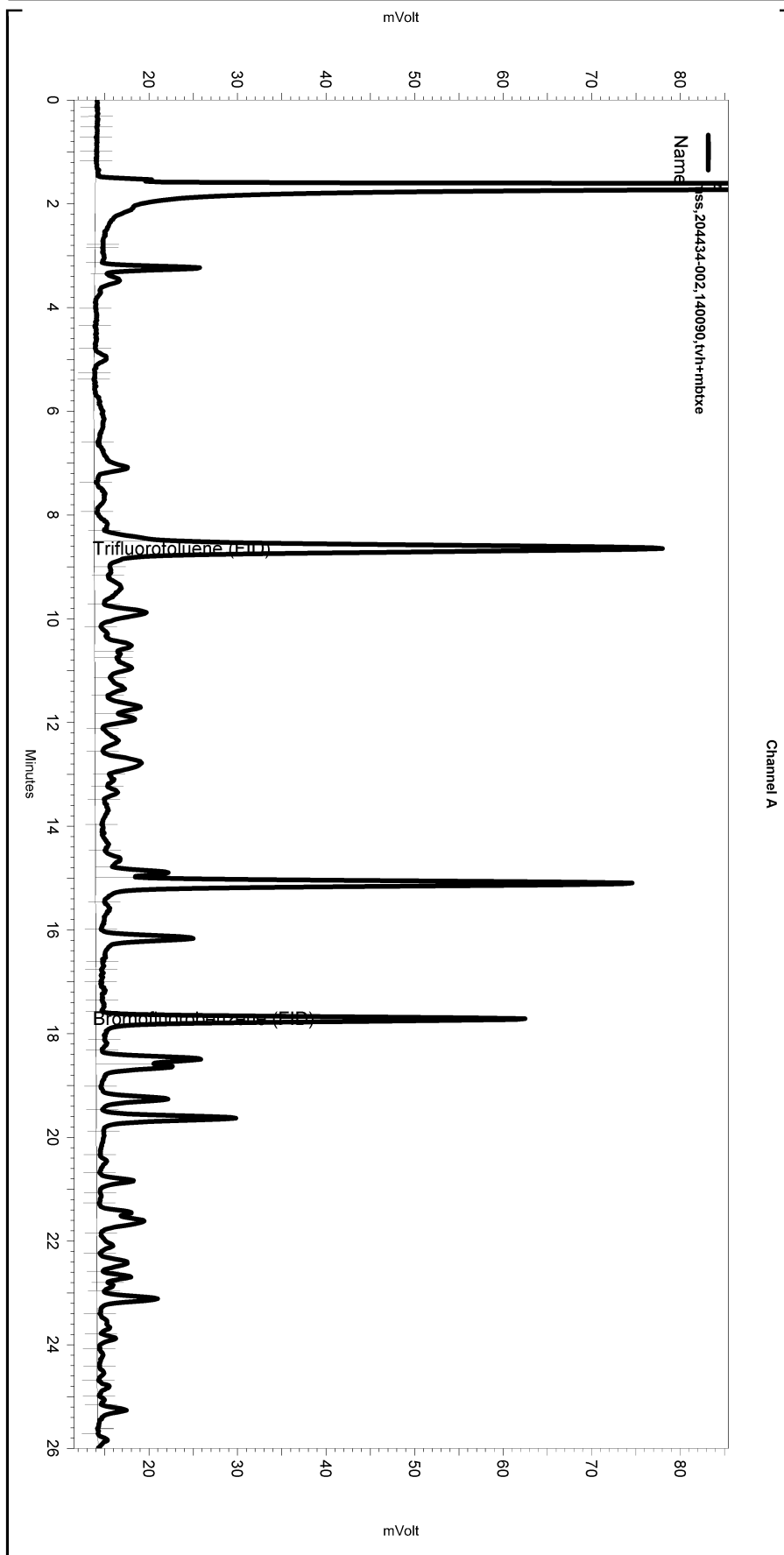
Manual Integration Fixes

Data File: \\Lims\gdrive\ezchrom\Projects\GC19\Data\191\_023

Enabled	Event Type	Start (Minutes)	Stop (Minutes)	Value
Yes	Lowest Point Horizontal Baseli	0	26.017	0
Yes	Split Peak	8.506	0	0
Yes	Split Peak	8.797	0	0

Sequence File: \\Lims\gdrive\ezchrom\Projects\GC19\Sequence\191.seq  
 Sample Name: mss,204434-002,140090,tvh+mbtxe  
 Data File: \\Lims\gdrive\ezchrom\Projects\GC19\Data\191\_024  
 Instrument: GC19 (Offline) Vial: N/A Operator: Tvh 2. Analyst (lims2k3\tvh2)  
 Method Name: \\Lims\gdrive\ezchrom\Projects\GC19\Method\TVHBTXE143.met

Software Version 3.1.7  
 Run Date: 7/9/2008 11:08:06 PM  
 Analysis Date: 7/10/2008 10:19:15 AM  
 Sample Amount: 5 Multiplier: 5  
 Vial & pH or Core ID: B3



---< General Method Parameters >---

No items selected for this section

---< A >---

No items selected for this section

Integration Events

Enabled	Event Type	Start (Minutes)	Stop (Minutes)	Value
Yes	Width	0	0	0.2
Yes	Threshold	0	0	50

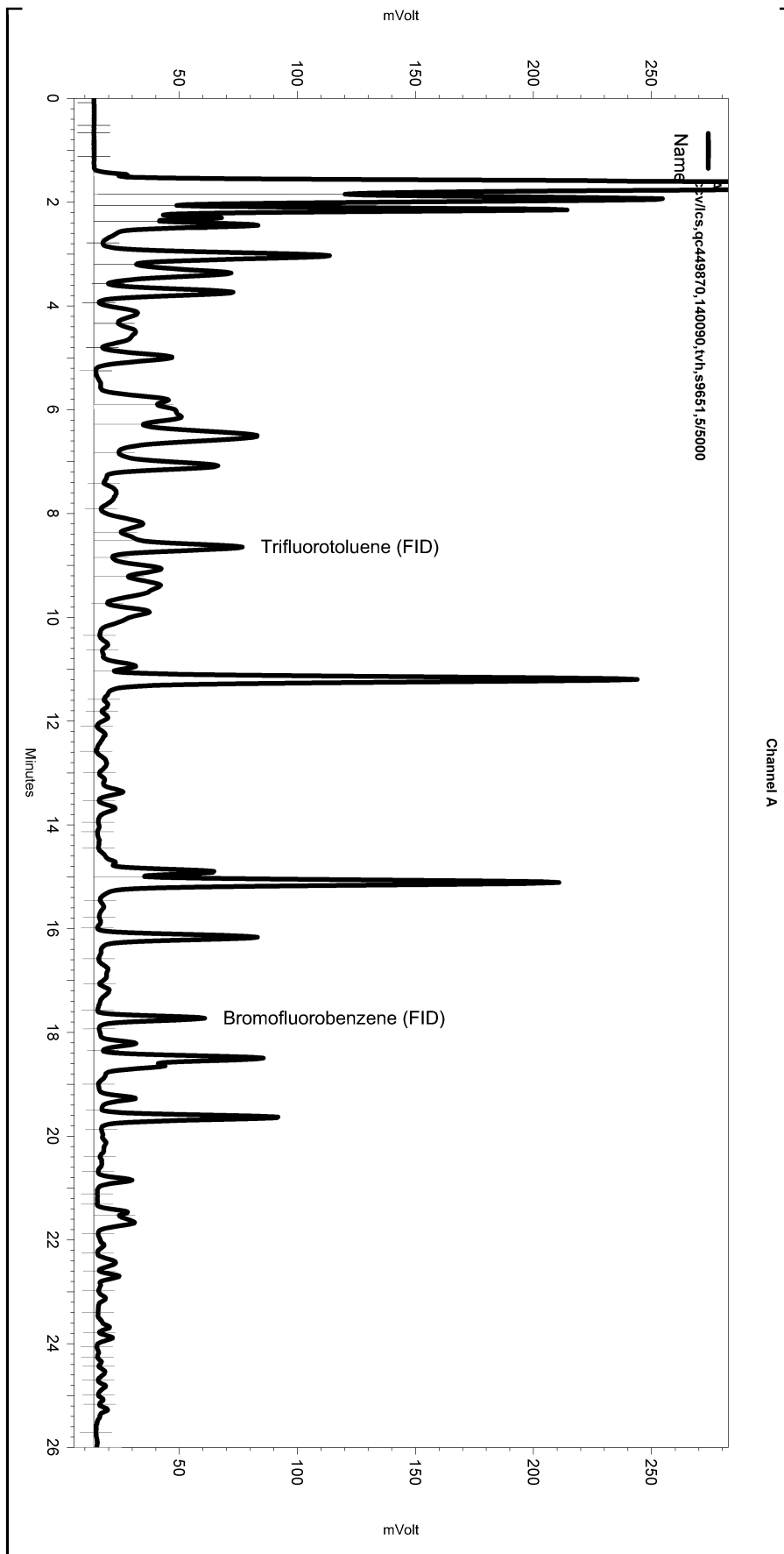
Manual Integration Fixes

Data File: \\Lims\gdrive\ezchrom\Projects\GC19\Data\191\_024

Enabled	Event Type	Start (Minutes)	Stop (Minutes)	Value
Yes	Split Peak	8.497	0	0

Sequence File: \\Lims\gdrive\ezchrom\Projects\GC19\Sequence\191.seq  
 Sample Name: ccv/lcs,qc449870,140090,tvh,s9651,5/5000  
 Data File: \\Lims\gdrive\ezchrom\Projects\GC19\Data\191\_017  
 Instrument: GC19 (Offline) Vial: N/A Operator: Tvh 2. Analyst (lims2k3\tvh2)  
 Method Name: \\Lims\gdrive\ezchrom\Projects\GC19\Method\tvhbtxe143.met

Software Version 3.1.7  
 Run Date: 7/9/2008 6:45:37 PM  
 Analysis Date: 7/10/2008 8:49:45 AM  
 Sample Amount: 5 Multiplier: 5  
 Vial & pH or Core ID: {Data Description}



---< General Method Parameters >---

No items selected for this section

---< A >---

No items selected for this section

Integration Events

Enabled	Event Type	Start (Minutes)	Stop (Minutes)	Value
Yes	Width	0	0	0.2
Yes	Threshold	0	0	50

Manual Integration Fixes

Data File: \\Lims\gdrive\ezchrom\Projects\GC19\Data\191\_017

Enabled	Event Type	Start (Minutes)	Stop (Minutes)	Value
Yes	Lowest Point Horizontal Baseli	0	26.017	0
Yes	Split Peak	8.515	0	0



**Total Extractable Hydrocarbons**

Lab #:	204434	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 3520C
Project#:	2008-02	Analysis:	EPA 8015B
Matrix:	Water	Sampled:	07/07/08
Units:	ug/L	Received:	07/07/08
Diln Fac:	1.000		

Field ID:	MW-2A	Batch#:	140055
Type:	SAMPLE	Prepared:	07/08/08
Lab ID:	204434-001	Analyzed:	07/09/08

Analyte	Result	RL
Diesel C10-C24	2,200 Y	50

Surrogate	%REC	Limits
Hexacosane	105	63-130

Field ID:	MW-2B	Batch#:	140165
Type:	SAMPLE	Prepared:	07/10/08
Lab ID:	204434-002	Analyzed:	07/11/08

Analyte	Result	RL
Diesel C10-C24	55 Y	50

Surrogate	%REC	Limits
Hexacosane	103	63-130

Type:	BLANK	Prepared:	07/08/08
Lab ID:	QC449728	Analyzed:	07/09/08
Batch#:	140055		

Analyte	Result	RL
Diesel C10-C24	ND	50

Surrogate	%REC	Limits
Hexacosane	92	63-130

Type:	BLANK	Prepared:	07/10/08
Lab ID:	QC450192	Analyzed:	07/11/08
Batch#:	140165		

Analyte	Result	RL
Diesel C10-C24	ND	50

Surrogate	%REC	Limits
Hexacosane	109	63-130

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

## Batch QC Report

Total Extractable Hydrocarbons			
Lab #:	204434	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 3520C
Project#:	2008-02	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC449729	Batch#:	140055
Matrix:	Water	Prepared:	07/08/08
Units:	ug/L	Analyzed:	07/10/08

Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	2,500	2,319	93	61-120

Surrogate	%REC	Limits
Hexacosane	116	63-130

## Batch QC Report

Total Extractable Hydrocarbons			
Lab #:	204434	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 3520C
Project#:	2008-02	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	140055
MSS Lab ID:	204390-002	Sampled:	07/02/08
Matrix:	Water	Received:	07/02/08
Units:	ug/L	Prepared:	07/08/08
Diln Fac:	1.000	Analyzed:	07/10/08

Type: MS Cleanup Method: EPA 3630C  
 Lab ID: QC449730

Analyte	MSS Result	Spiked	Result	%REC	Limits
Diesel C10-C24	473.6	2,500	3,046	103	58-126

Surrogate	%REC	Limits
Hexacosane	82	63-130

Type: MSD Cleanup Method: EPA 3630C  
 Lab ID: QC449731

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	2,500	3,676	128 *	58-126	19	31

Surrogate	%REC	Limits
Hexacosane	78	63-130

\*= Value outside of QC limits; see narrative

RPD= Relative Percent Difference

## Batch QC Report

Total Extractable Hydrocarbons			
Lab #:	204434	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 3520C
Project#:	2008-02	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	140055
MSS Lab ID:	204354-001	Sampled:	07/01/08
Matrix:	Water	Received:	07/01/08
Units:	ug/L	Prepared:	07/08/08
Diln Fac:	1.000	Analyzed:	07/09/08

Type: MS Lab ID: QC449813

Analyte	MSS Result	Spiked	Result	%REC	Limits
Diesel C10-C24	463.6	2,500	2,581	85	58-126

Surrogate	%REC	Limits
Hexacosane	101	63-130

Type: MSD Lab ID: QC449814

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	2,500	2,595	85	58-126	1	31

Surrogate	%REC	Limits
Hexacosane	97	63-130

RPD= Relative Percent Difference

## Batch QC Report

Total Extractable Hydrocarbons			
Lab #:	204434	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 3520C
Project#:	2008-02	Analysis:	EPA 8015B
Matrix:	Water	Batch#:	140165
Units:	ug/L	Prepared:	07/10/08
Diln Fac:	1.000	Analyzed:	07/11/08

Type: BS Cleanup Method: EPA 3630C  
 Lab ID: QC450193

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	2,500	2,090	84	61-120

Surrogate	%REC	Limits
Hexacosane	94	63-130

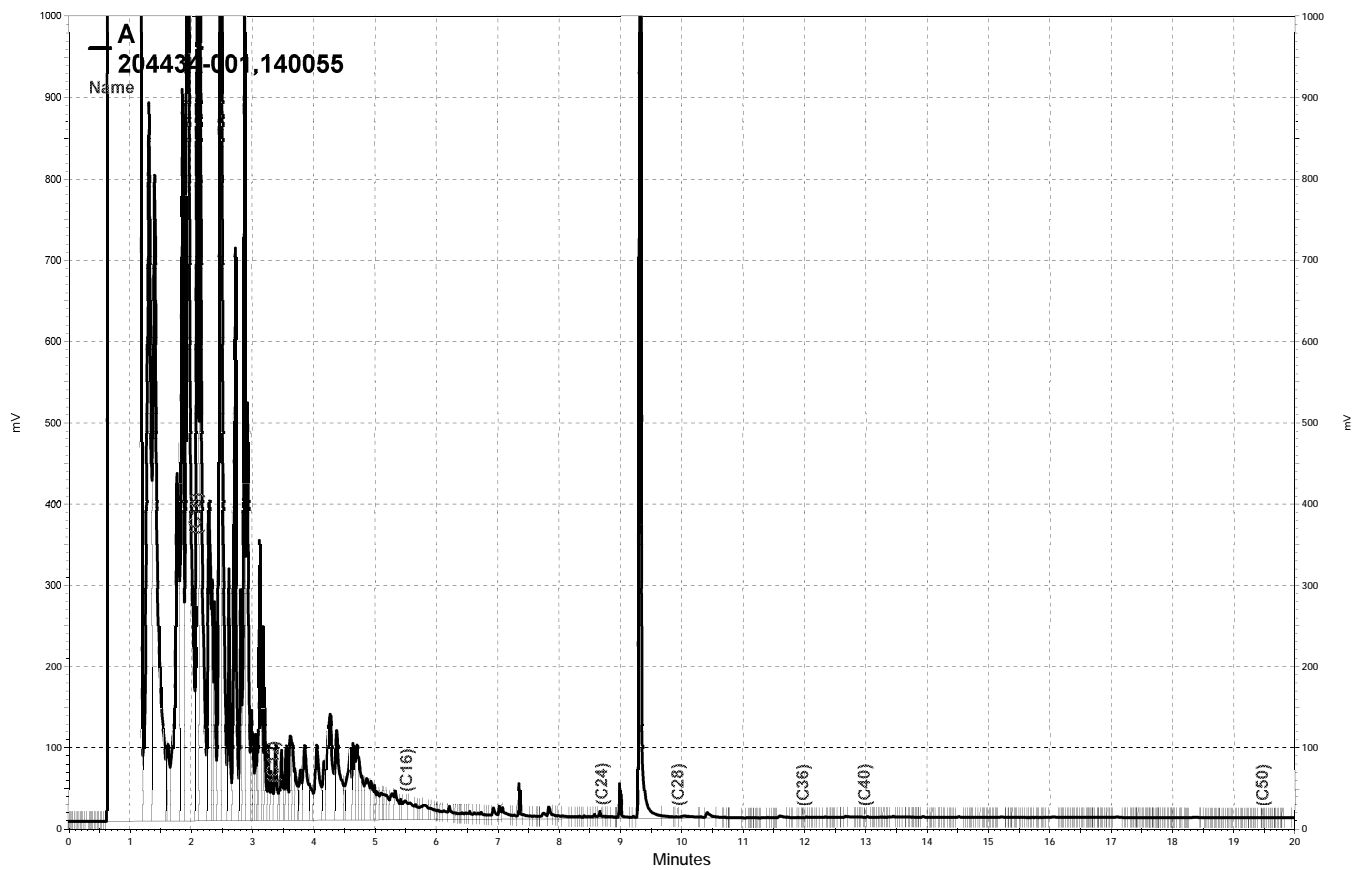
Type: BSD Cleanup Method: EPA 3630C  
 Lab ID: QC450194

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	2,500	2,369	95	61-120	12	29

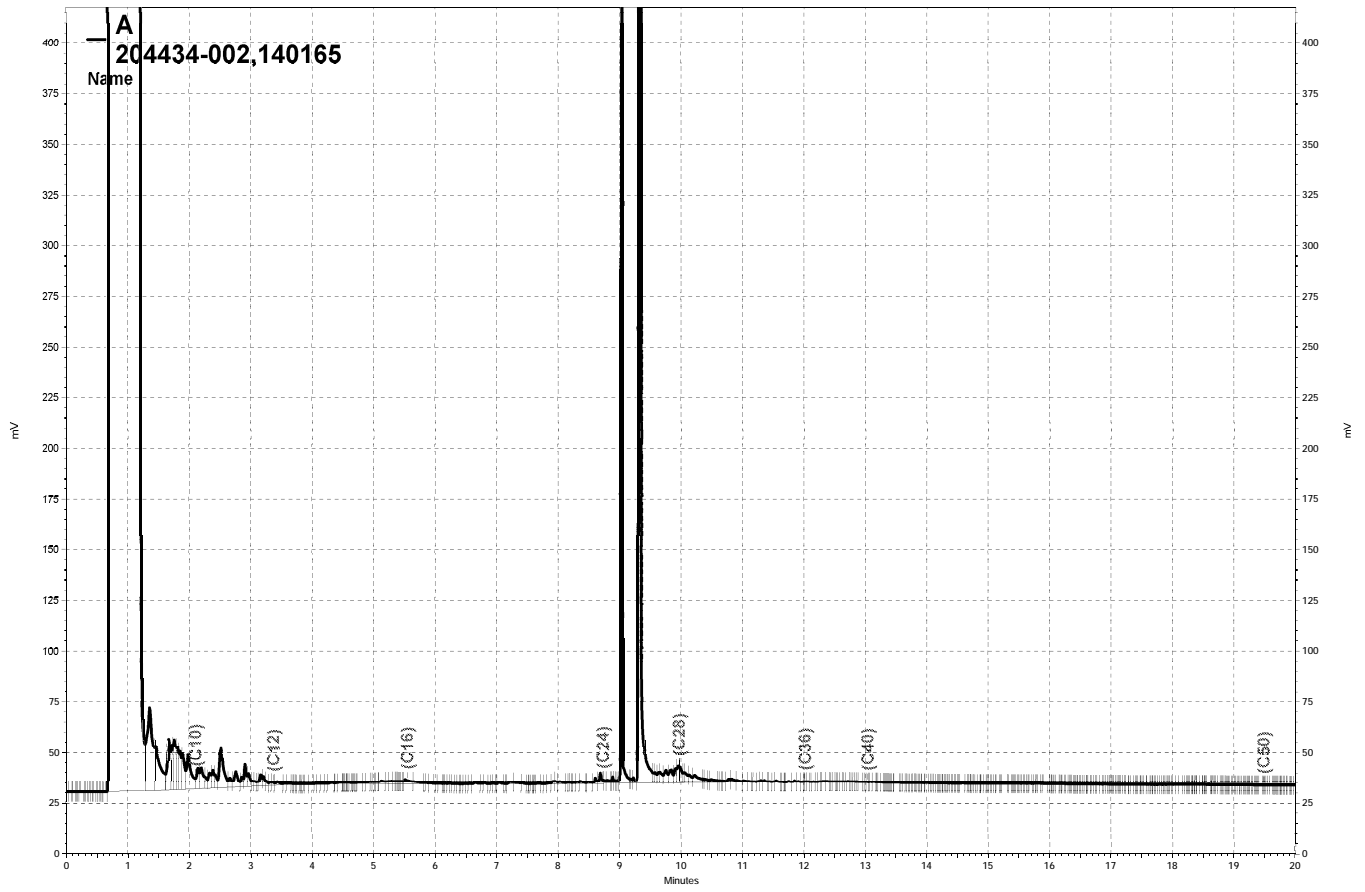
  

Surrogate	%REC	Limits
Hexacosane	106	63-130

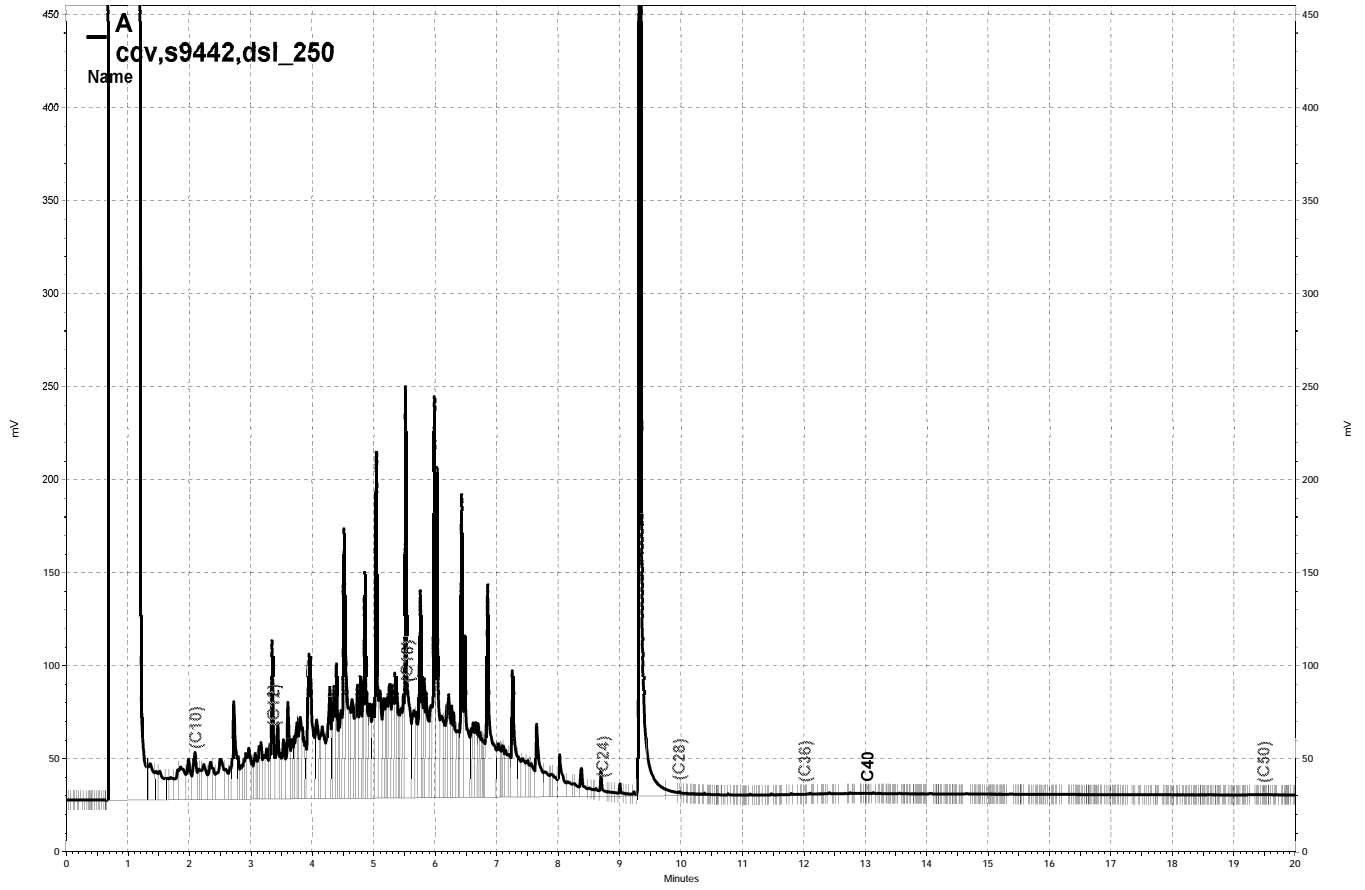
RPD= Relative Percent Difference



\\Lims\gdrive\ezchrom\Projects\GC17A\Data\191a009, A



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— \\Lims\gdrive\ezchrom\Projects\GC11A\Data\191a003, A



# Chain of Custody Record

205321

Lab job no. \_\_\_\_\_

Date 1 of 1

Page 1 of 1

Laboratory Curtis and Tompkins, Ltd. Method of Shipment Hand Delivery  
 Address 2323 Fifth Street Shipment No. \_\_\_\_\_  
Berkeley, California 94710 Airbill No. \_\_\_\_\_  
510-486-0900 Cooler No. \_\_\_\_\_  
 Project Owner East Bay Regional Park District Project Manager Richard Makdisi  
 Site Address 7867 Redwood Road Telephone No. (510) 644-3123  
Oakland, California Fax No. (510) 644-3859  
 Project Name Redwood Regional Park Samplers: (Signature) [Signature]  
 Project Number 2006-16

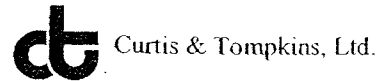
Field Sample Number	Location/Depth	Date	Time	Sample Type	Type/Size of Container	Preservation		Filtered	No. of Containers	Analysis Required	Remarks
						Cooler	Chemical				
1 2 MW-2A	-	8/14/08	1030	W	3 VOA, 11L	Y	Y(a)	N	4	XX	
MW-2B	-	↓	1100	↓	↓	↓	↓	N	4	XX	

Relinquished by: <u>[Signature]</u> Signature Printed: <u>Kal Glass</u> Company: <u>Stellar Environmental</u>	Date: <u>8/14/08</u> Time: <u>12:15</u>	Received by: <u>[Signature]</u> Signature Printed: <u>Tracy Bobber</u> Company: <u>CE7</u>	Date: <u>8/14/08</u> Time: <u>12:15</u>	Relinquished by: _____ Signature Printed: _____ Company: _____	Date: _____ Time: _____	Received by: _____ Signature Printed: _____ Company: _____	Date: _____ Time: _____		
Turnaround Time: <u>5 Day TAT - Standard</u> Comments: <u>Samples on ice</u> <u>(a) VOA w/ HCL</u>				Relinquished by: _____ Signature Printed: _____ Company: _____				Received by: _____ Signature Printed: _____ Company: _____	

2000-00-01

on ice & initial.

COOLER RECEIPT CHECKLIST



Login # 205321 Date Received 8/14/08 Number of coolers 1
Client SES Project EB RPD Redwood Reg Park
Date Opened 8/14 By (print) K Wellbrock (sign) [Signature]
Date Logged in [Arrow] By (print) [Arrow] (sign) [Arrow]

1. Did cooler come with a shipping slip (airbill, etc)? YES [X]
Shipping info

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

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

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

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

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

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

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

7. Temperature documentation:

Type of ice used: [ ] Wet [X] Blue/Gel [ ] None Temp(°C)

[X] Samples Received on ice & cold without a temperature blank

[ ] Samples received on ice directly from the field. Cooling process had begun

8. Were Method 5035 sampling containers present? YES [X]
If YES, what time were they transferred to freezer?

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

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

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

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

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

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

15. Are bubbles > 6mm absent in VOA samples? YES [X] NO N/A

16. Was the client contacted concerning this sample delivery? YES NO
If YES, Who was called? By Date:

COMMENTS

[Blank lines for comments]



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

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

Laboratory Job Number 205321  
ANALYTICAL REPORT

Stellar Environmental Solutions  
2198 6th Street  
Berkeley, CA 94710

Project : 2006-16  
Location : Redwood Regional Park  
Level : II

Sample ID

MW-2A  
MW-2B

Lab ID

205321-001  
205321-002

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: 08/21/2008

Signature:   
Senior Program Manager

Date: 08/28/2008

**CASE NARRATIVE**

Laboratory number: 205321  
Client: Stellar Environmental Solutions  
Project: 2006-16  
Location: Redwood Regional Park  
Request Date: 08/14/08  
Samples Received: 08/14/08

This hardcopy data package contains sample and QC results for two water samples, requested for the above referenced project on 08/14/08. The samples were received cold and intact.

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

No analytical problems were encountered.

**TPH-Extractables by GC (EPA 8015B):**

No analytical problems were encountered.

**Curtis & Tompkins Laboratories Analytical Report**

Lab #:	205321	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2006-16		
Matrix:	Water	Sampled:	08/14/08
Units:	ug/L	Received:	08/14/08
Batch#:	141571		

Field ID: MW-2A Diln Fac: 10.00  
 Type: SAMPLE Analyzed: 08/19/08  
 Lab ID: 205321-001

Analyte	Result	RL	Analysis
Gasoline C7-C12	28,000	500	EPA 8015B
MTBE	ND	20	EPA 8021B
Benzene	12	5.0	EPA 8021B
Toluene	19	5.0	EPA 8021B
Ethylbenzene	260	5.0	EPA 8021B
m,p-Xylenes	1,900	5.0	EPA 8021B
o-Xylene	840	5.0	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	110	69-140	EPA 8015B
Bromofluorobenzene (FID)	110	73-144	EPA 8015B
Trifluorotoluene (PID)	89	60-146	EPA 8021B
Bromofluorobenzene (PID)	94	65-143	EPA 8021B

Field ID: MW-2B Lab ID: 205321-002  
 Type: SAMPLE

Analyte	Result	RL	Diln Fac	Analyzed	Analysis
Gasoline C7-C12	8,700	50	1.000	08/19/08	EPA 8015B
MTBE	3.5	2.0	1.000	08/19/08	EPA 8021B
Benzene	5.7	0.50	1.000	08/19/08	EPA 8021B
Toluene	7.4	0.50	1.000	08/19/08	EPA 8021B
Ethylbenzene	130	0.50	1.000	08/19/08	EPA 8021B
m,p-Xylenes	620	2.5	5.000	08/20/08	EPA 8021B
o-Xylene	280	0.50	1.000	08/19/08	EPA 8021B

Surrogate	%REC	Limits	Diln Fac	Analyzed	Analysis
Trifluorotoluene (FID)	130	69-140	1.000	08/19/08	EPA 8015B
Bromofluorobenzene (FID)	121	73-144	1.000	08/19/08	EPA 8015B
Trifluorotoluene (PID)	90	60-146	1.000	08/19/08	EPA 8021B
Bromofluorobenzene (PID)	100	65-143	1.000	08/19/08	EPA 8021B

ND= Not Detected  
 RL= Reporting Limit

**Curtis & Tompkins Laboratories Analytical Report**

Lab #:	205321	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2006-16		
Matrix:	Water	Sampled:	08/14/08
Units:	ug/L	Received:	08/14/08
Batch#:	141571		

Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC456229	Analyzed:	08/19/08

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)	105	69-140	EPA 8015B
Bromofluorobenzene (FID)	108	73-144	EPA 8015B
Trifluorotoluene (PID)	86	60-146	EPA 8021B
Bromofluorobenzene (PID)	90	65-143	EPA 8021B

ND= Not Detected  
 RL= Reporting Limit

## Batch QC Report

**Curtis & Tompkins Laboratories Analytical Report**

Lab #:	205321	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2006-16	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC456230	Batch#:	141571
Matrix:	Water	Analyzed:	08/19/08
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1,000	947.6	95	80-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	113	69-140
Bromofluorobenzene (FID)	112	73-144

## Batch QC Report

**Curtis & Tompkins Laboratories Analytical Report**

Lab #:	205321	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2006-16	Analysis:	EPA 8021B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC456231	Batch#:	141571
Matrix:	Water	Analyzed:	08/19/08
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
MTBE	10.00	10.57	106	70-129
Benzene	10.00	9.544	95	80-120
Toluene	10.00	9.803	98	80-120
Ethylbenzene	10.00	9.356	94	80-120
m,p-Xylenes	10.00	9.026	90	80-120
o-Xylene	10.00	9.468	95	80-120

Surrogate	%REC	Limits
Trifluorotoluene (PID)	84	60-146
Bromofluorobenzene (PID)	90	65-143



## Batch QC Report

**Curtis & Tompkins Laboratories Analytical Report**

Lab #:	205321	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2006-16	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	141571
MSS Lab ID:	205337-003	Sampled:	08/13/08
Matrix:	Water	Received:	08/14/08
Units:	ug/L	Analyzed:	08/19/08
Diln Fac:	1.000		

Type: MS Lab ID: QC456232

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	20.16	2,000	1,964	97	67-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	123	69-140
Bromofluorobenzene (FID)	118	73-144

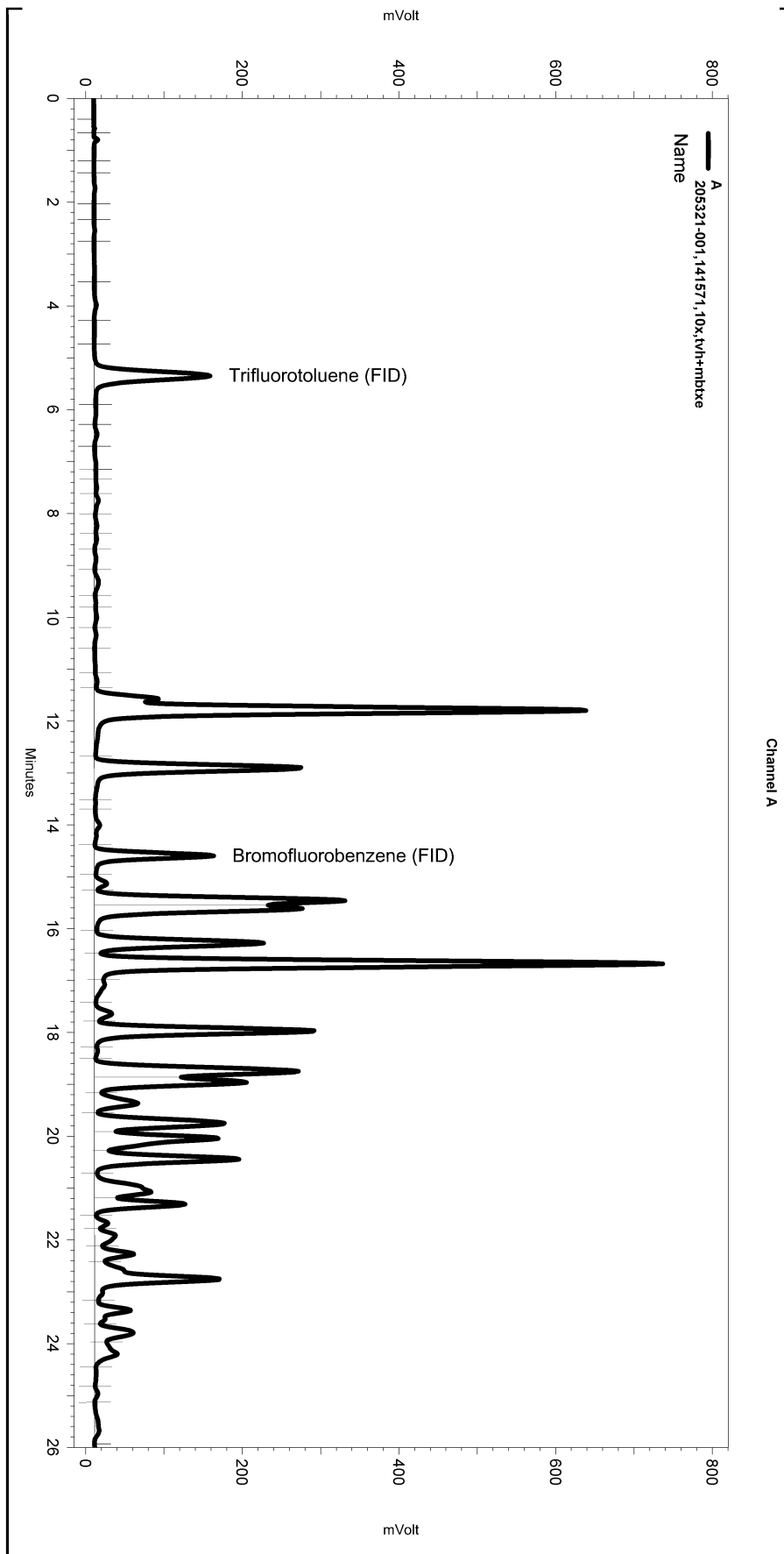
Type: MSD Lab ID: QC456233

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	1,805	89	67-120	8	20

Surrogate	%REC	Limits
Trifluorotoluene (FID)	121	69-140
Bromofluorobenzene (FID)	115	73-144

Sequence File: \\Lims\gdrive\ezchrom\Projects\GC07\Sequence\232.seq  
 Sample Name: 205321-001,141571,10x,tvh+mbtxe  
 Data File: \\Lims\gdrive\ezchrom\Projects\GC07\Data\232\_005  
 Instrument: GC07 (Offline) Vial: N/A Operator: Tvh 2. Analyst (lims2k3\tvh2)  
 Method Name: \\Lims\gdrive\ezchrom\Projects\GC07\Method\tvhbtxe224.met

Software Version 3.1.7  
 Run Date: 8/19/2008 1:55:26 PM  
 Analysis Date: 8/20/2008 9:30:18 AM  
 Sample Amount: 5 Multiplier: 5  
 Vial & pH or Core ID: a1.3



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Integration Events

Enabled	Event Type	Start (Minutes)	Stop (Minutes)	Value
Yes	Width	0	0	0.2
Yes	Threshold	0	0	50

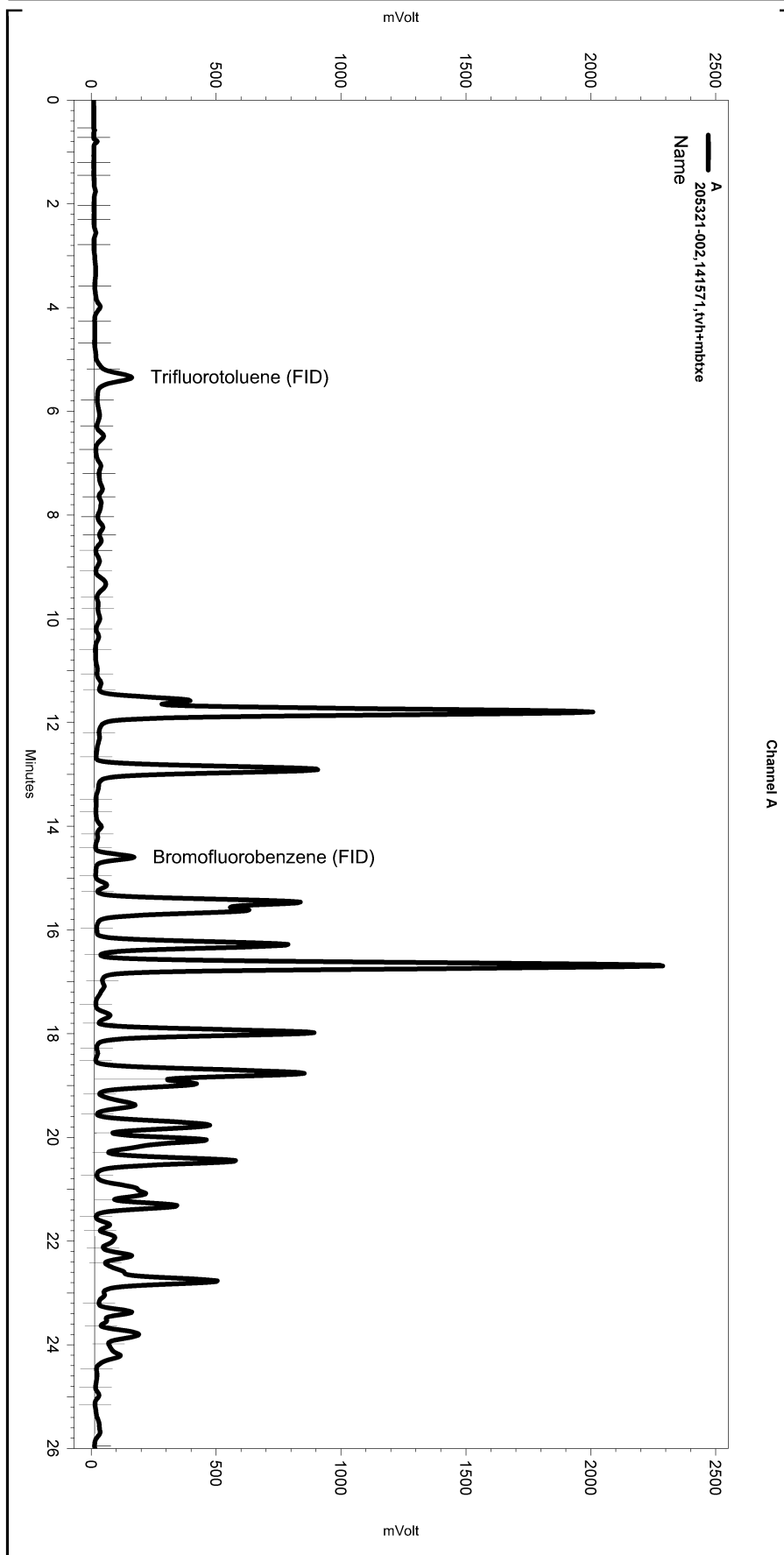
Manual Integration Fixes

Data File: \\Lims\gdrive\ezchrom\Projects\GC07\Data\232\_005

Enabled	Event Type	Start (Minutes)	Stop (Minutes)	Value
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Sequence File: \\Lims\gdrive\ezchrom\Projects\GC07\Sequence\232.seq  
 Sample Name: 205321-002,141571,tvh+mbtxe  
 Data File: \\Lims\gdrive\ezchrom\Projects\GC07\Data\232\_006  
 Instrument: GC07 (Offline) Vial: N/A Operator: Tvh 2. Analyst (lims2k3\tvh2)  
 Method Name: \\Lims\gdrive\ezchrom\Projects\GC07\Method\TVHBTXE224.met

Software Version 3.1.7  
 Run Date: 8/19/2008 2:32:15 PM  
 Analysis Date: 8/20/2008 12:50:16 PM  
 Sample Amount: 5 Multiplier: 5  
 Vial & pH or Core ID: a1.6



---< General Method Parameters >---

No items selected for this section

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No items selected for this section

Integration Events

Enabled	Event Type	Start (Minutes)	Stop (Minutes)	Value
Yes	Width	0	0	0.2
Yes	Threshold	0	0	50

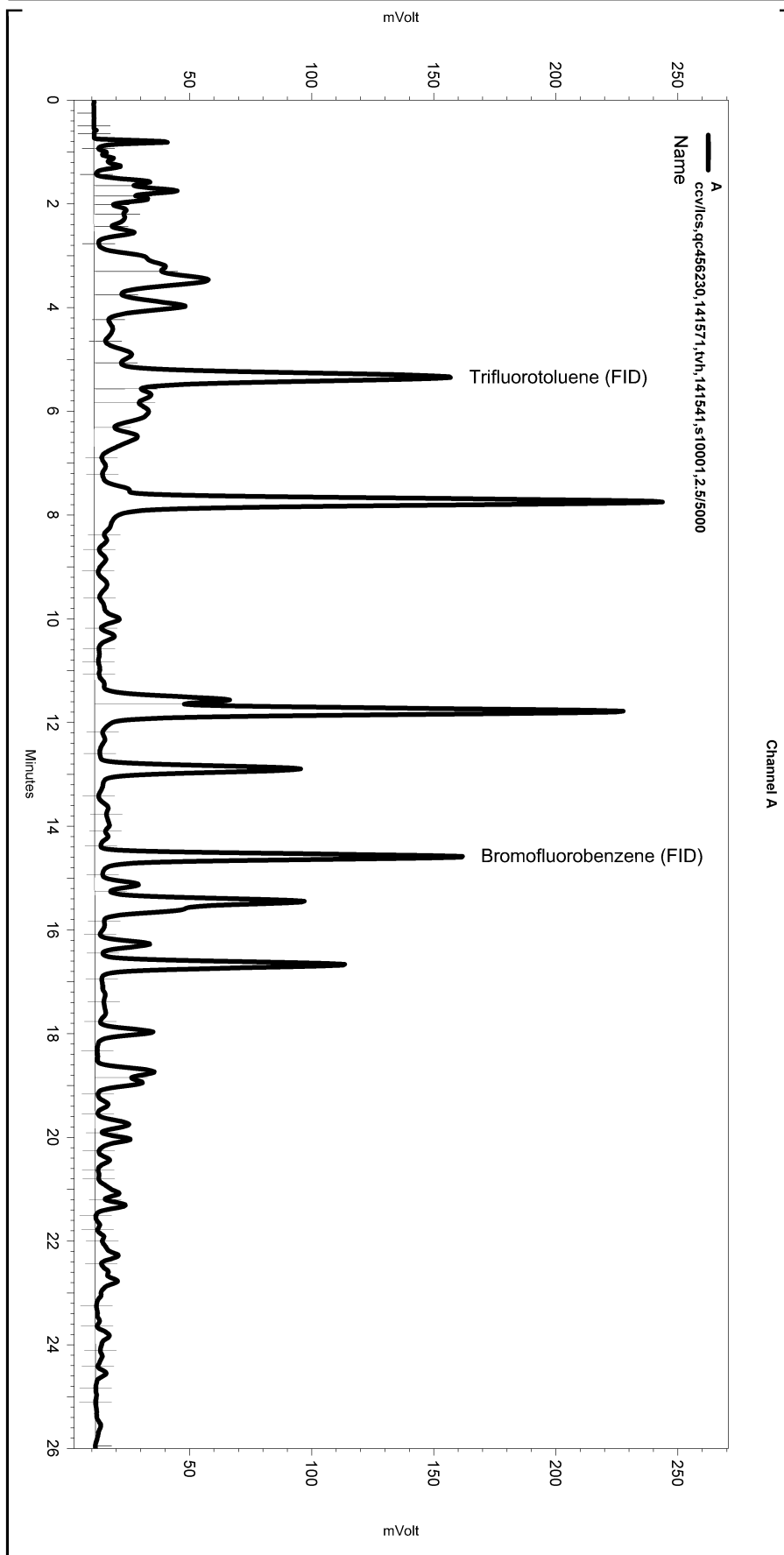
Manual Integration Fixes

Data File: \\Lims\gdrive\ezchrom\Projects\GC07\Data\232\_006

Enabled	Event Type	Start (Minutes)	Stop (Minutes)	Value
Yes	Split Peak	5.179	0	0

Sequence File: \\Lims\gdrive\ezchrom\Projects\GC07\Sequence\232.seq  
 Sample Name: ccv/lcs,qc456230,141571,tvh,141541,s10001,2.5/5000  
 Data File: \\Lims\gdrive\ezchrom\Projects\GC07\Data\232\_003  
 Instrument: GC07 (Offline) Vial: N/A Operator: Tvh 2. Analyst (lims2k3\tvh2)  
 Method Name: \\Lims\gdrive\ezchrom\Projects\GC07\Method\TVHBTXE224.met

Software Version 3.1.7  
 Run Date: 8/19/2008 12:21:53 PM  
 Analysis Date: 8/20/2008 12:46:59 PM  
 Sample Amount: 5 Multiplier: 5  
 Vial & pH or Core ID: {Data Description}



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 ---< General Method Parameters >-----  
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No items selected for this section

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No items selected for this section

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 Integration Events  
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Enabled	Event Type	Start (Minutes)	Stop (Minutes)	Value
Yes	Width	0	0	0.2
Yes	Threshold	0	0	50

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 Manual Integration Fixes  
 -----

Data File: \\Lims\gdrive\ezchrom\Projects\GC07\Data\232\_003

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

**Total Extractable Hydrocarbons**

Lab #:	205321	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 3520C
Project#:	2006-16	Analysis:	EPA 8015B
Matrix:	Water	Sampled:	08/14/08
Units:	ug/L	Received:	08/14/08
Diln Fac:	1.000	Prepared:	08/18/08
Batch#:	141559	Analyzed:	08/20/08

Field ID:           MW-2A                                   Lab ID:                 205321-001  
 Type:               SAMPLE

Analyte	Result	RL
Diesel C10-C24	7,100 Y	50

Surrogate	%REC	Limits
Hexacosane	116	63-130

Field ID:           MW-2B                                   Lab ID:                 205321-002  
 Type:               SAMPLE

Analyte	Result	RL
Diesel C10-C24	2,700 Y	50

Surrogate	%REC	Limits
Hexacosane	107	63-130

Type:               BLANK                                   Cleanup Method:    EPA 3630C  
 Lab ID:             QC456143

Analyte	Result	RL
Diesel C10-C24	ND	50

Surrogate	%REC	Limits
Hexacosane	102	63-130

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

## Batch QC Report

Total Extractable Hydrocarbons			
Lab #:	205321	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 3520C
Project#:	2006-16	Analysis:	EPA 8015B
Matrix:	Water	Batch#:	141559
Units:	ug/L	Prepared:	08/18/08
Diln Fac:	1.000	Analyzed:	08/20/08

Type: BS Cleanup Method: EPA 3630C  
 Lab ID: QC456144

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	2,500	2,268	91	61-120

Surrogate	%REC	Limits
Hexacosane	101	63-130

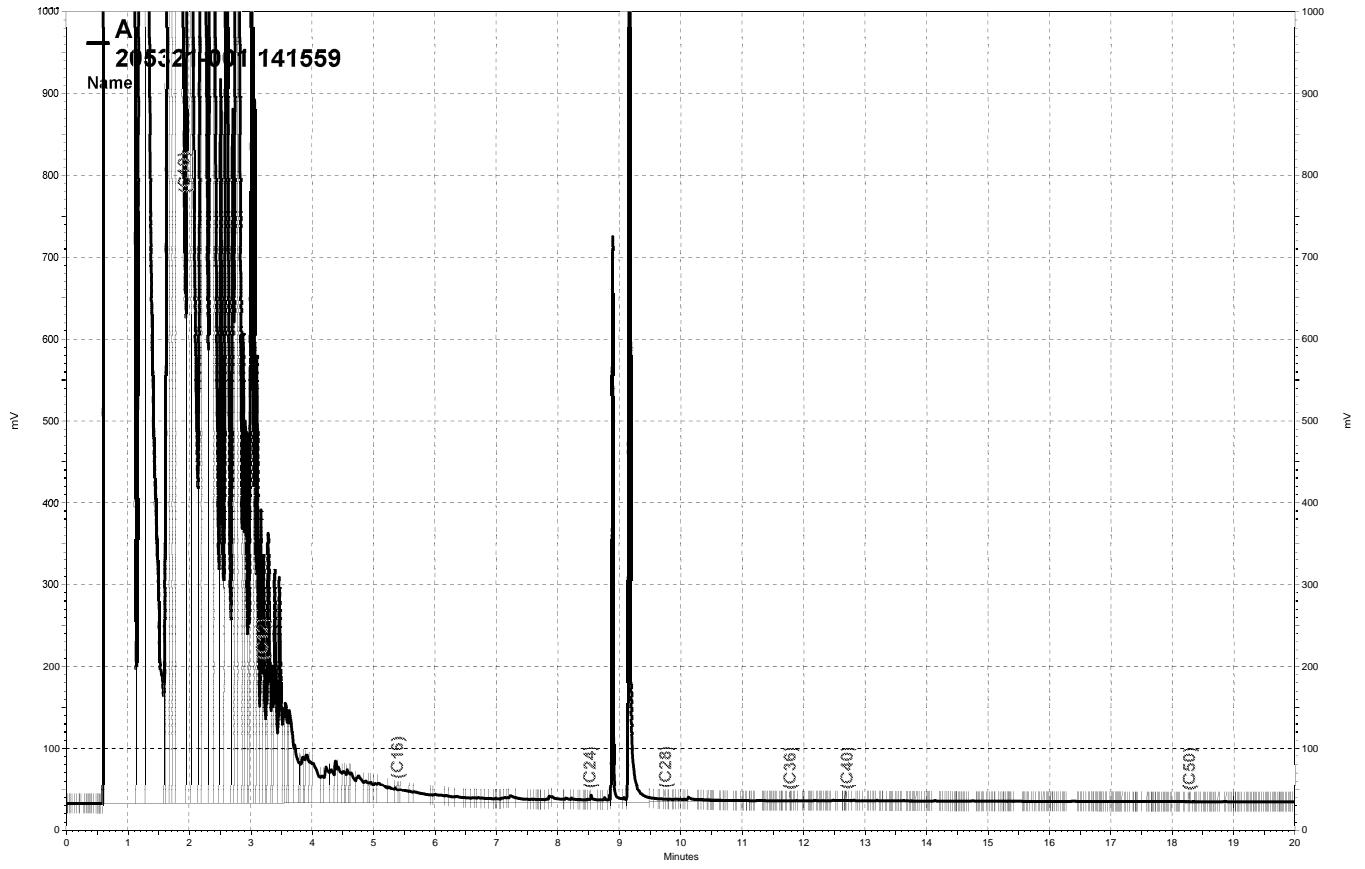
Type: BSD Cleanup Method: EPA 3630C  
 Lab ID: QC456145

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	2,500	2,388	96	61-120	5	29

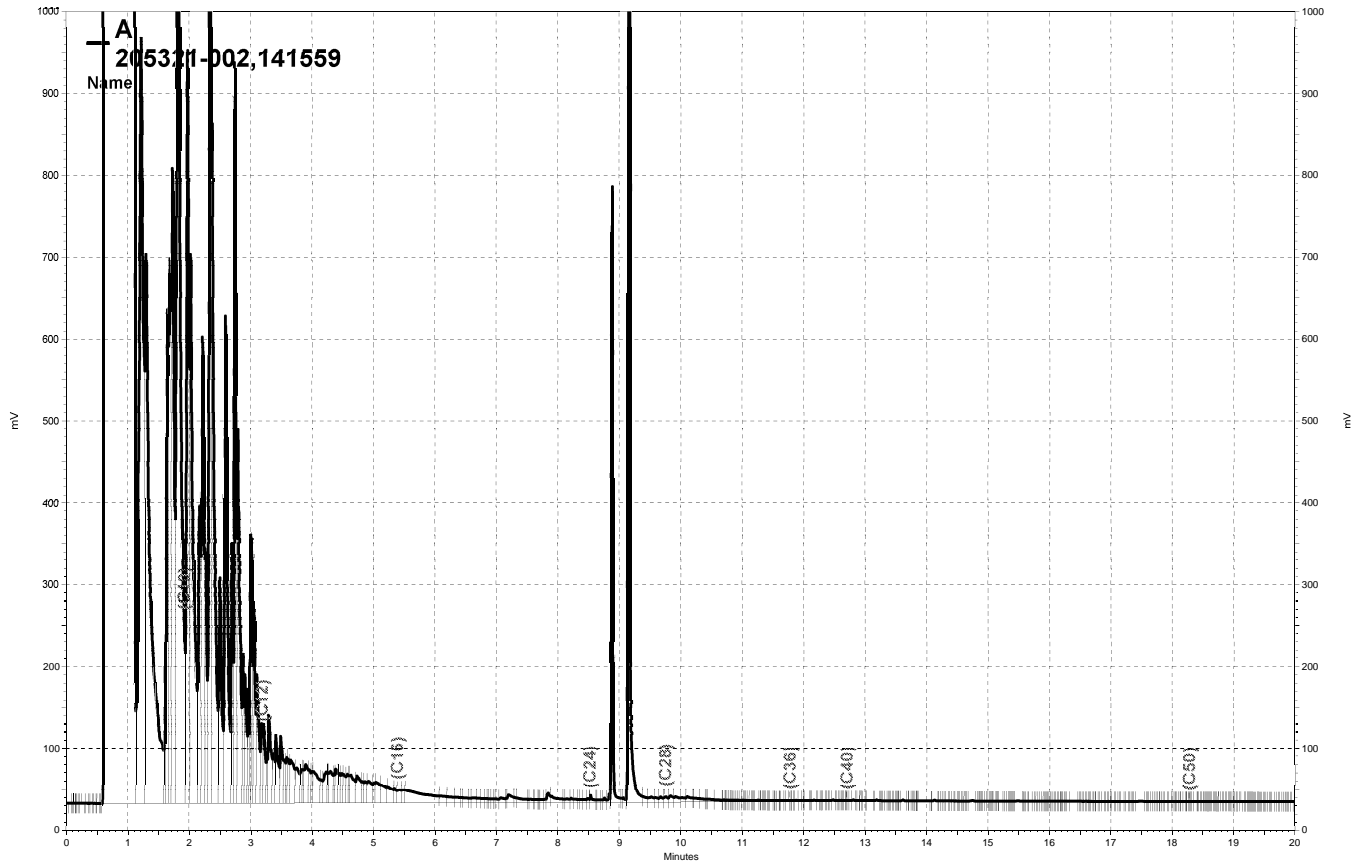
  

Surrogate	%REC	Limits
Hexacosane	108	63-130

RPD= Relative Percent Difference

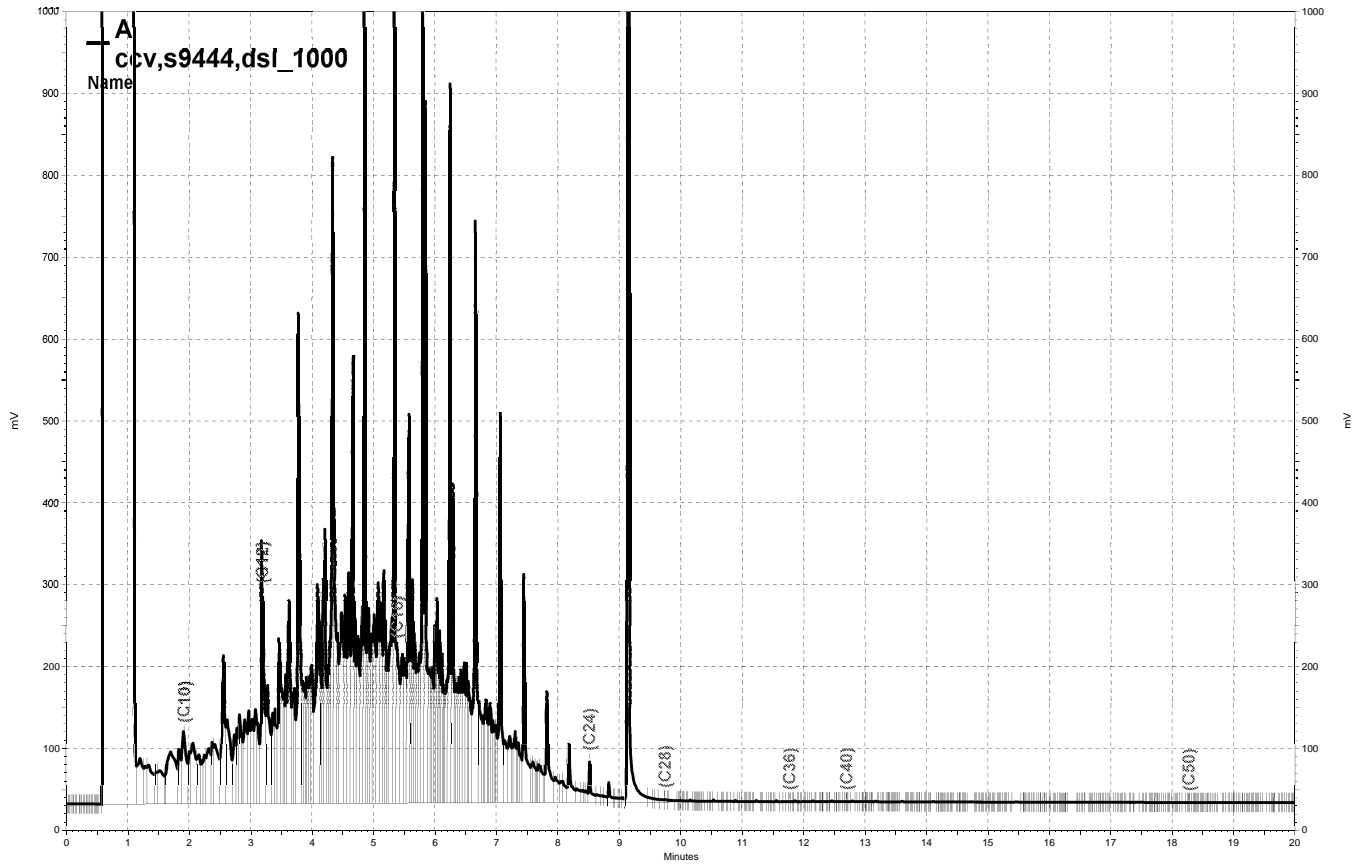


— \\Lims\gdrive\ezchrom\Projects\GC11A\Data\231a060, A



\\Lims\gdrive\ezchrom\Projects\GC11A\Data\231a061, A





\\Lims\gdrive\ezchrom\Projects\GC11A\Data\231a050, A

# Chain of Custody Record

Lab job no. 206149  
 Date \_\_\_\_\_  
 Page 1 of 1

Laboratory Curtis and Tompkins, Ltd. Method of Shipment Hand Delivery  
 Address 2323 Fifth Street Shipment No. \_\_\_\_\_  
Berkeley, California 94710 Airbill No. \_\_\_\_\_  
510-486-0900 Cooler No. \_\_\_\_\_  
 Project Owner East Bay Regional Park District Project Manager Richard Makdisi  
 Site Address 7867 Redwood Road Telephone No. (510) 644-3123  
Oakland, California Fax No. (510) 644-3859  
 Project Name Redwood Regional Park Samplers: (Signature) [Signature]  
 Project Number ~~2006-16~~ 2008-02

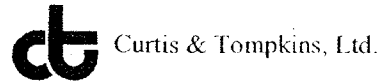
Field Sample Number	Location/ Depth	Date	Time	Sample Type	Type/Size of Container	Preservation		Filtered	No. of Containers	Analysis Required										Remarks					
						Cooler	Chemical			1	2	3	4	5	6	7	8	9	10		11	12			
1		07-18-08	1405	W	1 liter Amber NP 3 UOAS HCL		HCL/NP			X	X	X													
2			1152							X	X	X													
3			1324							X	X	X													
4			1305							X	X	X													
5			1120							X	X	X													
6			1354							X	X	X													
7			1220							X	X	X													

1  
2  
3  
4  
5  
6  
7

Relinquished by: Signature <u>[Signature]</u> Printed <u>Max Todi</u> Company <u>Stellar Environmental</u>	Date <u>07-18-08</u>	Received by: Signature <u>[Signature]</u> Printed <u>Long Wen</u> Company <u>C&amp;T</u>	Date <u>7/18/08</u>	Relinquished by: Signature _____ Printed _____ Company _____	Date _____	Received by: Signature _____ Printed _____ Company _____	Date _____
	Time <u>3:02pm</u>		Time _____		Time _____		Time _____
Turnaround Time: <u>5 Day TAT</u>				Comments: <u>Please provide a GeoTracker EDF for groundwater samples only</u> <u>Surface water samples collected by Stellar Environmental Solutions.</u> <u>Groundwater samples collected by Blaine Tech Services.</u> <u>on ice intact Global ID: T0600100489</u>			

2000-00-01

COOLER RECEIPT CHECKLIST



Login # 206149 Date Received 9-18-08 Number of coolers 1
Client STEWAR ENVIR. Project EAST BAY REG. PARK DIST.

Date Opened 9-18-08 By (print) SAM EVANS (sign)
Date Logged in By (print) M. VILLONVEUX (sign)

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

2A. Were custody seals present? YES 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, Cloth material, Foam blocks, Cardboard, Bags, Styrofoam, None, Paper towels

7. Temperature documentation:

Type of ice used: Wet Blue/Gel None Temp(C) 3.5

Samples Received on ice & cold without a temperature blank

Samples received on ice directly from the field. Cooling process had begun

8. Were Method 5035 sampling containers 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 > 6mm 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

Blank lines for handwritten comments.



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

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

Laboratory Job Number 206149
ANALYTICAL REPORT

Stellar Environmental Solutions
2198 6th Street
Berkeley, CA 94710

Project : 2008-02
Location : Redwood Regional Park
Level : II

Table with 2 columns: Sample ID, Lab ID. Rows include MW-2 through MW-12 with corresponding Lab IDs from 206149-001 to 206149-007.

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: [Handwritten Signature]
Project Manager

Date: 10/01/2008

Signature: [Handwritten Signature]
Senior Program Manager

Date: 10/01/2008

### CASE NARRATIVE

Laboratory number: 206149  
Client: Stellar Environmental Solutions  
Project: 2008-02  
Location: Redwood Regional Park  
Request Date: 09/18/08  
Samples Received: 09/18/08

This hardcopy data package contains sample and QC results for seven water samples, requested for the above referenced project on 09/18/08. The samples were received cold and intact.

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

Low responses were observed for MTBE in the CCV analyzed 09/20/08 08:38 and the CCV analyzed 09/20/08 17:23; affected data was qualified with "b". No other analytical problems were encountered.

**TPH-Extractables by GC (EPA 8015B):**

No analytical problems were encountered.



### Curtis & Tompkins Laboratories Analytical Report

Lab #: 206149	Location: Redwood Regional Park
Client: Stellar Environmental Solutions	Prep: EPA 5030B
Project#: 2008-02	
Matrix: Water	Sampled: 09/18/08
Units: ug/L	Received: 09/18/08

Field ID: MW-2    Lab ID: 206149-001  
Type: SAMPLE    Analyzed: 09/20/08

Analyte	Result	RL	Diln Fac	Batch#	Analysis
Gasoline C7-C12	40,000 Y	250	5.000	142723	EPA 8015B
MTBE	9.5 C	2.0	1.000	142703	EPA 8021B
Benzene	1.6 C	0.50	1.000	142703	EPA 8021B
Toluene	ND	0.50	1.000	142703	EPA 8021B
Ethylbenzene	110	2.5	5.000	142723	EPA 8021B
m,p-Xylenes	580	2.5	5.000	142723	EPA 8021B
o-Xylene	330	2.5	5.000	142723	EPA 8021B

Surrogate	%REC	Limits	Diln Fac	Batch#	Analysis
Trifluorotoluene (FID)	108	61-149	5.000	142723	EPA 8015B
Bromofluorobenzene (FID)	130	65-146	5.000	142723	EPA 8015B
Trifluorotoluene (PID)	104	52-143	5.000	142723	EPA 8021B
Bromofluorobenzene (PID)	106	56-141	5.000	142723	EPA 8021B

Field ID: MW-7    Lab ID: 206149-002  
Type: SAMPLE    Diln Fac: 1.000

Analyte	Result	RL	Batch#	Analyzed	Analysis
Gasoline C7-C12	6,400 Y	50	142723	09/20/08	EPA 8015B
MTBE	ND	2.0	142703	09/19/08	EPA 8021B
Benzene	22 C	0.50	142703	09/19/08	EPA 8021B
Toluene	ND	0.50	142703	09/19/08	EPA 8021B
Ethylbenzene	100	0.50	142703	09/19/08	EPA 8021B
m,p-Xylenes	9.3	0.50	142703	09/19/08	EPA 8021B
o-Xylene	ND	0.50	142703	09/19/08	EPA 8021B

Surrogate	%REC	Limits	Batch#	Analyzed	Analysis
Trifluorotoluene (FID)	126	61-149	142723	09/20/08	EPA 8015B
Bromofluorobenzene (FID)	109	65-146	142723	09/20/08	EPA 8015B
Trifluorotoluene (PID)	99	52-143	142703	09/19/08	EPA 8021B
Bromofluorobenzene (PID)	87	56-141	142703	09/19/08	EPA 8021B

C= Presence confirmed, but RPD between columns exceeds 40%

Y= Sample exhibits chromatographic pattern which does not resemble standard

NA= Not Analyzed

ND= Not Detected

RL= Reporting Limit



### Curtis & Tompkins Laboratories Analytical Report

Lab #: 206149	Location: Redwood Regional Park
Client: Stellar Environmental Solutions	Prep: EPA 5030B
Project#: 2008-02	
Matrix: Water	Sampled: 09/18/08
Units: ug/L	Received: 09/18/08

Field ID: MW-10                      Lab ID: 206149-005  
 Type: SAMPLE                      Diln Fac: 1.000

Analyte	Result	RL	Batch#	Analyzed	Analysis
Gasoline C7-C12	80 Y	50	142723	09/20/08	EPA 8015B
MTBE	3.0 C	2.0	142703	09/19/08	EPA 8021B
Benzene	1.6 C	0.50	142703	09/19/08	EPA 8021B
Toluene	ND	0.50	142703	09/19/08	EPA 8021B
Ethylbenzene	0.52	0.50	142723	09/20/08	EPA 8021B
m,p-Xylenes	ND	0.50	142703	09/19/08	EPA 8021B
o-Xylene	ND	0.50	142703	09/19/08	EPA 8021B

Surrogate	%REC	Limits	Batch#	Analyzed	Analysis
Trifluorotoluene (FID)	104	61-149	142723	09/20/08	EPA 8015B
Bromofluorobenzene (FID)	97	65-146	142723	09/20/08	EPA 8015B
Trifluorotoluene (PID)	84	52-143	142703	09/19/08	EPA 8021B
Bromofluorobenzene (PID)	84	56-141	142703	09/19/08	EPA 8021B

Field ID: MW-11                      Lab ID: 206149-006  
 Type: SAMPLE                      Diln Fac: 1.000

Analyte	Result	RL	Batch#	Analyzed	Analysis
Gasoline C7-C12	7,300 Y	50	142723	09/20/08	EPA 8015B
MTBE	ND	2.0	142703	09/19/08	EPA 8021B
Benzene	130	0.50	142703	09/19/08	EPA 8021B
Toluene	ND	0.50	142703	09/19/08	EPA 8021B
Ethylbenzene	110	0.50	142703	09/19/08	EPA 8021B
m,p-Xylenes	4.5	0.50	142703	09/19/08	EPA 8021B
o-Xylene	ND	0.50	142703	09/19/08	EPA 8021B

Surrogate	%REC	Limits	Batch#	Analyzed	Analysis
Trifluorotoluene (FID)	146	61-149	142723	09/20/08	EPA 8015B
Bromofluorobenzene (FID)	129	65-146	142723	09/20/08	EPA 8015B
Trifluorotoluene (PID)	112	52-143	142703	09/19/08	EPA 8021B
Bromofluorobenzene (PID)	85	56-141	142703	09/19/08	EPA 8021B

C= Presence confirmed, but RPD between columns exceeds 40%  
 Y= Sample exhibits chromatographic pattern which does not resemble standard  
 NA= Not Analyzed  
 ND= Not Detected  
 RL= Reporting Limit



**Curtis & Tompkins Laboratories Analytical Report**

Lab #: 206149	Location: Redwood Regional Park
Client: Stellar Environmental Solutions	Prep: EPA 5030B
Project#: 2008-02	
Matrix: Water	Sampled: 09/18/08
Units: ug/L	Received: 09/18/08

Field ID: MW-12                      Lab ID: 206149-007  
 Type: SAMPLE                      Diln Fac: 1.000

Analyte	Result	RL	Batch#	Analyzed	Analysis
Gasoline C7-C12	370 Y	50	142723	09/20/08	EPA 8015B
MTBE	ND	2.0	142703	09/19/08	EPA 8021B
Benzene	ND	0.50	142703	09/19/08	EPA 8021B
Toluene	ND	0.50	142703	09/19/08	EPA 8021B
Ethylbenzene	2.8	0.50	142703	09/19/08	EPA 8021B
m,p-Xylenes	0.98 C	0.50	142703	09/19/08	EPA 8021B
o-Xylene	ND	0.50	142703	09/19/08	EPA 8021B

Surrogate	%REC	Limits	Batch#	Analyzed	Analysis
Trifluorotoluene (FID)	128	61-149	142723	09/20/08	EPA 8015B
Bromofluorobenzene (FID)	101	65-146	142723	09/20/08	EPA 8015B
Trifluorotoluene (PID)	95	52-143	142703	09/19/08	EPA 8021B
Bromofluorobenzene (PID)	86	56-141	142703	09/19/08	EPA 8021B

Type: BLANK                      Batch#: 142703  
 Lab ID: QC461125                      Analyzed: 09/19/08  
 Diln Fac: 1.000                      Analysis: EPA 8021B

Analyte	Result	RL
MTBE	ND	2.0
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	Result	%REC	Limits
Trifluorotoluene (FID)	NA		
Bromofluorobenzene (FID)	NA		
Trifluorotoluene (PID)		93	52-143
Bromofluorobenzene (PID)		92	56-141

C= Presence confirmed, but RPD between columns exceeds 40%  
 Y= Sample exhibits chromatographic pattern which does not resemble standard  
 NA= Not Analyzed  
 ND= Not Detected  
 RL= Reporting Limit

**Curtis & Tompkins Laboratories Analytical Report**

Lab #:	206149	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2008-02		
Matrix:	Water	Sampled:	09/18/08
Units:	ug/L	Received:	09/18/08

Type:	BLANK	Batch#:	142723
Lab ID:	QC461224	Analyzed:	09/20/08
Diln Fac:	1.000		

Analyte	Result	RL	Analysis
Gasoline C7-C12	ND	50	EPA 8015B
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)	102	61-149	EPA 8015B
Bromofluorobenzene (FID)	99	65-146	EPA 8015B
Trifluorotoluene (PID)	102	52-143	EPA 8021B
Bromofluorobenzene (PID)	97	56-141	EPA 8021B

C= Presence confirmed, but RPD between columns exceeds 40%  
 Y= Sample exhibits chromatographic pattern which does not resemble standard  
 NA= Not Analyzed  
 ND= Not Detected  
 RL= Reporting Limit

## Batch QC Report

**Curtis & Tompkins Laboratories Analytical Report**

Lab #:	206149	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2008-02	Analysis:	EPA 8021B
Matrix:	Water	Diln Fac:	1.000
Units:	ug/L	Batch#:	142703

Type: BS Analyzed: 09/19/08  
 Lab ID: QC461222

Analyte	Spiked	Result	%REC	Limits
MTBE	10.00	9.986	100	61-143
Benzene	10.00	9.650	97	80-120
Toluene	10.00	9.994	100	77-120
Ethylbenzene	10.00	10.41	104	79-123
m,p-Xylenes	10.00	9.832	98	78-123
o-Xylene	10.00	9.936	99	78-122

Surrogate	%REC	Limits
Trifluorotoluene (PID)	87	52-143
Bromofluorobenzene (PID)	87	56-141

Type: BSD Analyzed: 09/20/08  
 Lab ID: QC461223

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	30.00	28.28	94	61-143	6	32
Benzene	30.00	26.74	89	80-120	8	20
Toluene	30.00	27.06	90	77-120	10	20
Ethylbenzene	30.00	26.78	89	79-123	15	20
m,p-Xylenes	30.00	25.68	86	78-123	14	21
o-Xylene	30.00	26.19	87	78-122	13	20

Surrogate	%REC	Limits
Trifluorotoluene (PID)	90	52-143
Bromofluorobenzene (PID)	91	56-141

RPD= Relative Percent Difference

## Batch QC Report

**Curtis & Tompkins Laboratories Analytical Report**

Lab #:	206149	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2008-02	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC461225	Batch#:	142723
Matrix:	Water	Analyzed:	09/20/08
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1,000	1,013	101	78-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	111	61-149
Bromofluorobenzene (FID)	97	65-146

## Batch QC Report

**Curtis & Tompkins Laboratories Analytical Report**

Lab #:	206149	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2008-02	Analysis:	EPA 8021B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC461226	Batch#:	142723
Matrix:	Water	Analyzed:	09/20/08
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Ethylbenzene	10.00	11.39	114	79-123
m,p-Xylenes	10.00	11.12	111	78-123
o-Xylene	10.00	11.15	111	78-122

Surrogate	%REC	Limits
Trifluorotoluene (PID)	103	52-143
Bromofluorobenzene (PID)	97	56-141

## Batch QC Report

**Curtis & Tompkins Laboratories Analytical Report**

Lab #:	206149	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2008-02	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	142723
MSS Lab ID:	206184-001	Sampled:	09/18/08
Matrix:	Water	Received:	09/19/08
Units:	ug/L	Analyzed:	09/20/08
Diln Fac:	1.000		

Type: MS Lab ID: QC461227

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	18.67	2,000	2,197	109	65-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	130	61-149
Bromofluorobenzene (FID)	104	65-146

Type: MSD Lab ID: QC461228

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	2,221	110	65-120	1	20

Surrogate	%REC	Limits
Trifluorotoluene (FID)	128	61-149
Bromofluorobenzene (FID)	104	65-146

RPD= Relative Percent Difference





















<b>Total Extractable Hydrocarbons</b>			
Lab #:	206149	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 3520C
Project#:	2008-02	Analysis:	EPA 8015B
Matrix:	Water	Sampled:	09/18/08
Units:	ug/L	Received:	09/18/08
Diln Fac:	1.000	Prepared:	09/25/08
Batch#:	142940	Analyzed:	09/26/08

Field ID:           MW-11                                       Lab ID:                206149-006  
 Type:               SAMPLE

Analyte	Result	RL
Diesel C10-C24	4,600 Y	50

Surrogate	%REC	Limits
Hexacosane	98	58-127

Field ID:           MW-12                                       Lab ID:                206149-007  
 Type:               SAMPLE

Analyte	Result	RL
Diesel C10-C24	95 Y	50

Surrogate	%REC	Limits
Hexacosane	96	58-127

Type:               BLANK                                       Lab ID:                QC462144

Analyte	Result	RL
Diesel C10-C24	ND	50

Surrogate	%REC	Limits
Hexacosane	94	58-127

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



## Batch QC Report

Total Extractable Hydrocarbons			
Lab #:	206149	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 3520C
Project#:	2008-02	Analysis:	EPA 8015B
Matrix:	Water	Batch#:	142940
Units:	ug/L	Prepared:	09/25/08
Diln Fac:	1.000	Analyzed:	09/26/08

Type: BS Cleanup Method: EPA 3630C  
 Lab ID: QC462145

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	2,500	2,132	85	52-120

Surrogate	%REC	Limits
Hexacosane	89	58-127

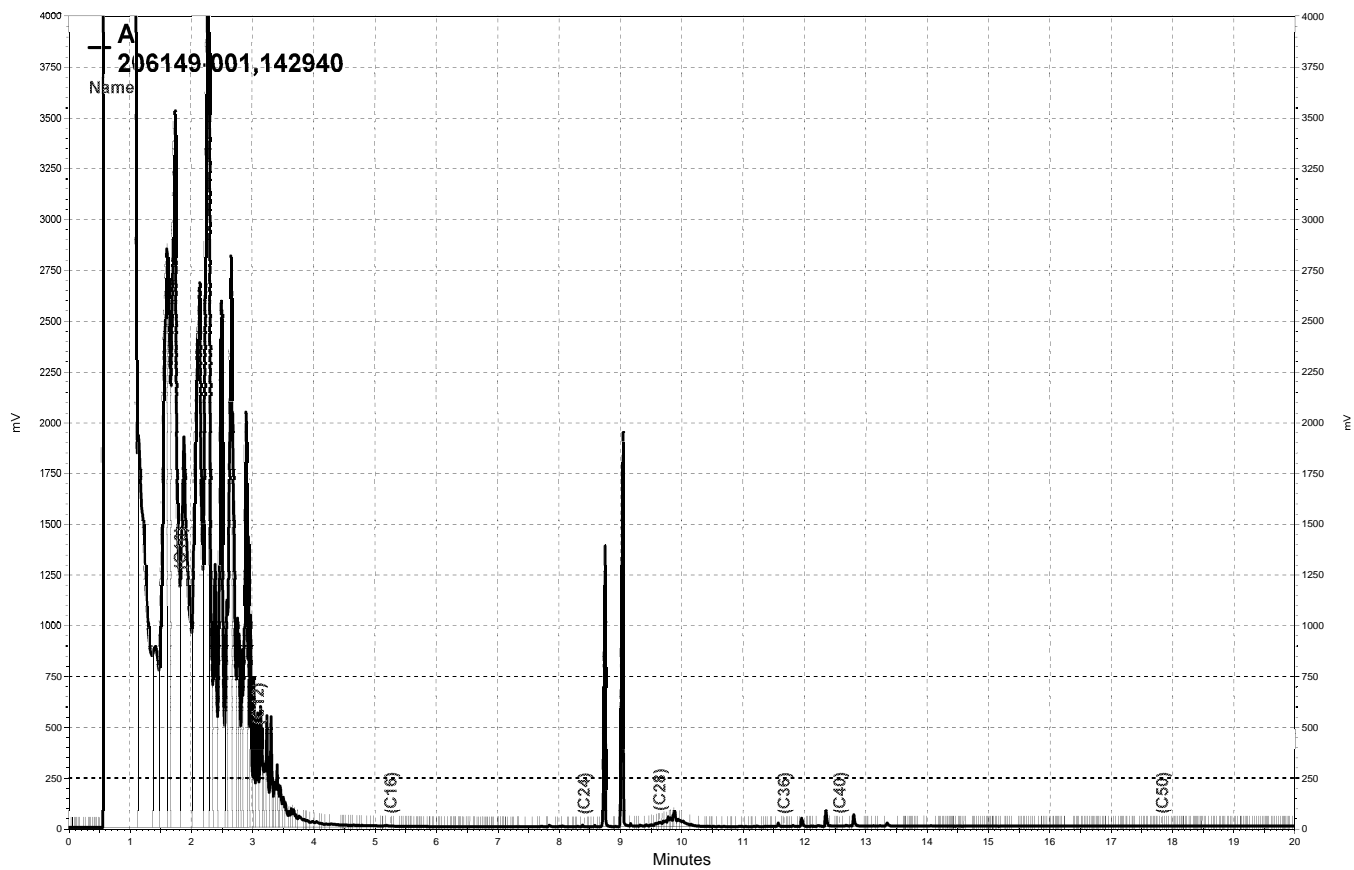
Type: BSD Cleanup Method: EPA 3630C  
 Lab ID: QC462146

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	2,500	2,394	96	52-120	12	30

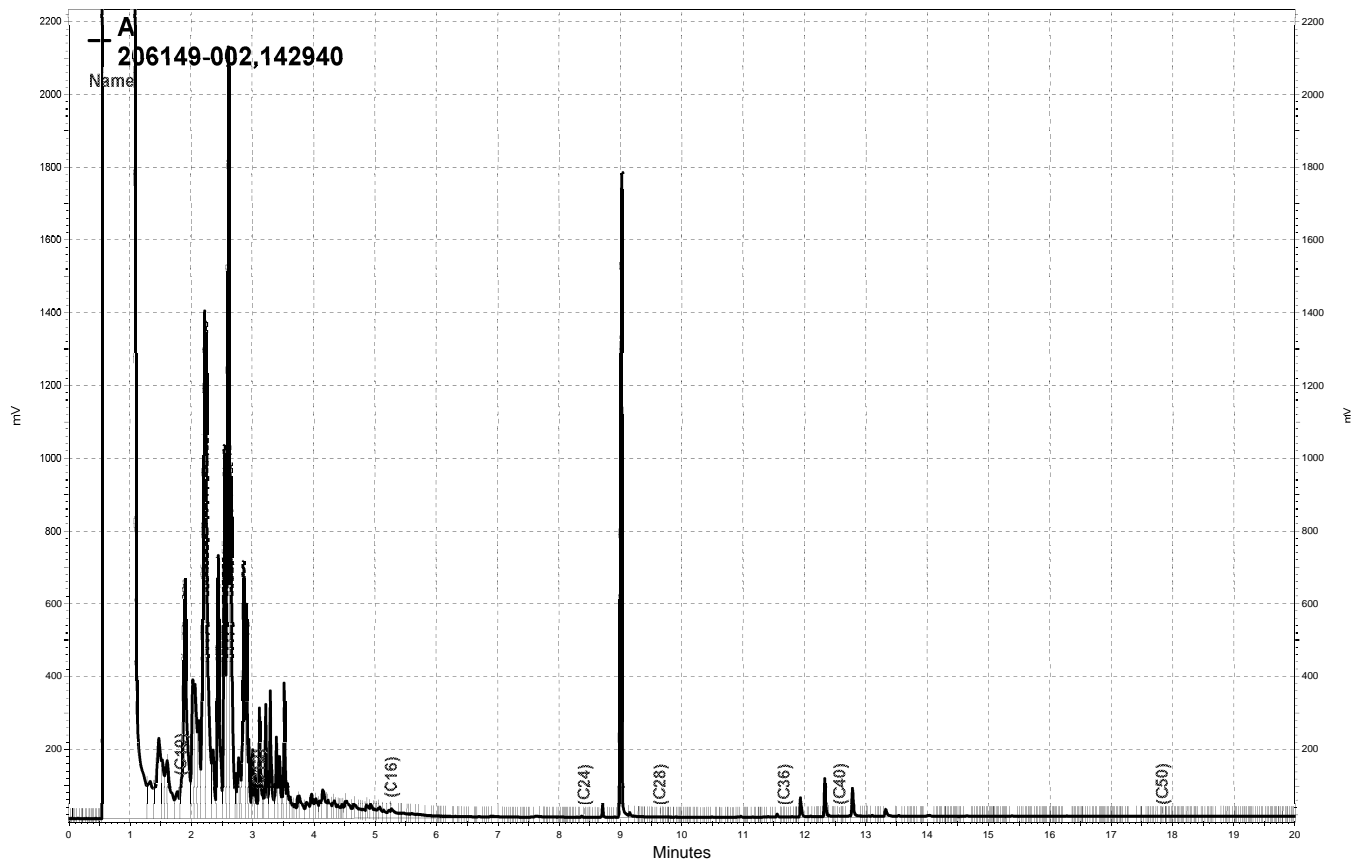
  

Surrogate	%REC	Limits
Hexacosane	99	58-127

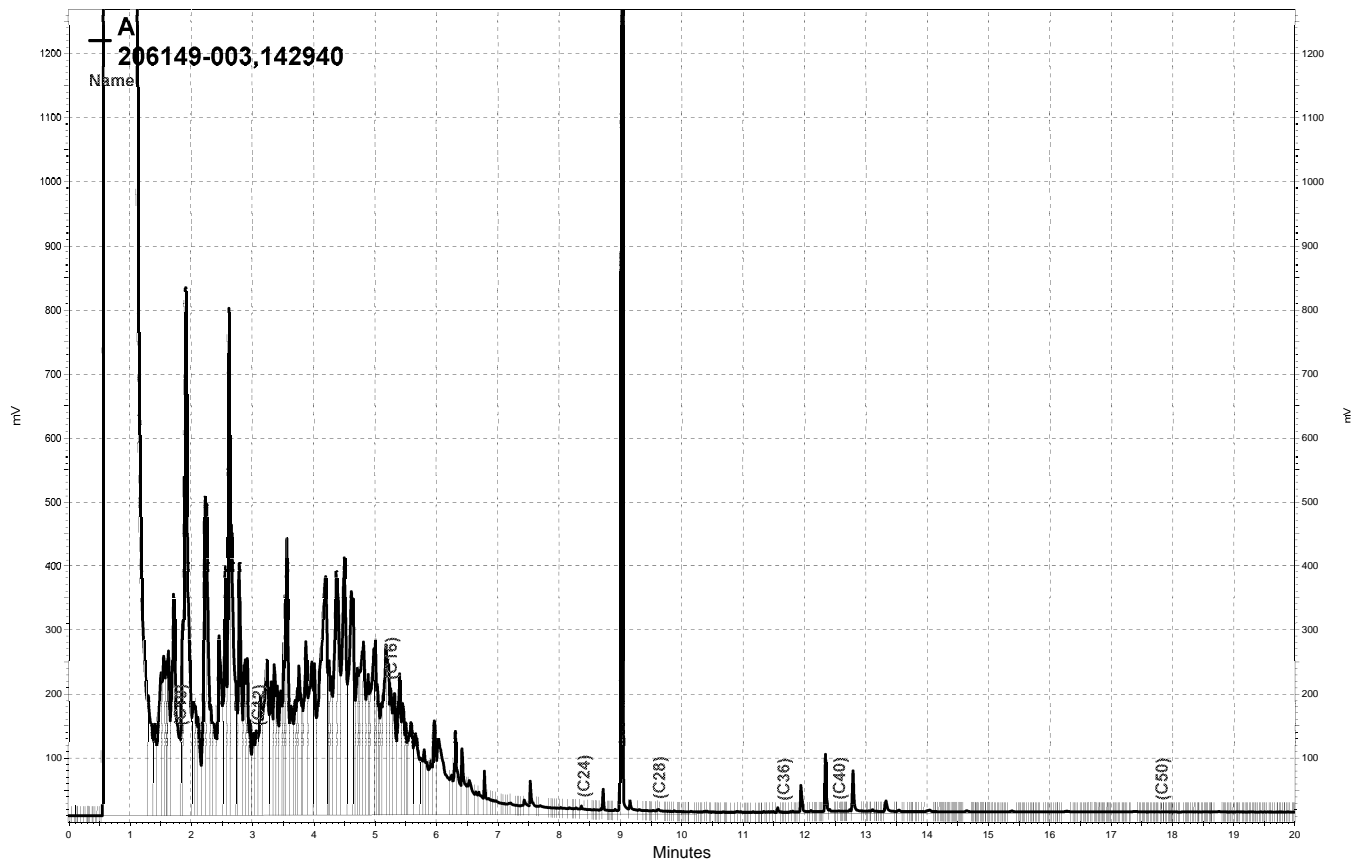
RPD= Relative Percent Difference



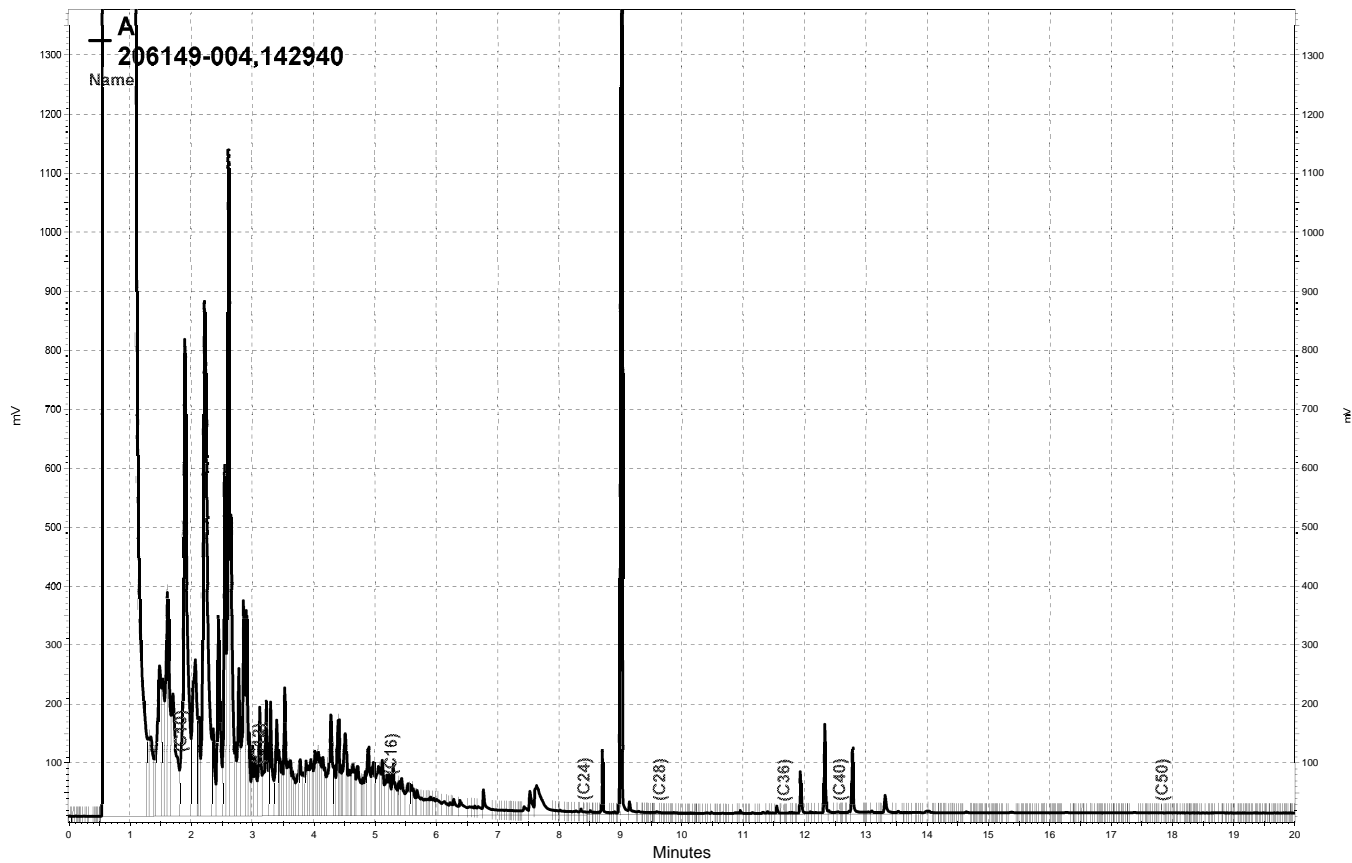
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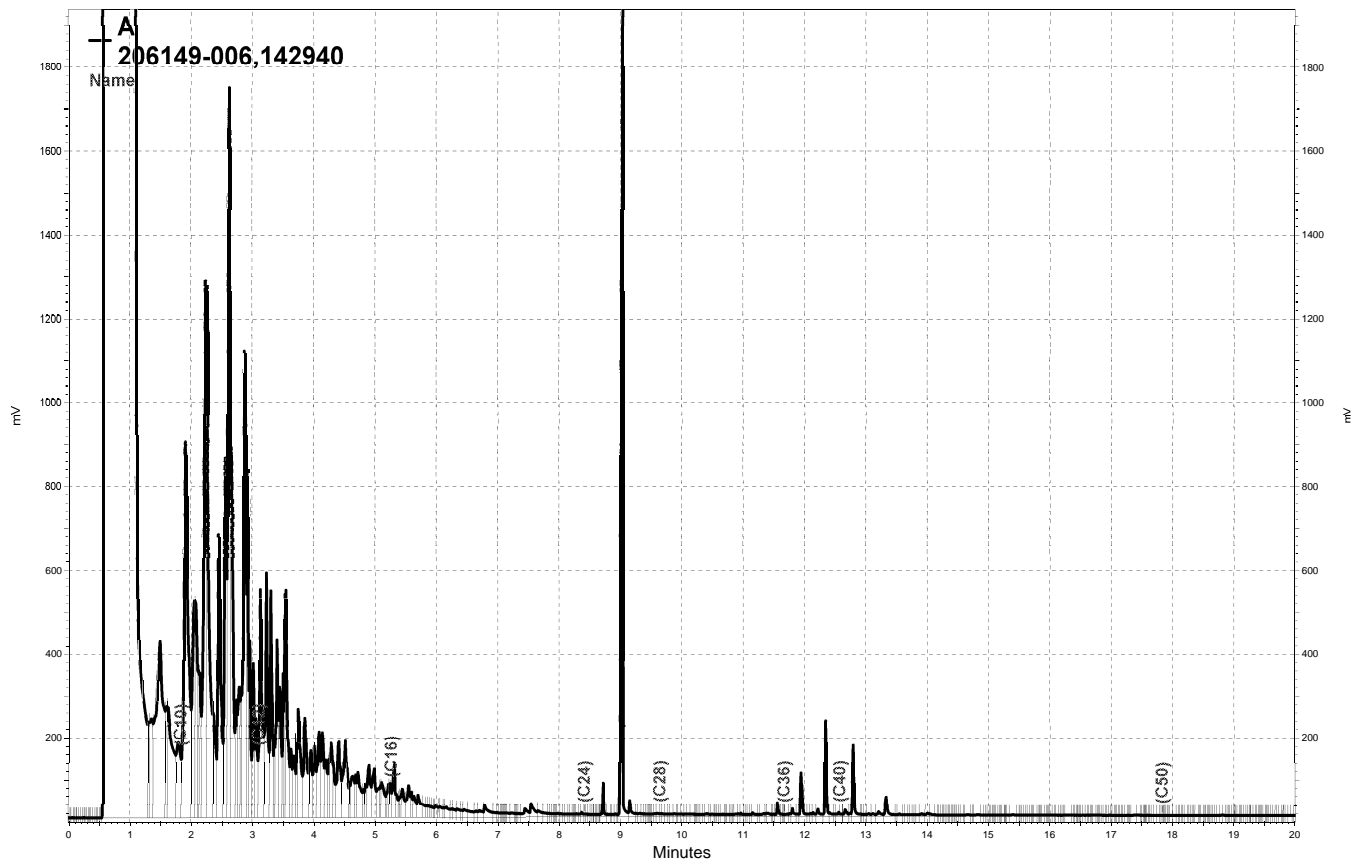
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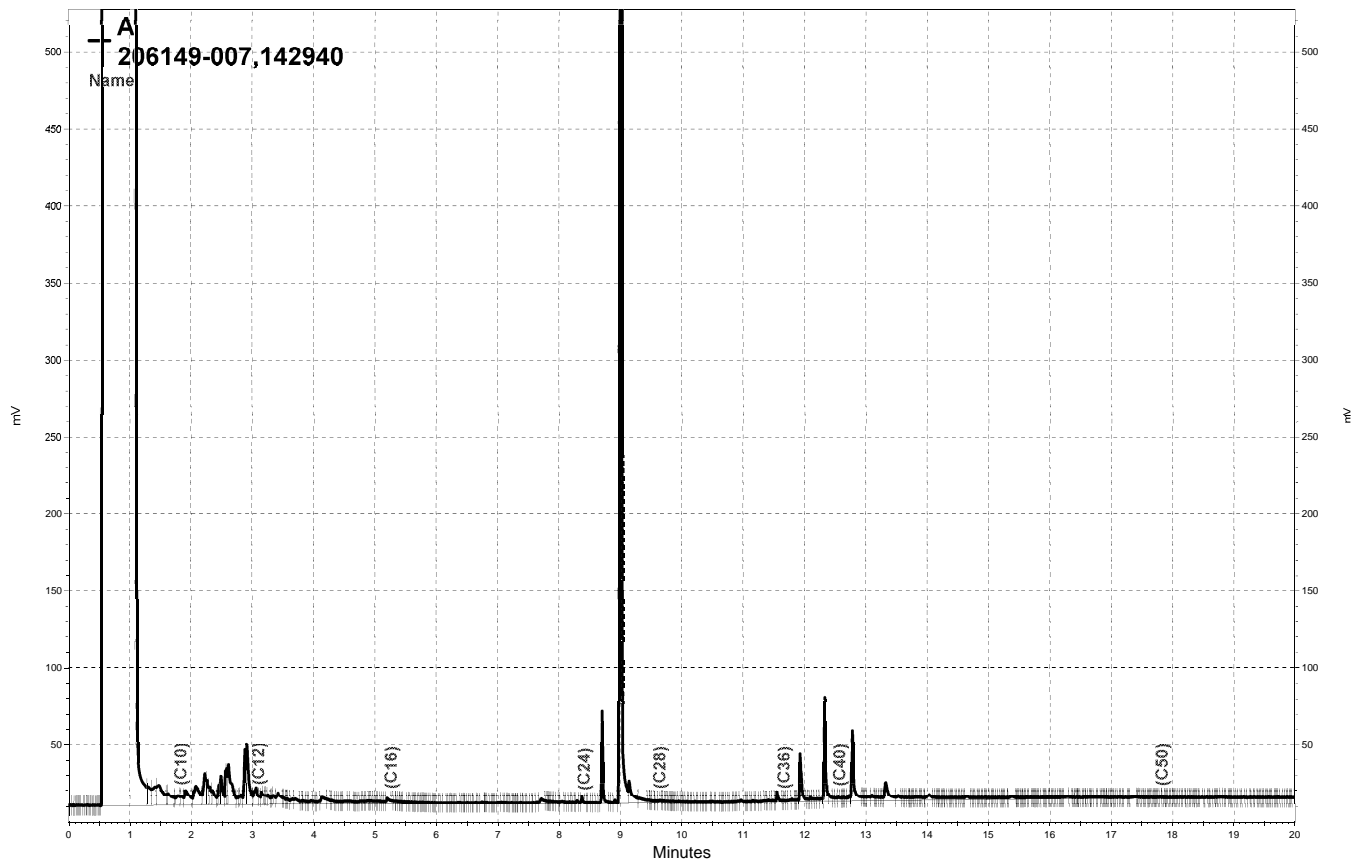
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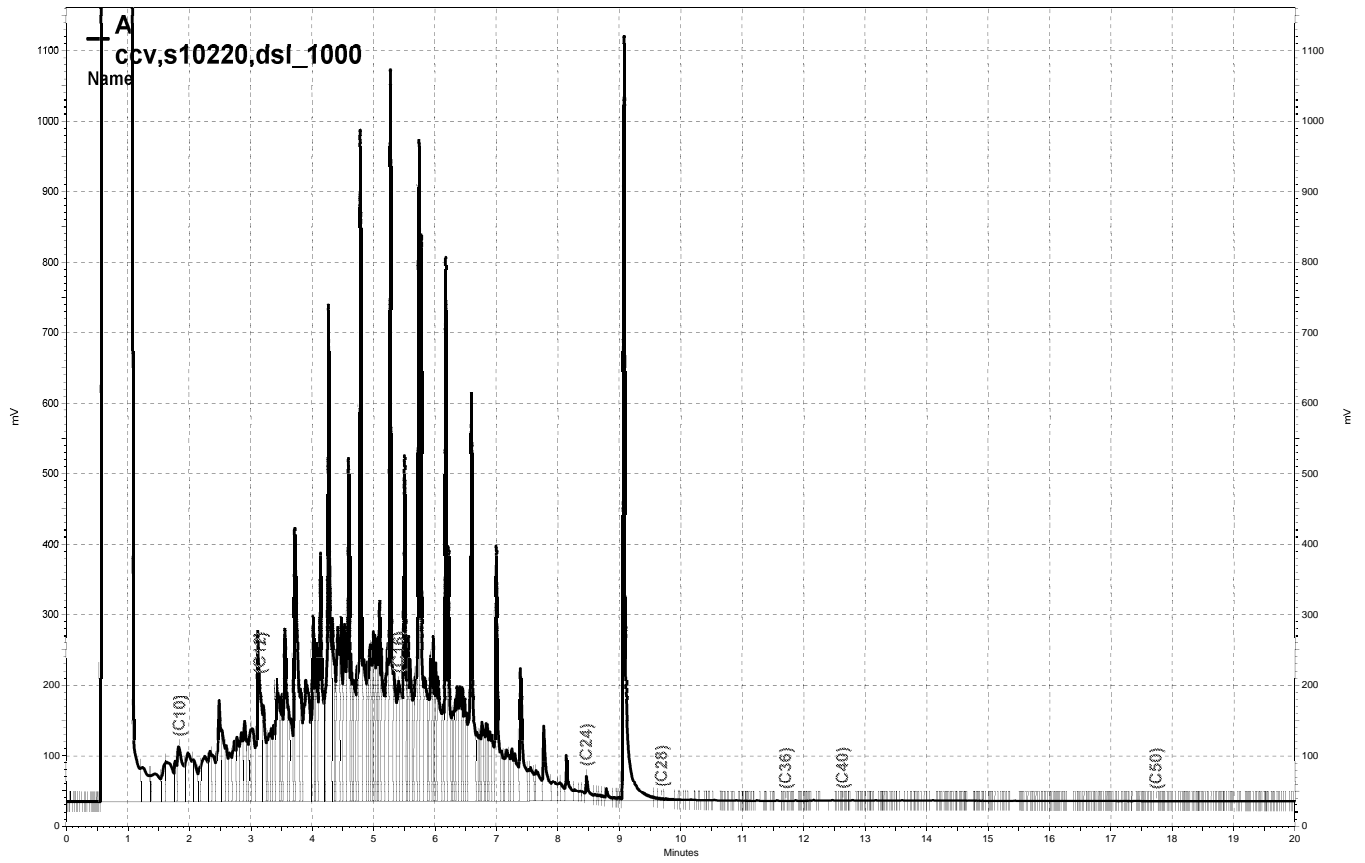
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\\Lims\gdrive\ezchrom\Projects\GC11A\Data\270a10, A



# Chain of Custody Record

Lab job no. 206150

Laboratory Curtis and Tompkins, Ltd.  
 Address 2323 Fifth Street  
Berkeley, California 94710  
510-486-0900

Method of Shipment Hand Delivery

Date \_\_\_\_\_  
 Page 1 of 1

Project Owner East Bay Regional Park District  
 Site Address 7867 Redwood Road  
Oakland, California

Shipment No. \_\_\_\_\_

Airbill No. \_\_\_\_\_

Cooler No. \_\_\_\_\_

Project Name Redwood Regional Park  
 Project Number 2006-16

Project Manager Richard Makdisi

Telephone No. (510) 644-3123

Fax No. (510) 644-3859

Samplers: (Signature) [Signature]

Filtered	No. of Containers	Analysis Required										Remarks		
TVH	4	X	X	X	X	X	X	X	X	X	X	X	X	X
TETA	4	X	X	X	X	X	X	X	X	X	X	X	X	X

Field Sample Number	Location/Depth	Date	Time	Sample Type	Type/Size of Container	Preservation		Cooler	Chemical	No. of Containers	Analysis Required	Remarks
<del>SW-1</del> <del>SW-3</del>	<del>SW3</del>	<del>9-18-08</del>	<del>1130</del>	<del>W</del>	<del>1L, 3 VOA</del>	<del>Y</del>	<del>Y(a)</del>	<del>Y</del>	<del>Y(a)</del>	<del>4</del>	<del>XX</del>	
SW-2	SW2	↓	1100	W	↓	↓	↓	↓	↓	4	XX	

Relinquished by: [Signature]  
 Signature Leal Glass  
 Printed Leal Glass  
 Company Stellar Environmental

Date 9-18-08  
 Received by: [Signature]  
 Signature Max Todi  
 Printed Max Todi  
 Company Blaine Tech

Date 09-18-08  
 Relinquished by: [Signature]  
 Signature Max Todi  
 Printed Max Todi  
 Company Blaine Tech

Date 09-18-08  
 Received by: [Signature]  
 Signature King Wa  
 Printed King Wa  
 Company CFT

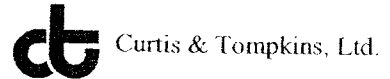
Turnaround Time: 5 Day TAT - Standard  
 Comments: Samples on ice  
(a) VOA w/ HCL  
on ice, intact

Relinquished by: \_\_\_\_\_  
 Signature \_\_\_\_\_  
 Printed \_\_\_\_\_  
 Company \_\_\_\_\_

Date \_\_\_\_\_  
 Received by: \_\_\_\_\_  
 Signature \_\_\_\_\_  
 Printed \_\_\_\_\_  
 Company \_\_\_\_\_

2000-00-01

COOLER RECEIPT CHECKLIST



Login # 206150 Date Received 9/18/08 Number of coolers 1
Client STEWAR ENVIR. Project EAST BAY REG. PARK DIST.

Date Opened 9-17-08 By (print) Sam Evans (sign)
Date Logged in [initials] By (print) A. Villanueva (sign)

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

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. Temperature documentation:

Type of ice used: Wet Blue/Gel None Temp(C) 3.5

Samples Received on ice & cold without a temperature blank

Samples received on ice directly from the field. Cooling process had begun

8. Were Method 5035 sampling containers 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 > 6mm 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

Blank lines for handwritten comments.



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

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

**Laboratory Job Number 206150  
ANALYTICAL REPORT**

Stellar Environmental Solutions  
2198 6th Street  
Berkeley, CA 94710

Project : 2006-16  
Location : Redwood Regional Park  
Level : II

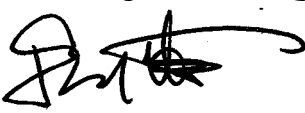
Sample ID  
SW-2

Lab ID  
206150-001

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: 09/29/2008

Signature:   
Senior Program Manager

Date: 09/30/2008

**CASE NARRATIVE**

Laboratory number: 206150  
Client: Stellar Environmental Solutions  
Project: 2006-16  
Location: Redwood Regional Park  
Request Date: 09/18/08  
Samples Received: 09/18/08

This hardcopy data package contains sample and QC results for one water sample, requested for the above referenced project on 09/18/08. The sample was received cold and intact.

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

No analytical problems were encountered.

**TPH-Extractables by GC (EPA 8015B):**

No analytical problems were encountered.

### Curtis & Tompkins Laboratories Analytical Report

Lab #: 206150 Client: Stellar Environmental Solutions Project#: 2006-16	Location: Redwood Regional Park Prep: EPA 5030B
Field ID: SW-2 Matrix: Water Units: ug/L	Diln Fac: 1.000 Sampled: 09/18/08 Received: 09/18/08

Type: SAMPLE                      Lab ID: 206150-001

Analyte	Result	RL	Batch#	Analyzed	Analysis
Gasoline C7-C12	530 Y	50	142725	09/20/08	EPA 8015B
MTBE	ND	2.0	142703	09/19/08	EPA 8021B
Benzene	ND	0.50	142703	09/19/08	EPA 8021B
Toluene	ND	0.50	142703	09/19/08	EPA 8021B
Ethylbenzene	4.3	0.50	142703	09/19/08	EPA 8021B
m,p-Xylenes	ND	0.50	142703	09/19/08	EPA 8021B
o-Xylene	ND	0.50	142703	09/19/08	EPA 8021B

Surrogate	%REC	Limits	Batch#	Analyzed	Analysis
Trifluorotoluene (FID)	145	61-149	142725	09/20/08	EPA 8015B
Bromofluorobenzene (FID)	110	65-146	142725	09/20/08	EPA 8015B
Trifluorotoluene (PID)	96	52-143	142703	09/19/08	EPA 8021B
Bromofluorobenzene (PID)	88	56-141	142703	09/19/08	EPA 8021B

Type: BLANK                      Analyzed: 09/19/08  
 Lab ID: QC461125                Analysis: EPA 8021B  
 Batch#: 142703

Analyte	Result	RL
MTBE	ND	2.0
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	Result	%REC	Limits
Trifluorotoluene (FID)	NA		
Bromofluorobenzene (FID)	NA		
Trifluorotoluene (PID)		93	52-143
Bromofluorobenzene (PID)		92	56-141

Type: BLANK                      Analyzed: 09/20/08  
 Lab ID: QC461233                Analysis: EPA 8015B  
 Batch#: 142725

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	Result	%REC	Limits
Trifluorotoluene (FID)		102	61-149
Bromofluorobenzene (FID)		101	65-146
Trifluorotoluene (PID)	NA		
Bromofluorobenzene (PID)	NA		

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

## Batch QC Report

**Curtis & Tompkins Laboratories Analytical Report**

Lab #:	206150	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2006-16	Analysis:	EPA 8021B
Matrix:	Water	Diln Fac:	1.000
Units:	ug/L	Batch#:	142703

Type: BS Analyzed: 09/19/08  
 Lab ID: QC461222

Analyte	Spiked	Result	%REC	Limits
MTBE	10.00	9.986	100	61-143
Benzene	10.00	9.650	97	80-120
Toluene	10.00	9.994	100	77-120
Ethylbenzene	10.00	10.41	104	79-123
m,p-Xylenes	10.00	9.832	98	78-123
o-Xylene	10.00	9.936	99	78-122

Surrogate	%REC	Limits
Trifluorotoluene (PID)	87	52-143
Bromofluorobenzene (PID)	87	56-141

Type: BSD Analyzed: 09/20/08  
 Lab ID: QC461223

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	30.00	28.28	94	61-143	6	32
Benzene	30.00	26.74	89	80-120	8	20
Toluene	30.00	27.06	90	77-120	10	20
Ethylbenzene	30.00	26.78	89	79-123	15	20
m,p-Xylenes	30.00	25.68	86	78-123	14	21
o-Xylene	30.00	26.19	87	78-122	13	20

Surrogate	%REC	Limits
Trifluorotoluene (PID)	90	52-143
Bromofluorobenzene (PID)	91	56-141

RPD= Relative Percent Difference

## Batch QC Report

**Curtis & Tompkins Laboratories Analytical Report**

Lab #:	206150	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2006-16	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC461234	Batch#:	142725
Matrix:	Water	Analyzed:	09/20/08
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1,000	943.4	94	78-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	126	61-149
Bromofluorobenzene (FID)	111	65-146

## Batch QC Report

**Curtis & Tompkins Laboratories Analytical Report**

Lab #:	206150	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2006-16	Analysis:	EPA 8015B
Field ID:	SW-2	Batch#:	142725
MSS Lab ID:	206150-001	Sampled:	09/18/08
Matrix:	Water	Received:	09/18/08
Units:	ug/L	Analyzed:	09/20/08
Diln Fac:	1.000		

Type: MS Lab ID: QC461235

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	529.3	2,000	2,098	78	65-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	137	61-149
Bromofluorobenzene (FID)	114	65-146

Type: MSD Lab ID: QC461236

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	2,189	83	65-120	4	20

Surrogate	%REC	Limits
Trifluorotoluene (FID)	143	61-149
Bromofluorobenzene (FID)	122	65-146







Total Extractable Hydrocarbons			
Lab #:	206150	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 3520C
Project#:	2006-16	Analysis:	EPA 8015B
Field ID:	SW-2	Sampled:	09/18/08
Matrix:	Water	Received:	09/18/08
Units:	ug/L	Prepared:	09/22/08
Diln Fac:	1.000	Analyzed:	09/24/08
Batch#:	142786		

Type: SAMPLE Lab ID: 206150-001

Analyte	Result	RL
Diesel C10-C24	690 Y	50

Surrogate	%REC	Limits
Hexacosane	105	58-127

Type: BLANK Lab ID: QC461493

Analyte	Result	RL
Diesel C10-C24	ND	50

Surrogate	%REC	Limits
Hexacosane	106	58-127

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

## Batch QC Report

Total Extractable Hydrocarbons			
Lab #:	206150	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 3520C
Project#:	2006-16	Analysis:	EPA 8015B
Matrix:	Water	Batch#:	142786
Units:	ug/L	Prepared:	09/22/08
Diln Fac:	1.000	Analyzed:	09/24/08

Type: BS Cleanup Method: EPA 3630C  
 Lab ID: QC461494

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	2,500	1,889	76	52-120

Surrogate	%REC	Limits
Hexacosane	91	58-127

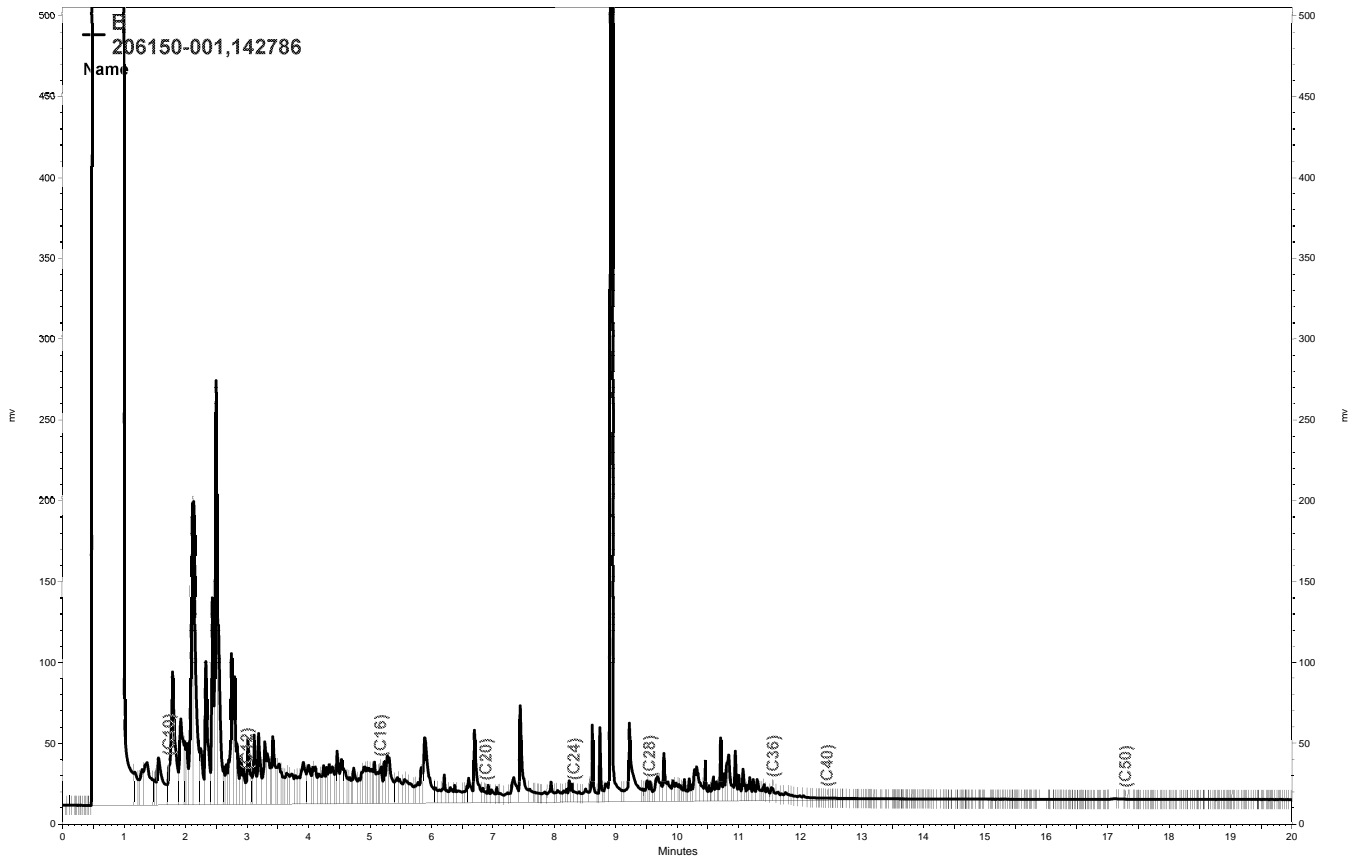
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 Lab ID: QC461495

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	2,500	2,207	88	52-120	16	30

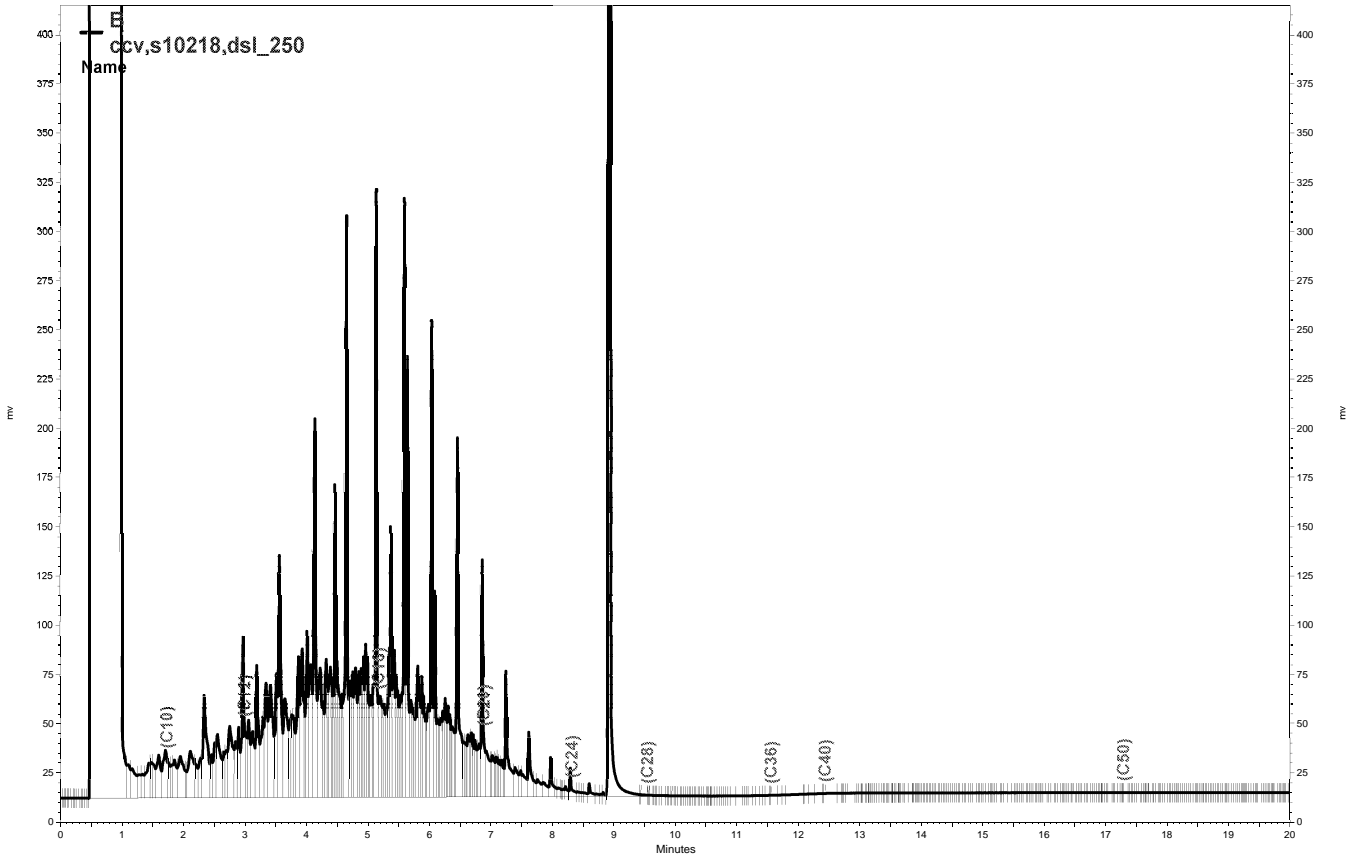
  

Surrogate	%REC	Limits
Hexacosane	105	58-127

RPD= Relative Percent Difference



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## **APPENDIX D**

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### **Historical Groundwater and Surface Water Analytical Results**

**HISTORICAL GROUNDWATER MONITORING WELLS ANALYTICAL RESULTS**  
**REDWOOD REGIONAL PARK SERVICE YARD, OAKLAND, CALIFORNIA**  
(all concentrations in ug/L, equivalent to parts per billion [ppb])

Well MW-2									
Event	Date	TVHg	TEHd	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total BTEX	MTBE
1	Nov-94	66	< 50	3.4	< 0.5	< 0.5	0.9	4.3	NA
2	Feb-95	89	< 50	18	2.4	1.7	7.5	30	NA
3	May-95	< 50	< 50	3.9	< 0.5	1.6	2.5	8.0	NA
4	Aug-95	< 50	< 50	5.7	< 0.5	< 0.5	< 0.5	5.7	NA
5	May-96	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
6	Aug-96	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
7	Dec-96	< 50	< 50	6.3	< 0.5	1.6	< 0.5	7.9	NA
8	Feb-97	< 50	< 50	0.69	< 0.5	0.55	< 0.5	1.2	NA
9	May-97	67	< 50	8.9	< 0.5	5.1	< 1.0	14	NA
10	Aug-97	< 50	< 50	4.5	< 0.5	1.1	< 0.5	5.6	NA
11	Dec-97	61	< 50	21	< 0.5	6.5	3.9	31	NA
12	Feb-98	2,000	200	270	92	150	600	1,112	NA
13	Sep-98	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	7.0
14	Apr-99	82	710	4.2	< 0.5	3.4	4.0	12	7.5
15	Dec-99	57	< 50	20	0.6	5.9	< 0.5	27	4.5
16	Sep-00	< 50	< 50	0.72	< 0.5	< 0.5	< 0.5	0.7	7.9
17	Jan-01	51	< 50	8.3	< 0.5	1.5	< 0.5	9.8	8.0
18	Apr-01	110	< 50	10	< 0.5	11	6.4	27	10
19	Aug-01	260	120	30	6.7	1.6	6.4	45	27
20	Dec-01	74	69	14	0.8	3.7	3.5	22	6.6
21	Mar-02	< 50	< 50	2.3	0.51	1.9	1.3	8.3	8.2
22	Jun-02	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	7.7
23	Sep-02	98	< 50	5.0	< 0.5	< 0.5	< 0.5	—	13
24	Dec-02	< 50	< 50	4.3	< 0.5	< 0.5	< 0.5	—	< 2.0
25	Mar-03	130	82	39	< 0.5	20	4.1	63	16
26	Jun-03	< 50	< 50	1.9	< 0.5	< 0.5	< 0.5	1.9	8.7
27	Sep-03	120	< 50	8.6	0.51	0.53	< 0.5	9.6	23
28	Dec-03	282	< 100	4.3	1.6	1.3	1.2	8.4	9.4
29	Mar-04	374	< 100	81	1.2	36	7.3	126	18
30	Jun-04	< 50	< 50	0.75	< 0.5	< 0.5	< 0.5	< 0.5	15
31	Sep-04	200	< 50	23	< 0.5	< 0.5	0.70	24	16
32	Dec-04	80	< 50	14	< 0.5	2.9	0.72	18	20
33	Mar-05	190	68	27	< 0.5	14	11	52	26
34	Jun-05	68	< 50	7.1	< 0.5	6.9	1.8	16	24
35	Sep-05	< 50	< 50	2.5	< 0.5	< 0.5	< 1.0	2.5	23
36	Dec-05	< 50	< 50	3.9	< 0.5	< 0.5	< 1.0	3.9	23
37	Mar-06	1300	300	77	4.4	91	250	422	18
38	Jun-06	< 50	60	< 0.5	< 0.5	< 0.5	< 1.0	—	17
39	Sep-06	270	52	31	< 0.5	15	6.69	53	17
40	Dec-06	< 50	< 50	2.1	< 0.5	< 0.5	< 0.5	2	16
41	Mar-07	59	< 50	4	< 0.5	< 0.5	< 0.5	< 0.5	14
42	Jun-07	< 50	< 50	3.5	< 0.5	< 0.5	< 0.5	3.5	8
43	Sep-07	2,600	260	160	44	86	431	721	15
44	Dec-07	16,000	5,800	23	91	230	2,420	2764	16
44a	Jan-08	480	200	1.1	3.2	5.5	68	77.8	11
45	Mar-08	20,000	24,000	21	39	300	2,620	2980	13
45a	Apr-08	800	640	2.6	2.1	13	155	172.7	13
46a	May-08	7,100	3,900	14	8.8	140	710	872.8	11
46	Jun-08	5,700	1,000	9.4	5.2	80	550	644.6	11
46a	Jul-08	6,400	2,200	13	5.1	140	570	728.1	2.9
46b	Jul-08	390	55	1.3	0.77	4.6	44.4	51.07	9
46c	Aug-08	28,000	7,100	12	19	260	2,740	3031	< 20
46d	Aug-08	8,700	2,700	5.7	7.4	130	900.0	1043.1	3.5
47	Sep-08	40,000	9,100	1.6	< 0.5	110	910.0	1021.6	9.5



Well MW-4									
Event	Date	TVHg	TEHd	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total BTEX	MTBE
1	Nov-94	2,600	230	120	4.8	150	88	363	NA
2	Feb-95	11,000	330	420	17	440	460	1,337	NA
3	May-95	7,200	440	300	13	390	330	1,033	NA
4	Aug-95	1,800	240	65	6.8	89	67	227	NA
5	May-96	1,100	140	51	< 0.5	< 0.5	47	98	NA
6	Aug-96	3,700	120	63	2.0	200	144	409	NA
7	Dec-96	2,700	240	19	< 0.5	130	93	242	NA
8	Feb-97	3,300	< 50	120	1.0	150	103	374	NA
9	May-97	490	< 50	2.6	6.7	6.4	6.7	22	NA
10	Aug-97	1,900	150	8.6	3.5	78	53	143	NA
11	Dec-97	1,000	84	4.6	2.7	61	54	123	NA
12	Feb-98	5,300	340	110	24	320	402	856	NA
13	Sep-98	1,800	< 50	8.9	< 0.5	68	27	104	23
14	Apr-99	2,900	710	61	1.2	120	80	263	32
15	Dec-99	1,000	430	4.0	2.0	26	14	46	< 2.0
16	Sep-00	570	380	< 0.5	< 0.5	16	4.1	20	2.4
17	Jan-01	1,600	650	4.2	0.89	46	13.8	65	8.4
18	Apr-01	1,700	1,100	4.5	2.8	48	10.7	66	5.0
19	Aug-01	1,300	810	3.2	4.0	29	9.7	46	< 2.0
20	Dec-01	< 50	110	< 0.5	< 0.5	< 0.5	1.2	1.2	< 2.0
21	Mar-02	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	< 2.0
22	Jun-02	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	< 2.0
23	Sep-02	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	< 2.0
24	Dec-02	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	< 2.0
25	Mar-03	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	< 2.0
26	Jun-03	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	< 2.0
27	Sep-03	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	< 2.0
28	Dec-03	< 50	< 100	< 0.3	< 0.3	< 0.3	< 0.6	—	< 5.0
29	Mar-04	< 50	< 100	< 0.3	< 0.3	< 0.3	< 0.6	—	< 5.0
30	Jun-04	< 50	2,500	< 0.3	< 0.3	< 0.3	< 0.6	—	< 5.0
31	Sep-04	< 50	< 50	< 0.5	< 0.5	< 0.5	< 1.0	—	< 2.0
32	Dec-04	< 50	< 50	< 0.5	< 0.5	< 0.5	< 1.0	—	< 2.0
33	Mar-05	< 50	< 50	< 0.5	< 0.5	< 0.5	< 1.0	—	< 2.0
34	Jun-05	< 50	< 50	< 0.5	< 0.5	< 0.5	< 1.0	—	< 2.0
35	Sep-05	< 50	< 50	< 0.5	< 0.5	< 0.5	< 1.0	—	< 2.0
Groundwater monitoring in this well discontinued with Alameda County Health Care Services Agency approval.									

Well MW-5									
Event	Date	TVHg	TEHd	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total BTEX	MTBE
1	Nov-94	50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
2	Feb-95	70	< 50	0.6	< 0.5	< 0.5	< 0.5	0.6	NA
3	May-95	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
4	Aug-95	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
5	May-96	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
6	Aug-96	80	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
7	Dec-96	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
8	Feb-97	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
9	May-97	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
10	Aug-97	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
11	Dec-97	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
12	Feb-98	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
13	Sep-98	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	< 2
Groundwater monitoring in this well discontinued in 1998 with Alameda County Health Care Services Agency approval.									
Subsequent groundwater monitoring conducted to confirm plume's southern limit									
14	Jun-04	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	5.9
15	Sep-04	< 50	< 50	< 0.5	< 0.5	< 0.5	< 1.0	—	< 2.0

Well MW-7									
Event	Date	TVHg	TEHd	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total BTEX	MTBE
1	Jan-01	13,000	3,100	95	4	500	289	888	95
2	Apr-01	13,000	3,900	140	< 0.5	530	278	948	52
3	Aug-01	12,000	5,000	55	25	440	198	718	19
4	Dec-01	9,100	4,600	89	< 2.5	460	228	777	< 10
5	Mar-02	8,700	3,900	220	6.2	450	191	867	200
6	Jun-02	9,300	3,500	210	6.3	380	155	751	18
7	Sep-02	9,600	3,900	180	< 0.5	380	160	720	< 2.0
8	Dec-02	9,600	3,700	110	< 0.5	400	189	699	< 2.0
9	Mar-03	10,000	3,600	210	12	360	143	725	45
10	Jun-03	9,300	4,200	190	< 10	250	130	570	200
11	Sep-03	10,000	3,300	150	11	300	136	597	< 2.0
12	Dec-03	9,140	1,100	62	45	295	184	586	89
13	Mar-04	8,170	600	104	41	306	129	580	84
14	Jun-04	9,200	2,700	150	< 0.5	290	91	531	< 2.0
15	Sep-04	9,700	3,400	98	< 0.5	300	125	523	< 2.0
16	Dec-04	8200	4,000	95	< 0.5	290	124	509	< 2.0
17	Mar-05	10,000	4,300	150	< 0.5	370	71	591	< 2.0
18	Jun-05	10,000	3,300	210	< 1.0	410	56	676	< 4.0
19	Sep-05	7,600	2,700	110	< 1.0	310	54	474	< 4.0
20	Dec-05	2,900	3,300	31	< 1.0	140	41	212	< 4.0
21	Mar-06	6,800	3,000	110	< 1.0	280	42	432	110
22	Jun-06	6,900	3,600	63	< 2.5	290	43	396	< 10
23	Sep-06	7,900	3,600	64	< 0.5	260	58	382	49
24	Dec-06	7,300	2,400	50	< 0.5	220	42	312	< 2.0
25	Mar-07	6,200	2,900	34	< 0.5	190	15	239	< 2.0
26	Jun-07	6,800	3,000	30	< 1.0	160	27	217	< 4.0
27	Sep-07	6,400	3,000	< 0.5	< 0.5	170	43	213	< 2.0
28	Dec-07	4,800	2,800	< 0.5	< 0.5	100	26.5	126.5	2.7
30	Mar-08	5,400	5,900	21	< 0.5	150	15	186	51
31	Jun-08	4,800	3,500	55	< 0.5	140	7.03	202	< 2.0
32	Sep-08	6,400	2,800	22	< 0.5	100	9.30	131	< 2.0

Well MW-8									
Event	Date	TVHg	TEHd	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total BTEX	MTBE
1	Jan-01	14,000	1,800	430	17	360	1230	2,037	96
2	Apr-01	11,000	3,200	320	13	560	1,163	2,056	42
3	Aug-01	9,600	3,200	130	14	470	463	1,077	14
4	Dec-01	3,500	950	69	2.4	310	431	812	< 4.0
5	Mar-02	14,000	3,800	650	17	1,200	1,510	3,377	240
6	Jun-02	2,900	1,100	70	2.0	170	148	390	19
7	Sep-02	1,000	420	22	< 0.5	64	50	136	< 2.0
8	Dec-02	3,300	290	67	< 0.5	190	203	460	< 2.0
9	Mar-03	13,000	3,500	610	12	1,100	958	2,680	< 10
10	Jun-03	7,900	2,200	370	7.4	620	562	1,559	< 4.0
11	Sep-03	3,600	400	120	3.3	300	221	644	< 2.0
12	Dec-03	485	100	19	1.5	26	36	83	< 5.0
13	Mar-04	16,000	900	592	24	1,060	1,870	3,546	90
14	Jun-04	5,900	990	260	9.9	460	390	1,120	< 10
15	Sep-04	2,000	360	100	< 2.5	180	102	382	< 10
16	Dec-04	15,000	4,000	840	21	1,200	1,520	3,581	< 10
17	Mar-05	24,000	7,100	840	51	1,800	2,410	5,101	<10
18	Jun-05	33,000	5,700	930	39	2,500	3,860	7,329	<20
19	Sep-05	5,600	1,200	270	6.6	400	390	1,067	<20
20	Dec-05	3,700	1,300	110	< 5.0	320	356	786	<20
21	Mar-06	22,000	4,300	550	30	1,800	2,380	4,760	<20
22	Jun-06	19,000	5,000	500	28	1,800	1,897	4,225	<20
23	Sep-06	9,000	820	170	7.7	730	539	1,447	<10
24	Dec-06	4,400	800	75	4.2	320	246	645	< 2.0
25	Mar-07	15,000	4,500	340	19	1,300	1,275	2,934	< 20
26	Jun-07	10,000	3,500	220	11	670	675	1,576	<4.0
27	Sep-07	9,400	3,400	200	6.9	1,000	773	1,980	<8.0
28	Dec-07	1,200	500	15	0.88	95	57.7	168.58	<2.0
30	Mar-08	11,000	13,000	150	13	1,100	950.0	2,213	76
31	Jun-08	2,000	1,700	27	2.5	190	113.2	333	<2.0
32	Sep-08	5,500	4,400	89	3.9	630	194.4	917	<2.0

Well MW-9									
Event	Date	TVHg	TEHd	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total BTEX	MTBE
1	Aug-01	11,000	170	340	13	720	616	1,689	48
2	Dec-01	9,400	2,700	250	5.1	520	317	1,092	< 10
3	Mar-02	1,700	300	53	4.2	120	67	244	20
4	Jun-02	11,000	2,500	200	16	600	509	1,325	85
5	Sep-02	3,600	2,800	440	11	260	39	750	< 4.0
6	Dec-02	7,000	3,500	380	9.5	730	147	1,266	< 10
7	Mar-03	4,400	1,400	320	6.9	400	93	820	< 2.0
8	Jun-03	7,600	1,600	490	10	620	167	1,287	< 4.0
9	Sep-03	8,300	2,900	420	14	870	200	1,504	< 10
10	Dec-03	7,080	700	287	31	901	255	1,474	< 10
11	Mar-04	3,550	600	122	15	313	84	534	35
12	Jun-04	6,800	1,700	350	< 2.5	620	99	1,069	< 10
13	Sep-04	7,100	1,900	160	8.1	600	406	1,174	< 10
14	Dec-04	4,700	2,800	160	< 2.5	470	< 0.5	630	< 10
15	Mar-05	4,200	1,600	97	< 2.5	310	42	449	< 10
16	Jun-05	9,900	2,000	170	< 2.5	590	359	1,119	< 10
17	Sep-05	3,600	1,200	250	< 0.5	330	36	616	< 2.0
18	Dec-05	8,700	1,500	150	4	650	551	1,355	< 4.0
19	Mar-06	3,600	880	37	< 1.0	210	165	412	< 4.0
20	Jun-06	3,200	1,300	39	< 1.0	220	144	403	4.2
21	Sep-06	12,000	3,300	130	8	850	604	1,592	< 1.0
22	Dec-06	12,000	2,800	140	9.4	880	634	1,663	< 10
23	Mar-07	9,600	2,900	120	8.7	780	453	1,362	< 10
24	Jun-07	7,100	2,200	75	5.2	480	298	858	< 4.0
25	Sep-07	4,500	2,100	60	3.8	420	227	710	< 4.0
26	Dec-07	6,200	2,000	51	< 0.5	340	128.8	519.8	< 2.0
27	Mar-08	6,400	3,500	67	5.2	480	177.6	724.6	38
28	Jun-08	10,000	3,400	89	< 2.5	510	231.0	830.0	< 10
29	Sep-08	4,800	2,700	53	< 0.5	250	66.4	369.4	< 2.0

Well MW-10									
Event	Date	TVHg	TEHd	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total BTEX	MTBE
1	Aug-01	550	2,100	17	< 0.5	31	44	92	40
2	Dec-01	< 50	81	< 0.5	< 0.5	< 0.5	< 0.5	—	25
3	Mar-02	< 50	< 50	0.61	< 0.5	< 0.5	< 0.5	0.61	6.0
4	Jun-02	< 50	< 50	0.59	< 0.5	0.58	< 0.5	1.2	9.0
5	Sep-02	160	120	10	< 0.5	6.7	3.6	20	26
6	Dec-02	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	16
7	Mar-03	110	< 50	11	< 0.5	12	1.3	24	15
8	Jun-03	110	< 50	9.6	< 0.5	6.8	< 0.5	16	9.0
9	Sep-03	< 50	< 50	1.1	< 0.5	1.5	< 0.5	2.6	7.0
10	Dec-03	162	<100	6.9	<0.3	8.0	<0.6	15	9.9
11	Mar-04	94	<100	2.8	<0.3	5.7	7.0	16	<5.0
12	Jun-04	150	56	11	< 0.5	12	< 0.5	23	15
13	Sep-04	< 50	< 50	1.6	< 0.5	1.9	< 1.0	3.5	5.8
14	Dec-04	64	< 50	3.7	< 0.5	3.7	0.7	8.1	10
15	Mar-05	95	98	8.3	<0.5	7.7	0.77	17	13
16	Jun-05	150	57	14	<0.5	10	1.0	25	<2.0
17	Sep-05	87	< 50	5.0	<0.5	3.6	<1.0	8.6	<2.0
18	Dec-05	< 50	< 50	1.2	<0.5	<0.5	<1.0	1.2	7.8
19	Mar-06	58	71	3.2	<0.5	2.2	<1.0	5.4	8.8
20	Jun-06	73	140	4.9	<0.5	2.5	<1.0	7.4	5.3
21	Sep-06	88	51	<0.5	<0.5	<0.5	<0.5	<0.5	9.6
22	Dec-06	<50	<50	0.61	<0.5	0.55	<0.5	1.2	3.7
23	Mar-07	57	<50	3.6	<0.5	2.2	<0.5	5.8	3.1
24	Jun-07	60	65	2.4	<0.5	1.6	<0.5	4.0	4.0
25	Sep-07	84	<50	3.6	<0.5	2.3	0.52	6.4	3.6
26	Dec-07	130	67	0.77	<0.5	340	0.83	341.6	<2.0
27	Mar-08	78	170	1.7	<0.5	3.1	0.97	5.8	2.4
28	Jun-08	230	320	12	<0.5	9.9	3.50	25.4	<2.0
29	Sep-08	80	<50	1.6	<0.5	0.52	<0.5	2.1	3

Well MW-11									
Event	Date	TVHg	TEHd	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total BTEX	MTBE
1	Aug-01	17,000	7,800	390	17	820	344	1,571	< 10
2	Dec-01	5,800	2,800	280	7.8	500	213	1,001	< 10
3	Mar-02	100	94	< 0.5	< 0.5	0.64	< 0.5	0.64	2.4
4	Jun-02	8,200	2,600	570	13	560	170	1,313	< 4
5	Sep-02	12,000	4,400	330	13	880	654	1,877	< 10
6	Dec-02	18,000	4,500	420	< 2.5	1,100	912	2,432	< 10
7	Mar-03	7,800	2,600	170	4.7	530	337	1,042	53
8	Jun-03	14,000	3,800	250	< 2.5	870	693	1,813	< 10
9	Sep-03	10,000	3,000	250	9.9	700	527	1,487	< 4
10	Dec-03	15,000	1,100	314	60	1,070	802	2,246	173
11	Mar-04	4,900	400	72	17	342	233	664	61
12	Jun-04	10,000	2,300	210	2.8	690	514	1,417	< 10
13	Sep-04	7,200	2,300	340	< 2.5	840	75	1,255	< 10
14	Dec-04	11,000	3,900	180	5.1	780	695	1,660	< 10
15	Mar-05	4,600	1,900	69	<2.5	300	206	575	< 10
16	Jun-05	1,400	590	85	<0.5	110	8.2	203	<2.0
17	Sep-05	12,000	3,100	220	< 1.0	840	762	1,822	< 4.0
18	Dec-05	2,500	2,100	120	< 2.5	260	16	396	< 10
19	Mar-06	2,200	1,300	27	<2.5	130	5.2	162	< 10
20	Jun-06	3,700	1,900	170	<1.0	230	14	414	< 4.0
21	Sep-06	3,600	2,100	80	<0.5	230	8.8	319	< 2.0
22	Dec-06	6,000	3,500	83	<1.0	260	16.4	359	< 4.0
23	Mar-07	4,500	1,900	110	< 0.5	170	7.9	288	< 2.0
24	Jun-07	4	2,200	120	<0.5	140	6.6	267	<4.0
25	Sep-07	5,500	2,700	86	<0.5	180	16.1	282	<2.0
26	Dec-07	7,100	4,000	68	<0.5	140	14	222	35
27	Mar-08	5,300	4,000	130	<0.5	120	13	263	8.8
28	Jun-08	3,600	4,200	190	<0.5	140	11	341	<2.0
29	Sep-08	7,300	4,600	130	<0.5	110	4.5	245	<2.0

Well MW-12									
Event	Date	TVHg	TEHd	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total BTEX	MTBE
1	Dec-05	1,300	700	< 0.5	< 0.5	33	5.6	39	< 2.0
2	Mar-06	1,100	540	<0.5	<0.5	8.5	1.5	10	49
3	Jun-06	680	400	<0.5	<0.5	5.8	1.4	7.2	< 2.0
4	Sep-06	910	480	<0.5	<0.5	9.9	1.5	11.4	21
5	Dec-06	770	230	< 0.5	< 0.5	7.4	2.0	9.4	< 2.0
6	Mar-07	390	110	< 0.5	< 0.5	1.7	1.7	3.4	< 2.0
7	Jun-07	590	280	<0.5	<0.5	4.5	0.9	5.4	<2.0
8	Sep-07	390	180	<0.5	<0.5	2.4	2.4	4.8	<2.0
9	Dec-07	210	140	<0.5	<0.5	2.1	1.3	3.4	<2.0
10	Mar-08	720	500	<0.5	4.4	9.0	2.8	16.2	<2.0
11	Jun-08	220	50	<0.5	<0.5	2.0	<0.5	2.0	<2.0
12	Sep-08	370	95	<0.5	<0.5	2.8	0.98	3.8	<2.0

**HISTORICAL SURFACE WATER ANALYTICAL RESULTS  
REDWOOD REGIONAL PARK SERVICE YARD, OAKLAND, CALIFORNIA**

(all concentrations in ug/L, equivalent to parts per billion [ppb])

Sampling Location SW-1 (Upstream of Contaminated Groundwater Discharge Location SW-2)									
Event	Date	TVHg	TEHd	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total BTEX	MTBE
1	Feb-94	50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
2	May-95	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
3	May-96	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
4	Aug-96	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
5	Dec-96	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
6	Feb-97	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
7	Aug-97	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
8	Dec-97	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
9	Feb-98	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	NA
10	Sep-98	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	< 2.0
11	Apr-99	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	—	< 2.0
Sampling at this location discontinued after April 1999 with Alameda County Health Services Agency approval.									



Sampling Location SW-2 (Area of Historical Contaminated Groundwater Discharge)									
Event	Date	TVHg	TEHd	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total BTEX	MTBE
1	Feb-94	130	< 50	1.9	< 0.5	4.4	3.2	9.5	NA
2	May-95	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	NA
3	Aug-95	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	NA
4	May-96	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	NA
5	Aug-96	200	< 50	7.5	< 0.5	5.4	< 0.5	13	NA
6	Dec-96	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	NA
7	Feb-97	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	NA
8	Aug-97	350	130	13	0.89	19	11	44	NA
9	Dec-97	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	NA
10	Feb-98	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	NA
11	Sep-98	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	< 2.0
12	Apr-99	81	< 50	2.0	< 0.5	2.5	1.3	5.8	2.3
13	Dec-99	1,300	250	10	1.0	47	27	85	2.2
14	Sep-00	160	100	2.1	< 0.5	5.2	1.9	9.2	3.4
15	Jan-01	< 50	< 50	< 0.5	< 0.5	0.53	< 0.5	0.5	< 2.0
16	Apr-01	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	< 2.0
17	Sep-01	440	200	2.1	< 0.5	17	1.3	20	10
18	Dec-01	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	< 2.0
19	Mar-02	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	< 2.0
20	Jun-02	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	< 2.0
21	Sep-02	220	590	10	< 0.5	13	< 0.5	23	< 2.0
22	Dec-02	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	< 2.0
23	Mar-03	< 50	< 50	< 0.5	< 0.5	0.56	< 0.5	0.56	2.8
24	Jun-03	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	< 2.0
25	Sep-03	190	92	2.1	< 0.5	4.2	< 0.5	6.3	< 2.0
26	Dec-03	86	< 100	< 0.3	< 0.3	< 0.3	< 0.6	<0.6	< 5.0
27	Mar-04	< 50	< 100	< 0.3	< 0.3	1.1	< 0.6	1.1	< 5.0
28	Jun-04	< 50	< 50	< 0.5	< 0.5	0.83	< 0.5	0.83	< 2.0
29	Sep-04	260	370	4.4	< 0.5	6.3	< 1.0	11	< 2.0
30	Dec-04	< 50	< 50	< 0.5	< 0.5	< 0.5	< 1.0	1.0	< 2.0
31	Mar-05	< 50	< 50	< 0.5	< 0.5	< 0.5	< 1.0	< 1.0	< 2.0
32	Jun-05	< 50	< 50	< 0.5	< 0.5	< 0.5	< 1.0	< 1.0	< 2.0
33	Sep-05	< 50	< 50	< 0.5	< 0.5	< 0.5	< 1.0	< 1.0	< 2.0
34	Dec-05	< 50	< 50	< 0.5	< 0.5	< 0.5	< 1.0	< 1.0	< 2.0
35	Mar-06	< 50	62	< 0.5	< 0.5	< 0.5	< 1.0	< 1.0	< 2.0
36	Jun-06	< 50	110	< 0.5	< 0.5	< 0.5	< 1.0	< 1.0	< 2.0
37	Sep-06	62	94	< 0.5	< 0.5	0.81	< 0.5	0.8	< 2.0
38	Dec-06	< 50	< 50	< 0.5	< 0.5	< 0.5	< 1.0	< 1.0	< 2.0
39	Mar-07	< 50	< 50	< 0.5	< 0.5	< 0.5	< 1.0	< 1.0	< 2.0
40	Jun-07	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 2.0
41	Sep-07	< 50	77	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 2.0
42	Dec-07	130	430	< 0.5	< 0.5	1.5	< 0.5	1.5	< 2.0
43	Mar-08	< 50	130	< 0.5	< 0.5	< 0.5	0.61	0.61	< 2.0
44	Jun-08	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 2.0
45	Sep-08	530	690	< 0.5	< 0.5	4.3	< 0.5	4.3	< 2.0

Sampling Location SW-3 (Downstream of Contaminated Groundwater Discharge Location SW-2)									
Event	Date	TVHg	TEHd	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total BTEX	MTBE
1	May-95	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	NA
2	Aug-95	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	NA
3	May-96	< 50	74	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	NA
4	Aug-96	69	< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	NA
5	Dec-96	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	NA
6	Feb-97	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	NA
7	Aug-97	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	NA
8	Dec-97	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	NA
9	Feb-98	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	NA
10	Sep-98	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 2.0
11	Apr-99	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 2.0
12	Dec-99	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 2.0
13	Sep-00	NS	NS	NS	NS	NS	NS	NS	NS
14	Jan-01	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 2.0
15	Apr-01	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 2.0
16	Sep-01	NS	NS	NS	NS	NS	NS	< 0.5	NS
17	Dec-01	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 2.0
18	Mar-02	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 2.0
19	Jun-02	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	2.4
20	Sep-02	NS	NS	NS	NS	NS	NS	NS	NS
21	Dec-02	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 2.0
22	Mar-03	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 2.0
23	Jun-03	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 2.0
24	Sep-03	NS	NS	NS	NS	NS	NS	NS	NS
25	Dec-03	60	< 100	< 0.3	< 0.3	< 0.3	< 0.6	< 0.6	< 5.0
26	Mar-04	< 50	< 100	< 0.3	< 0.3	< 0.6	< 0.6	< 0.6	< 5.0
27	Jun-04	NS	NS	NS	NS	NS	NS	NS	NS
28	Sep-04	NS	NS	NS	NS	NS	NS	NS	NS
29	Dec-04	< 50	< 50	< 0.5	< 0.5	< 0.5	< 1.0	< 1.0	< 2.0
30	Mar-05	< 50	< 50	< 0.5	< 0.5	< 0.5	< 1.0	< 1.0	< 2.0
31	Jun-05	< 50	< 50	< 0.5	< 0.5	< 0.5	< 1.0	< 1.0	< 2.0
32	Sep-05	< 50	< 50	< 0.5	< 0.5	< 0.5	< 1.0	< 1.0	< 2.0
33	Dec-05	< 50	< 50	< 0.5	< 0.5	< 0.5	< 1.0	< 1.0	< 2.0
34	Mar-06	< 50	< 50	< 0.5	< 0.5	< 0.5	< 1.0	< 1.0	< 2.0
35	Jun-06	< 50	120	< 0.5	< 0.5	< 0.5	< 1.0	< 1.0	< 2.0
36	Sep-06	< 50	120	< 0.5	< 0.5	< 0.5	< 0.5	0.5	7.8
37	Dec-06	< 50	< 50	< 0.5	< 0.5	< 0.5	< 1.0	< 1.0	< 2.0
38	Mar-07	< 50	< 50	< 0.5	< 0.5	< 0.5	< 1.0	< 1.0	3.3
39	Jun-07	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	0.5	< 2.0
40	Sep-07	NS	NS	NS	NS	NS	NS	NS	NS
41	Dec-07	NS	NS	NS	NS	NS	NS	NS	NS
42	Mar-08	< 50	200	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 2.0
43	Jun-08	< 50	55	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 2.0
44	Sep-08	NS	NS	NS	NS	NS	NS	NS	NS

NS = Not Sampled (no surface water present during sampling event)