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FIRST QUARTER 2011 GROUNDWATER MONITORING REPORT

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

Prepared for:

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

April 2011

**FIRST QUARTER 2011
GROUNDWATER MONITORING
REPORT**

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SERVICE YARD
OAKLAND, CALIFORNIA**

Prepared for:

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

Prepared by:

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

April 22, 2011

Project No. 2008-02

April 22, 2011

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: First Quarter 2011 Groundwater and Surface Water Monitoring Report — Redwood Regional Park Service Yard Site, Oakland, California (ACEH Fuel Leak Case No. RO0000246)

Dear Mr. Wickham:

Attached is the referenced 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 First Quarter 2011 groundwater and surface monitoring and sampling activities conducted between January 1 and March 31, 2011. These activities specifically include the quarterly sampling conducted on March 23, 2011. Ongoing bioventing activities are reported in technical submittals separate from the quarterly monitoring reports; however, brief summaries of salient information are included in the quarterly reports.

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 either Mr. Matt Graul of the EBRPD or me (510-644-3123).

Sincerely,



Richard S. Makdisi, R.G., R.E.A.
Principal and Project Manager



Matt Graul
East Bay Regional Park District

cc: Carl Wilcox, California Department of Fish and Game
Matt Graul, East Bay Regional Park District
State of California GeoTracker System
Alameda County Department of Environmental Health fip system

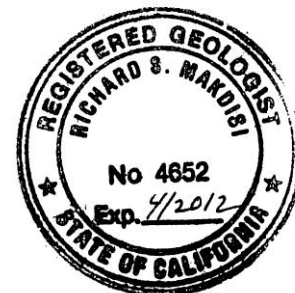


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1.0 INTRODUCTION

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 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

Historical remedial efforts have shown that residual hydrocarbons entrained in subsurface material and/or stratigraphic traps are continuing to release significant amounts of hydrocarbons into the groundwater. This report discusses the following activities conducted/coordinated by Stellar Environmental Solutions, Inc. (Stellar Environmental) between January 1 and March 31, 2011 (First Quarter 2011):

- 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
- Performing quarterly monitoring and maintenance of bioventing system operation

HISTORICAL CORRECTIVE ACTIONS AND INVESTIGATIONS

Other Stellar Environmental reports have discussed previous site remediation and investigations, site geology and hydrogeology, residual site contamination, the conceptual model for contaminant fate and transport, and hydrochemical trends and plume stability. Section 8.0 (References and Bibliography) of this report lists all technical reports for the site.

The principal phases of site work included:

- An October 2000 Site Feasibility Study Report for the site, submitted to ACEH, which provided detailed analyses of the regulatory implications of the site contamination and a request for the assessment and implementation of viable corrective actions.
- 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 Oxygen Release Compound (ORC™) injection proposed by Stellar Environmental 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.
- Groundwater monitoring and sampling, conducted on a quarterly basis since project inception (in 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. Bioventing well VW-3 was decommissioned and 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.
- An ORC™ injection pilot test, conducted by Stellar Environmental on March 10, 2009, to control historical high levels of hydrocarbons contamination that began to appear in September 2007 in source well MW-2.
- A Remedial Action Workplan (RAW), dated August 20, 2009, prepared by Stellar Environmental in response to a letter from ACEH. ACEH approved the RAW in a letter (dated October 2, 2009) to the EBRPD.
- An ORC™ injection conducted Q1-2010 over the full footprint of the plume to determine the effectiveness of achieving significant and sustained hydrocarbon concentration reductions.

SITE DESCRIPTION

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 1 shows the location of the project site and Figure 2 presents 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
- Reducing the frequency of creek surface water sampling from quarterly to semi-annually. The latter 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 Water Resources Control Board's GeoTracker requirements for uploading electronic data and reports. In addition, electronic copies of technical documentation reports published since Second Quarter 2005 have been uploaded to ACEH's file transfer protocol (ftp) system. Per ACEH's October 31, 2005 directive entitled "Miscellaneous Administrative Topics and Procedures," effective January 31, 2006, paper copies of reports are no longer provided to ACEH.

The most recent regulatory communication dated January 24, 2011 from ACEH case officer Mr. Jerry Wickham requested quarterly sampling reports for Q1-2011 and Q2-2011 be submitted May and August 2011, respectively; although semiannual monitoring had previously been recommended by Stellar Environmental in the Annual 2010 groundwater monitoring summary report.



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

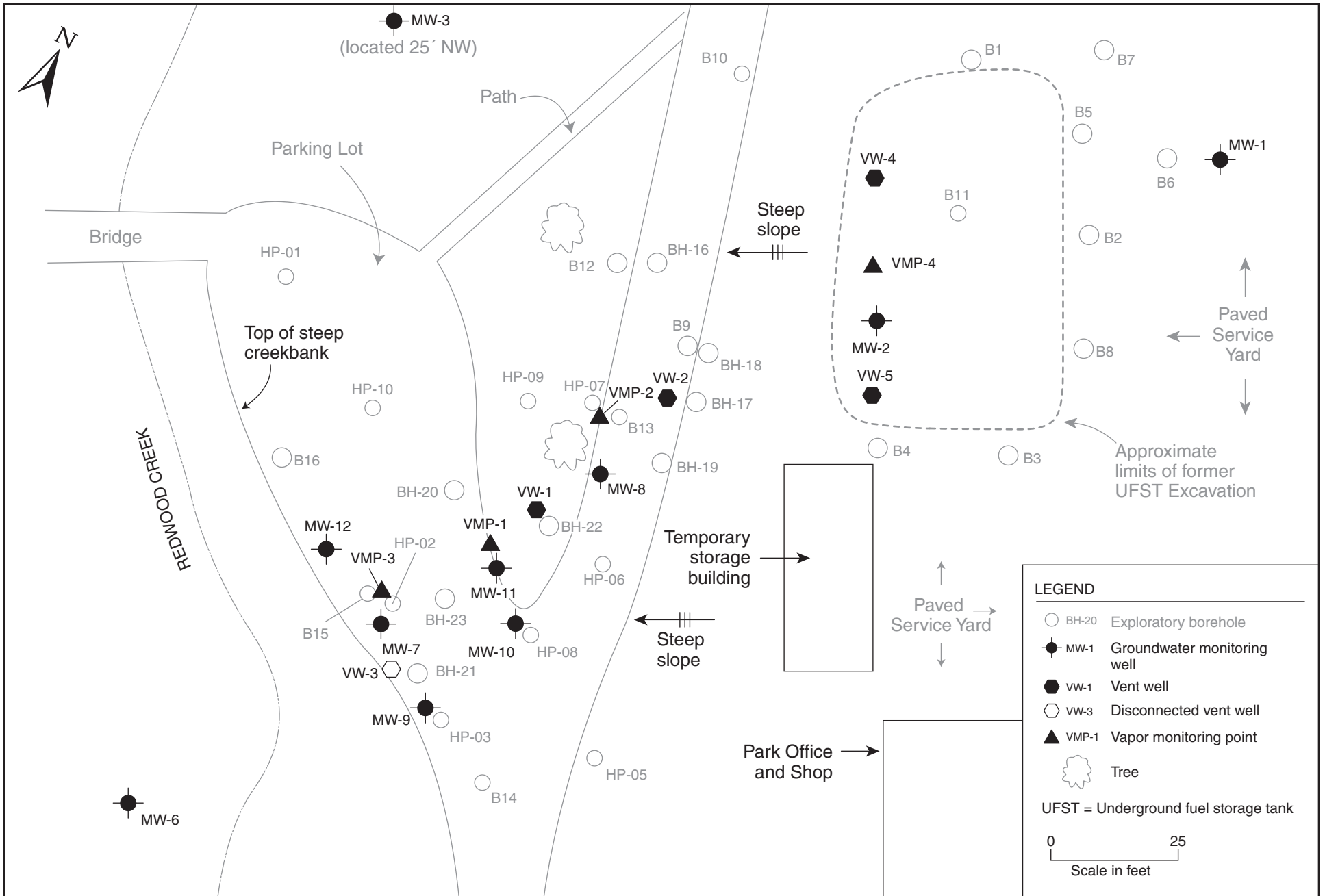
By: MJC

MARCH 2006

Figure 1



2006-17-01



LEGEND

- BH-20 Exploratory borehole
- MW-1 Groundwater monitoring well
- VW-1 Vent well
- ◻ VW-3 Disconnected vent well
- ▲ VMP-1 Vapor monitoring point
- ☼ Tree

UFST = Underground fuel storage tank

0 25
Scale in feet

SITE PLAN AND WELL LOCATIONS
Redwood Regional Park Service Yard, Oakland, CA

Figure 2

by: MJC

APRIL 2011

2.0 PHYSICAL SETTING

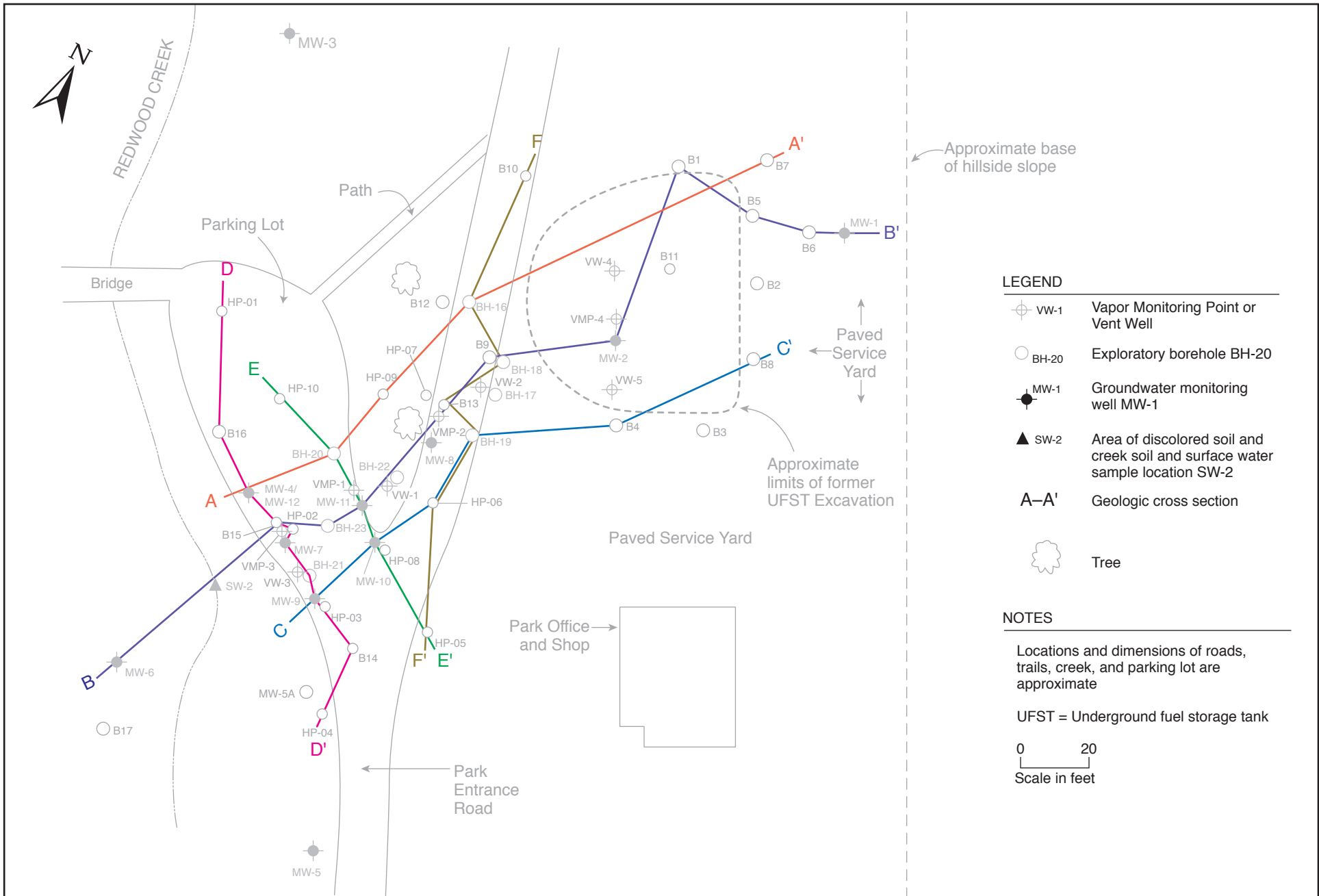
This section discusses the site hydrogeologic conditions based on geologic logging and water level measurements collected at the site since September 1993. Previous Stellar Environmental reports have included detailed discussions of site lithologic and hydrogeologic conditions. In May 2004, ACEH requested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

SITE LITHOLOGY

Figure 3 shows the locations of 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 (soil type and bedrock depth). Additional information on water level depths, historical range of water levels, and inferred thickness of soil contamination are presented in a previous report (Stellar Environmental, 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 in the most upgradient part of the site that abuts the canyon slope are inferred to be landslide debris.

A previous report (Stellar Environmental, 2004c) presented a bedrock surface isopleth map (elevation contours for the top of the bedrock surface) in the contaminant plume area. As shown in Figures 4 and 5, the isopleth map indicates 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 shows a gentle east-to-west slope 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



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

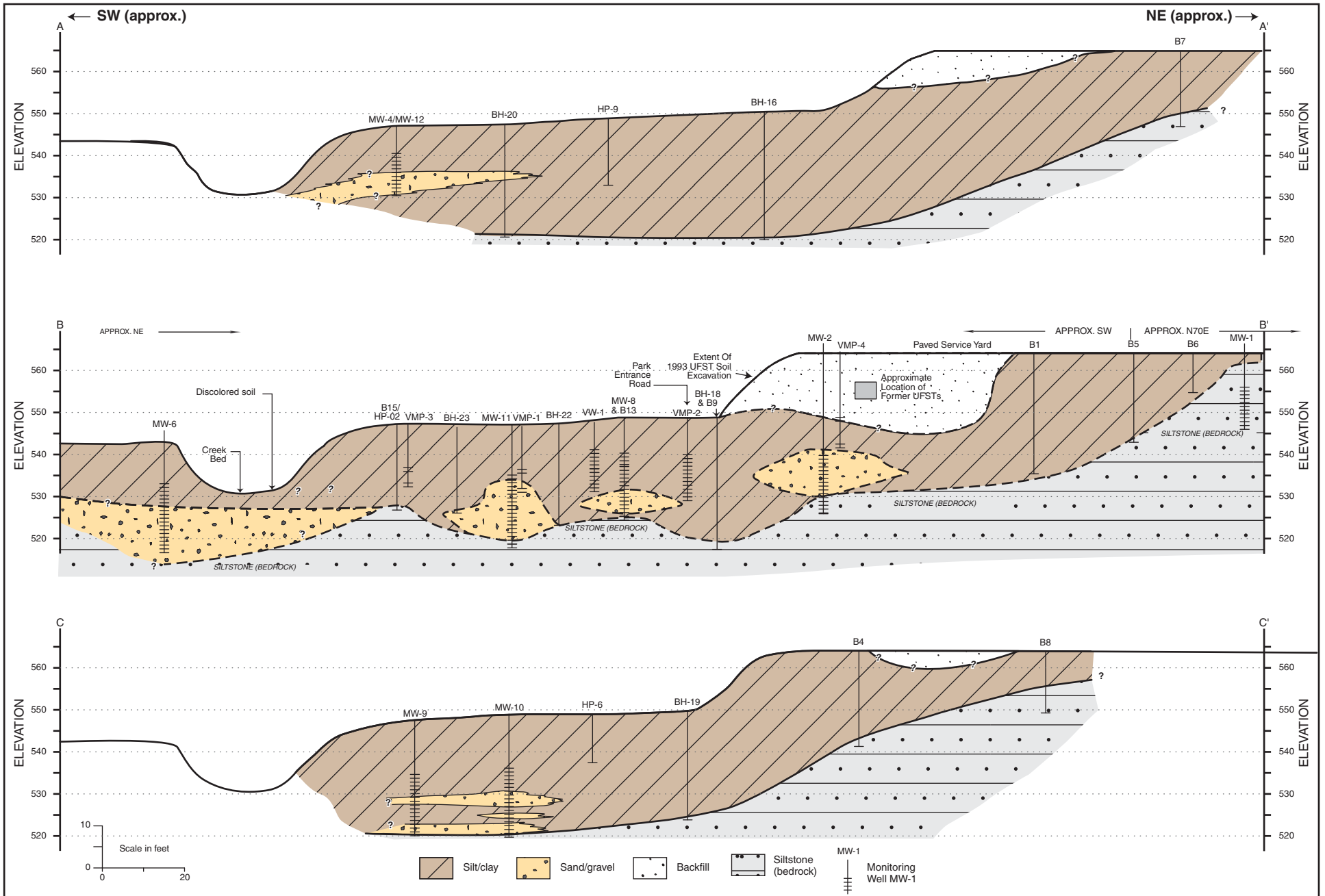
2008-02-05



**GEOLOGIC CROSS-SECTION LOCATIONS
Redwood Regional Park Service Yard, Oakland, CA**

Figure 3

by: MJC	MARCH 2008
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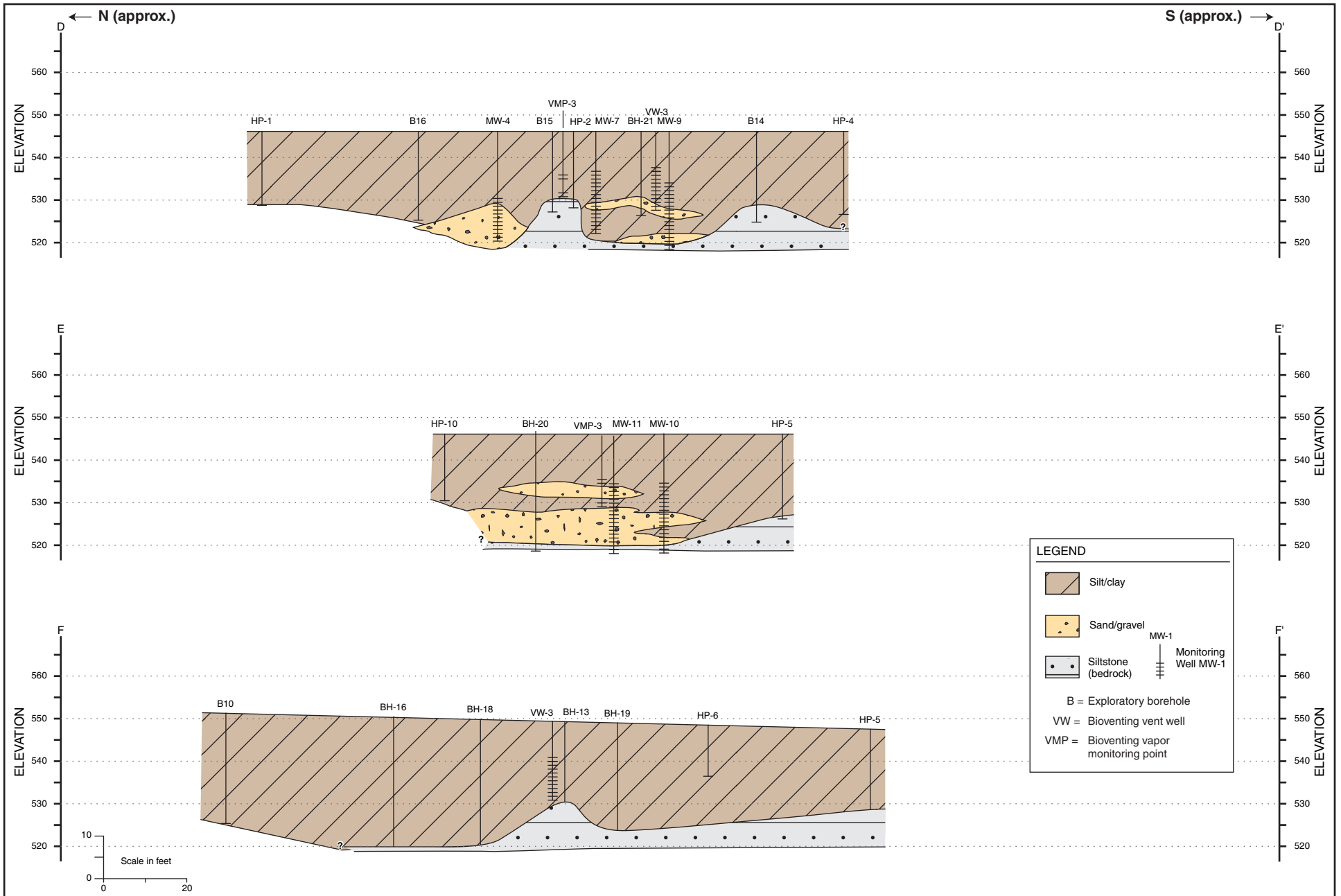


GEOLOGIC CROSS SECTIONS — A-A' through C-C'
Redwood Regional Park Service Yard, Oakland, CA

Figure 4

by: MJC

DECEMBER 2007



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

Figure 5

by: MJC

DECEMBER 2005

southern side of the plume area, bedrock slopes gently from 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.

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 it may have undergone channel erosion from a paleostream(s) flow 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 surface affects local groundwater depth and flow direction. This is an important hydrogeologic control that should be considered if groundwater-specific corrective action is contemplated.

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); 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 to 15 feet in the area of contamination. Local perched water zones have been observed well above the top of the capillary fringe. 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 the surrounding area. As discussed in the previous subsection, local groundwater flow direction is likely more variable than expressed by groundwater monitoring well data due to local variations in bedrock surface topography.

We assume a site groundwater velocity of 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 one 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 located approximately one 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.

The following groundwater gradient information is based on the First Quarter 2011 monitoring data contained in Section 6.0 of this report. In the upgradient portion of the site (between well MW-1 and MW-2, in landslide debris and the former UFST excavation backfill) the groundwater gradient was measured at approximately 0.21 feet per foot. Downgradient from (west of) the UFST source area (between MW-2 and Redwood Creek) the groundwater gradient was approximately 0.12 feet per foot. The average groundwater elevation was 2.2 feet higher than the previous (December 2010) event, with the greatest increase of 5.19 feet measured in MW-8 and the lowest increase measured in MW-3 of 0.98 feet. 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.

3.0 REGULATORY CONSIDERATIONS

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 groundwater 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 5 (in Section 7.0), 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 5 (in Section 7.0), 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 (sample location 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 FIRST QUARTER 2011 MONITORING ACTIVITIES

This section presents the quarterly creek surface water and groundwater sampling, and analytical methods for the most recent groundwater monitoring event (First Quarter 2011) conducted in March 2011. A summary of bioventing-related activities is also provided.

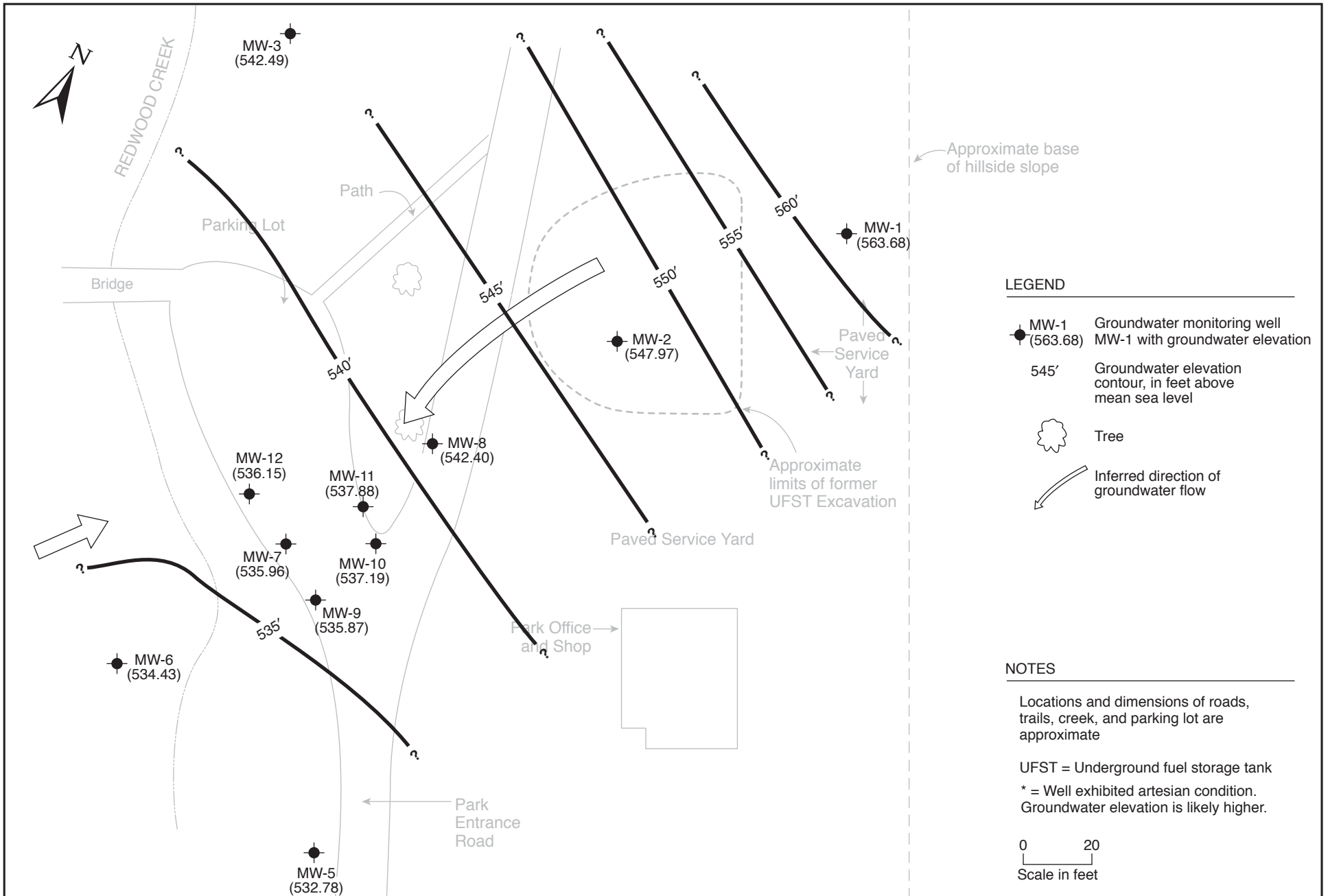
Groundwater and surface water analytical results are summarized in Section 7.0. Monitoring and sampling protocols were in accordance with the ACEH-approved workplan (Stellar Environmental, 1998a). Current First Quarter 2011 event activities included:

- 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

Redwood Creek surface water sampling, and groundwater monitoring and sampling was conducted on March 23, 2011. The locations of all site monitoring wells and creek water sampling locations are shown on Figure 2 (in Section 1.0). Appendix A contains historical groundwater elevation data. Appendix B contains the groundwater monitoring field records for the current event. Figure 6 is a groundwater elevation map constructed from the First Quarter 2011 event monitoring well elevation data. Table 1 summarizes the groundwater elevation data.

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 Stellar Environmental 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 workplan (Stellar Environmental, 1998a).



GROUNDWATER ELEVATION MAP—March 23, 2011
Redwood Regional Park Service Yard, Oakland, CA

Figure 6

by: MJC

APRIL 2011

Table 1
Groundwater Monitoring Well Construction
and Groundwater Elevation Data – March 23, 2011

Well	Well Depth	Screened Interval	TOC Elevation	Groundwater Elevation (3/23/11)
MW-1	18	7 to 17	565.83	563.68
MW-2	36	20 to 35	566.42	547.97
MW-3	42	7 to 41	560.81	542.49
MW-5	26	10 to 25	547.41	532.78
MW-6	26	10 to 25	545.43	534.43
MW-7	24	9 to 24	547.56	535.96
MW-8	23	8 to 23	549.13	542.40
MW-9	26	11 to 26	549.28	535.87
MW-10	26	11 to 26	547.22	537.19
MW-11	26	11 to 26	547.75	537.88
MW-12	25	10 to 25	544.67	536.15

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 expressed in feet above U.S. Geological Survey mean sea level.

As the first task of the monitoring event, static water levels were measured using an electric water level indicator. 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, electrical conductivity, and turbidity) 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).

In addition to the aquifer stability parameters, Stellar Environmental also measured dissolved oxygen (DO); oxygen reduction potential (ORP); alternate electron acceptors including nitrates, sulfates, and biological oxygen demand (BOD); and chemical oxygen demand (COD) to evaluate the effects of the plume wide February 2010 ORC™ application.

CREEK SURFACE WATER SAMPLING

Surface water sampling was conducted by Stellar Environmental personnel on March 23, 2011. Surface water samples were collected from Redwood Creek location SW-2 (immediately

downgradient of the former UFST source area and within the area of documented creek bank soil contamination), and at SW-3 (located approximately 500 feet downstream of the SW-2 location). In accordance with a previous Stellar Environmental 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 high stage due to recent rain events; water depths ranged from approximately one to two feet, and the creek was flowing steadily. Stellar Environmental did not observe any orange algae or sheen during this event and no odors were detected.

BIOVENTING-RELATED ACTIVITIES

The bioventing system, which consisted of three wells, was installed and started up in December 2005/January 2006 and later augmented with two additional wells in 2008. Based on respiration test data, the bioventing system has achieved hydrocarbon reduction through microbial degradation. However, the system is currently limited by oxygen penetration due to tight lithology, saturation, and tree roots. Vent well VW-3, which historically had shown insignificant pressurization, was disconnected in March 2008. Vent wells VW-4 and VW- 5, located in the upper area of the plume, were installed following the disconnection of vent well VW-3 to supplement the system. Bioventing monitoring activities in Q1-2011 showed a decrease in pressure in wells VW-1, VW-2, and VW-5; indicating air was moving through these wells and into the soil. VW-5 began showing a drop in pressure during monitoring in September 2010.

2010 ORC™ INJECTION EFFECTIVENESS INDICATORS

In Q1-2010, ORC™ was injected into a total of 24 boreholes in four zones throughout the plume and at various depths using direct-push drilling technology. Approximately 2,075 pounds of Advanced ORC™ was mixed in a 30 percent water/slurry mix and injected from the depth of the borehole to the subsurface. This was designed to treat and/or intercept accessible subsurface groundwater hydrocarbon contamination. One year later, this in-situ treatment appears to have been only marginally effective. The alternate electron acceptors measured during this Q1-2011 sampling event; which included nitrates, sulfates, biological oxygen demand (BOD), and chemical oxygen demand (COD) were analyzed to track the ORC™ utilization. One concern about the use of ORC™ is that other non-hydrocarbon-utilizing microorganisms will use the product as well, without the benefit of hydrocarbon reduction occurring as effectively. The oxygen demand exerted by extraneous oxygen sinks, such as nitrates and sulfates can then be estimated to evaluate its equivalent to the oxygen demand exerted by the contaminants of concern. Table 2 includes the results of these additional analyses.

The main active ingredient in Advanced ORC™ is calcium oxy-hydroxide. The optimal pH for hydrocarbon reduction is between seven and nine. The groundwater measured in site wells during this event had a pH range of 6.8 to 7.6, mostly within the optimum range. Under these conditions, the Advanced ORC™ remedy product will react to release hydrogen peroxide and oxygen. This allows for the initial chemical oxidation to take place; starting the breakup of the contaminants. The oxygen is then released more slowly, which will assist bioremediation over a period of up to 1.5 years.

Because only a moderate reduction in hydrocarbon contaminant concentrations has been observed in the key site wells since the injection, it is suspected that in addition to lithologic restraints, non-hydrocarbon utilizing microorganisms are utilizing the ORC™, preventing the breakdown of the residual hydrocarbons. This hypothesis is supported by the only rapid decrease in concentrations being observed in well MW-2, located in fill material in the historical excavation area, which would generally contain fewer microorganisms and lithologic restraints. This hypothesis can be tested by continuing to collect additional site chemical parameters in subsequent semiannual monitoring events. Table 2 contains the results from the parameter analysis conducted during this Q1-2011 sampling event.

Table 2
Electron Acceptors and Oxygen Demand in Key Wells
March 23, 2011 Analytical Results

Location	Concentrations				
	Nitrates	Sulfates	BOD	DO	COD
MW-2	1.6	140	<5.0	27.3	23
MW-7	<0.05	2.4	16	0.62	23
MW-8	0.06	19	40	0.47	55
MW-12	<0.05	22	9.6	0.50	17

COD = Chemical oxygen demand; BOD = Biological oxygen demand; DO = Dissolved Oxygen

Dissolved Oxygen

DO is the most thermodynamically favored electron acceptor used in aerobic biodegradation of hydrocarbons. Active aerobic biodegradation of petroleum hydrocarbon compounds requires at least one to two milligrams per liter (mg/L) of DO in groundwater. During aerobic biodegradation, DO levels are reduced in the hydrocarbon plume as respiration occurs. Therefore, DO levels that vary inversely to hydrocarbon concentrations are consistent with the occurrence of aerobic biodegradation.

The highest hydrocarbon concentrations (> 40,000 µg/L) were reported in well W-2 in early 2009 before the initial injection of ORC™ in Q1-2009 which resulted in steady decreases in both TPHg and TPHg. The current DO in MW-2 is at its highest with relatively low hydrocarbon concentrations (< 1,000 µg/L) in this well. This suggest both that the ORC™ was effective there and that less active aerobic biodegradation is currently occurring thee now. Conversely at monitoring well MW-8, which had the highest concentration of hydrocarbons, the lowest DO concentration was measured. In this case the ORC™ was likely not as effective at being in contact with the hydrocarbon contamination in and around that well. Thus a low DO concentration can also signifty a lack of effective aerobic biodegradation occurring as a result of less ORC™ penetration or utilization by the hydrocarbons.

During the First Quarter 2010 sampling event, DO concentrations in site wells ranged from 0.28 mg/L to 2.41 mg/L. During the Second Quarter 2010 sampling event, DO concentrations ranged from 0.30 mg/L to 24.01 mg/L, with the anomalous 24.01 mg/L being associated with MW-2. During this Q1-2011 event, DO concentrations ranged from 0.44 mg/L to 27.3 mg/L.

5.0 FIRST QUARTER 2011 ANALYTICAL RESULTS

This section presents the field and laboratory results of the current monitoring event. Table 3 summarizes the contaminant analytical results. Figure 7 shows the contaminant results and the inferred limits of the gasoline groundwater plume. Appendix C contains the certified analytical laboratory report and chain-of-custody record. Appendix D summarizes the historical groundwater and surface water analytical results.

GROUNDWATER AND SURFACE WATER ANALYTICAL RESULTS

First Quarter 2011 site groundwater contaminant concentrations exceeded the groundwater ESL for total volatile hydrocarbons as gasoline (TVHg) and total extractable hydrocarbons as diesel (TEHd) in all of the seven wells sampled (MW-2, MW-7, MW-8, MW-9, MW-10, MW-11, and MW-12). The ESL for benzene was equaled or exceeded in MW-7, MW-8, MW-9 and MW-10. The ESL for ethylbenzene was exceeded in MW-7 and MW-8; the ESL for total xylenes was exceeded in MW-8. MTBE was detected above the ESL in wells MW-9, MW-10, MW-11, and MW-12. MTBE was also detected in MW-2 but below the ESL. Toluene was detected only in MW-12 but was below the ESL of 4 micrograms per liter ($\mu\text{g/L}$).

The maximum concentration of TVHg and TEHd were detected in MW-8 (located just downgradient of the former source area represented by MW-2). MW-7 (located in the downgradient area of the plume) contained the next highest concentrations of TVHg and TEHd. 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. The area of the current event contaminant plume is consistent with historical contaminant distribution. While the center of contaminant mass in groundwater is generally located downgradient of the former source area, historically, contamination also has been observed in the former source area.

While contaminant concentrations remain elevated, a general decrease in the total concentrations of both gasoline and diesel was observed compared to the same quarter last year (March 2010).

No contaminants were detected above their respective laboratory detection limits in either surface water sample location SW-2 or SW-3 during this March 2011 sampling event.

Table 3
Groundwater and Surface Water Samples – March 23, 2011
Analytical Results

Location	Dissolved Oxygen (mg/L)	Contaminant Concentrations						
		TVHg	TEHd	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE
GROUNDWATER SAMPLES								
MW-2	27.30	860	1,100	<0.5	<0.5	<0.5	<0.5	3.1
MW-7	0.62	5,500	3,400	11	<0.5	94	8.5	<2.0
MW-8	0.47	6,000	5,900	39	<0.5	510	431	<2.0
MW-9	0.70	700	680	1.6	<0.5	10	3.5	14.0
MW-10	0.80	170	1,200	1.0	<0.5	3.7	1.8	6.3
MW-11	0.44	180	1,600	<0.5	<0.5	1.2	<0.5	6.9
MW-12	0.50	290	450	<0.5	0.74	1.3	<0.5	11.0
<i>Groundwater ESLs^(a)</i>	<i>NLP</i>	<i>100 / 210</i>	<i>100 / 210</i>	<i>1.0 / 46</i>	<i>4.0 / 130</i>	<i>30 / 43</i>	<i>20 / 100</i>	<i>5.0 / 1,800</i>
REDWOOD CREEK SURFACE WATER SAMPLES								
SW-2	NA	<50	<50	<0.5	<0.5	<0.5	<0.5	<2.0
SW-3	NA	<50	<50	<0.5	<0.5	<0.5	<0.5	<2.0
<i>Surface Water Screening Levels^(b)</i>	<i>NLP</i>	<i>100</i>	<i>100</i>	<i>1.0</i>	<i>40</i>	<i>30</i>	<i>20</i>	<i>5.0</i>

Notes:

^(a) ESLs = Water Board Environmental Screening Levels, where groundwater is/is not a potential drinking water resource (Water Board, 2008)

^(b) Water Board Surface Water Screening Levels for freshwater habitats (Water Board, 2008)

NA = not analyzed
NLP = no level published

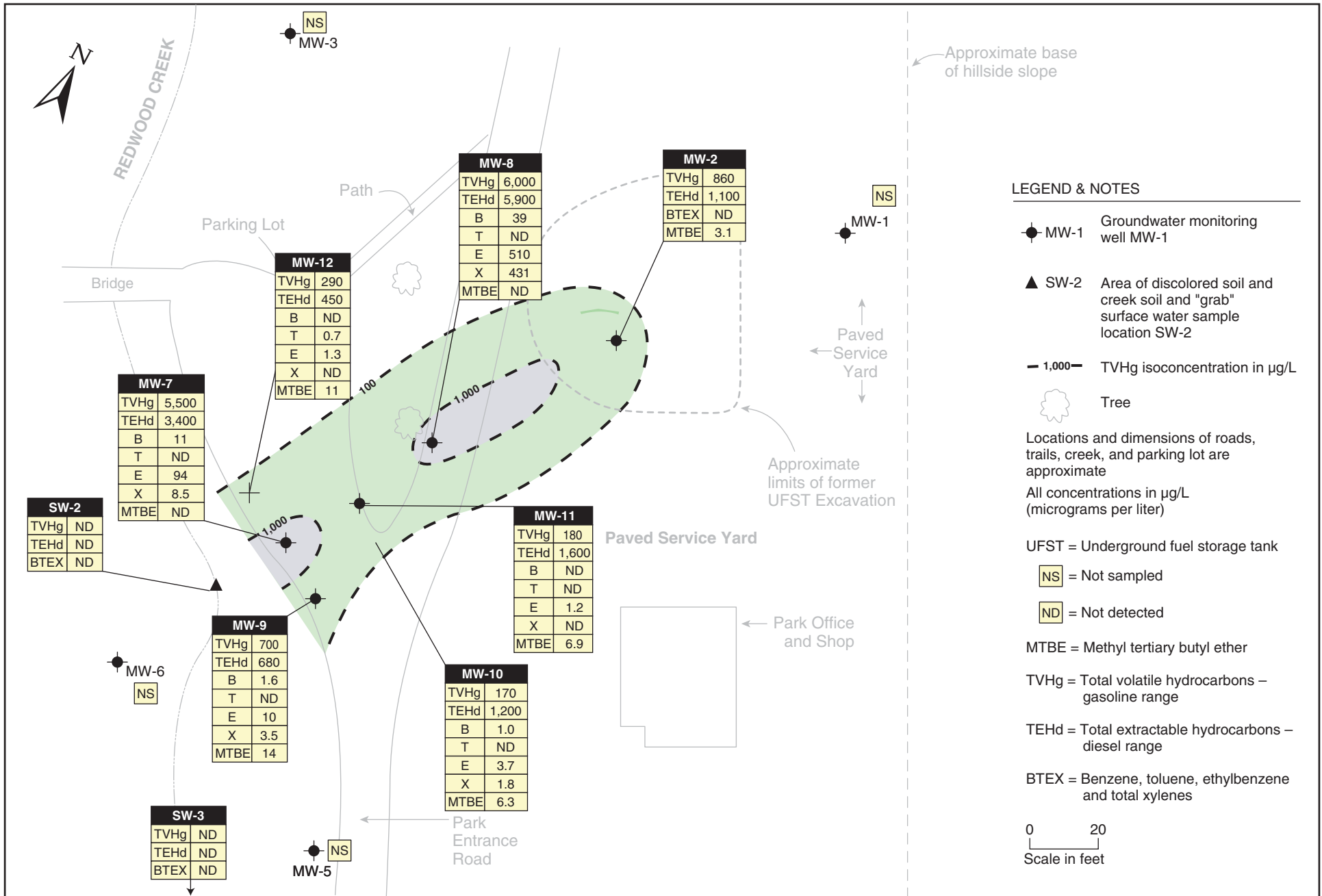
MTBE = methyl tertiary-butyl ether
TEHd = total extractable hydrocarbons - diesel range
TVHg = total volatile hydrocarbons - gasoline range

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

Dissolved oxygen concentrations are expressed in milligrams per liter (mg/L).

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).



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
 - NS = Not sampled
 - ND = 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

2010-02-14



ANALYTICAL RESULTS AND GASOLINE PLUME—MARCH 2011
Redwood Regional Park Service Yard, Oakland, CA

Figure 7
 by: MJC APRIL 2011

6.0 SUMMARY, CONCLUSIONS AND PROPOSED ACTIONS

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

SUMMARY AND CONCLUSIONS

- The overall objective of the 2010 in-situ injection remedial action was to continue trying to reduce the residual hydrocarbons in the source area and in the downgradient slope area leading to Redwood Creek. Historical remedial efforts have shown that residual hydrocarbons entrained in subsurface material and/or stratigraphic traps are continuing to release significant amounts of hydrocarbons into the groundwater. The dissolved fraction that results from this release forms a recalcitrant plume that still daylight at the Redwood Creek interface. As described in the report, the First Quarter 2010 in-situ remedial action continues to support the trend line of a reduction in hydrocarbon plume concentrations in Q1-2011, although at a diminished rate with rebound apparent. The hydrocarbon concentrations remain above the ESLs.
- Groundwater sampling has been conducted on an approximately quarterly basis since November 1994. A total of eleven site wells are available for monitoring; seven of the available wells are currently monitored for contamination.
- Site contaminants of concern include gasoline, diesel, BTEX, and MTBE. Current groundwater concentrations exceed regulatory screening levels for TVHg, TEHd, benzene, ethylbenzene, total xylenes, and MTBE in groundwater.
- The primary environmental risk is discharge of contaminated groundwater to the adjacent Redwood Creek. A stream bioassessment (conducted between 1999 to 2000) 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 but generally only under low-creek flow conditions. No contaminants were detected above their respective laboratory detection limits in either surface water sample location SW-2 or SW-3 during this March 2011 sampling event.

- The existing well layout adequately constrains the lateral extent of groundwater contamination, and the vertical limit is very likely the top of the near-surface (25 to 28 feet bgs) in 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.
- First Quarter 2011 site groundwater contaminant concentrations exceeded the groundwater ESL for TVHg and TEHd in all of the seven wells sampled (MW-2, MW-7, MW-8, MW-9, MW-10, MW-11, and MW-12).
- The ESL for benzene was equaled or exceeded in monitoring wells MW-7, MW-8, MW-9 and MW-10; the ESL for ethylbenzene was exceeded in MW-7 and MW-8; the ESL for total xylenes was exceeded in MW-8. MTBE was detected above the ESL in MW-9, MW-10, MW-11, and MW-12. MTBE was also detected in MW-2 but below the ESL. Toluene was detected only in MW-12 but was below the ESL of 4.0 µg/L.
- Groundwater contaminant concentrations fluctuate seasonally as a result of changes in saturated conditions, and the center of mass of the contaminant plume (represented by maximum concentrations) is alternated between the upgradient, mid-plume, and downgradient wells in recent history.
- While concentrations of both gasoline and diesel remain elevated, they have generally decreased in the Q1-2011 monitoring event as compared to Q1-2010.
- The bioventing system has achieved its objectives of enhancing oxygen to promote microbial reduction of available hydrocarbons but has been limited by its ability to penetrate into areas where residual hydrocarbons are still entrained in the soil and saturated matrix. The initial hydrocarbon reduction in the first year of operation of the bioventing system was more than double what it is now based on respiration test data. The current reductions do not appear to justify the operational costs of the system.
- The most recent regulatory communication was provided in the ACEH letter dated January 24, 2011 from case officer Mr. Jerry Wickham, whom requested that quarterly sampling reports for Q1-2011 and Q2-2011 be submitted May and August 2011, respectively. Semiannual monitoring was previously recommended by Stellar Environmental in the annual 2010 groundwater monitoring summary report.
- In-situ injection of ORCTM in the area of the plume has been limited by lithologic restraints and non-hydrocarbon-utilizing microorganisms. It worked very well around the permeable backfilled zone of the former UFST excavation area as seen in results at MW-2, but shows very limited effectiveness in the midfield and downgradient wells.

PROPOSED ACTIONS

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

- As quarterly sampling has been conducted since the project inception and seasonal fluctuations have been established, Stellar Environmental recommends moving from quarterly to semiannual monitoring.
- Continue to monitor the February 2010 ORC™ injection remedy effectiveness during regular quarterly (or if approved semiannual) sampling events. Monitoring of additional site chemical parameters will continue to be included in subsequent monitoring events to investigate whether microbial biodegradation activity is occurring preferentially in natural site constituents in competition with the target residual hydrocarbons.
- Continue to inform regulators of site progress and seek their concurrence with proposed actions.
- The bioventing system is recommended to be shut down for one year based on the indications of reduced hydrocarbon utilization at this point. After one year photoionization (PID) readings will be collected to see if rebound had occurred.
- Continue to evaluate analytical results in the context of hydrochemical trends, groundwater contamination on Redwood Creek, and effectiveness of the corrective action to date.
- Continue to make required Electronic Data Format uploads to the State of California GeoTracker database, and upload an electronic copy of technical reports to the ACEH ftp system.

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8.0 LIMITATIONS

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 Stellar Environmental since September 1998. This report has been prepared in accordance with generally accepted methodologies and standards of practice. The Stellar Environmental 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 site characterization and corrective actions completed.

APPENDIX A

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	531.4						
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
12/17/2008	561.11	540.88	536.77	(b)	530.68	531.67	533.26	534.04	532.35	532.94	533.29	533.66
3/16/2009	561.84	546.25	539.51	(b)	531.63	532.58	534.65	539.51	534.56	535.55	535.49	535.08
6/10/2009	561.05	545.02	541.38	(b)	531.02	532.08	534.45	537.94	534.08	535.40	535.18	534.96
9/25/2009	560.00	540.79	536.33	(b)	529.98	Dry	532.58	534.25	531.96	532.62	532.97	533.08
12/21/2009	560.93	543.49	541.22	(b)	530.96	532.06	534.03	536.17	533.46	534.13	534.57	534.69
3/29/2010	561.48	546.44	541.59	(b)	531.52	532.58	534.72	540.03	534.53	535.94	535.55	535.28
6/22/2010	561.17	545.62	541.40	(b)	531.26	532.41	534.63	538.90	534.37	535.62	535.27	535.21
9/28/2010	560.32	543.36	537.91	(b)	530.6	532.02	532.66	535.23	532.96	534.21	533.99	534.16
12/16/2010	561.33	545.52	541.51	(b)	531.11	532.31	534.52	537.21	534.00	534.38	535.10	535.15
3/23/2011	563.68	547.97	542.49	(b)	532.78	534.43	535.96	542.40	535.87	537.19	537.88	536.15

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

Groundwater Monitoring Field Documentation

WELLHEAD INSPECTION CHECKLIST

Date 3-23-11 Client STELLAR ENV.

Site Address ZEDWOOD REGIONAL PARKS SERV. YARD OAKLAND

Job Number 110323-FS1 Technician A

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	✓							
MW-2	✓							
MW-3	✓							
MW-5	✓							
MW-6	✓							
MW-7	✓	✓						
MW-8		✓					✓	
MW-9	✓							
MW-10							✓	
MW-11	✓							
MW-12	✓	✓						

NOTES: MW-10 (1/2 TABS STRIPPED) MW-8 (2/3 BOLTS MISSING)

WELL GAUGING DATA

Project # 110323 - FS1 Date 3-23-11 Client STELLAR

Site REDWOOD REGIONAL PARKS SERV. YARD OAKLAND

Well ID	Time	Well Size (in.)	Sheen / Odor	Depth to Immiscible Liquid (ft.)	Thickness of Immiscible Liquid (ft.)	Volume of Immiscibles Removed (ml)	Depth to water (ft.)	Depth to well bottom (ft.)	Survey Point: TOB or TOC	Notes
MW-1	911	4					2.15	19.13	TOC	
MW-2	915	4					18.45	36.94		
MW-3	920	4					18.32	44.81		
MW-5	955	4					14.63	26.82		
MW-6	1000	2					11.00	14.25		
MW-7	930	2					11.60	25.20		
MW-8	945	2					6.73	22.15		
MW-9	940	2					¹³⁴¹ 14.63	^{30.05} 26.82		
MW-10	925	2					10.03	28.18		
MW-11	950	2					9.87	28.52		
MW-12	935	2					8.52	29.55		

WELL MONITORING DATA SHEET

Project #: 110323 - FS1	Client: STELLAR
Sampler: F5	Date: 3-23-11
Well I.D.: MW-2	Well Diameter: 2 3 4 6 8
Total Well Depth (TD): 36.94	Depth to Water (DTW): 18.45
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 22.14	

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

$12.1 \text{ (Gals.)} \times 3 = 36.3 \text{ Gals.}$ <p>1 Case Volume Specified Volumes Calculated Volume</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <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>radius² * 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 ² * 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 ² * 0.163														

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
1020	14.1	7.2	1329	>1000	12.1	
— WELL DEWATERED @ 14 GALS —						
1355	13.2	7.3	822	199	—	

Did well dewater? <input checked="" type="radio"/> Yes No	Gallons actually evacuated: 14
Sampling Date: 3-23-11 Sampling Time: 1355 Depth to Water: 28.78	
Sample I.D.: MW-2 Laboratory: Kiff CalScience Other: <u>C&T</u>	
Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other: <u>SEE C.O.C.</u>	
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: 27.30 mg/L	
O.R.P. (if req'd): Pre-purge: _____ mV Post-purge: 65 mV	

WELL MONITORING DATA SHEET

Project #: 110323 - FS1	Client: STELLAR
Sampler: F3	Date: 3-23-11
Well I.D.: MW-7	Well Diameter: ② 3 4 6 8 _____
Total Well Depth (TD): 25.20	Depth to Water (DTW): 11.60
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 14.32	

Purge Method: Bailer	Wattera	Sampling Method: Bailer
Disposable Bailer	Peristaltic	Disposable Bailer
Positive Air Displacement	Extraction Pump	Extraction Port
Electric Submersible	Other _____	Dedicated Tubing
		Other: _____

$\frac{2.2 \text{ (Gals.)} \times 3}{1 \text{ Case Volume Specified Volumes}} = \frac{6.6 \text{ Gals.}}{\text{Calculated Volume}}$	<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>radius² * 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 ² * 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 ² * 0.163														

Time	Temp (°F or °C)	pH	Cond. (mS or μS)	Turbidity (NTUs)	Gals. Removed	Observations
1057	12.18	6.9	752	157	2.2	
1104	12.34	6.8	760	89	4.4	
1109	12.0	6.8	732	64	6.6	

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

Sampling Date: **3-23-11** Sampling Time: **1435** Depth to Water: **11.20**

Sample I.D.: **MW-7** Laboratory: Kiff CalScience Other **C&T**

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) **Other: SEE C.O.C.**

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:	0.62	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	37	mV

WELL MONITORING DATA SHEET

Project #: 110323-FS1	Client: STELLAR
Sampler: F3	Date: 3-23-11
Well I.D.: MW-8	Well Diameter: (2) 3 4 6 8
Total Well Depth (TD): 22.15	Depth to Water (DTW): 6.73
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): (YSI) HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 9.81	

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: _____
--------------------------------------------------------------------------------------------------	----------------------------------------------------------	-------------------------------------------------------------------------------------------------------

2.5 (Gals.) X 3 = 7.5 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 ² * 0.163

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
1240	12.6	7.0	818	329	2.5	odor
1245	12.8	6.9	827	241	5.0	↓
1250	12.8	6.8	825	357	7.5	

Did well dewater? Yes No Gallons actually evacuated: **7.5**

Sampling Date: **3-23-11** Sampling Time: **1515** Depth to Water: **6.92**

Sample I.D.: **MW-8** Laboratory: Kiff CalScience Other **C&T**

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) (Other) **SEE C.O.C.**

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
				0.77
				-20

WELL MONITORING DATA SHEET

Project #: 110323-FS1	Client: STELLAR
Sampler: F3	Date: 3-23-11
Well I.D.: MW-9	Well Diameter: 2 3 4 6 8 <u> </u>
Total Well Depth (TD): 30.05	Depth to Water (DTW): 13.41
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: <u>PVC</u> Grade	D.O. Meter (if req'd): <u>YSI</u> HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 16.73	

Purge Method: Bailer <u>Disposable Bailer</u> Positive Air Displacement Electric Submersible	Watterra Peristaltic Extraction Pump Other _____	Sampling Method: <u>Bailer</u> <u>Disposable Bailer</u> Extraction Port Dedicated Tubing Other: _____
-------------------------------------------------------------------------------------------------------	-----------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------

$\frac{2.7 \text{ (Gals.)} \times 3}{1 \text{ Case Volume}} = \frac{8.1 \text{ Gals.}}{\text{Specified Volumes}} \text{ Calculated Volume}$	<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>radius² * 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 ² * 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 ² * 0.163														

Time	Temp (°F or <u>°C</u>)	pH	Cond. (mS or <u>µS</u>)	Turbidity (NTUs)	Gals. Removed	Observations
1215	12.3	6.8	758	297	2.7	SHEEN
1219	12.7	6.6 ^{6.9}	789	513	5.4	"
1224	12.8	6.9	799	505	8.1	"

Did well dewater? Yes No Gallons actually evacuated: **8.1**

Sampling Date: **3-23-11** Sampling Time: **1500** Depth to Water: **13.50**

Sample I.D.: **MW-9** Laboratory: Kiff CalScience Other C&T

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other: SEE C.O.C.

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:	0.70 mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	13 mV

WELL MONITORING DATA SHEET

Project #: 110323 - FS1	Client: STELLAR
Sampler: FS	Date: 3-23-11
Well I.D.: MW-10	Well Diameter: (2) 3 4 6 8 _____
Total Well Depth (TD): 28.19	Depth to Water (DTW): 10.03
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): (YSI) HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 13.66	

Purge Method: Bailer (Disposable Bailer) Positive Air Displacement Electric Submersible	Wattera Peristaltic Extraction Pump Other _____	Sampling Method: (Bailer) (Disposable Bailer) Extraction Port Dedicated Tubing Other: _____
----------------------------------------------------------------------------------------------------------------	----------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------

$\frac{3.0 \text{ (Gals.)} \times 3}{1 \text{ Case Volume Specified Volumes}} = \frac{9.0 \text{ Gals.}}{\text{Calculated Volume}}$	<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>radius² * 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 ² * 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 ² * 0.163														

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
1035	13.1	7.6	767	151	3	
1038	13.6	7.5	778	120	6	
1042	13.3	7.4	780	366	9	

Did well dewater? Yes No Gallons actually evacuated: **9**

Sampling Date: **3-23-11** Sampling Time: **1420** Depth to Water: **9.21**

Sample I.D.: **MW-10** Laboratory: Kiff CalScience Other **CFT**

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) **(Other: SEE C.O.C.)**

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:	0.80	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	165	mV

WELL MONITORING DATA SHEET

Project #: 110323-FS1	Client: STELLAR
Sampler: F₃	Date: 3-23-11
Well I.D.: MW-11	Well Diameter: (2) 3 4 6 8
Total Well Depth (TD): 28.52	Depth to Water (DTW): 9.87
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): (YSI) HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 13.6	

Purge Method: Bailer ~~Disposable Bailer~~ Waterra Sampling Method: **Bailer** ~~Disposable Bailer~~
 Positive Air Displacement Peristaltic Extraction Port
 Electric Submersible Extraction Pump Dedicated Tubing
 Other _____ Other: _____

$3.0 \text{ (Gals.)} \times 3 = 9.0 \text{ Gals.}$ 1 Case Volume Specified Volumes Calculated Volume	<table border="1" style="width: 100%; border-collapse: collapse;"> <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>radius² * 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 ² * 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 ² * 0.163														

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
1300	11.9	7.0	511	193	3.0	
1304	12.1	6.9	556	192	6.0	
1308	12.2	6.9	560	175	9.0	

Did well dewater? Yes **(No)** Gallons actually evacuated: **9.0**

Sampling Date: **3-23-11** Sampling Time: **1530** Depth to Water: **9.78**

Sample I.D.: **MW-11** Laboratory: Kiff CalScience Other **C&T**

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) **(Other: SEE C.O.C.)**

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:	0.44 mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	-54 mV

WELL MONITORING DATA SHEET

Project #: 110323-FS1	Client: STELLAR
Sampler: F3	Date: 3-23-11
Well I.D.: MW-12	Well Diameter: 2 3 4 6 8
Total Well Depth (TD): 23.55	Depth to Water (DTW): 8.52
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 11.52	

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

Other: _____

$\frac{2.5 \text{ (Gals.)} \times 3}{1 \text{ Case Volume}} = 7.5 \text{ Gals.}$ <p style="text-align: center; margin: 0;">Specified Volumes Calculated Volume</p>	<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>radius² * 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 ² * 0.163
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1"	0.04	4"	0.65														
2"	0.16	6"	1.47														
3"	0.37	Other	radius ² * 0.163														

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
1147	11.8	6.9	631	185	2.5	
1151	12.0	6.8	648	303	5.0	
1157	12.1	6.8	649	578	7.5	

Did well dewater? Yes **No** Gallons actually evacuated: **75**

Sampling Date: **3-23-11** Sampling Time: **1450** Depth to Water: **8.60**

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

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) **Other: SEE C.O.C.**

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:	0.50 mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	-25 mV

Chain of Custody Record

Lab job no. _____
 Date 3-23-11
 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 2006-46 2008-02

Field Sample Number	Location/ Depth	Date	Time	Sample Type	Type/Size of Container	Preservation								Analysis Required	Remarks			
						Cooler		Chemical										
MW-2		3-23-11	1355	W														
MW-7			1435															
MW-8			1515															
MW-9			1500															
MW-10			1420															
MW-11			1530															
MW-12			1450															

Filtered
 No. of Containers
 TVH-G (BOIS)
 BTEX (MTRF)
 TEH-D (BOIS)

Analysis Required
 NITRATE
 SULFATE
 BOD
 COD

Relinquished by: Signature <u>[Signature]</u> Printed <u>F. SPINDLER</u> Company <u>Stellar Environmental</u>	Date <u>3-23-11</u> Time <u>1645</u>	Received by: Signature <u>[Signature]</u> Printed <u>Micah Smith</u> Company <u>C&T</u>	Date <u>3/23/11</u> Time <u>16:45</u>	Relinquished by: Signature _____ Printed _____ Company _____	Date _____ Time _____	Received by: Signature _____ Printed _____ Company _____	Date _____ 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>				Relinquished by: Signature _____ Printed _____ Company _____				Received by: Signature _____ Printed _____ Company _____	

2000-00-01

Chain of Custody Record

Lab job no. _____

Laboratory Curtis and Tompkins, Ltd. Method of Shipment Hand Delivery
 Address 2323 Fifth Street
Berkeley, California 94710
510-486-0900
 Project Owner East Bay Regional Park District Cooler No. _____
 Site Address 7867 Redwood Road Project Manager Richard Makdisi
Oakland, California Telephone No. (510) 644-3123
 Project Name Redwood Regional Park Fax No. (510) 644-3859
 Project Number 2010-02 Samplers: (Signature) [Signature]

Date _____
 Page 1 of 1

Field Sample Number	Location/Depth	Date	Time	Sample Type	Type/Size of Container	Preservation		Filtered	No. of Containers	Analysis Required										Remarks						
						Cooler	Chemical																			
SW-2	Creek	12/16/10 3/23/11		W	40 ml VOA	Y	Yes (a)	N	3	X																
SW-3	Creek	12/16/10 3/23/11		W	40 ml VOA	Y	Yes (a)	N	3	X																
SW-2	Creek	3/23/11		W	Amber Litev	Y	Yes (a)	N	1	X																
SW-2	Creek	3/23/11		W	Amber Litar	Y	Yes (a)	N	1	X																

Relinquished by: <u>[Signature]</u> Signature <u>Steve Bittman</u> Printed _____ Company <u>Stellar Environmental</u>	Date <u>12-18-10</u> <u>3/23/11</u> Time <u>12:00</u>	Received by: <u>[Signature]</u> Signature _____ Printed <u>F. SPRINGTON</u> Company <u>Blaine Tech</u>	Date <u>12-18-10</u> <u>3-23-11</u> Time <u>12:00</u>	Relinquished by: <u>[Signature]</u> Signature _____ Printed <u>F. SPRINGTON</u> Company <u>BLAINE TECH</u>	Date _____ <u>3-23-11</u> Time _____ <u>16:45</u>	Received by: <u>[Signature]</u> Signature _____ Printed <u>Mich Smith</u> Company <u>C#7</u>	Date _____ <u>3/23/11</u> Time _____ <u>16:45</u>		
Turnaround Time: <u>Standard - 5 Day</u> Comments: <u>(a) VOA w/ HCL</u>				Relinquished by: _____ Signature _____ Printed _____ Company _____				Received by: _____ Signature _____ Printed _____ Company _____	

2000-00-01

APPENDIX C

Analytical Laboratory Report and Chain-of-Custody Record



Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878





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

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

**Laboratory Job Number 226830
ANALYTICAL REPORT**

Stellar Environmental Solutions
2198 6th Street
Berkeley, CA 94710

Project : 2010-02
Location : Redwood Regional Park
Level : II

Sample ID

SW-2

SW-3

Lab ID

226830-001

226830-002

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 signature. 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: 03/30/2011

NELAP # 01107CA

CASE NARRATIVE

Laboratory number: 226830
Client: Stellar Environmental Solutions
Project: 2010-02
Location: Redwood Regional Park
Request Date: 03/23/11
Samples Received: 03/23/11

This data package contains sample and QC results for two water samples, requested for the above referenced project on 03/23/11. 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.

Chain of Custody Record

226830

Lab job no. _____

Laboratory Curtis and Tompkins, Ltd. Method of Shipment Hand Delivery

Date _____

Address 2323 Fifth Street Shipment No. _____

Page 1 of 1

Berkeley, California 94710 Airbill No. _____

Project Owner East Bay Regional Park District Cooler No. _____

Site Address 7867 Redwood Road Project Manager Richard Makdisi

Oakland, California Telephone No. (510) 644-3123

Project Name Redwood Regional Park Fax No. (510) 644-3859

Project Number 2010-02 Samplers: (Signature) [Signature]

Field Sample Number	Location/Depth	Date	Time	Sample Type	Type/Size of Container	Preservation		Filtered	No. of Containers	Analysis Required										Remarks						
						Cooler	Chemical																			
SW-2	Creek	12/16/00 3/23/11		W	40 ml VOA	Y	Yes (a)	N	3																	
SW-3	Creek	12/16/00 3/23/11		W	40 ml VOA	Y	Yes (a)	N	3																	
SW-2	Creek	3/23/11		W	Amber Litar	Y	Y0X0)	N	1																	
SW-2	Creek	3/23/11		W	Amber Litar	Y	Y2X0)	N	1																	

Relinquished by: [Signature]
 Signature Steve Bittman
 Printed Steve Bittman
 Company Stellar Environmental

Date 12-16-00
3/23/11
 Time 12:00
 Received by: [Signature]
 Signature F. SPINAWTON
 Printed F. SPINAWTON
 Company Blaine Tech

Date 12-16-00
3-23-11
 Time 12:00
 Relinquished by: [Signature]
 Signature F. SPINAWTON
 Printed F. SPINAWTON
 Company BLAINS TECH

Date 3-23-11
3/23/11
 Time 1645
 Received by: [Signature]
 Signature Mich Smith
 Printed Mich Smith
 Company C&T

Date 3/23/11
 Time 1645

Turnaround Time: Standard - 5 Day
 Comments: (a) VOA w/ HCL

Relinquished by:
 Signature _____
 Printed _____
 Company _____

Date _____
 Received by:
 Signature _____
 Printed _____
 Company _____

Date _____
 Time _____

2000-00-01

COOLER RECEIPT CHECKLIST



Curtis & Tompkins, Ltd.

Login # 226830 Date Received 3/23/11 Number of coolers 2
 Client SRS Project EBRCPD

Date Opened 3/23/11 By (print) M. Villanueva (sign) [Signature]
 Date Logged in 3/23/11 By (print) M. Villanueva (sign) [Signature]

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

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

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

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

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

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

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

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

7. Temperature documentation:

Type of ice used: Wet Blue/Gel None Temp(°C) 1.5, 1.6

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

Rec'd 1-12 AMIB for SW-3. 12 AMIB are pres. w/ACU

Curtis & Tompkins Laboratories Analytical Report

Lab #: 226830	Location: Redwood Regional Park
Client: Stellar Environmental Solutions	Prep: EPA 5030B
Project#: 2010-02	
Matrix: Water	Batch#: 173112
Units: ug/L	Sampled: 03/23/11
Diln Fac: 1.000	Received: 03/23/11

Field ID: SW-2 Lab ID: 226830-001
 Type: SAMPLE Analyzed: 03/25/11

Analyte	Result	RL	Analysis
Gasoline C7-C12	ND	50	EPA 8015B
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
Bromofluorobenzene (FID)	99	75-130	EPA 8015B
Bromofluorobenzene (PID)	102	58-121	EPA 8021B

Field ID: SW-3 Lab ID: 226830-002
 Type: SAMPLE Analyzed: 03/25/11

Analyte	Result	RL	Analysis
Gasoline C7-C12	ND	50	EPA 8015B
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
Bromofluorobenzene (FID)	96	75-130	EPA 8015B
Bromofluorobenzene (PID)	99	58-121	EPA 8021B

Type: BLANK Analyzed: 03/24/11
 Lab ID: QC585120

Analyte	Result	RL	Analysis
Gasoline C7-C12	ND	50	EPA 8015B
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
Bromofluorobenzene (FID)	101	75-130	EPA 8015B
Bromofluorobenzene (PID)	96	58-121	EPA 8021B

ND= Not Detected
 RL= Reporting Limit
 Page 1 of 1

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	226830	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2010-02		
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC585121	Batch#:	173112
Matrix:	Water	Analyzed:	03/24/11
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits	Analysis
Gasoline C7-C12	1,000	1,042	104	75-126	EPA 8015B

Surrogate	%REC	Limits	Analysis
Bromofluorobenzene (FID)	107	75-130	EPA 8015B
Bromofluorobenzene (PID)	101	58-121	EPA 8021B

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	226830	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2010-02		
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC585122	Batch#:	173112
Matrix:	Water	Analyzed:	03/24/11
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits	Analysis
Benzene	10.00	9.002	90	74-121	EPA 8021B
Toluene	10.00	9.153	92	75-122	EPA 8021B
Ethylbenzene	10.00	9.580	96	75-122	EPA 8021B
m,p-Xylenes	10.00	9.502	95	76-123	EPA 8021B
o-Xylene	10.00	9.100	91	73-127	EPA 8021B

Surrogate	%REC	Limits	Analysis
Bromofluorobenzene (FID)	103	75-130	EPA 8015B
Bromofluorobenzene (PID)	98	58-121	EPA 8021B

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	226830	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2010-02		
Field ID:	ZZZZZZZZZZ	Batch#:	173112
MSS Lab ID:	226829-001	Sampled:	03/23/11
Matrix:	Water	Received:	03/23/11
Units:	ug/L	Analyzed:	03/24/11
Diln Fac:	1.000		

Type: MS Lab ID: QC585123

Analyte	MSS Result	Spiked	Result	%REC	Limits	Analysis
Gasoline C7-C12	862.7	2,000	2,312	72	68-120	EPA 8015B

Surrogate	%REC	Limits	Analysis
Bromofluorobenzene (FID)	101	75-130	EPA 8015B
Bromofluorobenzene (PID)	97	58-121	EPA 8021B

Type: MSD Lab ID: QC585124

Analyte	Spiked	Result	%REC	Limits	RPD	Lim	Analysis
Gasoline C7-C12	2,000	2,310	72	68-120	0	26	EPA 8015B

Surrogate	%REC	Limits	Analysis
Bromofluorobenzene (FID)	104	75-130	EPA 8015B
Bromofluorobenzene (PID)	101	58-121	EPA 8021B

RPD= Relative Percent Difference

Batch QC Report
Curtis & Tompkins Laboratories Analytical Report

Lab #: 226830	Location: Redwood Regional Park
Client: Stellar Environmental Solutions	Prep: EPA 5030B
Project#: 2010-02	
Field ID: ZZZZZZZZZZ	Batch#: 173112
MSS Lab ID: 226841-001	Sampled: 03/24/11
Matrix: Water	Received: 03/24/11
Units: ug/L	Analyzed: 03/25/11
Diln Fac: 1.000	

Type: MS Lab ID: QC585125

Analyte	MSS Result	Spiked	Result	%REC	Limits	Analysis
Benzene	0.09393	20.00	19.44	97	41-151	EPA 8021B
Toluene	0.1065	20.00	19.31	96	38-148	EPA 8021B
Ethylbenzene	0.04942	20.00	19.75	99	33-160	EPA 8021B
m,p-Xylenes	0.1049	20.00	19.20	95	45-138	EPA 8021B
o-Xylene	<0.04666	20.00	18.85	94	37-156	EPA 8021B

Surrogate	%REC	Limits	Analysis
Bromofluorobenzene (FID)	101	75-130	EPA 8015B
Bromofluorobenzene (PID)	102	58-121	EPA 8021B

Type: MSD Lab ID: QC585126

Analyte	Spiked	Result	%REC	Limits	RPD	Lim	Analysis
Benzene	20.00	19.06	95	41-151	2	39	EPA 8021B
Toluene	20.00	19.06	95	38-148	1	30	EPA 8021B
Ethylbenzene	20.00	19.40	97	33-160	2	30	EPA 8021B
m,p-Xylenes	20.00	18.71	93	45-138	3	30	EPA 8021B
o-Xylene	20.00	17.89	89	37-156	5	30	EPA 8021B

Surrogate	%REC	Limits	Analysis
Bromofluorobenzene (FID)	98	75-130	EPA 8015B
Bromofluorobenzene (PID)	96	58-121	EPA 8021B

RPD= Relative Percent Difference

Total Extractable Hydrocarbons			
Lab #:	226830	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 3520C
Project#:	2010-02	Analysis:	EPA 8015B
Matrix:	Water	Sampled:	03/23/11
Units:	ug/L	Received:	03/23/11
Diln Fac:	1.000	Prepared:	03/23/11
Batch#:	173077		

Field ID: SW-2 Lab ID: 226830-001
 Type: SAMPLE Analyzed: 03/25/11

Analyte	Result	RL
Diesel C10-C24	87 Y	50

Surrogate	%REC	Limits
o-Terphenyl	94	60-129

Field ID: SW-3 Lab ID: 226830-002
 Type: SAMPLE Analyzed: 03/25/11

Analyte	Result	RL
Diesel C10-C24	71 Y	50

Surrogate	%REC	Limits
o-Terphenyl	106	60-129

Type: BLANK Analyzed: 03/24/11
 Lab ID: QC584991

Analyte	Result	RL
Diesel C10-C24	ND	50

Surrogate	%REC	Limits
o-Terphenyl	111	60-129

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

Batch QC Report

Total Extractable Hydrocarbons			
Lab #:	226830	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 3520C
Project#:	2010-02	Analysis:	EPA 8015B
Matrix:	Water	Batch#:	173077
Units:	ug/L	Prepared:	03/23/11
Diln Fac:	1.000	Analyzed:	03/24/11

Type: BS Cleanup Method: EPA 3630C
 Lab ID: QC584992

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	2,500	1,865	75	53-128

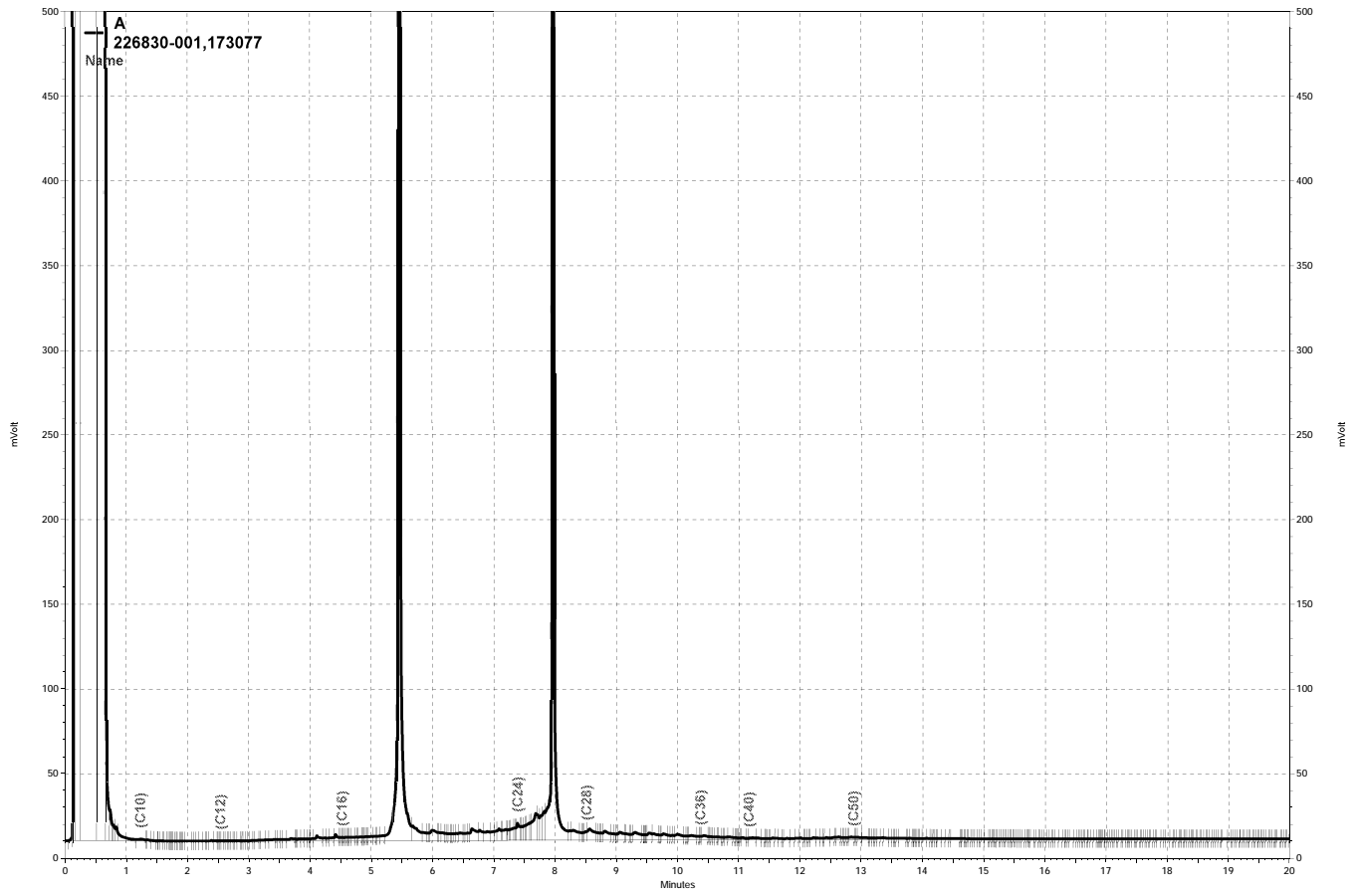
Surrogate	%REC	Limits
o-Terphenyl	99	60-129

Type: BSD Cleanup Method: EPA 3630C
 Lab ID: QC584993

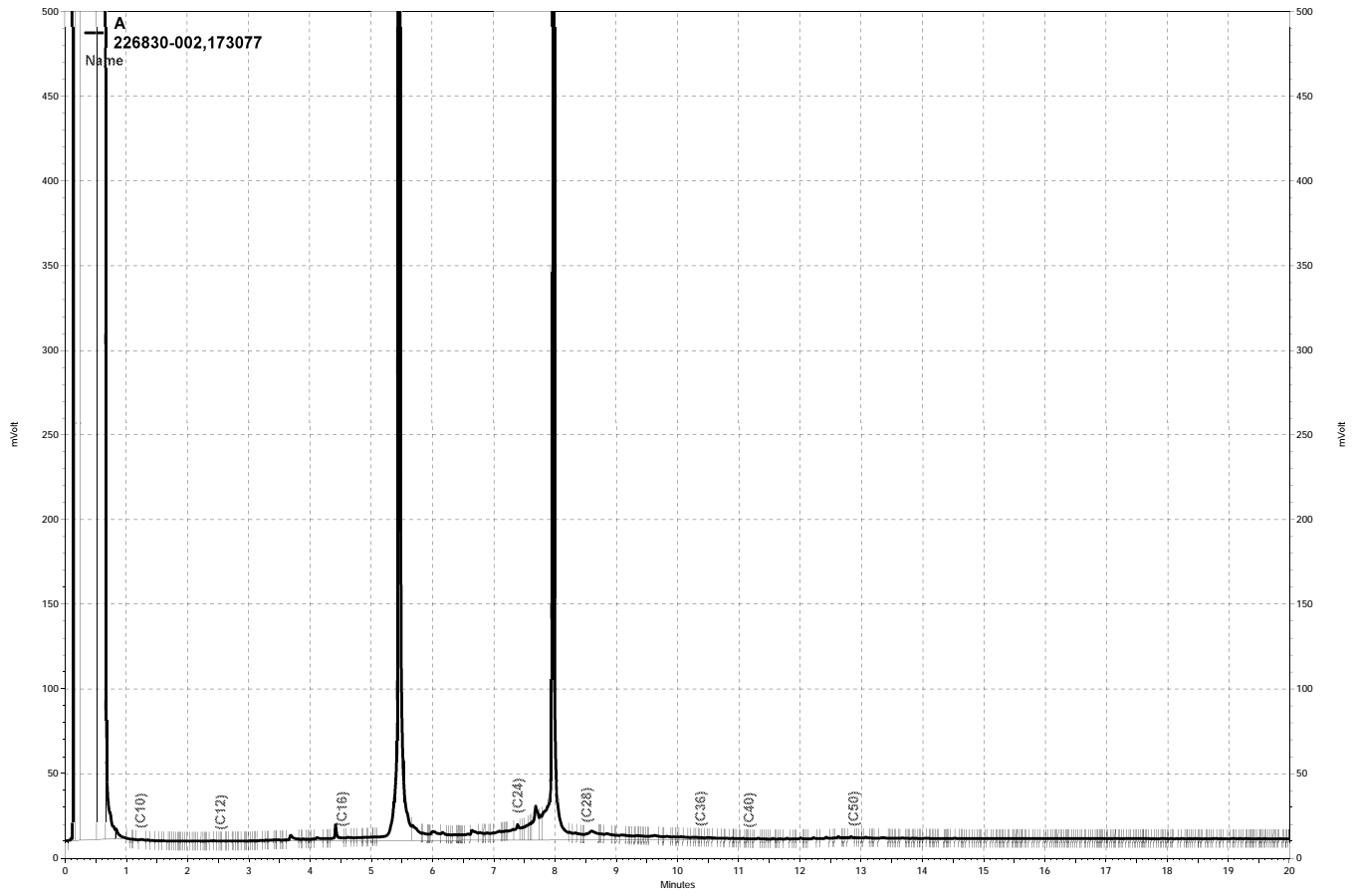
Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	2,500	1,808	72	53-128	3	48

Surrogate	%REC	Limits
o-Terphenyl	97	60-129

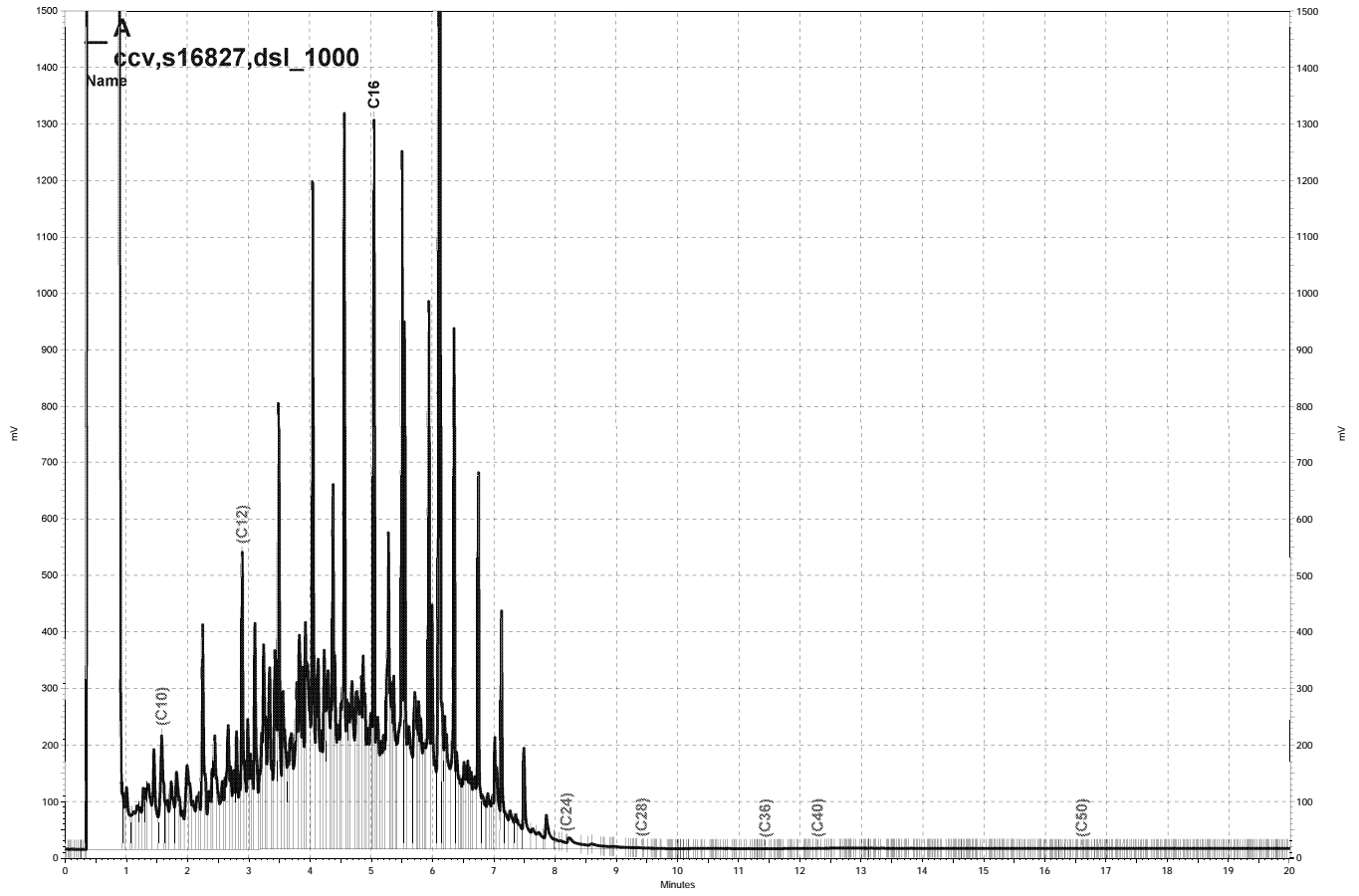
RPD= Relative Percent Difference



\\Lims\gdrive\ezchrom\Projects\GC26\Data\083a039, A



\\Lims\gdrive\ezchrom\Projects\GC26\Data\083a040, A



— \\Lims\gdrive\ezchrom\Projects\GC17A\Data\083a014, A



Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878



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

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

**Laboratory Job Number 226829
ANALYTICAL REPORT**

Stellar Environmental Solutions
2198 6th Street
Berkeley, CA 94710

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

<u>Sample ID</u>	<u>Lab ID</u>
MW-2	226829-001
MW-7	226829-002
MW-8	226829-003
MW-9	226829-004
MW-10	226829-005
MW-11	226829-006
MW-12	226829-007

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 signature. The results contained in this report meet all requirements of NELAP and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: _____

Project Manager

Date: 03/30/2011

NELAP # 01107CA

CASE NARRATIVE

Laboratory number: 226829
Client: Stellar Environmental Solutions
Project: 2008-02
Location: Redwood Regional Park
Request Date: 03/23/11
Samples Received: 03/23/11

This data package contains sample and QC results for seven water samples, requested for the above referenced project on 03/23/11. 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.

Ion Chromatography (EPA 300.0):

No analytical problems were encountered.

Chemical Oxygen Demand (SM5220D):

No analytical problems were encountered.

Carbonaceous BOD (SM5210B):

High recoveries were observed for biochemical oxygen demand in the BS/BSD for batch 173072; the associated RPD was within limits. No other analytical problems were encountered.

Chain of Custody Record

226829

Lab job no. _____
 Date 3-23-11
 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	Analysis Required								Remarks			
						Cooler	Chemical	Filtered	No. of Containers	TVH-G (BOIS)	BTEX (MTBE) (BOIS)	TEH-P (BOIS)	NITRATE		SULFATE	BOD	COD
MW-2		3-23-11	1355	W						X	X	X	X	X	X	X	
MW-7			1435							X	X	X	X	X	X	X	
MW-8			1515							X	X	X	X	X	X	X	
MW-9			1500							X	X	X	X	X	X	X	
MW-10			1420							X	X	X					
MW-11			1530							X	X	X					
MW-12			1450							X	X	X	X	X	X	X	

1155
1500
1420
1530
1450

Relinquished by: Signature: <u>[Signature]</u> Printed: <u>F. SPINDLER</u> Company: <u>Stellar Environmental</u>	Date: <u>3-23-11</u> Time: <u>1645</u>	Received by: Signature: <u>[Signature]</u> Printed: <u>M. Leah Smith</u> Company: <u>C & T</u>	Date: <u>3/23/11</u> Time: <u>16:45</u>	Relinquished by: Signature: _____ Printed: _____ Company: _____	Date: _____ Time: _____	Received by: Signature: _____ Printed: _____ Company: _____	Date: _____ 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>				Relinquished by: Signature: _____ Printed: _____ Company: _____				Received by: Signature: _____ Printed: _____ Company: _____	

2000-00-01

COOLER RECEIPT CHECKLIST



Curtis & Tompkins, Ltd.

Login # 226829 Date Received 3/23/11 Number of coolers 2
Client SRS Project EBR2PD

Date Opened 3/23/11 By (print) M. Villanueva (sign) [Signature]
Date Logged in 3/23/11 By (print) [Signature] (sign) [Signature]

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

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

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

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

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

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

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

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

7. Temperature documentation:

Type of ice used: Wet Blue/Gel None Temp(°C) 1.5, 1.6

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 Sample Preservation for 226829

Sample	pH: <2	>12	Other
-001a	<input type="checkbox"/>	<input type="checkbox"/>	_____
b	<input type="checkbox"/>	<input type="checkbox"/>	_____
c	<input type="checkbox"/>	<input type="checkbox"/>	_____
d	<input type="checkbox"/>	<input type="checkbox"/>	_____
e	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
f	<input type="checkbox"/>	<input type="checkbox"/>	_____
g	<input type="checkbox"/>	<input type="checkbox"/>	_____
h	<input type="checkbox"/>	<input type="checkbox"/>	_____
-002a	<input type="checkbox"/>	<input type="checkbox"/>	_____
b	<input type="checkbox"/>	<input type="checkbox"/>	_____
c	<input type="checkbox"/>	<input type="checkbox"/>	_____
d	<input type="checkbox"/>	<input type="checkbox"/>	_____
e	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
f	<input type="checkbox"/>	<input type="checkbox"/>	_____
g	<input type="checkbox"/>	<input type="checkbox"/>	_____
h	<input type="checkbox"/>	<input type="checkbox"/>	_____
-003a	<input type="checkbox"/>	<input type="checkbox"/>	_____
b	<input type="checkbox"/>	<input type="checkbox"/>	_____
c	<input type="checkbox"/>	<input type="checkbox"/>	_____
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e	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
f	<input type="checkbox"/>	<input type="checkbox"/>	_____
g	<input type="checkbox"/>	<input type="checkbox"/>	_____
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-007a	<input type="checkbox"/>	<input type="checkbox"/>	_____
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g	<input type="checkbox"/>	<input type="checkbox"/>	_____
h	<input type="checkbox"/>	<input type="checkbox"/>	_____

Analyst: MV
 Date: 3/23/11

Curtis & Tompkins Laboratories Analytical Report

Lab #: 226829	Location: Redwood Regional Park
Client: Stellar Environmental Solutions	Prep: EPA 5030B
Project#: 2008-02	
Matrix: Water	Sampled: 03/23/11
Units: ug/L	Received: 03/23/11

Field ID: MW-2	Diln Fac: 1.000
Type: SAMPLE	Batch#: 173112
Lab ID: 226829-001	Analyzed: 03/24/11

Analyte	Result	RL	Analysis
Gasoline C7-C12	860 Y	50	EPA 8015B
MTBE	3.1 C	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
Bromofluorobenzene (FID)	110	75-130	EPA 8015B
Bromofluorobenzene (PID)	99	58-121	EPA 8021B

Field ID: MW-7	Diln Fac: 1.000
Type: SAMPLE	Batch#: 173112
Lab ID: 226829-002	Analyzed: 03/24/11

Analyte	Result	RL	Analysis
Gasoline C7-C12	5,500 Y	50	EPA 8015B
MTBE	ND	2.0	EPA 8021B
Benzene	11 C	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	94	0.50	EPA 8021B
m,p-Xylenes	4.8 C	0.50	EPA 8021B
o-Xylene	3.7 C	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Bromofluorobenzene (FID)	109	75-130	EPA 8015B
Bromofluorobenzene (PID)	108	58-121	EPA 8021B

Field ID: MW-8	Lab ID: 226829-003
Type: SAMPLE	

Analyte	Result	RL	Diln Fac	Batch#	Analyzed	Analysis
Gasoline C7-C12	6,000	50	1.000	173112	03/24/11	EPA 8015B
MTBE	ND	2.0	1.000	173112	03/24/11	EPA 8021B
Benzene	39	0.50	1.000	173112	03/24/11	EPA 8021B
Toluene	ND	0.50	1.000	173112	03/24/11	EPA 8021B
Ethylbenzene	510 C	10	20.00	173145	03/25/11	EPA 8021B
m,p-Xylenes	420 C	10	20.00	173145	03/25/11	EPA 8021B
o-Xylene	11	0.50	1.000	173112	03/24/11	EPA 8021B

Surrogate	%REC	Limits	Diln Fac	Batch#	Analyzed	Analysis
Bromofluorobenzene (FID)	105	75-130	1.000	173112	03/24/11	EPA 8015B
Bromofluorobenzene (PID)	102	58-121	20.00	173145	03/25/11	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 #: 226829	Location: Redwood Regional Park
Client: Stellar Environmental Solutions	Prep: EPA 5030B
Project#: 2008-02	
Matrix: Water	Sampled: 03/23/11
Units: ug/L	Received: 03/23/11

Field ID: MW-9 Diln Fac: 1.000
 Type: SAMPLE Batch#: 173112
 Lab ID: 226829-004 Analyzed: 03/24/11

Analyte	Result	RL	Analysis
Gasoline C7-C12	700 Y	50	EPA 8015B
MTBE	14	2.0	EPA 8021B
Benzene	1.6 C	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	10	0.50	EPA 8021B
m,p-Xylenes	1.8	0.50	EPA 8021B
o-Xylene	1.7	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Bromofluorobenzene (FID)	107	75-130	EPA 8015B
Bromofluorobenzene (PID)	107	58-121	EPA 8021B

Field ID: MW-10 Diln Fac: 1.000
 Type: SAMPLE Batch#: 173112
 Lab ID: 226829-005 Analyzed: 03/24/11

Analyte	Result	RL	Analysis
Gasoline C7-C12	170 Y	50	EPA 8015B
MTBE	6.3	2.0	EPA 8021B
Benzene	0.99 C	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	3.7	0.50	EPA 8021B
m,p-Xylenes	1.8	0.50	EPA 8021B
o-Xylene	ND	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Bromofluorobenzene (FID)	100	75-130	EPA 8015B
Bromofluorobenzene (PID)	105	58-121	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 #: 226829	Location: Redwood Regional Park
Client: Stellar Environmental Solutions	Prep: EPA 5030B
Project#: 2008-02	
Matrix: Water	Sampled: 03/23/11
Units: ug/L	Received: 03/23/11

Field ID: MW-11 Diln Fac: 1.000
 Type: SAMPLE Batch#: 173112
 Lab ID: 226829-006 Analyzed: 03/24/11

Analyte	Result	RL	Analysis
Gasoline C7-C12	180 Y	50	EPA 8015B
MTBE	6.9	2.0	EPA 8021B
Benzene	ND	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	1.2	0.50	EPA 8021B
m,p-Xylenes	ND	0.50	EPA 8021B
o-Xylene	ND	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Bromofluorobenzene (FID)	96	75-130	EPA 8015B
Bromofluorobenzene (PID)	96	58-121	EPA 8021B

Field ID: MW-12 Diln Fac: 1.000
 Type: SAMPLE Batch#: 173112
 Lab ID: 226829-007 Analyzed: 03/24/11

Analyte	Result	RL	Analysis
Gasoline C7-C12	290 Y	50	EPA 8015B
MTBE	11	2.0	EPA 8021B
Benzene	ND	0.50	EPA 8021B
Toluene	0.74	0.50	EPA 8021B
Ethylbenzene	1.3 C	0.50	EPA 8021B
m,p-Xylenes	ND	0.50	EPA 8021B
o-Xylene	ND	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Bromofluorobenzene (FID)	105	75-130	EPA 8015B
Bromofluorobenzene (PID)	107	58-121	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 #:	226829	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2008-02		
Matrix:	Water	Sampled:	03/23/11
Units:	ug/L	Received:	03/23/11

Type: BLANK Batch#: 173112
 Lab ID: QC585120 Analyzed: 03/24/11
 Diln Fac: 1.000

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
Bromofluorobenzene (FID)	101	75-130	EPA 8015B
Bromofluorobenzene (PID)	96	58-121	EPA 8021B

Type: BLANK Batch#: 173145
 Lab ID: QC585260 Analyzed: 03/25/11
 Diln Fac: 1.000 Analysis: EPA 8021B

Analyte	Result	RL
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50

Surrogate	Result	%REC	Limits
Bromofluorobenzene (FID)	NA		
Bromofluorobenzene (PID)		105	58-121

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 #:	226829	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2008-02		
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC585121	Batch#:	173112
Matrix:	Water	Analyzed:	03/24/11
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits	Analysis
Gasoline C7-C12	1,000	1,042	104	75-126	EPA 8015B

Surrogate	%REC	Limits	Analysis
Bromofluorobenzene (FID)	107	75-130	EPA 8015B
Bromofluorobenzene (PID)	101	58-121	EPA 8021B

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	226829	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2008-02		
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC585122	Batch#:	173112
Matrix:	Water	Analyzed:	03/24/11
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits	Analysis
MTBE	10.00	8.778	88	67-136	EPA 8021B
Benzene	10.00	9.002	90	74-121	EPA 8021B
Toluene	10.00	9.153	92	75-122	EPA 8021B
Ethylbenzene	10.00	9.580	96	75-122	EPA 8021B
m,p-Xylenes	10.00	9.502	95	76-123	EPA 8021B
o-Xylene	10.00	9.100	91	73-127	EPA 8021B

Surrogate	%REC	Limits	Analysis
Bromofluorobenzene (FID)	103	75-130	EPA 8015B
Bromofluorobenzene (PID)	98	58-121	EPA 8021B

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	226829	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2008-02		
Field ID:	MW-2	Batch#:	173112
MSS Lab ID:	226829-001	Sampled:	03/23/11
Matrix:	Water	Received:	03/23/11
Units:	ug/L	Analyzed:	03/24/11
Diln Fac:	1.000		

Type: MS Lab ID: QC585123

Analyte	MSS Result	Spiked	Result	%REC	Limits	Analysis
Gasoline C7-C12	862.7	2,000	2,312	72	68-120	EPA 8015B

Surrogate	%REC	Limits	Analysis
Bromofluorobenzene (FID)	101	75-130	EPA 8015B
Bromofluorobenzene (PID)	97	58-121	EPA 8021B

Type: MSD Lab ID: QC585124

Analyte	Spiked	Result	%REC	Limits	RPD	Lim	Analysis
Gasoline C7-C12	2,000	2,310	72	68-120	0	26	EPA 8015B

Surrogate	%REC	Limits	Analysis
Bromofluorobenzene (FID)	104	75-130	EPA 8015B
Bromofluorobenzene (PID)	101	58-121	EPA 8021B

RPD= Relative Percent Difference

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	226829	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2008-02		
Field ID:	ZZZZZZZZZZ	Batch#:	173112
MSS Lab ID:	226841-001	Sampled:	03/24/11
Matrix:	Water	Received:	03/24/11
Units:	ug/L	Analyzed:	03/25/11
Diln Fac:	1.000		

Type: MS Lab ID: QC585125

Analyte	MSS Result	Spiked	Result	%REC	Limits	Analysis
MTBE	1.772	20.00	20.97	96	1-186	EPA 8021B
Benzene	0.09393	20.00	19.44	97	41-151	EPA 8021B
Toluene	0.1065	20.00	19.31	96	38-148	EPA 8021B
Ethylbenzene	0.04942	20.00	19.75	99	33-160	EPA 8021B
m,p-Xylenes	0.1049	20.00	19.20	95	45-138	EPA 8021B
o-Xylene	<0.04666	20.00	18.85	94	37-156	EPA 8021B

Surrogate	%REC	Limits	Analysis
Bromofluorobenzene (FID)	101	75-130	EPA 8015B
Bromofluorobenzene (PID)	102	58-121	EPA 8021B

Type: MSD Lab ID: QC585126

Analyte	Spiked	Result	%REC	Limits	RPD	Lim	Analysis
MTBE	20.00	18.47	83	1-186	13	49	EPA 8021B
Benzene	20.00	19.06	95	41-151	2	39	EPA 8021B
Toluene	20.00	19.06	95	38-148	1	30	EPA 8021B
Ethylbenzene	20.00	19.40	97	33-160	2	30	EPA 8021B
m,p-Xylenes	20.00	18.71	93	45-138	3	30	EPA 8021B
o-Xylene	20.00	17.89	89	37-156	5	30	EPA 8021B

Surrogate	%REC	Limits	Analysis
Bromofluorobenzene (FID)	98	75-130	EPA 8015B
Bromofluorobenzene (PID)	96	58-121	EPA 8021B

RPD= Relative Percent Difference

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	226829	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2008-02	Analysis:	EPA 8021B
Matrix:	Water	Batch#:	173145
Units:	ug/L	Analyzed:	03/25/11
Diln Fac:	1.000		

Type: BS Lab ID: QC585269

Analyte	Spiked	Result	%REC	Limits
Ethylbenzene	10.00	9.362	94	75-122
m,p-Xylenes	10.00	9.826	98	76-123

Surrogate	%REC	Limits
Bromofluorobenzene (PID)	99	58-121

Type: BSD Lab ID: QC585270

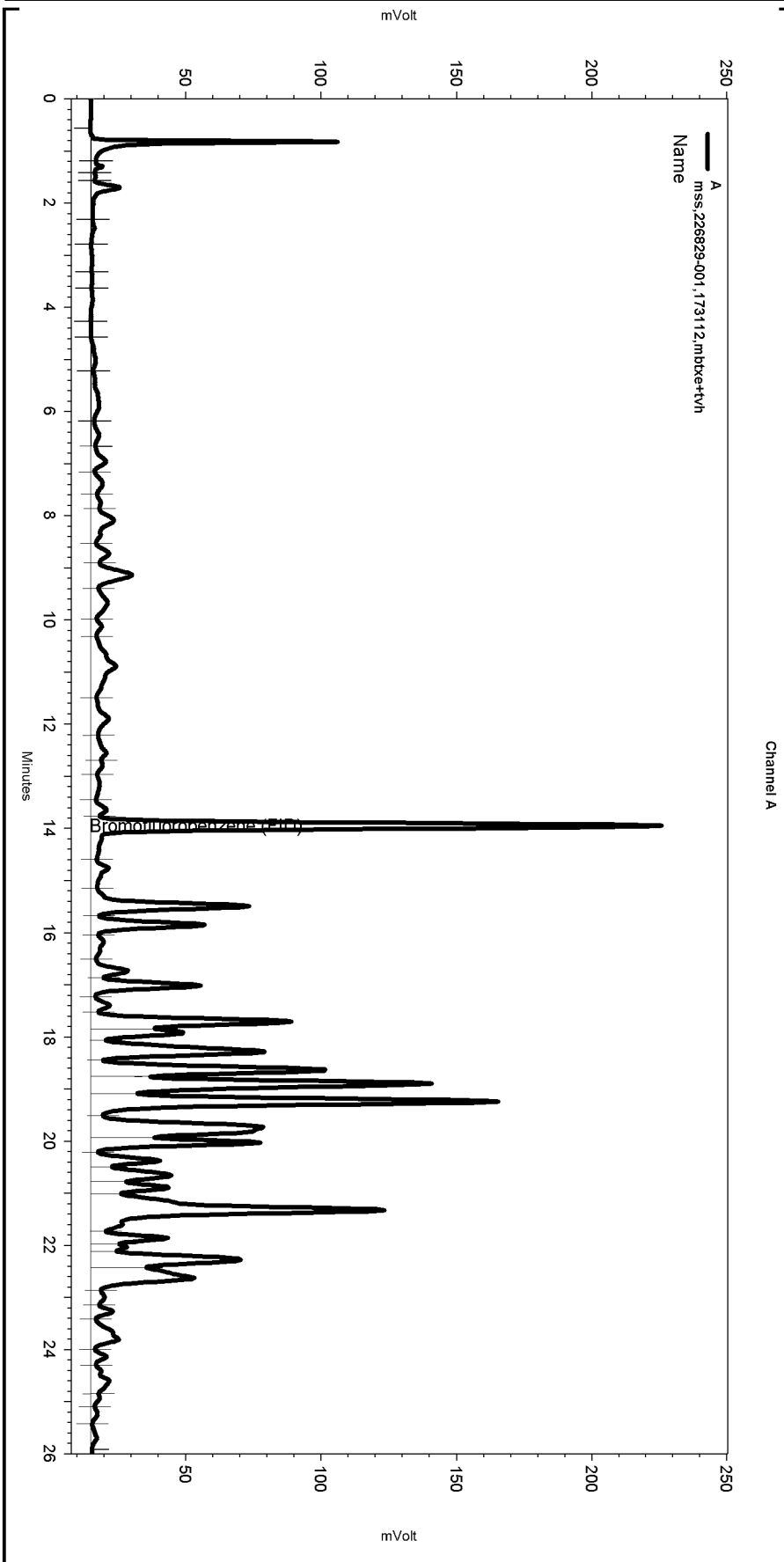
Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Ethylbenzene	10.00	9.897	99	75-122	6	20
m,p-Xylenes	10.00	10.27	103	76-123	4	20

Surrogate	%REC	Limits
Bromofluorobenzene (PID)	103	58-121

RPD= Relative Percent Difference

Sequence File: \\Lims\gdrive\ezchrom\Projects\GC19\Sequence\083.seq
 Sample Name: mss,226829-001,173112,mbtxe+tvh
 Data File: \\Lims\gdrive\ezchrom\Projects\GC19\Data\083-009
 Instrument: GC19 (Offline) Vial: N/A Operator: Tvh 2. Analyst (lims2k3\tvh2)
 Method Name: \\Lims\gdrive\ezchrom\Projects\GC19\Method\tvhbtxe068.met

Software Version 3.1.7
 Run Date: 3/24/2011 6:40:54 PM
 Analysis Date: 3/25/2011 12:00:42 PM
 Sample Amount: 5 Multiplier: 5
 Vial & pH or Core ID: a1.0



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Integration Events

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Yes	Threshold	0	0	50

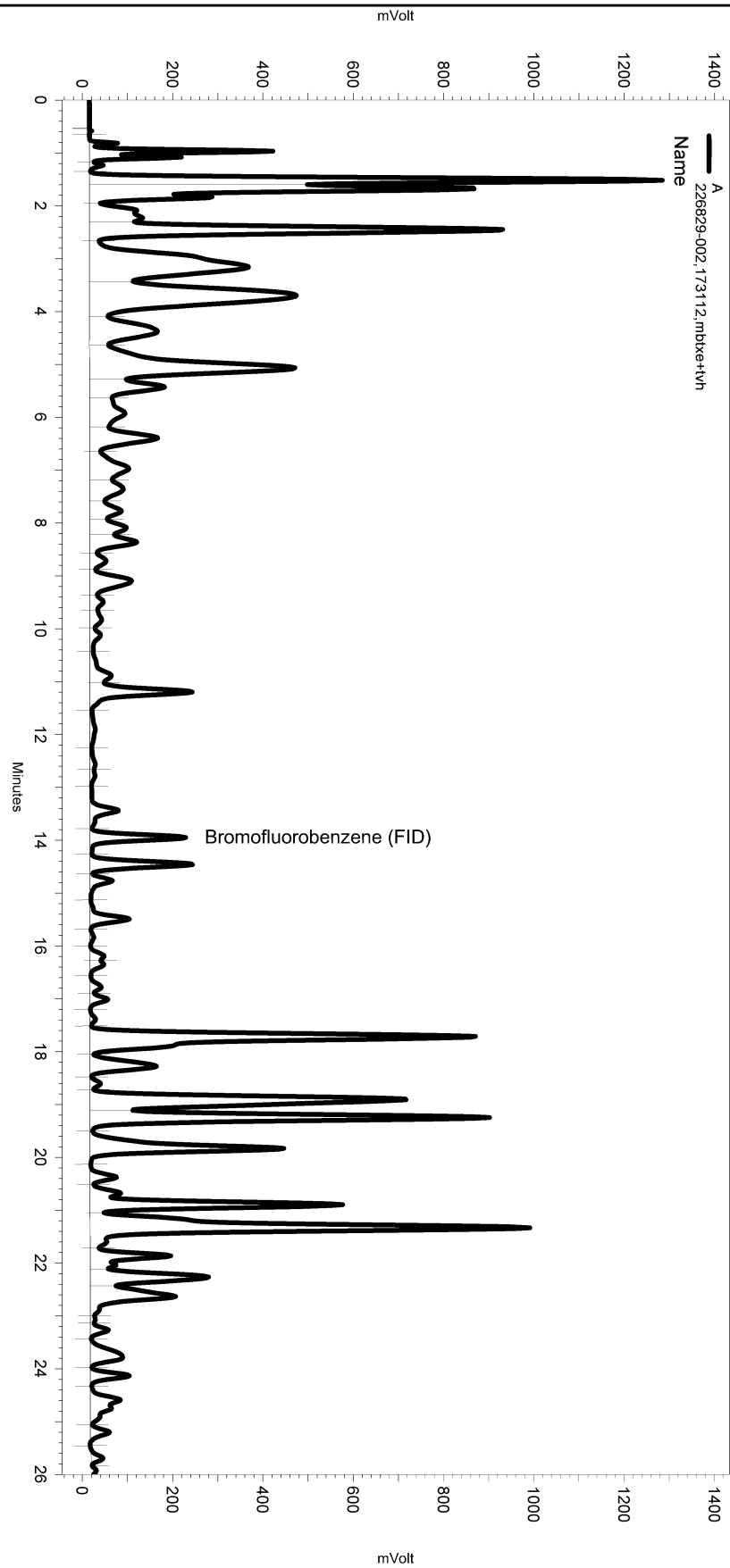
Manual Integration Fixes

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 Instrument: GC19 Vial: N/A Operator: lims2k3\tvh3
 Method Name: \\Lims\gdrive\ezchrom\Projects\GC19\Method\tvhbtxe068.met

Software Version 3.1.7
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 Analysis Date: 3/24/2011 9:03:03 PM
 Sample Amount: 5 Multiplier: 5
 Vial & pH or Core ID: a1.0



Channel A

---< General Method Parameters >---

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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

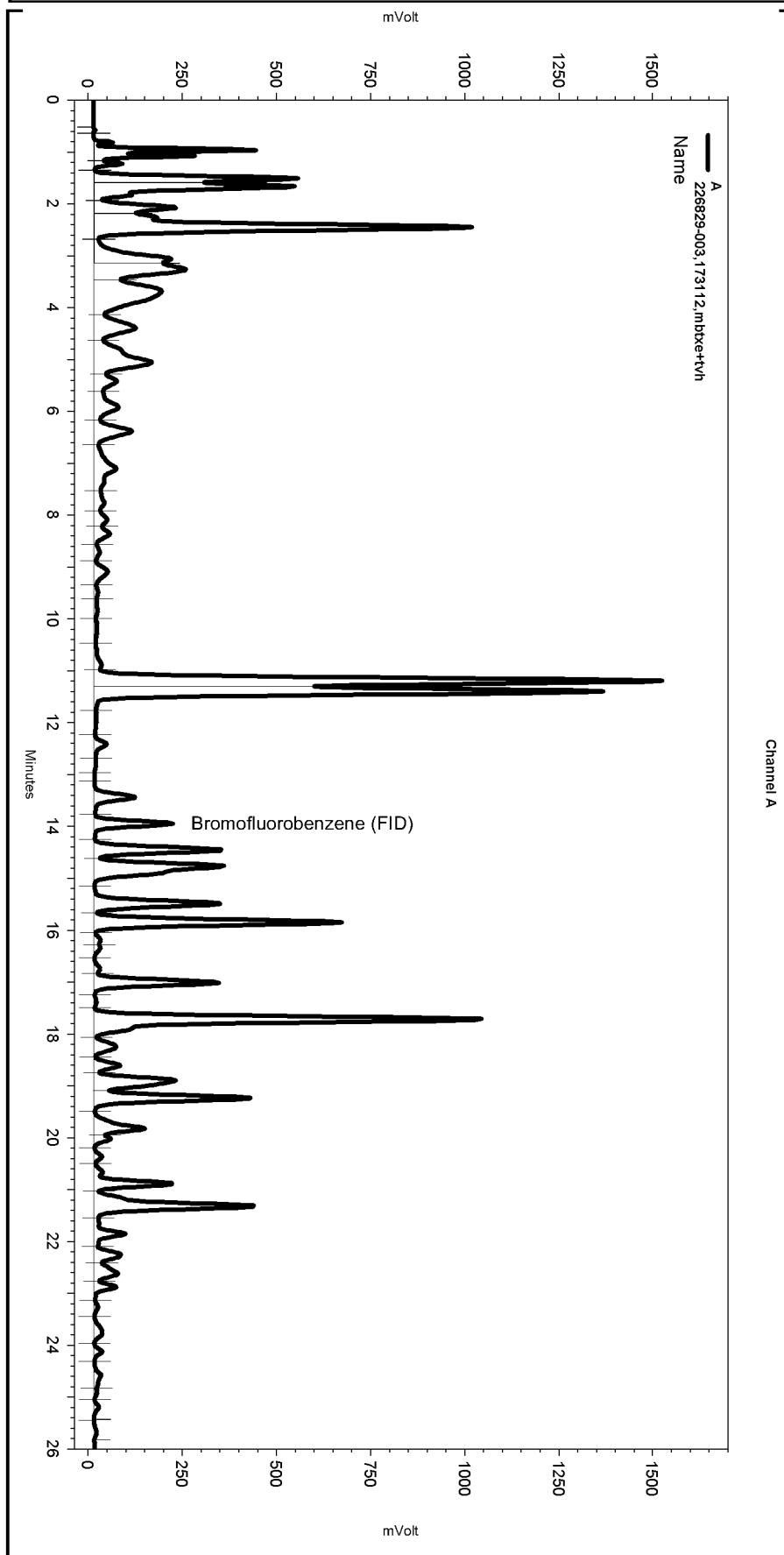
Manual Integration Fixes

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 Data File: \\Lims\gdrive\ezchrom\Projects\GC19\Data\083-013
 Instrument: GC19 (Offline) Vial: N/A Operator: Tvh 2. Analyst (lims2k3\tvh2)
 Method Name: \\Lims\gdrive\ezchrom\Projects\GC19\Method\TVHBTXE068.met

Software Version 3.1.7
 Run Date: 3/24/2011 9:11:33 PM
 Analysis Date: 3/25/2011 12:07:57 PM
 Sample Amount: 5 Multiplier: 5
 Vial & pH or Core ID: a1.0



---< General Method Parameters >---

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Integration Events

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

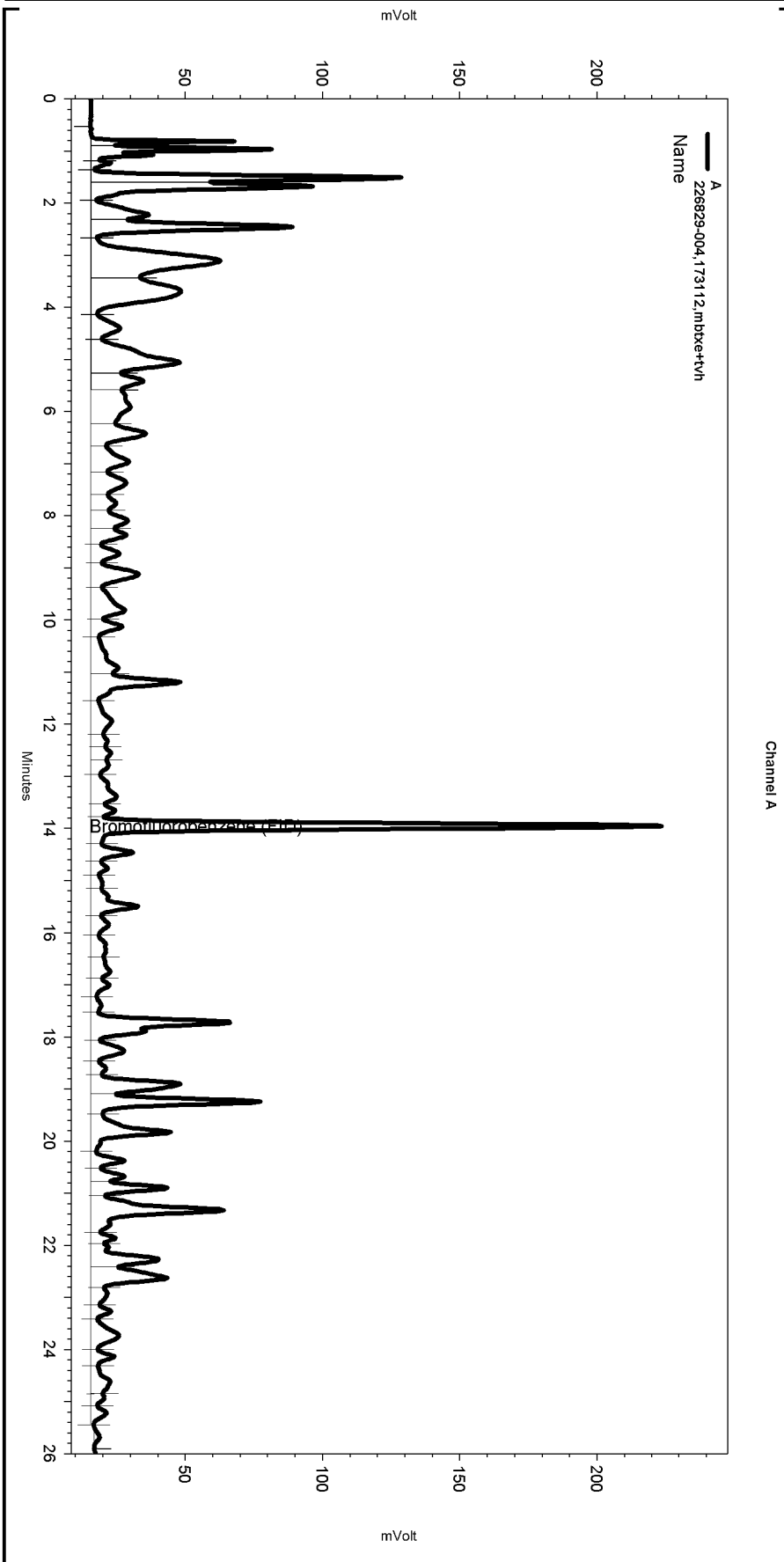
Manual Integration Fixes

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Yes	Lowest Point Horizontal Baseli	0.299	25.451	0

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 Data File: \\Lims\gdrive\ezchrom\Projects\GC19\Data\083-014
 Instrument: GC19 (Offline) Vial: N/A Operator: Tvh 2. Analyst (lims2k3\tvh2)
 Method Name: \\Lims\gdrive\ezchrom\Projects\GC19\Method\TVHbtXe068.met

Software Version 3.1.7
 Run Date: 3/24/2011 9:49:09 PM
 Analysis Date: 3/25/2011 12:08:56 PM
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 Vial & pH or Core ID: a1.0



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No items selected for this section

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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

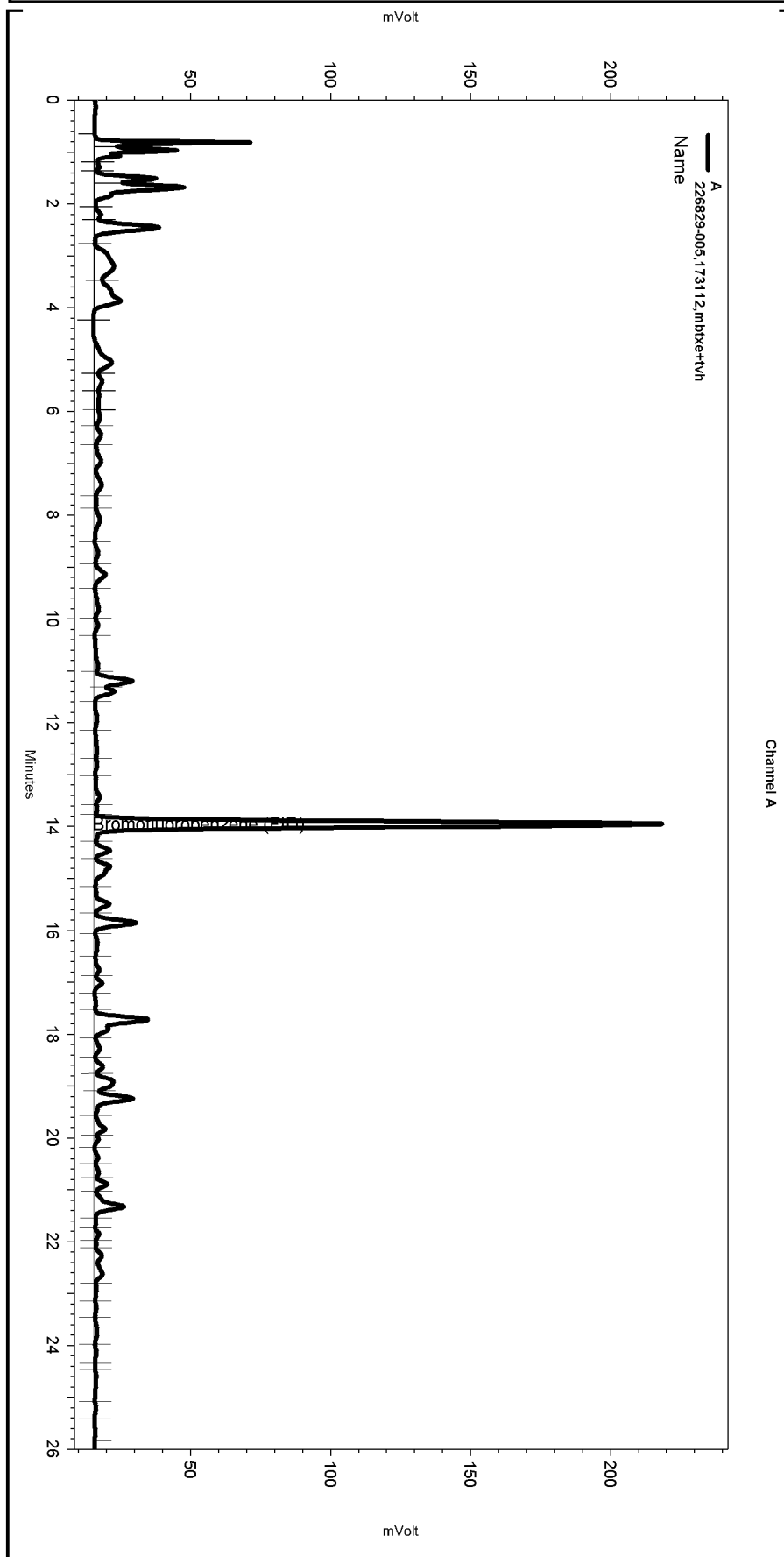
Manual Integration Fixes

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 Sample Name: 226829-005,173112,mbtXe+tvh
 Data File: \\Lims\gdrive\ezchrom\Projects\GC19\Data\083-015
 Instrument: GC19 (Offline) Vial: N/A Operator: Tvh 2. Analyst (lims2k3\tvh2)
 Method Name: \\Lims\gdrive\ezchrom\Projects\GC19\Method\TVHbtXe068.met

Software Version 3.1.7
 Run Date: 3/24/2011 10:26:43 PM
 Analysis Date: 3/25/2011 12:14:48 PM
 Sample Amount: 5 Multiplier: 5
 Vial & pH or Core ID: a1.0



---< General Method Parameters >---

No items selected for this section

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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

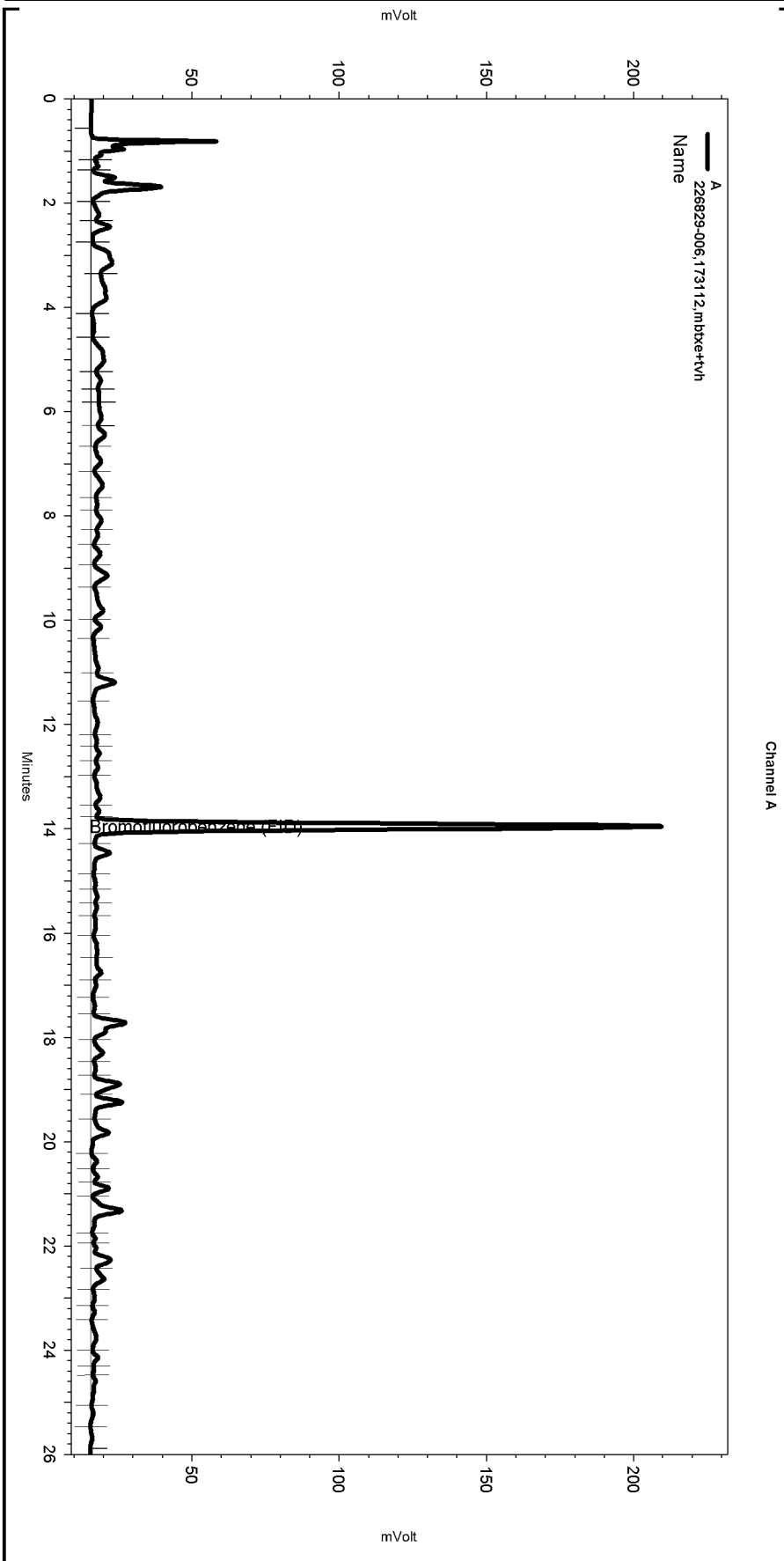
Manual Integration Fixes

Data File: \\Lims\gdrive\ezchrom\Projects\GC19\Data\083-015

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Yes	Lowest Point Horizontal Baseli	0.652	25.475	0

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 Sample Name: 226829-006,173112,mbtxe+tvh
 Data File: \\Lims\gdrive\ezchrom\Projects\GC19\Data\083-016
 Instrument: GC19 (Offline) Vial: N/A Operator: Tvh 2. Analyst (lims2k3\tvh2)
 Method Name: \\Lims\gdrive\ezchrom\Projects\GC19\Method\tvhbtxe068.met

Software Version 3.1.7
 Run Date: 3/24/2011 11:04:17 PM
 Analysis Date: 3/25/2011 12:16:22 PM
 Sample Amount: 5 Multiplier: 5
 Vial & pH or Core ID: a1.0



---< General Method Parameters >---

No items selected for this section

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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

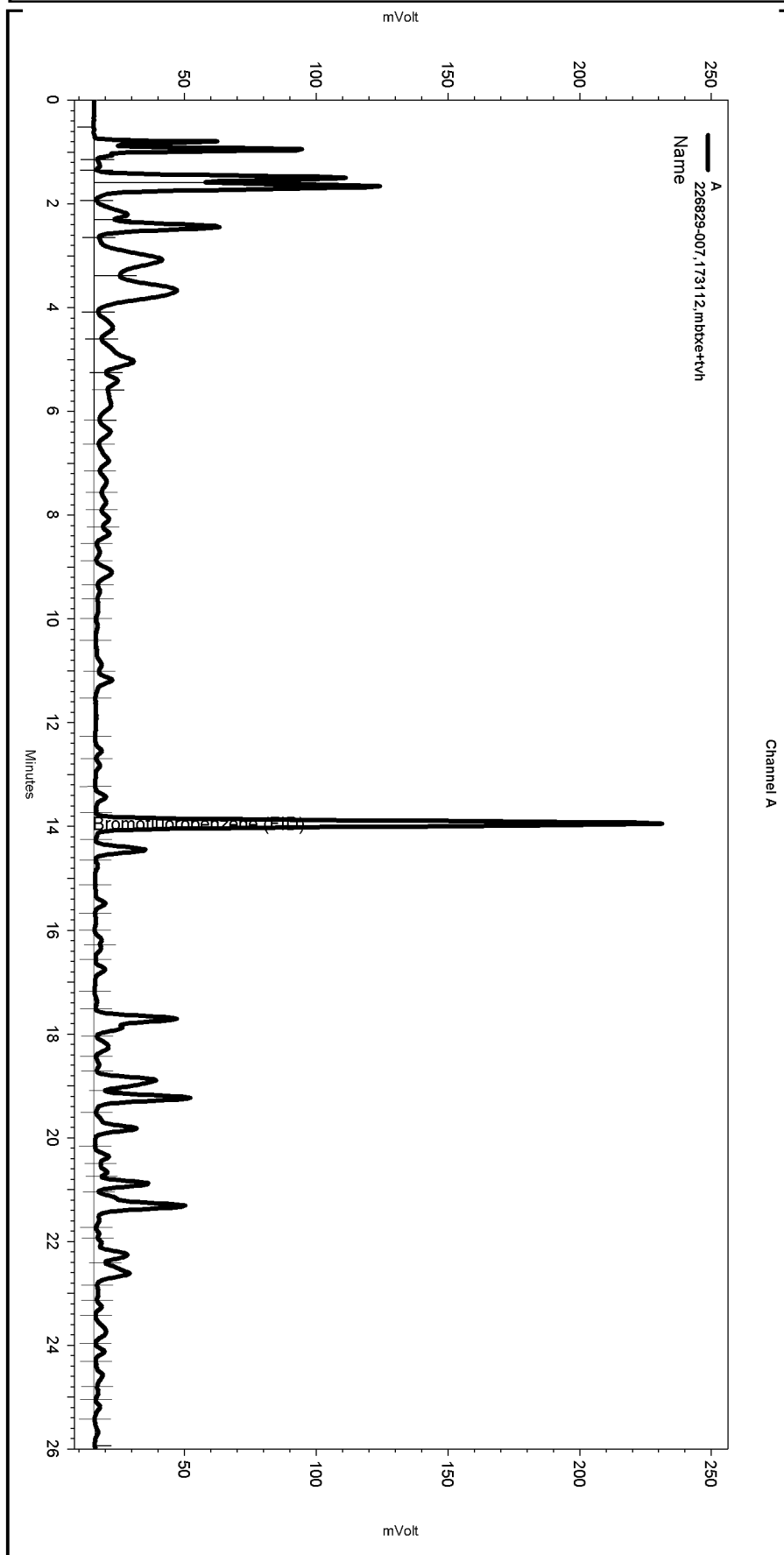
Manual Integration Fixes

Data File: \\Lims\gdrive\ezchrom\Projects\GC19\Data\083-016

Enabled	Event Type	Start (Minutes)	Stop (Minutes)	Value
Yes	Lowest Point Horizontal Baseli	0.55	25.45	0

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 Sample Name: 226829-007,173112,mbtXe+tvh
 Data File: \\Lims\gdrive\ezchrom\Projects\GC19\Data\083-017
 Instrument: GC19 (Offline) Vial: N/A Operator: Tvh 2. Analyst (lims2k3\tvh2)
 Method Name: \\Lims\gdrive\ezchrom\Projects\GC19\Method\TVHbtXe068.met

Software Version 3.1.7
 Run Date: 3/24/2011 11:41:51 PM
 Analysis Date: 3/25/2011 12:17:41 PM
 Sample Amount: 5 Multiplier: 5
 Vial & pH or Core ID: a1.0



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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

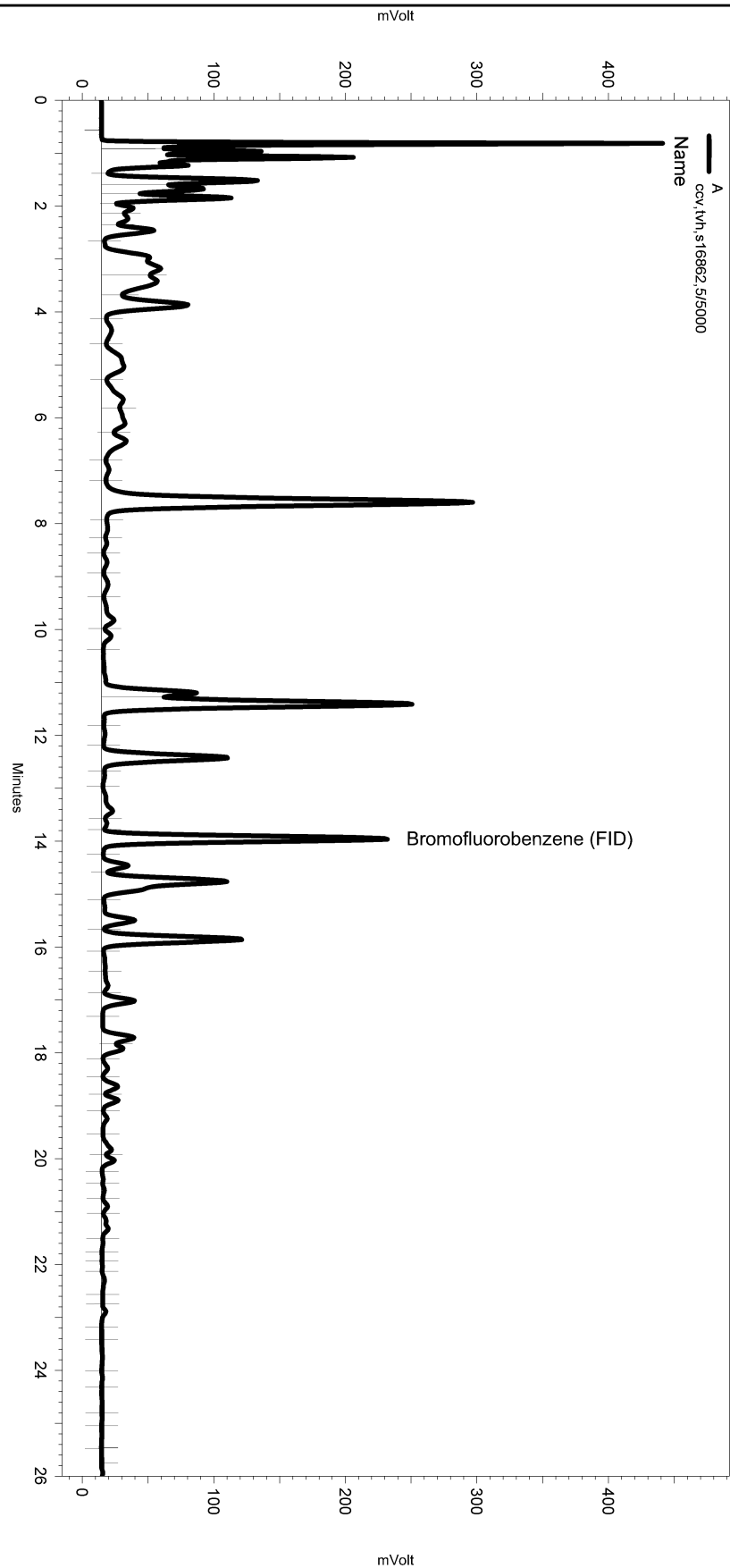
Manual Integration Fixes

Data File: \\Lims\gdrive\ezchrom\Projects\GC19\Data\083-017

Enabled	Event Type	Start (Minutes)	Stop (Minutes)	Value
Yes	Lowest Point Horizontal Baseli	0.55	25.382	0

Sequence File: \\Lims\gdrive\ezchrom\Projects\GC19\Sequence\083.seq
 Sample Name: ccv,tvh,s16862,5/5000
 Data File: \\Lims\gdrive\ezchrom\Projects\GC19\Data\083-004
 Instrument: GC19 Vial: N/A Operator: lims2k3\tvh3
 Method Name: \\Lims\gdrive\ezchrom\Projects\GC19\Method\tvhbx068.met

Software Version 3.1.7
 Run Date: 3/24/2011 1:57:53 PM
 Analysis Date: 3/24/2011 2:27:01 PM
 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: C:\Documents and Settings\All Users\Application Data\ChromatographySystem\Recovery Data\Instrument.10050\083-004_018D.tmp

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

Channel A

Total Extractable Hydrocarbons

Lab #: 226829	Location: Redwood Regional Park
Client: Stellar Environmental Solutions	Prep: EPA 3520C
Project#: 2008-02	Analysis: EPA 8015B
Matrix: Water	Sampled: 03/23/11
Units: ug/L	Received: 03/23/11
Diln Fac: 1.000	Prepared: 03/23/11
Batch#: 173077	

Field ID: MW-2 Lab ID: 226829-001
 Type: SAMPLE Analyzed: 03/24/11

Analyte	Result	RL
Diesel C10-C24	1,100	50
Surrogate	%REC	Limits
o-Terphenyl	107	60-129

Field ID: MW-7 Lab ID: 226829-002
 Type: SAMPLE Analyzed: 03/24/11

Analyte	Result	RL
Diesel C10-C24	3,400	50
Surrogate	%REC	Limits
o-Terphenyl	111	60-129

Field ID: MW-8 Lab ID: 226829-003
 Type: SAMPLE Analyzed: 03/24/11

Analyte	Result	RL
Diesel C10-C24	5,900 Y	50
Surrogate	%REC	Limits
o-Terphenyl	110	60-129

Field ID: MW-9 Lab ID: 226829-004
 Type: SAMPLE Analyzed: 03/25/11

Analyte	Result	RL
Diesel C10-C24	680 Y	50
Surrogate	%REC	Limits
o-Terphenyl	115	60-129

Field ID: MW-10 Lab ID: 226829-005
 Type: SAMPLE Analyzed: 03/25/11

Analyte	Result	RL
Diesel C10-C24	1,200 Y	50
Surrogate	%REC	Limits
o-Terphenyl	113	60-129

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

Total Extractable Hydrocarbons

Lab #: 226829	Location: Redwood Regional Park
Client: Stellar Environmental Solutions	Prep: EPA 3520C
Project#: 2008-02	Analysis: EPA 8015B
Matrix: Water	Sampled: 03/23/11
Units: ug/L	Received: 03/23/11
Diln Fac: 1.000	Prepared: 03/23/11
Batch#: 173077	

Field ID: MW-11	Lab ID: 226829-006
Type: SAMPLE	Analyzed: 03/25/11

Analyte	Result	RL
Diesel C10-C24	1,600 Y	50
Surrogate	%REC	Limits
o-Terphenyl	108	60-129

Field ID: MW-12	Lab ID: 226829-007
Type: SAMPLE	Analyzed: 03/25/11

Analyte	Result	RL
Diesel C10-C24	450 Y	50
Surrogate	%REC	Limits
o-Terphenyl	107	60-129

Type: BLANK	Analyzed: 03/24/11
Lab ID: QC584991	

Analyte	Result	RL
Diesel C10-C24	ND	50
Surrogate	%REC	Limits
o-Terphenyl	111	60-129

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

Batch QC Report

Total Extractable Hydrocarbons			
Lab #:	226829	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 3520C
Project#:	2008-02	Analysis:	EPA 8015B
Matrix:	Water	Batch#:	173077
Units:	ug/L	Prepared:	03/23/11
Diln Fac:	1.000	Analyzed:	03/24/11

Type: BS Cleanup Method: EPA 3630C
 Lab ID: QC584992

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	2,500	1,865	75	53-128

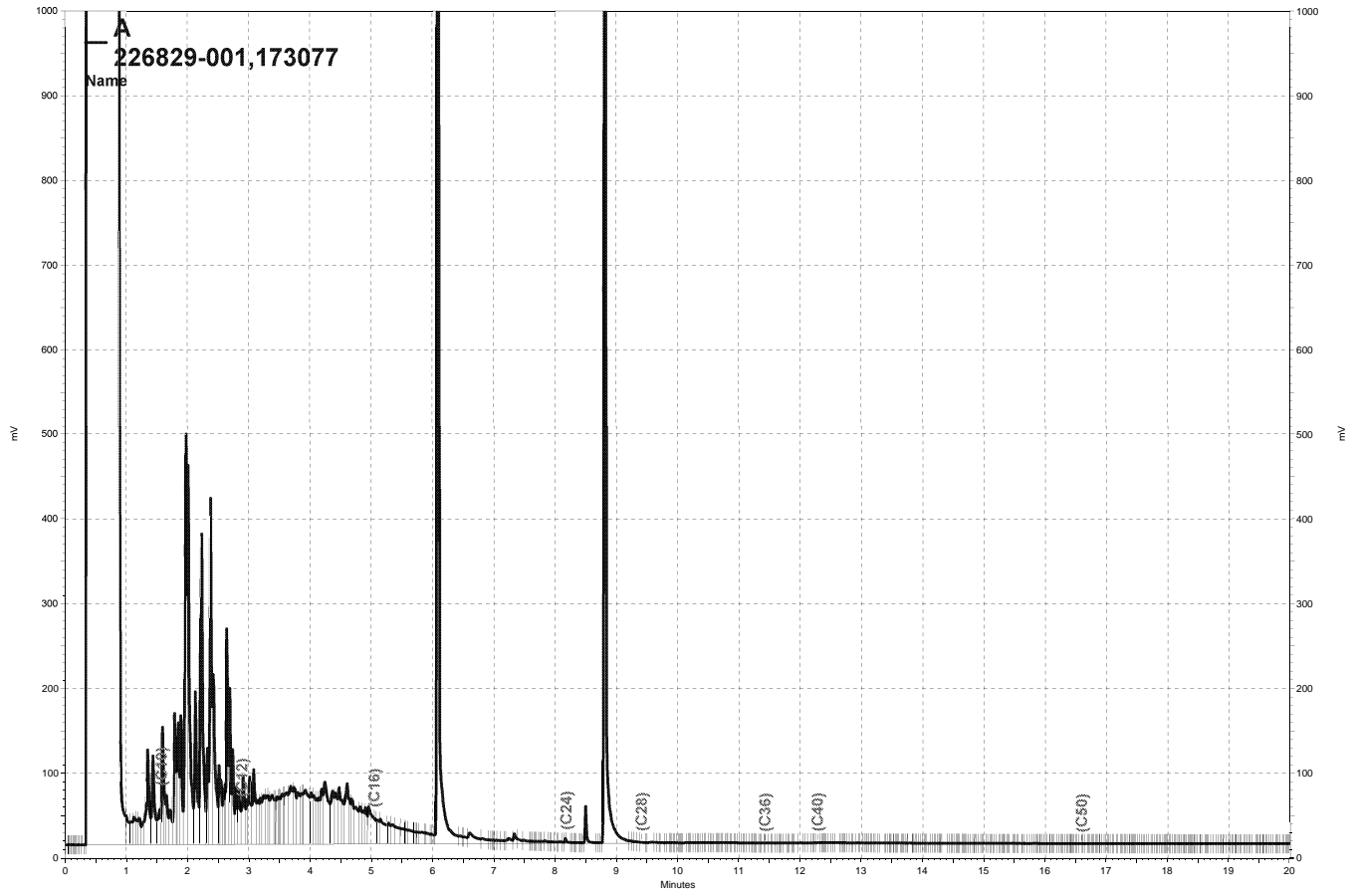
Surrogate	%REC	Limits
o-Terphenyl	99	60-129

Type: BSD Cleanup Method: EPA 3630C
 Lab ID: QC584993

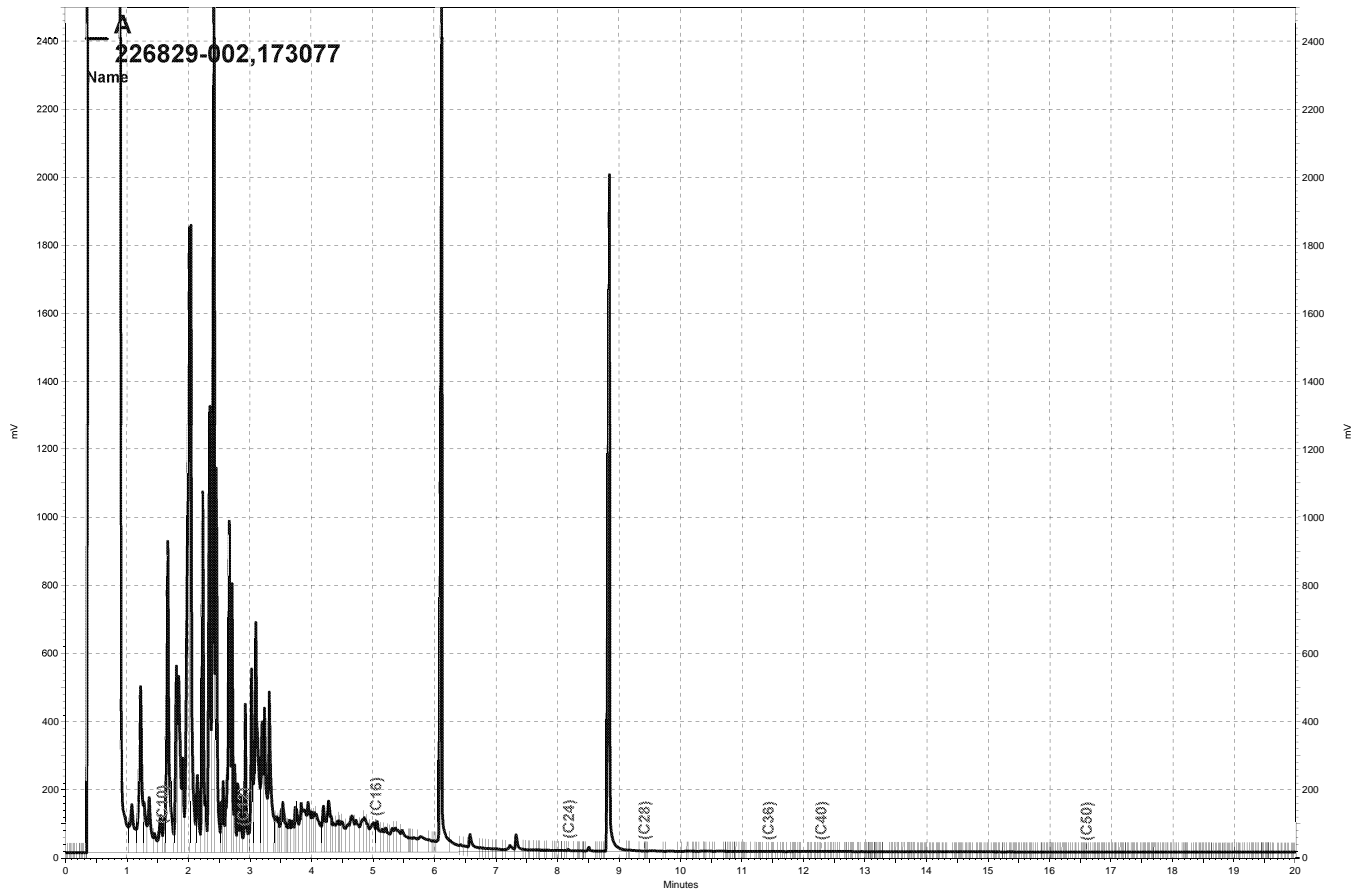
Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	2,500	1,808	72	53-128	3	48

Surrogate	%REC	Limits
o-Terphenyl	97	60-129

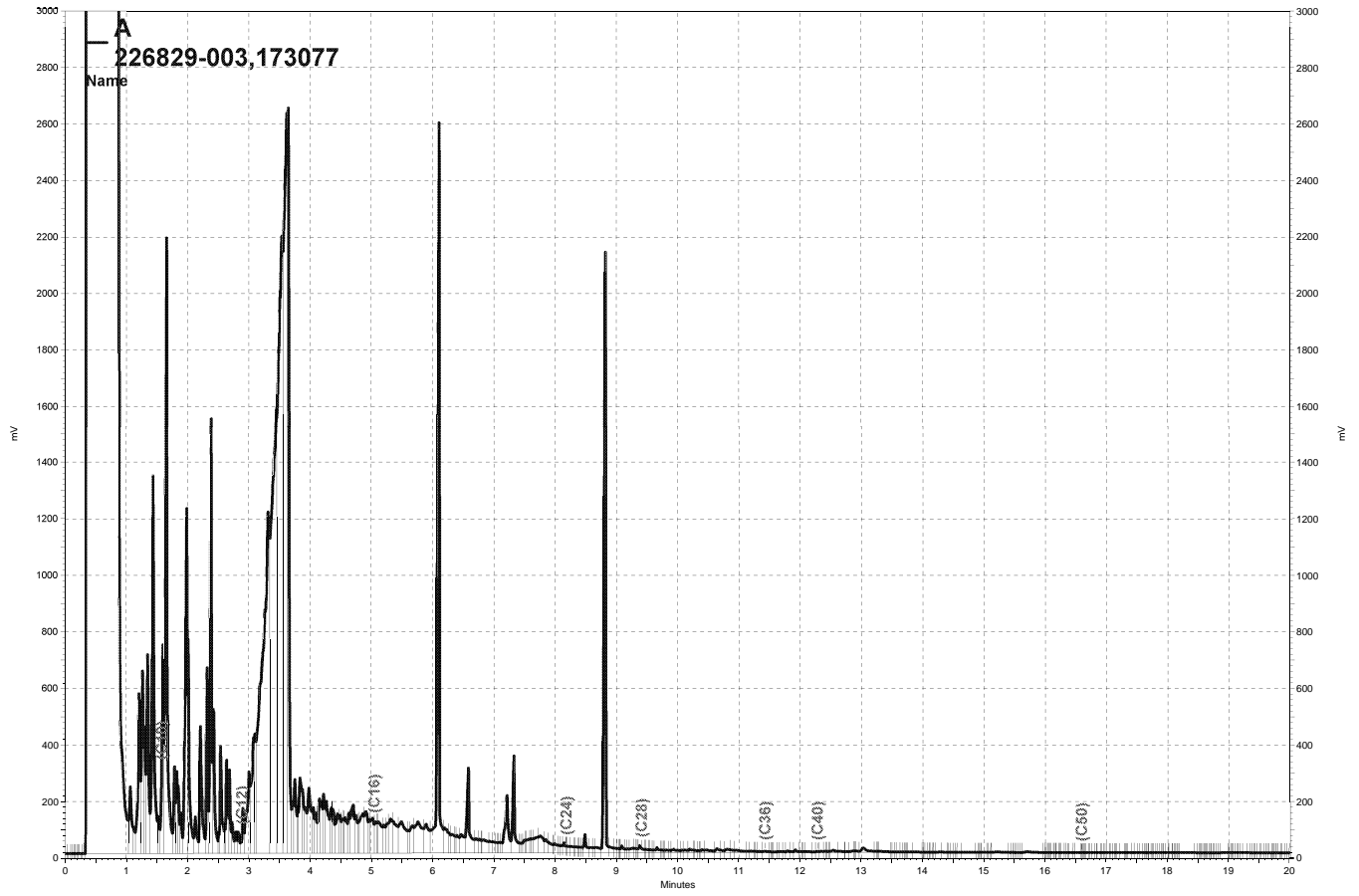
RPD= Relative Percent Difference



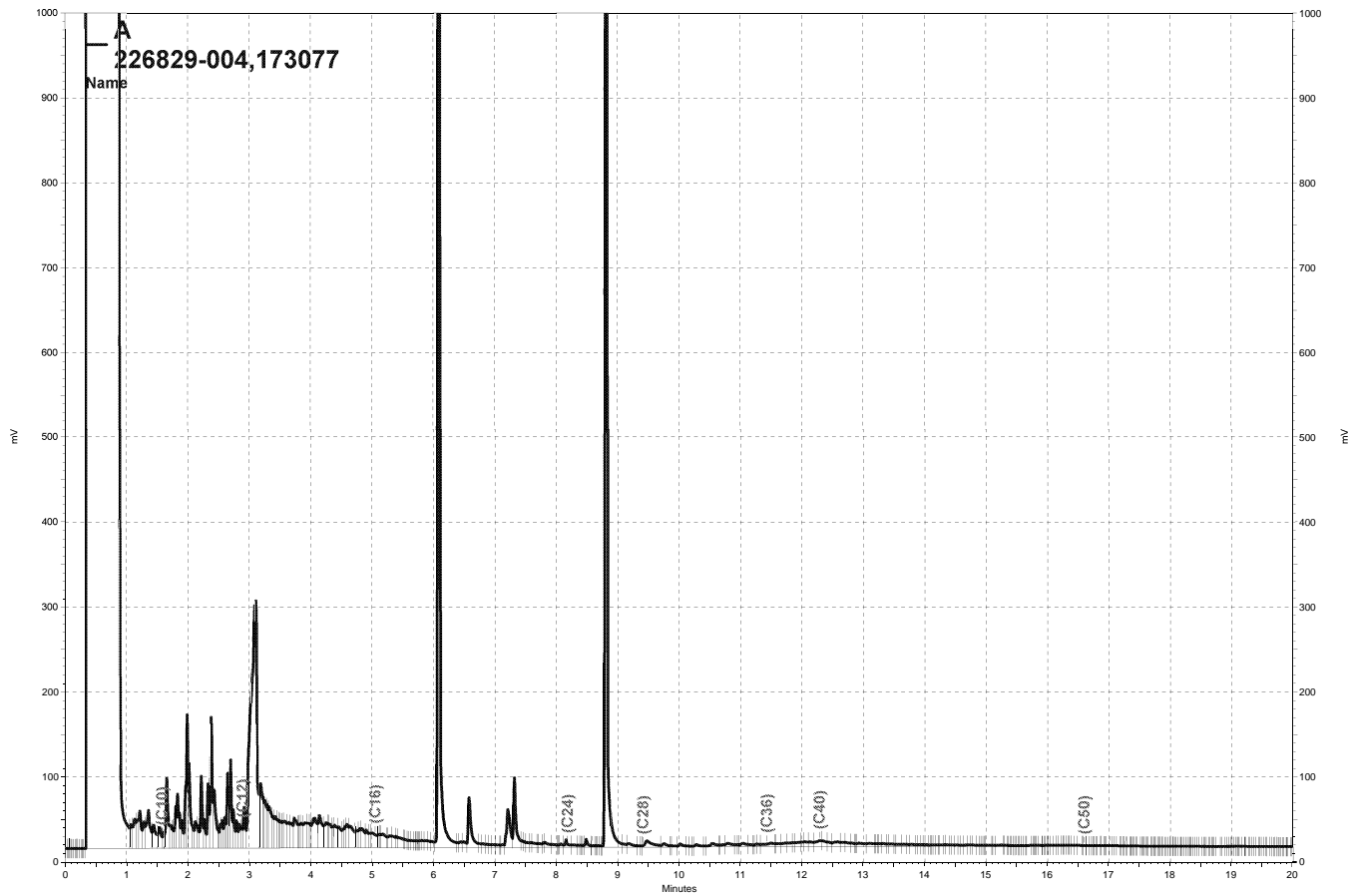
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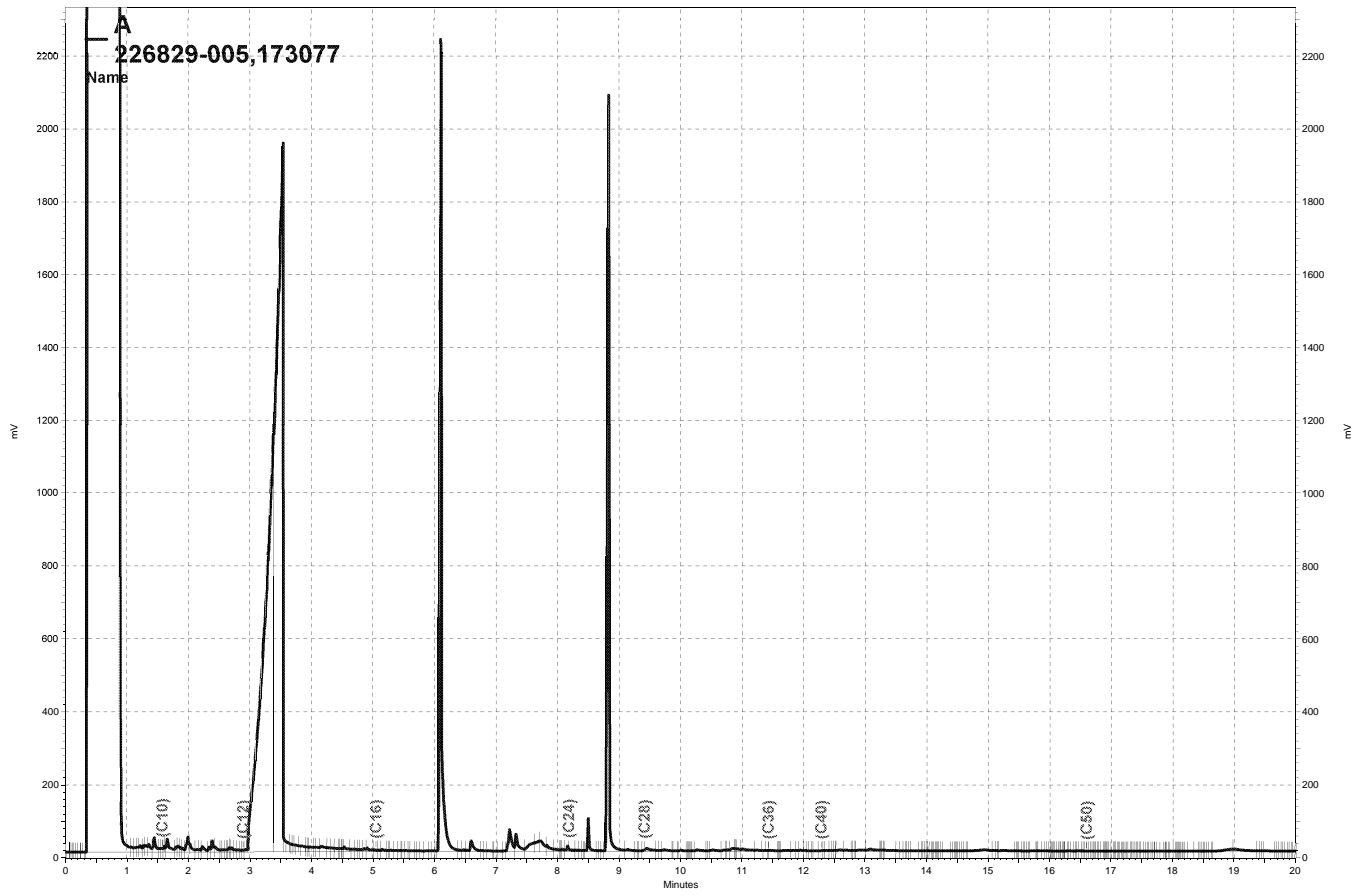
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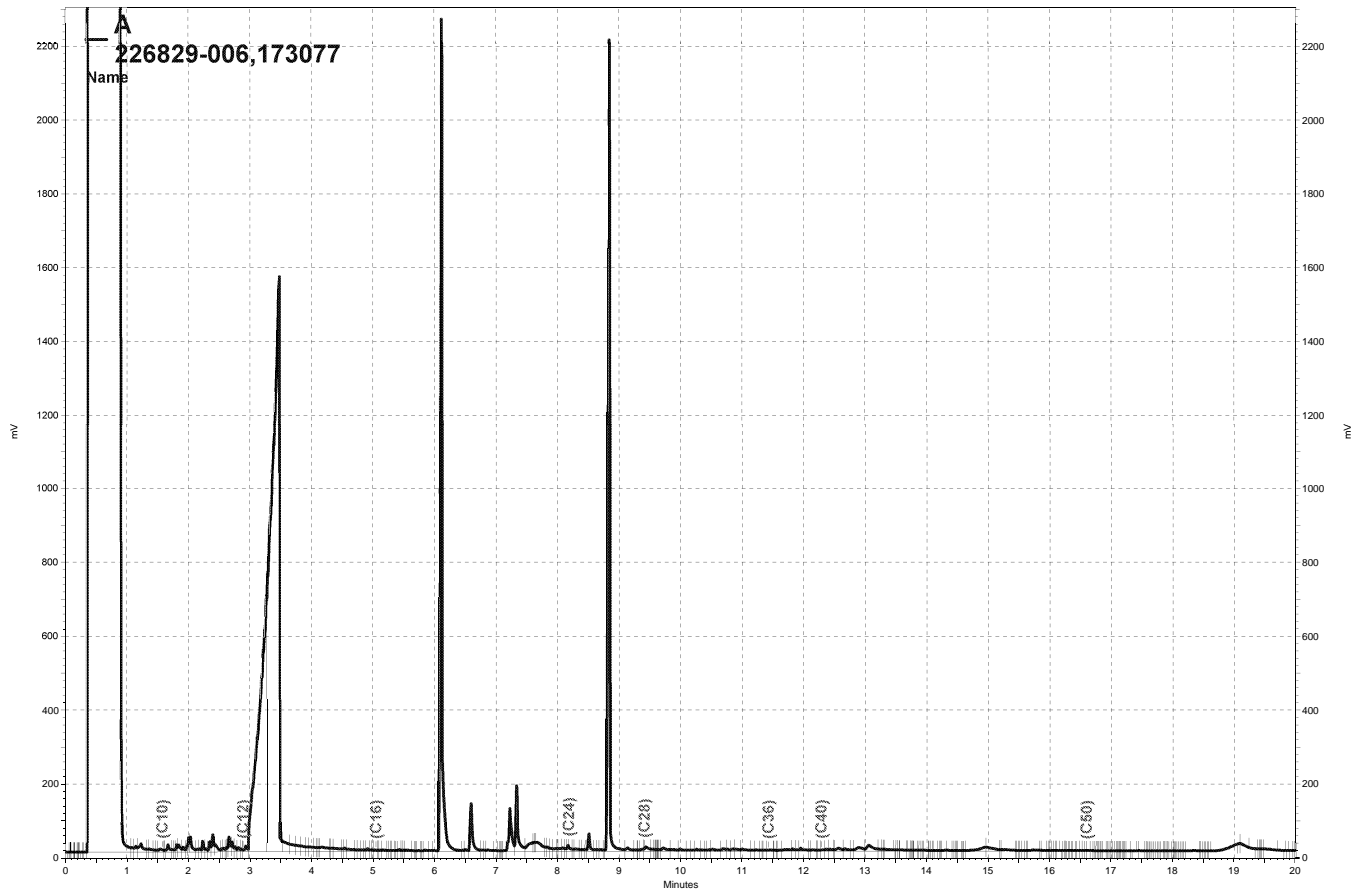
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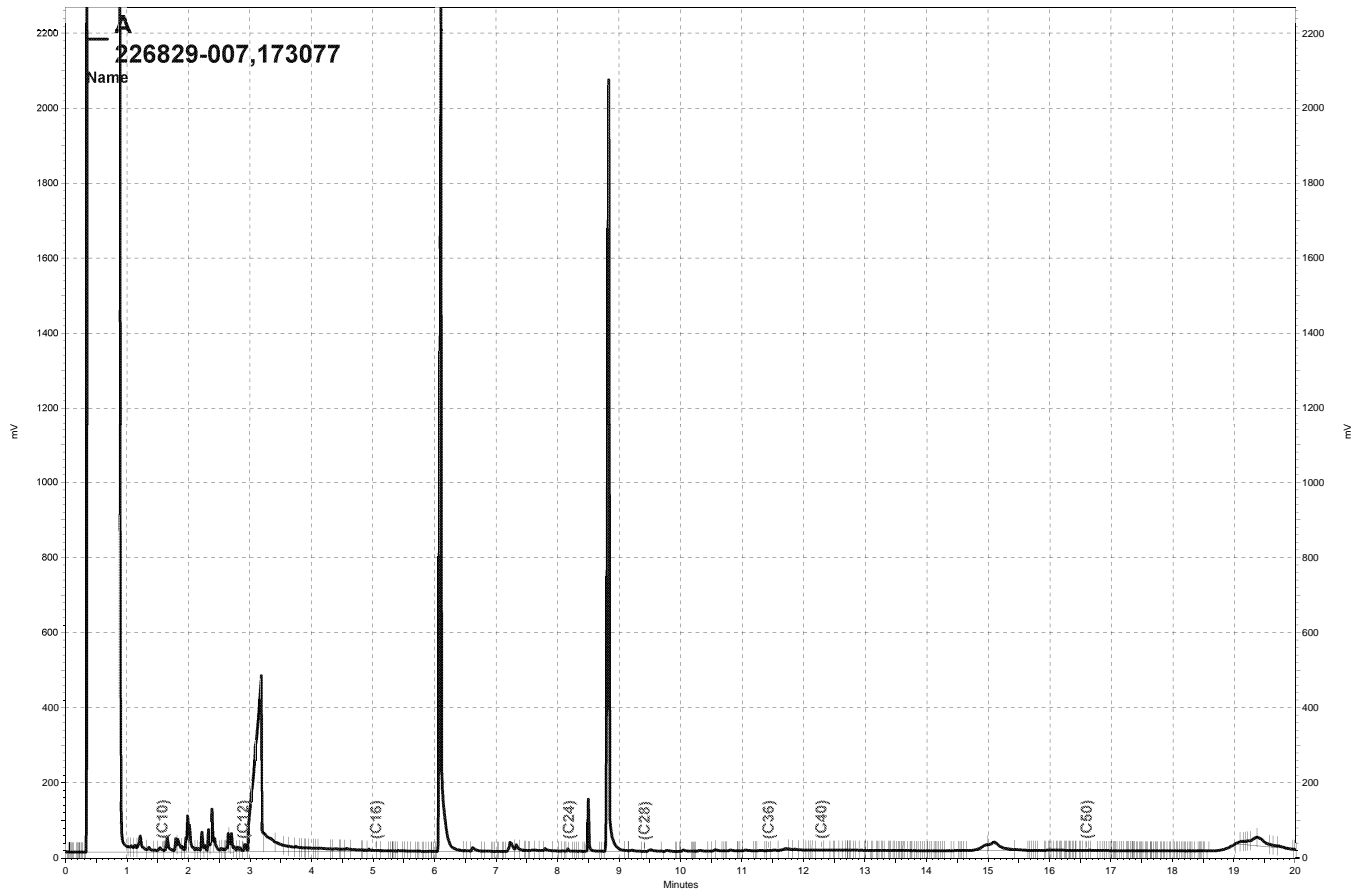
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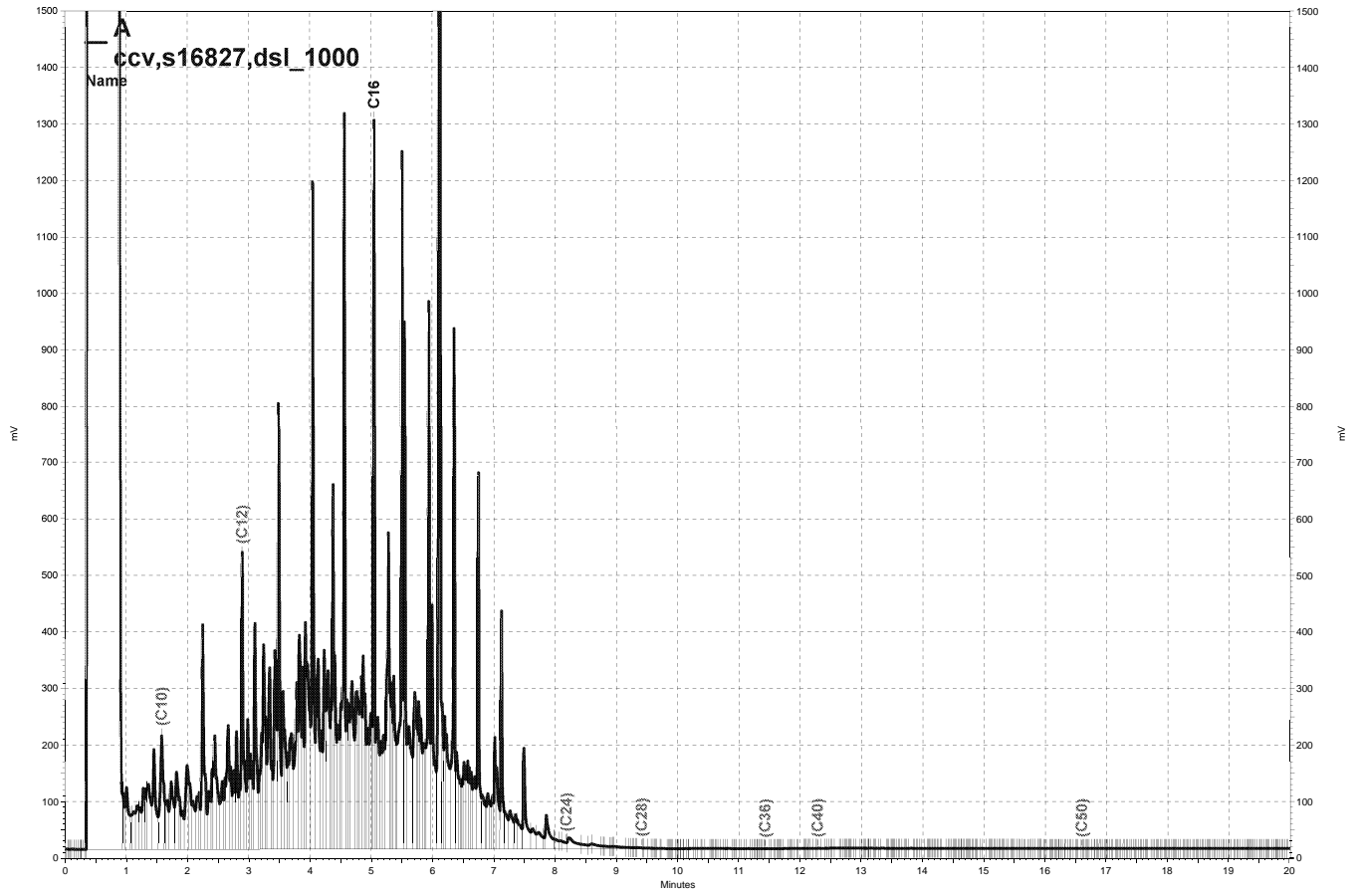
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\\Lims\gdrive\ezchrom\Projects\GC17A\Data\083a014, A

Curtis & Tompkins Laboratories Analytical Report

Lab #: 226829	Location: Redwood Regional Park
Client: Stellar Environmental Solutions	Prep: METHOD
Project#: 2008-02	Analysis: EPA 300.0
Matrix: Water	Batch#: 173067
Units: mg/L	Received: 03/23/11

Field ID: MW-2	Lab ID: 226829-001	
Type: SAMPLE	Sampled: 03/23/11 13:55	

Analyte	Result	RL	Diln Fac	Analyzed
Nitrogen, Nitrate	1.6	0.05	1.000	03/23/11 16:56
Sulfate	140	2.5	5.000	03/23/11 18:24

Field ID: MW-7	Diln Fac: 1.000	
Type: SAMPLE	Sampled: 03/23/11 14:35	
Lab ID: 226829-002	Analyzed: 03/23/11 18:41	

Analyte	Result	RL
Nitrogen, Nitrate	ND	0.05
Sulfate	2.4	0.50

Field ID: MW-8	Diln Fac: 1.000	
Type: SAMPLE	Sampled: 03/23/11 15:15	
Lab ID: 226829-003	Analyzed: 03/23/11 19:16	

Analyte	Result	RL
Nitrogen, Nitrate	0.06	0.05
Sulfate	19	0.50

Field ID: MW-12	Diln Fac: 1.000	
Type: SAMPLE	Sampled: 03/23/11 14:50	
Lab ID: 226829-007	Analyzed: 03/23/11 19:51	

Analyte	Result	RL
Nitrogen, Nitrate	ND	0.05
Sulfate	22	0.50

Type: BLANK	Diln Fac: 1.000	
Lab ID: QC584956	Analyzed: 03/23/11 09:43	

Analyte	Result	RL
Nitrogen, Nitrate	ND	0.05
Sulfate	ND	0.50

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	226829	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	METHOD
Project#:	2008-02	Analysis:	EPA 300.0
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC584957	Batch#:	173067
Matrix:	Water	Analyzed:	03/23/11 10:01
Units:	mg/L		

Analyte	Spiked	Result	%REC	Limits
Nitrogen, Nitrate	1.000	0.9757	98	80-120
Sulfate	10.00	9.836	98	80-120

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	226829	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	METHOD
Project#:	2008-02	Analysis:	EPA 300.0
Field ID:	MW-2	Diln Fac:	5.000
MSS Lab ID:	226829-001	Batch#:	173067
Matrix:	Water	Sampled:	03/23/11 13:55
Units:	mg/L	Received:	03/23/11

Type: MS Analyzed: 03/23/11 20:26
 Lab ID: QC584968

Analyte	MSS Result	Spiked	Result	%REC	Limits
Nitrogen, Nitrate	1.622	2.500	4.103	99	80-120
Sulfate	144.7	25.00	167.1	89 NM	80-120

Type: MSD Analyzed: 03/23/11 20:43
 Lab ID: QC584969

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Nitrogen, Nitrate	2.500	4.050	97	80-120	1	20
Sulfate	25.00	167.4	91 NM	80-120	0	20

NM= Not Meaningful: Sample concentration > 4X spike concentration
 RPD= Relative Percent Difference

Biochemical Oxygen Demand			
Lab #:	226829	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	METHOD
Project#:	2008-02	Analysis:	SM5210B
Analyte:	Biochemical Oxygen Demand	Batch#:	173072
Matrix:	Water	Received:	03/23/11
Units:	mg/L	Prepared:	03/23/11 19:10
Diln Fac:	1.000	Analyzed:	03/28/11 16:45

Field ID	Type	Lab ID	Result	RL	Sampled
MW-2	SAMPLE	226829-001	ND	5.0	03/23/11 13:55
MW-7	SAMPLE	226829-002	16	7.5	03/23/11 14:35
MW-8	SAMPLE	226829-003	40	15	03/23/11 15:15
MW-12	SAMPLE	226829-007	9.6	5.0	03/23/11 14:50
	BLANK	QC584975	ND	5.0	

ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Biochemical Oxygen Demand			
Lab #:	226829	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	METHOD
Project#:	2008-02	Analysis:	SM5210B
Analyte:	Biochemical Oxygen Demand	Batch#:	173072
Field ID:	ZZZZZZZZZZ	Sampled:	03/23/11 09:30
MSS Lab ID:	226818-001	Received:	03/23/11
Matrix:	Water	Prepared:	03/23/11 19:10
Units:	mg/L	Analyzed:	03/28/11 16:45
Diln Fac:	1.000		

Type	Lab ID	MSS Result	Spiked	Result	RL	%REC	Limits	RPD	Lim
BS	QC584976		198.0	263.1		133 *	85-115		
BSD	QC584977		198.0	235.1		119 *	85-115	11	20
SDUP	QC584978	<60.00		<60.00	60.00			NC	20

*= Value outside of QC limits; see narrative

NC= Not Calculated

RL= Reporting Limit

RPD= Relative Percent Difference

Chemical Oxygen Demand			
Lab #:	226829	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	METHOD
Project#:	2008-02	Analysis:	SM5220D
Analyte:	Chemical Oxygen Demand	Batch#:	173260
Matrix:	Water	Received:	03/23/11
Units:	mg/L	Prepared:	03/30/11 13:00
Diln Fac:	1.000	Analyzed:	03/30/11 15:00

Field ID	Type	Lab ID	Result	RL	Sampled
MW-2	SAMPLE	226829-001	23	10	03/23/11 13:55
MW-7	SAMPLE	226829-002	23	10	03/23/11 14:35
MW-8	SAMPLE	226829-003	55	10	03/23/11 15:15
MW-12	SAMPLE	226829-007	17	10	03/23/11 14:50
	BLANK	QC585758	ND	10	

ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Chemical Oxygen Demand			
Lab #:	226829	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	METHOD
Project#:	2008-02	Analysis:	SM5220D
Analyte:	Chemical Oxygen Demand	Batch#:	173260
Field ID:	MW-12	Sampled:	03/23/11 14:50
MSS Lab ID:	226829-007	Received:	03/23/11
Matrix:	Water	Prepared:	03/30/11 13:00
Units:	mg/L	Analyzed:	03/30/11 15:00
Diln Fac:	1.000		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
LCS	QC585759		75.00	76.55	102	90-110		
MS	QC585760	16.71	150.0	156.2	93	65-131		
MSD	QC585761		150.0	152.3	90	65-131	3	20

RPD= Relative Percent Difference

APPENDIX D

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
48	Dec-08	9,200	2,200	0.52	<0.5	<0.5	201.0	201.52	12
49	Mar-09	3,100	37,000	1.1	1.4	7.9	35.0	45.4	14
50	May-09	5,000	15,000	1.5	<0.5	9.8	39.0	50	13
51	Jun-09	2,400	8,000	5.4	<0.5	11	20.2	36.6	13
52	Aug-09	1,900	3,100	1.6	1.8	11	23.8	38.2	7.1
53	Sep-09	1,400	1,800	<0.5	<0.5	<0.5	4.2	4.24	12
54	Dec-09	590	1,800	<0.5	<0.5	1.2	1.2	2.4	3.6
55	Mar-10	1,900	3,200	<0.5	<0.5	<0.5	2.2	2.2	2.2
56	Mar-10	2,000	4,300	<0.5	<0.5	<0.5	3.5	3.45	<2.0
57	Jun-10	1,300	2,400	<0.5	<0.5	<0.5	1.7	1.74	<2.0
58	Sep-10	910	<50	<0.5	<0.5	<0.5	1.5	1.45	<2.0
59	Dec-10	910	1,600	<0.5	<0.5	<0.5	<0.5	<0.5	2.6
60	Mar-11	860	1,100	<0.5	<0.5	<0.5	<0.5	0	3.1

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	7.0	202	< 2.0
32	Sep-08	6,400	2,800	22	< 0.5	100	9.3	131	< 2.0
33	Dec-08	3,500	3,600	5	< 0.5	100	9.1	114	< 2.0
34	Mar-09	5,100	6,700	19	< 0.5	140	12.3	171	51
35	Jun-09	4,600	5,400	40	< 0.5	140	5.1	185	260
36	Sep-09	4,400	4,700	< 0.5	< 0.5	96	5.6	102	3.5
37	Dec-09	4,900	4,500	< 0.5	< 0.5	90	2.9	93	57.0
38	Mar-10	5,300	4,300	17	< 0.5	110	2.6	130	16.0
39	Mar-10	2,600	6,100	11	< 0.5	76	4.5	92	< 2.0
40	Jun-10	5,800	5,000	20	< 0.5	140	9.9	170	< 2.0
41	Sep-10	6,300	4,100	< 0.5	< 0.5	93	6.0	99	69.0
42	Dec-10	5,400	3,500	< 0.5	< 0.5	99	9.2	108	87.0
43	Mar-11	5,500	3,400	11	< 0.5	94	8.5	114	< 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
33	Dec-08	520	400	1.5	< 0.5	20	4.4	26	4.5
34	Mar-09	4,600	7,300	55	< 5.0	410	639.0	1,104	< 20
35	Jun-09	2,100	3,400	32	< 0.5	260	80.8	373	55
36	Sep-09	440	1,700	2.8	< 0.5	33	2.7	39	3.7
37	Dec-09	560	540	1.5	< 0.5	39	7.1	48	4.2
38	Mar-10	220	270	0.8	< 0.5	14	3.1	18	3.9
39	Mar-10	3,400	5,700	28.0	< 0.5	340	255.7	624	< 2.0
40	Jun-10	4,700	4,200	27.0	2.9	400	103.2	533	27
41	Sep-10	900	1,300	2.9	< 0.5	22	< 2.5	25	< 10
42	Dec-10	180	260	< 0.5	< 0.5	5	1.0	6.4	7.2
43	Mar-11	6,000	5,900	39	< 0.5	510	431.0	980.0	< 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
30	Dec-08	4,300	2,300	45	< 0.5	330	39.1	414.1	< 2.0
31	Mar-09	4,000	2,200	< 2.0	< 0.5	160	34.9	194.9	< 2.0
32	Jun-09	4,100	3,600	62	< 0.5	280	41.7	383.7	160
33	Sep-09	2,200	2,900	15	< 0.5	110	11.8	136.8	< 2.0
34	Dec-09	2,500	4,000	27	< 0.5	170	8.7	205.7	< 2.0
35	Mar-10	3,300	2,600	15	< 0.5	140	12.0	167.0	8.6
36	Mar-10	2,500	3,400	16	< 0.5	70	15.4	101.4	2.1
37	Jun-10	1,700	1,300	13	< 0.5	48	4.9	65.9	11
38	Sep-10	13,000	2,900	43	< 0.5	300	47.9	390.9	43
39	Dec-10	3,900	2,400	32	< 0.5	240	20.5	292.5	82
40	Mar-11	700	680	1.6	< 0.5	10	3.5	15.1	14

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	3.0
30	Dec-08	<50	66	0.89	<0.5	<0.5	<0.5	0.9	2.1
31	Mar-09	76	230	<2.0	<0.5	1.4	<0.5	1.4	<2.0
32	Jun-09	72	120	2.0	< 0.5	4.4	1.3	7.7	<2.0
33	Sep-09	74	220	1.6	<0.5	<0.5	<0.5	1.6	<2.0
34	Dec-09	72	150	0.6	<0.5	1.6	1.2	3.4	<2.0
36	Mar-10	63	280	1.3	<0.5	48	<0.5	49.3	<2.0
37	Jun-10	110	340	1.4	<0.5	2.6	0.74	4.7	2.4
38	Sep-10	140	360	2.1	<0.5	1.4	<0.5	3.5	4.3
39	Dec-10	80	440	<0.5	<0.5	0.69	<0.5	0.7	4.1
40	Mar-11	170	1,200	1.0	<0.5	3.7	1.8	6.5	6.3

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
30	Dec-08	2,800	1,600	93	< 0.5	82	0.69	176	< 2.0
31	Mar-09	4,100	4,600	18	< 0.5	82	8	108	8.0
32	Jun-09	2,100	2,700	38	< 0.5	80	3.3	121	3.3
33	Sep-09	830	2,400	11	< 0.5	19	< 0.5	30	< 2.0
34	Dec-09	2,200	3,100	19	< 0.5	46	0.78	66	14.0
35	Mar-10	2,300	2,500	13	< 0.5	59	0.79	73	3.4
36	Mar-10	1,500	3,400	12	< 0.5	48	< 0.5	60	< 2.0
37	Jun-10	2,000	3,500	14	< 0.5	42	0.92	57	7.9
38	Sep-10	3,000	2,200	18	< 0.5	41	0.55	60	8.0
39	Dec-10	1,800	2,900	13	< 0.5	49	1.9	64	15.0
40	Mar-11	180	1,600	< 0.5	< 0.5	1.2	< 0.5	1.2	6.9

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
13	Dec-08	93	170	< 0.5	< 0.5	0.76	< 0.5	0.8	< 2.0
14	Mar-09	180	130	< 0.5	< 0.5	1.70	< 0.5	1.7	< 2.0
15	Jun-09	300	280	< 0.5	< 0.5	4.60	< 0.5	4.6	< 2.0
16	Sep-09	330	270	< 0.5	< 0.5	2.30	< 0.5	2.3	< 2.0
17	Dec-09	76	170	< 0.5	< 0.5	< 0.5	< 0.5	0.0	< 2.0
18	Mar-10	240	380	< 0.5	< 0.5	2.7	< 0.5	2.7	< 2.0
19	Jun-10	540	370	< 0.5	< 0.5	3.5	0.92	4.4	7.9
20	Sep-10	380	220	< 0.5	< 0.5	1.7	< 0.5	1.7	8
21	Dec-10	320	350	< 0.5	< 0.5	1.5	< 0.5	1.5	3.9
22	Mar-11	290	450	< 0.5	0.74	1.3	< 0.5	2.0	11

**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
46	Dec-08	<50	83	<5.0	<5.0	<5.0	<5.0	<0.5	< 2.0
47	Mar-09	<50	<50	<0.5	<0.5	<0.5	<0.5	<1.0	< 2.0
48	Jun-09	<50	<50	<5.0	<5.0	<5.0	<5.0	<0.5	< 2.0
49	Sep-09	110	220	<0.5	<0.5	<0.5	<0.5	<0.5	< 2.0
50	Dec-09	<50	<50	<5.0	<5.0	<5.0	<5.0	<0.5	< 2.0
51	Mar-10	<50	<50	<5.0	<5.0	<5.0	<5.0	<0.5	< 2.0
52	Jun-10	<50	240	<5.0	<5.0	<5.0	<5.0	<0.5	< 2.0
53	Sep-10	<50	66	<5.0	<5.0	<5.0	<5.0	<0.5	< 2.0
54	Dec-10	<50	<50	<0.5	<0.5	<0.5	<5.0	<0.5	NA
55	Mar-11	<50	<50	<0.5	<0.5	<0.5	<5.0	<0.5	NA

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
45	Dec-08	< 50	360	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 2.0
46	Mar-09	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	0.5	< 2.0
47	Jun-09	< 50	< 50	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 2.0
48	Sep-09	NS	NS	NS	NS	NS	NS	NS	NS
49	Dec-09	< 50	< 50	< 5.0	< 5.0	< 5.0	< 5.0	< 0.5	< 2.0
50	Mar-10	< 50	< 50	< 5.0	< 5.0	< 5.0	< 5.0	< 0.5	< 2.0
51	Jun-10	< 50	< 50	< 5.0	< 5.0	< 5.0	< 5.0	< 0.5	< 2.0
52	Sep-10	NS	NS	NS	NS	NS	NS	NS	NS
53	Dec-10	< 50	< 50	< 0.5	0.57	< 0.5	0.81	1.4	NS
54	Mar-11	< 50	< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	NS

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