RECEIVED
By Alameda County Environmental Health at 3:54 pm, Jan 27, 2014

SECOND SEMIANNUAL 2013 GROUNDWATER MONITORING, PERMEABLE BARRIER INSTALLATION, AND ANNUAL SUMMARY REPORT

REDWOOD REGIONAL PARK
SERVICE YARD
OAKLAND, CALIFORNIA

Prepared for:

EAST BAY REGIONAL PARK DISTRICT
OAKLAND, CALIFORNIA

January 2014

STELLAR
ENVIRONMENTAL SOLUTIONS, INC.
GEOSCIENCE & ENGINEERING CONSULTING

SECOND SEMIANNUAL 2013 GROUNDWATER MONITORING, PERMEABLE REACTIVE BARRIER INSTALLATION, AND ANNUAL SUMMARY REPORT

REDWOOD REGIONAL PARK
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

January 21, 2014

Project No. 2013-02

STELLAR
ENVIRONMENTAL SOLUTIONS, INC.
2198 SIXTH STREET, SUITE 201·BERKELEY, CA 94710
TEL: (510)644-3123 · FAX: (510)644-3859
GEOSCIENCE & ENGINEERING CONSULTING

January 21, 2014

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: Second Semiannual 2012 Groundwater Monitoring, Permeable Reactive Barrier installation, and Annual Summary 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 Semiannual 2013 groundwater and surface water monitoring activities conducted from July1 to December 31, 2013. These activities include: the semiannual groundwater monitoring event conducted on October 2, 2013; the installation of the permeable reactive barrier (PRB) on November 20, 2013; and a 30-day post-PRB installation monitoring of key wells conducted on December 30, 2013. In addition to the activities typically conducted during a monitoring event, the water quality parameters including oxygen demand, dissolved oxygen and oxygen reduction potential were taken to assess the effectiveness of the PRB.

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, P.G., R.E.A.
Principal Geochemist/President

Matt Graul, Stewardship Manager
East Bay Regional Park District

cc: State of California GeoTracker database
Alameda County Department of Environmental Health 'ftp' system

TABLE OF CONTENTS

Section **Page**

Appendices

TABLES AND FIGURES

Tables **Page**

Figures **Page**

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 extensive 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). This report presents the second semiannual 2013 groundwater monitoring report that includes documentation of the implementation of the permeable reactive a barrier remedy approved by ACEH along with the annual trend analyses and recommendations for future work.

OBJECTIVES AND SCOPE OF WORK

The overall objective of site monitoring and the latest remedial action is to continue trying to reduce the site residual hydrocarbons. 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) for the second 2013 semiannual period from July 1, 2013 to December 31, 2013:

- 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
- Implementation of the PRB workplan during the second semiannual 2013 period.

HISTORICAL CORRECTIVE ACTIONS AND INVESTIGATIONS

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

The general phases of site work included:

- An October 2000 Feasibility Study report for the site, submitted to ACEH, which provided detailed analyses of the regulatory implications of the site contamination and an assessment of viable corrective actions (Stellar Environmental, 2000d).
- Two instream bioassessment events, conducted in April 1999 and January 2000, to evaluate potential impacts to stream biota associated with the site contamination. No impacts were documented.
- Additional monitoring well installations and corrective action by ORC™ injection—proposed by 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.
- A total of 58 groundwater monitoring events have been conducted since project inception (February 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. Bioventing activities conducted to date have been discussed in bioventing-specific technical reports, and updates were 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 over the full footprint of plume during First Quarter 2010 (on February 1-2), followed by 30-day post-injection monitoring and sampling of key site wells (on March 2).
- Conversion of surface and groundwater monitoring frequency from quarterly to semiannual by ACEH at the request of Stellar Environmental on behalf of Park District occurred in June 2011.
- In concurrence with ACEH, the site bioventing system having accomplished its' design purpose, was discontinued on July 18, 2011.

- The RAW, dated November 28, 2011, prepared by Stellar Environmental. ACEH approved the PRB RAW in a subsequent letter, dated December 29, 2011and the PRB was installed in November 2013 and followed with a 30-day post-installation monitoring of key downgradient site wells in December 2013.

SITE DESCRIPTION

The site slopes to the west—from an elevation of approximately 564 feet above mean sea level at the eastern edge of the service yard to approximately 530 feet above mean sea level 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. 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 surface water quality impacts to Redwood Creek. No surface water quality impacts to aquatic organisms were found. The ACEH-approved revisions to the site monitoring program as of this date include:

- 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.
- Conversion of surface and groundwater monitoring frequency from quarterly to semiannual by ACEH, at the request of Stellar Environmental on behalf of Park District occurred in June 2011.
- Shut down of the site bioventing system In June 2011.
- Design and implementation of PRB workplan.

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 will no longer be provided to ACEH.

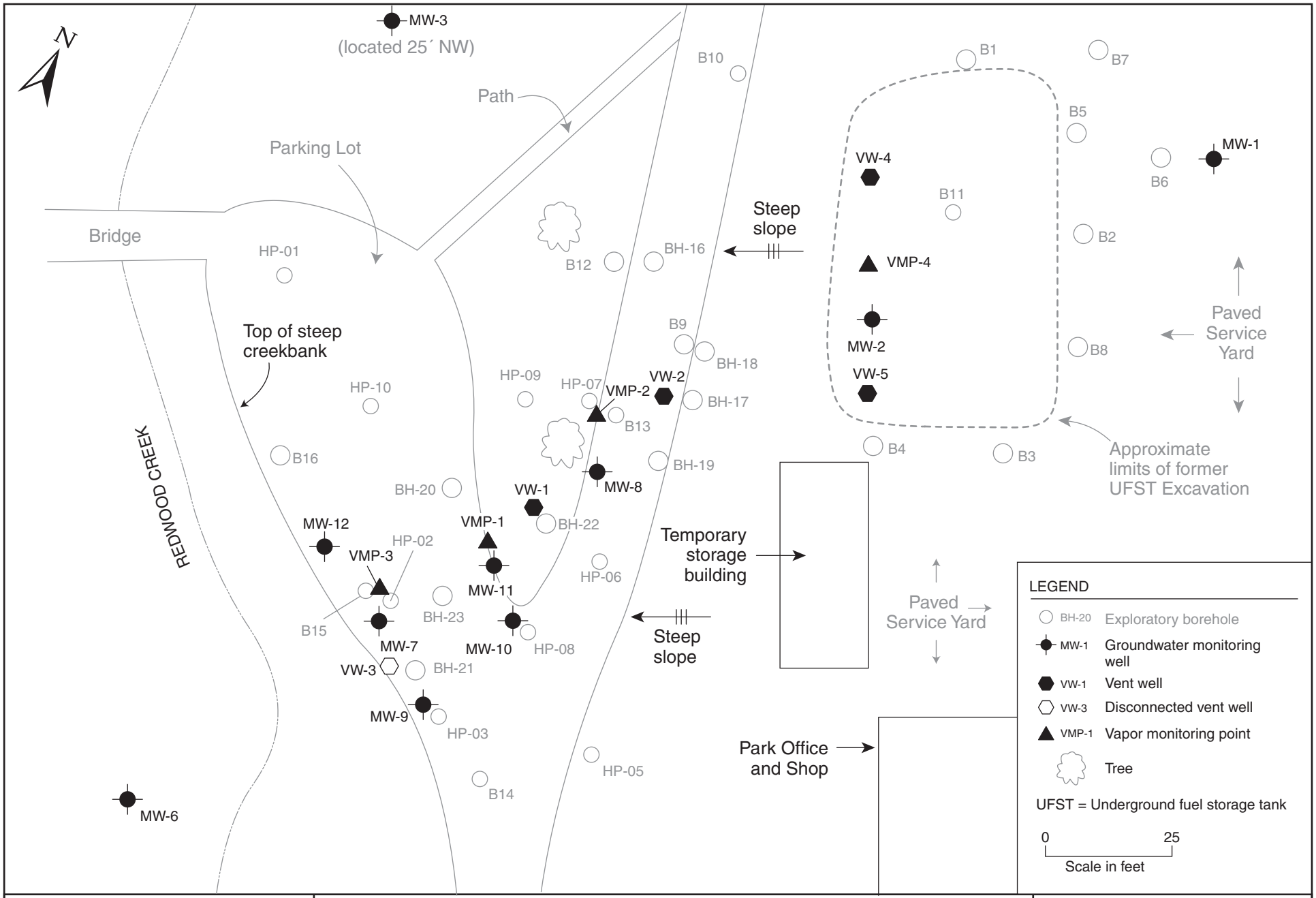
N

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

Redwood Reg. Park Service Yard Oakland, CA	By: MJC	MARCH 2006
	Figure 1	

STELLAR ENVIRONMENTAL SOLUTIONS, INC
GEOSCIENCE & ENGINEERING CONSULTING

2006-17-01



STELLAR ENVIRONMENTAL SOLUTIONS, INC
GEOSCIENCE & ENGINEERING CONSULTING

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

Figure 2

by: MJC | APRIL 2011

2010-02-13

2.0 PHYSICAL SETTING

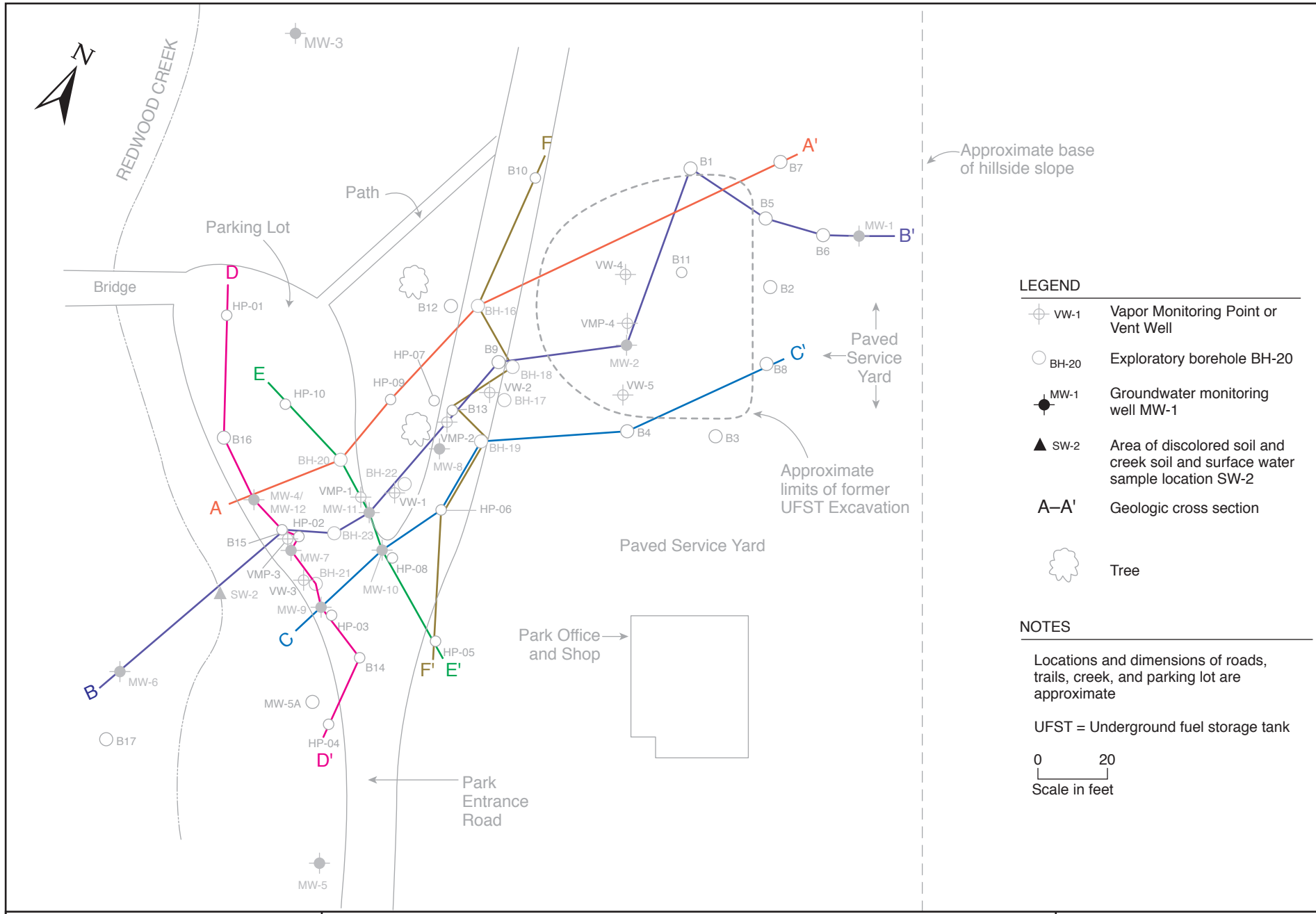
This section discusses the site hydrogeologic conditions based on geologic logging and water level measurements collected at the site since September 1993. Previous Stellar Environmental reports have included detailed discussions of site lithologic and hydrogeologic conditions. In May 2004, ACEH requested, via email, 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 location 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 (i.e., soil type and bedrock depth). Additional information on water level depths, historical range of water levels, and inferred thickness of soil contamination were 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 are inferred to be landslide debris.

A previous Stellar Environmental report (Stellar Environmental, 2004c) presented a bedrock surface isopleth map (elevation contours for the top of the bedrock surface) in the contaminant plume area. The isopleth map indicates the following (as shown in Figures 4 and 5): 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 slopes gently from east to west in the downgradient portion of the site (under the gravel parking area) toward Redwood Creek.



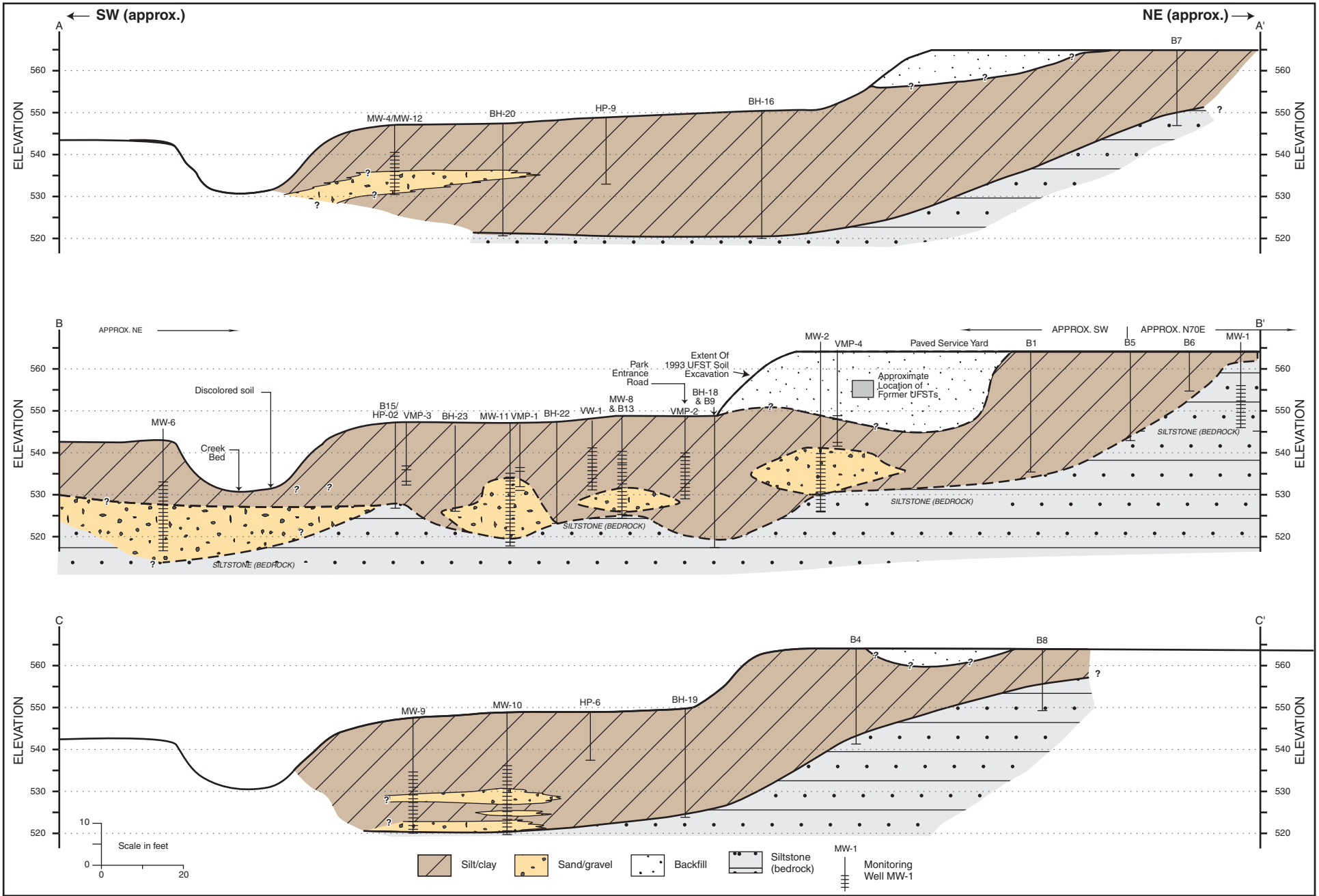
STELLAR ENVIRONMENTAL SOLUTIONS, INC
GEOSCIENCE & ENGINEERING CONSULTING

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

Figure 3

by: MJC | MARCH 2008

2008-02-05



STELLAR ENVIRONMENTAL SOLUTIONS, INC
GEOSCIENCE & ENGINEERING CONSULTING

GEOLOGIC CROSS SECTIONS — A-A' through C-C'

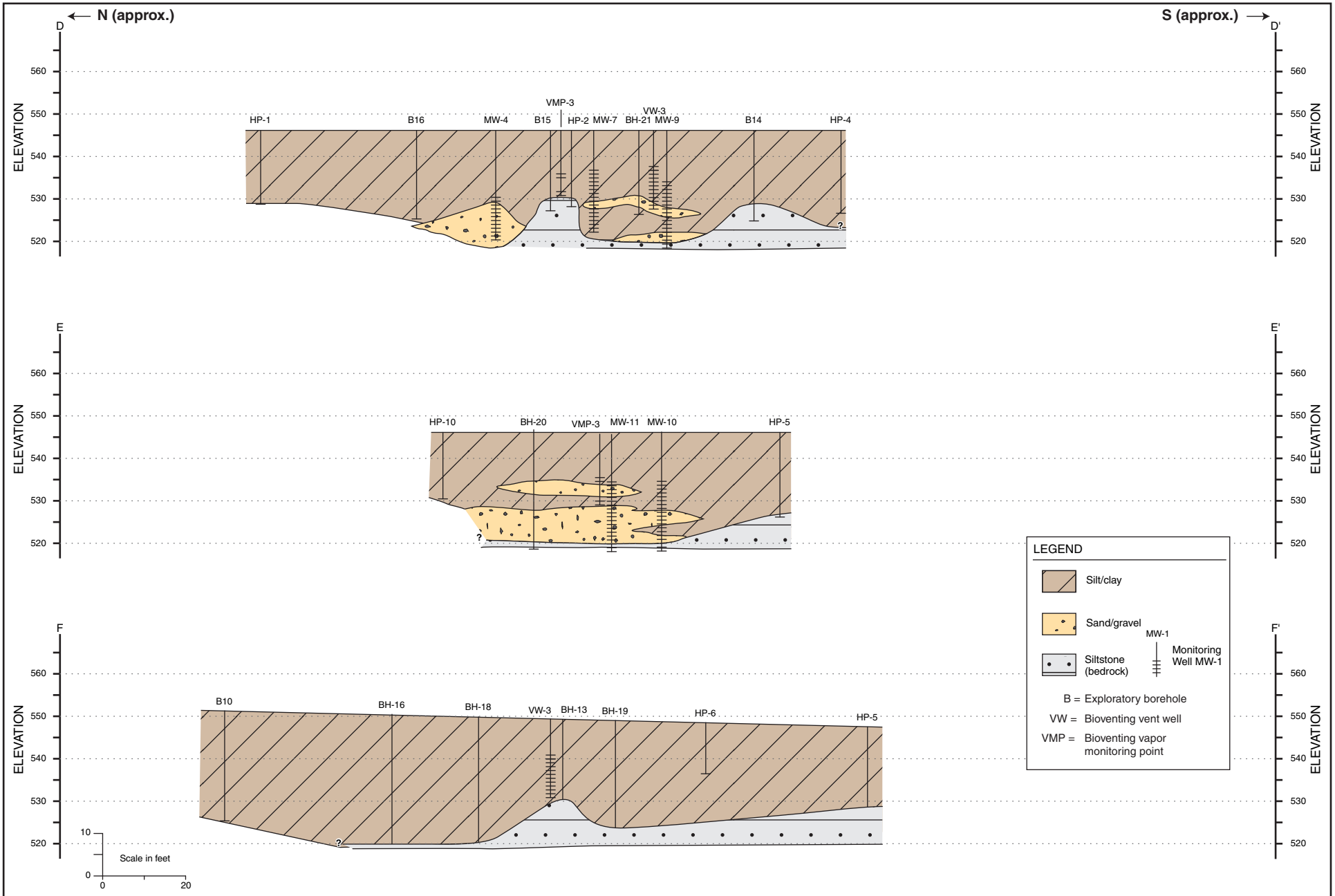
Redwood Regional Park Service Yard, Oakland, CA

Figure 4

by: MJC

DECEMBER 2007

2005-66-14



STELLAR ENVIRONMENTAL SOLUTIONS, INC
GEOSCIENCE & ENGINEERING CONSULTING

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

Figure 5

by: MJC | DECEMBER 2005

2005-66-13

This general gradient corresponds to the local groundwater flow direction. On the 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 the bedrock surface may have at one time undergone channel erosion from a paleostream(s) flowing sub-parallel to present-day Redwood Creek. Because groundwater flows in the unconsolidated sediments that directly overlie the bedrock surface, it is likely that the hummocky bedrock surface affects local groundwater depth and flow direction. This is an important hydrogeologic control that should be considered 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 and 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 in the surrounding area. As discussed in the previous subsection, local groundwater flow direction likely is more variable than expressed by groundwater monitoring well data, due to local variations in bedrock surface topography.

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

The following groundwater gradient information is based on the monitoring data contained in Section 4.0 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 0.27 feet per foot. Downgradient from (west of) the UFST source area (between MW-2 and Redwood Creek) the groundwater gradient was approximately 0.07 feet per foot. The average groundwater elevation was 2.75 feet lower than the previous (March 2013) event, with the greatest decrease of 4.56 feet measured in MW-2 and the lowest increase measured in MW-7 of 0.97 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 2 (in Section 5.0), site groundwater contaminant levels are compared to two sets of criteria: 1) Water Board Tier 1 Environmental Screening Levels (ESLs) for residential sites where groundwater is a current or potential drinking water source; and 2) ESLs for residential sites where groundwater is not a current or potential drinking water source.

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

SURFACE WATER CONTAMINATION

As summarized in Table 3 (in Section 5.0), site surface water contaminant levels are compared to the most stringent screening level criteria published by the State of California, U.S. Environmental Protection Agency, and U.S. Department of Energy. These screening criteria address chronic and acute exposures to aquatic life. As discussed in the ESL document (Water

Board, 2008), benthic communities at the groundwater/surface water interface (e.g., at site groundwater discharge location SW-2) are assumed to be exposed to the full concentration of groundwater contamination prior to dilution/mixing with the surface water). This was also a fundamental assumption in the instream benthic macro-invertebrate bioassessment events, which documented no measurable impacts.

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

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

4.0 SECOND SEMIANNUAL 2013 ACTIVITIES

This section presents the creek surface water and groundwater sampling procedures and methods for the groundwater monitoring event (Second Semiannual 2013), conducted on October 3, 2013, along with the analytical results. 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 Stellar Environmental workplan (Stellar Environmental, 1998a).

The current monitoring period activities included:

- Measuring static water levels in all 11 site wells;
- Collecting post-purge groundwater samples for laboratory analysis of site contaminants and as well as the water quality parameters pH, temperature, conductivity, and turbidity during purging from wells located within (or potentially within) the groundwater plume (MW-2, MW-7, MW-8, MW-9, MW-10, MW-11, and MW-12);
- Collecting Redwood Creek surface water samples for laboratory analysis from locations SW-2 and SW-3 (creek location SW-3 was dry and could not be sampled this 2nd 2013 semiannual event)
- Implementation of PRB workplan, discussed in Sections 6.0 and 7.0; and
- Continue post-purge measurement of dissolved oxygen (DO) and redox to establish a baseline prior to installation and monitor the effect of the permeable reactive barrier (PRB) that was installed this period across the distal contaminant plume. In addition, Stellar Environmental also analyzed wells MW-7, MW-9 and MW-12, located directly downgradient of the PRB, for alternate electron acceptors including nitrates, sulfates, biological oxygen demand (BOD), and chemical oxygen demand (COD) to establish a baseline prior to and approximately 30 days after installation of the PRB;
- Conduct a limited sampling, approximately 30 days after installation of the PRB, of downgradient wells: MW-7, MW-9, MW-12 and upgradient wells: MW-10 and MW-11.

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.

Well construction information and the October 2013 groundwater elevation data are summarized in Table 1. Figure 6 is a groundwater elevation map constructed from the current event monitoring well groundwater elevation data.

Table 1
Groundwater Monitoring Well Construction
and Groundwater Elevation Data – October 3, 2013

Well	Well Depth	Screened Interval	TOC Elevation	Groundwater Depth (bgs)	Groundwater Elevation
MW-1	18	7 to17	565.83	4.88	560.95
MW-2	36	20 to 35	566.42	24.41	541.01
MW-3	42	7 to 41	560.81	24.52	536.21
MW-5	26	10 to 25	547.41	17.39	530.02
MW-6	26	10 to 25	545.43	14.29	531.14
MW-7	24	9 to24	547.56	14.82	532.74
MW-8	23	8 to 23	549.13	15.39	533.74
MW-9	26	11 to 26	549.28	17.39	531.89
MW-10	26	11 to 26	547.22	14.68	532.54
MW-11	26	11 to 26	547.75	14.67	533.08
MW-12	25	10 to 25	544.67	11.61	533.06

Notes:
All measurements expressed in feet
TOC = top of casing
bgs = below ground surface
Wells MW-1 through MW-6 are 4-inch diameter; all other wells are 2-inch diameter.
All elevations are expressed in feet above mean sea level. (U.S. Geological Survey)

GROUNDWATER MONITORING AND SAMPLING

Groundwater monitoring well water level measurements, purging, sampling, and field measurements were conducted by Blaine Tech Services under the supervision of Stellar Environmental personnel. 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 event).

The sampling-derived purge water and decontamination rinseate (approximately 53 gallons) from the current event was containerized in the onsite above-ground storage tank. Purgewater is accumulated in the onsite tank until it is full, at which time the water is transported offsite for proper disposal.

CREEK SURFACE WATER SAMPLING

Surface water sampling was conducted by Blaine Tech Services under the supervision of Stellar Environmental personnel on October 3, 2013. A surface water samples was 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). The creek was dry at surface water sampling location SW-3 (located approximately 500 feet downstream of the SW-2 location) and could not be sampled this event. 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.

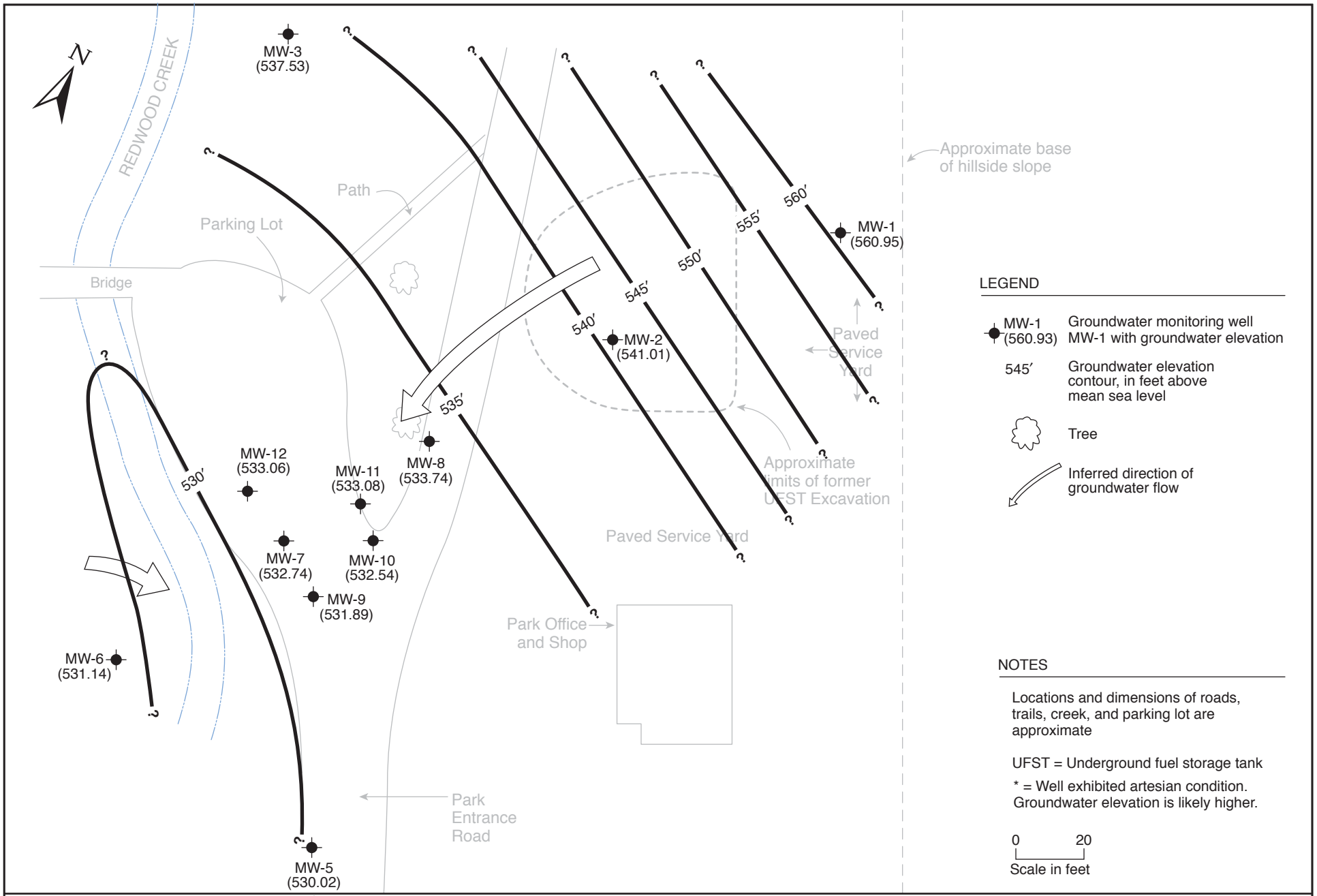
At the time of sampling, the creek was at a seasonally low stage with water ponded with no areas of visible flow. Sampling location SW-3 was dry and location SW-2 was ponded and less than 6 inches. Blaine Tech personnel did not report observing orange algae in the creek bank at location SW-2 and no sheen in the water or petroleum odors during this event.

BIOVENTING-RELATED ACTIVITIES

On July 18, 2011, in concurrence with ACEH, the site bioventing system, having accomplished its' design purpose, was discontinued.

PRB INSTALLATION AND MONITORING

Installation and monitoring of the PRB installed during this second semiannual 2013 period are discussed workplan, discussed in Sections 5.0, 6.0 and 7.0 of this report.



STELLAR ENVIRONMENTAL SOLUTIONS, INC
GEOSCIENCE & ENGINEERING CONSULTING

GROUNDWATER ELEVATION MAP—OCTOBER 3, 2013
Redwood Regional Park Service Yard, Oakland, CA

Figure 6

by: MJC | DECEMBER 2013

2010-02-23

GROUNDWATER AND SURFACE WATER ANALYTICAL RESULTS

The semiannual field and analytical laboratory results of the current monitoring event were collected in October 2013. Table 2 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.

Second Semiannual 2013 groundwater contaminant concentrations were as follows: The ESL for TVHg for residential areas where groundwater is a drinking water resource was exceeded in six of the seven wells sampled and was exceeded for TEHd in five of the seven wells sampled. The ESL for benzene was exceeded in the 3 wells in which it was detected. Ethylbenzene was detected in all of the wells except MW-2 and above the ESL in wells MW7, MW-10 and MW-12. Total xylenes were detected in wells MW-7 and MW-9 and below the ESL. Toluene was not detected above the laboratory detection limit in any of the seven wells sampled. MTBE was detected in wells MW-2, MW-8 and MW-10 but above the ESL only in well MW-8.

Well MW-7 contained both the maximum TVHg and TEHd groundwater. MW-7 is located in the downgradient central area of the plume, adjacent to Redwood Creek. The northern edge of the downgradient edge 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 current event contaminant plume geometry is consistent with historical contaminant distribution.

Only surface water sampling location SW-2 had sufficient water for sampling, and this sample showed 930 ug/L TEHd, above the ESL. This is the highest historical detection of TEHd at this location and likely reflects a combination of factors including an increased subsurface flow after many years of drought conditions, followed by this year's, low seasonal rainfall that results in increased contaminants concentration in non-flowing stagnant creek water pools.

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).

Table 2
Groundwater and Surface Water Samples
Analytical Results –October 3, 2013
Redwood Regional Park Corporation Yard, Oakland, California

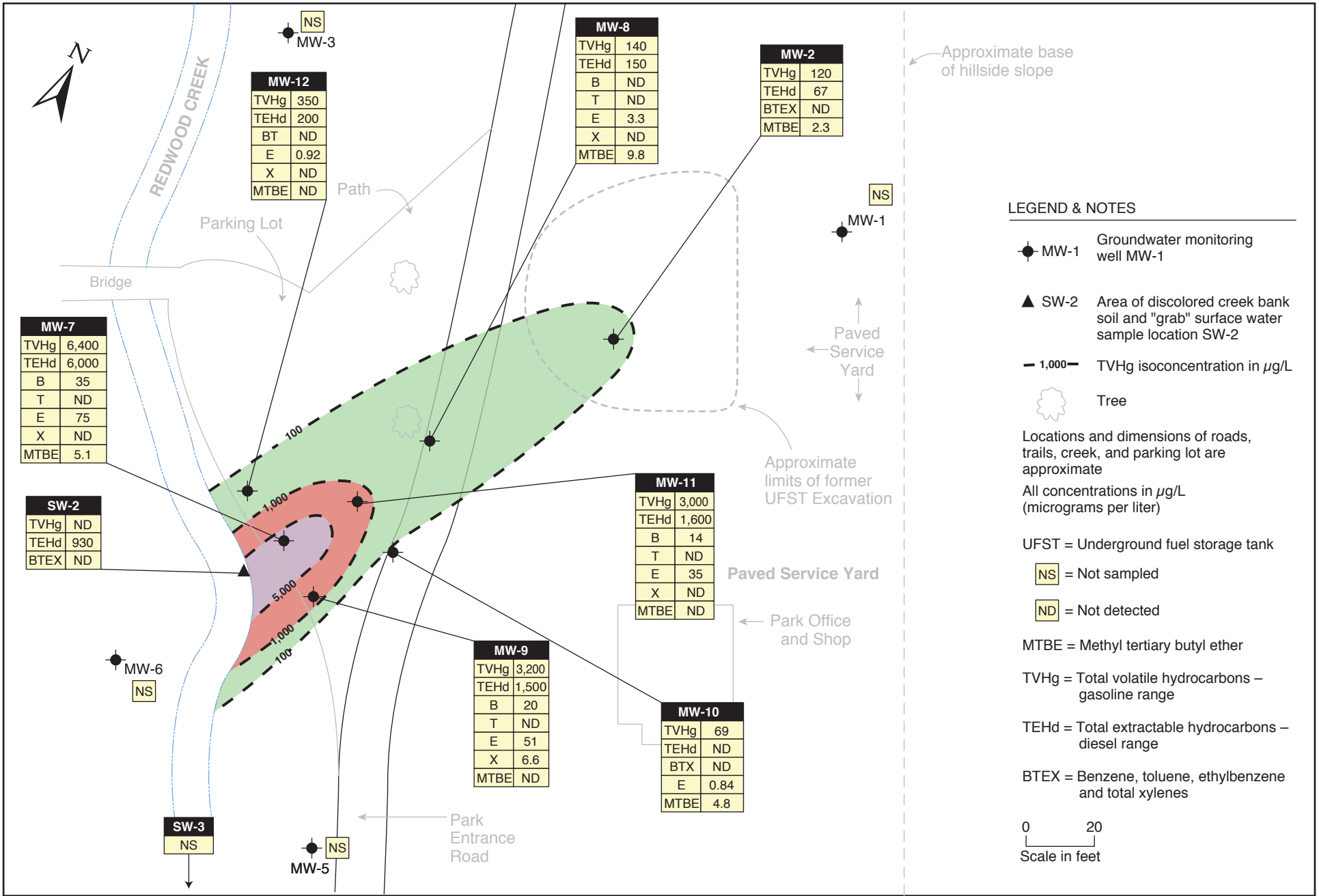
Location	Dissolved Oxygen	ORP	Contaminant Concentrations						
			TEHd	TVHg	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE
GROUNDWATER SAMPLES									
MW-2	15.41	2	67	**120**	<0.5	<0.5	<0.5	<0.5	2.3
MW-7	0.27	-45	**6,000**	**6,400**	**35**	<0.5	**75**	5.1	<2.0
MW-8	0.38	-82	**140**	**150**	<0.5	<0.5	3.3	<0.5	**9.8**
MW-9	0.31	-108	**1,500**	**3,200**	**20**	<0.5	**51**	6.6	<2.0
MW-10	0.87	-42	<50	69	<0.5	<0.5	0.84	<0.5	4.8
MW-11	0.17	-62	**1,600**	**3,000**	**14**	<0.5	**35**	<0.5	<2.0
MW-12	0.23	1	**200**	**350**	<0.5	<0.5	0.92	<0.5	<2.0
Groundwater ESLs [a]			100 / 640	100/ 500	1.0 / 27	40 / 130	30 / 43	20 / 100	5.0 / 1,800
REDWOOD CREEK SURFACE WATER SAMPLES									
SW-2	2.49	22	**930**	<50	<0.5	<0.5	<0.5	<0.5	4.8
SW-3 (dry this event)	NS	NS	NS	NS	NS	NS	NS	NS	NS
Surface Water Screening Levels [b]			100	100	1.0	40	30	20	5.0

Notes:
[a] ESLs = Water Board Environmental Screening Levels (where groundwater is/is not a potential drinking water resource) (Water Board, 2013).
[b] Water Board Surface Water Screening Levels for freshwater habitats (Water Board, 2008).
Samples in **bold-face type** exceed the ESLs and/or surface water screening levels where groundwater is a potential drinking water resource.

NA = not analyzed
NLP = no level published
NS = not sampled

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

All contaminant concentrations are expressed in micrograms per liter (µg/L), equivalent to parts per billion.
Dissolved oxygen concentrations are expressed in milligrams per liter (mg/L); post-purge measurement in all wells.
ORP = redox or oxidation reduction potential measured in millivolts (mV)



LEGEND & NOTES

- MW-1 — Groundwater monitoring well MW-1
- SW-2 — Area of discolored creek bank 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

STELLAR ENVIRONMENTAL SOLUTIONS, INC
GEOSCIENCE & ENGINEERING CONSULTING

ANALYTICAL RESULTS AND GASOLINE PLUME—OCTOBER 2013

Redwood Regional Park Service Yard, Oakland, CA

Figure 7

by: MJC | JANUARY 2014

2010-02-24

PERMEABLE REACTIVE BARRIER (PRB) BASELINE MONITORING INDICATORS

The permeable reactive barrier (PRB) was installed, as discussed in Sections 6.0 and 7.0, on November 20, 2013 and was designed to treat and/or intercept accessible subsurface groundwater hydrocarbon contamination. Alternate electron acceptors were measured during this monitoring and sampling event in wells MW-7, MW-8 and MW-12 located downgradient of the the PRB location; which included nitrates, sulfates, biological oxygen demand (BOD), and chemical oxygen demand (COD) to establish a baseline to track the effect of the oxygen release product (Adventus EHC-O™) utilization. One concern about the use of Adventus EHC-O™ 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.

The main active ingredient in Adventus EHC-O™ is calcium peroxide. 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 6.85 to 7.06, mostly within the optimum range. Under these conditions, the Adventus EHC-O™ 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 in groundwater as they reach the PRB. The oxygen is then released more slowly, which will assist bioremediation for several years.

Table 3 includes the baseline results of these additional analyses that have been collected in site monitoring wells located immediately downgradient of the proposed PRB. Analytical results collected 30-days after the PRB installation is reported in Section 7.0.

Table 3
Baseline Analytical Results of Electron Acceptors and Oxygen Demand in Downgradient Wells - October 3, 2013

Location	Analytical Lab Concentrations			
	Nitrates	Sulfates	BOD	COD
MW-7	<0.25	0.55	<30	52
MW-9	<0.25	8.7	6.0	43
MW-12	<0.25	17	<5.0	30

Notes:
COD = Chemical oxygen demand; BOD = biochemical oxygen demand;
Analytical laboratory concentrations are expressed in in milligrams per liter (mg/L) micrograms per liter (µg/L).

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 baseline DO concentrations, prior to installation of the PRB, at monitoring wells MW-7, MW-9 and MW12, of which MW-7 and MW-9 currently show the highest concentrations of hydrocarbons, are relatively low (0.23 – 0.31 mg/L) suggesting that less active aerobic biodegradation is currently occurring at these wells. The DO in wells MW-10 and MW-11, located upgradient of the PRB ranged from 0.23 – 0.31 mg/L also suggests minimal aerobic biodegradation is occurring. The trends will be monitored in subsequent monitoring events to evaluate the effectiveness of the PRB.

Oxidation-Reduction Potential

The oxidation-reduction potential (ORP) of groundwater is a measure of electron activity, and is an indicator of the relative tendency of a solute species to gain or lose electrons. The ORP of groundwater generally ranges from -400 millivolts (mV) to +800 mV. In oxidizing (aerobic) conditions favorable to bioremediation, the ORP of groundwater is typically positive; in reducing (anaerobic) conditions, the ORP is typically negative (or less positive).

Measurement of the baseline ORP during this sampling event ranged from -108 to + 1 mV in wells MW-7, MW-9 and MW-12 located within 15 feet downgradient of the PRB and from -42 and -62 in wells MW-10 and MW-11, located within 15 feet upgradient of the PRB, respectfully. As with the DO, the ORP trend will be monitored to evaluate the effectiveness of the PRB in subsequent monitoring events. Measurements collected during the October 2013 baseline and 30-day monitoring events are included in Tables 2 and 5, respectfully

5.0 PRB CORRECTIVE ACTION BACKGROUND AND IMPLEMENTATION

This section discusses the background and implementation of the Remedial Action Workplan (RAW), prepared by Stellar Environmental, dated November 28, 2011 (Stellar Environmental, 2011a). The corrective action activity entailed the installation of a permeable reactive barrier (PRB) containing the Adventus brand oxygen release compound EHC-O™. The PRB trench excavation and installation was conducted by Speelman Excavation, a California-licensed hazardous contractor, under the direct supervision of Stellar Environmental on November 20 and December 4, 2013.

RATIONALE FOR INSTALLATION OF THE PERMEABLE REACTIVE BARRIER

The development of the PRB workplan was initiated when Stellar Environmental requested from ACEH the lead regulator in a letter dated June 10, 2011, to reduce the previously specified quarterly monitoring to semiannually and for the operating bioventing system to be turned off. Mr. Jerry Wickham of ACEH, agreed to allow for the monitoring to be reduced to semiannual allowing for a portion of the saving generated by the reduction in operational and monitoring costs to be used to evaluate—and provisionally to implement—future remediation work to further reduce the concentrations in the hydrocarbon groundwater plume, particularly in front of the downgradient receptor, Redwood Creek, that empties to San Leandro Reservoir. In response Stellar Environmental designed the PRB RAW that was subsequently approved by ACEH in their letter dated December 29, 2011.

Previous applications of oxygen reducing product focused on the upper and mid areas of the contaminant plume to treat two principal areas; the upper yard area (source area), and mid-plume area, immediately downgradient in the roadway area where high residual contamination in the capillary fringe and saturated zone are indicated to be present based on the hydrochemical history of the plume. The proposed workplan presented is to install an *in-situ* reactive zone transverse across the entire width of the contaminant plume in the lowest, most downgradient and accessible area at the crest of the slope bank leading down to the sensitive receptor of Redwood Creek for plume control and passive treatment of the plume over time. The groundwater will be treated as it flows into and through the relatively more permeable reactive PRB zone and prevent further migration of the plume. This remedy will create highly oxygenated barrier zones at critical locations transverse to the plume, focusing depth and loading

based on lithology and known or suspected TPH mass. Adventus brand EHC-O was selected as a more cost-effective and equal alternative to the Regenesis Advanced ORC® product, to be used in the PRB design to inoculate the groundwater.

The PRB should be effective in reducing the toxicity of the plume by accelerating the biodegradation significantly within the first approximately 6-12 months. The mobility of the plume will likewise be reduced, although historical data from the last 6 years suggest that the remnant source between the corporation yard access road and the former UFST excavation area exhibits contaminant persistence due to probable hydrocarbons sorption and possibly lithologic (trap) reasons. The idea of the PRB remedy is to place the oxygenating material within a relatively more permeable matrix installed in a location downgradient of the source where it will intercept contaminants as they migrate in the groundwater flow.

The volume of dissolved hydrocarbons within the generalized area is expected to be reduced within the first 12 months by 50 percent or more—according to the manufacturer's data. This approach assures continued long-term treatment of remaining contaminants through low-cost bioremediation after the chemical oxidation treatment is complete.

PRB IMPLEMENTATION AND FIELDWORK PLANNING

Prior to the field activity, a site visit was made to mark the trench location to obtain utility clearance from both Underground Service Alert and park maintenance personnel. A site health and safety plan (HASP) was prepared for the PRB field activity. The Adventus EHC-O™ was shipped product as a dry powder in 55-gallon drums (each drum containing 250 lbs EHC-O packed in 10 x 25-lb bags) and was delivered directly to the site the week preceding the excavation activity.

Trench work was coordinated with the EBRPD superintendent and plumbers who conducted a planned shut-off, draining and subsequent repair of a 4-inch diameter high pressure water main that crossed the trench area excavation. Prior to the trench excavation and stockpiling of hydrocarbon contaminated soils, the Bay Area Air Quality Management District (BAAQMD) was notified as per Regulation 8, Rule 40.

Photodocumentation of the PRB installation field activity is contained in Appendix E. Appendix F includes the BAAQMD Regulation 8, Rule 40 notification form and associated contaminated soil waste disposal documentation.

PRB DESIGN AND INSTALLATION

The PRB trench was constructed by excavating a trench to approximately 22 feet bgs utilizing an excavator. To prevent sidewall collapse in the trench, the upper 10 feet of the trench depth was

stepped outward by excavating with a 4-foot wide bucket followed by using the excavator equipped with a 3 foot wide bucket to excavate the 10-22 depth interval. Excavated contaminated soils were a stockpiled onsite, on and covered with visqueen plastic. The Adventus EHC-O product (1,250 lbs.) was delivered directly to the site the previous week. The PRB installation entailed the following design parameters:

- Trench was 40 feet long and 3 foot wide in the contaminated zone that was encountered from approximately 10 -22 feet bgs.
- The EHC-O inoculation zone ranged from 10-22 feet bgs
- Total treatment volume of the PRB = 1,440 ft^3
- EHC-O was mixed into the drain rock backfill using the excavator bucket as it was placed into the trench excavation in approximately 1 foot lifts.
- The total of 1,250 pounds of EHC-O was mixed with the drain rock and emplaced in the trench from 22 to 10 feet bgs as it was backfilled.
- The trench was backfilled to approximately 10 feet bgs with ¾-inch drain rock
- Approximately 100 lbs of EHC-O was used every 1-foot lift between the trench base at 22 feet bgs to 10 feet bgs. The oxidant loading was based on a conservative average of 8,000 micrograms per liter (µg/L) TVHg and TEHd. The dosage was determined based on COD reported in monitoring wells, existing geochemical conditions and incorporating safety factors to account for unknown oxygen sinks.
- Backfill Porosity - 25% (was achieved with clean imported ¾-inch backfill drain rock having greater permeability and porosity than surrounding area soils).
- A silt barrier construction fabric was placed on top of the drain rock to separate it from the overlying clayey silt to retard these particles from entering the drain rock and diminishing the effectiveness of the EHC-O product.
- Clean native overburden of clayey silt excavated from the trench was used to backfill the trench between 0 – 10 feet bgs.
- Approximately 90-95% compaction was achieved during backfilling of the trench utilizing the weight of the excavator equipped with a sheepsfoot roller compactor.

FIELD OBSERVATIONS DURING THE PRB INSTALLATION

During advancement of the trench, there was an obvious color change observed at approximately 11-12 feet bgs that demarked the boundary between the clean overburden light brown clayey silt soil and the underlying discolored blue-green contaminated soil interval had a strong petroleum

odor. The top of the discolored soil demarked the upper reach of the vadose "smear" zone. The observed discoloration resulted from hydrocarbons entrained in the groundwater plume that had sorbed onto the downgradient soil. Minimal groundwater was observed to infiltrate into the open trench and this was primarily observed at the 21-22 foot depth. The trench was backfilled immediately to prevent potential caving and thus the groundwater was not observed to equilibrate in the trench

Figure 8 is site plan showing the location of the PRB in relation to the site wells and Redwood Creek. Figure 9 is a cross-section showing the construction design of the PRB in relation to the contaminated zone and Redwood Creek.

CONTAMINATED SOIL PROFILING AND DISPOSAL OF STOCKPILED SOIL

On behalf of the EBRPD, we prepared and submitted to a waste profile package utilizing the analytical results from the contaminated soil stockpile sample (SP1) that was collected on November 20, 2013. The sample was analyzed for TVHg, TEHd, methyl tert-butyl ether (MTBE), benzene, toluene, ethylbenzene, total xylenes, (BTEX), and the LUFT metals; lead; chromium; zinc; nickel; and cadmium. The initial stockpile soil analysis showed all detectable concentrations of the LUFT metals were acceptable for Class II landfill disposal without further testing.

On December 4, 2013, 84.38 tons of contaminated soil was loaded and transported offsite by Greg's Trucking and disposed of at the Vasco Road Landfill in Livermore, California. Double 9 CY transfer trucks were used to transport the petroleum-contaminated soil with the appropriate non-hazardous waste manifest to the receiving landfill facility. Care was taken to avoid overloading the haul trucks to avoid spillage onto roadways.

The soil profile documentation and non-hazardous transport manifests and weight tickets for offsite removal and disposal are included in Appendix G.

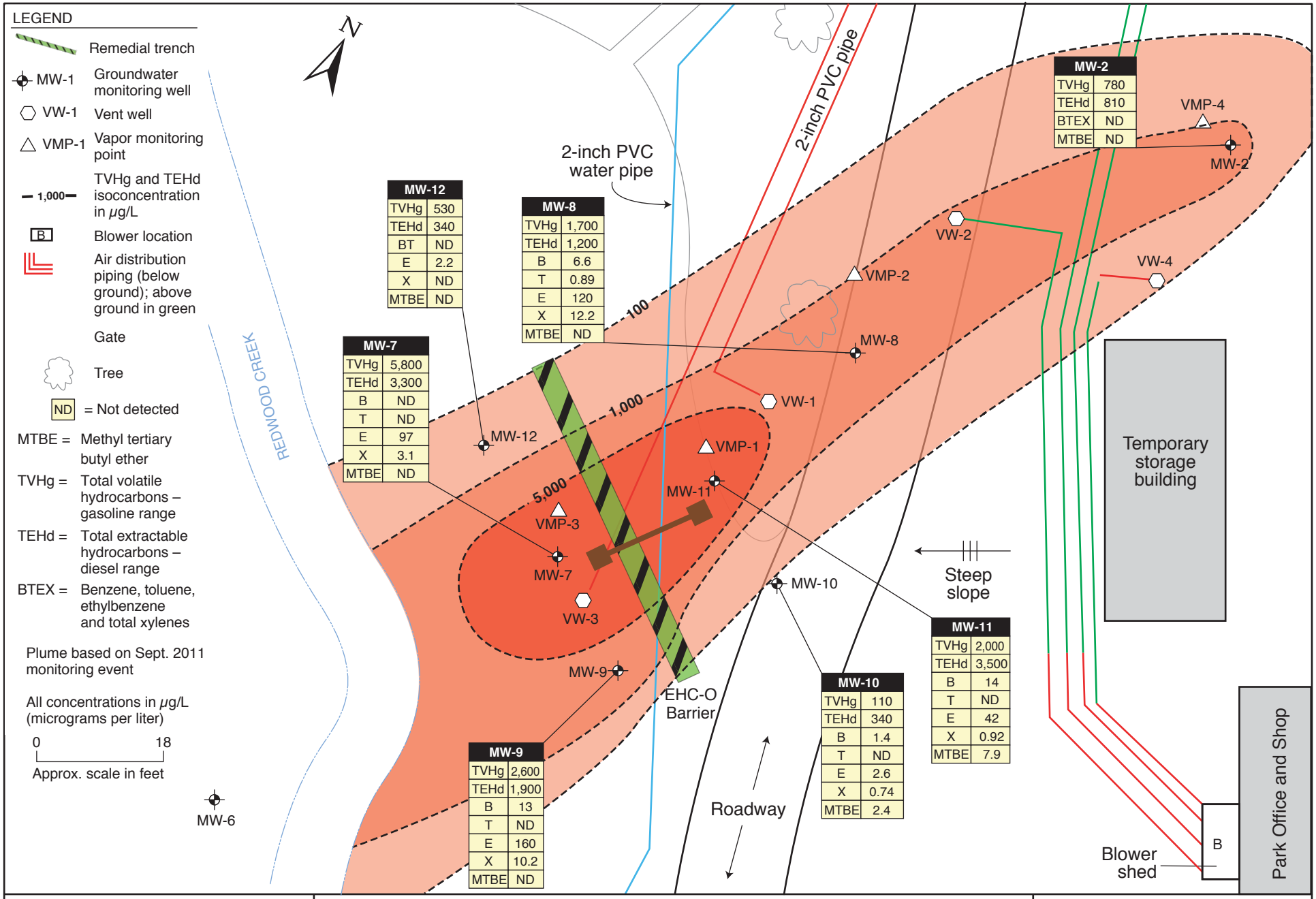
ESTIMATED CONTAMINANT MASS REMOVAL

Contamination Removed During Soil Excavation

Based on manifest records 84.38 tons of contaminated soil was removed from the site. The composite stockpile profile sample analysis showed 110 mg/kg TEHd; 41 mg/kg TVHg; 0.441 mg/kg BTEX or a total petroleum hydrocarbons (TPH) = 151.44 mg/kg. Using the TPH concentration of 151.44 mg/kg in 84.38 tons (76,548 kilograms) translates into a mass removal of approximately 63 pounds of TPH removed by the PRB trench excavation.

SITE RESTORATION

The trench was backfilled from the base at 22 feet bgs to 10 feet bgs with 68. 59 tons of clean imported 0.5 - 0.75-inch crushed drain rock that was mixed with the EHC-O product. A silt barrier construction fabric was place on top of the drain rock to separate it from the overlying clean native overburden of clayey silt excavated from the trench was re-used to backfill the trench between 0 – 10 feet bgs. Approximately 90-95% compaction was achieved during backfilling of the trench utilizing the weight of the excavator equipped with a sheeps-foot roller compactor. The site was graded smooth after removal of the waste soil stockpile on December 4, 2013.



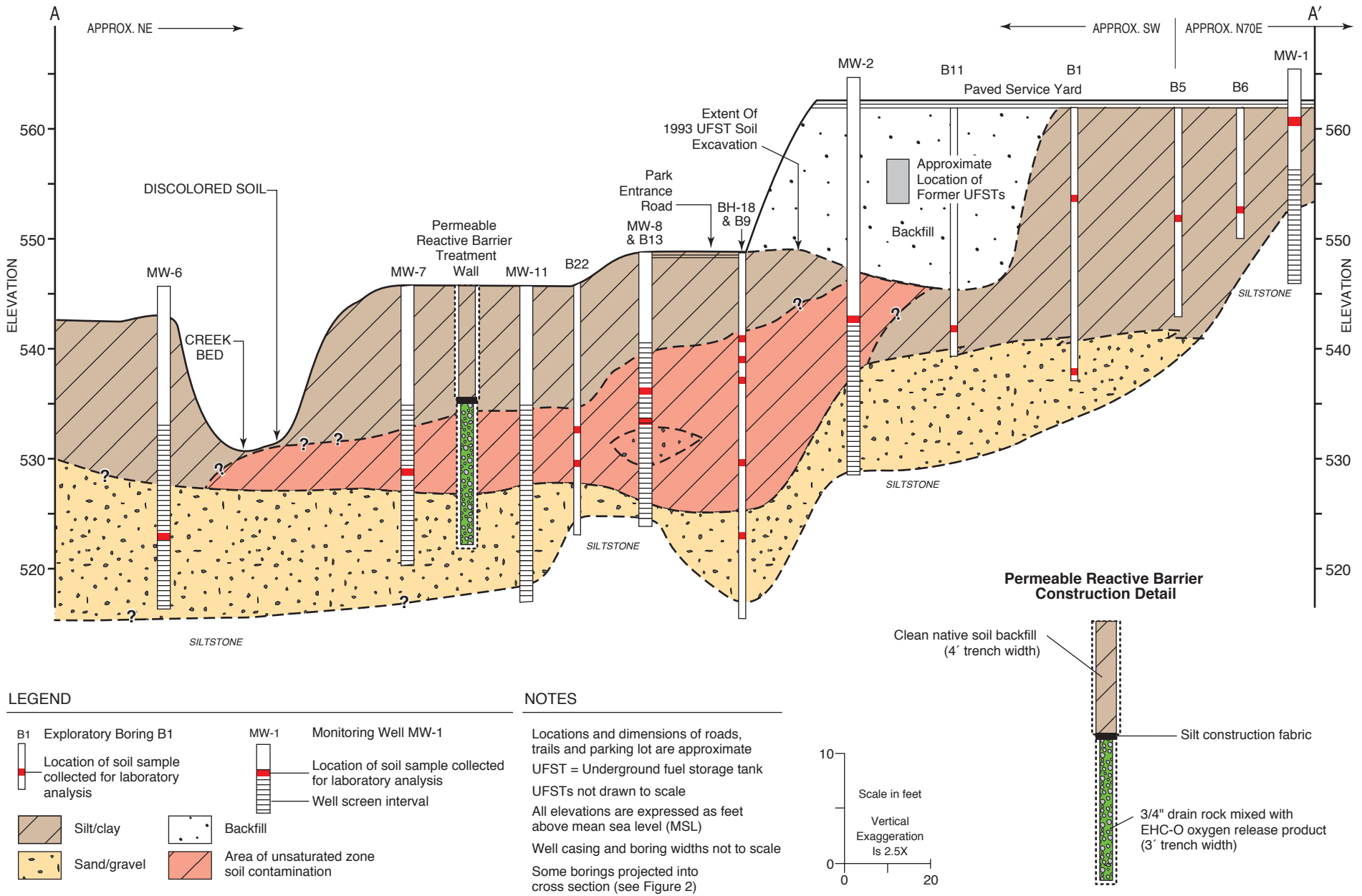
STELLAR ENVIRONMENTAL SOLUTIONS, INC
GEOSCIENCE & ENGINEERING CONSULTING

PLAN VIEW OF REMEDIAL EHC-O BARRIER TREATMENT WALL & TPH PLUME
7867 Redwood Rd, Oakland, CA

Figure 8

by: MJC | DECEMBER 2013

2011-02-04



STELLAR ENVIRONMENTAL SOLUTIONS, INC
GEOSCIENCE & ENGINEERING CONSULTING

CROSS SECTION A-A' SHOWING LOCATION OF TREATMENT WALL AND CONSTRUCTION DETAIL
Redwood Regional Park Service Yard, Oakland, CA

Figure 9

by: MJC | JANUARY 2014

2011-02-05

6.0 30-DAY POST-PRB INSTALLATION EVALUATION

This section presents the field and laboratory results of the 30-day post-PRB installation monitoring event. In accordance with the PRB RAW, groundwater monitoring and sampling of the five key wells surrounding the PRB (downgradient wells: MW-7, MW-9, MW-12 and upgradient wells: MW-10 and MW-11) was conducted to monitor the effectiveness of the PRB. Groundwater monitoring well water level measurements, purging, sampling, and field measurements was conducted on December 30, 2013, approximately 1 month after the November 20, 2013 installation of the PRB, by Blaine Tech Services under the supervision of Stellar Environmental personnel.

The 30-day monitoring included analysis of TPH contaminants in all five of the key wells and analysis of the electron acceptors and oxygen demand analyses to track utilization of the PRB product was done in the 3 key wells downgradient of the PRB.

Table 4 summarizes the contaminant analytical results and Table 5 summarizes the results of the electron acceptors and oxygen demand analyses in the 30-day event. Appendix C contains the certified analytical laboratory reports and chain-of-custody record.

GROUNDWATER ELEVATION IN KEY WELLS

Due to the below seasonal average rainfall, the 30-day groundwater levels measurement showed an average rise of only 0.413 feet in the five key wells since the previous monitoring on October 3, 2013.

ANALYTICAL RESULTS

Volatile Organic Compounds

Groundwater contaminant concentrations exceeded the groundwater ESL for TVHg in all five of the key wells sampled (MW-7, MW-9, MW-10, MW-11 and MW-12) and the ESL for TEHd in 4 of the 5 key wells. The ESL for benzene was exceeded in both wells where it was detected (MW-9 and MW-11); ethylbenzene was detected in all 5 wells but only exceeded the ESL in MW-7 and MW-9; and MW-11. Other contaminants were detected but below their respective ESLs; MTBE was detected in MW-10 and MW-12; toluene was detected in MW-10; and total xylenes were detected in wells MW-9 and MW-10.

All of the contaminant concentrations were detected within their historical ranges suggesting that insufficient time has elapsed to see a reduction in concentration compared to both the baseline concentrations in the October 2013 monitoring or previous events.

Table 4
30-Day Post-PRB Installation Groundwater Sampling
Analytical Results – December 30, 2013

Location	Field Measurements			Contaminant Concentrations					
	Dissolved Oxygen	ORP	TEHd	TVHg	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE
MW-7	1.44	-83	**4,200**	**6000**	<0.5	<0.5	**100**	<0.5	<2.0
MW-9	0.93	-100	**2,700**	**3,000**	**22**	<0.5	**120**	4.6	<2.0
MW-10	2.75	26	<52	**220**	<0.5	0.61	2.0	1.5	3.7
MW-11	1.14	-64	**2,000**	**2,500**	**13**	<0.5	29	<0.5	<2.0
MW-12	1.40	61	**190**	**210**	<0.5	<0.5	0.68	<0.5	2.5
Groundwater ESLs	-	-	*100/ 640*	*100 / 500*	*1.0 / 27*	*40 / 130*	*30 / 43*	*20 / 100*	*5.0 / 1,800*

Notes:

ESLs = Water Board Environmental Screening Levels, where groundwater is/is not a potential drinking water resource (Water Board, 2013)

TEHd = total extractable hydrocarbons - diesel range
TVHg = total volatile hydrocarbons - gasoline range
MTBE = methyl tertiary-butyl ether
NLP = no level published

All contaminant concentrations are expressed in micrograms per liter (µg/L), equivalent to parts per billion. Samples in **bold-face** type 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).

Table 5
30-Day Analytical Results of Electron Acceptors and Oxygen Demand in Downgradient Wells - December 30, 2013

Location	Analytical Lab Concentrations			
	Nitrates	Sulfates	BOD	COD
MW-7	<0.05	46	9.2	48
MW-9	<0.05	34	11	77
MW-12	<0.05	16	<5.0	55

Notes:
COD = Chemical oxygen demand; BOD = biochemical oxygen demand;
Analytical laboratory concentrations are expressed in in milligrams per liter (mg/L) micrograms per liter (µg/L).

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 1 to 2 milligrams per liter (mg/L) of DO in groundwater. During aerobic biodegradation, DO levels are reduced in the hydrocarbon plume as microbial respiration occurs. Therefore, DO levels that vary inversely to hydrocarbon concentrations are consistent with the occurrence of aerobic biodegradation.

To help evaluate the effect of the PRB, DO was measured in the key site wells during the October 2013 sampling event to establish a baseline for comparison in future monitoring events. The baseline post-purge measurements during October 2013 event showed a DO concentration ranging from 0.17 - 0.87 mg/L in the downgradient key site wells (MW-7, MW-9 and MW-12) and a DO concentration ranging from 0.23 - 0.31 mg/L in the upgradient (of the PRB) key site wells MW-10 and MW-11. The 30-day, post-PRB installation sampling event measured DO concentrations ranging from 0.93 in downgradient key site well MW-9 to 2.75 mg/L in the upgradient key well MW-10. This represents an average increase of over 400% of available oxygen in the 5 key wells that can be attributed to the PRB.

It should be noted that DO concentrations in the field are not indicative of the total amount of oxygen release by EHC-O™ product as the oxygen is rapidly utilized by microorganisms.

Oxidation-Reduction Potential

In oxidizing (aerobic) conditions, the ORP of groundwater is typically positive; in reducing (anaerobic) conditions, the ORP is typically negative (or less positive).

Combined measurement equal to -154 mV of the ORP range of 61 to -100 mV in wells MW-7, MW-9 and MW-12 (downgradient of the PRB) during the 30-day sampling event increased (became more positive) to -122 mV indicating an increase in oxidizing aerobic conditions favorable to bioremediation.

Chemical and Biochemical Oxygen Demand, Nitrates, and Sulfates

Alternate electron acceptors were measured during this monitoring and sampling event in wells MW-7, MW-9 and MW-12 located downgradient of the PRB location; which included nitrates, sulfates, BOD and COD to establish a baseline to track the effect of the oxygen release product (Adventus EHC-O™) utilization.

The presence of sulfates and absence of nitrates in wells MW-7, MW-9 and MW-12 is generally consistent with the DO and ORP data. These results indicate that some degree of aerobic degradation is likely occurring at the site; however there is no discernable trend and/or correlation to hydrocarbon concentration in this 30-day monitoring event.

7.0 EVALUATION OF HYDROCHEMICAL TRENDS AND PLUME STABILITY

This section evaluates the observed hydrochemical trends with regard to plume stability and migration of the center of contaminant mass toward Redwood Creek. An assessment is made as to the nature of residual contaminated soil that acts as a continued source of groundwater contamination. A conceptual model (incorporating site lithology, hydrogeology, and hydro-chemistry is presented to explain the spatial extent and magnitude of the dissolved hydrocarbon plume.

CONTAMINANT SOURCE ASSESSMENT

Site UFSTs were removed (i.e., discharge was discontinued) in 1993, and some but not all of the source area excavation contaminated soil was removed. That residual hydrocarbon contamination entrained in the soil and capillary fringe has been extremely hard to mitigate, with only partial success achieved through the bioventing and oxygen providing product in-situ injection that has been implemented since 2005.

Success at reducing the significant contamination in the mid-field plume area represented by well MW-8 has been achieved along with mitigation of the 2007 timeframe increase at the upper plume area represented by well MW-2. But the lower plume area represented by the "guard" wells MW-7 and MW-9 were not significantly reduced by the combination of bioventing and March 2010 ORC™ injection. The PRB installed this November 2013 to treat the plume on the downgradient border was designed to mitigate against the hydrocarbon impact to the Redwood Creek and subsequent monitoring events of will be needed evaluate the effectiveness of this remedy.

Borehole soil sampling has provided data on the extent and magnitude of soil contamination in the vicinity of the former UFSTs ("source area") and the outlying area (in the capillary fringe above the groundwater plume). Soil contamination appears constrained to the unsaturated zone and the underlying saturated sediments on the weathered bedrock surface. The 2010 ORC™ injection effort was aimed at mitigating the apparent large mass of residual TPH contamination in the unsaturated zone, primarily in the area between the former UFSTs and the park entrance roadway, with the contaminated zone thinning toward Redwood Creek. Seasonal desorption of contamination in this unsaturated zone occurs during the rainy season and during high-water

periods, acting as a long-term source of dissolved contamination. Previous ORC™ injection programs—which resulted in permanent reductions at the peripheral plume margins, but were followed by rebound (to pre-injection conditions) within the central portions of the plume—indicate that site conditions support aerobic biodegradation. However, biodegradation is limited by oxygen deficiency in the unsaturated zone.

Based on this conceptual model—and using conservative assumptions for equilibrium partitioning, contaminant geometry, soil moisture, and previous laboratory analytical results for TPH in soil—estimates of TPH mass in soil were calculated based on 2004 and earlier borehole data. Residual TPH in vadose zone soil is estimated at 1,400 to 7,000 pounds (100 to 600 gallons of gasoline), compared to a mass of TPH in groundwater estimated at 1 to 10 pounds (0.1 to 1.0 gallon of gasoline). The hydrocarbon mass in groundwater is likely higher than originally estimated (based on post-2004 data).

Soil and groundwater contamination distribution and site lithologic and hydrogeologic conditions have shown that residual soil contamination, unless abated, will continue to be a source of long-term groundwater contamination via seasonal desorption and migration.

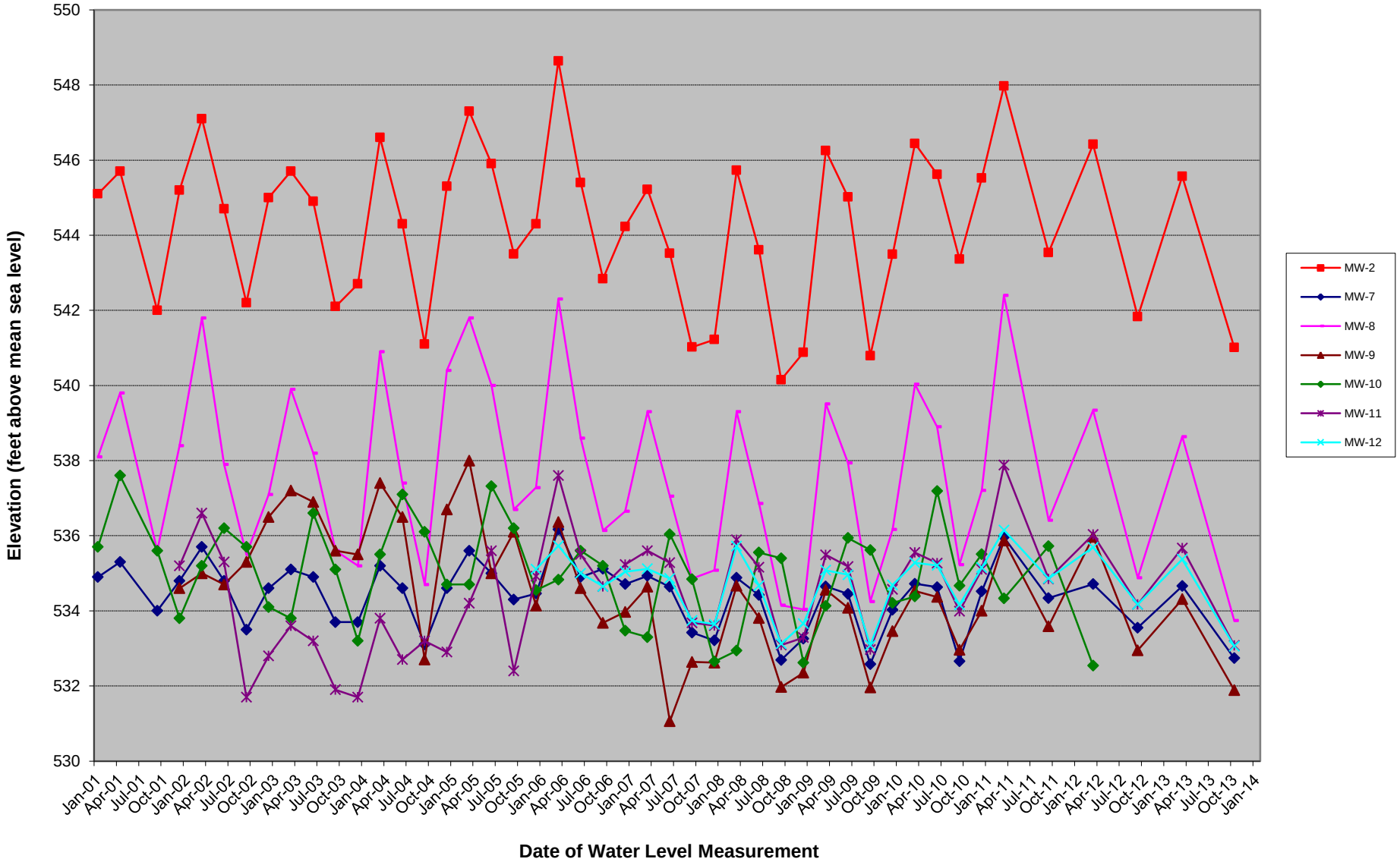
WATER LEVEL TRENDS

Appendix D contains historical groundwater elevation data. Figure 10 shows a trendline of site groundwater elevations in key wells (those within the contaminant plume). The data support the following conclusions:

- Groundwater elevations in all of the monitored site wells showed a seasonal fluctuation in 2012-2013—from an average increase of 1.8 feet (from September 2012 to March 2013) to an average decrease of 2.75 feet (from March 2013 to October 2013). The 30-day post-PRB installation monitoring of 5 key downgradient well showed only a slight average increase of 0.41 feet (from October 2013 to December 2013) reflecting the current low rainfall season.
- In all wells, the lowest elevations have generally been observed during the end of the dry season and the highest elevations at the peak of the rainy season. This is a common seasonal trend observed in the upper water-bearing zone in the Bay Area.
- Groundwater elevation trends and magnitudes are similar between wells.
- Overall groundwater flow direction is consistently to the west-southwest (toward Redwood Creek). Localized (on the scale of tens of feet) groundwater flow direction appears to vary within the general flow direction, likely controlled by bedrock surface topography.

- The historical groundwater gradient in the area of the contaminant plume is consistently around 0.1 feet/foot.

Figure 10: Historical Groundwater Elevations in Site Wells
Redwood Regional Park Service Yard - Oakland, California



HYDROCHEMICAL TRENDS

Concentrations of contaminants in an individual well can fluctuate over time for one or more reasons—contaminant migration, seasonal effects due to fluctuating groundwater levels (i.e., desorption from the unsaturated zone and/or dilution of saturated zone contamination), and/or natural attenuation (plus enhancement by active remediation measures such as ORC™ injection, bioventing and the PRB). These hydrochemical trends can result in changes in the lateral extent and magnitude of a dissolved contaminant plume.

The most consistent trend in the wells located within the centerline of the plume has been a seasonal influence of desorption following winter rains, with a resultant increase in dissolved hydrocarbon concentration in the groundwater.

Because the quarter-to-quarter comparisons can be unduly influenced by seasonal effects that mask longer trends, it is useful to compare same-season data over time to determine if concentrations are increasing, decreasing, or remaining stable. Our evaluation of hydrochemical trends focuses on gasoline and diesel, which, when combined, represent the majority of the contaminant mass. To more closely evaluate plume stability differences, the following discussion focuses on four separate portions of the plume relative to the long axis (along the hydraulic gradient): "upgradient" (trailing edge of plume); "mid-plume"; "downgradient"; and "plume fringe."

Important components of plume stability include: degree of contaminant fluctuations in individual wells over time; changes in the lateral extent of the plume; and changes in the location of the center of contaminant mass within the plume.

Historically, the contaminant plume appeared to have disconnected from the source such that historical downgradient concentrations were higher than upgradient (near the source) concentrations. However, a significant increase in gasoline and diesel concentrations in source area well MW-2 was observed beginning in approximately September 2007. The increase continued, even after individual purging events, into 2010. Stellar Environmental commenced with ORC™ injection near this well and in the general area of the plume in February 2010. Based on that apparent success, In March 2010, a wider ORC™ injection into areas of the plume was initiated. This has not resulted in the same success at reducing concentrations in the lower plume area as it did in the upper and mid-field of the plume. The two guard wells MW-7 and MW-9 generally have comparative TPHg + TEHd, however there was a large difference over the last year. Well MW-7 showed a combined 9,100 µg/L TPHg + TEHd in September 2011 compared with 8,700 µg/L TPHg + TEHd in September 2012, which is pretty comparable. But well MW-9 showed a combined 4,500 µg/L TPHg + TEHd in September 2011 compared with a significant increase to 18,600 µg/L TPHg + TEHd in September 2012. The contaminants in

source area MW-2 have showed a steady decrease since March 2010, with the mid and downgradient areas of the plume (MW-7, MW-9 and MW-11 exhibiting the highest contaminant concentrations.

To evaluate plume stability with regard to changes in the center of contaminant mass, we evaluated concentrations of TPH (gasoline and diesel combined) in individual wells over time. The data show no obvious correlation between maximum TPH concentrations and well locations, suggesting high plume instability. Since January 2001, maximum TPH concentrations have been variously detected in upgradient, mid-plume, and downgradient wells. These variations are likely due in large part to differing contaminant mass in unsaturated zone soils at particular locations, resulting in variable amounts of desorbed mass to the plume during high water conditions. The following discusses hydrochemical trends in each of the upgradient, mid-plume, and downgradient portions of the site, as well as at the fringes of the plume.

Upgradient Hydrochemical Trends

MW-2. As described in Section 4.0, this source area well historically has shown low to trace (sometimes non-detectable) contaminant levels. However, since September 2007, well MW-2 concentrations increased dramatically, suggesting desorption from the original upgradient source area as a result of the drought-induced drop in water levels. In September 2008, a new historic maximum of 40,000 µg/L of gasoline was observed in MW-2 and a new historic maximum of diesel at 37,000 µg/L was observed in March 2009. In March 2010, Stellar Environmental conducted a limited ORC™ injection, which has dramatically decreased concentrations of both gasoline and diesel over time and in this October 2013 event, the diesel concentration measured 67 µg/L and the gasoline concentration measured 120 µg/L. Figure 11 shows hydrochemical trends for gasoline and diesel in MW-2.

Mid-Plume Trends

MW-8. Concentrations of TVHg in MW-8, located approximately 60 feet downgradient of MW-2, have been generally decreasing since 2005: from a historic high of 33,000 TPHg µg/L observed in June 2005 to the lowest TPHg concentration of 180 µg/L in December 2010 to 1,700 µg/L in this latest event. TEHd concentrations had remained fairly stable until a TEHd spike of 13,000 µg/L was observed in March 2008; however, the concentration has since decreased to the 260 µg/L observed in this latest event. This fluctuation demonstrates that significant contaminant mass entrained in the soil continues to "feed" the dissolved concentration, as demonstrated by periods of recharge represented during the March 2008 sampling event. As contaminant concentrations decrease in the source area, contaminant concentrations in this well will most likely decrease as the plume migrates downgradient. Both gasoline and diesel concentrations have fluctuated widely but follow a well-established seasonal fluctuation pattern. The strong seasonal effect is visually apparent, with annual maximum concentrations generally occurring in

late winter/early spring and annual minimum concentrations generally occurring in the fall/winter. Figure 12 features gasoline and diesel hydrochemical trends in MW-8.

Figure 11: Gasoline and Diesel Hydrochemical Trends: Well MW-2; 2005 - 2013

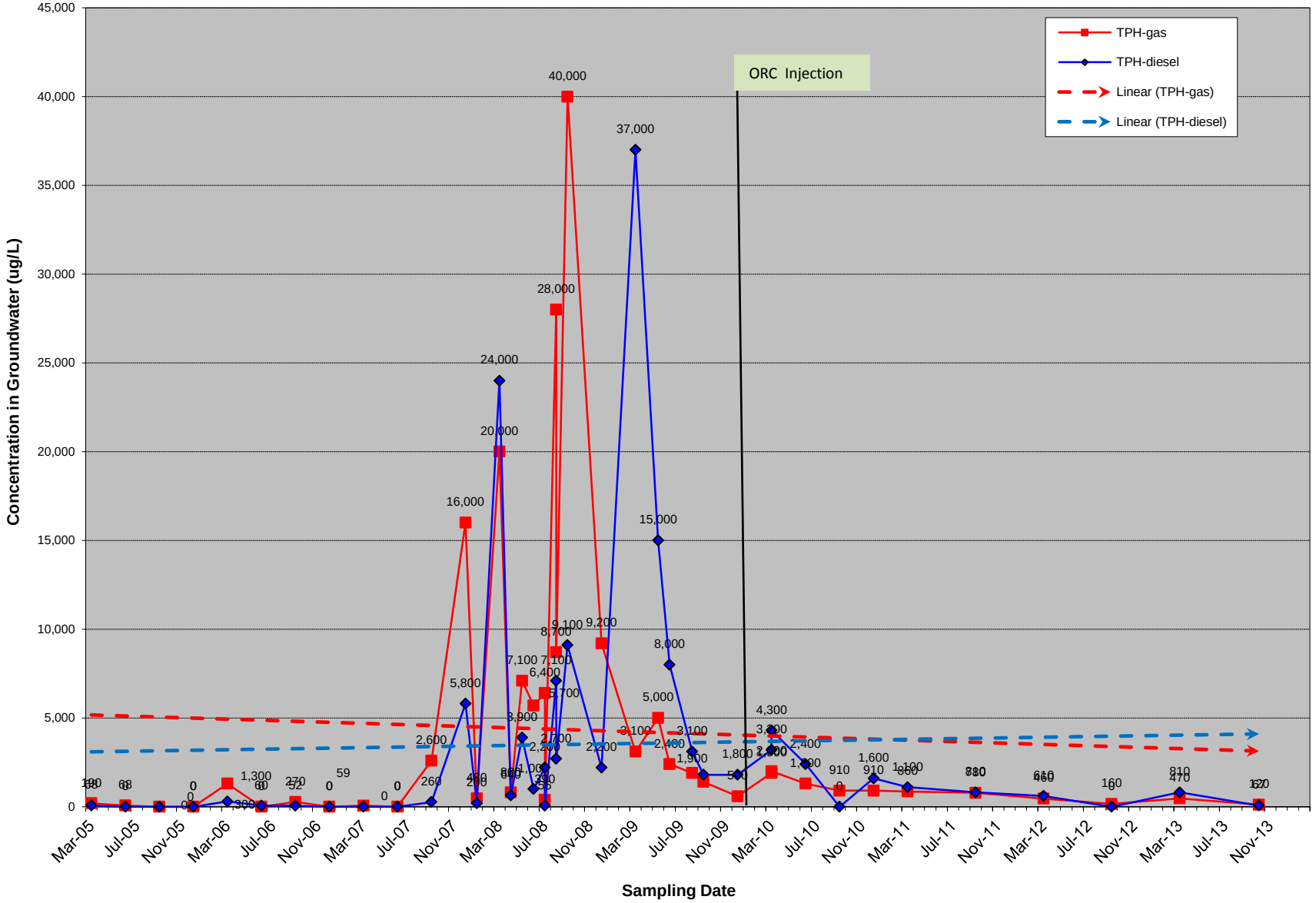
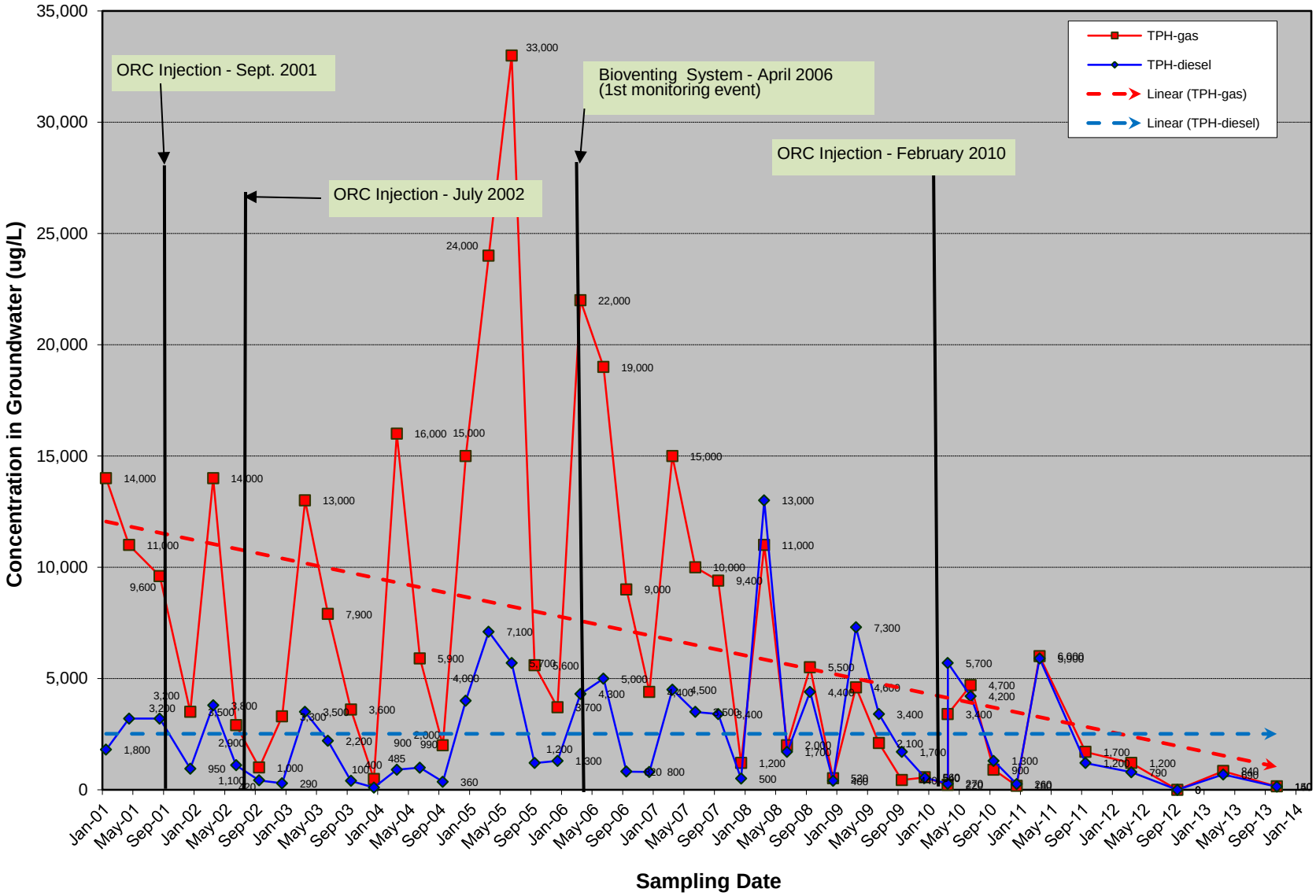


Figure 12: Gasoline and Diesel Hydrochemical Trends: Well MW-8
Redwood Regional Park Service Yard, Oakland, California



MW-11. This well is located in the lower part of the mid plume zone, along the plume centerline, approximately midway between upgradient well MW-8 and downgradient guard well MW-7. Figure 13 shows hydrochemical trends for gasoline and diesel in this well. Gasoline and diesel concentrations were greatly reduced in 2001, and this was followed by an equally large increase by late 2002. Since that time, concentrations have fluctuated widely, with a strong seasonal effect. However, both diesel and gasoline concentrations in this well demonstrated a generally decreasing trend since 2008 and were within historical range.

Downgradient Hydrochemical Trends

MW-7 and MW-9. These wells represent the high-concentration area of the central plume at the downgradient area approximately 20 feet from Redwood Creek. Both of these wells show concentrations of diesel and gasoline within historical ranges relative to the last monitoring event with gasoline concentrations on an overall downward trendline and diesel on a slightly increasing one.

Figure 14 shows hydrochemical trends for gasoline and diesel in MW-7. Gasoline has shown strong fluctuations in concentration, but generally stable and within historical range since 2008. However, the diesel concentration trend has historically been fairly stable to slightly increasing trend. Figure 15 shows hydrochemical trends for gasoline and diesel in MW-9, with a rise in diesel concentration in the December 2013 30-day post-PRB installation monitoring event relative to the October 2013 sampling but a significant decrease compared to the historical maximum of 13,000 µg/L gasoline was observed two years ago in September 2010 and the 10,000 µg/L recorded in September 2012.

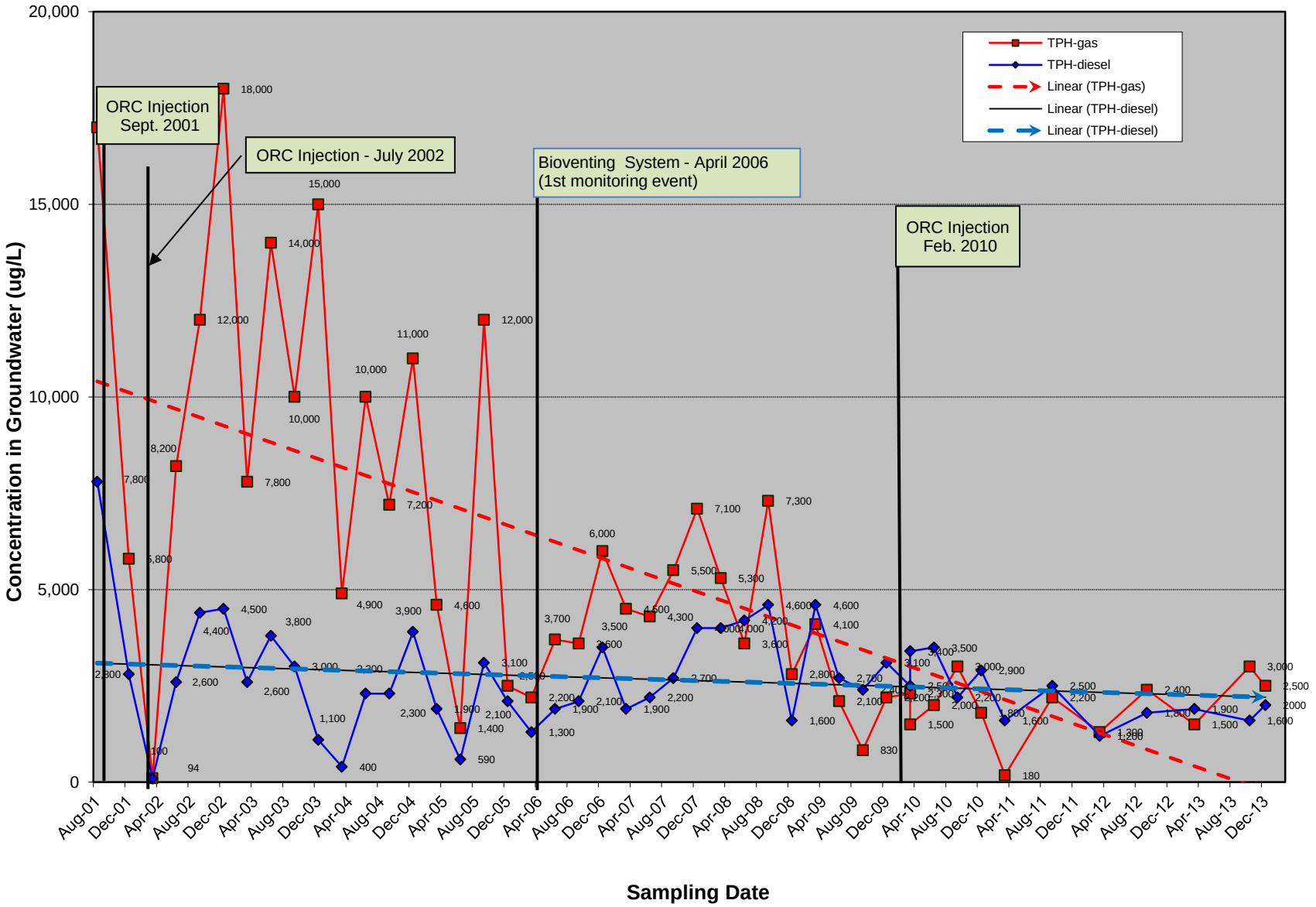
Plume Fringe Zone Trends

MW-10. This well is located on the southern edge of the plume, in the mid-plume portion relative to the longitudinal axis. Figure 16 shows hydrochemical trends for gasoline and diesel in this well. Concentrations of gasoline generally remained stable compared to 2009, with only slight increases observed above 100 µg/L and a downward trend in 2013. The diesel concentration trend appears stable with a slightly increasing trend. The historic maximum of 2,100 µg/L diesel was recorded in 2001 and the second highest of 1,200 µg/L diesel was observed during in March 2011.

MW-4 (former). This well was located on the northern edge of the plume, just upgradient of Redwood Creek. Other than anomalous diesel detection in June 2004, no contamination had been detected in this well since December 2001. Due to poor recharge in this well, the well was destroyed in November 2005 and replaced by well MW-12 (in an adjacent position).

MW-12. The initial sampling of MW-12 showed elevated petroleum concentrations up to 1,300 µg/L, but those concentrations declined until March 2008 when a spike was observed. Concentrations have fluctuated since then, but are below the historical maximum observed and show a decreasing contaminant trend. Figure 17 shows hydrochemical trends for gasoline and diesel in this well.

Figure 13: Gasoline and Diesel Hydrochemical Trends: Well MW-11
Redwood Regional Park Service Yard, Oakland, California



Stellar Environmental Solutions, Inc.

Figure 14: Gasoline and Diesel Hydrochemical Trends: 2011-2013
Well MW-7, Redwood Regional Park Service Yard, Oakland, C

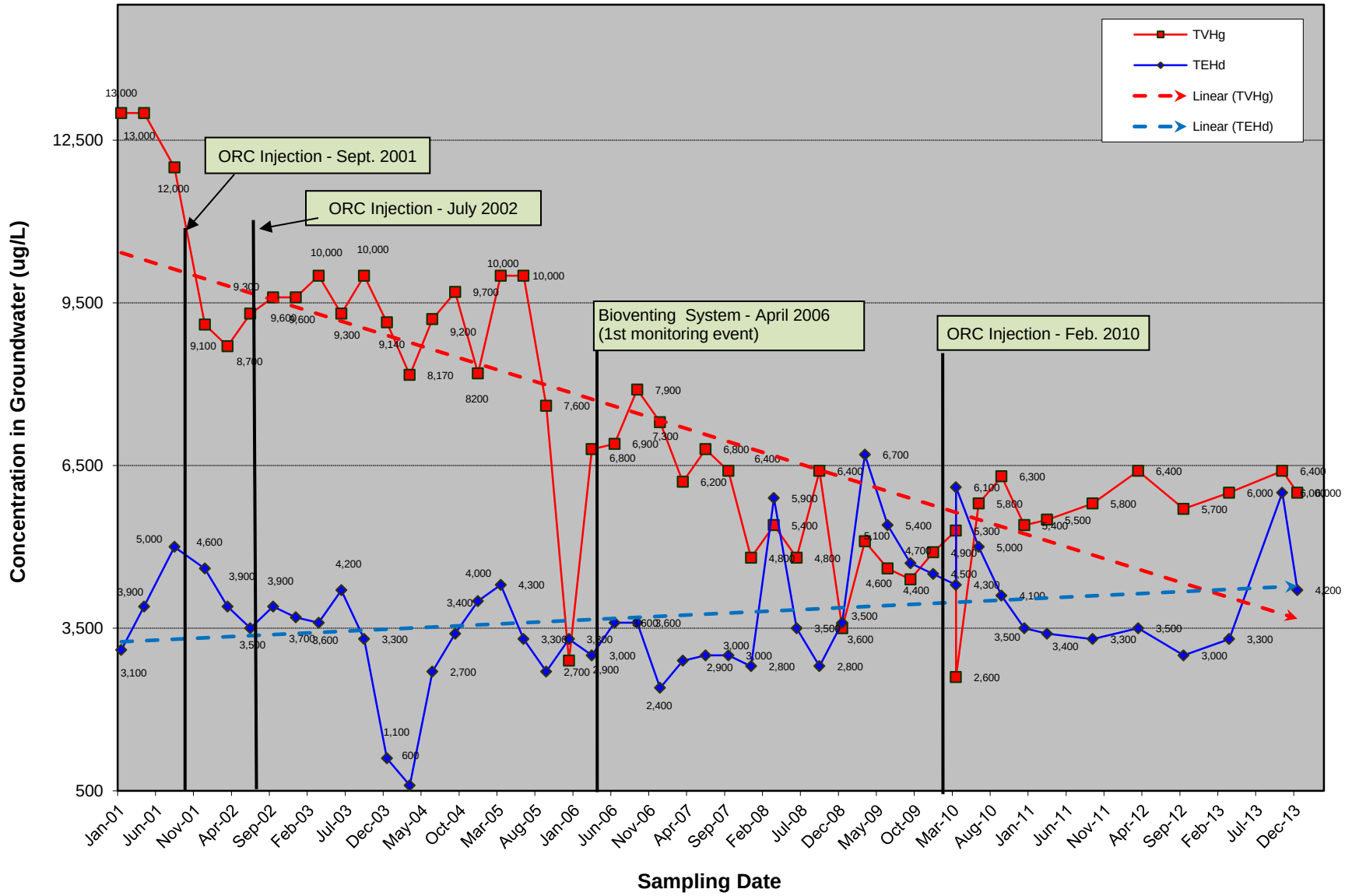
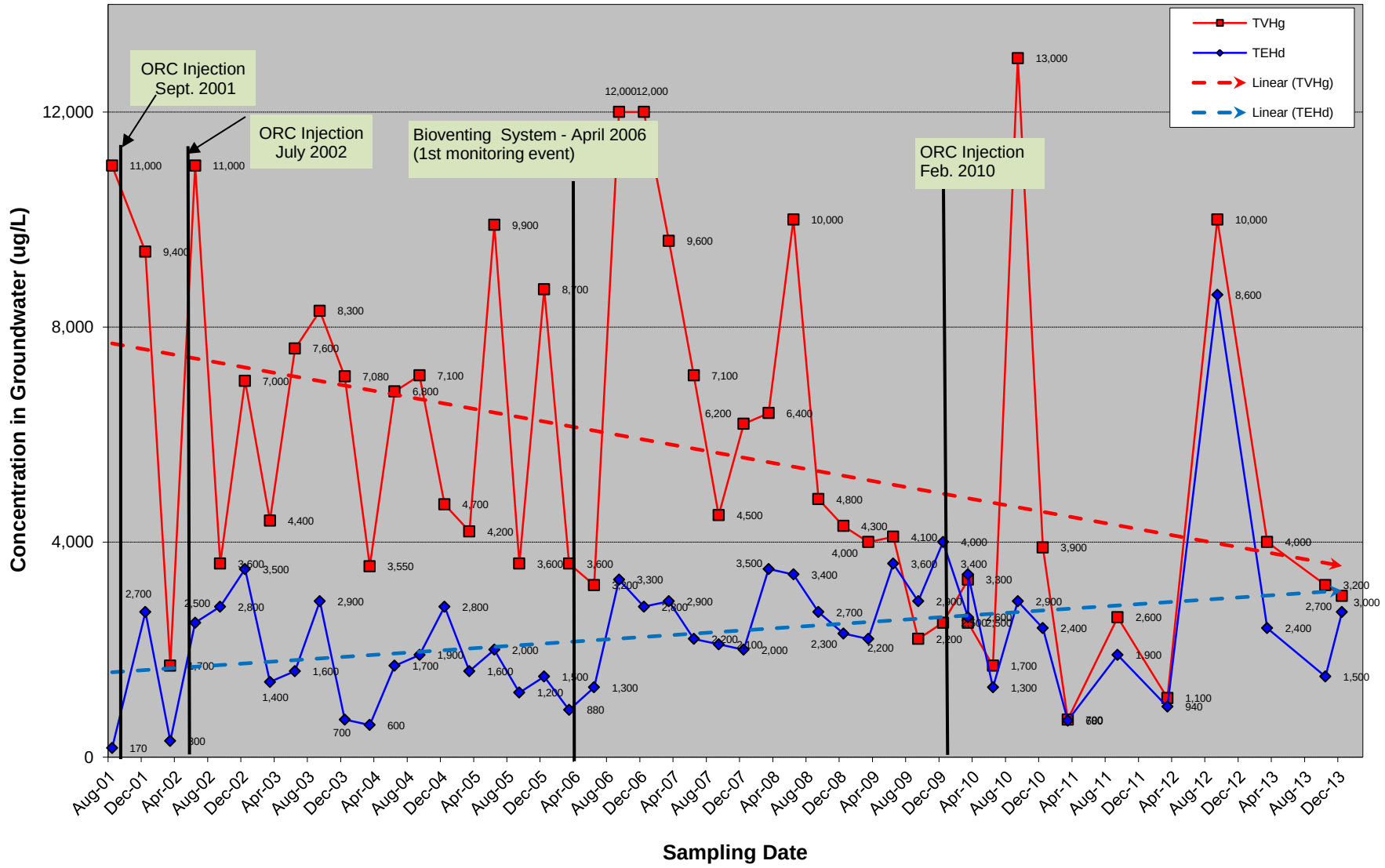


Figure 15: TPH-gasoline and TPH-diesel Hydrochemical Trends: 2001-2013

Well MW-9, Redwood Regional Park Service Yard, Oakland, California



Stellar Environmental Solutions, Inc.

Figure 16: Gasoline and Diesel Hydrochemical Trends: 2001-2013

Well MW-10, Redwood Regional Park Service Yard, Oakland, California

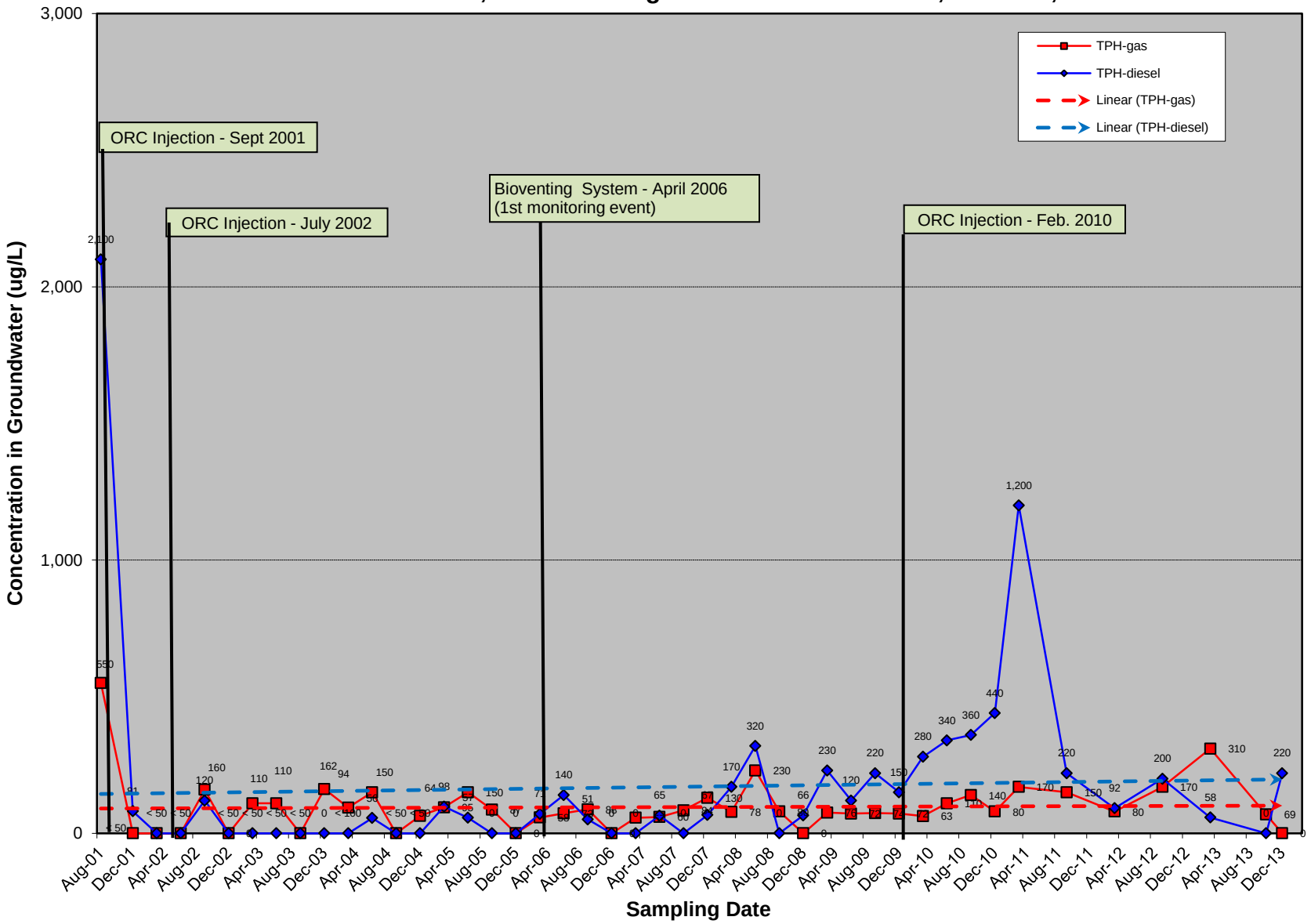
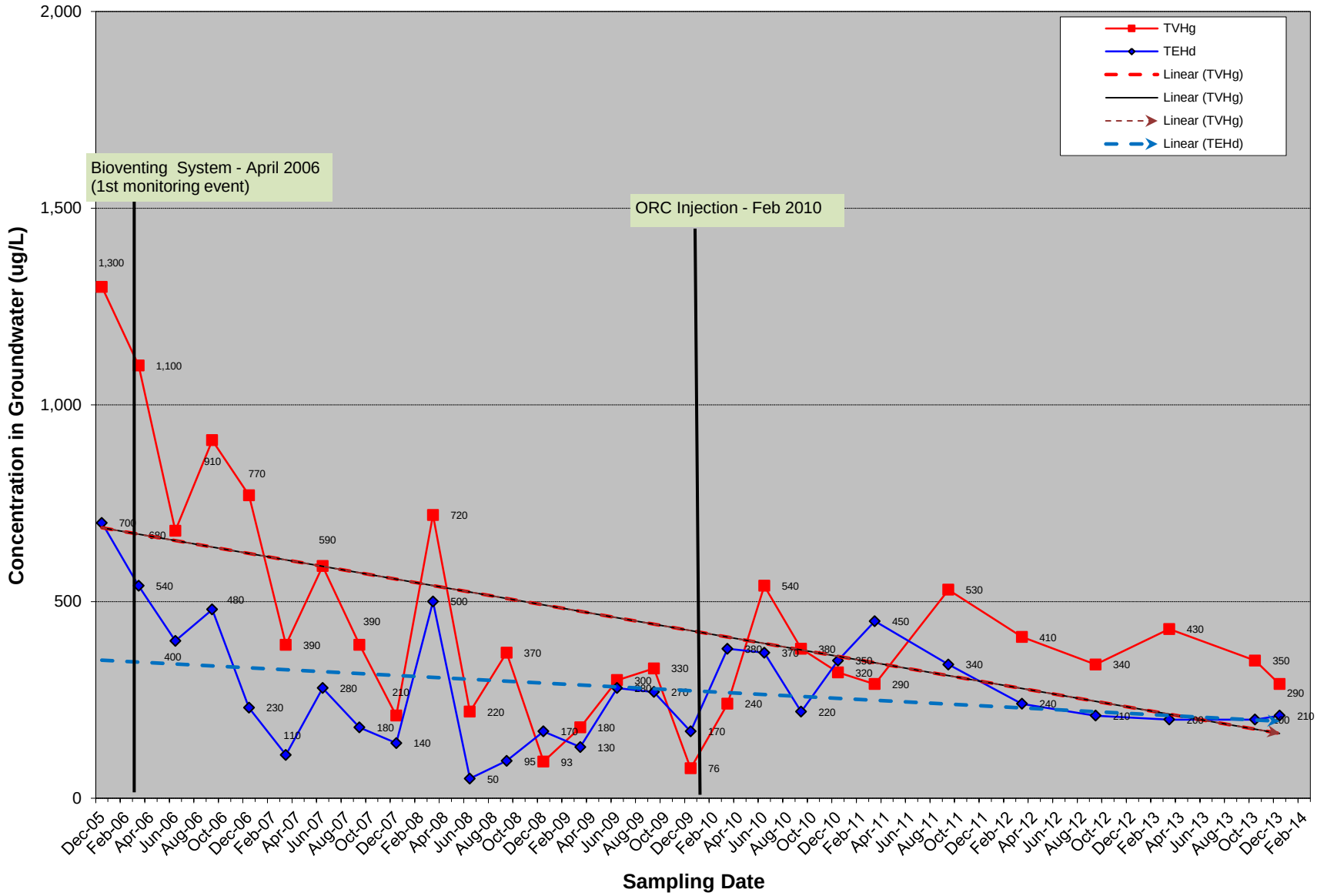


Figure 17: Gasoline and Diesel Hydrochemical Trends: 2005-2013
Well MW-12, Redwood Regional Park Service Yard, Oakland, California



PLUME GEOMETRY AND MIGRATION INDICATIONS

The plume of groundwater contamination above screening levels appears to be approximately 130 feet long and approximately 50 feet wide. The zone of greatest contamination historically fluctuated between the upper portion of the plume (MW-2), the mid-portion of the plume (near MW-8), and the downgradient portion of the plume (at MW-7 and MW-9). The last two years of monitoring to the current event show the greatest contamination in the mid-plume area (MW-11) and downgradient portion of the plume (MW-7 and MW-9).

The plume geometry has not varied substantially over the past years of monitoring, although seasonal fluctuations in contaminant concentrations have been observed. This is exhibited by higher concentrations in downgradient wells in some events, and in mid-plume or upgradient wells in other events.

The October 2013 monitoring event showed the historical highest detection of TEHd detected at surface sampling location SW-2, the most distal point from the source where the plume seeps from the Redwood Creek bank.

CLOSURE CRITERIA ASSESSMENT AND PROPOSED ACTIONS

The Water Board and ACEH generally require that the following criteria be met before issuing regulatory closure of contaminant cases:

1. ***The contaminant source has been removed (i.e., the source of the discharge and obviously-contaminated soil***). This criterion has not been partially met. While the UFSTs have been removed, along with contaminated soil, borehole soil sampling has shown a substantial mass of residual source area soil contamination that will act as an ongoing source of groundwater contamination. A bioventing system was installed and began operating in December 2005 as a corrective action to reduce gross contaminant mass in soil. The bioventing system resulted in an estimated magnitude drop in soil contaminant concentrations and thus having accomplished its' design purpose, was turned off in June 2011.
2. ***The groundwater contaminant plume is well characterized, and is stable or reducing in magnitude and extent.*** As discussed above, in our professional opinion, this criterion has not been met, and continued groundwater monitoring will be needed to demonstrate plume stability.
3. ***If residual contamination (soil or groundwater) exists, there is no reasonable risk to sensitive receptors (i.e., contaminant discharge to surface water or water supply wells) or to site occupants.*** This criterion is generally met by conducting a Risk-Based

Corrective Action assessment that models the fate and transport of residual contamination in the context of potential impacts to sensitive receptors (e.g., water wells, residential and use). The newly installed PRB corrective action is designed to remedy the magnitude and duration of future contaminated groundwater discharge to Redwood Creek; considered the primary sensitive receptor.

8.0 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

- Groundwater sampling has been conducted on an approximately quarterly basis from November 1994 to June 2011 and on a semiannual basis since September 2011. 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 gasoline, diesel, benzene and ethylbenzene in groundwater.
- The primary environmental risk is discharge of contaminated groundwater to the adjacent Redwood Creek. An in-stream bioassessment conducted in 1999 to 2000, concluded that there were no direct impacts to the surface water benthic macro-invertebrate 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, benzene, total xylenes, and ethylbenzene but generally only under low creek flow conditions.
- 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) siltstone bedrock. The saturated interval extends approximately 12 to 15 feet from top of bedrock through the capillary fringe. Groundwater elevations fluctuate seasonally, creating a capillary fringe that varies seasonally in thickness.
- The plume of groundwater contamination above screening levels appears to be approximately 130 feet long and approximately 50 feet wide. The zone of greatest contamination (greater than 1,000 µg/L of TVHg) is currently centered around wells MW-7, MW-9, and MW-11 which are in the downgradient area of the plume. However, prior to the ORC™ injection in March 2010, the greatest zone of contamination was observed in MW-2, the historical source area well.

- The contaminant plume has historically appeared neither stable and reducing, the groundwater contaminant concentrations fluctuate seasonally, and the center of mass of the contaminant plume (represented by maximum concentrations) has alternated between the upgradient, mid-plume, and downgradient wells, however the contaminants in upgradient source area MW-2 have showed a steady decrease since March 2010, with the mid and downgradient areas of the plume (MW-7, MW-9 and MW-11 exhibiting the highest contaminant concentrations.
- Historical remedial efforts indicate 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 daylights at the Redwood Creek interface.
- A September 2003 exploratory borehole program confirmed that sorbed-phase contamination in the seasonally unsaturated zone is a primary source of long-term contaminant contribution to the groundwater plume. Reduction/removal of this contamination will be necessary to eliminate continued discharge of contaminated groundwater to Redwood Creek, and to ultimately obtain site closure.
- Second Semiannual 2013 site groundwater contaminant concentrations exceeded the groundwater ESL for TVHg in six of the seven wells sampled and the ESL for TEHd in five of the seven wells. The ESLs for benzene and ethylbenzene were exceeded in monitoring wells MW-7, MW-9 and MW-11; and the ESL for MTBE was exceeded in well MW-8.
- Surface water sample collected at redwood Creek location SW-2 showed 930 ug/L TEHd above the ESL. This is the highest historical detection of TEHd at this location and likely reflects a combination of factors including an increased contribution from subsurface flow after many years of drought conditions, followed by this year's, low seasonal rainfall that results in increased contaminants concentration in non-flowing stagnant creek water pools.
- The current October 2013 event and the subsequent 30-day, post-PRB installation monitoring event in December 2013 showed detected the contaminant concentrations were within their historical ranges suggesting that insufficient time has elapsed to see a reduction in concentration compared to both the baseline concentrations in the October 2013 monitoring or previous events.
- The 30-day, post-PRB installation sampling event measured DO concentrations ranging from 0.93 in downgradient key site well MW-9 to 2.75 mg/L in the upgradient key well MW-10. This represents an average increase of over 400% of available oxygen in the 5 key wells that may be attributed to the PRB, however additional monitoring events will be needed to evaluate this trend. This may be due to the EHC-O product in the PRB, or it could reflect the aeration during trenching for installation of the PRB.

- Trenching during installation of the PRB resulted in removal and offsite disposal of 84.38 tons of contaminated soil to the Vasco Rd. Landfill facility in Livermore, CA. the contaminated soil contained an estimated mass of approximately 63 pounds of TPH.

PROPOSED ACTIONS

The EBRPD proposes to implement the following actions to address the current site conditions and regulatory concerns:

- Continue to monitor and evaluate the PRB installed this monitoring period, transverse to the plume in the downgradient area of the plume to treat the groundwater and minimize contaminants reaching Redwood Creek.
- Continue to monitor the PRB effectiveness with quarterly sampling at key wells MW-7, MW-9, MW-11 and MW-12 for two years and inclusion of the additional site chemical parameters during all sampling events to track the effect of the oxygen release product utilization and 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.
- Continue to make the required electronic data and report uploads to the State of California GeoTracker database, and upload an electronic copy of technical reports to ACEH's ftp database.

9.0 REFERENCES

Parsons Engineering Science (Parsons), 1998. Quarterly Progress Report 11, Redwood Regional Park Service Yard, Oakland, California. January 28.

Parsons Engineering Science (Parsons), 1997a. Quarterly Progress Report 7, Redwood Regional Park Service Yard, Oakland, California. January 31.

Parsons Engineering Science (Parsons), 1997b. Quarterly Progress Report 8 and Annual Summary Assessment, Redwood Regional Park Service Yard, Oakland, California. April 4.

Parsons Engineering Science (Parsons), 1997c. Quarterly Progress Report 9, Redwood Regional Park Service Yard, Oakland, California. June 30.

Parsons Engineering Science (Parsons), 1997d. Quarterly Progress Report 10, Redwood Regional Park Service Yard, Oakland, California. September 22.

Parsons Engineering Science (Parsons), 1996a. Quarterly Progress Report 5, Redwood Regional Park Service Yard, Oakland, California. June 6.

Parsons Engineering Science (Parsons), 1996b. Quarterly Progress Report 6, Redwood Regional Park Service Yard, Oakland, California. September 24.

Parsons Engineering Science (Parsons), 1995a. Quarterly Progress Report 2, Redwood Regional Park Service Yard, Oakland, California. March 8.

Parsons Engineering Science (Parsons), 1995b. Quarterly Progress Report 3, Redwood Regional Park Service Yard, Oakland, California. June 23.

Parsons Engineering Science (Parsons), 1995c. Quarterly Progress Report 4 and Annual Summary Assessment (November 1994 - August 1995), Redwood Regional Park Service Yard, Oakland, California. November 13.

Parsons Engineering Science (Parsons), 1994a. Creek and Soil Sampling at Redwood Regional Park, Oakland, California. March 2.

Parsons Engineering Science (Parsons), 1994b. Creek Surface Water at Redwood Regional Park, Oakland, California. May 13.

Parsons Engineering Science (Parsons), 1994c. Workplan for Groundwater Characterization Program at East Bay Regional Park Service Yard, Oakland, California. August 17.

Parsons Engineering Science (Parsons), 1994d. Quarterly Progress Report 1, Redwood Regional Park Service Yard, Oakland, California. December 28.

Parsons Engineering Science (Parsons), 1993a. Closure of Underground Fuel Storage Tanks and Initial Site Characterization at Redwood Regional Park Service Yard, Oakland, California. December 16.

Parsons Engineering Science (Parsons), 1993b. Workplan for Site Characterization at East Bay Regional Park District, Redwood Regional Park Corporation Yard, Oakland, Alameda County, California. September 3.

Regional Water Quality Control Board, San Francisco Bay Region (Water Board), 2013. Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater and Surface Water Screening Levels for Freshwater Aquatic Habitats. , Revised May 2013.

Regional Water Quality Control Board, San Francisco Bay Region (Water Board), 1995. San Francisco Bay Region Water Quality Control Plan.

State Water Resources Control Board, 1989. Leaking Underground Fuel Tank Field Manual: Guidelines for Site Assessment, Cleanup, and Underground Storage Tank Closure. State of California Leaking Underground Fuel Tank Task Force. October.

Stellar Environmental Solutions, Inc. (Stellar Environmental), 2013. First Semiannual 2013 Groundwater and Surface Water Monitoring Report, Redwood Regional Park Service Yard Site, Oakland, California. May 8.

Stellar Environmental Solutions, Inc. (Stellar Environmental), 2012a. Second Semiannual Groundwater Monitoring Report and Annual Summary Report, Redwood Regional Park Service Yard, Oakland, California. November 13.

Stellar Environmental Solutions, Inc. (Stellar Environmental), 2012b. First Semiannual Groundwater Monitoring Report, Redwood Regional Park Service Yard, Oakland, California. May 8.

Stellar Environmental Solutions, Inc. (Stellar Environmental), 2011a. Remedial Action Workplan for Installation of a Permeable Reactive Barrier for Hydrocarbon Contamination Treatment, Redwood Regional Park Service Yard 7867 Redwood Road, Oakland, California. November 28.

Stellar Environmental Solutions, Inc. (Stellar Environmental), 2011b. Second Semiannual 2011 Groundwater Monitoring Report and Annual Summary Report, Redwood Regional Park Service Yard, Oakland, California. October 19.

Stellar Environmental Solutions, Inc. (Stellar Environmental), 2011b. First Quarter 2011 Groundwater Monitoring Report, Redwood Regional Park Service Yard, Oakland, California. April 22.

Stellar Environmental Solutions, Inc. (Stellar Environmental), 2011c. Fourth Quarter 2010 Groundwater Monitoring and Annual Summary Report, Redwood Regional Park Service Yard, Oakland, California. January 28.

Stellar Environmental Solutions, Inc. (Stellar Environmental), 2010a. Third Quarter 2010 Groundwater Monitoring Report, Redwood Regional Park Service Yard, Oakland, California. November 8.

Stellar Environmental Solutions, Inc. (Stellar Environmental), 2010b. Second Quarter 2010 Groundwater Monitoring Report, Redwood Regional Park Service Yard, Oakland, California. July 12.

Stellar Environmental Solutions, Inc. (Stellar Environmental), 2010c. First Quarter 2010 Groundwater Monitoring Report, Redwood Regional Park Service Yard, Oakland, California. April 20.

Stellar Environmental Solutions, Inc. (SES), 2009a. Fourth Quarter 2008 Groundwater Monitoring Report, Redwood Regional Park Service Yard, Oakland, California. January 15.

Stellar Environmental Solutions, Inc. (SES), 2009b. First Quarter 2009 Groundwater Monitoring and Oxygen Release Compound ORC™ Treatment Corrective Action Report, Redwood Regional Park Service Yard, Oakland, California. April 10.

Stellar Environmental Solutions, Inc. (SES), 2009c. Second Quarter 2009 Site Monitoring Report, Redwood Regional Park Service Yard, Oakland, California. July 1.

Stellar Environmental Solutions, Inc. (SES), 2009d. Third Quarter 2009 Groundwater Monitoring Report, Redwood Regional Park Service Yard, Oakland, California. October 20.

Stellar Environmental Solutions, Inc. (SES), 2009e. Workplan for Insitu Injection. Redwood Regional Park Service Yard, Oakland, California. August 20.

Stellar Environmental Solutions, Inc. (SES), 2008a. Fourth Quarter 2007 Groundwater Monitoring and Annual Summary Report, Redwood Regional Park Service Yard, Oakland, California. January 8.

Stellar Environmental Solutions, Inc. (SES), 2008b. First Quarter 2008 Groundwater Monitoring and Annual Summary Report, Redwood Regional Park Service Yard, Oakland, California. April 29.

Stellar Environmental Solutions, Inc. (SES), 2008c. Second Quarter 2008 Groundwater Monitoring and Annual Summary Report, Redwood Regional Park Service Yard, Oakland, California. July 15.

Stellar Environmental Solutions, Inc. (SES), 2008d. Third Quarter 2008 Groundwater Monitoring and Annual Summary Report, Redwood Regional Park Service Yard, Oakland, California. October 7.

Stellar Environmental Solutions, Inc. (SES), 2007a. First Quarter 2007 Site Monitoring Report, Redwood Regional Park Service Yard, Oakland, California. April 25.

Stellar Environmental Solutions, Inc. (SES), 2007b. Second Quarter 2007 Site Monitoring Report, Redwood Regional Park Service Yard, Oakland, California. July 9.

Stellar Environmental Solutions, Inc. (SES), 2007c. Third Quarter 2007 Site Monitoring Report, Redwood Regional Park Service Yard, Oakland, California. October 9.

Stellar Environmental Solutions, Inc. (SES), 2006a. Fourth Quarter 2005 Groundwater Monitoring and Annual Summary Report, Redwood Regional Park Service Yard, Oakland, California. January 20.

Stellar Environmental Solutions, Inc. (SES), 2006b. First Quarter 2006 Site Monitoring Report, Redwood Regional Park Service Yard, Oakland, California. April 21.

Stellar Environmental Solutions, Inc. (SES), 2006c. Second Quarter 2006 Site Monitoring Report, Redwood Regional Park Service Yard, Oakland, California. July 5.

Stellar Environmental Solutions, Inc. (SES), 2006d. Third Quarter 2006 Site Monitoring Report, Redwood Regional Park Service Yard, Oakland, California. November 21.

Stellar Environmental Solutions, Inc. (SES), 2005a. First Quarter 2005 Site Monitoring Report, Redwood Regional Park Service Yard, Oakland, California. March 31.

Stellar Environmental Solutions, Inc. (SES), 2005b. Second Quarter 2005 Site Monitoring Report, Redwood Regional Park Service Yard, Oakland, California. July 12.

Stellar Environmental Solutions, Inc. (SES), 2005c. Third Quarter 2005 Site Monitoring Report, Redwood Regional Park Service Yard, Oakland, California. October 13.

Stellar Environmental Solutions, Inc. (SES), 2005d. Fourth Quarter 2004 Groundwater Monitoring and Annual Summary Report, Redwood Regional Park Service Yard, Oakland, California. January 24.

Stellar Environmental Solutions, Inc. (SES), 2004a. Year 2003 Annual Summary Report, Redwood Regional Park Service Yard, Oakland, California. January 15.

Stellar Environmental Solutions, Inc. (SES), 2004b. First Quarter 2004 Site Monitoring Report, Redwood Regional Park Service Yard, Oakland, California. April 14.

Stellar Environmental Solutions, Inc. (SES), 2004c. Second Quarter 2004 Site Monitoring Report, Redwood Regional Park Service Yard, Oakland, California. July 16.

Stellar Environmental Solutions, Inc. (SES), 2004d. Third Quarter 2004 Site Monitoring Report, Redwood Regional Park Service Yard, Oakland, California. October 12.

Stellar Environmental Solutions, Inc. (SES), 2003a. Year 2002 Annual Summary Report, Redwood Regional Park Service Yard, Oakland, California. January 27.

Stellar Environmental Solutions, Inc. (SES), 2003b. First Quarter 2003 Site Monitoring Report, Redwood Regional Park Service Yard, Oakland, California. May 5.

Stellar Environmental Solutions, Inc. (SES), 2003c. Second Quarter 2003 Site Monitoring Report, Redwood Regional Park Service Yard, Oakland, California. July 29.

Stellar Environmental Solutions, Inc. (SES), 2003d. Third Quarter 2003 Site Monitoring Report, Redwood Regional Park Service Yard, Oakland, California. October 3.

Stellar Environmental Solutions, Inc. (SES), 2002a. First Quarter 2002 Site Monitoring Report, Redwood Regional Park Service Yard, Oakland, California. April 16.

Stellar Environmental Solutions, Inc. (SES), 2002b. Second Quarter 2002 Site Monitoring Report, Redwood Regional Park Service Yard, Oakland, California. July 23.

Stellar Environmental Solutions, Inc. (SES), 2002c. Third Quarter 2002 Site Monitoring Report, Redwood Regional Park Service Yard, Oakland, California. October 14.

Stellar Environmental Solutions, Inc. (SES), 2001a. Monitoring Well Installation and Site Monitoring Report, Redwood Regional Park Service Yard, Oakland, California. February 8.

Stellar Environmental Solutions, Inc. (SES), 2001b. Site Monitoring Report, Redwood Regional Park Service Yard, Oakland, California. May 4.

Stellar Environmental Solutions, Inc. (SES), 2001c. Well Installation, Site Monitoring, and Corrective Action Report, Redwood Regional Park Service Yard, Oakland, California. October 26.

Stellar Environmental Solutions, Inc. (SES), 2000a. Site Monitoring Report, Redwood Regional Park Service Yard, Oakland, California. April 21.

Stellar Environmental Solutions, Inc. (SES), 2000b. Workplan for Groundwater Monitoring Well Installations, Redwood Regional Park Service Yard, Oakland, California. October 19.

Stellar Environmental Solutions, Inc. (SES), 2000c. Site Monitoring Report, Redwood Regional Park Service Yard, Oakland, California. October 19.

Stellar Environmental Solutions, Inc. (SES), 2000d. Site Feasibility Study Report, Redwood Regional Park Service Yard, Oakland, California. October 20.

Stellar Environmental Solutions, Inc. (SES), 1999a. Workplan for Subsurface Investigation, Redwood Regional Park Service Yard, Oakland, California. April 8.

Stellar Environmental Solutions, Inc. (SES), 1999b. Residual Contamination Investigation and Remedial Action Assessment Report, Redwood Regional Park Service Yard, Oakland, California. June 9.

Stellar Environmental Solutions, Inc. (SES), 1998a. Workplan for Continued Site Investigation and Closure Assessment, Redwood Regional Park Service Yard, Oakland, California. October 9.

Stellar Environmental Solutions, Inc. (SES), 1998b. Site Investigation and Closure Assessment Report, Redwood Regional Park Service Yard, Oakland, California. December 4.

10.0 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 SES since September 1998. This report has been prepared in accordance with generally accepted methodologies and standards of practice. The SES personnel who performed this work are qualified to perform such investigations and have accurately reported the information available, but cannot attest to the validity of that information. No warranty, expressed or implied, is made as to the findings, conclusions, and recommendations included in the report.

The findings of this report are valid as of the present. Site conditions may change with the passage of time, natural processes, or human intervention, which can invalidate the findings and conclusions presented in this report. As such, this report should be considered a reflection of the current site conditions as based on 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
9/23/2011	561.03	543.54	539.52	(b)	530.81	532.31	534.34	536.41	533.59	534.67	534.85	534.86
3/22/2012	562.25	546.42	542.02	(b)	531.83	533.13	534.71	539.34	535.97	535.51	536.03	535.69
9/19/2012	560.93	541.83	537.53	(b)	530.6	531.91	533.55	534.88	532.95	534.33	534.17	534.17
3/14/2013	561.80	545.57	541.74	(b)	531.01	532.11	534.66	538.64	534.31	535.72	535.67	535.37
10/3/2013	560.95	541.01	536.21	(b)	530.02	531.14	532.74	533.74	531.89	532.54	533.08	533.06

TOC = Top of well Casing

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

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

APPENDIX B

Groundwater Monitoring
Field Documentation

WELL GAUGING DATA

Project # 131003-PC1 Date 10/3/13 Client Stellar

Site RRPSY, 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	0816	4					4.88	19.22		
MW-2	0822	4					25.41	37.16		
MW-3	0755	4					24.52	45.11		
MW-5	0804	4					17.39	26.92		
MW-6	0810	4					14.29	27.40		
MW-7	0829	2					14.82	25.31		
MW-8	0839	2					15.39	22.29		
MW-9	0835	2					17.39	30.20		
MW-10	0826	2					14.68	28.40		
MW-11	0841	2					14.67	28.71		
MW-12	0831	2					11.61	23.30		

WELLHEAD INSPECTION CHECKLIST

Client Stellar Date 10/3/13

Site Address RRPSY, Oakland

Job Number 131003-PC1 Technician PC

Well ID	Well Inspected - No Corrective Action Required	Water Bailed From Wellbox	Wellbox Components Cleaned	Cap Replaced	Lock Replaced	Other Action Taken (explain below)	Well Not Inspected (explain below)	Repair Order Submitted
MW-1								X
MW-2	X							
MW-3	X							
MW-5	X							
MW-6	X							
MW-7	X							
MW-8		X						X
MW-9	X							
MW-10								X
MW-11	X							
MW-12								X

NOTES: MW-12 1/2 tabs broken. MW-1 standpipe lid broken off
MW-8 3/3 bolts missing MW-10 2/2 tabs stripped

TEST EQUIPMENT CALIBRATION LOG

PROJECT NAME RRPS, Oakland Stellar ES				PROJECT NUMBER 13003-PC1			
EQUIPMENT NAME	EQUIPMENT NUMBER	DATE/TIME OF TEST	STANDARDS USED	EQUIPMENT READING	CALIBRATED TO: OR WITHIN 10%:	TEMP. °C	INITIALS
Myron L	622 3841	10/3/13 0735	4/7/10pH	4.00/7.00/10.01	Y	22.2	E
			3900 µS	3902	Y	22.0	
			mV@		Y	21.2	
YSI 550A	05G1029	0740	DO→100%	99.6	Y	22.1	E

WELL MONITORING DATA SHEET

Project #: 131003-PC1	Client: Stellar
Sampler: PC	Date: 10/3/13
Well I.D.: MW-2	Well Diameter: 2 3 (4) 6 8 ___
Total Well Depth (TD): 37.16	Depth to Water (DTW): 25.41
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]: 27.76	

Purge Method: Bailer; Disposable Bailer; Positive Air Displacement; X Electric Submersible; Waterra; Peristaltic; Extraction Pump; Other_____

Sampling Method: Bailer; X Disposable Bailer; Extraction Port; Dedicated Tubing; Other: _____

7.6 (Gals.) X	3	= 22.8 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	radius² * 0.163

Time	Temp (°F or (°C))	pH	Cond. (mS or (µS))	Turbidity (NTUs)	Gals. Removed	Observations
0902	13.4	6.04	798.2	>1000	7.6	
0903	well dewatered					
1330	14.5	7.48	8221	289	-	

Did well dewater? (Yes) No Gallons actually evacuated: 9

Sampling Date: 10/3/13 Sampling Time: 1330 Depth to Water: 31.48 (2nd Hr.)

Sample I.D.: MW-2 Laboratory: Kiff CalScience Other (CET)

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

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

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

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	15.41	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	2	mV

WELL MONITORING DATA SHEET

Project #: 131003-PC1	Client: Stellar
Sampler: PC	Date: 10/3/13
Well I.D.: MW-7	Well Diameter: (2) 3 4 6 8 ___
Total Well Depth (TD): 25.31	Depth to Water (DTW): 14.82
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]: 16.92	

Purge Method: Bailer; Disposable Bailer; X Positive Air Displacement; Electric Submersible; Waterra; Peristaltic; Extraction Pump; Other_____

Sampling Method: Bailer; X Disposable Bailer; Extraction Port; Dedicated Tubing; Other: _____

1.7 (Gals.) X	3	= 5.1 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
0944	12.0	7.11	749.6	184	1.7	fuel odor, sheen
0950	12.3	6.74	740.3	107	3.4	" " "
0955	12.5	6.77	724	62	5.1	" " "

Did well dewater? Yes (No) Gallons actually evacuated: 5.1

Sampling Date: 10/3/13 Sampling Time: 1030 Depth to Water: 15.49

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

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

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

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

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	0.27	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	-45	mV

WELL MONITORING DATA SHEET

Project #: 13 1003-PC1	Client: Stellar
Sampler: PC	Date: 10/3/13
Well I.D.: MW-8	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth (TD): 22.29	Depth to Water (DTW): 15.39
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]: 16.77	

Purge Method: Bailer; Disposable Bailer; [X] Positive Air Displacement; Electric Submersible; Waterra; Peristaltic; Extraction Pump; Other_____

Sampling Method: Bailer; [X] Disposable Bailer; Extraction Port; Dedicated Tubing; Other: _____

1.1 (Gals.) X	3	= 3.3 Gals.
1 Case Volume	Specified Volumes	Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius² * 0.163

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
1140	13.1	7.31	801.0	594	1.1	fuel odor, sheen
1144	13.4	7.07	798.3	232	2.2	" " "
1148	13.4	7.01	802.2	>1000	3.3	" " "

Did well dewater? Yes (No) Gallons actually evacuated: 3.3

Sampling Date: 10/3/13 Sampling Time: 1245 Depth to Water: 15.50

Sample I.D.: MW-8 Laboratory: Kiff CalScience Other CAT

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

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

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

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	0.38	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	-82	mV

W[illegible]L MONITORING DATA SHE[illegible]

Project #: 131003-PC1	Client: Stellar
Sampler: PC	Date: 10/3/13
Well I.D.: MW-9	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth (TD): 30.20	Depth to Water (DTW): 17.39
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]: 19.95	

Purge Method: Bailer; Disposable Bailer; X Positive Air Displacement; Electric Submersible; Waterra; Peristaltic; Extraction Pump; Other_____

Sampling Method: Bailer; X Disposable Bailer; Extraction Port; Dedicated Tubing; Other: _____

2 (Gals.) X	3 =	6 Gals.
1 Case Volume	Specified Volumes	Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius^2 * 0.163

Time	Temp (°F or (°C))	pH	Cond. (mS or (µS))	Turbidity (NTUs)	Gals. Removed	Observations
1050	12.5	6.90	895.2	176	2	Steam
1055	12.9	6.89	872.5	273	4	
1101	13.1	6.93	871.5	76	6	

Did well dewater? Yes (No) Gallons actually evacuated: 6

Sampling Date: 10/3/13 Sampling Time: 1220 Depth to Water: 18.52

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

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

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

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

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	0.31 mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	-108 mV

WELL MONITORING DATA SHEET

Project #: 131003-PC1	Client: Stellar
Sampler: PC	Date: 10/3/13
Well I.D.: MW-10	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth (TD): 28.40	Depth to Water (DTW): 14.68
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]: 17.42	

Purge Method: Bailer; Disposable Bailer; X Positive Air Displacement; Electric Submersible; Waterra; Peristaltic; Extraction Pump; Other_____

Sampling Method: Bailer; X Disposable Bailer; Extraction Port; Dedicated Tubing; Other: _____

2.2 (Gals.) X 3 = 6.6 Gals.
1 Case Volume | Specified Volumes | Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius² * 0.163

Time	Temp (°F or (°C))	pH	Cond. (mS or (µS))	Turbidity (NTUs)	Gals. Removed	Observations
0922	11.7	7.24	786.7	195	2.2	
0927	12.5	7.15	805.8	93	4.4	
0932	12.1	7.23	777.5	63	6.6	

Did well dewater? Yes (No) Gallons actually evacuated: 6.6

Sampling Date: 10/3/13 Sampling Time: 1000 Depth to Water: 17.40

Sample I.D.: MW-10 Laboratory: Kiff CalScience Other (C&T)

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

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

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

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	0.87	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	-42	mV

WELL MONITORING DATA SHEET

Project #: 131003-PC1	Client: Stellar
Sampler: PC	Date: 10/3/13
Well I.D.: MW-11	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth (TD): 28.71	Depth to Water (DTW): 14.67
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]: 17.48	

Purge Method: Bailer; Disposable Bailer; Positive Air Displacement; Electric Submersible; Waterra; Peristaltic; Extraction Pump; Other_____

Sampling Method: Bailer; X Disposable Bailer; Extraction Port; Dedicated Tubing; Other: _____

2.2 (Gals.) X	3	=	6.6 Gals.
1 Case Volume	Specified Volumes		Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius² * 0.163

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
1200	13.2	6.70	813.6	>1000	2.2	
1205	13.5	6.70	812.6	522	4.4	
1210	13.6	6.71	806.9	432	6.6	

Did well dewater? Yes (No) Gallons actually evacuated: 6.6

Sampling Date: 10/3/13 Sampling Time: 1310 Depth to Water: 15.01

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

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

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

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

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	0.17	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	-62	mV

W[illegible]LL MONITORING DATA SHE[illegible]

Project #: 131003-PC1	Client: Stellar
Sampler: PC	Date: 10/3/13
Well I.D.: MW-12	Well Diameter: (2) 3 4 6 8 ___
Total Well Depth (TD): 23.30	Depth to Water (DTW): 11.61
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]: 13.95	

Purge Method: Bailer; Disposable Bailer; [X] Positive Air Displacement; Electric Submersible; Waterra; Peristaltic; Extraction Pump; Other_____

Sampling Method: Bailer; [X] Disposable Bailer; Extraction Port; Dedicated Tubing; Other: _____

1.9 (Gals.) X 3 = 5.7 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	radius² * 0.163

Time	Temp (°F or (°C))	pH	Cond. (mS or (µS))	Turbidity (NTUs)	Gals. Removed	Observations
1012	11.8	6.86	718.2	59	1.9	
1018	12.4	6.99	652.4	610	3.8	
1024	12.5	6.75	657.5	438	5.7	

Did well dewater? Yes (No) Gallons actually evacuated: 5.7

Sampling Date: 10/3/13 Sampling Time: 1125 Depth to Water: 13.90

Sample I.D.: MW-12 Laboratory: Kiff CalScience Other (CET)

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

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

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

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	0.23
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	1

WELL MONITORING DATA SHEET

Project #: 131003-PC1	Client: Stellar
Sampler: PC	Date: 10/3/13
Well I.D.: SW2	Well Diameter: 2 3 4 6 8 ✓
Total Well Depth (TD): —	Depth to Water (DTW): —
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]:	

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:_____

_____(Gals.) X _____ = _____ 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	radius² * 0.163

Time	Temp (°F or (°C))	pH	Cond. (mS or (µS))	Turbidity (NTUs)	Gals. Removed	Observations
1340	13.9	7.86	659.6	121		
			Sample collected from pool of			
			water below fishway. Not flowing.			

Did well dewater? Yes No Gallons actually evacuated:

Sampling Date: 10/3/13 Sampling Time: 1340 Depth to Water:

Sample I.D.: SW2 Laboratory: Kiff CalScience (Other CET)

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

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

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

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	2.49	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	27	mV

W[illegible]L MONITORING DATA SHE[illegible]

Project #: 131003-PC1	Client: Stellar
Sampler: PC	Date: 10/3/13
Well I.D.: SW-3	Well Diameter: 2 3 4 6 8 ~
Total Well Depth (TD):	Depth to Water (DTW):
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]:	

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: _____

_____(Gals.) X _____ = _____ 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
			No flow, No water, NO sample			

Did well dewater? Yes No Gallons actually evacuated:

Sampling Date: Sampling Time: Depth to Water:

Sample I.D.: SW-3 Laboratory: Kiff CalScience Other_____

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

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

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

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

WELL GAUGING DATA

Project # 131230-P(1) Date 12/30/13 Client Stellar

Site Redwood Regional Park Service 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-7	0832	2					14.43	25.29		
MW-9	0839	2					16.77	30.19		
MW-10	0828	2					14.20	28.40		
MW-11	0842	2					14.15	28.75		
MW-12	0836	2					11.52	23.98		
	⇒ Approximately 70gal in Green holding tank near MW-1									

TEST EQUIPMENT CALIBRATION LOG

PROJECT NAME Stellar @ RRPSY				PROJECT NUMBER 13250-PC1			
EQUIPMENT NAME	EQUIPMENT NUMBER	DATE/TIME OF TEST	STANDARDS USED	EQUIPMENT READING	CALIBRATED TO: OR WITHIN 10%:	TEMP. °C	INITIALS
Myron L	621021	12/30/13 0625	3900 µS	3892	Y	12.2	PC
			4/7/10 pH	4.00/7.00/10.00	Y	12.3	↓
YSI 550A	10G 0561	0635	DO 100%	100.1	Y	14.1	↓

WELLHEAD INSPECTION CHECKLIST

Client Stellar Date 12/30/13

Site Address Redwood Regional Park Service Yard, Oakland

Job Number 131230-RC Technician RC

Well ID	Well Inspected - No Corrective Action Required	Water Bailed From Wellbox	Wellbox Components Cleaned	Cap Replaced	Lock Replaced	Other Action Taken (explain below)	Well Not Inspected (explain below)	Repair Order Submitted
MW-7	X							
MW-9	X							
MW-10								X
MW-11	X							
MW-12								X

NOTES: MW-10 2 1/2 tabs stripped
MW-12 1/2 tabs broken

WELL MONITORING DATA SHEET

Project #: 131230-PC1	Client: Stellar
Sampler: PC	Date: 12/30/13
Well I.D.: MW-7	Well Diameter: (2) 3 4 6 8 ___
Total Well Depth (TD): 25.29	Depth to Water (DTW): 14.43
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]: 16.60	

Purge Method: Bailer; Disposable Bailer; X Positive Air Displacement; Electric Submersible; Waterra; Peristaltic; Extraction Pump; Other_____

Sampling Method: Bailer; X Disposable Bailer; Extraction Port; Dedicated Tubing; Other: _____

1.7 (Gals.) X	3	= 5.1 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	radius² * 0.163

Time	Temp (°F or °C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
928	11.2	6.62	746.1	170	1.7	
0935	11.2	6.60	771.1	121	3.4	
0940	11.8	6.65	733.1	98	5.1	

Did well dewater? Yes (No) Gallons actually evacuated: 5.1

Sampling Date: 12/30/13 Sampling Time: 1022 Depth to Water: 16.49

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

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

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

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

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	1.44	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	-83	mV

V L MONITORING DATA SHE

Project #: 131230-PC1	Client: Stellar
Sampler: PC	Date: 12/30/13
Well I.D.: MW-9	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth (TD): 30.19	Depth to Water (DTW): 16.77
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]: 19.45	

Purge Method: Bailer; Disposable Bailer; X Positive Air Displacement; Electric Submersible; Waterra; Peristaltic; Extraction Pump; Other ____

Sampling Method: Bailer; X Disposable Bailer; Extraction Port; Dedicated Tubing; Other: ____

2.1 (Gals.) X	3	=	6.3 Gals.
1 Case Volume	Specified Volumes		Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius² * 0.163

Time	Temp (°F or (°C))	pH	Cond. (mS or (µS))	Turbidity (NTUs)	Gals. Removed	Observations
1048	11.7	6.97	906.7	147	2.1	
1055	12.5	6.87	962.1	302	4.2	
1102	12.7	6.88	958.4	497	6.3	

Did well dewater? Yes (No)		Gallons actually evacuated: 6.3	
Sampling Date: 12/30/13	Sampling Time: 1150	Depth to Water: 19.29	
Sample I.D.: MW-9		Laboratory: Kiff CalScience Other C&T	
Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other: See COC			
EB I.D. (if applicable): @ Time		Duplicate I.D. (if applicable):	
Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other:			
D.O. (if req'd): Pre-purge:	mg/L	Post-purge:	0.93 mg/L
O.R.P. (if req'd): Pre-purge:	mV	Post-purge:	-100 mV

WELL MONITORING DATA SHEET

Project #: 131230-PC	Client: Stellar
Sampler: PC	Date: 12/30/13
Well I.D.: MW-10	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth (TD): 28.40	Depth to Water (DTW): 14.20
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]: 17.04	

Purge Method: Bailer; Disposable Bailer; X Positive Air Displacement; Electric Submersible; Waterra; Peristaltic; Extraction Pump; Other ____

Sampling Method: Bailer; X Disposable Bailer; Extraction Port; Dedicated Tubing; Other: ____

2.3 (Gals.) X	3	= 6.9 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	radius² * 0.163

Time	Temp (°F or (°C))	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
0900	11.9	6.34	975.1	79	2.3	
0907	12.0	6.77	908.2	75	4.6	
0914	12.2	6.84	985.4	103	6.9	

Did well dewater? Yes (No) Gallons actually evacuated: 6.9

Sampling Date: 12/30/13 Sampling Time: 0944 Depth to Water: 17.00

Sample I.D.: MW-10 Laboratory: Kiff CalScience Other C&T

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

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

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

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	2.75	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	26	mV

W[illegible]L MONITORING DATA SHE[illegible]

Project #: 131230-P1	Client: Stellar
Sampler: PC	Date: 12/30/13
Well I.D.: MW-11	Well Diameter: (2) 3 4 6 8 ___
Total Well Depth (TD): 28.75	Depth to Water (DTW): 14.15
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]: 17.07	

Purge Method: Bailer; Disposable Bailer; X Positive Air Displacement; Electric Submersible; Waterra; Peristaltic; Extraction Pump; Other ____

Sampling Method: Bailer; X Disposable Bailer; Extraction Port; Dedicated Tubing; Other: ____

2.3 (Gals.) X 3 = 6.9 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	radius² * 0.163

Time	Temp (°F or (°C))	pH	Cond. (mS or (µS))	Turbidity (NTUs)	Gals. Removed	Observations
1126	12.5	6.71	935.1	526	2.3	
1134	12.9	6.61	872.1	354	4.6	
1141	13.0	6.64	830.0	293	6.9	

Did well dewater? Yes (No) Gallons actually evacuated: 6.9

Sampling Date: 12/30/13 Sampling Time: 1220 Depth to Water: 17.00

Sample I.D.: MW-11 Laboratory: Kiff CalScience Other CET

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

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

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

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	1.14 mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	-64 mV

WELL MONITORING DATA SHEET

Project #: 131230-PC1	Client: Stellar
Sampler: PC	Date: 12/30/13
Well I.D.: MW-12	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth (TD): 23.92	Depth to Water (DTW): 11.52
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]: 14.00	

Purge Method: Bailer; Disposable Bailer; X Positive Air Displacement; Electric Submersible; Waterra; Peristaltic; Extraction Pump; Other ____

Sampling Method: Bailer; X Disposable Bailer; Extraction Port; Dedicated Tubing; Other: ____

2 (Gals.) X	3 =	6 Gals.
1 Case Volume	Specified Volumes	Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius² * 0.163

Time	Temp (°F or (°C))	pH	Cond. (mS or (µS))	Turbidity (NTUs)	Gals. Removed	Observations
0958	10.9	6.78	656.6	626	2	
1004	11.7	6.69	674.1	423	4	
1011	12.1	6.89	697.1	944	6	

Did well dewater? Yes (No) Gallons actually evacuated: 6

Sampling Date: 12/30/13 Sampling Time: 1115 Depth to Water: 13.89

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

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

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

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

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	1.40	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	61	mV

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 249606
ANALYTICAL REPORT

Stellar Environmental Solutions	Project : 2013-02.
2198 6th Street	Location : Redwood Regional Park
Berkeley, CA 94710	Level : II

Sample ID	Lab ID
MW-2	249606-001
MW-7	249606-002
MW-8	249606-003
MW-9	249606-004
MW-10	249606-005
MW-11	249606-006
MW-12	249606-007
SW-2	249606-008

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following 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: Tracy Babjar Date: 10/14/2013

Tracy Babjar
Project Manager
tracy.babjar@ctberk.com
(510) 204-2226

NELAP # 01107CA

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**249606**
Client:	**Stellar Environmental Solutions**
Project:	**2013-02.**
Location:	**Redwood Regional Park**
Request Date:	**10/03/13**
Samples Received:	**10/03/13**

This data package contains sample and QC results for eight water samples, requested for the above referenced project on 10/03/13. 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):
MW-7 (lab # 249606-002), MW-9 (lab # 249606-004), and MW-12 (lab # 249606-007) were diluted due to problematic matrix. No other analytical problems were encountered.

Chemical Oxygen Demand (SM5220D):
No analytical problems were encountered.

Biochemical Oxygen Demand (SM5210B):
No analytical problems were encountered.

Chain of Custody Record

Lab job no. 249606

Date

Page 1 of 1

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

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

Project Name Redwood Regional Park
Project Number 2013-02

Method of Shipment Hand Delivery
Shipment No.
Airbill No.
Cooler No.
Project Manager Richard Makdisi
Telephone No. (510) 644-3123
Fax No. (510) 644-3859
Samplers: (Signature) Pat Li

	Field Sample Number	Location/ Depth	Date	Time	Sample Type	Type/Size of Container	Preservation: Cooler	Preservation: Chemical	Filtered	No. of Containers	Analysis Required: TVH-G (8015M)	Analysis Required: BTEX/MTBE (8021)	Analysis Required: TEH-D (8015)	Analysis Required: NITRATE	Analysis Required: SULFATE	Analysis Required: BOD	Analysis Required: COD	Remarks
1	MW-2		10/3	1330	W	Mixture	✓	HCl		X	X	X	X					
2	MW-7			1030				HCl; H_2SO_4		X	X	X	X	X	X	X	X	
3	MW-8			1245				HCl		X	X	X	X					
4	MW-9			1220				HCl; H_2SO_4		X	X	X	X	X	X	X	X	
5	MW-10			1000				HCl		X	X	X	X					
6	MW-11			1310				HCl		X	X	X	X					
7	MW-12			1125				H_2SO_4		X	X	X	X	X	X	X	X	
8	SW-2			1340						X	X	X	X					

Relinquished by:	Date	Received by:	Date	Relinquished by:	Date	Received by:	Date
Signature Pat Li	10/3/13	Signature Pat Hamph	10/3	Signature		Signature	
Printed Pete Larwish	Time	Printed Pat Gonzalez	Time 14:05	Printed	Time	Printed	Time
Company Stellar Environmental		Company CET		Company		Company	

Turnaround Time: 5 Day TAT
Comments: Samples on ice

Relinquished by:	Date	Received by:	Date
Signature		Signature	
Printed	Time	Printed	Time
Company		Company	

2000-00-01

★ Stellar Environmental Solutions

2198 Sixth Street #201, Berkeley, CA 94710

COOLER RECEIPT CHECKLIST

Curtis & Tompkins, Ltd.

Login # 249606 Date Received 10/3/13 Number of coolers 2
Client STELLAR Project REDWOOD REGIONAL PARK (2013-02)

Date Opened 10/3/13 By (print) TR (sign) Tricia Raikar
Date Logged in ↓ By (print) ↓ (sign) ↓

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: * Notify PM if temperature exceeds 6°C

Type of ice used: ☒ Wet ☐ Blue/Gel ☐ None Temp(°C) _____

☒ Samples Received on ice & cold without a temperature blank; ~~temp. taken with IR gun~~

☒ 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 there any missing / extra samples? _____ YES (NO)
11. Are samples in the appropriate containers for indicated tests? _____ (YES) NO
12. Are sample labels present, in good condition and complete? _____ (YES) NO
13. Do the sample labels agree with custody papers? _____ (YES) NO
14. Was sufficient amount of sample sent for tests requested? _____ (YES) NO
15. Are the samples appropriately preserved? _____ (YES) NO N/A
16. Did you check preservatives for all bottles for each sample? _____ (YES) NO N/A
17. Did you document your preservative check? _____ (YES) NO N/A
18. Did you change the hold time in LIMS for unpreserved VOAs? _____ YES NO (N/A)
19. Did you change the hold time in LIMS for preserved terracores? _____ YES NO (N/A)
20. Are bubbles > 6mm absent in VOA samples? _____ (YES) NO (N/A) TR
21. Was the client contacted concerning this sample delivery? _____ YES (NO)
   If YES, Who was called? _____ By _____ Date: _____

COMMENTS

_____

_____

_____

_____

_____

_____

Rev 10, 11/11

Curtis & Tompkins Sample Preservation for 249606

Sample	pH: <2	>9	>12	Other
-002a	[ ]	[ ]	[ ]	_____
b	[ ]	[ ]	[ ]	_____
c	[ ]	[ ]	[ ]	_____
d	[X]	[ ]	[ ]	_____
e	[ ]	[ ]	[ ]	_____
f	[ ]	[ ]	[ ]	_____
g	[ ]	[ ]	[ ]	_____
h	[ ]	[ ]	[ ]	_____
-004a	[ ]	[ ]	[ ]	_____
b	[ ]	[ ]	[ ]	_____
c	[ ]	[ ]	[ ]	_____
d	[X]	[ ]	[ ]	_____
e	[ ]	[ ]	[ ]	_____
f	[ ]	[ ]	[ ]	_____
g	[ ]	[ ]	[ ]	_____
h	[ ]	[ ]	[ ]	_____
-007a	[ ]	[ ]	[ ]	_____
b	[ ]	[ ]	[ ]	_____
c	[ ]	[ ]	[ ]	_____
d	[X]	[ ]	[ ]	_____
e	[ ]	[ ]	[ ]	_____
f	[ ]	[ ]	[ ]	_____
g	[ ]	[ ]	[ ]	_____
h	[ ]	[ ]	[ ]	_____

Analyst: IR
Date: 10/3/13

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	249606	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2013-02.		
Matrix:	Water	Batch#:	203747
Units:	ug/L	Sampled:	10/03/13
Diln Fac:	1.000	Received:	10/03/13

Field ID: MW-2 Lab ID: 249606-001
Type: SAMPLE Analyzed: 10/05/13

Analyte	Result	RL	Analysis
Gasoline C7-C12	120 Y	50	EPA 8015B
MTBE	2.3	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	76-128	EPA 8015B
Bromofluorobenzene (PID)	101	70-136	EPA 8021B

Field ID: MW-7 Lab ID: 249606-002
Type: SAMPLE Analyzed: 10/05/13

Analyte	Result	RL	Analysis
Gasoline C7-C12	6,400	50	EPA 8015B
MTBE	ND	2.0	EPA 8021B
Benzene	35 C	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	75	0.50	EPA 8021B
m,p-Xylenes	ND	0.50	EPA 8021B
o-Xylene	5.1 C	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Bromofluorobenzene (FID)	114	76-128	EPA 8015B
Bromofluorobenzene (PID)	103	70-136	EPA 8021B

Field ID: MW-8 Lab ID: 249606-003
Type: SAMPLE Analyzed: 10/05/13

Analyte	Result	RL	Analysis
Gasoline C7-C12	150	50	EPA 8015B
MTBE	9.8	2.0	EPA 8021B
Benzene	ND	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	3.3	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)	108	76-128	EPA 8015B
Bromofluorobenzene (PID)	108	70-136	EPA 8021B

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

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	249606	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2013-02.		
Matrix:	Water	Batch#:	203747
Units:	ug/L	Sampled:	10/03/13
Diln Fac:	1.000	Received:	10/03/13

Field ID: MW-9 Lab ID: 249606-004
Type: SAMPLE Analyzed: 10/05/13

Analyte	Result	RL	Analysis
Gasoline C7-C12	3,200	50	EPA 8015B
MTBE	ND	2.0	EPA 8021B
Benzene	20 C	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	51	0.50	EPA 8021B
m,p-Xylenes	3.2 C	0.50	EPA 8021B
o-Xylene	3.4	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Bromofluorobenzene (FID)	121	76-128	EPA 8015B
Bromofluorobenzene (PID)	111	70-136	EPA 8021B

Field ID: MW-10 Lab ID: 249606-005
Type: SAMPLE Analyzed: 10/05/13

Analyte	Result	RL	Analysis
Gasoline C7-C12	69 Y	50	EPA 8015B
MTBE	4.8	2.0	EPA 8021B
Benzene	ND	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	0.84	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)	103	76-128	EPA 8015B
Bromofluorobenzene (PID)	101	70-136	EPA 8021B

Field ID: MW-11 Lab ID: 249606-006
Type: SAMPLE Analyzed: 10/05/13

Analyte	Result	RL	Analysis
Gasoline C7-C12	3,000	50	EPA 8015B
MTBE	ND	2.0	EPA 8021B
Benzene	14 C	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	35	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)	112	76-128	EPA 8015B
Bromofluorobenzene (PID)	106	70-136	EPA 8021B

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

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	249606	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2013-02.		
Matrix:	Water	Batch#:	203747
Units:	ug/L	Sampled:	10/03/13
Diln Fac:	1.000	Received:	10/03/13

Field ID: MW-12 Lab ID: 249606-007
Type: SAMPLE Analyzed: 10/05/13

Analyte	Result	RL	Analysis
Gasoline C7-C12	350 Y	50	EPA 8015B
MTBE	ND	2.0	EPA 8021B
Benzene	ND	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	0.92 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)	100	76-128	EPA 8015B
Bromofluorobenzene (PID)	100	70-136	EPA 8021B

Field ID: SW-2 Lab ID: 249606-008
Type: SAMPLE Analyzed: 10/05/13

Analyte	Result	RL	Analysis
Gasoline C7-C12	ND	50	EPA 8015B
MTBE	4.8	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)	108	76-128	EPA 8015B
Bromofluorobenzene (PID)	106	70-136	EPA 8021B

Type: BLANK Analyzed: 10/04/13
Lab ID: QC710585

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	76-128	EPA 8015B
Bromofluorobenzene (PID)	101	70-136	EPA 8021B

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

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	249606	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2013-02.	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC710584	Batch#:	203747
Matrix:	Water	Analyzed:	10/04/13
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1,000	1,005	100	80-120

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	113	76-128

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	249606	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2013-02.	Analysis:	EPA 8021B
Matrix:	Water	Batch#:	203747
Units:	ug/L	Analyzed:	10/04/13
Diln Fac:	1.000		

Type: BS Lab ID: QC710586

Analyte	Spiked	Result	%REC	Limits
MTBE	10.00	9.325	93	71-134
Benzene	10.00	10.65	107	80-120
Toluene	10.00	9.790	98	80-120
Ethylbenzene	10.00	10.19	102	80-120
m,p-Xylenes	10.00	9.806	98	80-120
o-Xylene	10.00	9.420	94	80-120

Surrogate	%REC	Limits
Bromofluorobenzene (PID)	101	70-136

Type: BSD Lab ID: QC710587

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	20.00	18.11	91	71-134	3	50
Benzene	20.00	19.30	96	80-120	10	20
Toluene	20.00	18.75	94	80-120	4	20
Ethylbenzene	20.00	19.42	97	80-120	5	20
m,p-Xylenes	20.00	18.83	94	80-120	4	20
o-Xylene	20.00	18.12	91	80-120	4	20

Surrogate	%REC	Limits
Bromofluorobenzene (PID)	107	70-136

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	249606	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2013-02.	Analysis:	EPA 8015B
Field ID:	MW-2	Batch#:	203747
MSS Lab ID:	249606-001	Sampled:	10/03/13
Matrix:	Water	Received:	10/03/13
Units:	ug/L	Analyzed:	10/05/13
Diln Fac:	1.000		

Type: MS Lab ID: QC710597

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	122.2	2,000	1,855	87	76-120

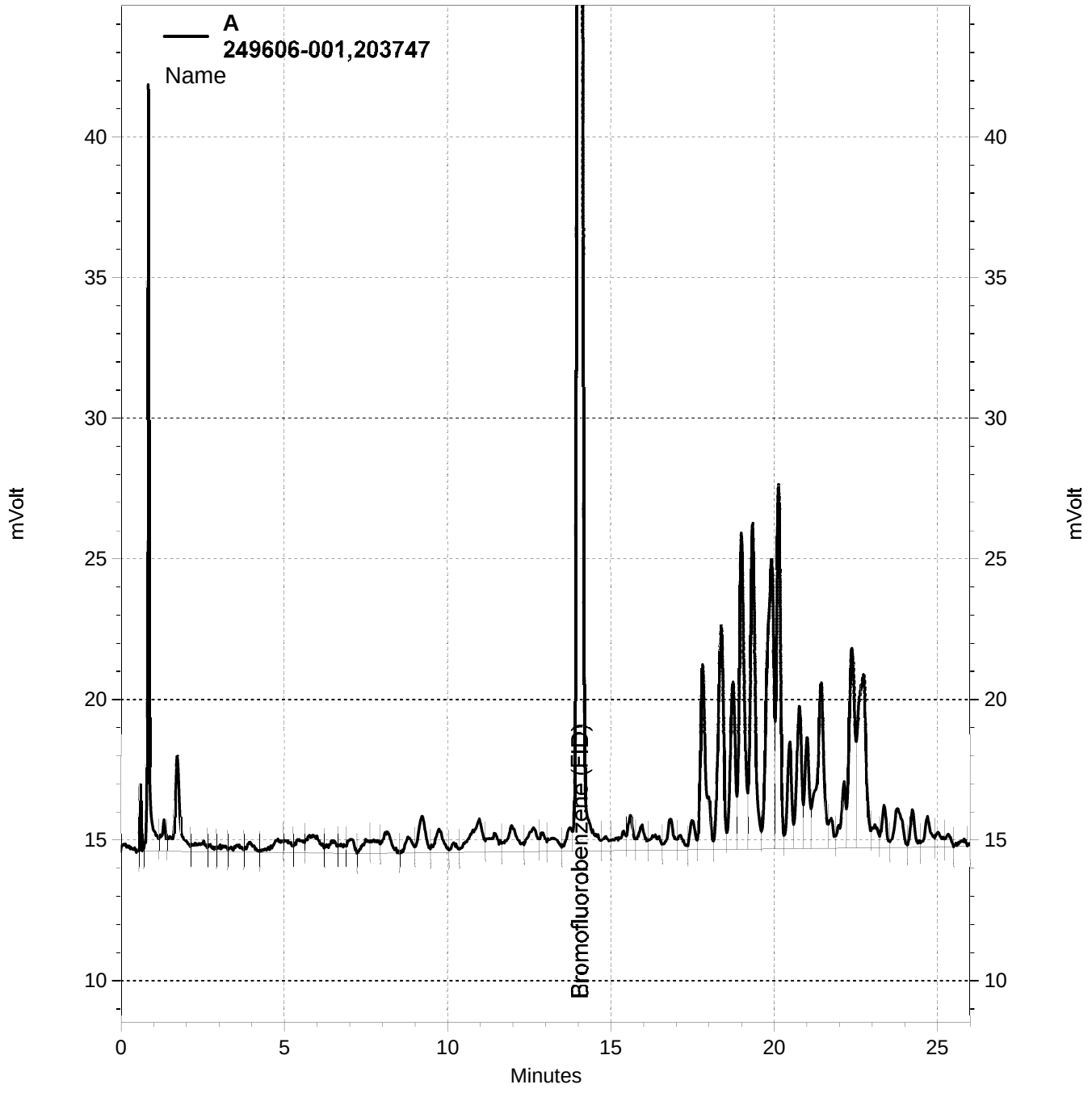
Surrogate	%REC	Limits
Bromofluorobenzene (FID)	102	76-128

Type: MSD Lab ID: QC710598

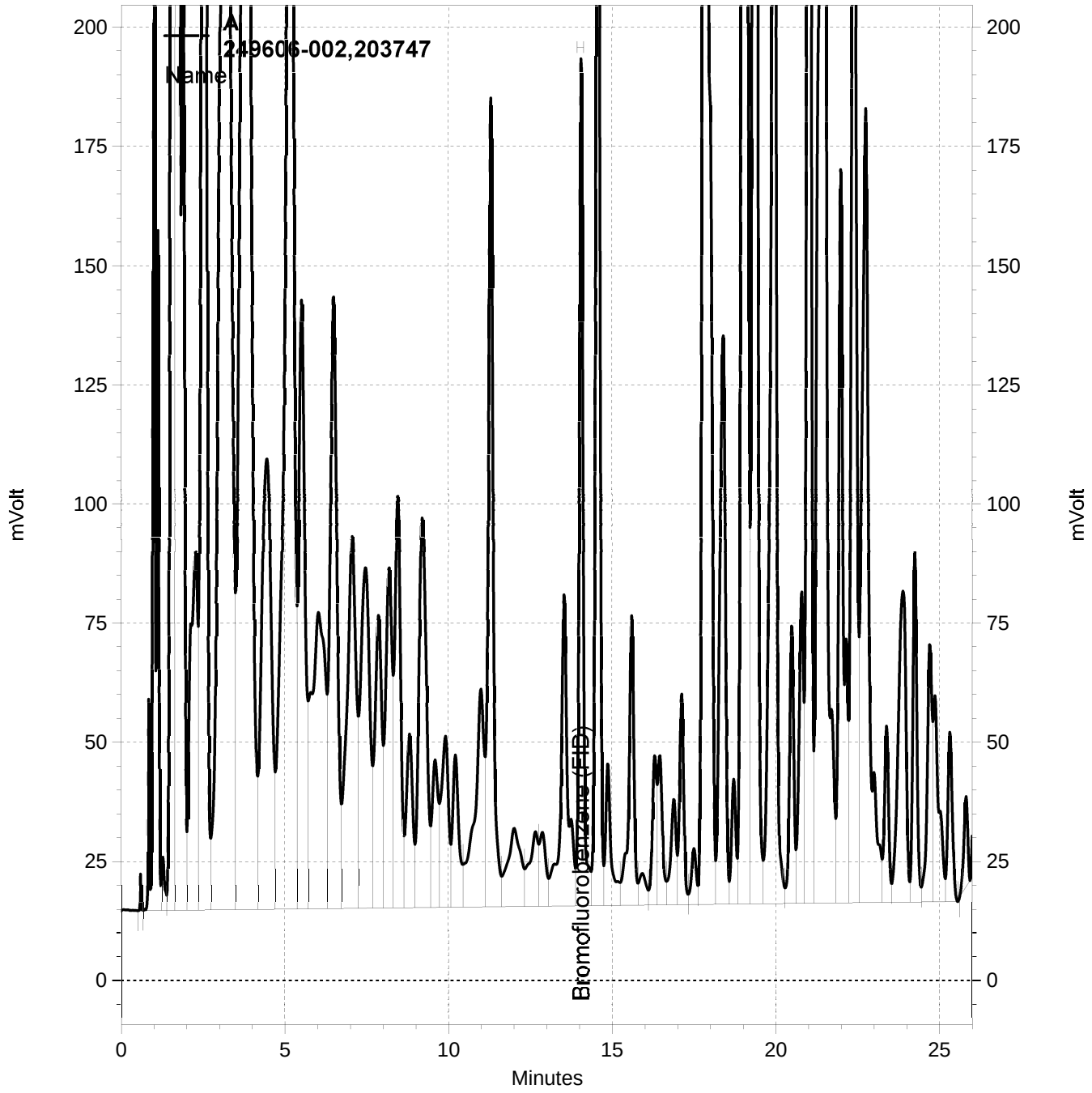
Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	1,895	89	76-120	2	20

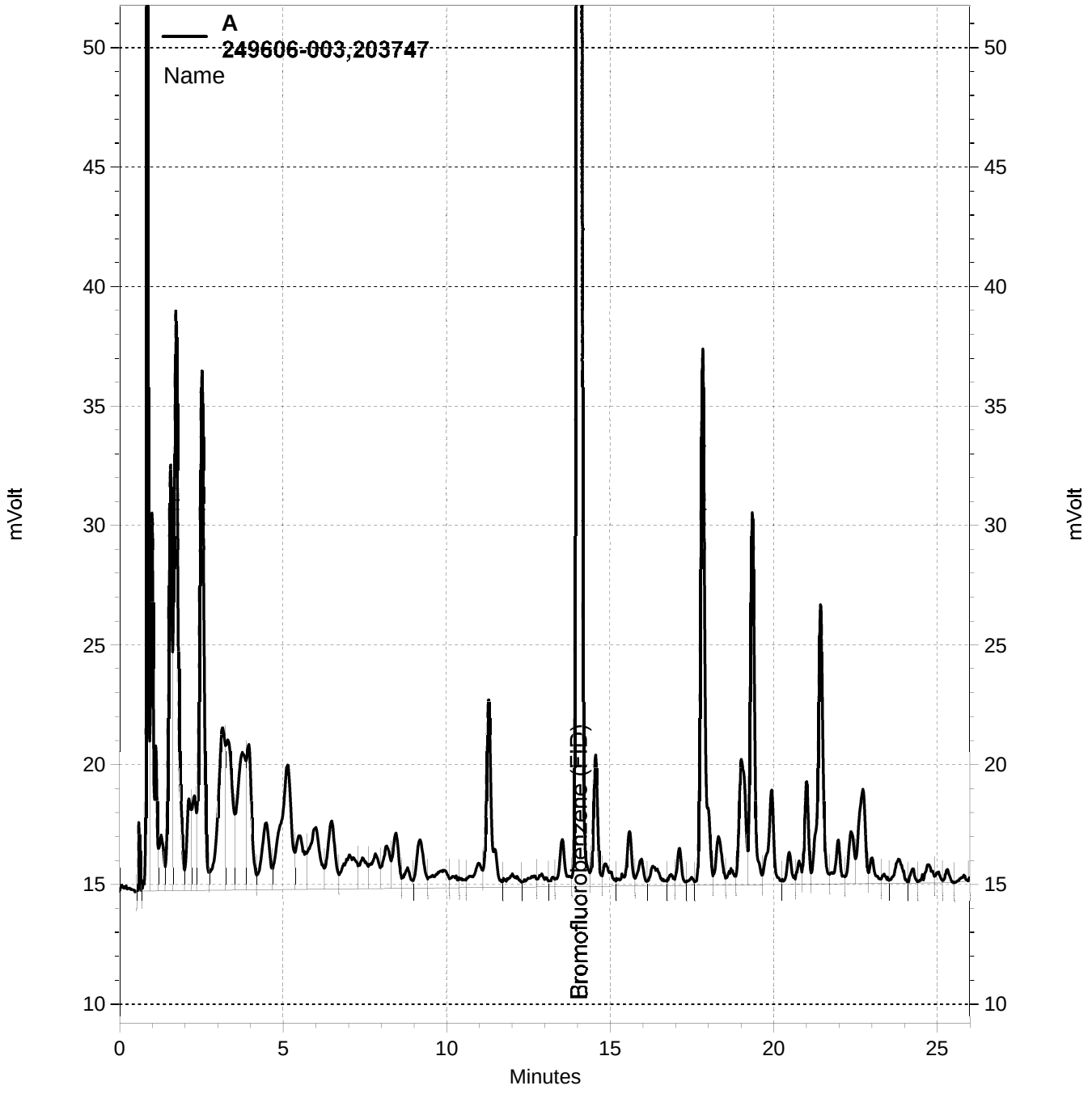
Surrogate	%REC	Limits
Bromofluorobenzene (FID)	102	76-128

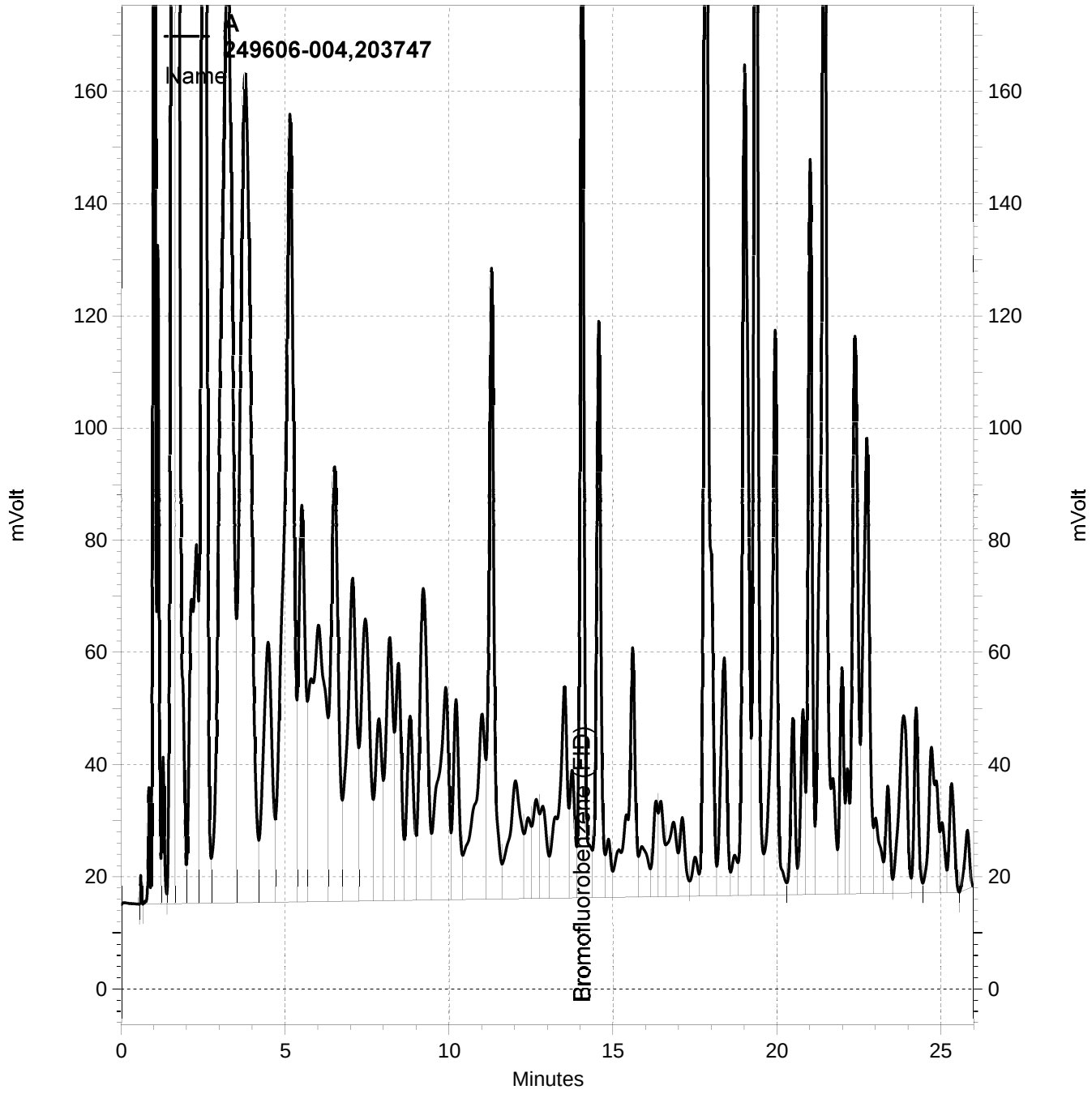
RPD= Relative Percent Difference



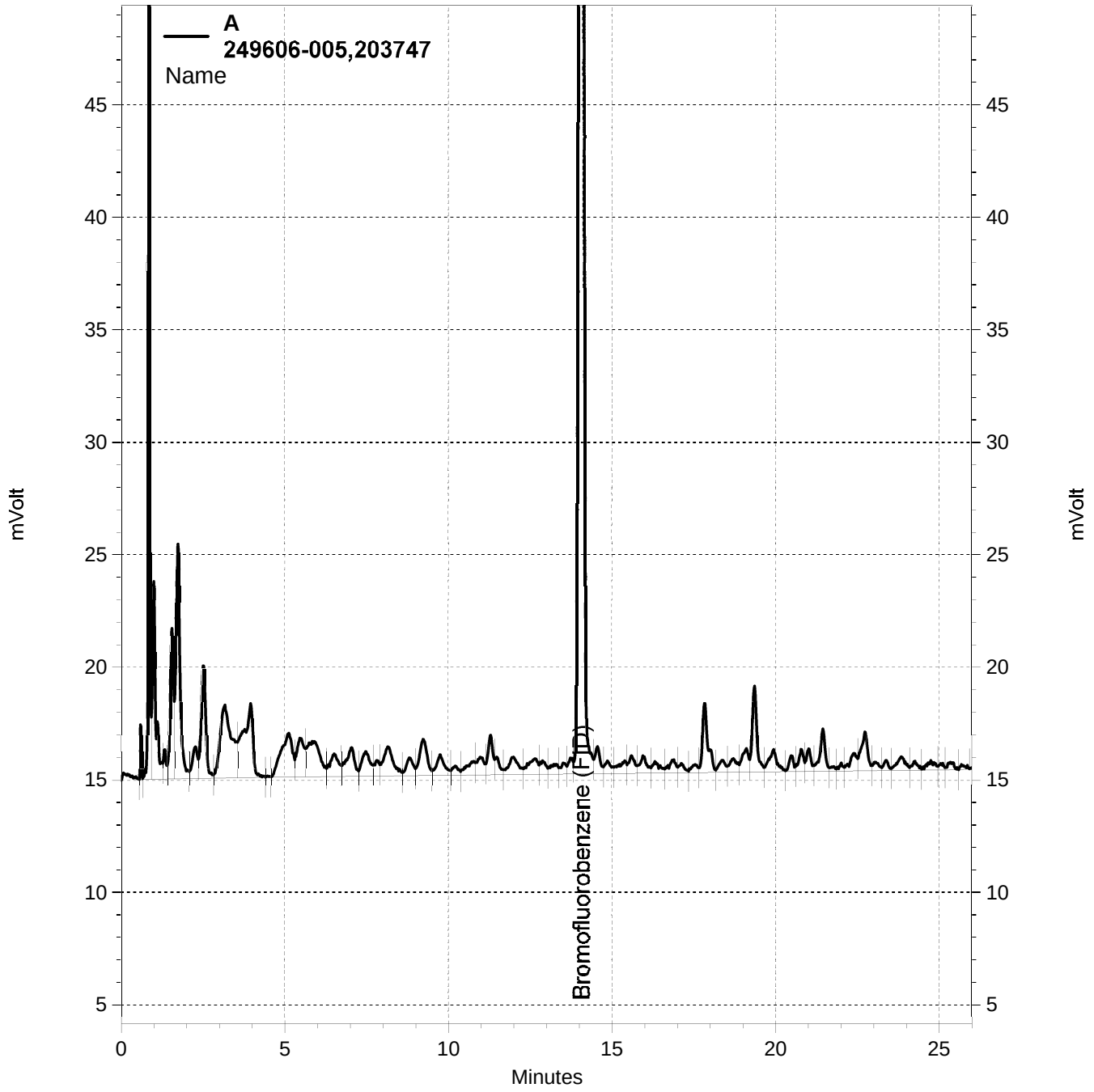
\\Lims\gdrive\ezchrom\Projects\GC19\Data\277-026, A


A
249606-002,203747
Name
mVolt
mVolt
200
175
150
125
100
75
50
25
0
0
5
10
15
20
25
Minutes
Bromofluorobenzene (FID)
\\Lims\gdrive\ezchrom\Projects\GC19\Data\277-027, A

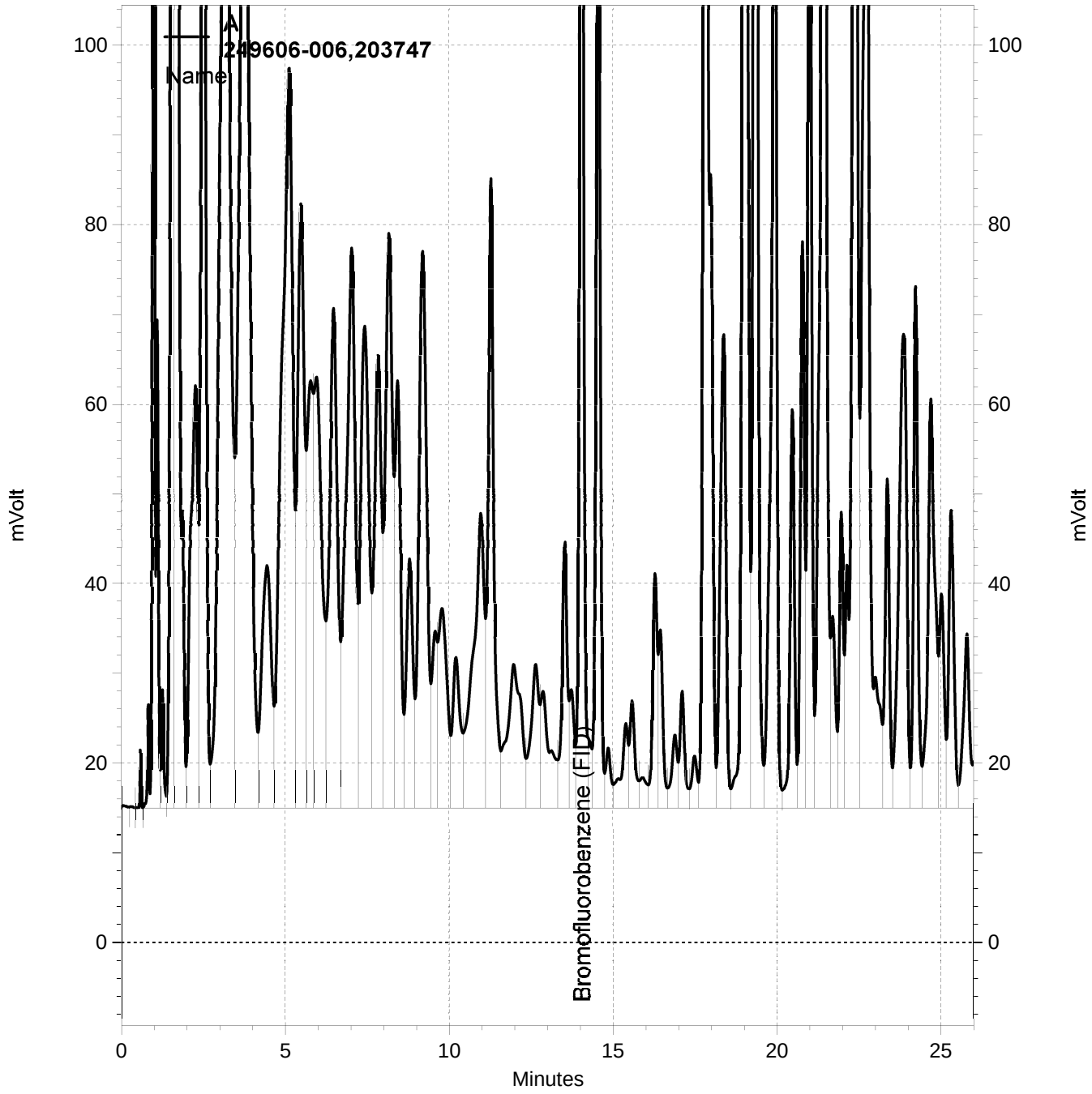

A
249606-003,203747
Name
mVolt
mVolt
Bromofluorobenzene (FID)
Minutes
0
5
10
15
20
25
10
15
20
25
30
35
40
45
50
\\Lims\gdrive\ezchrom\Projects\GC19\Data\277-028, A



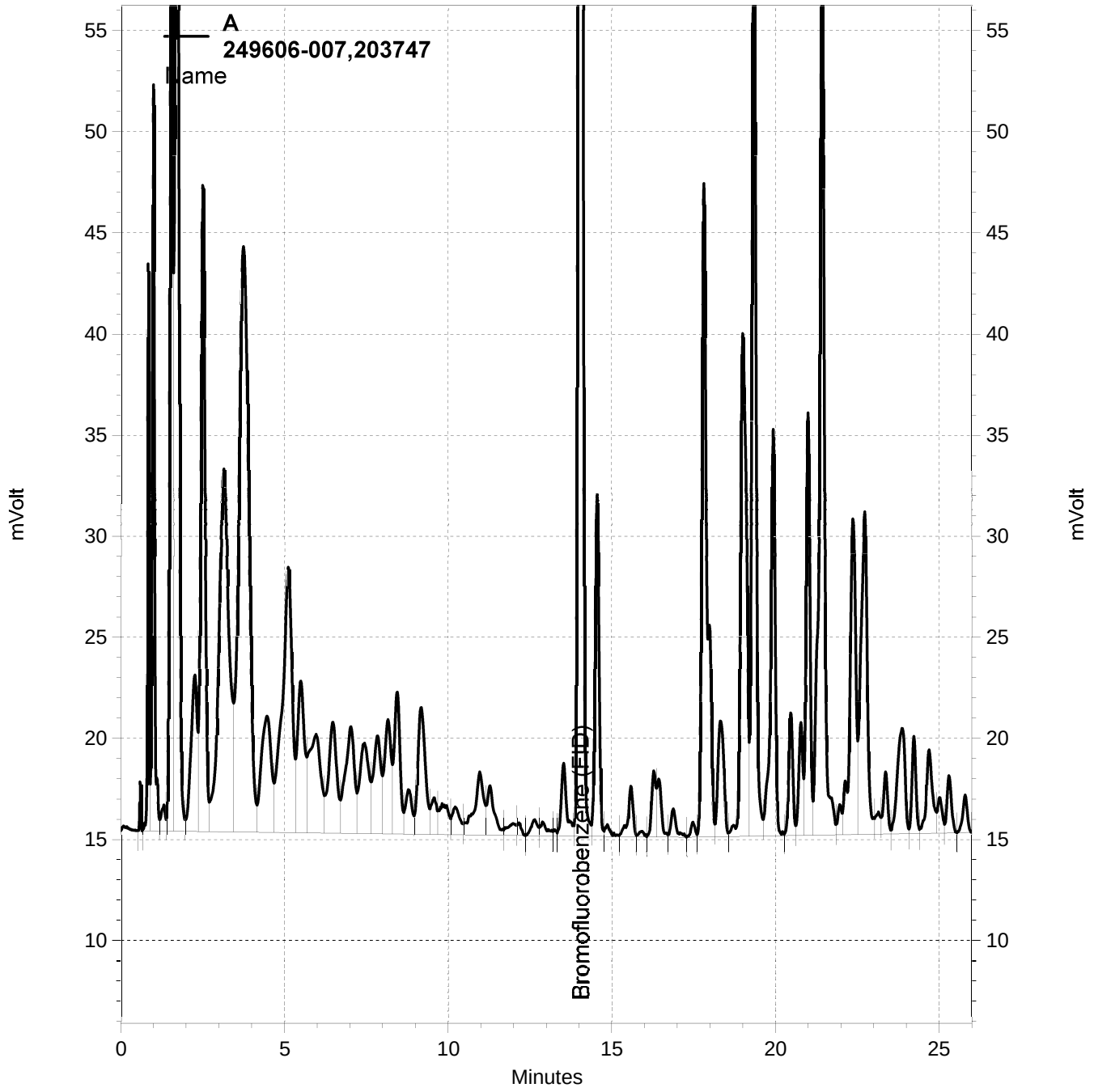
\\Lims\gdrive\ezchrom\Projects\GC19\Data\277-029, A



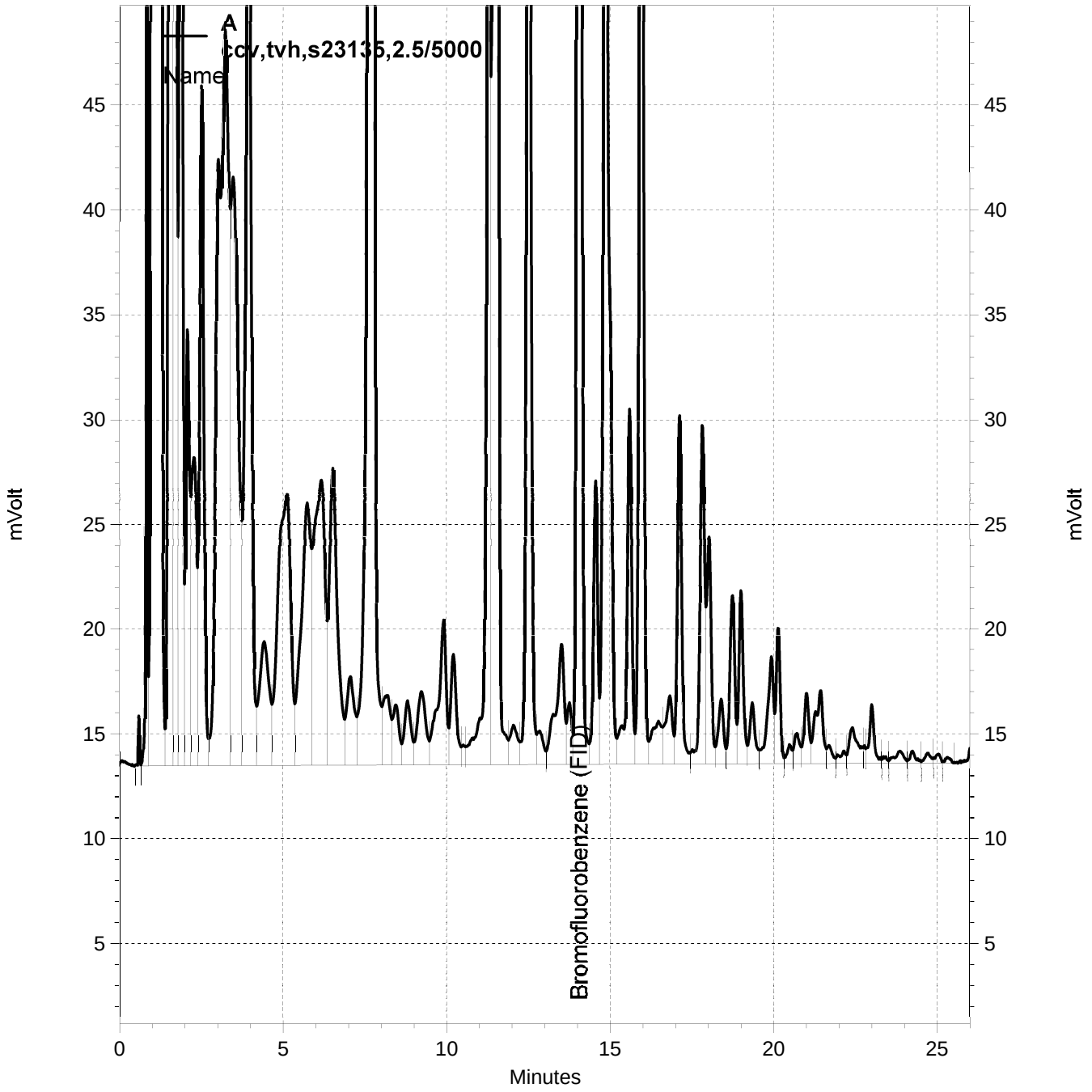
\\Lims\gdrive\ezchrom\Projects\GC19\Data\277-030, A



\\Lims\gdrive\ezchrom\Projects\GC19\Data\277-031, A



\\Lims\gdrive\ezchrom\Projects\GC19\Data\277-032, A



\\Lims\gdrive\ezchrom\Projects\GC19\Data\277-007, A

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	249606	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 3520C
Project#:	2013-02.	Analysis:	EPA 8015B
Matrix:	Water	Sampled:	10/03/13
Units:	ug/L	Received:	10/03/13
Diln Fac:	1.000	Prepared:	10/08/13
Batch#:	203832		

Field ID: MW-2 Lab ID: 249606-001
Type: SAMPLE Analyzed: 10/11/13

Analyte	Result	RL
Diesel C10-C24	67 Y	50

Surrogate	%REC	Limits
o-Terphenyl	103	62-133

Field ID: MW-7 Lab ID: 249606-002
Type: SAMPLE Analyzed: 10/11/13

Analyte	Result	RL
Diesel C10-C24	6,000	50

Surrogate	%REC	Limits
o-Terphenyl	96	62-133

Field ID: MW-8 Lab ID: 249606-003
Type: SAMPLE Analyzed: 10/10/13

Analyte	Result	RL
Diesel C10-C24	140 Y	50

Surrogate	%REC	Limits
o-Terphenyl	96	62-133

Field ID: MW-9 Lab ID: 249606-004
Type: SAMPLE Analyzed: 10/10/13

Analyte	Result	RL
Diesel C10-C24	1,500	50

Surrogate	%REC	Limits
o-Terphenyl	103	62-133

Field ID: MW-10 Lab ID: 249606-005
Type: SAMPLE Analyzed: 10/10/13

Analyte	Result	RL
Diesel C10-C24	ND	50

Surrogate	%REC	Limits
o-Terphenyl	97	62-133

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

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	249606	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 3520C
Project#:	2013-02.	Analysis:	EPA 8015B
Matrix:	Water	Sampled:	10/03/13
Units:	ug/L	Received:	10/03/13
Diln Fac:	1.000	Prepared:	10/08/13
Batch#:	203832		

Field ID: MW-11 Lab ID: 249606-006
Type: SAMPLE Analyzed: 10/10/13

Analyte	Result	RL
Diesel C10-C24	1,600	50

Surrogate	%REC	Limits
o-Terphenyl	95	62-133

Field ID: MW-12 Lab ID: 249606-007
Type: SAMPLE Analyzed: 10/10/13

Analyte	Result	RL
Diesel C10-C24	200 Y	50

Surrogate	%REC	Limits
o-Terphenyl	106	62-133

Field ID: SW-2 Lab ID: 249606-008
Type: SAMPLE Analyzed: 10/10/13

Analyte	Result	RL
Diesel C10-C24	930	50

Surrogate	%REC	Limits
o-Terphenyl	100	62-133

Type: BLANK Analyzed: 10/10/13
Lab ID: QC710958

Analyte	Result	RL
Diesel C10-C24	ND	50

Surrogate	%REC	Limits
o-Terphenyl	98	62-133

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

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	249606	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 3520C
Project#:	2013-02.	Analysis:	EPA 8015B
Matrix:	Water	Batch#:	203832
Units:	ug/L	Prepared:	10/08/13
Diln Fac:	1.000	Analyzed:	10/09/13

Type: BS Cleanup Method: EPA 3630C
Lab ID: QC710959

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	2,500	2,107	84	59-120

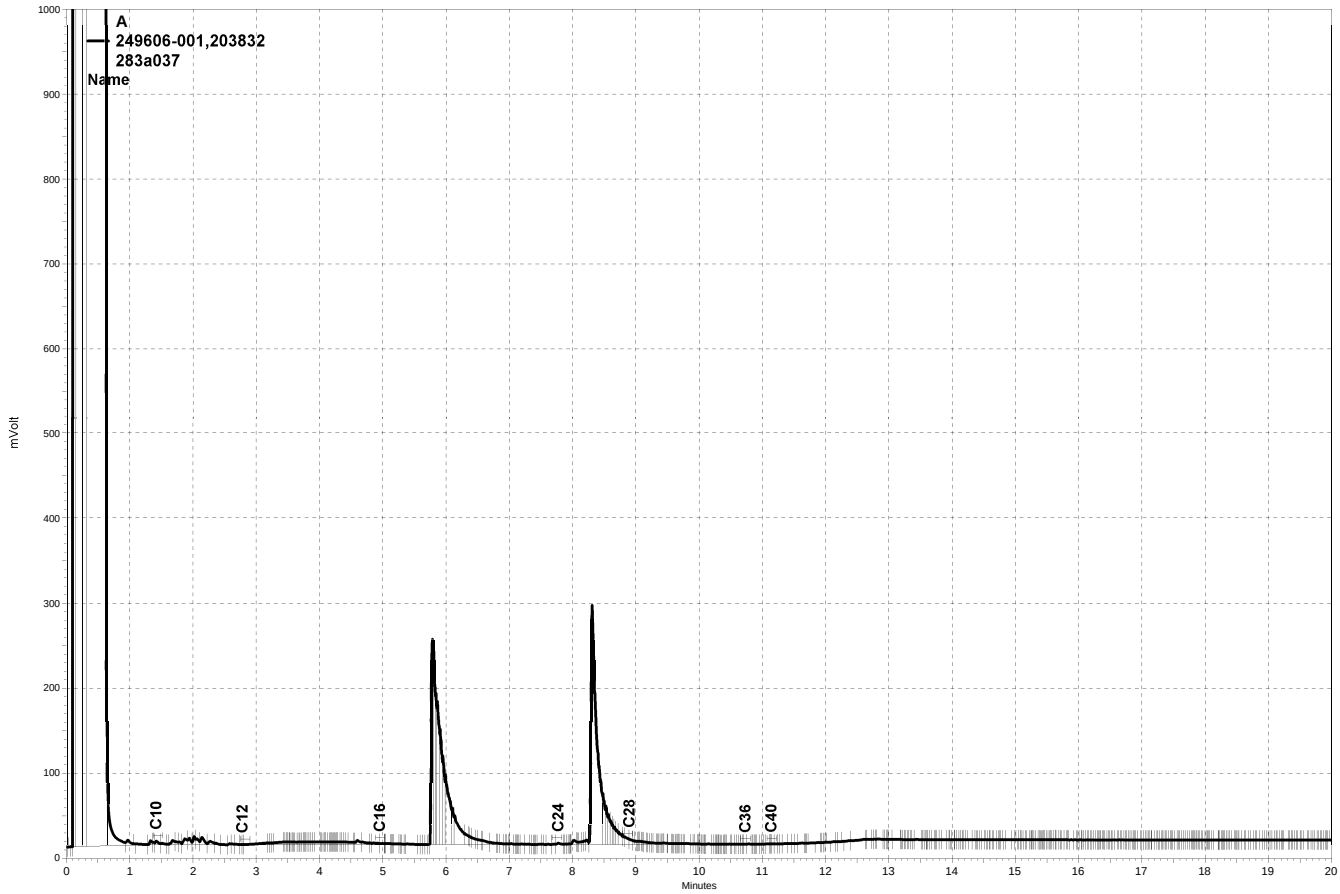
Surrogate	%REC	Limits
o-Terphenyl	106	62-133

Type: BSD Cleanup Method: EPA 3630C
Lab ID: QC710960

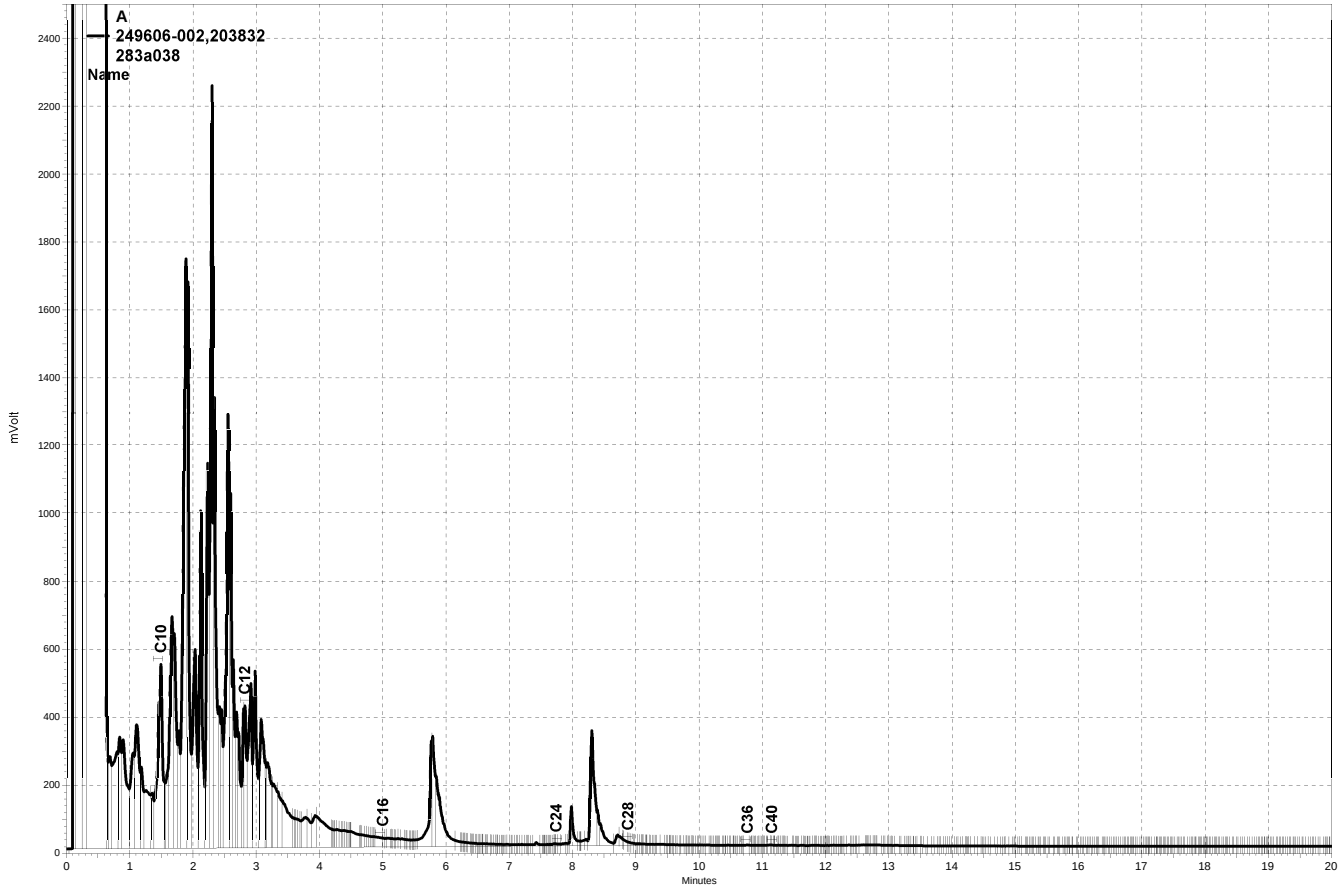
Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	2,500	2,135	85	59-120	1	46

Surrogate	%REC	Limits
o-Terphenyl	106	62-133

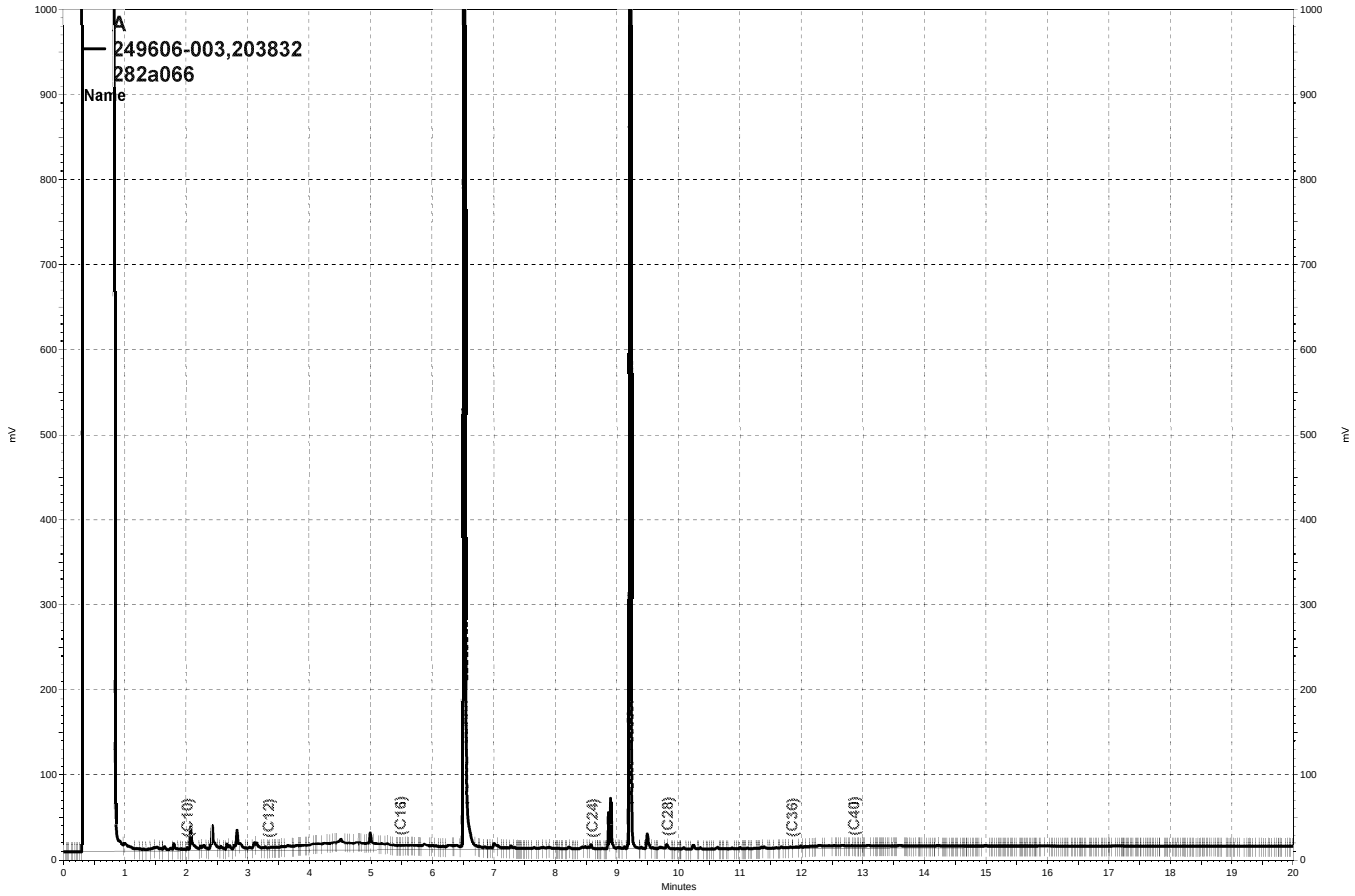
RPD= Relative Percent Difference



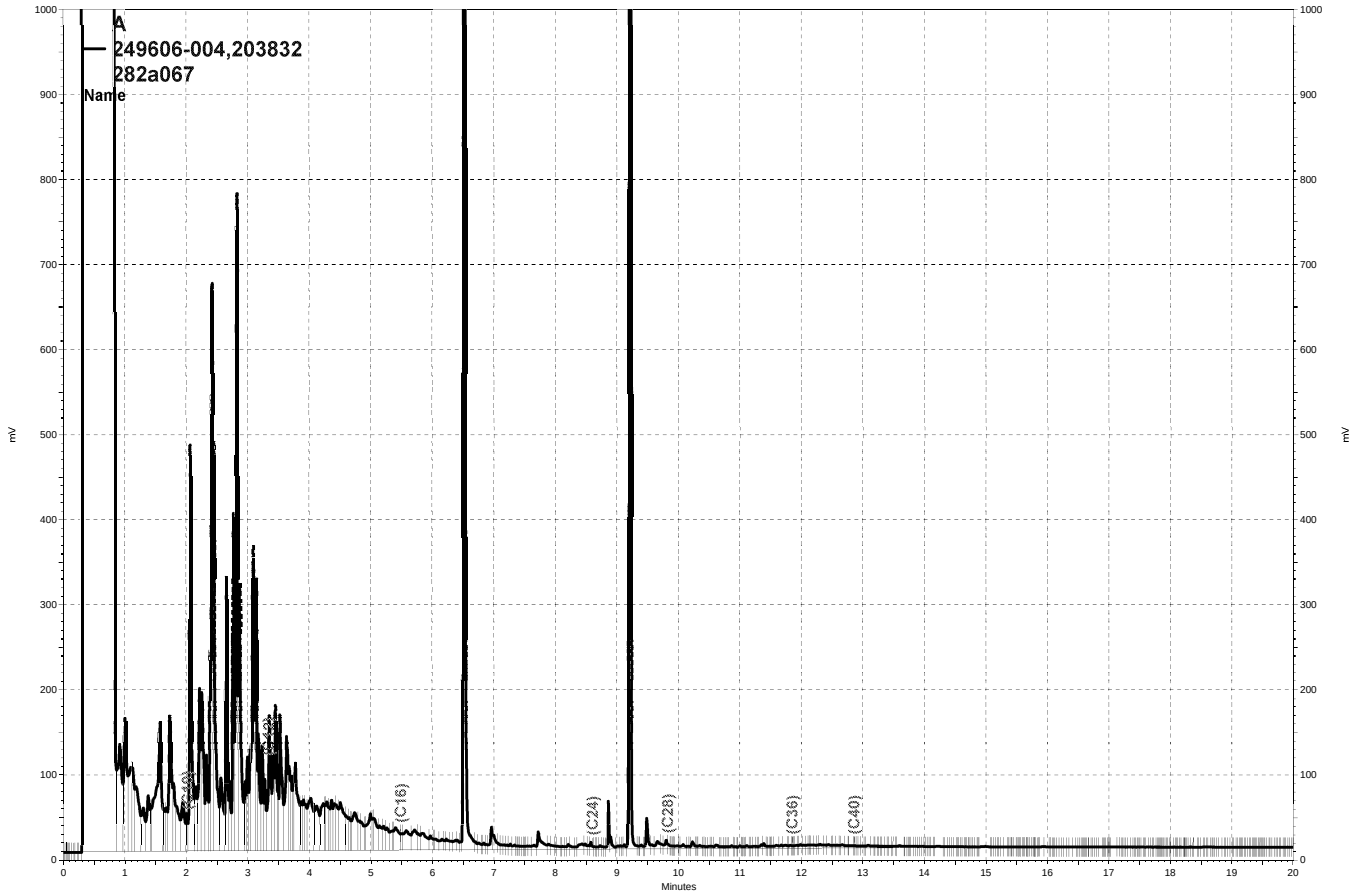
\\Lims\gdrive\ezchrom\Projects\GC26\Data\283a037, A



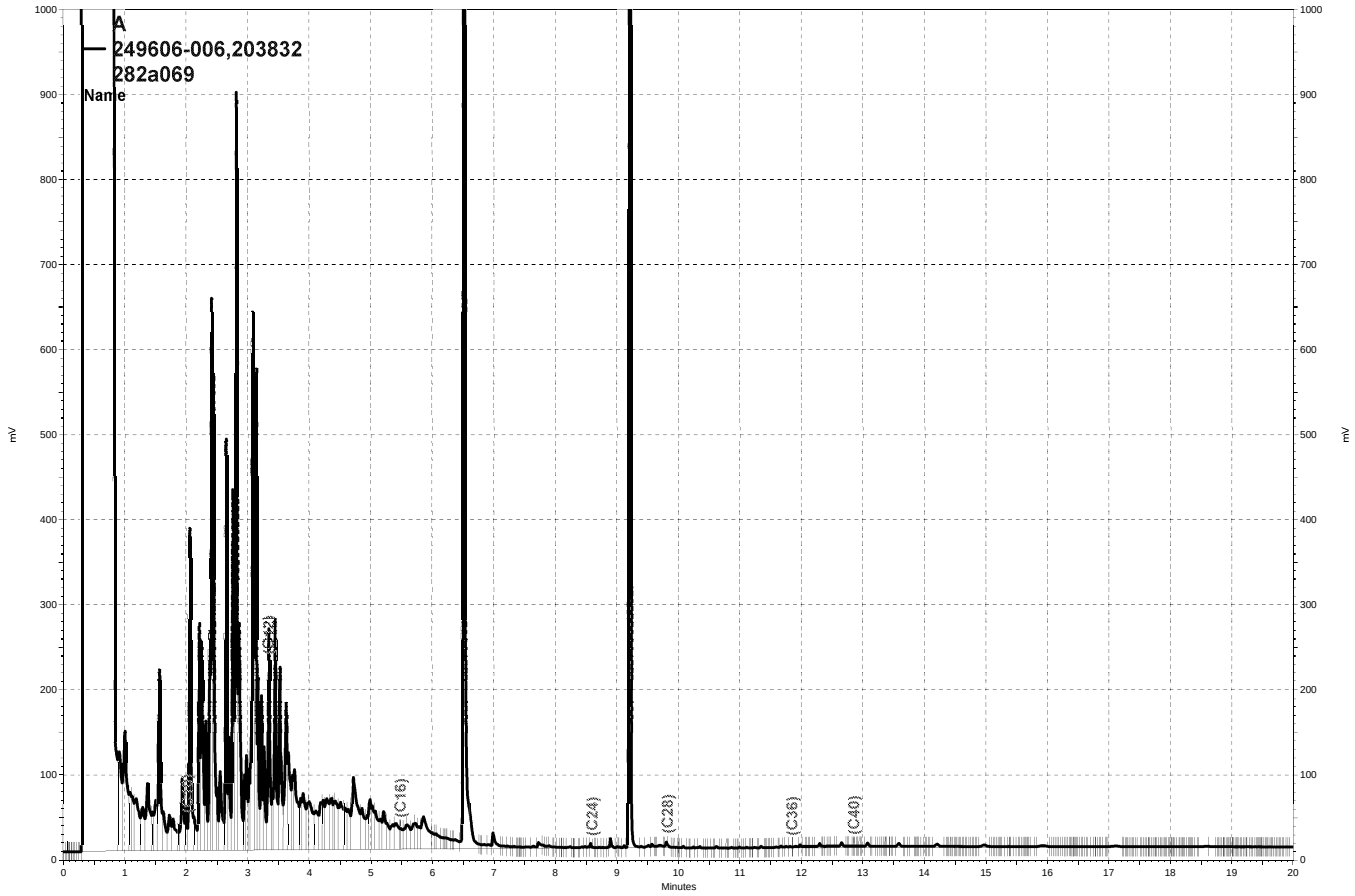
\\Lims\gdrive\ezchrom\Projects\GC26\Data\283a038, A



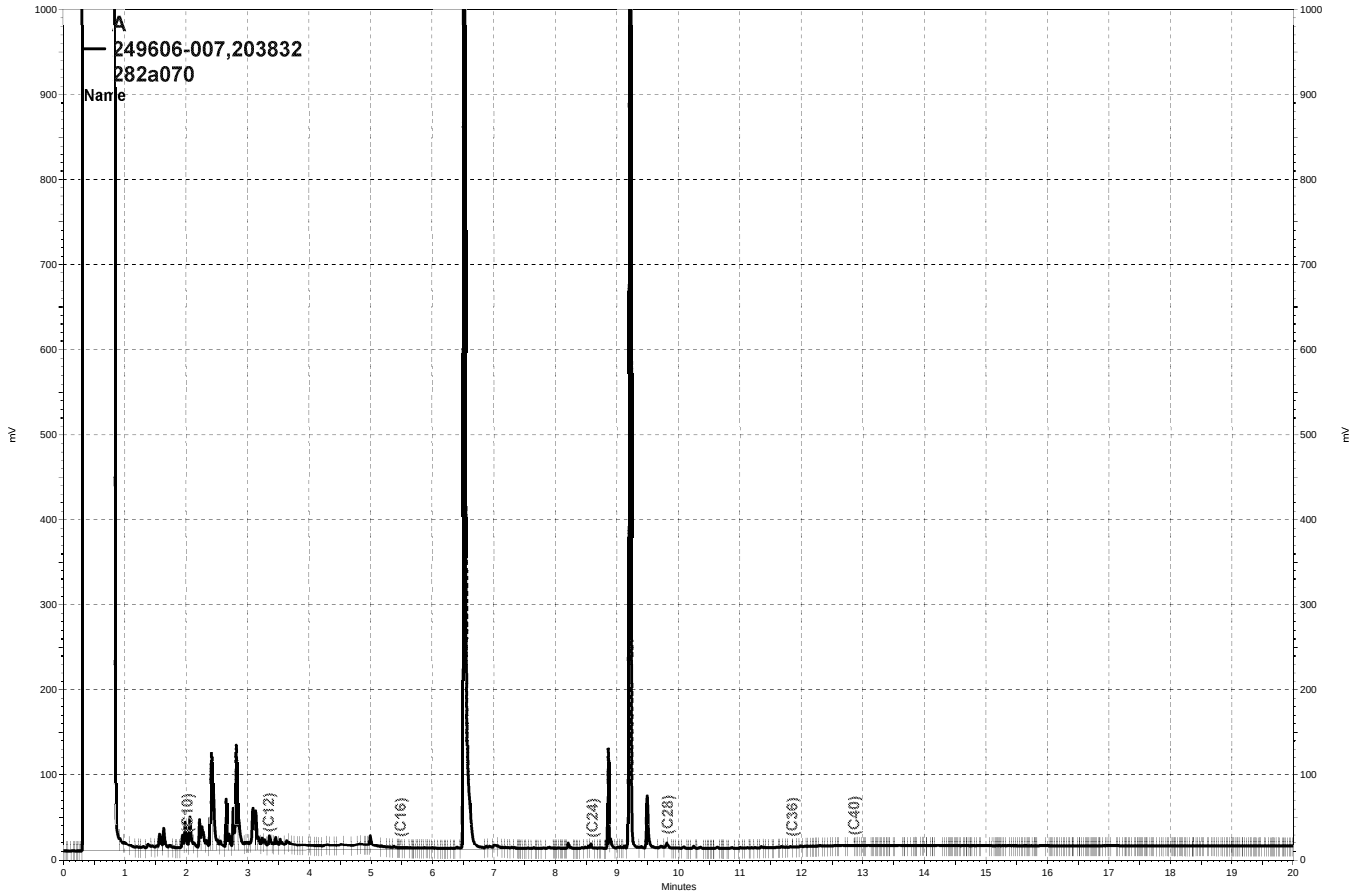
\\Lims\gdrive\ezchrom\Projects\GC17A\Data\282a066, A



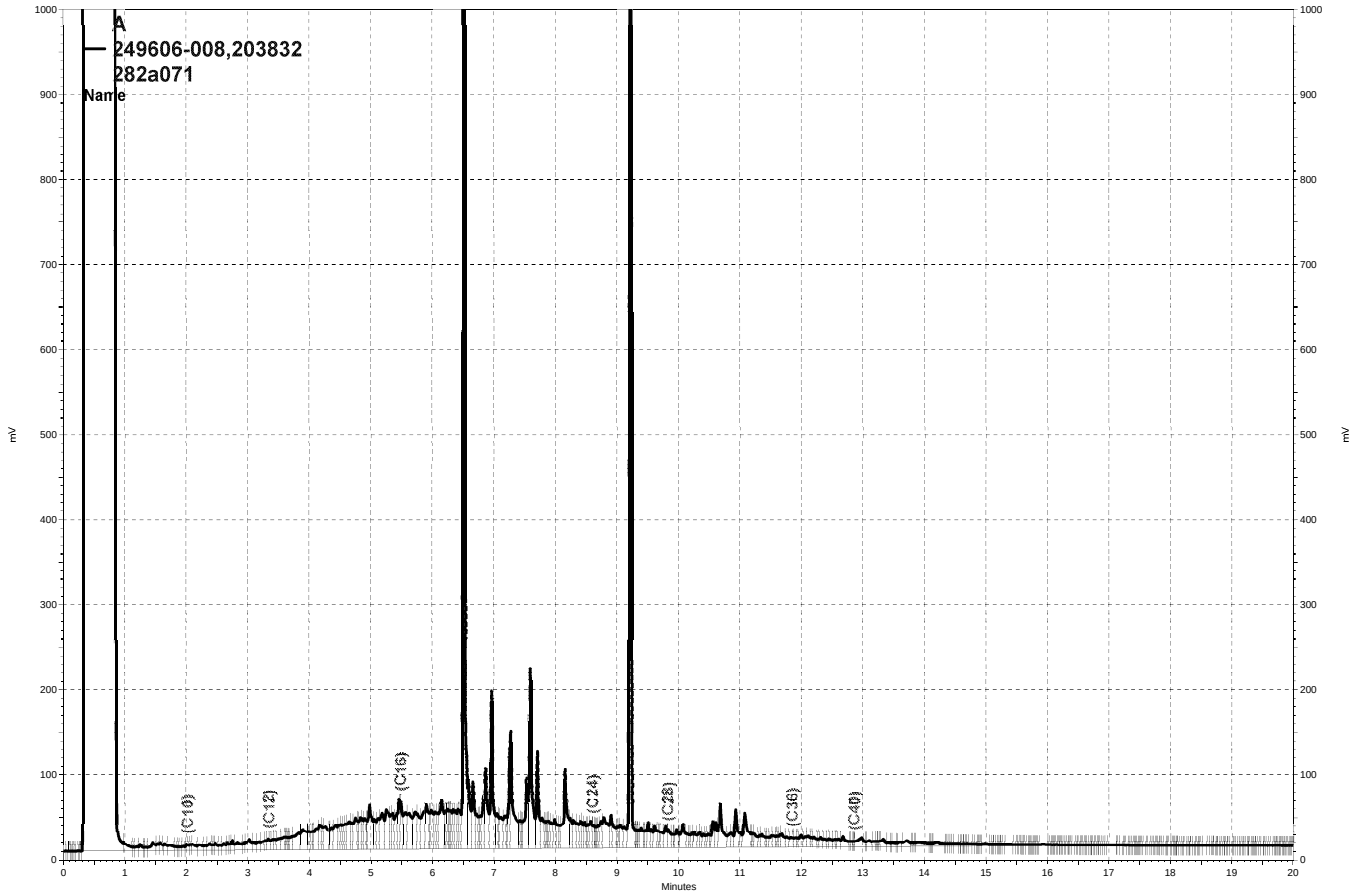
\\Lims\gdrive\ezchrom\Projects\GC17A\Data\282a067, A



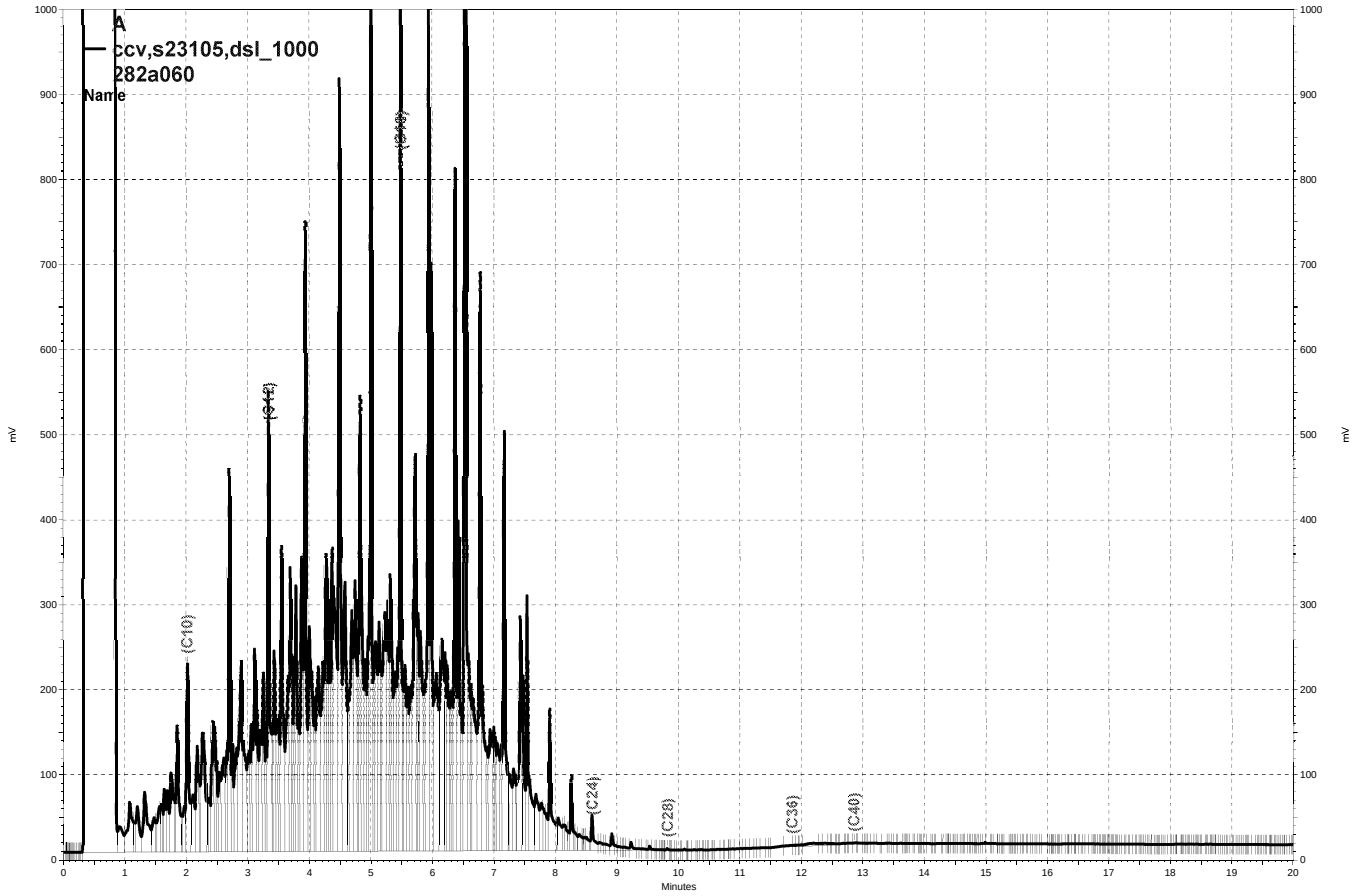
\\Lims\gdrive\ezchrom\Projects\GC17A\Data\282a069, A



\\Lims\gdrive\ezchrom\Projects\GC17A\Data\282a070, A



\\Lims\gdrive\ezchrom\Projects\GC17A\Data\282a071, A



\\Lims\gdrive\ezchrom\Projects\GC17A\Data\282a060, A

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	249606	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	METHOD
Project#:	2013-02.	Analysis:	EPA 300.0
Matrix:	Water	Batch#:	203678
Units:	mg/L	Received:	10/03/13

Field ID: MW-7 Lab ID: 249606-002
Type: SAMPLE Sampled: 10/03/13 10:30

Analyte	Result	RL	Diln Fac	Analyzed
Nitrogen, Nitrate	ND	0.25	5.000	10/03/13 16:41
Sulfate	0.55	0.50	1.000	10/03/13 15:31

Field ID: MW-9 Diln Fac: 5.000
Type: SAMPLE Sampled: 10/03/13 12:20
Lab ID: 249606-004 Analyzed: 10/03/13 16:58

Analyte	Result	RL
Nitrogen, Nitrate	ND	0.25
Sulfate	8.7	2.5

Field ID: MW-12 Diln Fac: 5.000
Type: SAMPLE Sampled: 10/03/13 11:25
Lab ID: 249606-007 Analyzed: 10/03/13 17:16

Analyte	Result	RL
Nitrogen, Nitrate	ND	0.25
Sulfate	17	2.5

Type: BLANK Diln Fac: 1.000
Lab ID: QC710294 Analyzed: 10/03/13 10:34

Analyte	Result	RL
Nitrogen, Nitrate	ND	0.05
Sulfate	ND	0.50

ND= Not Detected
RL= Reporting Limit

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	249606	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	METHOD
Project#:	2013-02.	Analysis:	EPA 300.0
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC710295	Batch#:	203678
Matrix:	Water	Analyzed:	10/03/13 10:51
Units:	mg/L		

Analyte	Spiked	Result	%REC	Limits
Nitrogen, Nitrate	1.000	0.9480	95	80-120
Sulfate	10.00	9.385	94	80-120

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	249606	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	METHOD
Project#:	2013-02.	Analysis:	EPA 300.0
Field ID:	ZZZZZZZZZZ	Diln Fac:	1.010
Type:	SSPIKE	Batch#:	203678
MSS Lab ID:	249595-004	Sampled:	10/02/13 12:00
Lab ID:	QC710341	Received:	10/03/13
Matrix:	Water	Analyzed:	10/03/13 14:56
Units:	mg/L		

Analyte	MSS Result	Spiked	Result	%REC	Limits
Nitrogen, Nitrate	<0.01000	0.2525	0.2844	113	80-120
Sulfate	10.79	2.525	13.32	100 NM	80-120

NM= Not Meaningful: Sample concentration > 4X spike concentration

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	249606	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	METHOD
Project#:	2013-02.	Analysis:	EPA 300.0
Field ID:	ZZZZZZZZZZ	Diln Fac:	1.010
Type:	SSPIKE	Batch#:	203678
MSS Lab ID:	249595-005	Sampled:	10/02/13 14:05
Lab ID:	QC710342	Received:	10/03/13
Matrix:	Water	Analyzed:	10/03/13 15:14
Units:	mg/L		

Analyte	MSS Result	Spiked	Result	%REC	Limits
Nitrogen, Nitrate	<0.01000	0.2525	0.2212	88	80-120
Sulfate	1.284	2.525	3.746	97	80-120

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	249606	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	METHOD
Project#:	2013-02.	Analysis:	EPA 300.0
Field ID:	MW-12	Diln Fac:	5.000
MSS Lab ID:	249606-007	Batch#:	203678
Matrix:	Water	Sampled:	10/03/13 11:25
Units:	mg/L	Received:	10/03/13

Type: MS Analyzed: 10/03/13 20:10
Lab ID: QC710451

Analyte	MSS Result	Spiked	Result	%REC	Limits
Nitrogen, Nitrate	0.05970	1.250	1.245	95	80-120
Sulfate	16.93	12.50	29.43	100	80-120

Type: MSD Analyzed: 10/03/13 20:27
Lab ID: QC710452

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Nitrogen, Nitrate	1.250	1.228	93	80-120	1	20
Sulfate	12.50	29.14	98	80-120	1	20

RPD= Relative Percent Difference

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	249606	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	METHOD
Project#:	2013-02.	Analysis:	EPA 300.0
Field ID:	MW-12	Diln Fac:	5.000
Type:	SDUP	Batch#:	203678
MSS Lab ID:	249606-007	Sampled:	10/03/13 11:25
Lab ID:	QC710518	Received:	10/03/13
Matrix:	Water	Analyzed:	10/04/13 09:50
Units:	mg/L		

Analyte	MSS Result	Result	RL	RPD	Lim
Nitrogen, Nitrate	<0.2500	ND	0.2500	NC	20
Sulfate	16.93	17.12	2.500	1	20

NC= Not Calculated
ND= Not Detected
RL= Reporting Limit
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Biochemical Oxygen Demand

Lab #:	249606	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	METHOD
Project#:	2013-02.	Analysis:	SM5210B
Analyte:	Biochemical Oxygen Demand	Batch#:	203731
Matrix:	Water	Received:	10/03/13
Units:	mg/L	Prepared:	10/04/13 13:57
Diln Fac:	1.000	Analyzed:	10/09/13 11:54

Field ID	Type	Lab ID	Result	RL	Sampled
MW-7	SAMPLE	249606-002	ND	30	10/03/13 10:30
MW-9	SAMPLE	249606-004	6.0	5.0	10/03/13 12:20
MW-12	SAMPLE	249606-007	ND	5.0	10/03/13 11:25
	BLANK	QC710528	ND	5.0	

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Biochemical Oxygen Demand

Lab #:	249606	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	METHOD
Project#:	2013-02.	Analysis:	SM5210B
Analyte:	Biochemical Oxygen Demand	Batch#:	203731
Field ID:	ZZZZZZZZZZ	Sampled:	10/03/13 10:05
MSS Lab ID:	249605-001	Received:	10/03/13
Matrix:	Water	Prepared:	10/04/13 13:57
Units:	mg/L	Analyzed:	10/09/13 11:54
Diln Fac:	1.000		

Type	Lab ID	MSS Result	Spiked	Result	RL	%REC	Limits	RPD	Lim
BS	QC710529		198.0	198.2		100	85-115		
BSD	QC710530		198.0	171.7		87	85-115	14	31
SDUP	QC710531	<5.000		<5.000	5.000			NC	42

NC= Not Calculated
RL= Reporting Limit
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Chemical Oxygen Demand

Lab #:	249606	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	METHOD
Project#:	2013-02.	Analysis:	SM5220D
Analyte:	Chemical Oxygen Demand	Batch#:	203851
Matrix:	Water	Received:	10/03/13
Units:	mg/L	Prepared:	10/08/13 14:36
Diln Fac:	1.000	Analyzed:	10/08/13 15:00

Field ID	Type	Lab ID	Result	RL	Sampled
MW-7	SAMPLE	249606-002	52	10	10/03/13 10:30
MW-9	SAMPLE	249606-004	43	10	10/03/13 12:20
MW-12	SAMPLE	249606-007	30	10	10/03/13 11:25
	BLANK	QC711029	ND	10	

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Chemical Oxygen Demand

Lab #:	249606	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	METHOD
Project#:	2013-02.	Analysis:	SM5220D
Analyte:	Chemical Oxygen Demand	Batch#:	203851
Field ID:	ZZZZZZZZZZ	Sampled:	09/30/13 10:35
MSS Lab ID:	249529-003	Received:	10/01/13
Matrix:	Water	Prepared:	10/08/13 14:36
Units:	mg/L	Analyzed:	10/08/13 15:00

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim	Diln Fac
LCS	QC711030		75.00	73.14	98	90-110			1.000
MS	QC711031	2.940	300.0	283.0	94	70-124			2.000
MSD	QC711032		300.0	296.1	99	70-124	5	20	2.000

RPD= Relative Percent Difference


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 251990
ANALYTICAL REPORT

Stellar Environmental Solutions	Project : 2013-02.
2198 6th Street	Location : Redwood Regional Park
Berkeley, CA 94710	Level : II

Sample ID	Lab ID
MW-7	251990-001
MW-9	251990-002
MW-10	251990-003
MW-11	251990-004
MW-12	251990-005

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: Tracy Babjar Date: 01/06/2014

Tracy Babjar
Project Manager
tracy.babjar@ctberk.com
(510) 204-2226

NELAP # 01107CA

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**251990**
Client:	**Stellar Environmental Solutions**
Project:	**2013-02.**
Location:	**Redwood Regional Park**
Request Date:	**12/30/13**
Samples Received:	**12/30/13**

This data package contains sample and QC results for five water samples, requested for the above referenced project on 12/30/13. 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.

Biochemical Oxygen Demand (SM5210B):
No analytical problems were encountered.

251990

Chain of Custody Record

Lab job no. _____

Date _____

Page 1 of 1

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

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

Project Name Redwood Regional Park
Project Number 2013-02

Method of Shipment Hand Delivery
Shipment No. _____
Airbill No. _____
Cooler No. _____
Project Manager Richard Makdisi
Telephone No. (510) 644-3123
Fax No. (510) 644-3859
Samplers: *(Signature)* _____

Field Sample Number	Location/ Depth	Date	Time	Sample Type	Type/Size of Container	Preservation: Cooler	Preservation: Chemical	No. of Containers	Filtered	Analysis Required: TPH-G (8015M)	Analysis Required: BTEX/MTBE (8021)	Analysis Required: TPH-D (8015)	Analysis Required: Nitrate	Analysis Required: Sulfate	Analysis Required: BOD	Analysis Required: COD	Remarks
1 MW-7		12/30/13	1022		Mixture		HCl/H_2SO_4	8		X	X	X	X	X	X	X	
2 MW-9		↓	1155		↓		↓	8		X	X	X	X	X	X	X	
3 MW-10			0944				HCl	5		X	X	X					
4 MW-11			1220				↓	5		X	X	X					
5 MW-12			1115				HCl/H_2SO_4	8		X	X	X	X	X	X	X	

Relinquished by:	Date	Received by:	Date	Relinquished by:	Date	Received by:	Date
Signature Peter	12/30/13	Signature	12/30/13	Signature		Signature	
Printed Peter Cornish	Time 1307	Printed ISABELLE CHIU	Time 1307	Printed	Time	Printed	Time
Company Stellar Environmental		Company C&T		Company		Company	

Turnaround Time: 5 Day TAT
Comments: Samples on ice

Relinquished by:	Date	Received by:	Date
Signature		Signature	
Printed	Time	Printed	Time
Company		Company	

2000-00-01

★ Stellar Environmental Solutions

2198 Sixth Street #201, Berkeley, CA 94710

COOLER RECEIPT CHECKLIST

Curtis & Tompkins, Ltd.

Login # 251990 Date Received 12/30/13 Number of coolers 1
Client SES Project REDWOOD REGIONAL PARK (2013-02)

Date Opened 12/30/13 By (print) IK (sign) Tina Ranka
Date Logged in ↓ By (print) ↓ (sign) ↓

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: * Notify PM if temperature exceeds 6°C

Type of ice used: ☒ Wet ☐ Blue/Gel ☐ None Temp(°C) _____

☒ Samples Received on ice & cold without a temperature blank; ~~temp. taken with IR gun~~

☒ 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 there any missing / extra samples? _____ YES (NO)
11. Are samples in the appropriate containers for indicated tests? _____ (YES) NO
12. Are sample labels present, in good condition and complete? _____ (YES) NO
13. Do the sample labels agree with custody papers? _____ (YES) NO
14. Was sufficient amount of sample sent for tests requested? _____ (YES) NO
15. Are the samples appropriately preserved? _____ (YES) NO N/A
16. Did you check preservatives for all bottles for each sample? _____ (YES) NO N/A
17. Did you document your preservative check? _____ (YES) NO N/A
18. Did you change the hold time in LIMS for unpreserved VOAs? _____ YES NO (N/A)
19. Did you change the hold time in LIMS for preserved terracores? _____ YES NO (N/A)
20. Are bubbles > 6mm absent in VOA samples? _____ (YES) NO N/A IK
21. Was the client contacted concerning this sample delivery? _____ YES (NO)
   If YES, Who was called? _____ By _____ Date: _____

COMMENTS

_____

_____

_____

_____

_____

_____

Rev 10; 11/11

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	251990	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2013-02.		
Matrix:	Water	Batch#:	206685
Units:	ug/L	Sampled:	12/30/13
Diln Fac:	1.000	Received:	12/30/13

Field ID: MW-7 Lab ID: 251990-001
Type: SAMPLE Analyzed: 12/31/13

Analyte	Result	RL	Analysis
Gasoline C7-C12	6,000 Y	50	EPA 8015B
MTBE	ND	2.0	EPA 8021B
Benzene	ND	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	100	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)	114	77-128	EPA 8015B
Bromofluorobenzene (PID)	127	75-132	EPA 8021B

Field ID: MW-9 Lab ID: 251990-002
Type: SAMPLE Analyzed: 01/01/14

Analyte	Result	RL	Analysis
Gasoline C7-C12	3,000 Y	50	EPA 8015B
MTBE	ND	2.0	EPA 8021B
Benzene	22 C	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	120	0.50	EPA 8021B
m,p-Xylenes	4.6 C	0.50	EPA 8021B
o-Xylene	ND	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Bromofluorobenzene (FID)	108	77-128	EPA 8015B
Bromofluorobenzene (PID)	124	75-132	EPA 8021B

Field ID: MW-10 Lab ID: 251990-003
Type: SAMPLE Analyzed: 01/01/14

Analyte	Result	RL	Analysis
Gasoline C7-C12	220 Y	50	EPA 8015B
MTBE	3.7	2.0	EPA 8021B
Benzene	ND	0.50	EPA 8021B
Toluene	0.61	0.50	EPA 8021B
Ethylbenzene	2.0	0.50	EPA 8021B
m,p-Xylenes	ND	0.50	EPA 8021B
o-Xylene	1.5 C	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Bromofluorobenzene (FID)	95	77-128	EPA 8015B
Bromofluorobenzene (PID)	101	75-132	EPA 8021B

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

Curtis & Tompkins Sample Preservation for 251990

Sample	pH: <2	>9	>12	Other
-001a	[ ]	[ ]	[ ]	_____
b	[ ]	[ ]	[ ]	_____
c	[ ]	[ ]	[ ]	_____
d	[X]	[ ]	[ ]	_____
e	[ ]	[ ]	[ ]	_____
f	[ ]	[ ]	[ ]	_____
g	[ ]	[ ]	[ ]	_____
h	[ ]	[ ]	[ ]	_____
-002a	[ ]	[ ]	[ ]	_____
b	[ ]	[ ]	[ ]	_____
c	[ ]	[ ]	[ ]	_____
d	[X]	[ ]	[ ]	_____
e	[ ]	[ ]	[ ]	_____
f	[ ]	[ ]	[ ]	_____
g	[ ]	[ ]	[ ]	_____
h	[ ]	[ ]	[ ]	_____
-005a	[ ]	[ ]	[ ]	_____
b	[ ]	[ ]	[ ]	_____
c	[ ]	[ ]	[ ]	_____
d	[X]	[ ]	[ ]	_____
e	[ ]	[ ]	[ ]	_____
f	[ ]	[ ]	[ ]	_____
g	[ ]	[ ]	[ ]	_____
h	[ ]	[ ]	[ ]	_____

Analyst: TR
Date: 12/30/13

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	251990	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2013-02.		
Matrix:	Water	Batch#:	206685
Units:	ug/L	Sampled:	12/30/13
Diln Fac:	1.000	Received:	12/30/13

Field ID: MW-11 Lab ID: 251990-004
Type: SAMPLE Analyzed: 01/01/14

Analyte	Result	RL	Analysis
Gasoline C7-C12	2,500 Y	50	EPA 8015B
MTBE	ND	2.0	EPA 8021B
Benzene	13 C	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	29	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)	119	77-128	EPA 8015B
Bromofluorobenzene (PID)	117	75-132	EPA 8021B

Field ID: MW-12 Lab ID: 251990-005
Type: SAMPLE Analyzed: 01/01/14

Analyte	Result	RL	Analysis
Gasoline C7-C12	210 Y	50	EPA 8015B
MTBE	2.5 C	2.0	EPA 8021B
Benzene	ND	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	0.68	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)	102	77-128	EPA 8015B
Bromofluorobenzene (PID)	108	75-132	EPA 8021B

Type: BLANK Analyzed: 12/31/13
Lab ID: QC722614

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)	80	77-128	EPA 8015B
Bromofluorobenzene (PID)	85	75-132	EPA 8021B

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

Curtis & Tompkins, Ltd.

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	251990	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2013-02.	Analysis:	EPA 8021B
Matrix:	Water	Batch#:	206685
Units:	ug/L	Analyzed:	12/31/13
Diln Fac:	1.000		

Type: BS Lab ID: QC722611

Analyte	Spiked	Result	%REC	Limits
MTBE	10.00	9.996	100	74-132
Benzene	10.00	9.262	93	80-120
Toluene	10.00	8.786	88	80-120
Ethylbenzene	10.00	9.462	95	80-120
m,p-Xylenes	10.00	8.748	87	80-120
o-Xylene	10.00	8.963	90	80-120

Surrogate	%REC	Limits
Bromofluorobenzene (PID)	90	75-132

Type: BSD Lab ID: QC722612

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	10.00	10.43	104	74-132	4	36
Benzene	10.00	9.702	97	80-120	5	20
Toluene	10.00	9.021	90	80-120	3	20
Ethylbenzene	10.00	9.192	92	80-120	3	20
m,p-Xylenes	10.00	9.271	93	80-120	6	20
o-Xylene	10.00	9.097	91	80-120	1	20

Surrogate	%REC	Limits
Bromofluorobenzene (PID)	89	75-132

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	251990	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2013-02.	Analysis:	EPA 8015B
Matrix:	Water	Diln Fac:	1.000
Units:	ug/L	Batch#:	206685

Type: BS Analyzed: 12/31/13
Lab ID: QC722718

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1,000	949.7	95	80-120

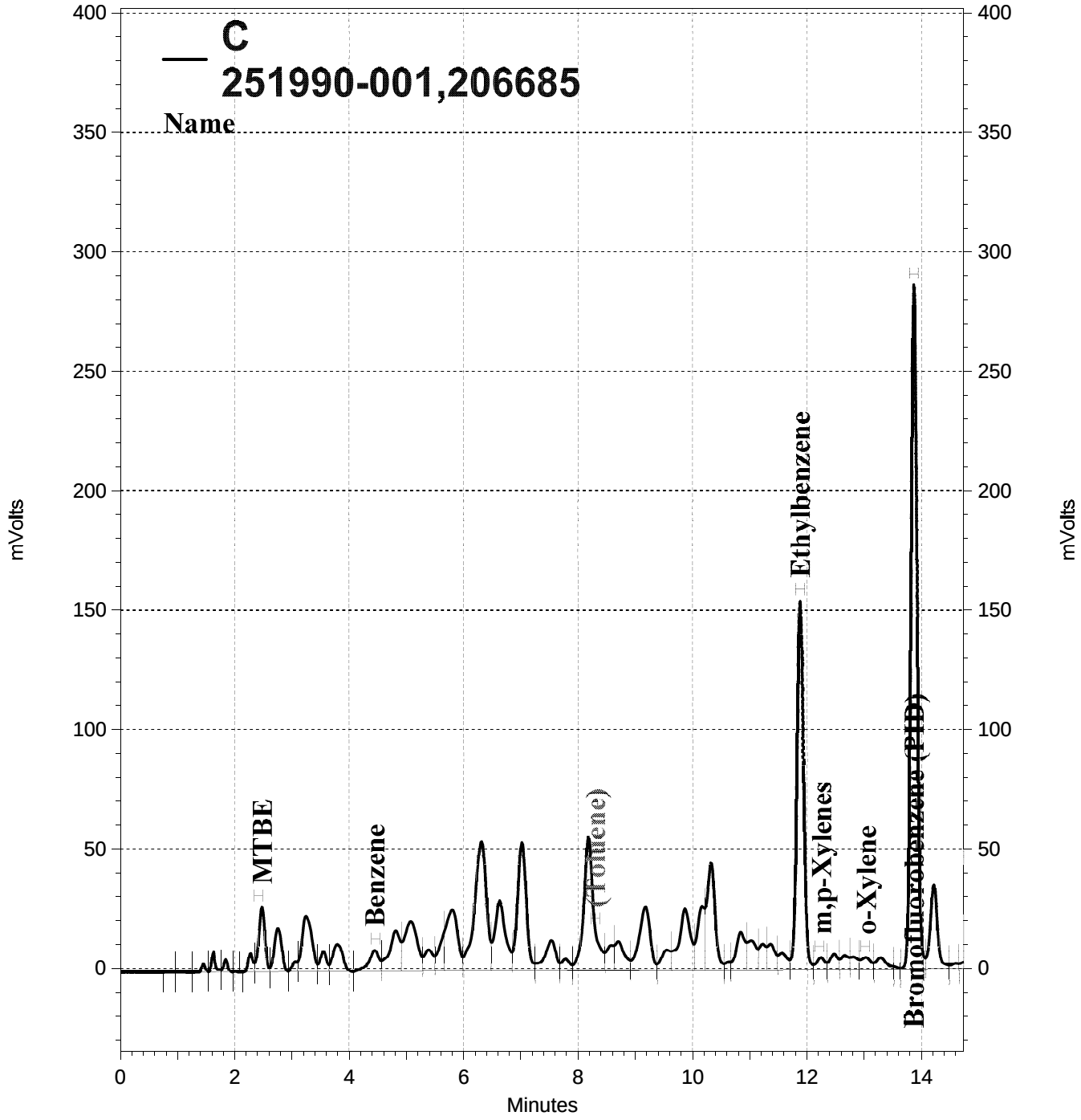
Surrogate	%REC	Limits
Bromofluorobenzene (FID)	84	77-128

Type: BSD Analyzed: 01/01/14
Lab ID: QC722719

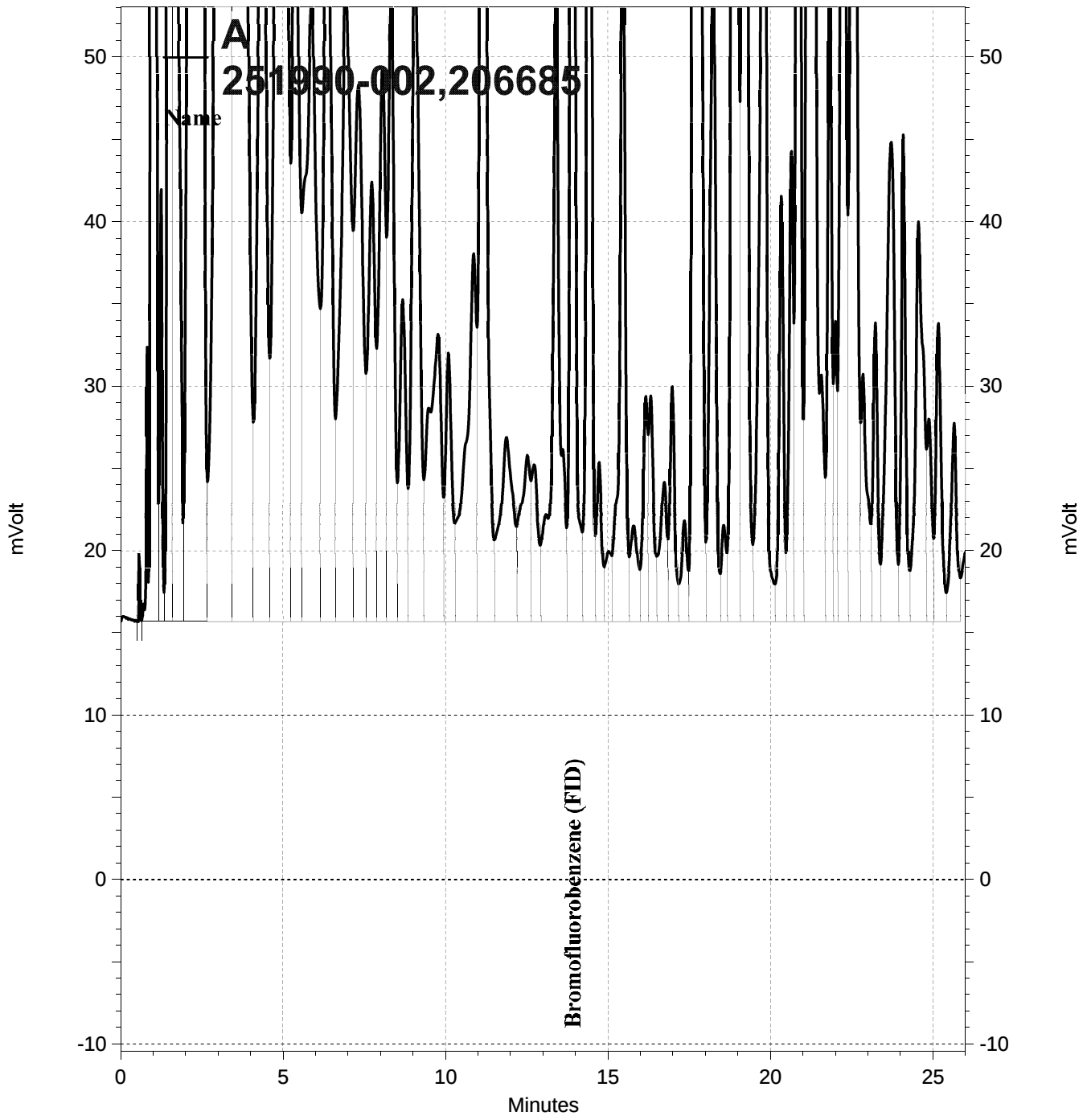
Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	3,000	2,784	93	80-120	2	20

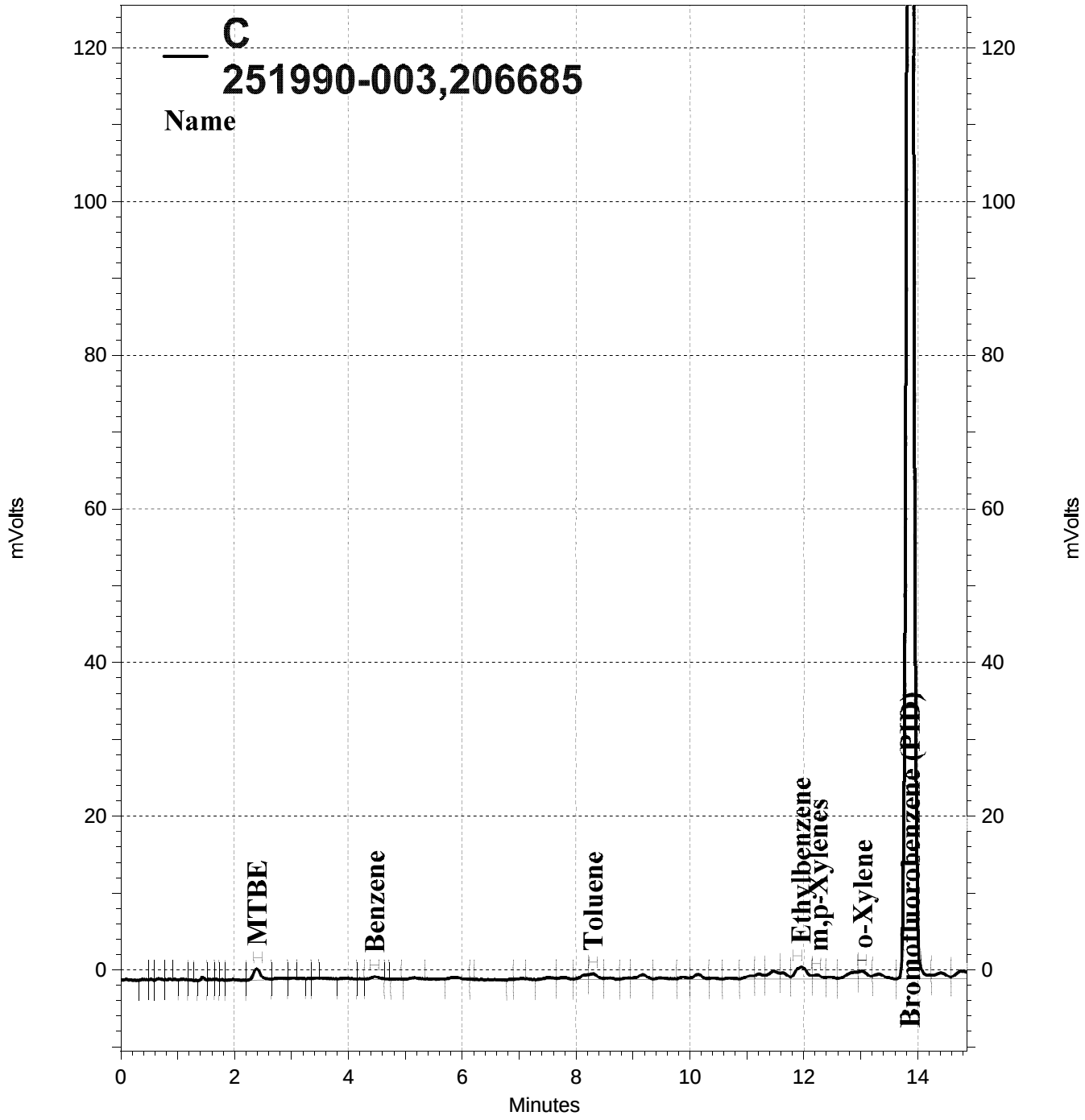
Surrogate	%REC	Limits
Bromofluorobenzene (FID)	105	77-128

RPD= Relative Percent Difference

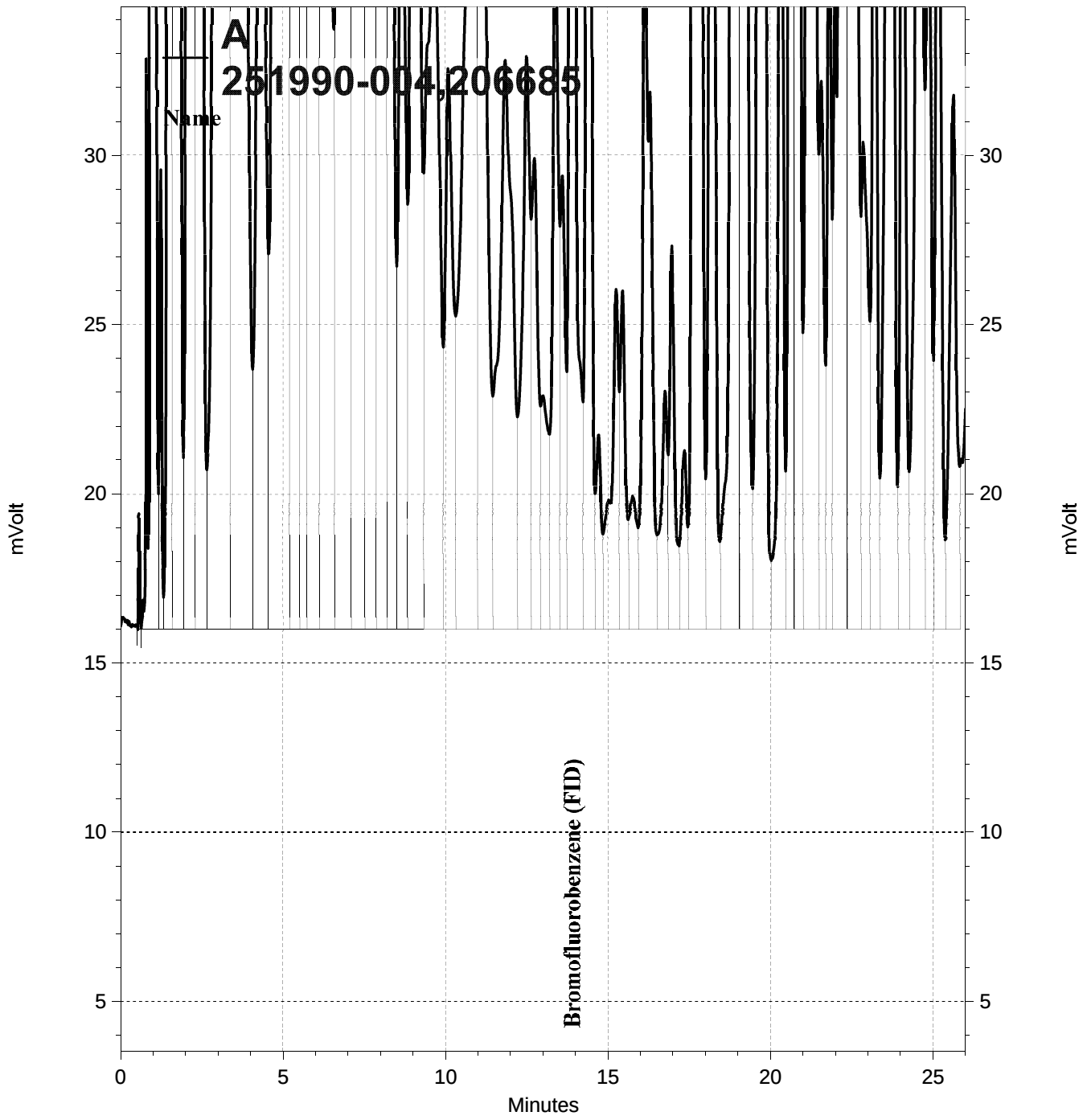


\\Lims\gdrive\ezchrom\Projects\GC19\Data\365-023, C

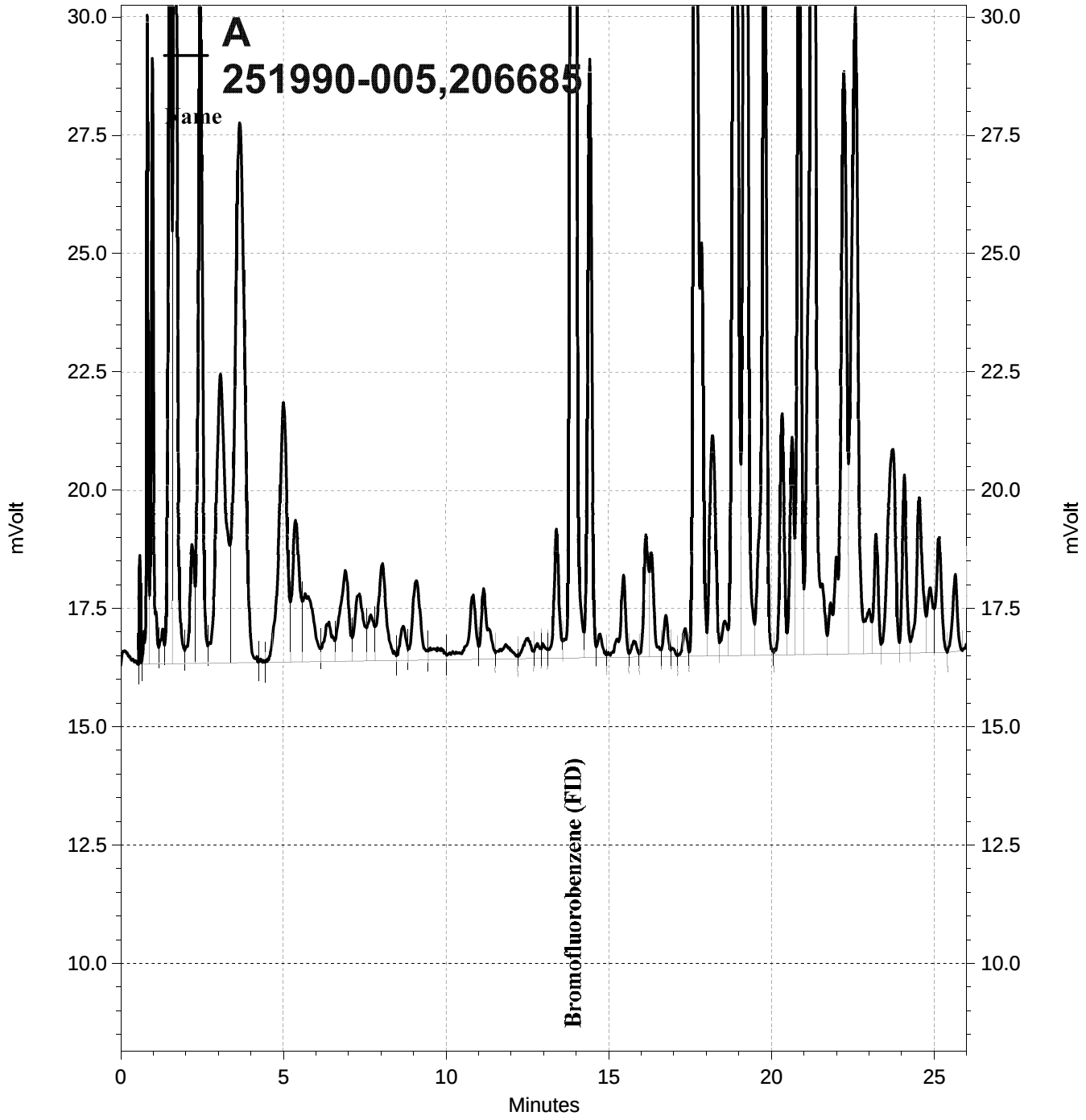

A
251990-002,206685
Name
mVolt
mVolt
50
40
30
20
10
0
-10
0
5
10
15
20
25
Minutes
Bromofluorobenzene (FID)
\\Lims\gdrive\ezchrom\Projects\GC19\Data\365-024, A

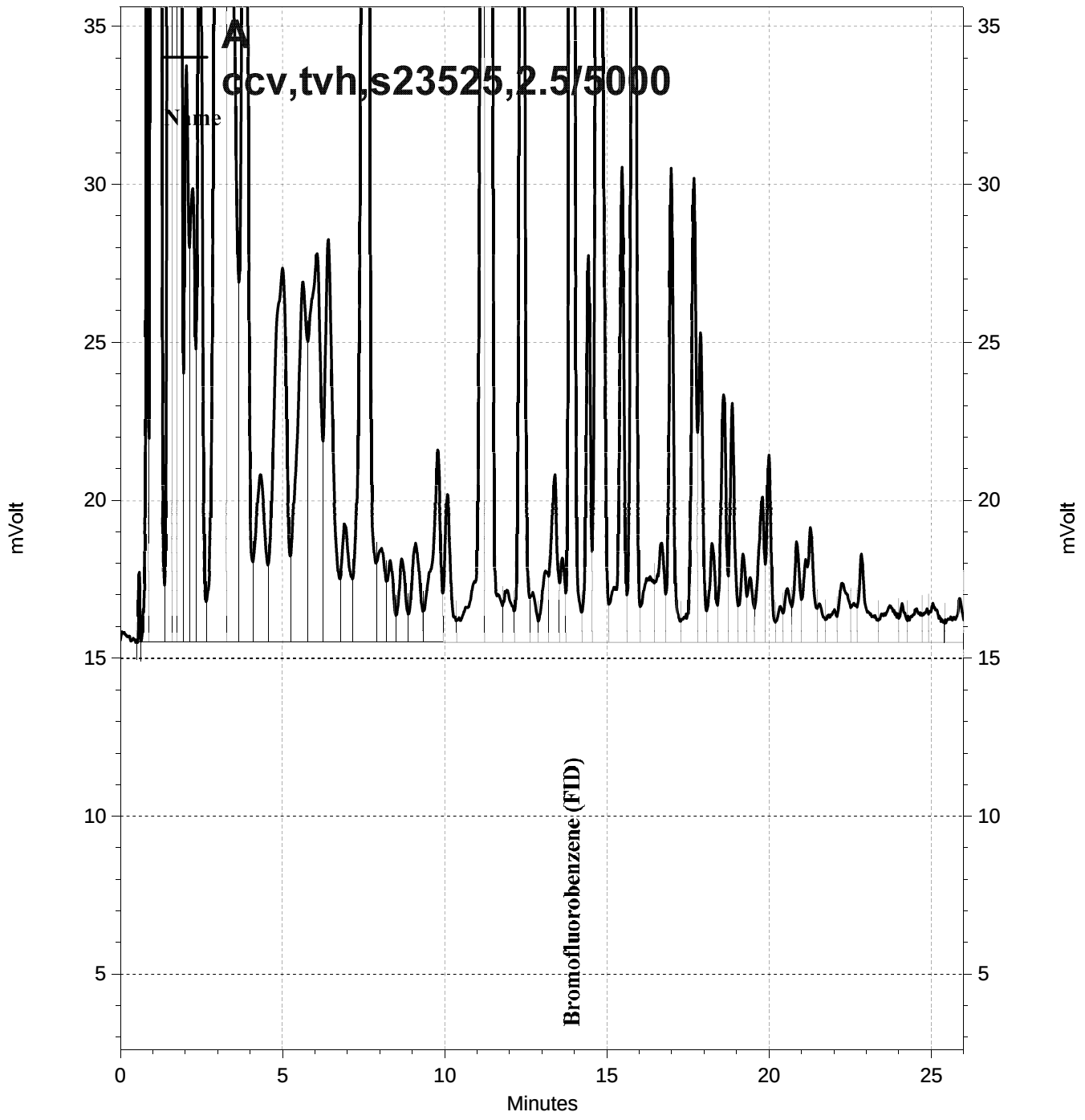


\\Lims\gdrive\ezchrom\Projects\GC19\Data\365-025, C



\\Lims\gdrive\ezchrom\Projects\GC19\Data\365-026, A


A
251990-005,206685
Name
mVolt
mVolt
30.0
27.5
25.0
22.5
20.0
17.5
15.0
12.5
10.0
0
5
10
15
20
25
Minutes
Bromofluorobenzene (FID)
\\Lims\gdrive\ezchrom\Projects\GC19\Data\365-027, A



\\Lims\gdrive\ezchrom\Projects\GC19\Data\365-003, A

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	251990	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 3520C
Project#:	2013-02.	Analysis:	EPA 8015B
Matrix:	Water	Sampled:	12/30/13
Units:	ug/L	Received:	12/30/13
Diln Fac:	1.000	Prepared:	12/30/13
Batch#:	206666	Analyzed:	12/31/13

Field ID: MW-7 Lab ID: 251990-001
Type: SAMPLE

Analyte	Result	RL
Diesel C10-C24	4,200 Y	50

Surrogate	%REC	Limits
o-Terphenyl	116	66-129

Field ID: MW-9 Lab ID: 251990-002
Type: SAMPLE

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

Surrogate	%REC	Limits
o-Terphenyl	126	66-129

Field ID: MW-10 Lab ID: 251990-003
Type: SAMPLE

Analyte	Result	RL
Diesel C10-C24	ND	52

Surrogate	%REC	Limits
o-Terphenyl	122	66-129

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

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	251990	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 3520C
Project#:	2013-02.	Analysis:	EPA 8015B
Matrix:	Water	Sampled:	12/30/13
Units:	ug/L	Received:	12/30/13
Diln Fac:	1.000	Prepared:	12/30/13
Batch#:	206666	Analyzed:	12/31/13

Field ID: MW-11 Lab ID: 251990-004
Type: SAMPLE

Analyte	Result	RL
Diesel C10-C24	2,000 Y	50

Surrogate	%REC	Limits
o-Terphenyl	113	66-129

Field ID: MW-12 Lab ID: 251990-005
Type: SAMPLE

Analyte	Result	RL
Diesel C10-C24	190 Y	50

Surrogate	%REC	Limits
o-Terphenyl	119	66-129

Type: BLANK Lab ID: QC722545

Analyte	Result	RL
Diesel C10-C24	ND	50

Surrogate	%REC	Limits
o-Terphenyl	109	66-129

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

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	251990	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 3520C
Project#:	2013-02.	Analysis:	EPA 8015B
Matrix:	Water	Batch#:	206666
Units:	ug/L	Prepared:	12/30/13
Diln Fac:	1.000	Analyzed:	12/31/13

Type: BS Lab ID: QC722546

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	2,500	2,486	99	61-120

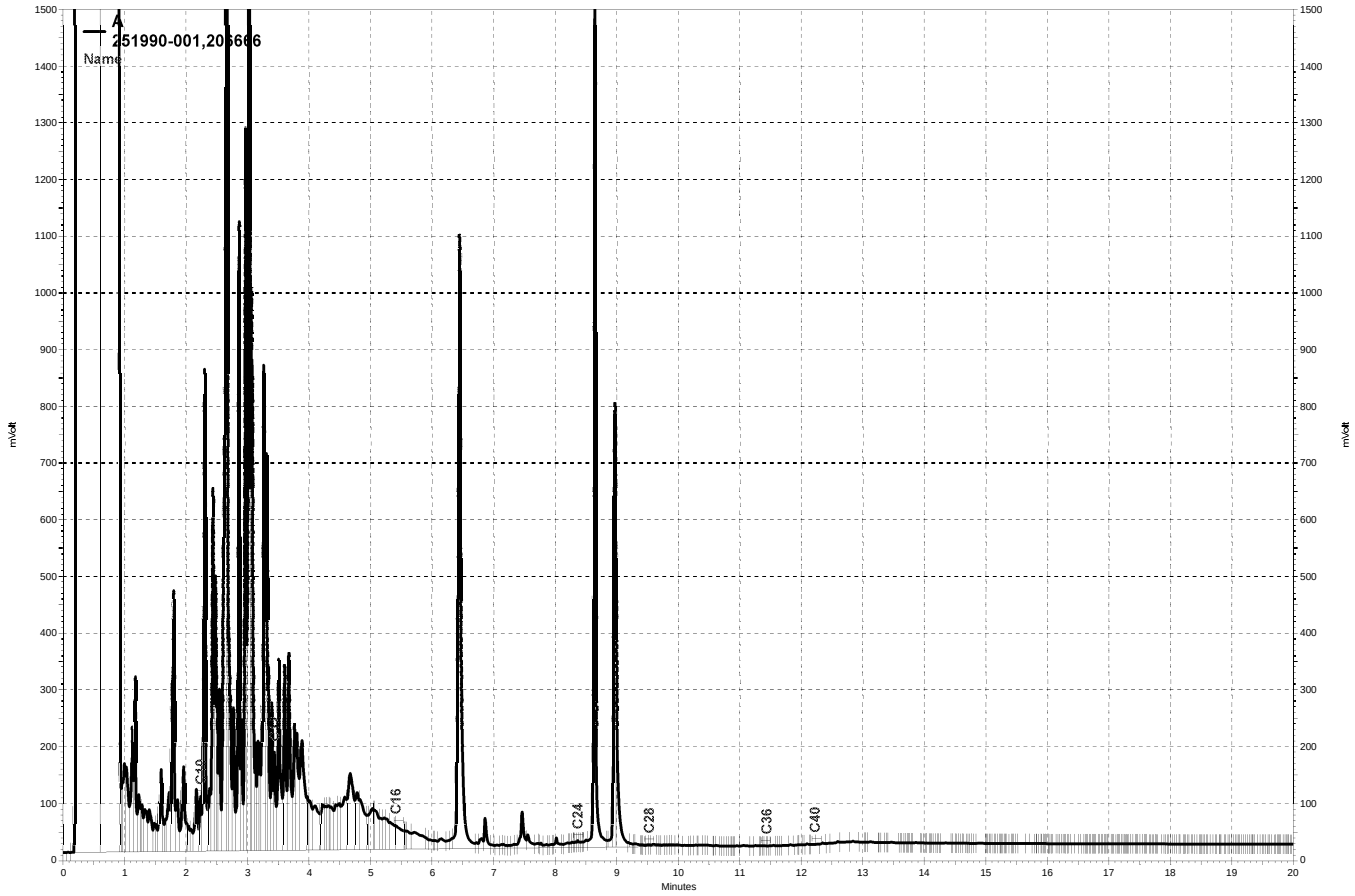
Surrogate	%REC	Limits
o-Terphenyl	123	66-129

Type: BSD Lab ID: QC722547

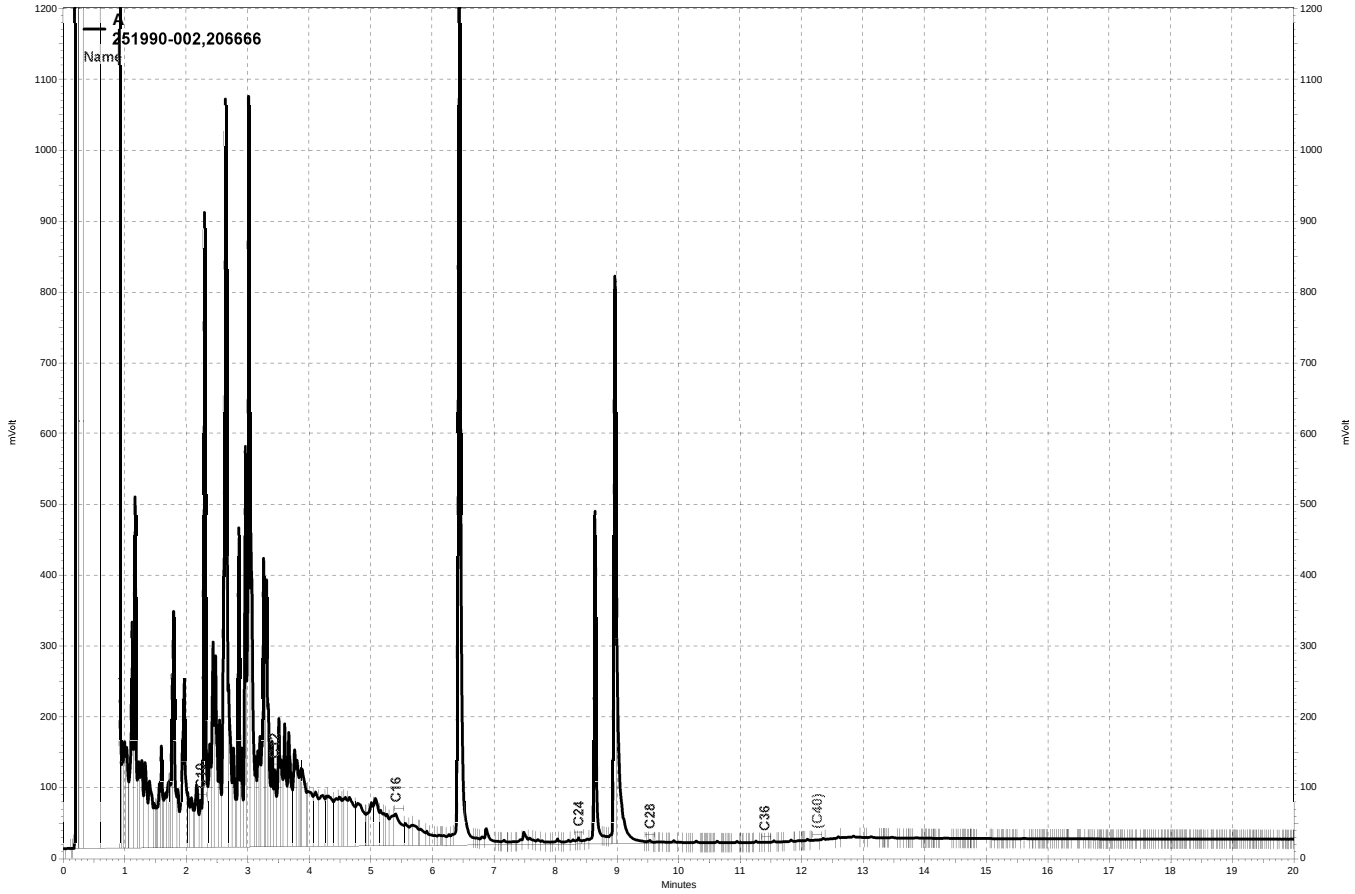
Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	2,500	2,403	96	61-120	3	45

Surrogate	%REC	Limits
o-Terphenyl	120	66-129

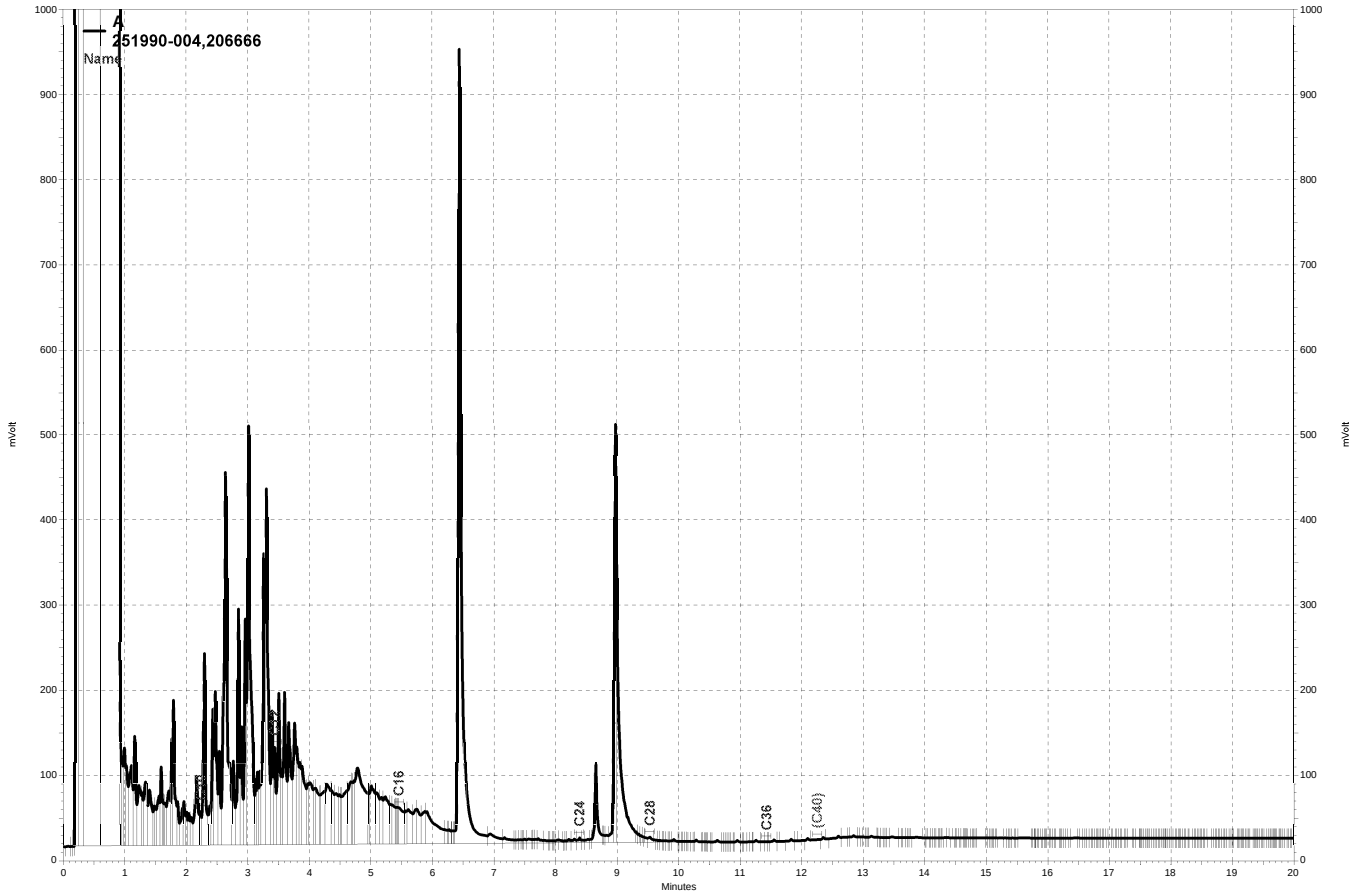
RPD= Relative Percent Difference



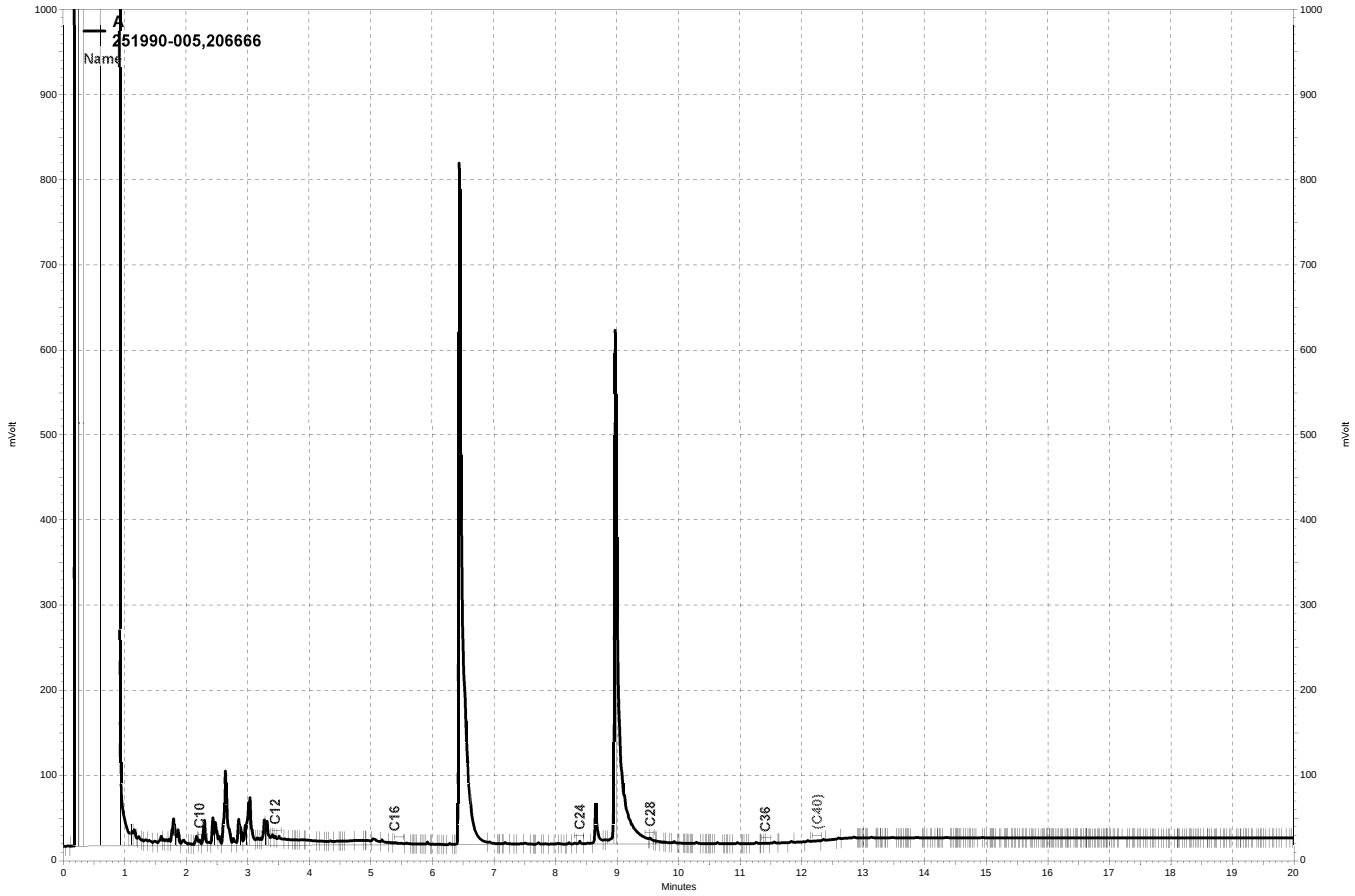
\\Lims\gdrive\ezchrom\Projects\GC26\Data\365a015, A



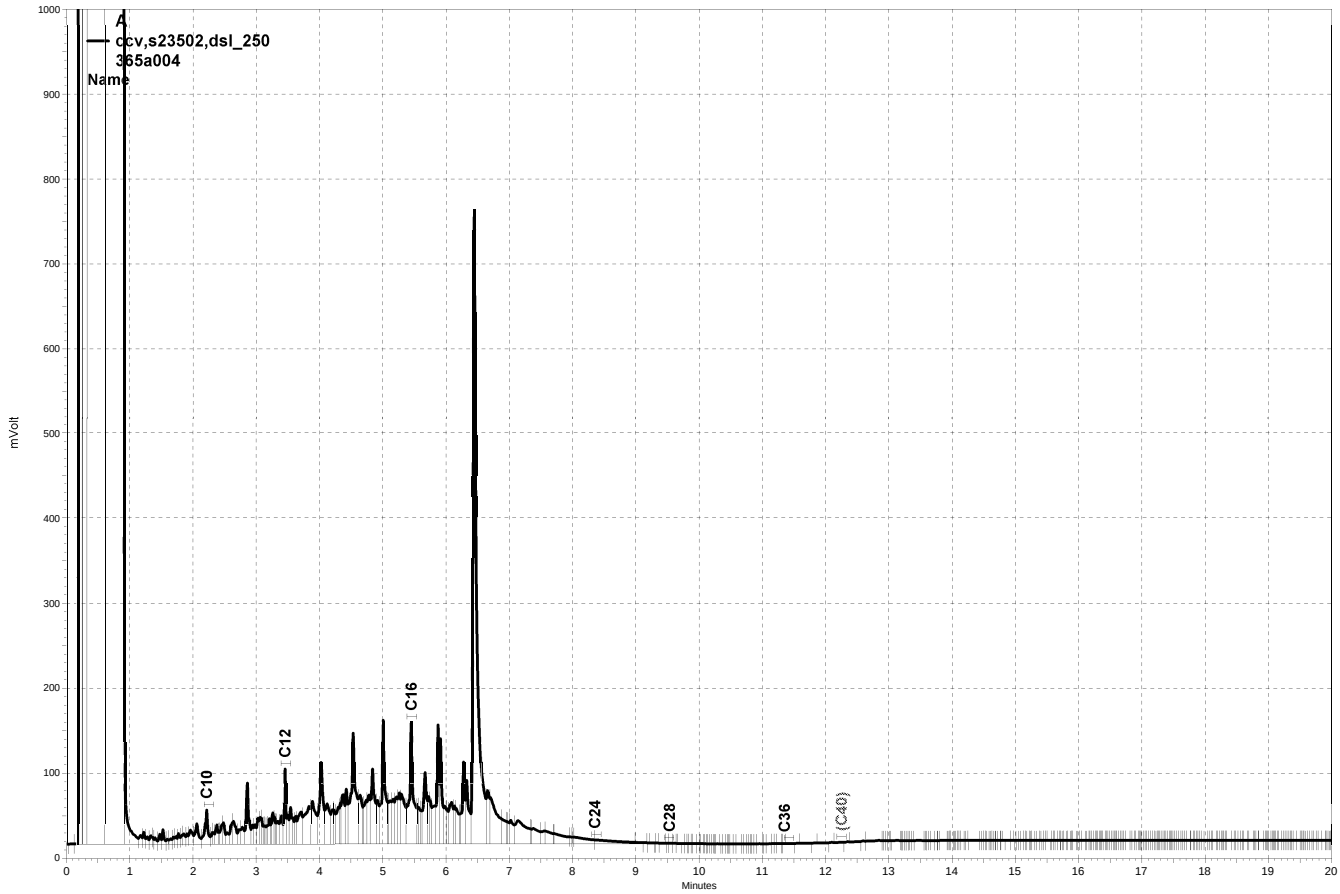
\\Lims\gdrive\ezchrom\Projects\GC26\Data\365a016, A



\\Lims\gdrive\ezchrom\Projects\GC26\Data\365a022, A



\\Lims\gdrive\ezchrom\Projects\GC26\Data\365a023, A



\\Lims\gdrive\ezchrom\Projects\GC26\Data\365a004, A

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	251990	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	METHOD
Project#:	2013-02.	Analysis:	EPA 300.0
Matrix:	Water	Batch#:	206664
Units:	mg/L	Received:	12/30/13
Diln Fac:	1.000		

Field ID: MW-7 Sampled: 12/30/13 10:22
Type: SAMPLE Analyzed: 12/30/13 13:21
Lab ID: 251990-001

Analyte	Result	RL
Nitrogen, Nitrate	ND	0.05
Sulfate	46	0.50

Field ID: MW-9 Sampled: 12/30/13 11:50
Type: SAMPLE Analyzed: 12/30/13 13:56
Lab ID: 251990-002

Analyte	Result	RL
Nitrogen, Nitrate	ND	0.05
Sulfate	34	0.50

Field ID: MW-12 Sampled: 12/30/13 11:15
Type: SAMPLE Analyzed: 12/30/13 14:31
Lab ID: 251990-005

Analyte	Result	RL
Nitrogen, Nitrate	ND	0.05
Sulfate	16	0.50

Type: BLANK Analyzed: 12/30/13 12:47
Lab ID: QC722535

Analyte	Result	RL
Nitrogen, Nitrate	ND	0.05
Sulfate	ND	0.50

ND= Not Detected
RL= Reporting Limit

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	251990	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	METHOD
Project#:	2013-02.	Analysis:	EPA 300.0
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC722536	Batch#:	206664
Matrix:	Water	Analyzed:	12/30/13 13:04
Units:	mg/L		

Analyte	Spiked	Result	%REC	Limits
Nitrogen, Nitrate	1.000	1.018	102	80-120
Sulfate	10.00	9.876	99	80-120

Curtis & Tompkins, Ltd.

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	251990	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	METHOD
Project#:	2013-02.	Analysis:	EPA 300.0
Field ID:	MW-7	Diln Fac:	5.000
MSS Lab ID:	251990-001	Batch#:	206664
Matrix:	Water	Sampled:	12/30/13 10:22
Units:	mg/L	Received:	12/30/13

Type: MS Analyzed: 12/30/13 22:32
Lab ID: QC722537

Analyte	MSS Result	Spiked	Result	%REC	Limits
Nitrogen, Nitrate	<0.01127	2.500	2.474	99	80-120
Sulfate	45.83	25.00	70.88	100	79-120

Type: MSD Analyzed: 12/30/13 22:49
Lab ID: QC722538

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Nitrogen, Nitrate	2.500	2.532	101	80-120	2	20
Sulfate	25.00	69.86	96	79-120	1	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Biochemical Oxygen Demand

Lab #:	251990	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	METHOD
Project#:	2013-02.	Analysis:	SM5210B
Analyte:	Biochemical Oxygen Demand	Batch#:	206688
Matrix:	Water	Received:	12/30/13
Units:	mg/L	Prepared:	12/31/13 15:19
Diln Fac:	1.000	Analyzed:	01/05/14 13:37

Field ID	Type	Lab ID	Result	RL	Sampled
MW-7	SAMPLE	251990-001	9.2	5.0	12/30/13 10:22
MW-9	SAMPLE	251990-002	11	5.0	12/30/13 11:50
MW-12	SAMPLE	251990-005	ND	5.0	12/30/13 11:15
	BLANK	QC722624	ND	5.0	

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Biochemical Oxygen Demand

Lab #:	251990	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	METHOD
Project#:	2013-02.	Analysis:	SM5210B
Analyte:	Biochemical Oxygen Demand	Batch#:	206688
Field ID:	MW-7	Sampled:	12/30/13 10:22
MSS Lab ID:	251990-001	Received:	12/30/13
Matrix:	Water	Prepared:	12/31/13 15:19
Units:	mg/L	Analyzed:	01/05/14 13:37
Diln Fac:	1.000		

Type	Lab ID	MSS Result	Spiked	Result	RL	%REC	Limits	RPD	Lim
BS	QC722625		198.0	190.3		96	85-115		
BSD	QC722626		198.0	197.3		100	85-115	4	26
SDUP	QC722627	9.200		9.200	5.000			NC	29

NC= Not Calculated
RL= Reporting Limit
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Chemical Oxygen Demand

Lab #:	251990	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	METHOD
Project#:	2013-02.	Analysis:	SM5220D
Analyte:	Chemical Oxygen Demand	Batch#:	206773
Matrix:	Water	Received:	12/30/13
Units:	mg/L	Prepared:	01/03/14 14:02
Diln Fac:	1.000	Analyzed:	01/03/14 14:30

Field ID	Type	Lab ID	Result	RL	Sampled
MW-7	SAMPLE	251990-001	48	10	12/30/13 10:22
MW-9	SAMPLE	251990-002	77	10	12/30/13 11:50
MW-12	SAMPLE	251990-005	55	10	12/30/13 11:15
	BLANK	QC722941	ND	10	

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Chemical Oxygen Demand

Lab #:	251990	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	METHOD
Project#:	2013-02.	Analysis:	SM5220D
Analyte:	Chemical Oxygen Demand	Batch#:	206773
Field ID:	MW-7	Sampled:	12/30/13 10:22
MSS Lab ID:	251990-001	Received:	12/30/13
Matrix:	Water	Prepared:	01/03/14 14:02
Units:	mg/L	Analyzed:	01/03/14 14:30

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim	Diln Fac
LCS	QC722942		75.00	72.71	97	90-110			1.000
MS	QC722943	48.12	300.0	337.9	97	78-120			2.000
MSD	QC722944		300.0	324.6	92	78-120	4	20	2.000

RPD= Relative Percent Difference

APPENDIX D

Historical 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**	**-**	*<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*	—	**3.1**
61	Sep-11	**780**	**810**	*<0.5*	*<0.5*	*<0.5*	*<0.5*	—	*<2.0*
62	Mar-12	**460**	**610**	*<0.5*	*<0.5*	*<0.5*	*<0.5*	—	*<2.0*
63	Sep-12	**160**	**190**	*<0.5*	*<0.5*	*<0.5*	*<0.5*	—	*<2.0*
64	Mar-13	**470**	**810**	*<0.5*	*<0.5*	*<0.5*	*<0.5*	—	*<2.0*
65	Oct-13	**120**	**67**	*<0.5*	*<0.5*	*<0.5*	*<0.5*	—	**2.3**

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*
44	Sep-11	**5,800**	**3,300**	*<0.5*	*<0.5*	**97**	**3.1**	**100**	*<2.0*
45	Mar-12	**6,400**	**3,500**	*<0.5*	*<0.5*	**110**	**5.6**	**116**	*<2.0*
46	Sep-12	**5,700**	**3,000**	*<0.5*	*<0.5*	**84**	*<0.5*	**84**	*<2.0*
47	Mar-13	**6,000**	**3,300**	*<0.5*	*<0.5*	**82**	*<0.5*	**82**	*<2.0*
48	Oct-13	**6,400**	**6,000**	**35**	*<0.5*	**75**	**5.10**	**115**	*<2.0*
49	Dec-13	**6,000**	**4,200**	*<0.5*	*<0.5*	**100**	*<0.5*	**100**	*<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*
44	Sep-11	1,700	1,200	7	0.9	120	12.2	139.7	*<2.0*
45	Mar-12	1,200	790	11	0.9	*<0.5*	99.0	110.9	*<2.0*
46	Sep-12	730	430	4.7	*<0.5*	45	3.8	53.5	9.2
47	Mar-13	840	690	5.6	*<0.5*	47	9.9	62.51	15
48	Oct-13	150	140	*<0.5*	*<0.5*	3.3	*<0.5*	3.3	*<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
41	Sep-11	2,600	1,900	12	<0.5	160	10.2	182.2	<2.0
42	Mar-12	1,100	940	9	<0.5	25	1.6	35.6	<2.0
43	Sep-12	10,000	8,600	25	<0.5	260	19.0	304.0	<2.0
44	Mar-13	4,000	2,400	9.1	<0.5	73	9.7	91.8	<2.0
45	Oct-13	3,200	1,500	20	<0.5	51	6.6	77.6	<2.0
49	Dec-13	3,000	2,700	22	<0.5	120	4.6	147	<2.0

Well MW-10									
Event	**Date**	**TVHg**	**TEHd**	**Benzene**	**Toluene**	**Ethylbenzene**	**Total Xylenes**	**Total BTEX**	**MTBE**
1	Aug-01	**550**	**2,100**	**17**	*< 0.5*	**31**	**44**	**92**	**40**
2	Dec-01	*< 50*	**81**	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	**25**
3	Mar-02	*< 50*	*< 50*	**0.61**	*< 0.5*	*< 0.5*	*< 0.5*	**0.61**	**6.0**
4	Jun-02	*< 50*	*< 50*	**0.59**	*< 0.5*	**0.58**	*< 0.5*	**1.2**	**9.0**
5	Sep-02	**160**	**120**	**10**	*< 0.5*	**6.7**	**3.6**	**20**	**26**
6	Dec-02	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	**16**
7	Mar-03	**110**	*< 50*	**11**	*< 0.5*	**12**	**1.3**	**24**	**15**
8	Jun-03	**110**	*< 50*	**9.6**	*< 0.5*	**6.8**	*< 0.5*	**16**	**9.0**
9	Sep-03	*< 50*	*< 50*	**1.1**	*< 0.5*	**1.5**	*< 0.5*	**2.6**	**7.0**
10	Dec-03	**162**	*<100*	**6.9**	*<0.3*	**8.0**	*<0.6*	**15**	**9.9**
11	Mar-04	**94**	*<100*	**2.8**	*<0.3*	**5.7**	**7.0**	**16**	*<5.0*
12	Jun-04	**150**	**56**	**11**	*< 0.5*	**12**	*< 0.5*	**23**	**15**
13	Sep-04	*< 50*	*< 50*	**1.6**	*< 0.5*	**1.9**	*< 1.0*	**3.5**	**5.8**
14	Dec-04	**64**	*< 50*	**3.7**	*< 0.5*	**3.7**	**0.7**	**8.1**	**10**
15	Mar-05	**95**	**98**	**8.3**	*<0.5*	**7.7**	**0.77**	**17**	**13**
16	Jun-05	**150**	**57**	**14**	*<0.5*	**10**	**1.0**	**25**	*<2.0*
17	Sep-05	**87**	*< 50*	**5.0**	*<0.5*	**3.6**	*<1.0*	**8.6**	*<2.0*
18	Dec-05	*< 50*	*< 50*	**1.2**	*<0.5*	*<0.5*	*<1.0*	**1.2**	**7.8**
19	Mar-06	**58**	**71**	**3.2**	*<0.5*	**2.2**	*<1.0*	**5.4**	**8.8**
20	Jun-06	**73**	**140**	**4.9**	*<0.5*	**2.5**	*<1.0*	**7.4**	**5.3**
21	Sep-06	**88**	**51**	*<0.5*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	**9.6**
22	Dec-06	*<50*	*<50*	**0.61**	*<0.5*	**0.55**	*<0.5*	**1.2**	**3.7**
23	Mar-07	**57**	*<50*	**3.6**	*<0.5*	**2.2**	*<0.5*	**5.8**	**3.1**
24	Jun-07	**60**	**65**	**2.4**	*<0.5*	**1.6**	*<0.5*	**4.0**	**4.0**
25	Sep-07	**84**	*<50*	**3.6**	*<0.5*	**2.3**	**0.52**	**6.4**	**3.6**
26	Dec-07	**130**	**67**	**0.77**	*<0.5*	**340**	**0.83**	**341.6**	*<2.0*
27	Mar-08	**78**	**170**	**1.7**	*<0.5*	**3.1**	**0.97**	**5.8**	**2.4**
28	Jun-08	**230**	**320**	**12**	*<0.5*	**9.9**	**3.50**	**25.4**	*<2.0*
29	Sep-08	**80**	*<50*	**1.6**	*<0.5*	**0.52**	*<0.5*	**2.1**	**3.0**
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**
41	Sep-11	**150**	**220**	**0.8**	*<0.5*	**1.9**	**1**	**3.7**	*<2.0*
42	Mar-12	**80**	**92**	**0.81**	*<0.5*	**1.5**	*<0.5*	**2.3**	**3.4**
43	Sep-12	**170**	**200**	*<0.5*	*<0.5*	**2**	**0.94**	**2.9**	*<2.0*
44	Mar-13	**310**	**58**	*<0.5*	*<0.5*	**7.3**	**7.94**	**15.2**	*<2.0*
45	Oct-13	**69**	*<50*	*<0.5*	*<0.5*	**0.84**	*<0.5*	**0.8**	**4.8**
46	Dec-13	*<52*	**220**	*<0.5*	**0.61**	**2**	**1.5**	**4.1**	**3.7**

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	4,300	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
41	Sep-11	2,200	2,500	12	<0.5	44	2.2	58.2	<2.0
42	Mar-12	1,300	1,200	8.7	<0.5	29	<0.5	37.7	<2.0
43	Sep-12	2,400	1,800	7.7	<0.5	29	<0.5	36.7	<2.0
44	Mar-13	1,500	1,900	4.8	<0.5	22	<0.5	26.8	<2.0
45	Oct-13	3,000	1,600	14	<0.5	35	<0.5	49	<2.0
46	Dec-13	2500	2000	<0.5	13	<0.5	0.68	13.7	<2.0

Well MW-12									
Event	**Date**	**TVHg**	**TEHd**	**Benzene**	**Toluene**	**Ethylbenzene**	**Total Xylenes**	**Total BTEX**	**MTBE**
1	Dec-05	**1,300**	**700**	*< 0.5*	*< 0.5*	**33**	**5.6**	**39**	*< 2.0*
2	Mar-06	**1,100**	**540**	*<0.5*	*<0.5*	**8.5**	**1.5**	**10**	**49**
3	Jun-06	**680**	**400**	*<0.5*	*<0.5*	**5.8**	**1.4**	**7.2**	*< 2.0*
4	Sep-06	**910**	**480**	*<0.5*	*<0.5*	**9.9**	**1.5**	**11.4**	**21**
5	Dec-06	**770**	**230**	*< 0.5*	*< 0.5*	**7.4**	**2.0**	**9.4**	*< 2.0*
6	Mar-07	**390**	**110**	*< 0.5*	*< 0.5*	**1.7**	**1.7**	**3.4**	*< 2.0*
7	Jun-07	**590**	**280**	*<0.5*	*<0.5*	**4.5**	**0.9**	**5.4**	*<2.0*
8	Sep-07	**390**	**180**	*<0.5*	*<0.5*	**2.4**	**2.4**	**4.8**	*<2.0*
9	Dec-07	**210**	**140**	*<0.5*	*<0.5*	**2.1**	**1.3**	**3.4**	*<2.0*
10	Mar-08	**720**	**500**	*<0.5*	**4.4**	**9.0**	**2.8**	**16.2**	*<2.0*
11	Jun-08	**220**	**50**	*<0.5*	*<0.5*	**2.0**	*<0.5*	**2.0**	*<2.0*
12	Sep-08	**370**	**95**	*<0.5*	*<0.5*	**2.8**	**0.98**	**3.8**	*<2.0*
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**
23	Sep-11	**530**	**340**	*<0.5*	*<0.5*	**2.2**	*<0.5*	**2.2**	*<2.0*
24	Mar-12	**410**	**240**	*<0.5*	*<0.5*	**1.9**	*<0.5*	**1.9**	*<2.0*
25	Sep-12	**340**	**210**	*<0.5*	*<0.5*	**1.1**	*<0.5*	**1.1**	*<2.0*
26	Mar-13	**430**	**200**	*<0.5*	*<0.5*	**1.2**	*<0.5*	**1.2**	**7.1**
27	Oct-13	**350**	**200**	*<0.5*	*<0.5*	**0.92**	*<0.5*	**0.92**	*<2.0*
28	Dec-13	**290**	**210**	*<0.5*	*<0.5*	**0.68**	*<0.5*	**0.68**	**2.5**

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*
56	Sep-11	*<50*	*<50*	*<0.5*	*<0.5*	*<0.5*	*<5.0*	*<0.5*	*NA*
57	Mar-12	*<50*	*<50*	*<0.5*	*<0.5*	*<0.5*	*<5.0*	*<0.5*	*<2.0*
58	Sep-12	*<50*	*<50*	*<0.5*	*<0.5*	*<0.5*	*<5.0*	*<0.5*	*<2.0*
59	Mar-13	*<50*	*<50*	*<0.5*	*<0.5*	*<0.5*	*<5.0*	*<0.5*	*<2.0*
60	Oct-13	*<50*	**930**	*<0.5*	*<0.5*	*<0.5*	*<5.0*	*<0.5*	**4.8**

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**	*NA*
54	Mar-11	*<50*	*<50*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	*NA*
55	Sep-11	*<50*	*<50*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	*NA*
57	Mar-12	*<50*	*<50*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	*<0.5*	*<2.0*
58	Sep-12	*<50*	*<50*	*<0.5*	*<0.5*	*<0.5*	*<5.0*	*<0.5*	*<2.0*
59	Mar-13	*<50*	*<50*	*<0.5*	*<0.5*	*<0.5*	*<5.0*	*<0.5*	*<2.0*
60	Oct-13	*NS*	*NS*	*NS*	*NS*	*NS*	*NS*	*NS*	*NS*

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

APPENDIX E

Photodocumentation of PRB Implementation Activity

Subject: Beginning PRB trench excavation	
Site: Redwood Regional Park Service Yard, Oakland, CA	
Date Taken: November 20, 2013	Project No.: SES 2013-57
Photographer: H. Pietropaoli	Photo No.: 01

Subject: Segregating contaminated soil on plastic from clean overburden soil	
Site: Redwood Regional Park Service Yard, Oakland, CA	
Date Taken: November 20, 2013	Project No.: SES 2013-57
Photographer: H. Pietropaoli	Photo No.: 02

Subject: Inside trench showing discolored blue contaminated soil from 10-22 feet bgs	
Site: Redwood Regional Park Service Yard, Oakland, CA	
Date Taken: November 20, 2013	Project No.: SES 2013-57
Photographer: H. Pietropaoli	Photo No.: 03

Subject: Mixing EHC-O oxygen release product into drain rock	
Site: Redwood Regional Park Service Yard, Oakland, CA	
Date Taken: November 20, 2013	Project No.: SES 2013-57
Photographer: H. Pietropaoli	Photo No.: 04

Subject: Placing silt construction fabric over drain rock at 10 feet bgs	
Site: Redwood Regional Park Service Yard, Oakland, CA	
Date Taken: November 20, 2013	Project No.: SES 2013-57
Photographer: H. Pietropaoli	Photo No.: 05

Subject: Sheepfoot conpactor mounted onto excavator being used to compact backfill	
Site: Redwood Regional Park Service Yard, Oakland, CA	
Date Taken: November 20, 2013	Project No.: SES 2013-57
Photographer: H. Pietropaoli	Photo No.: 06

Subject: EBRPD plumbers repairing 4-inch water main across trench area	
Site: Redwood Regional Park Service Yard, Oakland, CA	
Date Taken: November 20, 2013	Project No.: SES 2013-57
Photographer: H. Pietropaoli	Photo No.: 07

Subject: Traffic control flagging was conducted throughout field activity	
Site: Redwood Regional Park Service Yard, Oakland, CA	
Date Taken: November 20, 2013	Project No.: SES 2013-57
Photographer: H. Pietropaoli	Photo No.: 08

Subject: Contaminated soil pile covered with plastic sheeting and barricaded prior to offsite disposal	
Site: Redwood Regional Park Service Yard, Oakland, CA	
Date Taken: November 20, 2013	Project No.: SES 2013-57
Photographer: H. Pietropaoli	Photo No.: 09

Subject: Contaminated soil being loaded into end dump for transport to off stie landfill	
Site: Redwood Regional Park Service Yard, Oakland, CA	
Date Taken: December 4, 2013	Project No.: SES 2013-57
Photographer: H. Pietropaoli	Photo No.: 10

APPENDIX F

EHC-O Product MSDS

and

BAAQMD Notification

1. PRODUCT IDENTIFICATION:

PRODUCT IDENTIFICATION: EHC-O™

PRODUCT USE: Soil and water treatment.

MANUFACTURER:

Adventus Americas Inc.
2871 W. Forest Rd., Suite 2
Freeport, IL
61032

EMERGENCY PHONE:

USA: 1-800-424-9300 (CHEMTREC®)
Canada: 1-613-996-6666 (CANUTEC)

TRANSPORTATION OF DANGEROUS GOOD CLASSIFICATION:
Oxidizing Solid, n.o.s. (Calcium Peroxide), Class 5.1, PG II, UN1479

WHMIS CLASSIFICATION:
Oxidizer

2. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients	Chemical Formula	CAS No.	Percentage
Calcium Peroxide	CaO_2	1305-79-9	45%-70%
Calcium Hydroxide	$Ca(OH)_2$	1305-62-0	10%-20%
Zeolite (Sodium, Calcium Aluminosilicate Hydrated)	$Ca_2(Na,K)_2Al_gSi_{28}O_{72}$ $24H_2O$	12173-10-3	20%-30%

3. PHYSICAL DATA

Appearance	White
Physical state	Solid
Odor threshold	None
Bulk Density	500~650g/L
Solubility in Water	Insoluble
pH	~11
Appearance	White
Decomposition Temperature	Self-accelerating decomposition with oxygen release starting from 275 degrees Celsius

4. HAZARDS IDENTIFICATION

Emergency overview
Oxidizing agent, contact with other material may cause fire. Under fire conditions this material may decompose and release oxygen that intensifies fire. This product contains <1% **non-respirable** crystalline silica. The NTP and OSHA have not classified **non-respirable** crystalline silica as carcinogenic. Long term exposure to hazardous levels of *respirable* silica dusts can cause lung disease (silicosis). EHC-O does not contain respirable crystalline silica.

Potential Health Effects:

- General ..... Irritating to mucous membrane and eyes.
- Inhalation ..... Irritating to respiratory tract. Long term inhalation of elevated levels may cause lung disease (silicosis).
- Eye contact ..... May cause irritation to the eyes; Risks of serious or permanent eye lesions.
- Skin contact ..... May cause skin irritation.
- Ingestion ..... Irritation of the mouth and throat with nausea and vomiting.

5. FIRST AID MEASURES

- Inhalation ..... Remove affected person to fresh air. Seek medical attention if effects persist.
- Eye contact ..... Flush eyes with running water for at least 15 minutes with eyelids held open. Seek specialist advice.
- Skin contact ..... Wash affected skin with soap and mild detergent and large amounts of water.
- Ingestion ..... If the person is conscious and not convulsing, give 2-4 cupfuls of water to dilute the chemical and seek medical attention immediately. Do not induce vomiting.

6. FIRE FIGHTING MEASURE

Flash Point

- Not applicable

Flammability

- Not applicable

Ignition Temperature

- Not applicable

Danger of Explosion

- Non-explosive

Extinguishing Media

- Water

Fire Hazards

- Oxidizer. Storage vessels involved in a fire may vent gas or rupture due to internal pressure. Damp material may decompose exothermically and ignite combustibles. Oxygen release due to exothermic decomposition may support combustion. May ignite other combustible materials. Avoid contact with incompatible materials such as heavy metals, reducing agents, acids, bases, combustible (wood, papers, cloths etc.) Thermal decomposition releases oxygen and heat. Pressure bursts may occur due to gas evolution. Pressurization if confined when heated or decomposing. Containers may burst violently.

Fire Fighting Measures

- Evacuate all non-essential personnel
- Wear protective clothing and self-contained breathing apparatus.
- Remain upwind of fire to avoid hazardous vapors and decomposition products.
- Use water spray to cool fire- exposed containers.

7. ACCIDENTAL RELEASE MEASURES

Spill Clean-up Procedure

- Oxidizer. Eliminate all sources of ignition. Evacuate unprotected personnel from equipment recommendations found in Section 9. Never exceed any occupational exposure limit.
- Shovel or sweep material into plastic bags or vented containers for disposal. Do not return spilled or contaminated material to inventory. Avoid making dust.
- Flush remaining area with water to remove trace residue and dispose of properly. Avoid direct discharge to sewers and surface waters. Notify authorities if entry occurs.
- Do not touch or walk through spilled material. Keep away from combustibles (wood, paper, oils, etc.). Do not return product to container because of risk of contamination.

8. HANDLING AND STORAGE

Storage

- Oxidizer. Store in a cool, well-ventilated area away from all source of ignition and out of direct sunlight. Store in a dry location away from heat.
- Keep away from incompatible materials. Keep containers tightly closed. Do not store in unlabeled or mislabeled containers.
- Protect from moisture. Do not store near combustible materials. Keep containers well sealed. Ensure pressure relief and adequate ventilation.
- Store separately from organics and reducing materials. Avoid contamination that may lead to decomposition.

Handling

- Avoid contact with eyes, skin, and clothing. Use with adequate ventilation.
- Do not swallow. Avoid breathing vapors, mists, or dust. Do not eat, drink, or smoke in work area.
- Prevent contact with combustible or organic materials.
- Label containers and keep them tightly closed when not in use.
- Wash thoroughly after handling.

9. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

- General room ventilation is required. Local exhaust ventilation, process enclosures or other engineers controls may be needed to maintain airborne levels below recommended exposure limits. Avoid creating dust or mist. Maintain adequate ventilation. Do not use in closed or confined spaces. Keep levels below exposure limits. To determine exposure limits, monitoring should be performed regularly.

Respiratory Protection

- In dusty or unknown atmospheres or when exposures exceed limit values, wear a NIOSH approved respirator.

Eye/Face Protection

- Wear chemical safety goggles and a full face shield while handling this product.

Skin Protection

- Prevent contact with this product. Wear gloves and protective clothing depending on condition of use. Protective gloves: Chemical-resistant (Recommended materials: PVC, neoprene or rubber)

Other Protective Equipment

- Eye-wash station
- Safety shower
- Impervious clothing
- Rubber boots

General Hygiene Considerations

- Wash with soap and water before meal times and at the end of each work shift. Good manufacturing practices require gross amounts of any chemical removed from skin as soon as practical, especially before eating or smoking.

10. STABILITY AND REACTIVITY

Stability

- Stable under normal conditions

Condition to Avoid

- Acids
- Bases
- Salts of heavy metals
- Reducing agents
- Organic materials
- Flammable substances

Hazardous Decomposition Products

- Oxygen which supports combustion

11. TOXICOLOGICAL INFORMATION

- LD50 Oral: Min.2000 mg/kg, rat
- LD50 Dermal: Min. 2000mg/kg, rat
- LD50 Inhalation: Min. 4580 mg/kg, rat

12. ECOLOGICAL INFORMATION

Ecotoxicological Information

- Hazards for the environment are limited due to the product properties of no bioaccumulation, weak solubility and precipitation in aquatic environment.

Chemical Fate Information

- As indicated by chemical properties oxygen is released into the environment.

13. DISPOSAL CONSIDERATIONS

Waste Treatment

- Dispose of in an approved waste facility operated by an authorized contractor in compliance with local regulations.

Package Treatment

- The empty and clean containers are to be recycled or disposed of in conformity with local regulations.

14. TRANSPORT INFORMATION

- Proper Shipping Name: EHC-O
- Hazard Class: 5.1
- Labels: 5.1 (Oxidizer)
- Packing Group: II

15. REGULATORY INFORMATION

- SARA Section ..... Yes
- SARA (313) Chemicals ..... No
- EPA TSCA Inventory ..... Appears
- Canadian WHMIS Classification ..... C, D2B
- Canadian DSL ..... Appears
- EINECS Inventory ..... Appears

16. PREPARATION INFORMATION

Prepared By:

Adventus Remediation Technologies
1345 Fewster Drive
Mississauga, Ontario
L4W 2A5

Date Prep./Rev: 4/17/07
Print Date: 4/17/07
Phone: 905-273-5374
Fax: 905-273-4367

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

COMPLIANCE & ENFORCEMENT DIVISION

Notification Form

Regulation 8 Rule 40

REMOVAL OF UNDERGROUND STORAGE TANKS *OR* TREATMENT OF CONTAMINATED SOIL

SITE OF ACTIVITY

Site Address: Redwood Park | **City & Zip:** Oakland CA 94619 | **Site#:**

Specific Location of Project within Address: 7867 Redwood Road

Owner/Operator: East Bay Regional Park District

Check any that apply (400 numbers refer to regulation section requiring reporting):

☐ Tank Removal or Replacement ***(401)*** ☑ Contaminated Soil Excavation and Removal ***(402)***

☐ Aeration of Soil < 50 ppmw organic content, but does not meet Section 118 Exemption ***(403)***

☐ Section 114 Exempt; Date Pipeline Leak ***Started:*** _____ Vol. Of Soil: _____ ***(403)***

☐ Section 115 Exempt; Date Contamination Unrelated to UST Activities ***Discovered:*** _____ ***(405)***

If only Tank Removal is selected, attach results showing soil is not contaminated

CONTRACTOR INFORMATION

Name: Stellar Environmental Solutions, Inc | **Site Contact:** H. Pietropaoli | **Phone:** 510-644-3123

Address: 2198 Sixth Street, Berkeley, CA 94710

TANK REMOVAL *(Section 401)*

Scheduled Start Date: | **Number and Size of Tank(s):**

Explain Methods of:

Piping drainage or flushing ***(310.1)*** _____

Liquid and sludge removal ***(310.2)*** _____

Vapor removal *(310.3)* **[Check One]** ☐ Water Displacement ☐ Vapor Freeing* ☐ Ventilation*

* Emission controls required for vapor freeing or ventilation if tank size greater than 250 gallons.

COMPLETE INFORMATION BELOW OR ATTACH SAMPLE RESULTS SHOWING SOIL IS UNCONTAMINATED (310.4)

CONTAMINATED SOIL EXCAVATION AND REMOVAL *(Section 402)*

Scheduled Start Date: 11-20-2013 | **Scheduled Completion Date:** 11-20-2013

Purpose of Excavation: site redevelopment

Quantity of Soil: 90 cubic yards **Organic Content & Type:** TPH gasoline 2,500 mg/kg

Methods used to quantify and analyze soil: EPA 8015

Method of Stockpile Control *(304-306)*

☐ Water Spray ☑ Covered ☐ Vapor Suppressant (List Material Used): _____

Method of Site Closure *(306)*

☑ Backfilled ☑ Contaminated Soil Removed

☐ Onsite Treatment (Describe): _____ A/C or P/O #: _____

Loaded Trucks Covered? *(306.2)* ☑ Yes ☐ No

AERATION OF SOIL < 50 PPMW ORGANIC CONTENT *(Section 403)*

You must submit a Permit Application and Risk Screening Analysis *(Forms will be sent to you)*

FOR BAAQMD USE ONLY

Fax/PM Date:	By:	Disp to I#:	Area:	Date:	By:
Inv Req Date:	By:	Fwd to Supv.		Date:	By:

See Page Two to Complete This Form Press to clear form ***Approved 7/8/03***

OTHER PUBLIC AGENCY CONTACTED *(Fire District, Hazardous Materials, City or County)**?***	
Agency Name: East Bay Regional Park District	Contact Name: Jeff Manley, Superintendent
Address: 7867 Redwood Road, Oakland, 94619	Phone: (510) 544-3126

EMERGENCY REMOVAL ORDER APPLICABLE?	
Agency Name: NA	Contact Name:
Address:	Phone:

H:\Pub_data\Janet\Reg 8-40\forms\notifdraft3.doc

GENERAL INFORMATION

- This notification form shall be used to notify the BAAQMD of any projects subject to the reporting requirements in Regulation 8, Rule 40, Sections 401 through 405. Notifications may be faxed to (415) 928-0338 or mailed to the address listed at the bottom of this form.
- An invoice for payment will be sent to the person listed under "Contractor Information" as the person responsible, unless the project is exempt from fee payment (see next item).
- See "Frequently Asked Questions" (FAQ) for definition of projects, change procedures, permit requirements, emergency conditions, project exemptions, and fee exemptions. For any questions not answered in the FAQ, contact the Compliance Assistance Counselor at (415) 749-4999.

INSTRUCTIONS

- **SITE OF ACTIVITY:** Give the site street address and indicate if it has any existing BAAQMD site number, for either a plant or GDF. Identify the specific project location if the site contains more than one building. Indicate all applicable activity types by checking appropriate boxes. For reporting requirements under Sections 401 through 403, additional information is required, as below.
- **CONTRACTOR INFORMATION:** Identify the contractor that is responsible for performing the work at the site location listed. This contractor is also responsible for payment of the applicable notification fee, if the project is not exempt.
- **SECTION 401 - TANK REMOVAL/REPLACEMENT:** All soils disturbed and/or excavated as part of the tank removal shall be subject to the requirements of Sections 304 through 306, unless the soil has been determined not to be contaminated by measurement of organic content using the procedures in Sections 601 and 602. Complete requirements for Section 402 or submit sample results showing that the soil is not contaminated.
- **SECTION 402 - CONTAMINATED SOIL EXCAVATION AND REMOVAL:**
  - Be as accurate as possible for the Scheduled Start and Completion Dates. Specific requirements apply for excavation projects triggered within either 45 or 90 days (Reg. 8-40-306.4) and Authority to Construct requirements for projects lasting longer than three months (Reg. 2-1-128.16).
  - If a vapor suppressant is used, attach a product data sheet or MSDS.
  - If Method of Site Closure used is Onsite Treatment, describe specific method, (e.g., bioremediation, vapor extraction, air sparging, thermal desorption, etc.).
  - If Onsite Treatment is used, indicate whether an Authority to Construct was obtained by providing the Application No. or attach copy of BAAQMD Certification of Exemption.
- **SECTION 403 – AERATION OF SOIL < 50 PPMW ORGANIC CONTENT:** Section 301 exempts from control the aeration of soil containing less than 50 ppmw of organic compounds, but Section 403 still requires reporting of **ANY** soil aeration. If such a project does not meet the exemption criteria of Section 118, then a Permit Application and Risk Screening Analysis must be submitted.
- **EMERGENCY REMOVAL INFORMATION (IF APPLICABLE):** The rule defines an emergency tank removal or excavation of contaminated soil as "carried out pursuant to an order of a state or local government agency issued because the contaminated soil poses an imminent threat to public health and safety." If the project(s) meet this definition, then identify the agency that issued the order. Under Section 402 requirements, on line two, identify the purpose as indicated in the order.

APPENDIX G

Waste Soil Disposal Documentation

REPUBLIC SERVICES

NON-HAZARDOUS SPECIAL WASTE & ASBESTOS MANIFEST

1394896

If waste is asbestos waste, complete Sections I, II, III and IV
If waste is **NOT** asbestos waste, complete Sections I, II and III

I. GENERATOR (Generator completes Ia-r)

a. Generator's US EPA ID Number	b. Manifest Document Number	c. Page 1 of
N/A		

d. Generator's Name and Location:	e. Generator's Mailing Address:
East Bay Regional Park District 7867 Redwood Road Oakland, CA 94619	East Bay Regional Park District 2950 Peralta Oaks Court Oakland, CA 94605
f. Phone: 510-544-2327	g. Phone: 510-544-2327
If owner of the generating facility differs from the generator, provide:	
h. Owner's Name:	i. Owner's Phone No.:

j. Waste Profile #	k. Exp. Date	l. Waste Shipping Name and Description	m. Containers No.	m. Containers Type	n. Total Quantity	o. Unit Wt/Vol
38501320525	11/22/2014	Soil				Tons
B.						
C.						

GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law, has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulations; AND, if this waste is a treatment residue of a previously restricted hazardous waste subject to the Land Disposal Restrictions. I certify and warrant that the waste has been treated in accordance with the requirements of 40 CFR 268 and is no longer a hazardous waste as defined by 40 CFR 261.

p. Generator Authorized Agent Name (Print)	q. Signature	r. Date
H. Pietropaoli	Agent	12/4/13

II. TRANSPORTER (Generator completes IIa-b and Transporter completes IIc-e)

a. Transporter's Name and Address:

b. Phone:

c. Driver Name (Print)	d. Signature	e. Date
SUMAIRUT SUIRK		12-4-13

III. DESTINATION (Generator complete IIIa-c and Destination Site completes IIId-g)

a. Disposal Facility and Site Address:	c. US EPA Number	d. Discrepancy Indication Space:
Vasco Rd. Landfill 4001 N. Vasco Rd. Livermore, CA 94551 925-447-0491 b.		

I hereby certify that the above named material has been accepted and to the best of my knowledge the foregoing is true and accurate.

e. Name of Authorized Agent (Print)	f. Signature	g. Date
Carlos Mora		12-4-13

IV. ASBESTOS (Generator completes IVa-f and Operator complete IVg-i)

a. Operator's Name and Address:	c. Responsible Agency Name and Address:
b. Phone:	d. Phone:

e. Special Handling Instructions and Additional Information:

f. ☐ Friable ☐ Non-Friable ☐ Both % Friable % Non-Friable

OPERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

g. Operator's Name and Title (Print)	h. Signature	i. Date

*Operator refers to the company which owns, leases, operates, controls, or supervises the facility being demolished or renovated, or the demolition or renovation operation or both

REV 12/10

RETURN TO OPERATOR

RS-F11A

REPUBLIC SERVICES

NON-HAZARDOUS SPECIAL WASTE & ASBESTOS MANIFEST

1394890

If waste is asbestos waste, complete Sections I, II, III and IV
If waste is **NOT** asbestos waste, complete Sections I, II and III

I. GENERATOR (Generator completes Ia-r)

a. Generator's US EPA ID Number	b. Manifest Document Number	c. Page 1 of
N/A		

d. Generator's Name and Location:	e. Generator's Mailing Address:
East Bay Regional Park District 7867 Redwood Road Oakland, CA 94619 f. Phone: 510-544-2327	East Bay Regional Park District 2950 Peralta Oaks Court Oakland, CA 94605 g. Phone: 510-544-2327
If owner of the generating facility differs from the generator, provide: h. Owner's Name:	i. Owner's Phone No.:

j. Waste Profile #	k. Exp. Date	l. Waste Shipping Name and Description	m. Containers No.	m. Containers Type	n. Total Quantity	o. Unit Wt/Vol
38501320525	11/22/2014	Soil				Tons
B.						
C.						

GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law, has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulations; AND, if this waste is a treatment residue of a previously restricted hazardous waste subject to the Land Disposal Restrictions. I certify and warrant that the waste has been treated in accordance with the requirements of 40 CFR 268 and is no longer a hazardous waste as defined by 40 CFR 261.

p. Generator Authorized Agent Name (Print)	q. Signature	r. Date
H. Pechoza agent		12/4/13

II. TRANSPORTER (Generator completes IIa-b and Transporter completes IIc-e)

a. Transporter's Name and Address: Gregs Trucking

b. Phone:

c. Driver Name (Print)	d. Signature	e. Date
Daryl Crockett		12-4-13

III. DESTINATION (Generator complete IIIa-c and Destination Site completes IIId-g)

a. Disposal Facility and Site Address:	c. US EPA Number	d. Discrepancy Indication Space:
Vasco Rd. Landfill 4001 N. Vasco Rd. Livermore, CA 94551 925-447-0491 b.		

I hereby certify that the above named material has been accepted and to the best of my knowledge the foregoing is true and accurate.

e. Name of Authorized Agent (Print)	f. Signature	g. Date
H. Pechoza		12-4-13

IV. ASBESTOS (Generator completes IVa-f and Operator complete IVg-i)

a. Operator's Name and Address:	c. Responsible Agency Name and Address:
b. Phone:	d. Phone:

e. Special Handling Instructions and Additional Information:

f. ☐ Friable ☐ Non-Friable ☐ Both % Friable % Non-Friable

OPERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

g. Operator's Name and Title (Print)	h. Signature	i. Date

*Operator refers to the company which owns, leases, operates, controls, or supervises the facility being demolished or renovated, or the demolition or renovation operation or both

REV 12/10

RETURN TO OPERATOR

RS-F11A

REPUBLIC SERVICES

NON-HAZARDOUS SPECIAL WASTE & ASBESTOS MANIFEST

1394897

If waste is asbestos waste, complete Sections I, II, III and IV
If waste is **NOT** asbestos waste, complete Sections I, II and III

I. GENERATOR (Generator completes Ia-r)

a. Generator's US EPA ID Number	b. Manifest Document Number	c. Page 1 of
N/A		

d. Generator's Name and Location:	e. Generator's Mailing Address:
East Bay Regional Park District 7867 Redwood Road Oakland, CA 94619 f. Phone: 510-544-2327	East Bay Regional Park District 2950 Peralta Oaks Court Oakland, CA 94605 g. Phone: 510-544-2327
If owner of the generating facility differs from the generator, provide:	
h. Owner's Name:	i. Owner's Phone No.:

j. Waste Profile #	k. Exp. Date	l. Waste Shipping Name and Description	m. Containers No.	m. Containers Type	n. Total Quantity	o. Unit Wt/Vol
38501320525	11/22/2014	Soil				Tons
B						
C						

GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law, has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulations; AND, if this waste is a treatment residue of a previously restricted hazardous waste subject to the Land Disposal Restrictions. I certify and warrant that the waste has been treated in accordance with the requirements of 40 CFR 268 and is no longer a hazardous waste as defined by 40 CFR 261.

p. Generator Authorized Agent Name (Print)	q. Signature	r. Date
H. Pietrapaoli	Hy Pietrapaoli Agent	12/4/13

II. TRANSPORTER (Generator completes IIa-b and Transporter completes IIc-e)

a. Transporter's Name and Address: Gregs Trucking

b. Phone:

c. Driver Name (Print)	d. Signature	e. Date
Daryl Crockett	Daryl Crockett	12-4-13

III. DESTINATION (Generator complete IIIa-c and Destination Site completes IIId-g)

a. Disposal Facility and Site Address:	c. US EPA Number	d. Discrepancy Indication Space:
Vasco Rd. Landfill 4001 N. Vasco Rd. Livermore, CA 94551 925-447-0491 b.		S

I hereby certify that the above named material has been accepted and to the best of my knowledge the foregoing is true and accurate.

e. Name of Authorized Agent (Print)	f. Signature	g. Date
Carlos Mon		12-4-13

IV. ASBESTOS (Generator completes IVa-f and Operator complete IVg-i)

a. Operator's Name and Address:	c. Responsible Agency Name and Address:
b. Phone:	d. Phone:

e. Special Handling Instructions and Additional Information:

f. ☐ Friable ☐ Non-Friable ☐ Both % Friable % Non-Friable

OPERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

g. Operator's Name and Title (Print)	h. Signature	i. Date

*Operator refers to the company which owns, leases, operates, controls, or supervises the facility being demolished or renovated, or the demolition or renovation operation or both

REV 12/10

RETURN TO OPERATOR

RS-F11A

REPUBLIC SERVICES

NON-HAZARDOUS SPECIAL WASTE & ASBESTOS MANIFEST

1394892

If waste is asbestos waste, complete Sections I, II, III and IV
If waste is **NOT** asbestos waste, complete Sections I, II and III

I. GENERATOR (Generator completes Ia-r)

a. Generator's US EPA ID Number	b. Manifest Document Number	c. Page 1 of
N/A		

d. Generator's Name and Location:	e. Generator's Mailing Address:
East Bay Regional Park District 7867 Redwood Road Oakland, CA 94619 f. Phone: 510-544-2327	East Bay Regional Park District 2950 Peralta Oaks Court Oakland, CA 94605 g. Phone: 510-544-2327
If owner of the generating facility differs from the generator, provide: h. Owner's Name:	i. Owner's Phone No.:

j. Waste Profile #	k. Exp. Date	l. Waste Shipping Name and Description	m. Containers No.	m. Containers Type	n. Total Quantity	o. Unit Wt/Vol
38501320525	11/22/2014	Soil				Tons
B.						
C.						

GENERATOR'S CERTIFICATION: I hereby certify that the above named material is not a hazardous waste as defined by 40 CFR 261 or any applicable state law, has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulations; AND, if this waste is a treatment residue of a previously restricted hazardous waste subject to the Land Disposal Restrictions. I certify and warrant that the waste has been treated in accordance with the requirements of 40 CFR 268 and is no longer a hazardous waste as defined by 40 CFR 261.

p. Generator Authorized Agent Name (Print)	q. Signature	r. Date
H. Pietropaoli		12/4/13

II. TRANSPORTER (Generator completes IIa-b and Transporter completes IIc-e)

a. Transporter's Name and Address:

b. Phone:

c. Driver Name (Print)	d. Signature	e. Date
SUMPREET SINGH		12-4-13

III. DESTINATION (Generator complete IIIa-c and Destination Site completes IIId-g)

a. Disposal Facility and Site Address:	c. US EPA Number	d. Discrepancy Indication Space:
Vasco Rd. Landfill 4001 N. Vasco Rd. Livermore, CA 94551 925-447-0491 b.		

I hereby certify that the above named material has been accepted and to the best of my knowledge the foregoing is true and accurate.

e. Name of Authorized Agent (Print)	f. Signature	g. Date
M Pedroza	Antioch	12-4-13

IV. ASBESTOS (Generator completes IVa-f and Operator complete IVg-i)

a. Operator's Name and Address:	c. Responsible Agency Name and Address:
b. Phone:	d. Phone:

e. Special Handling Instructions and Additional Information:

f. ☐ Friable ☐ Non-Friable ☐ Both % Friable % Non-Friable

OPERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

g. Operator's Name and Title (Print)	h. Signature	i. Date

*Operator refers to the company which owns, leases, operates, controls, or supervises the facility being demolished or renovated, or the demolition or renovation operation or both

REV 12/10

RETURN TO OPERATOR

RS-F11A

SITE

Vasco Road Landfill
4001 N Vasco Road
Livermore, CA 925-447-0491

CUSTOMER

017839
SPEELMAN EXCAVATION
1648 FAIRWAY OAKS CT
RIPON, CA 95366
38501320525

SITE	TICKET #	CELL
01	937213	

WEIGHMASTER: C.MORA

DATE/TIME IN	DATE/TIME OUT
12-04-2013 1:13 pm	12-4-2013 1:13 pm

VEHICLE: SUN52
CONTAINER:
REFERENCE: INVOICE
BILL OF LADING:

GROSS WEIGHT	71,920	NET TONS	20.39	
TARE WEIGHT	31,140	NET WEIGHT	40,780	INBOUND

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
0.00	YD	TRACKING QTY				
20.39	TN	SW-CONT SOIL-ALT DAILY COVE OAKLAND				
1.00		ENVIRONMENTAL FEE 1				
1.00		FUEL RECOVERY FEE				

WEIGHMASTER CERTIFICATE - This is to certify that the following described commodity was weighed, measured, or counted by a weighmaster, whose signature is on this certificate, who is a recognized authority of accurace, as prescribed by Chapter 7 (commencing with Section 12700) of Division 5 of the California Business and Professions Code, administered by the Division of Measurement Standards of the California Department of Food & Agriculture.

The undersigned individual signing this document on behalf of Customer acknowledges that he or she has read and understands the terms and conditions on the reverse side and that he or she has the authority to sign this document on behalf of the customer.

NET AMOUNT
TENDERED
CHANGE
CHECK#

RS-F042UPR (07/12)

2/21

SIGNATURE _____

SITE

Vasco Road Landfill
4001 N Vasco Road
Livermore, CA 925-447-0491

CUSTOMER

017839
SPEELMAN EXCAVATION
1648 FAIRWAY OAKS CT
RIPON, CA 95366
38501320525

SITE	TICKET #	CELL
01	937148	

WEIGHMASTER: M.Pedroza

DATE/TIME IN	DATE/TIME OUT
12-04-2013 9:40 am	12-4-2013 9:40 am

VEHICLE	CONTAINER
CRO3	

REFERENCE: INVOICE

BILL OF LADING:

GROSS WEIGHT	72,400	NET TONS	20.41
TARE WEIGHT	31,580	NET WEIGHT	40,820

INBOUND

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
0.00	YD	TRACKING QTY				
20.41	TN	SW-CONT SOIL-ALT DAILY COVE OAKLAND				
1.00		ENVIRONMENTAL FEE 1				
1.00		FUEL RECOVERY FEE				

WEIGHMASTER CERTIFICATE - This is to certify that the following described commodity was weighed, measured, or counted by a weighmaster, whose signature is on this certificate, who is a recognized authority of accurace, as prescribed by Chapter 7 (commencing with Section 12700) of Division 5 of the California Business and Professions Code, administered by the Division of Measurement Standards of the California Department of Food & Agriculture.

The undersigned individual signing this document on behalf of Customer acknowledges that he or she has read and understands the terms and conditions on the reverse side and that he or she has the authority to sign this document on behalf of the customer.

RS-F042UPR (07/12)

SIGNATURE _____

NET AMOUNT
TENDERED
CHANGE
CHECK#

SITE

Vasco Road Landfill
4001 N Vasco Road
Livermore, CA 925-447-0491

CUSTOMER

017839
SPEELMAN EXCAVATION
1648 FAIRWAY OAKS CT
RIPON, CA 95366
38501320525

SITE	TICKET #	CELL
01	937163	

WEIGHMASTER: IN - M. Pedroza OUT - S. De la Torr

DATE/TIME IN	DATE/TIME OUT
12-04-2013 10:18 am	12-4-2013 10:44 am

VEHICLE	CONTAINER
SUN52	

REFERENCE: INVOICE

BILL OF LADING:

GROSS WEIGHT	71,040	NET TONS	19.95	
TARE WEIGHT	31,140	NET WEIGHT	39,900	INBOUND

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
0.00	YD	TRACKING QTY				
19.95	TN	SW-CONT SOIL-ALT DAILY COVE OAKLAND				
1.00		ENVIRONMENTAL FEE 1				
1.00		FUEL RECOVERY FEE				

WEIGHMASTER CERTIFICATE - This is to certify that the following described commodity was weighed, measured, or counted by a weighmaster, whose signature is on this certificate, who is a recognized authority of accurace, as prescribed by Chapter 7 (commencing with Section 12700) of Division 5 of the California Business and Professions Code, administered by the Division of Measurement Standards of the California Department of Food & Agriculture.

NET AMOUNT

TENDERED

CHANGE

CHECK#

The undersigned individual signing this document on behalf of Customer acknowledges that he or she has read and understands the terms and conditions on the reverse side and that he or she has the authority to sign this document on behalf of the customer.

RS-F042UPR (07/12)

2/21

SIGNATURE _____

SITE

Vasco Road Landfill
4001 N Vasco Road
Livermore, CA 925-447-0491

CUSTOMER

017839
SPEELMAN EXCAVATION
1648 FAIRWAY OAKS CT
RIPON, CA 95366
38501320525

SITE	TICKET #	CELL
01	937205	

WEIGHMASTER C.MORA

DATE/TIME IN	DATE/TIME OUT
12-04-2013 12:45 pm	12-4-2013 12:45 pm

VEHICLE	CONTAINER
CRO3	

REFERENCE INVOICE

BILL OF LADING

GROSS WEIGHT	78,840	NET TONS	23.63
TARE WEIGHT	31,580	NET WEIGHT	47,260

INBOUND

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
0.00	YD	TRACKING QTY				
23.63	TN	SW-CONT SOIL-ALT DAILY COVE OAKLAND				
1.00		ENVIRONMENTAL FEE 1				
1.00		FUEL RECOVERY FEE				

WEIGHMASTER CERTIFICATE - This is to certify that the following described commodity was weighed, measured, or counted by a weighmaster, whose signature is on this certificate, who is a recognized authority of accurace, as prescribed by Chapter 7 (commencing with Section 12700) of Division 5 of the California Business and Professions Code, administered by the Division of Measurement Standards of the California Department of Food & Agriculture.

NET AMOUNT

TENDERED

CHANGE

CHECK#

The undersigned individual signing this document on behalf of Customer acknowledges that he or she has read and understands the terms and conditions on the reverse side and that he or she has the authority to sign this document on behalf of the customer.

RS-F042UPR (07/12)

SIGNATURE _____