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FIRST SEMIANNUAL 2013 GROUNDWATER MONITORING REPORT

REDWOOD REGIONAL PARK SERVICE YARD OAKLAND, CALIFORNIA

Prepared for:

EAST BAY REGIONAL PARK DISTRICT
OAKLAND, CALIFORNIA

May 2013

STELLAR ENVIRONMENTAL SOLUTIONS, INC.
GEOSCIENCE & ENGINEERING CONSULTING

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SERVICE YARD
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Prepared for:

EAST BAY REGIONAL PARK DISTRICT
OAKLAND, CALIFORNIA

Prepared by:

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May 8, 2013

Project No. 2013-02

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May 8, 2013

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

Subject: First Semiannual 2013 Groundwater and Surface Water Monitoring Report — Redwood Regional Park Service Yard Site, Oakland, California (ACEH Fuel Leak Case No. RO0000246)

Dear Mr. Wickham:

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

This report summarizes the First Semiannual 2013 groundwater and surface monitoring and sampling activities conducted on March 14, 2013 and disposal of the accumulated purgewater on April 4, 2013. In addition to the activities typically conducted during a monitoring event, the water quality parameters including dissolved oxygen and oxygen reduction potential were taken to establish baseline concentrations prior to installation of the permeable reactive barrier across the distal contaminant plume.

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 and Project Manager

Matt Graul
East Bay Regional Park District

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

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1.0 INTRODUCTION

PROJECT BACKGROUND

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

OBJECTIVES AND SCOPE OF WORK

Historical remedial efforts have shown that residual hydrocarbons entrained in subsurface material and/or stratigraphic traps are continuing to release significant amounts of hydrocarbons into the groundwater. This report discusses the following activities conducted/coordinated by Stellar Environmental Solutions, Inc. (Stellar Environmental) for the first 2013 semiannual period between January 1 and June 30, 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

HISTORICAL CORRECTIVE ACTIONS AND INVESTIGATIONS

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

The principal phases of site work included:

- An October 2000 Site Feasibility Study Report for the site, submitted to ACEH, which provided detailed analyses of the regulatory implications of the site contamination and a request for the assessment and implementation of viable corrective actions.
- Two instream bioassessment events, conducted in April 1999 and January 2000, to evaluate potential impacts to stream biota associated with the site contamination. No impacts were documented.
- Additional monitoring well installations and corrective action by Oxygen Release Compound (ORC™) injection proposed by Stellar Environmental and approved by ACEH in its January 8, 2001 letter to the EBRPD. Two phases of ORC™ injection were conducted—in September 2001 and July 2002.
- Groundwater monitoring and sampling, conducted on a quarterly basis since project inception in November 1994 until June 2011. 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 have been discussed in bioventing-specific technical reports with updates provided in groundwater monitoring progress reports.
- An ORC™ injection pilot test, conducted by Stellar Environmental on March 10, 2009, to control historical high levels of hydrocarbons contamination that began to appear in September 2007 in source well MW-2.
- A Remedial Action Workplan (RAW), dated August 20, 2009, prepared by Stellar Environmental in response to a letter from ACEH. ACEH approved the RAW in a letter (dated October 2, 2009) to the EBRPD.
- An ORC™ injection conducted Q1-2010 over the full footprint of the plume to determine the effectiveness of achieving significant and sustained hydrocarbon concentration reductions. Monitoring natual
- 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.

SITE DESCRIPTION

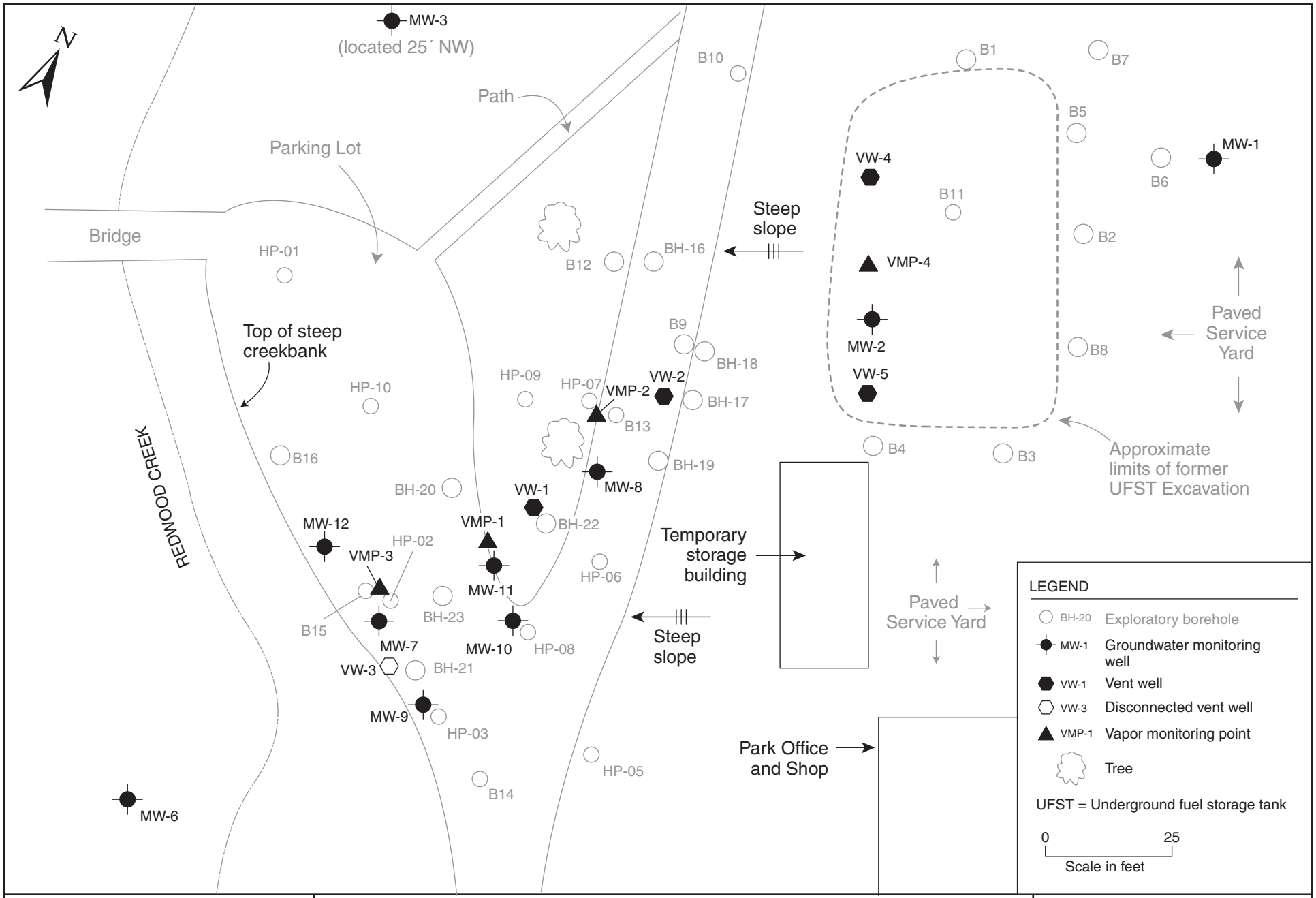
The site slopes to the west from an elevation of approximately 564 feet above mean sea level (amsl) at the eastern edge of the service yard to approximately 530 feet amsl at Redwood Creek, which defines the approximate western edge of the project site with regard to this investigation. Figure 1 shows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

REGULATORY OVERSIGHT

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

- Discontinuing hydrochemical sampling and analysis in wells MW-1, MW-3, MW-5, and MW-6
- Discontinuing creek surface water sampling at upstream location SW-1
- Reducing the frequency of creek surface water sampling from quarterly to semiannual. The latter recommendation has not yet been implemented due to the EBRPD's continued concern over potential impacts to Redwood Creek.

The site is in compliance with State Water Resources Control Board's GeoTracker requirements for uploading electronic data and reports. In addition, electronic copies of technical documentation reports published since Second Quarter 2005 have been uploaded to ACEH's file transfer protocol (ftp) system. Per ACEH's October 31, 2005 directive entitled "Miscellaneous Administrative Topics and Procedures," effective January 31, 2006, paper copies of reports are no longer provided to ACEH.



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

Figure 2

by: MJC | APRIL 2011

2010-02-13

N

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

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

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2006-17-01

2.0 PHYSICAL SETTING

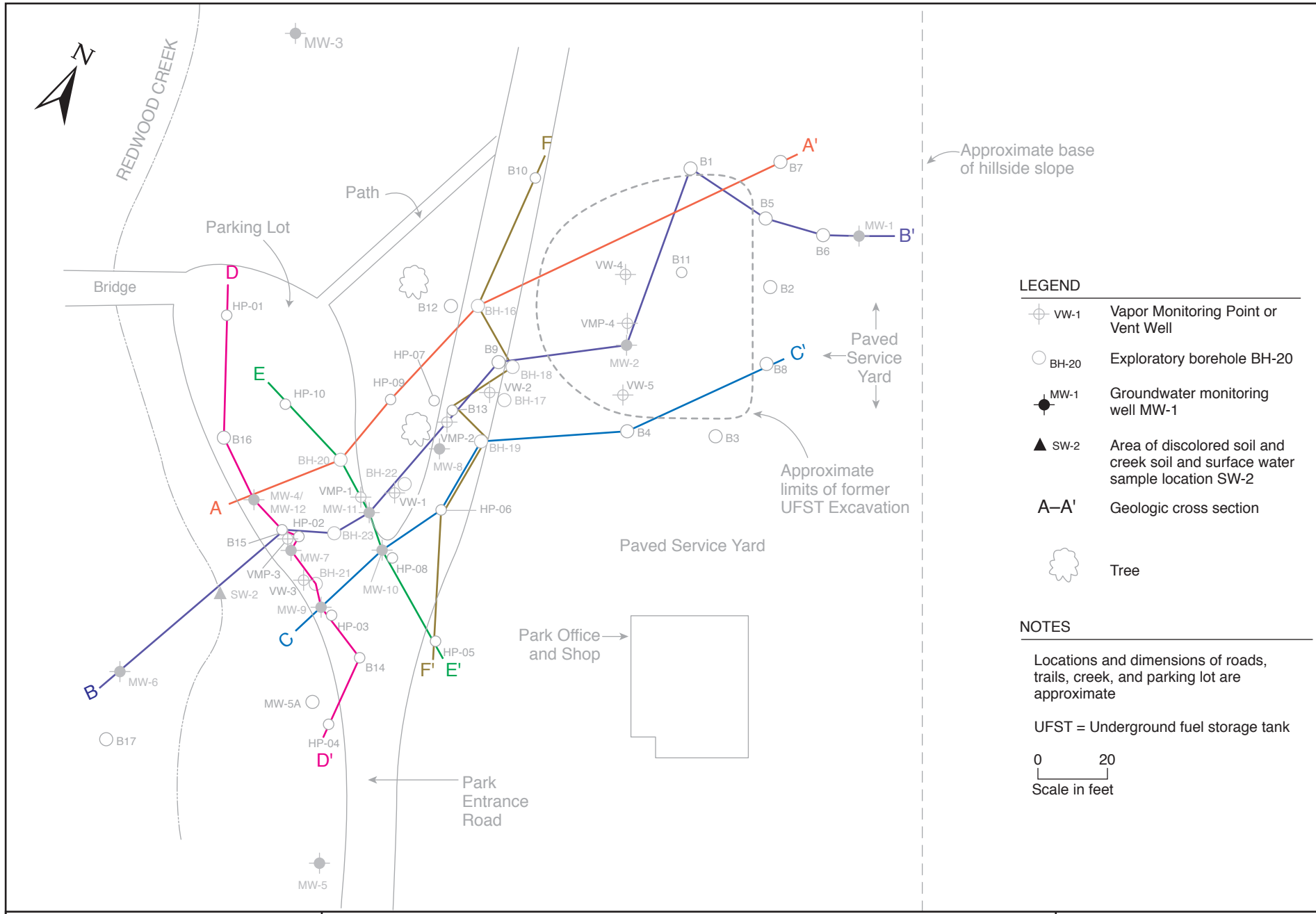
This section discusses the site hydrogeologic conditions based on geologic logging and water level measurements collected at the site since September 1993. Previous Stellar Environmental reports have included detailed discussions of site lithologic and hydrogeologic conditions. In May 2004, ACEH requested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

SITE LITHOLOGY

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

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

A previous report (Stellar Environmental, 2004c) presented a bedrock surface isopleth map (elevation contours for the top of the bedrock surface) in the contaminant plume area. As shown in Figures 4 and 5, the isopleth map indicates the following: The bedrock surface slopes steeply, approximately 0.3 feet/foot, from east to west (toward Redwood Creek) in the upgradient portion of the site (from the service yard to under the entrance road), then shows a gentle east-to-west slope in the downgradient portion of the site (under the gravel parking area) toward Redwood Creek.



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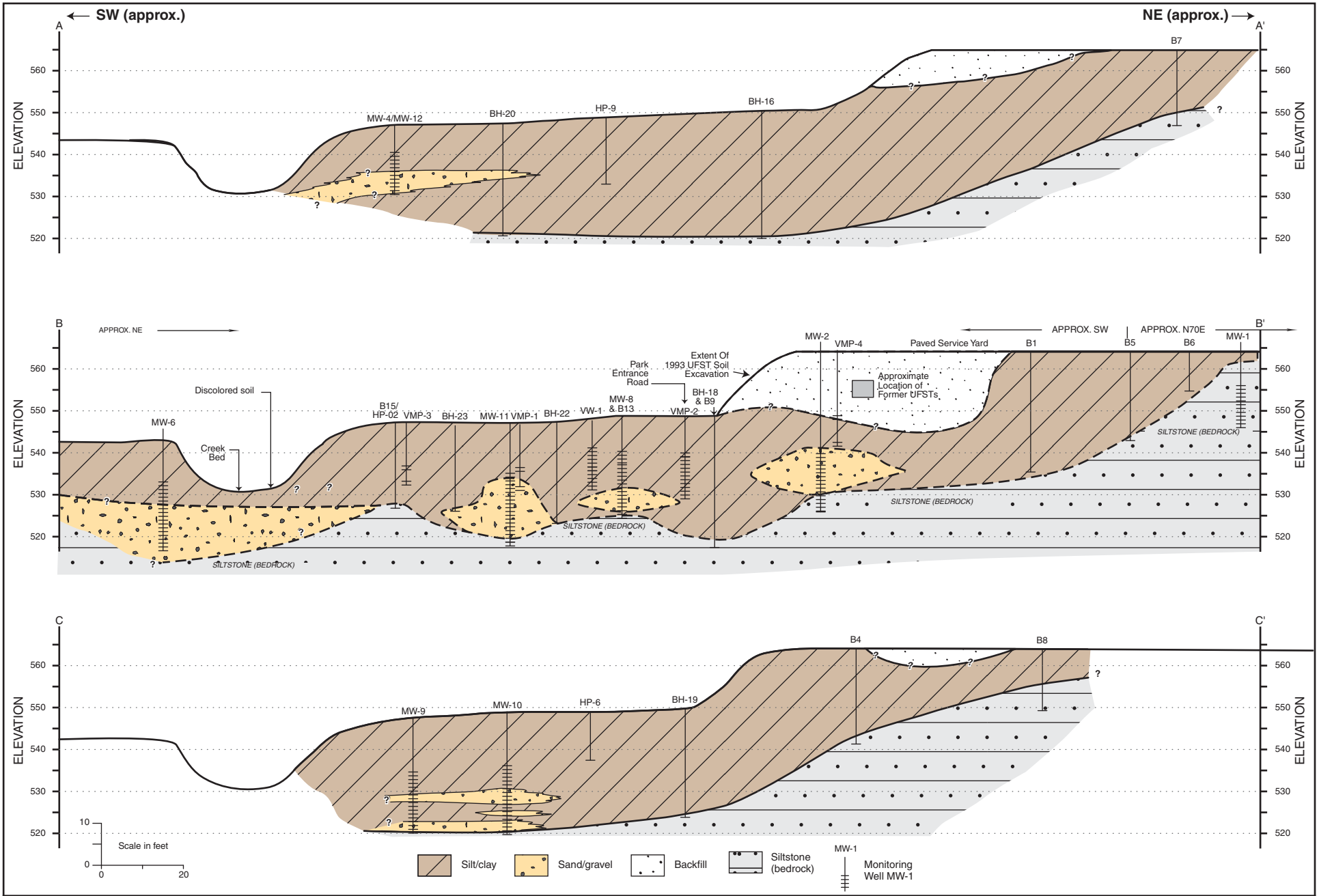
GEOLOGIC CROSS-SECTION LOCATIONS
Redwood Regional Park Service Yard, Oakland, CA

Figure 3

by: MJC | MARCH 2008

2008-02-05



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

Redwood Regional Park Service Yard, Oakland, CA

Figure 4

by: MJC

DECEMBER 2007

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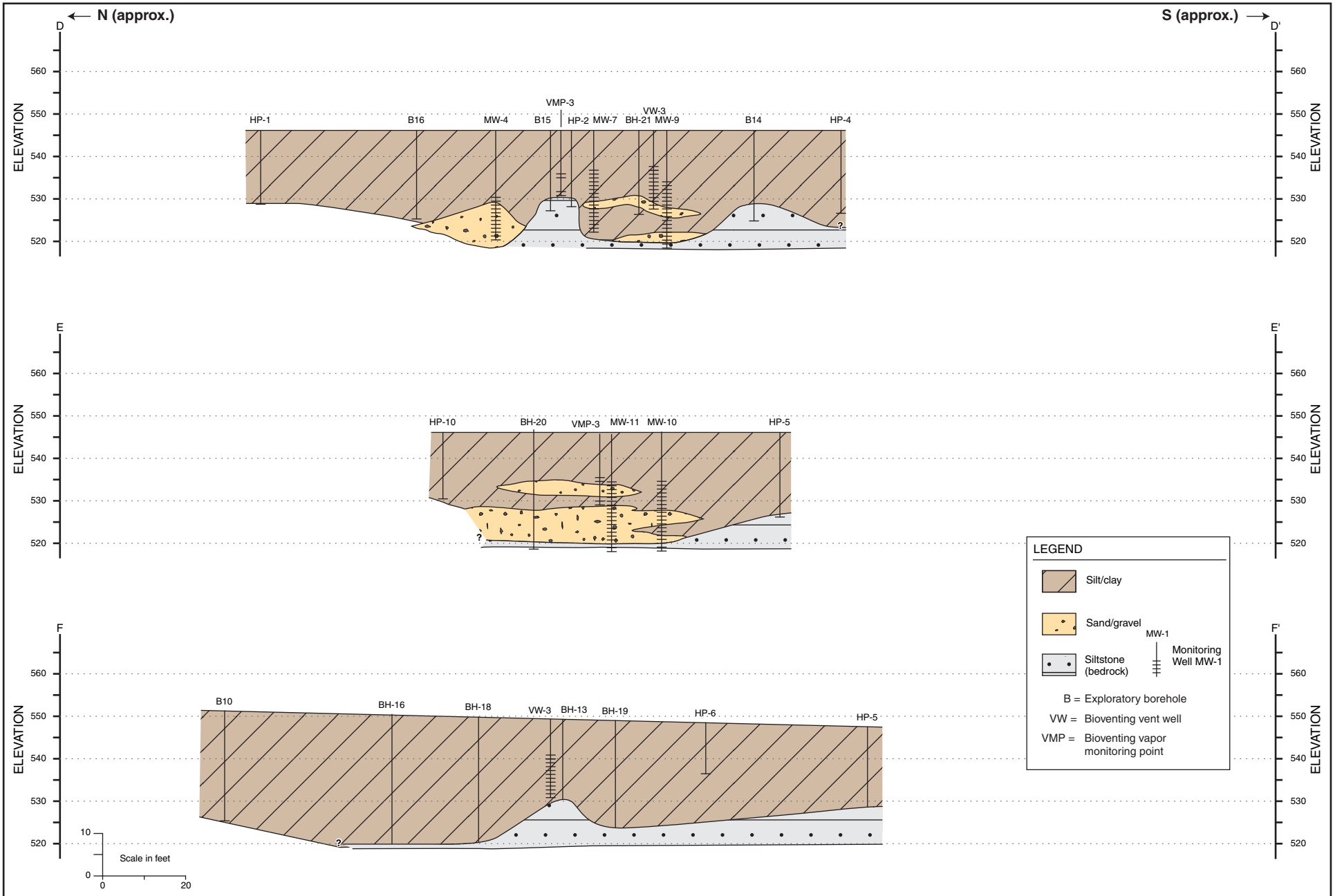

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GEOLOGIC CROSS SECTIONS — D-D' through F-F'
Redwood Regional Park Service Yard, Oakland, CA

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 it may have undergone channel erosion from a paleostream(s) flow sub-parallel to present-day Redwood Creek. Because groundwater flows in the unconsolidated sediments that directly overlie the bedrock surface, it is likely that the surface affects local groundwater depth and flow direction. This is an important hydrogeologic control that should be considered if groundwater-specific corrective action is contemplated.

HYDROGEOLOGY

Groundwater at the site occurs under unconfined and semi-confined conditions, generally within the clayey, silty, sand-gravel zone. The top of this zone varies between approximately 12 and 19 feet below ground surface (bgs); the bottom of the water-bearing zone (approximately 25 to 28 feet bgs) corresponds to the top of the siltstone bedrock unit. Seasonal fluctuations in groundwater depth create a capillary fringe of several feet that is saturated in the rainy period (late fall through early spring) and unsaturated during the remainder of the year. The thickness of the saturated zone plus the capillary fringe varies between approximately 10 to 15 feet in the area of contamination. Local perched water zones have been observed well above the top of the capillary fringe. Consistent with the bedrock isopleth map showing an elevation depression in the vicinity of MW-11, historical groundwater elevations in MW-11 are sporadically lower than the surrounding area. As discussed in the previous subsection, local groundwater flow direction is likely more variable than expressed by groundwater monitoring well data due to local variations in bedrock surface topography.

We assume a site groundwater velocity of 7 to 10 feet per year using general look-up tables for permeability characteristics for the site-specific lithologic data obtained from site investigations. This velocity estimate is conservatively low, but does meet minimum-distance-traveled criteria from the date when contamination was first observed in Redwood Creek (1993) relative to the

time of the UFST installations (late 1970s). Locally, however, the groundwater velocity could vary significantly. Calculating the specific hydraulic conductivity critical to accurately estimating site-specific groundwater velocity would require direct testing of the water-bearing zone through a slug or pumping test.

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

The following groundwater gradient information is based on the monitoring data contained in Section 6.0 of this report. In the upgradient portion of the site (between well MW-1 and MW-2, in landslide debris and the former UFST excavation backfill) the groundwater gradient was measured at approximately 0.22 feet per foot. Downgradient from (west of) the UFST source area (between MW-2 and Redwood Creek) the groundwater gradient was approximately 0.1 feet per foot. The average groundwater elevation was 1.79 feet higher than the previous (September2012) event, with the greatest increase of 4.21 feet measured in MW-3 and the lowest increase measured in MW-6 of 0.20 feet. The direction of shallow groundwater flow during the current event was to the west-southwest (toward Redwood Creek), which is consistent with historical site groundwater flow direction.

3.0 REGULATORY CONSIDERATIONS

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

GROUNDWATER CONTAMINATION

As specified in the Water Board's *San Francisco Bay Region Water Quality Control Plan* (Water Board, 1995), all groundwater are considered potential sources of drinking water unless otherwise approved by the Water Board and are also assumed to ultimately discharge to a surface water body and potentially impact aquatic organisms. While it is likely that site groundwater would satisfy geology-related criteria for exclusion as a drinking water source (excessive total dissolved solids and/or insufficient sustained yield), Water Board approval for this exclusion has not been obtained for the site. As summarized in Table 5 (in Section 7.0), site groundwater contaminant levels are compared to two sets of criteria: 1) Water Board Tier 1 Environmental Screening Levels (ESLs) for residential sites where groundwater *is* a current or potential drinking water source; and 2) ESLs for residential sites where groundwater *is not* a current or potential drinking water source.

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

SURFACE WATER CONTAMINATION

As summarized in Table 5 (in Section 7.0), site surface water contaminant levels are compared to the most stringent screening level criteria published by the State of California, U.S. Environmental Protection Agency, and U.S. Department of Energy. These screening criteria address chronic and acute exposures to aquatic life. As discussed in the ESL document (Water

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

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

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

4.0 FIRST SEMIANNUAL 2013 MONITORING ACTIVITIES

This section presents the quarterly creek surface water and groundwater sampling, and analytical methods for the most recent groundwater monitoring event conducted in March 14, 2013. Groundwater sampling was conducted in accordance with State of California guidelines for sampling dissolved analytes in groundwater associated with leaking UFSTs (State Water Resources Control Board, 1989), and followed the methods and protocols approved by ACEH in the workplan (Stellar Environmental, 1998a).

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

- Measuring static water levels in all 11 site wells
- Collecting post-purge groundwater samples for laboratory analysis of site contaminants from wells located within (or potentially within) the groundwater plume (MW-2, MW-7, MW-8, MW-9, MW-10, MW-11, and MW-12);
- Continue post-purge measurement of dissolved oxygen (DO) and redox to establish a baseline prior to installation of the permeable reactive barrier (PRB) in the distal contaminant plume. In addition, Stellar Environmental also analyzed wells MW-7, MW-9 and MW-12, located directly downgradient of the proposed PRB, for alternate electron acceptors including nitrates, sulfates, biological oxygen demand (BOD), and chemical oxygen demand (COD) to establish a baseline prior to installation of the PRB.
- Collecting Redwood Creek surface water samples for laboratory analysis from locations SW-2 and SW-3

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 current equilibrated groundwater elevation data are summarized in Table 1. Figure 6 is a groundwater elevation map constructed from the monitoring well elevation data.

Table 1
Groundwater Monitoring Well Construction
and Groundwater Elevation Data – March 14, 2013

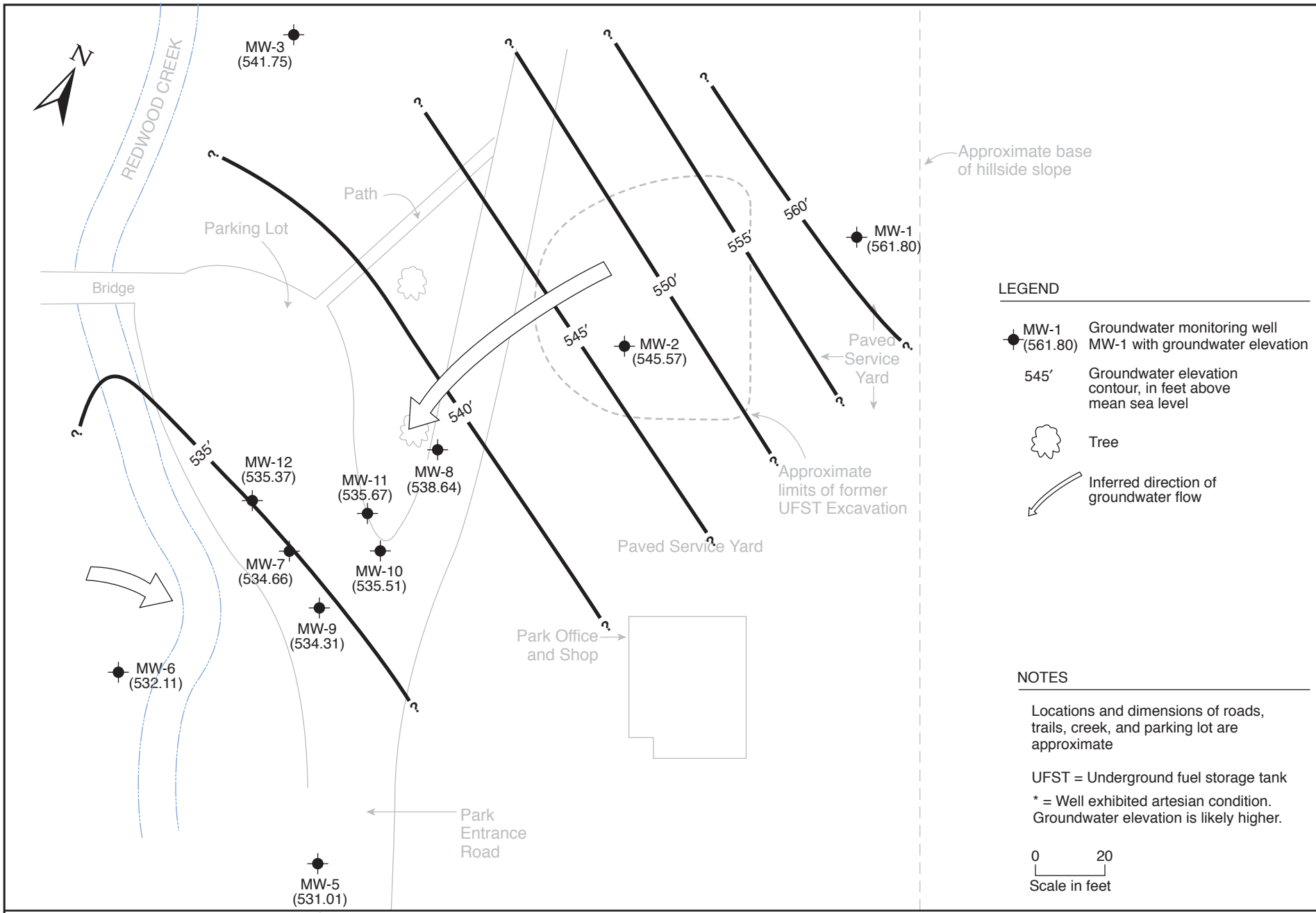
Well	Well Depth	Screened Interval	TOC Elevation	Groundwater Depth (bgs)	Groundwater Elevation
MW-1	18	7 to17	565.83	4.03	561.80
MW-2	36	20 to 35	566.42	20.85	545.57
MW-3	42	7 to 41	560.81	19.07	541.74
MW-5	26	10 to 25	547.41	16.40	531.01
MW-6	26	10 to 25	545.43	13.32	532.11
MW-7	24	9 to24	547.56	12.90	534.66
MW-8	23	8 to 23	549.13	10.49	538.64
MW-9	26	11 to 26	549.28	14.97	534.31
MW-10	26	11 to 26	547.22	11.50	535.72
MW-11	26	11 to 26	547.75	12.08	535.67
MW-12	25	10 to 25	544.67	9.30	535.37

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 analyses 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 quarter).

The sampling-derived purge water and decontamination rinseate (approximately 45 gallons) from the current event was containerized in the onsite above-ground storage tank. Eleven hundred gallons of accumulated purgewater from groundwater monitoring that was stored in the tank was emptied on April 4, 2013 by Evergreen Oil, Inc., and transported via non-hazardous manifest and disposed to their recycling facility in Newark, California.



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GROUNDWATER ELEVATION MAP—March 14, 2013
Redwood Regional Park Service Yard, Oakland, CA

Figure 6

by: MJC | APRIL 2013

2010-02-22

CREEK SURFACE WATER SAMPLING

Surface water sampling was conducted by Blaine Tech services personnel on March 14, 2013. Surface water samples were collected from Redwood Creek location SW-2 (immediately downgradient of the former UFST source area and within the area of documented creek bank soil contamination), and at SW-3 (located approximately 500 feet downstream of the SW-2 location). In accordance with a previous Stellar Environmental recommendation approved by ACEH, upstream sample location SW-1 is no longer part of the surface water sampling program.

PRE-PERMEABLE REACTIVE BARRIER INSTALLATION BASELINE INDICATORS

Petroleum constituents have also been documented in Redwood Creek, directly downgradient from the former UFSTs, as the plume has been noted to "daylight" in the stream channel, particularly during Redwood Creek's low-flow season. The problem has been persistent, despite multiple injection treatments with ORC®, an oxygen releasing compound, and bioventing, where air (for its oxygen content) is pumped by a blower into the subsurface via piping leading to wells. The remediation has been successful in significantly reducing the higher concentrations down to lower ones, but limited near the downgradient receptor, Redwood Creek. As a result of Redwood Creek being the primary receptor, a permeable reactive barrier (PRB) was designed and is planned for installation across the contaminant plume to intercept and clean the leading edge of the plume before it moves into Redwood Creek.

The PRB is 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 planned 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 2 includes the results of these additional analyses that have been collected in site monitoring wells located immediately downgradient of the proposed PRB.

Table 2
Analytical Results of Electron Acceptors and Oxygen Demand in Downgradient Wells – March 14, 2013

Location	Concentrations				
	Nitrates	Sulfates	BOD	DO	COD
MW-7	<0.05	<0.50	100	0.55	32
MW-9	<0.05	12	82	0.48	24
MW-12	<0.05	22	<38	0.56	19

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

Dissolved Oxygen

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

The historical highest hydrocarbon concentrations (> 40,000 µg/L) were reported in well MW-2 in early 2009 before the initial injection of ORC™ in Q1-2009 which resulted in steady decreases in both TPHg and TPHg. The current DO in MW-2 is still high with relatively low hydrocarbon concentrations (<1,000 µg/L) in this well suggesting that active aerobic biodegradation is still currently occurring. Conversely at monitoring wells MW-7, MW-9 and MW11, which currently show the highest concentrations of hydrocarbons, the DO concentrations measured are relatively low (0.48 – 0.55 mg/L) suggesting that less active aerobic biodegradation is currently occurring at these wells.

5.0 FIRST SEMIANNUAL 2013 ANALYTICAL RESULTS

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

GROUNDWATER AND SURFACE WATER ANALYTICAL RESULTS

First Semiannual 2013 site groundwater monitoring showed contaminant concentrations exceeded the groundwater ESL for total volatile hydrocarbons as gasoline (TVHg) in all of the seven wells sampled and for total extractable hydrocarbons as diesel (TEHd) in six of the seven wells (MW-2, MW-7, MW-8, MW-9, MW-11, and MW-12). The ESL for benzene was exceeded in all 3 wells in which it was detected (MW-8, MW-9 and MW-11). Ethylbenzene was detected in six of the seven sampled wells, exceeding the ESL in three wells; MW-7, MW-8 and MW-9. The ESL for MTBE was exceeded in all the wells in which it was detected (MW-8, MW-10 and MW-12). Xylenes were detected in three wells but below the ESL.

The maximum concentration of TVHg and TEHd were detected in MW-7, located in the downgradient area of the plume. The northern edge of the plume in the downgradient area of the plume is defined by well MW-12. The southern edge of the plume in the downgradient area is not strictly defined; however, based on historical groundwater data, it appears to be located between well MW-9 and well MW-5. The area of the current event contaminant plume is consistent with historical contaminant distribution. While the center of contaminant mass in groundwater is generally located downgradient of the former source area, historically, contamination also has been observed in the former source area.

No contaminants were detected above their respective laboratory detection limits in either surface water sample location SW-2 or SW-3 during this March 2013 sampling event.

Table 3
Groundwater and Surface Water Sample Analytical Results – March 14, 2013

Location	Dissolved Oxygen (mg/L)	Contaminant Concentrations						
		TEHd	TVHg	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE
GROUNDWATER SAMPLES								
MW-2	19.09	**810**	**470**	<0.5	<0.5	<0.5	<0.5	<2.0
MW-7	0.55	**3,300**	**6,000**	<0.5	<0.5	**82**	<0.5	<2.0
MW-8	0.52	**690**	**840**	**5.6**	<0.5	**47**	9.91	**15**
MW-9	0.48	**2,400**	**4.000**	**9.1**	<0.5	**73**	9.7	<2.0
MW-10	0.58	58	**310**	<0.5	<0.5	7.3	7.94	**5.7**
MW-11	0.54	**1,900**	**1,500**	**4.8**	<0.5	22	<0.5	<2.0
MW-12	0.56	**200**	**430**	<0.5	<0.5	1.2	<0.5	**7.1**
Groundwater ESLs [(a)]	*NLP*	*100 / 210*	*100 / 210*	*1.0 / 46*	*4.0 / 130*	*30 / 43*	*20 / 100*	*5.0 / 1,800*
REDWOOD CREEK SURFACE WATER SAMPLES								
SW-2	NA	<50	<50	<0.5	<0.5	<0.5	<0.5	<2.0
SW-3	NA	<50	<50	<0.5	<0.5	<0.5	<0.5	<2.0
Surface Water Screening Levels [(b)]	*NLP*	*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, 2008)

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

NA = not analyzed
NLP = no level published

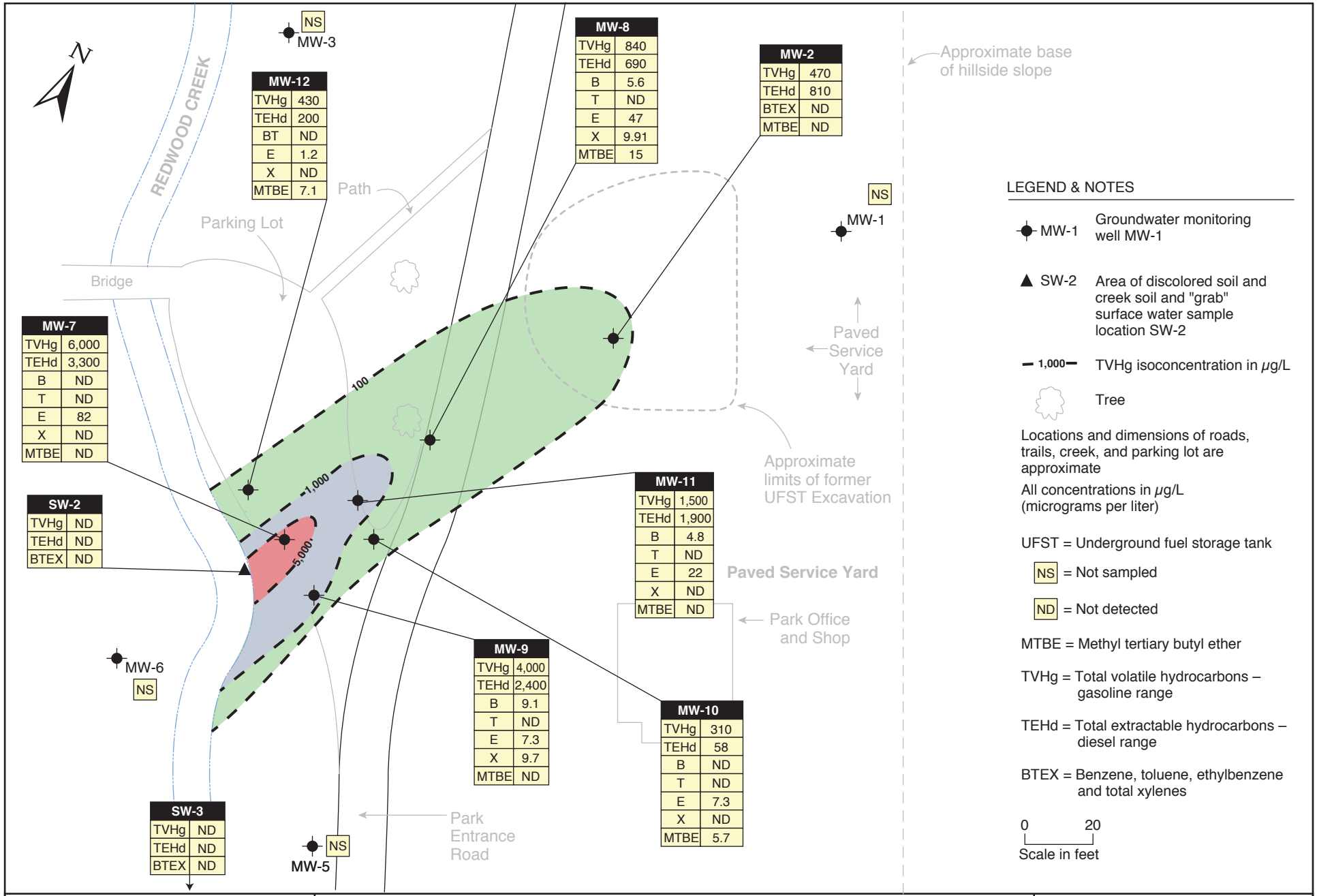
MTBE = methyl tertiary-butyl ether
TEHd = total extractable hydrocarbons - diesel range
TVHg = total volatile hydrocarbons - gasoline range

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

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

QUALITY CONTROL SAMPLE ANALYTICAL RESULTS

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



STELLAR ENVIRONMENTAL SOLUTIONS, INC
GEOSCIENCE & ENGINEERING CONSULTING

ANALYTICAL RESULTS AND GASOLINE PLUME—MARCH 2013

Redwood Regional Park Service Yard, Oakland, CA

Figure 7

by: MJC | APRIL 2013

2010-02-21

6.0 SUMMARY, CONCLUSIONS AND PROPOSED ACTIONS

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

SUMMARY AND CONCLUSIONS

- 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 which are currently monitored for contamination.
- Site contaminants of concern include gasoline, diesel, BTEX, and MTBE. Current groundwater concentrations exceed regulatory screening levels for TVHg, TEHd, benzene, ethylbenzene, and total xylenes in groundwater.
- On July 18, 2011, in concurrence with ACEH, the site bioventing system having accomplished its' design purpose, was discontinued.
- The primary environmental risk is discharge of contaminated groundwater to the adjacent Redwood Creek. A stream bioassessment (conducted between 1999 to 2000) concluded that there were no direct impacts to the surface water benthic community; however, groundwater contamination is sporadically detected in surface water samples, and there is historical visual evidence of plume discharge at the creek/groundwater interface. Surface water samples have sporadically exceeded surface water ESL criteria for gasoline, diesel, and benzene but generally only under low-creek flow conditions. No contaminants were detected above their respective laboratory detection limits in either surface water sample location SW-2 or SW-3 during this latest sampling event.
- The existing well layout adequately constrains the lateral extent of groundwater contamination, and the vertical limit is very likely the top of the near-surface (25 to 28 feet bgs) in siltstone bedrock. The saturated interval extends approximately 12 to 15 feet from top of bedrock through the capillary fringe. Groundwater elevations fluctuate seasonally, creating a capillary fringe that varies seasonally in thickness.

- The First Semiannual 2013 monitoring event detected TVHg above the ESL in all of the seven groundwater wells sampled and TEHd above its' ESL in six of the seven wells sampled.
- The ESL for benzene was exceeded in wells MW-8, MW-9 and MW-11). Ethylbenzene was detected above the ESL in three wells; MW-7, MW-8 and MW-9. The ESL for MTBE was exceeded in wells MW-8, MW-10 and MW-12. Toluene was not detected this monitoring event.
- Contaminant concentrations remain elevated in this First 2013 Semiannual event, however detected concentrations.

PROPOSED ACTIONS

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

- Continue to monitor and sample the site wells and creek on a semiannual frequency.
- Proceed with installation of the Permeable Reactive Barrier across the distal contaminant plume as planned in late spring – summer 2013
- Continue to inform regulators of site progress and seek their concurrence with proposed actions.
- Continue to evaluate analytical results in the context of hydrochemical trends, groundwater contamination on Redwood Creek, and effectiveness of the corrective action to date.
- Continue to make required Electronic Data Format uploads to the State of California GeoTracker database, and upload an electronic copy of technical reports to the ACEH ftp system.

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8.0 LIMITATIONS

This report has been prepared for the exclusive use of the East Bay Regional Park District, its authorized representatives, and the regulatory agencies. No reliance on this report shall be made by anyone other than those for whom it was prepared.

The findings and conclusions presented in this report are based on the review of previous investigators' findings at the site, as well as onsite activities conducted by Stellar Environmental since September 1998. This report has been prepared in accordance with generally accepted methodologies and standards of practice. The Stellar Environmental personnel who performed this work are qualified to perform such investigations and have accurately reported the information available, but cannot attest to the validity of that information. No warranty, expressed or implied, is made as to the findings, conclusions, and recommendations included in the report.

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

APPENDIX A

Historical Groundwater Monitoring Well Water Level Data

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

Well I.D.	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11	MW-12
TOC Elevation (a)	565.83	566.42	560.81	548.10	547.41	545.43	547.56	549.13	549.28	547.22	547.75	544.67
Date Monitored	Groundwater Elevations (feet above mean sea level)											
09/18/98	563.7	544.2	540.8	534.5	531.1	531.4						
04/06/99	565.2	546.9	542.3	535.6	532.3	532.9						
12/20/99	562.9	544.7	541.5	534.9	531.2	532.2						
09/28/00	562.8	542.7	538.3	532.2	530.9	532.0						
01/11/01	562.9	545.1	541.7	535.0	531.2	532.3	534.9	538.1				
04/13/01	562.1	545.7	541.7	535.1	531.5	532.4	535.3	539.8				
09/01/01	560.9	542.0	537.7	533.9	530.7	531.8	534.0	535.6				
12/17/01	562.2	545.2	542.2	534.8	531.4	532.4	534.8	538.4	534.6	535.7	535.2	
03/14/02	563.0	547.1	542.2	535.5	532.4	533.3	535.7	541.8	535.0	537.6	536.6	
06/18/02	562.1	544.7	541.1	534.6	531.2	532.2	534.8	537.9	534.7	535.6	535.3	
09/24/02	561.4	542.2	537.3	533.5	530.6	531.8	533.5	535.5	535.3	533.8	531.7	
12/18/02	562.4	545.0	542.0	534.8	531.5	532.5	534.6	537.1	536.5	535.2	532.8	
03/27/03	562.6	545.7	541.7	534.8	531.6	532.4	535.1	539.9	537.2	536.2	533.6	
06/19/03	562.3	544.9	541.5	534.8	531.3	532.3	534.9	538.2	536.9	535.7	533.2	
09/10/03	561.6	542.1	537.9	533.8	530.8	531.9	533.7	535.6	535.6	534.1	531.9	
12/10/03	562.4	542.7	537.6	533.7	530.9	531.9	533.7	535.2	535.5	533.8	531.7	
03/18/04	563.1	546.6	541.9	535.0	531.7	532.4	535.2	540.9	537.4	536.6	533.8	
06/17/04	562.1	544.3	540.7	534.3	531.0	532.1	534.6	537.4	536.5	535.1	532.7	
09/21/04	561.5	541.1	536.5	533.1	530.5	531.6	533.1	534.7	532.7	533.2	533.2	
12/14/04	562.2	545.3	541.7	534.7	531.4	532.2	534.6	540.4	536.7	535.5	532.9	
03/16/05	563.8	547.3	541.7	535.3	532.4	532.8	535.6	541.8	538.0	537.1	534.2	
06/15/05	562.9	545.9	541.6	535.0	531.7	532.5	535.0	540.0	535.0	536.1	535.6	
09/13/05	562.3	543.5	539.7	534.4	530.9	532.2	534.3	536.7	536.1	534.7	532.4	
12/15/05	562.2	544.3	541.4	(b)	531.0	532.2	534.5	537.3	534.1	534.7	534.9	535.1
03/30/06	565.8	548.6	542.7	(b)	533.9	534.4	536.2	542.3	536.4	537.3	537.6	535.7
06/20/06	563.6	545.4	541.6	(b)	531.5	532.5	534.9	538.6	534.6	536.2	535.5	535.0
09/29/06	561.9	542.8	539.0	(b)	530.7	532.1	535.1	536.1	533.7	534.6	534.7	534.7
12/14/06	562.9	544.2	541.5	(b)	531.1	532.3	534.7	536.7	534.0	534.8	535.2	535.0
03/21/07	562.5	545.2	541.7	(b)	531.4	532.4	534.9	539.3	534.6	535.6	535.6	535.1
06/20/07	561.5	543.5	540.8	(b)	531.0	532.4	534.6	537.1	531.1	535.2	535.3	534.9
9/14/2007	560.71	541.02	536.99	(b)	530.46	531.58	533.42	534.86	532.64	533.47	533.68	533.74
12/6/2007	560.62	541.22	536.85	(b)	530.68	531.48	533.21	535.08	532.62	533.3	533.61	533.64
3/14/2008	561.76	545.73	541.63	(b)	531.34	532.30	534.88	539.30	534.67	536.04	535.89	535.72
6/13/2008	560.92	543.61	540.6	(b)	530.83	532.02	534.42	536.86	533.81	534.84	535.16	534.67
9/18/2008	560.43	540.15	536.41	(b)	529.85	531.11	532.69	534.15	531.97	532.65	533.09	533.12
12/17/2008	561.11	540.88	536.77	(b)	530.68	531.67	533.26	534.04	532.35	532.94	533.29	533.66
3/16/2009	561.84	546.25	539.51	(b)	531.63	532.58	534.65	539.51	534.56	535.55	535.49	535.08
6/10/2009	561.05	545.02	541.38	(b)	531.02	532.08	534.45	537.94	534.08	535.40	535.18	534.96
9/25/2009	560.00	540.79	536.33	(b)	529.98	Dry	532.58	534.25	531.96	532.62	532.97	533.08
12/21/2009	560.93	543.49	541.22	(b)	530.96	532.06	534.03	536.17	533.46	534.13	534.57	534.69
3/29/2010	561.48	546.44	541.59	(b)	531.52	532.58	534.72	540.03	534.53	535.94	535.55	535.28
6/22/2010	561.17	545.62	541.40	(b)	531.26	532.41	534.63	538.90	534.37	535.62	535.27	535.21
9/28/2010	560.32	543.36	537.91	(b)	530.6	532.02	532.66	535.23	532.96	534.21	533.99	534.16
12/16/2010	561.33	545.52	541.51	(b)	531.11	532.31	534.52	537.21	534.00	534.38	535.10	535.15
3/23/2011	563.68	547.97	542.49	(b)	532.78	534.43	535.96	542.40	535.87	537.19	537.88	536.15
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

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 # 130314-BP1 Date 3.14.13 Client Stellar Env. Solutions

Site 7867 Redwood Rd, Oakland CA

Well ID	Time	Well Size (in.)	Sheen / Odor	Depth to Immiscible Liquid (ft.)	Thickness of Immiscible Liquid (ft.)	Volume of Immiscibles Removed (ml)	Depth to water (ft.)	Depth to well bottom (ft.)	Survey Point: TOB or TOC	Notes
MW-1	0749	4					4.03	19.19		
MW-2	0756	4					20.85	37.20		
MW-3	0730	4					19.07	45.03		
MW-5	0736	4					16.40	26.96		
MW-6	0742	2					13.32	27.44		
MW-7	0808	2					12.90	25.34		
MW-8	0816	2					10.49	22.36		
MW-9	0821	2					14.97	30.20		
MW-10	0801	2					11.50	28.42		
MW-11	0823	2					12.08	28.74		
MW-12	0815	2					9.30	23.89		
	* Holding Tank Estimated Water ~1100 Gals (Est)									
	* MW-6 obstruction @ 14' DTB 27.44 ✓✓									

WELLHEAD INSPECTION CHECKLIST

Client Stellar Env. Solutions Date 3-14-13

Site Address Redwood Regional Park Service Yard 7867 Redwood Rd Oakland

Job Number 130314-BP1 Technician BP

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				V		
MW-9	X							
MW-10						X		
MW-11	X							
MW-12						X		

NOTES: MW-12: 1/2 tabs Broken MW-8: 3/3 bolts

MW-10: 2/2 tabs stripped MW-1: Ring on standpipe broken

TEST EQUIPMENT CALIBRATION LOG

PROJECT NAME	Stellar @ Redwood Regional Park	PROJECT NUMBER	13034-BP1

EQUIPMENT NAME	EQUIPMENT NUMBER	DATE/TIME OF TEST	STANDARDS USED	EQUIPMENT READING	CALIBRATED TO: OR WITHIN 10%:	TEMP. °C	INITIALS
Myron L Ultrameter II	0218707	3-14-13 @ 0730	pH 7.00	pH 6.99	✓	17.7	BP
			pH 10.00	pH 10.01	✓	17.8	BP
			pH 4.00	pH 3.99	✓	17.7	BP
			cond 3900 µS	3898	✓	20.1	BP
			ORP 250 @ 10.1°C mV	237 mV	✓	10.6	BP
YSI 550	06E474AS	3-14-13 @ 0740	DO 100%	101.3%	✓	15.5	BP

WELL MONITORING DATA SHEET

Project #: 130314-BP1	Client: Stellar
Sampler: BP	Date: 3.14.13
Well I.D.: MW-2	Well Diameter: 2 3 (4) 6 8 ___
Total Well Depth (TD): 37.20	Depth to Water (DTW): 20.85
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]: 24.12	

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: ____

10.6 (Gals.) X 3 = 31.8 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
0924	13.6	7.21	806.4	7/000	10.6	
0925	Well Dewatered @ 11.1 Gals					DTW: 34.30
1320	15.0	7.35	760.0	128	—	

Did well dewater? (Yes) No — Gallons actually evacuated: 11.1

Sampling Date: 3.14.13 — Sampling Time: 1320 — Depth to Water: 27.30 (2hr)

Sample I.D.: MW-2 — Laboratory: Kiff CalScience Other CAT

Analyzed for: TPH-G BTEX MTBE TPH-D Oxygenates (5) Other: 5 EE 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:)	19.09 mg/L
O.R.P. (if req'd):	Pre-purge:		mV	(Post-purge:)	15 mV

WELL MONITORING DATA SHEET

Project #: 130314-BP1	Client: Stellar
Sampler: BP	Date: 3.14.13
Well I.D.: MW-7	Well Diameter: (2) 3 4 6 8 ___
Total Well Depth (TD): 25.34	Depth to Water (DTW): 12.90
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]: 15.38	

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

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

2.0 (Gals.) X	3	=	6.0 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
1027	12.7	6.91	734.6	262	2.0	ODOR, LIGHT SHEEN
1031	12.5	6.94	733.1	>1000	4.0	↓
1036	12.7	6.95	720.3	>1000	6.0	↓
					NOT AT 80%. SHORT WAIT	

Did well dewater? Yes (No) Gallons actually evacuated: 6.0

Sampling Date: 3-14-13 Sampling Time: 1040 Depth to Water: 15.30

Sample I.D.: MW-7 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):	0.55	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	(Post-purge):	-77	mV

WELL MONITORING DATA SHEET

Project #: 130314-BP1	Client: Stellar
Sampler: BP	Date: 3.14.13
Well I.D.: MW-8	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth (TD): 22.36	Depth to Water (DTW): 10.49
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]: 12.36	

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: ____

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
1209	14.1	6.87	877.4	369	1.9	PURGE
1212	13.8	6.99	868.6	826	3.8	↓
1215	13.7	6.92	859.0	942	5.7	↓
						NOT AT 80% SHORTWAIT

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

Sampling Date: 3.14.13 Sampling Time: 1225 Depth to Water: 12.44

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

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:)	0.52 mg/L
O.R.P. (if req'd):	Pre-purge:	mV	(Post-purge:)	-77 mV

ELL MONITORING DATA SHEET

Project #: 130314-BP1	Client: Stellar
Sampler: BP	Date: 3-14-13
Well I.D.: MW-9	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth (TD): 30.20	Depth to Water (DTW): 14.97
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]: 18.01	

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

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

2.4 (Gals.) X 3 = 7.2 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
1138	13.4	6.96	900.3	331	2.4	ODOR LIGHT SHEEN
1143	13.7	7.07	808.2	876	4.8	↓
1149	13.4	7.09	819.1	>1000	7.2	↓
					NOT AT 80%	SHORT WAIT

Did well dewater? Yes (No) Gallons actually evacuated: 7.2

Sampling Date: 3-14-13 Sampling Time: 1155 Depth to Water: 17.92

Sample I.D.: MW-9 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:)	0.48 mg/L
O.R.P. (if req'd):	Pre-purge:	mV	(Post-purge:)	-79 mV

ELL MONITORING DATA SHEET

Project #: 130314-BP1	Client: Stellar
Sampler: BP	Date: 3-14-13
Well I.D.: MW-10	Well Diameter: (2) 3 4 6 8 ___
Total Well Depth (TD): 28.42	Depth to Water (DTW): 11.50
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]: 14.88	

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

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

2.7 (Gals.) X	3	=	8.1 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
0950	13.3	7.49	766.9	202	2.7	ODOR (Slight)
0956	13.7	7.35	782.0	960	5.4	↓
1002	13.7	7.40	758.9	≥1000	8.1	↓
					NOT AT 80%	SHORT WAIT

Did well dewater? Yes (No) Gallons actually evacuated: 8.1

Sampling Date: 3-14-13 Sampling Time: 1020 Depth to Water: 14.76

Sample I.D.: MW-10 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:)	0.58	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	(Post-purge)	47	mV

WELL MONITORING DATA SHEET

Project #: 130314-BP1	Client: Stellar
Sampler: BP	Date: 3-14-13
Well I.D.: MW-11	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth (TD): 28.74	Depth to Water (DTW): 12.08
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]: 15.91	

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

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

2.7 (Gals.) X 3 = 8.1 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
1239	13.5	7.16	739.1	143	2.7	
1244	13.5	7.02	786.0	196	5.4	
1249	13.0	7.00	799.1	222	8.1	

Did well dewater? Yes (No) Gallons actually evacuated: 8.1

Sampling Date: 3-14-13 Sampling Time: 1255 Depth to Water: 14.75

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):	0.54 mg/L
O.R.P. (if req'd):	Pre-purge:	mV	(Post-purge):	-75 mV

WELL MONITORING DATA SHEET

Project #: 130314-BP1	Client: Stellar
Sampler: BP	Date: 3-14-13
Well I.D.: MW-12	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth (TD): 23.89	Depth to Water (DTW): 9.30
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]: 12.21	

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

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

2.3 (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
1058	12.5	6.93	642.7	246	2.3	
1103	12.4	6.85	658.0	278	4.6	
1109	12.6	6.87	646.8	>1000	6.9	
					NOT ATBCT.	

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

Sampling Date: 3-14-13 Sampling Time: 1125 Depth to Water: 12.08

Sample I.D.: MW-12 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):	0.56	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	(Post-purge):	72	mV

WELL MONITORING DATA SHEET

Project #: 130314-BP1	Client: Stellar
Sampler: BP	Date: 3-14-13
Well I.D.: SW2	Well Diameter: 2 3 4 6 8 creek sample
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
*	lynb sample, surface water from creek					
0905	8.9	7.60	510.8	6	—	

Did well dewater? Yes No — Gallons actually evacuated: —

Sampling Date: 3-14-13 Sampling Time: 0905 Depth to Water: —

Sample I.D.: SW2 Laboratory: Kiff CalScience Other CFT

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:	* 7.53	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	179	mV

* DO taken in cup

WELL MONITORING DATA SHEET

Project #: 130314-BP1	Client: Stellar
Sampler: BP	Date: 3-14-13
Well I.D.: SW3	Well Diameter: 2 3 4 6 8 creek sample
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
*	Grab sample, surface water from creek					
	(80)					
0840	9.7	7.58	505.1	5	—	

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

Sampling Date: 3-14-13 Sampling Time: 0840 Depth to Water:

Sample I.D.: SW3 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:)	* 8.26	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	(Post-purge:)	203	mV

* DO taken in cup

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 243800
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-10	243800-001
MW-7	243800-002
MW-12	243800-003
MW-9	243800-004
MW-8	243800-005
MW-11	243800-006
MW-2	243800-007
SW 2	243800-008
SW 3	243800-009

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: 03/20/2013

Tracy Babjar
Project Manager
(510) 204-2226

NELAP # 01107CA

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**243800**
Client:	**Stellar Environmental Solutions**
Project:	**2013-02.**
Location:	**Redwood Regional Park**
Request Date:	**03/14/13**
Samples Received:	**03/14/13**

This data package contains sample and QC results for nine water samples, requested for the above referenced project on 03/14/13. 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.

243800

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	Filtered	No. of Containers	TVH-g (8015m)	BTEX/MTBE (8021)	TEH-d (8015)	Nitrate	Sulfate	BOD	COD	Remarks
1	MW-10		3-14-13	1020	W	2x1L AGB NP 3-40mL VOA		NP HCl	N	5	X	X	X					
2	MW-7			1040	W	* 1x1L NP poly 1x500mL NP poly		H_2SO_4	N	8	X	X	X		X	X	X	X
3	MW-12			1125	W	* 1x250 H_2SO_4 add'l bottles		H_2SO_4	N	8	X	X	X		X	X	X	X
4	MW-9			1155	W	* add'l bottles		H_2SO_4	N	8	X	X	X		X	X	X	X
5	MW-8			1225	W				N	5	X	X	X					
6	MW-11			1255	W				N	5	X	X	X					
7	MW-2			1320	W				N	5	X	X	X					
8	SW 2			0905	W				N	5	X	X	X					
9	SW 3			0840	W				N	5	X	X	X					

Relinquished by:	Date	Received by:	Date	Relinquished by:	Date	Received by:	Date
Signature [signature]	3/14/13	Signature [signature]	3/14/13	Signature		Signature	
Printed Ben Parnell	Time	Printed Tracy Bdick	Time	Printed	Time	Printed	Time
Company Stellar Environmental		Company CET	2:10	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 # 243800 Date Received 3/14/13 Number of coolers 2
Client Stellar Environmental Project Redwood Regional Park

Date Opened 3/14/13 By (print) AAT (sign)
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) 1.0, 1.0

☐ 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
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 243800

Sample	pH: <2	>9	>12	Other
-002a	[ ]	[ ]	[ ]	_____
b	[ ]	[ ]	[ ]	_____
c	[ ]	[ ]	[ ]	_____
d	[✓]	[ ]	[ ]	_____
e	[ ]	[ ]	[ ]	_____
f	[ ]	[ ]	[ ]	_____
g	[ ]	[ ]	[ ]	_____
h	[ ]	[ ]	[ ]	_____
-003a	[ ]	[ ]	[ ]	_____
b	[ ]	[ ]	[ ]	_____
c	[ ]	[ ]	[ ]	_____
d	[✓]	[ ]	[ ]	_____
e	[ ]	[ ]	[ ]	_____
f	[ ]	[ ]	[ ]	_____
g	[ ]	[ ]	[ ]	_____
h	[ ]	[ ]	[ ]	_____
-004a	[ ]	[ ]	[ ]	_____
b	[ ]	[ ]	[ ]	_____
c	[ ]	[ ]	[ ]	_____
d	[✓]	[ ]	[ ]	_____
e	[ ]	[ ]	[ ]	_____
f	[ ]	[ ]	[ ]	_____
g	[ ]	[ ]	[ ]	_____
h	[ ]	[ ]	[ ]	_____

Analyst: _____

Date: 3/14/13

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	243800	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2013-02.		
Matrix:	Water	Sampled:	03/14/13
Units:	ug/L	Received:	03/14/13
Diln Fac:	1.000	Analyzed:	03/16/13
Batch#:	196427		

Field ID: MW-10 Lab ID: 243800-001
Type: SAMPLE

Analyte	Result	RL	Analysis
Gasoline C7-C12	310	50	EPA 8015B
MTBE	5.7	2.0	EPA 8021B
Benzene	ND	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	7.3	0.50	EPA 8021B
m,p-Xylenes	7.2	0.50	EPA 8021B
o-Xylene	0.74	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Bromofluorobenzene (FID)	113	76-128	EPA 8015B
Bromofluorobenzene (PID)	106	70-136	EPA 8021B

Field ID: MW-7 Lab ID: 243800-002
Type: SAMPLE

Analyte	Result	RL	Analysis
Gasoline C7-C12	6,000	50	EPA 8015B
MTBE	ND	2.0	EPA 8021B
Benzene	ND	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	82	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)	107	76-128	EPA 8015B
Bromofluorobenzene (PID)	101	70-136	EPA 8021B

Field ID: MW-12 Lab ID: 243800-003
Type: SAMPLE

Analyte	Result	RL	Analysis
Gasoline C7-C12	430	50	EPA 8015B
MTBE	7.1	2.0	EPA 8021B
Benzene	ND	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	1.2	0.50	EPA 8021B
m,p-Xylenes	ND	0.50	EPA 8021B
o-Xylene	ND	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Bromofluorobenzene (FID)	106	76-128	EPA 8015B
Bromofluorobenzene (PID)	104	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 #:	243800	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2013-02.		
Matrix:	Water	Sampled:	03/14/13
Units:	ug/L	Received:	03/14/13
Diln Fac:	1.000	Analyzed:	03/16/13
Batch#:	196427		

Field ID: MW-9 Lab ID: 243800-004
Type: SAMPLE

Analyte	Result	RL	Analysis
Gasoline C7-C12	4,000	50	EPA 8015B
MTBE	ND	2.0	EPA 8021B
Benzene	9.1 C	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	73	0.50	EPA 8021B
m,p-Xylenes	4.6 C	0.50	EPA 8021B
o-Xylene	5.1 C	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Bromofluorobenzene (FID)	116	76-128	EPA 8015B
Bromofluorobenzene (PID)	104	70-136	EPA 8021B

Field ID: MW-8 Lab ID: 243800-005
Type: SAMPLE

Analyte	Result	RL	Analysis
Gasoline C7-C12	840	50	EPA 8015B
MTBE	15 C	2.0	EPA 8021B
Benzene	5.6	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	47	0.50	EPA 8021B
m,p-Xylenes	9.1	0.50	EPA 8021B
o-Xylene	0.81	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Bromofluorobenzene (FID)	92	76-128	EPA 8015B
Bromofluorobenzene (PID)	88	70-136	EPA 8021B

Field ID: MW-11 Lab ID: 243800-006
Type: SAMPLE

Analyte	Result	RL	Analysis
Gasoline C7-C12	1,500	50	EPA 8015B
MTBE	ND	2.0	EPA 8021B
Benzene	4.8 C	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	22	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)	117	76-128	EPA 8015B
Bromofluorobenzene (PID)	109	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 #:	243800	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2013-02.		
Matrix:	Water	Sampled:	03/14/13
Units:	ug/L	Received:	03/14/13
Diln Fac:	1.000	Analyzed:	03/16/13
Batch#:	196427		

Field ID: MW-2 Lab ID: 243800-007
Type: SAMPLE

Analyte	Result	RL	Analysis
Gasoline C7-C12	470 Y	50	EPA 8015B
MTBE	ND	2.0	EPA 8021B
Benzene	ND	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	ND	0.50	EPA 8021B
m,p-Xylenes	ND	0.50	EPA 8021B
o-Xylene	ND	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Bromofluorobenzene (FID)	101	76-128	EPA 8015B
Bromofluorobenzene (PID)	97	70-136	EPA 8021B

Field ID: SW 2 Lab ID: 243800-008
Type: SAMPLE

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)	98	70-136	EPA 8021B

Field ID: SW 3 Lab ID: 243800-009
Type: SAMPLE

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)	96	76-128	EPA 8015B
Bromofluorobenzene (PID)	95	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 #:	243800	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2013-02.		
Matrix:	Water	Sampled:	03/14/13
Units:	ug/L	Received:	03/14/13
Diln Fac:	1.000	Analyzed:	03/16/13
Batch#:	196427		

Type: BLANK Lab ID: QC680301

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	76-128	EPA 8015B
Bromofluorobenzene (PID)	78	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.

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	243800	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2013-02.	Analysis:	EPA 8021B
Matrix:	Water	Diln Fac:	1.000
Units:	ug/L	Batch#:	196427

Type: BS Analyzed: 03/15/13
Lab ID: QC680298

Analyte	Spiked	Result	%REC	Limits
MTBE	10.00	9.456	95	71-134
Benzene	10.00	9.833	98	80-120
Toluene	10.00	9.365	94	80-120
Ethylbenzene	10.00	9.099	91	80-120
m,p-Xylenes	10.00	9.169	92	80-120
o-Xylene	10.00	9.235	92	80-120

Surrogate	%REC	Limits
Bromofluorobenzene (PID)	103	70-136

Type: BSD Analyzed: 03/16/13
Lab ID: QC680299

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	10.00	9.564	96	71-134	1	50
Benzene	10.00	9.742	97	80-120	1	20
Toluene	10.00	9.304	93	80-120	1	20
Ethylbenzene	10.00	8.891	89	80-120	2	20
m,p-Xylenes	10.00	8.854	89	80-120	4	20
o-Xylene	10.00	9.003	90	80-120	3	20

Surrogate	%REC	Limits
Bromofluorobenzene (PID)	98	70-136

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	243800	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:	QC680300	Batch#:	196427
Matrix:	Water	Analyzed:	03/16/13
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1,000	934.3	93	80-120

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	94	76-128

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	243800	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 5030B
Project#:	2013-02.	Analysis:	EPA 8015B
Field ID:	MW-10	Batch#:	196427
MSS Lab ID:	243800-001	Sampled:	03/14/13
Matrix:	Water	Received:	03/14/13
Units:	ug/L	Analyzed:	03/16/13
Diln Fac:	1.000		

Type: MS Lab ID: QC680302

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	311.1	2,000	2,108	90	76-120

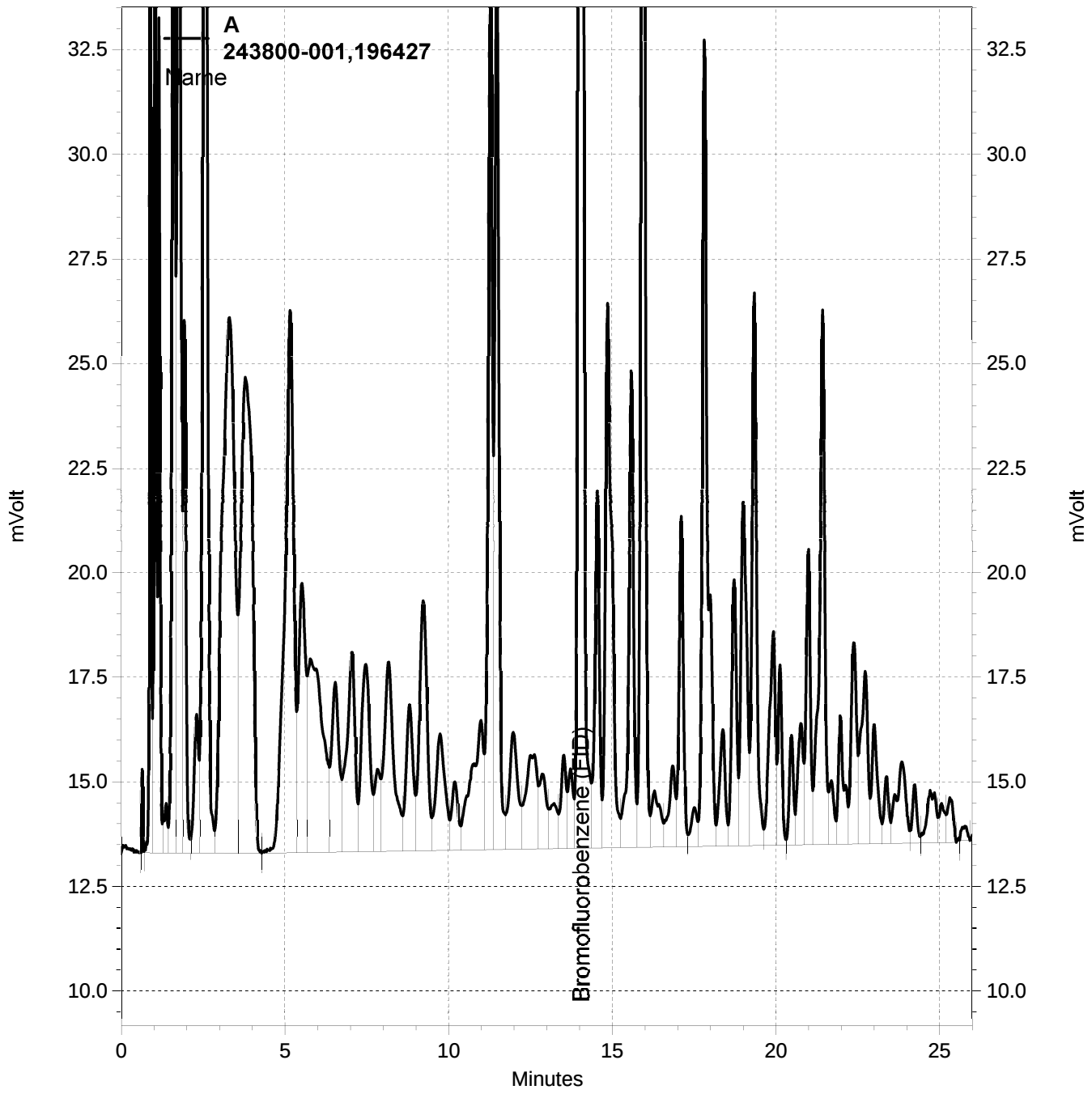
Surrogate	%REC	Limits
Bromofluorobenzene (FID)	98	76-128

Type: MSD Lab ID: QC680303

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	2,200	94	76-120	4	20

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	120	76-128

RPD= Relative Percent Difference



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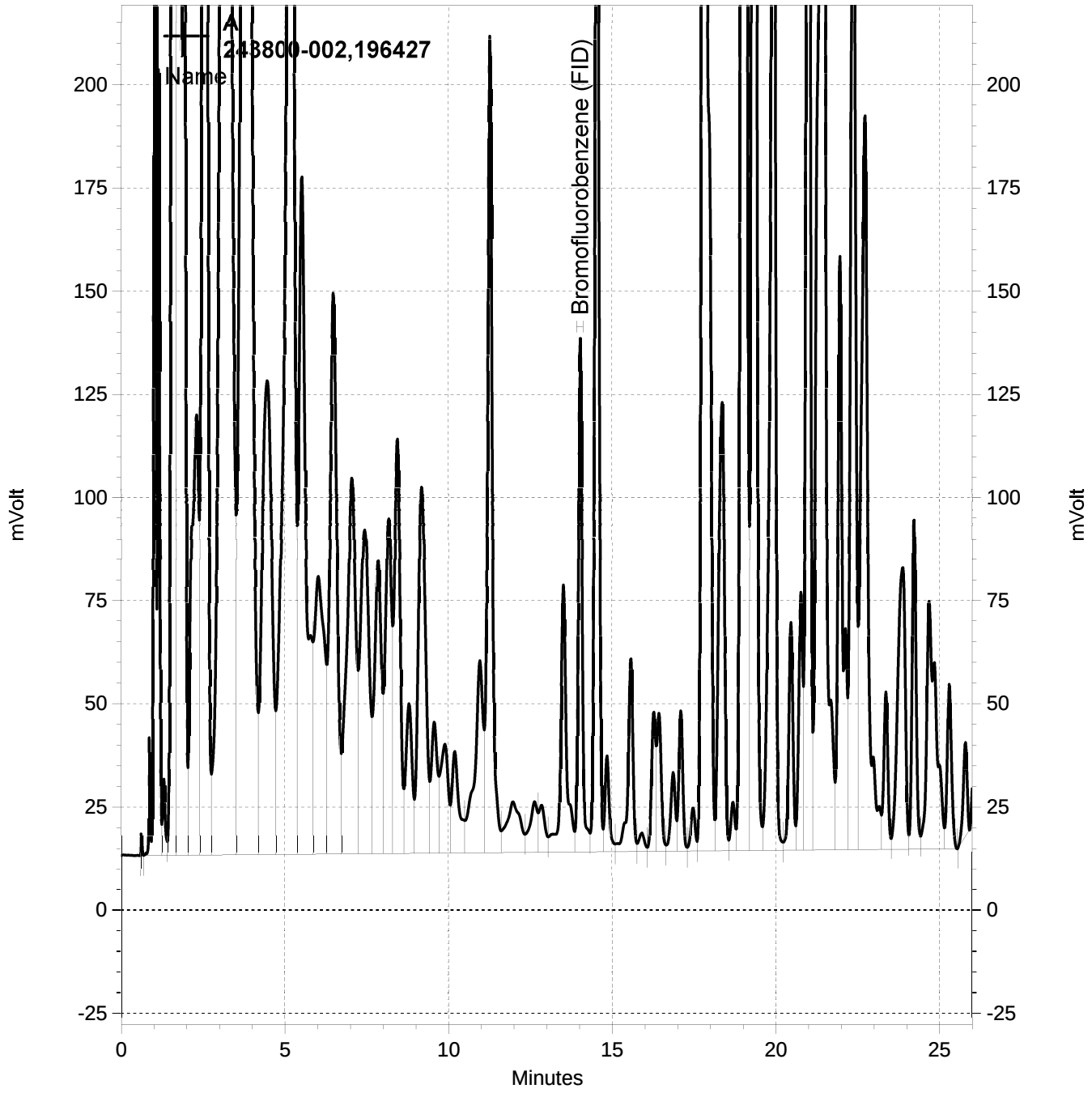

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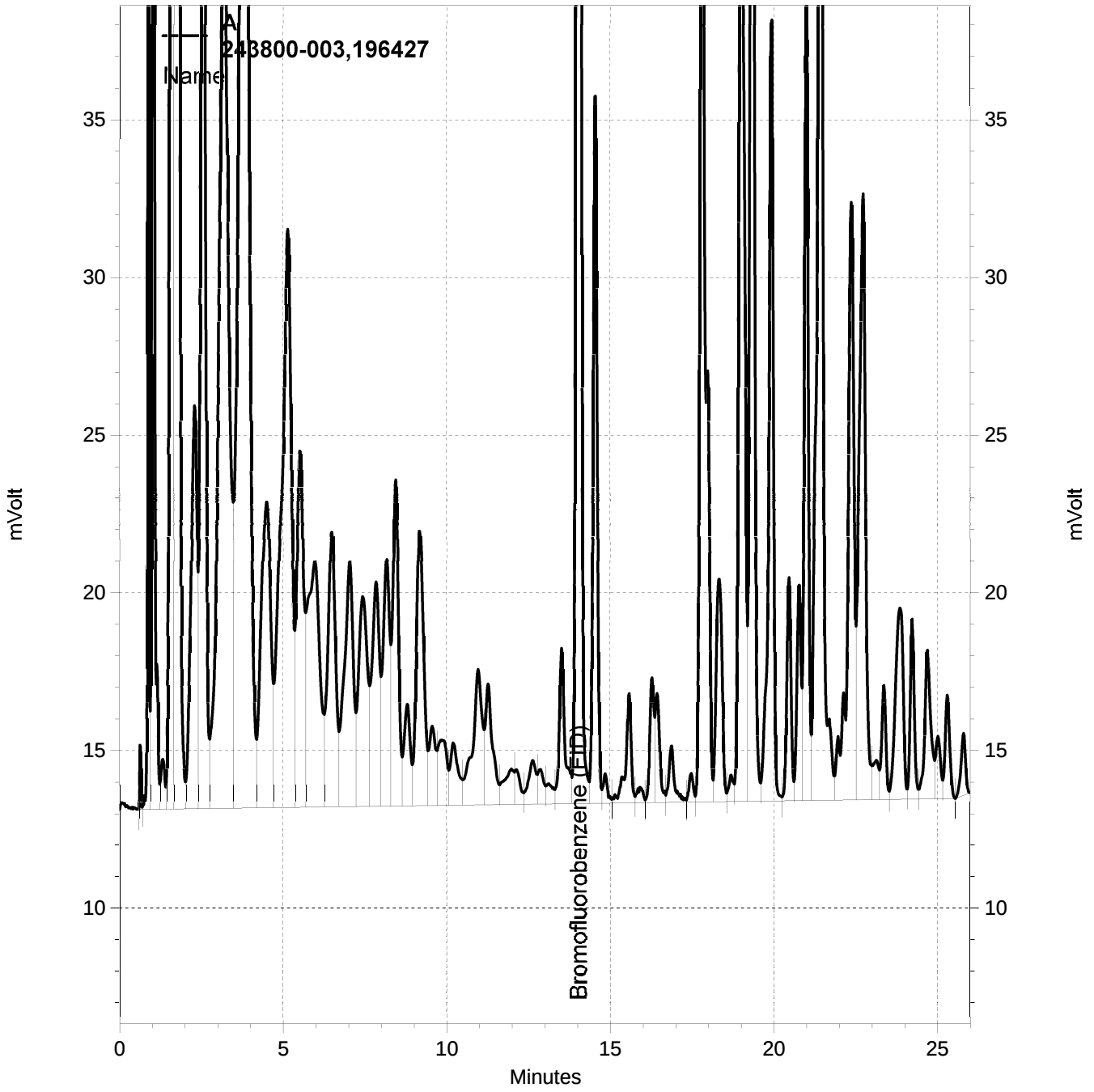

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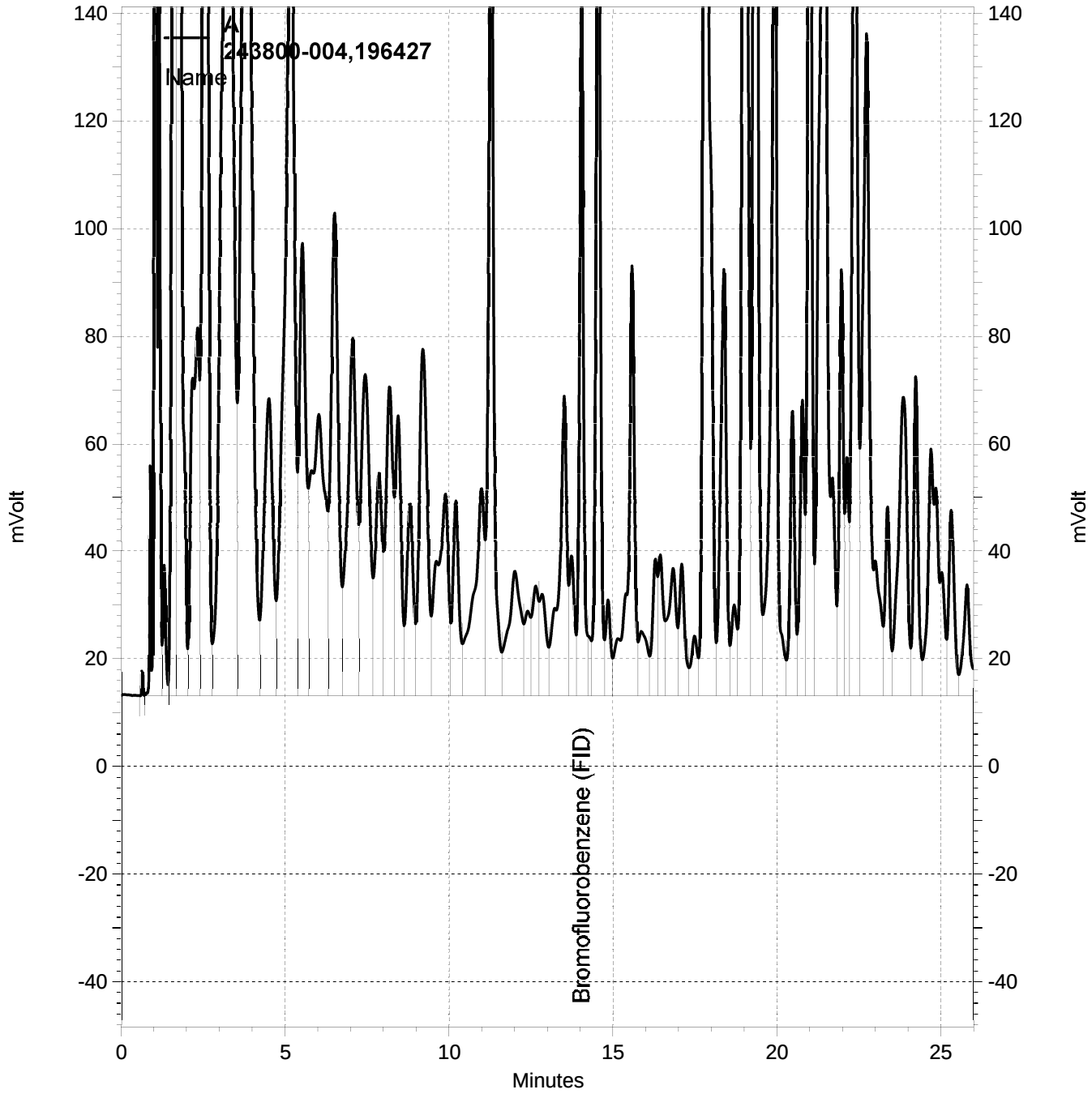

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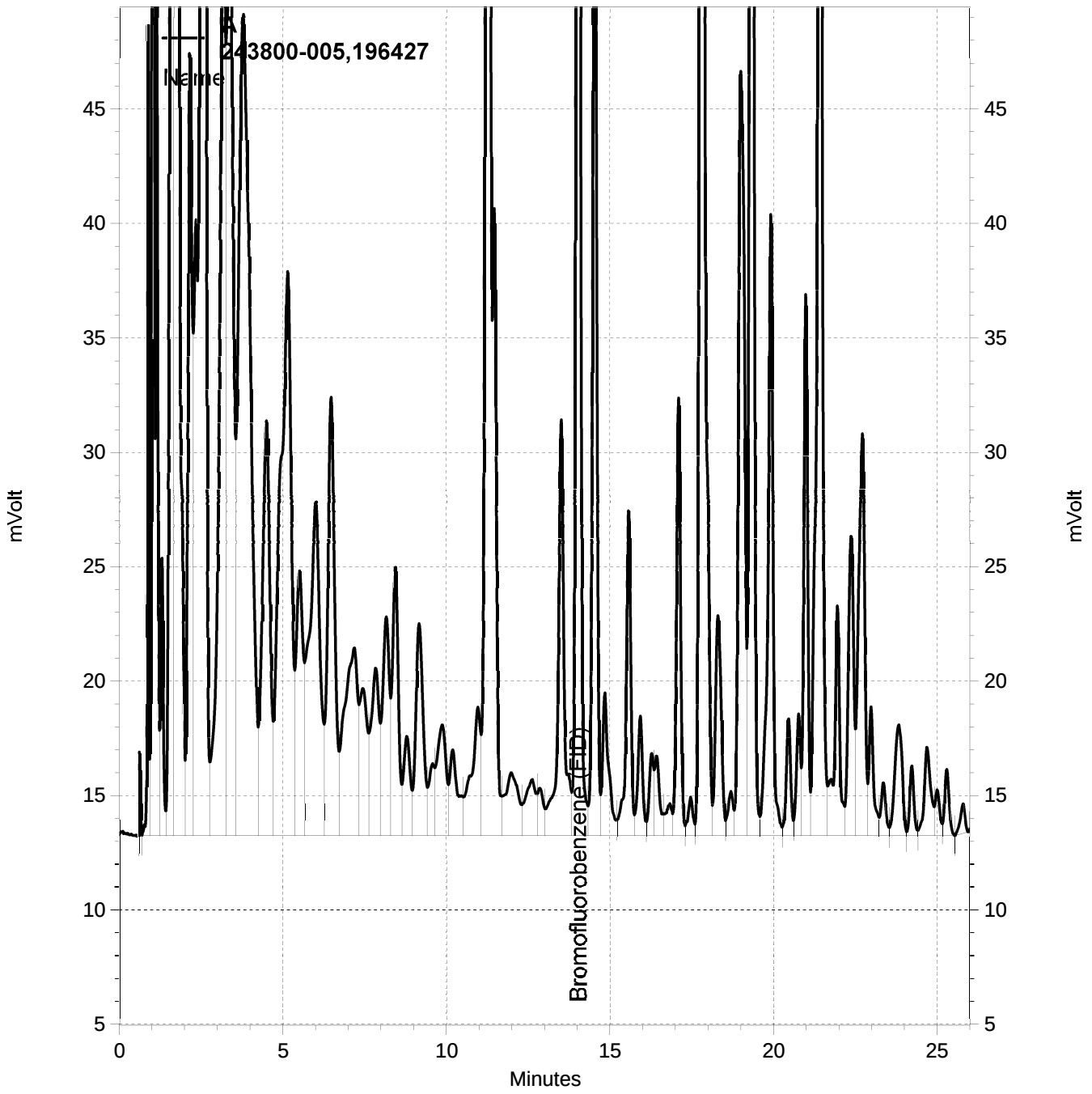

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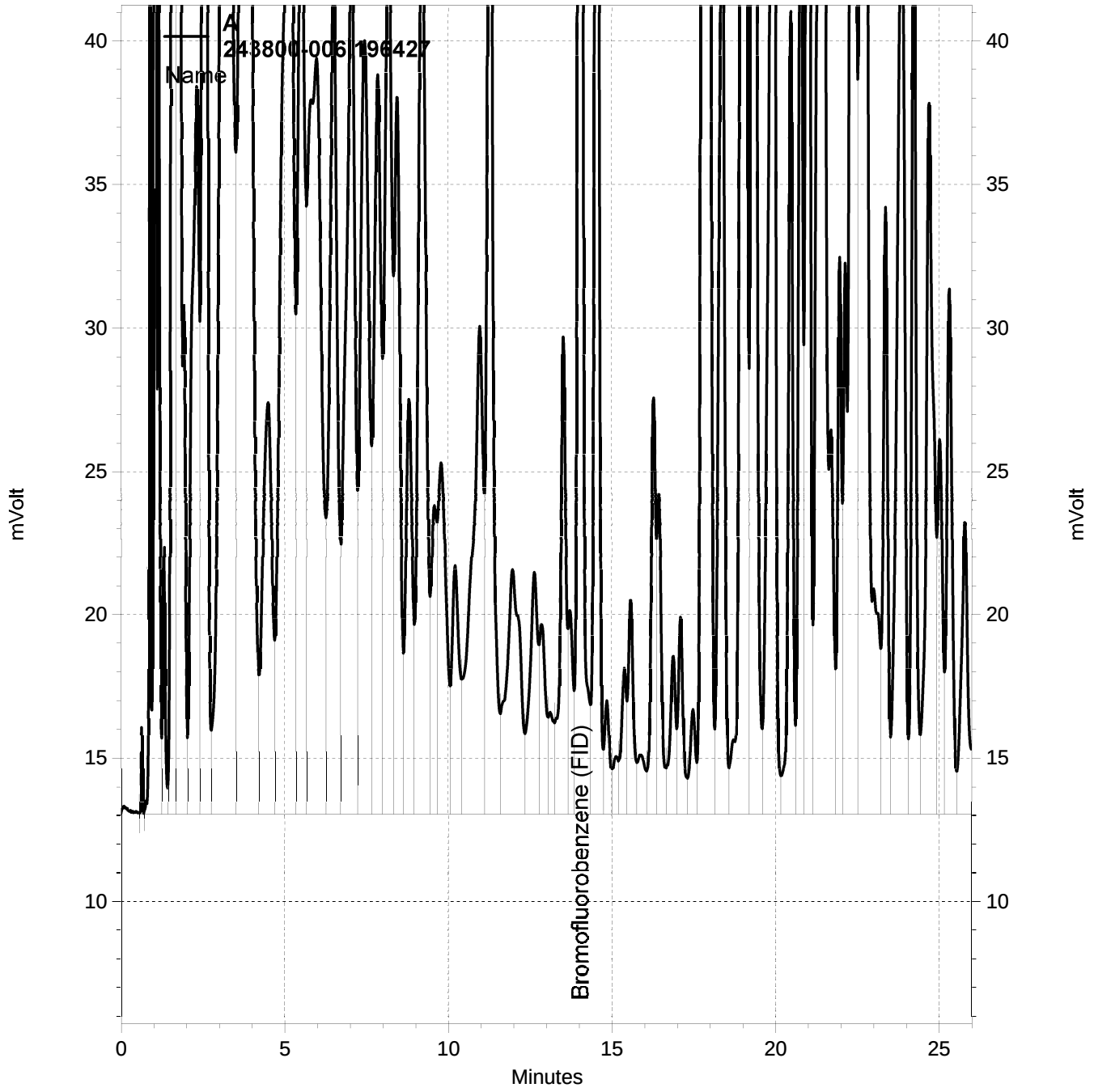

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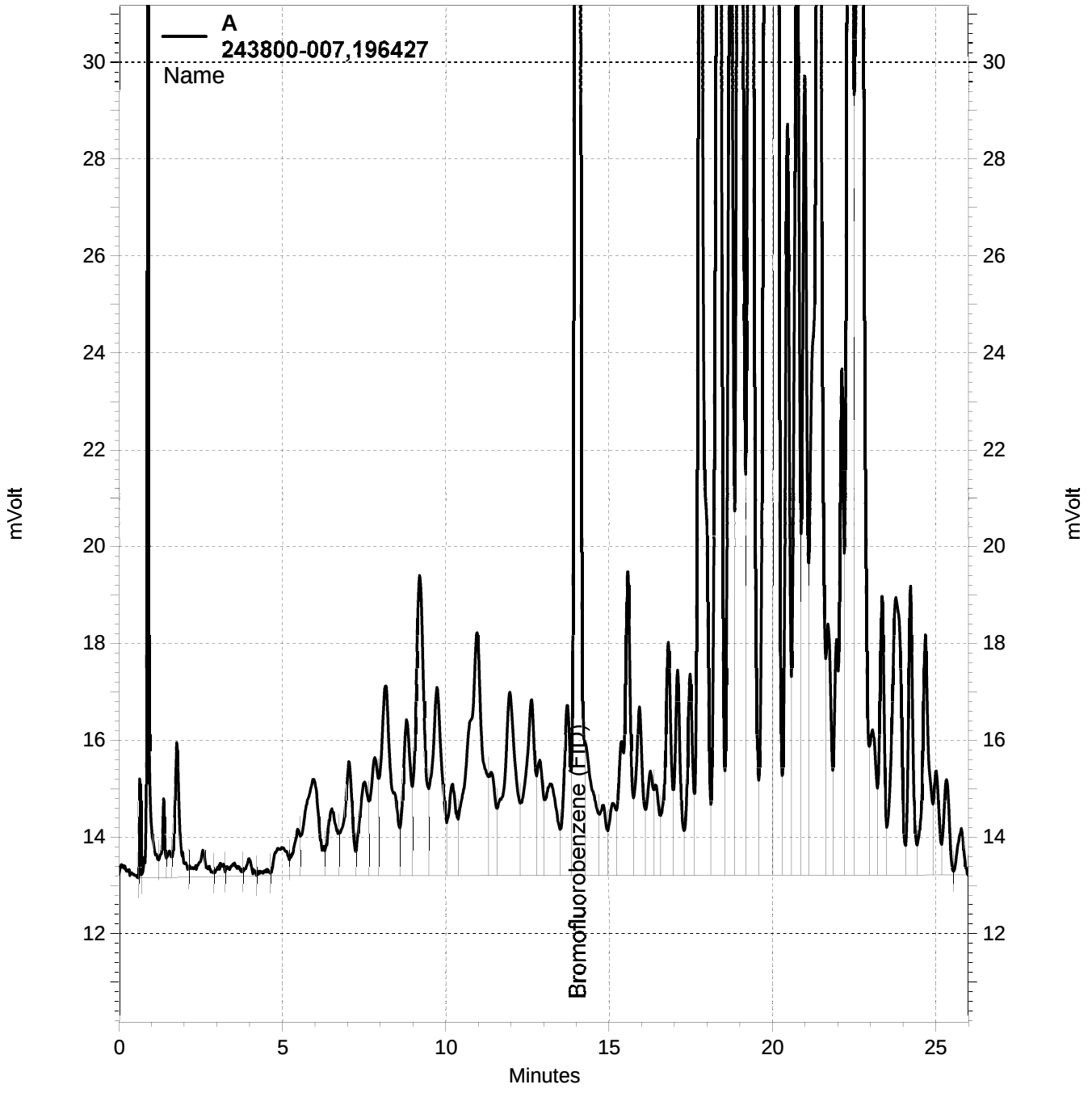

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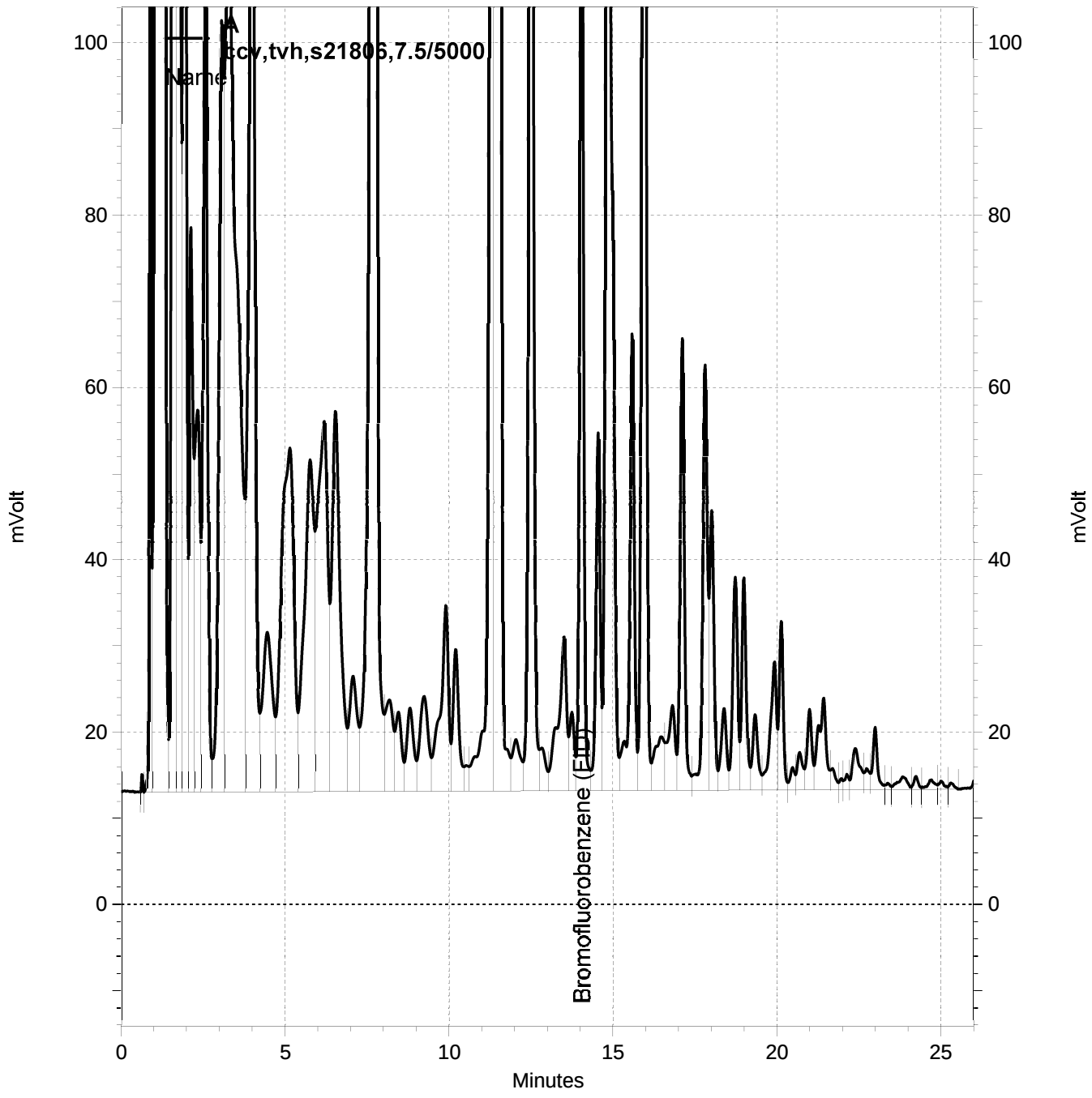

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Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	243800	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 3520C
Project#:	2013-02.	Analysis:	EPA 8015B
Matrix:	Water	Sampled:	03/14/13
Units:	ug/L	Received:	03/14/13
Diln Fac:	1.000	Prepared:	03/15/13
Batch#:	196414	Analyzed:	03/18/13

Field ID: MW-10 Lab ID: 243800-001
Type: SAMPLE

Analyte	Result	RL
Diesel C10-C24	58 Y	49

Surrogate	%REC	Limits
o-Terphenyl	101	62-133

Field ID: MW-7 Lab ID: 243800-002
Type: SAMPLE

Analyte	Result	RL
Diesel C10-C24	3,300 Y	49

Surrogate	%REC	Limits
o-Terphenyl	95	62-133

Field ID: MW-12 Lab ID: 243800-003
Type: SAMPLE

Analyte	Result	RL
Diesel C10-C24	200 Y	49

Surrogate	%REC	Limits
o-Terphenyl	98	62-133

Field ID: MW-9 Lab ID: 243800-004
Type: SAMPLE

Analyte	Result	RL
Diesel C10-C24	2,400 Y	49

Surrogate	%REC	Limits
o-Terphenyl	92	62-133

Field ID: MW-8 Lab ID: 243800-005
Type: SAMPLE

Analyte	Result	RL
Diesel C10-C24	690 Y	49

Surrogate	%REC	Limits
o-Terphenyl	90	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 #:	243800	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 3520C
Project#:	2013-02.	Analysis:	EPA 8015B
Matrix:	Water	Sampled:	03/14/13
Units:	ug/L	Received:	03/14/13
Diln Fac:	1.000	Prepared:	03/15/13
Batch#:	196414	Analyzed:	03/18/13

Field ID: MW-11 Lab ID: 243800-006
Type: SAMPLE

Analyte	Result	RL
Diesel C10-C24	1,900 Y	49

Surrogate	%REC	Limits
o-Terphenyl	97	62-133

Field ID: MW-2 Lab ID: 243800-007
Type: SAMPLE

Analyte	Result	RL
Diesel C10-C24	810 Y	49

Surrogate	%REC	Limits
o-Terphenyl	100	62-133

Field ID: SW 2 Lab ID: 243800-008
Type: SAMPLE

Analyte	Result	RL
Diesel C10-C24	ND	51

Surrogate	%REC	Limits
o-Terphenyl	105	62-133

Field ID: SW 3 Lab ID: 243800-009
Type: SAMPLE

Analyte	Result	RL
Diesel C10-C24	ND	50

Surrogate	%REC	Limits
o-Terphenyl	102	62-133

Type: BLANK Lab ID: QC680245

Analyte	Result	RL
Diesel C10-C24	ND	50

Surrogate	%REC	Limits
o-Terphenyl	101	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 #:	243800	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	EPA 3520C
Project#:	2013-02.	Analysis:	EPA 8015B
Matrix:	Water	Batch#:	196414
Units:	ug/L	Prepared:	03/15/13
Diln Fac:	1.000	Analyzed:	03/18/13

Type: BS Cleanup Method: EPA 3630C
Lab ID: QC680246

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	2,500	2,187	87	59-120

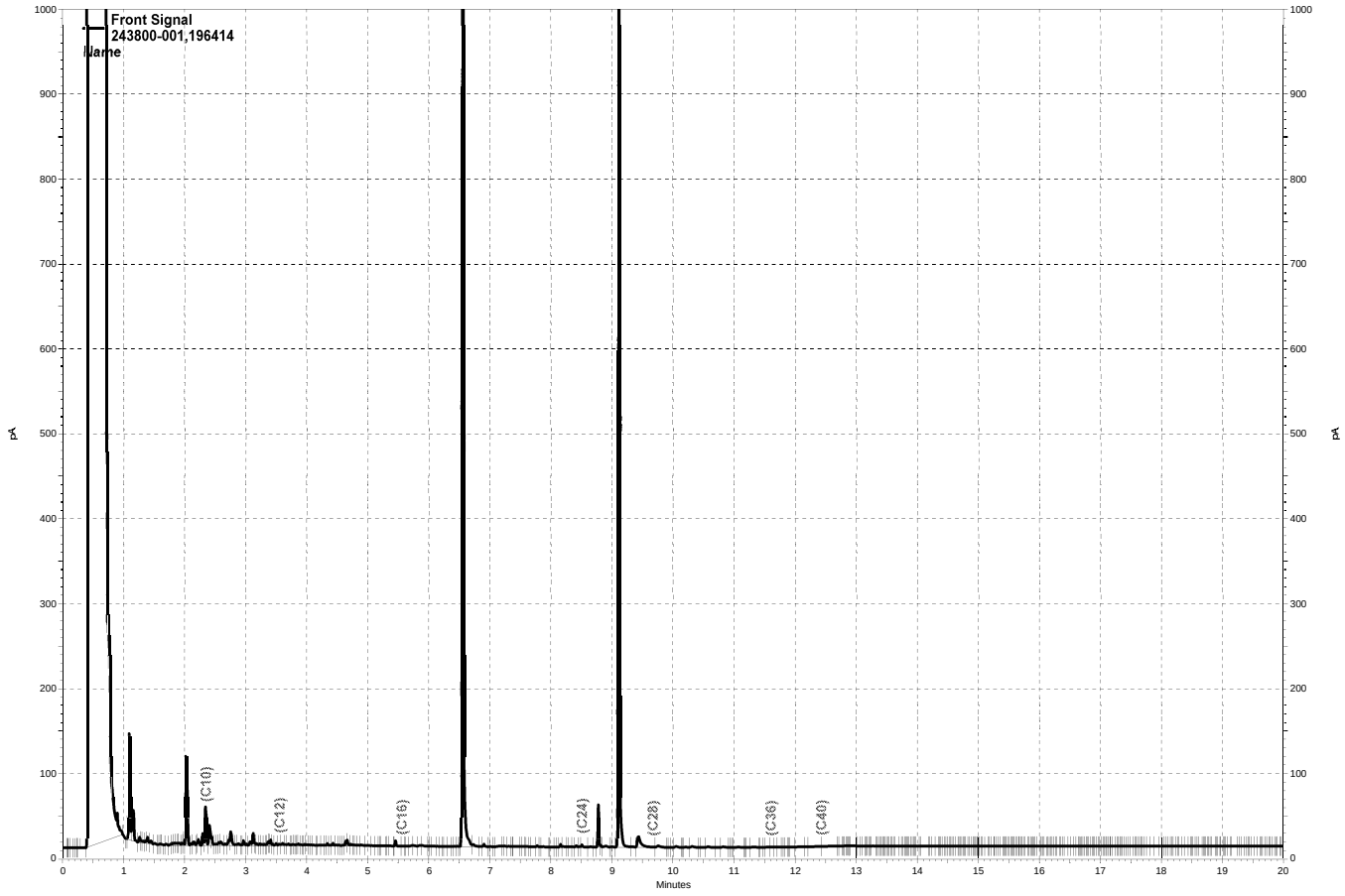
Surrogate	%REC	Limits
o-Terphenyl	105	62-133

Type: BSD Cleanup Method: EPA 3630C
Lab ID: QC680247

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	2,500	2,085	83	59-120	5	46

Surrogate	%REC	Limits
o-Terphenyl	100	62-133

RPD= Relative Percent Difference



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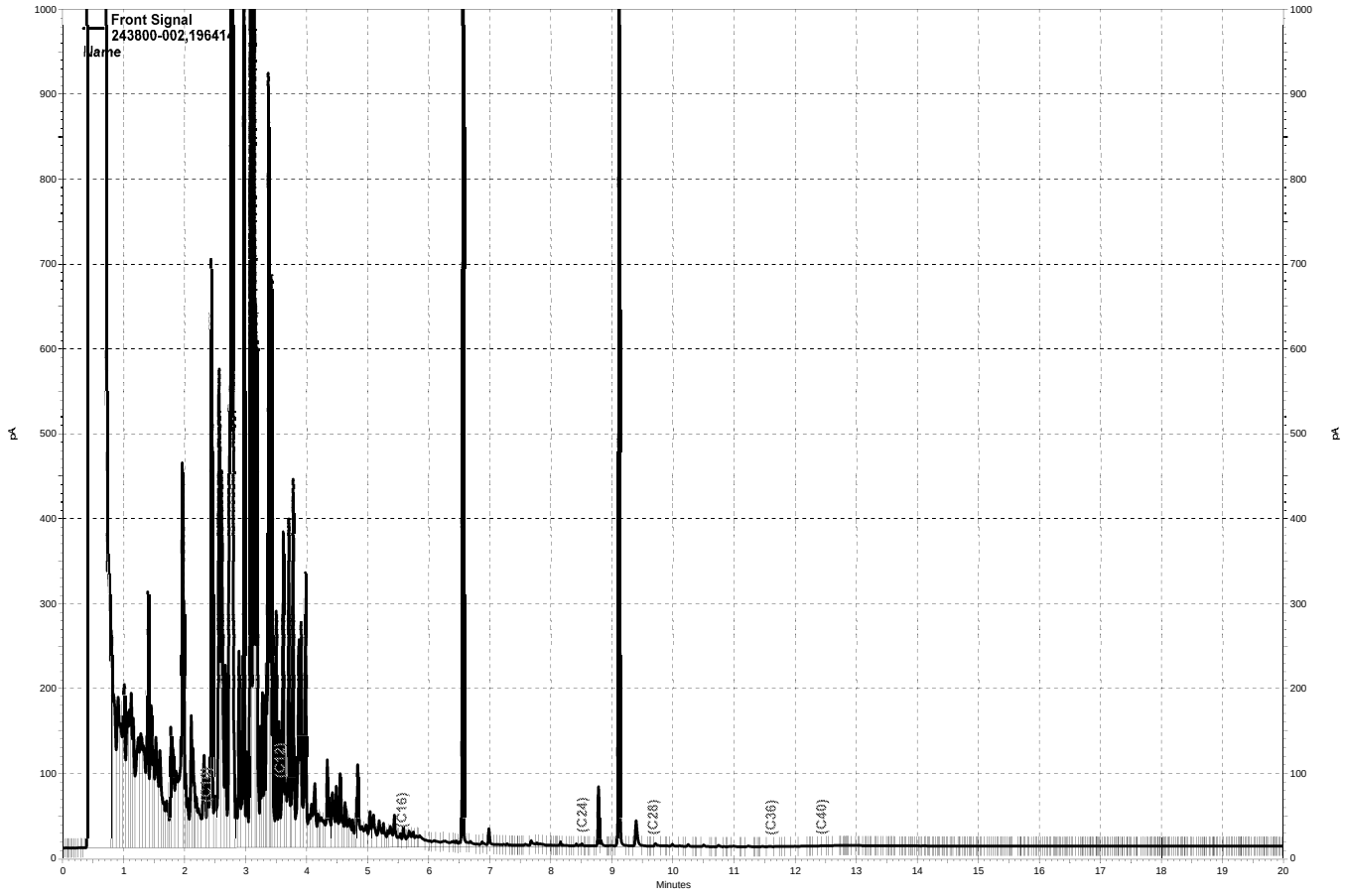

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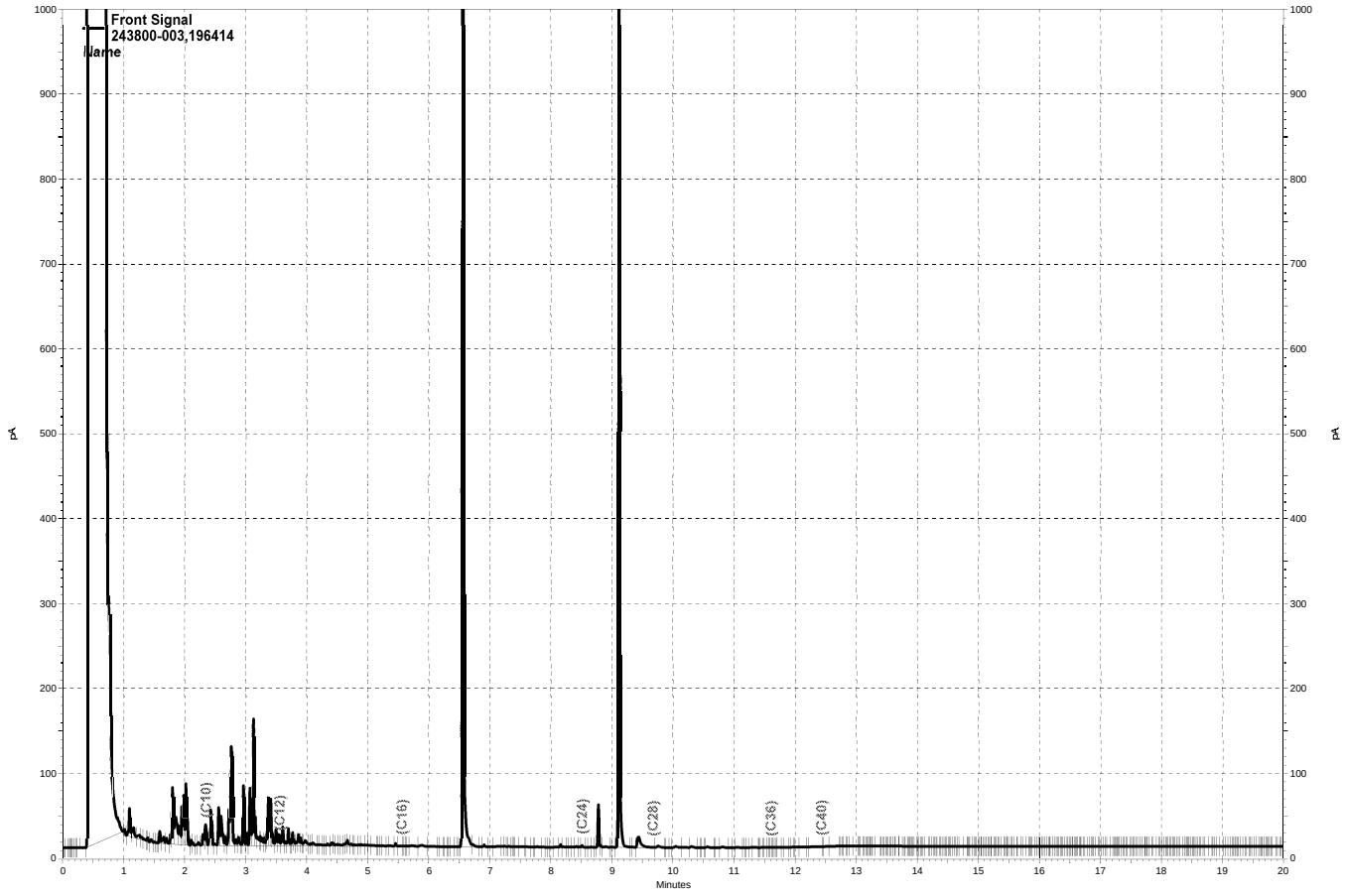

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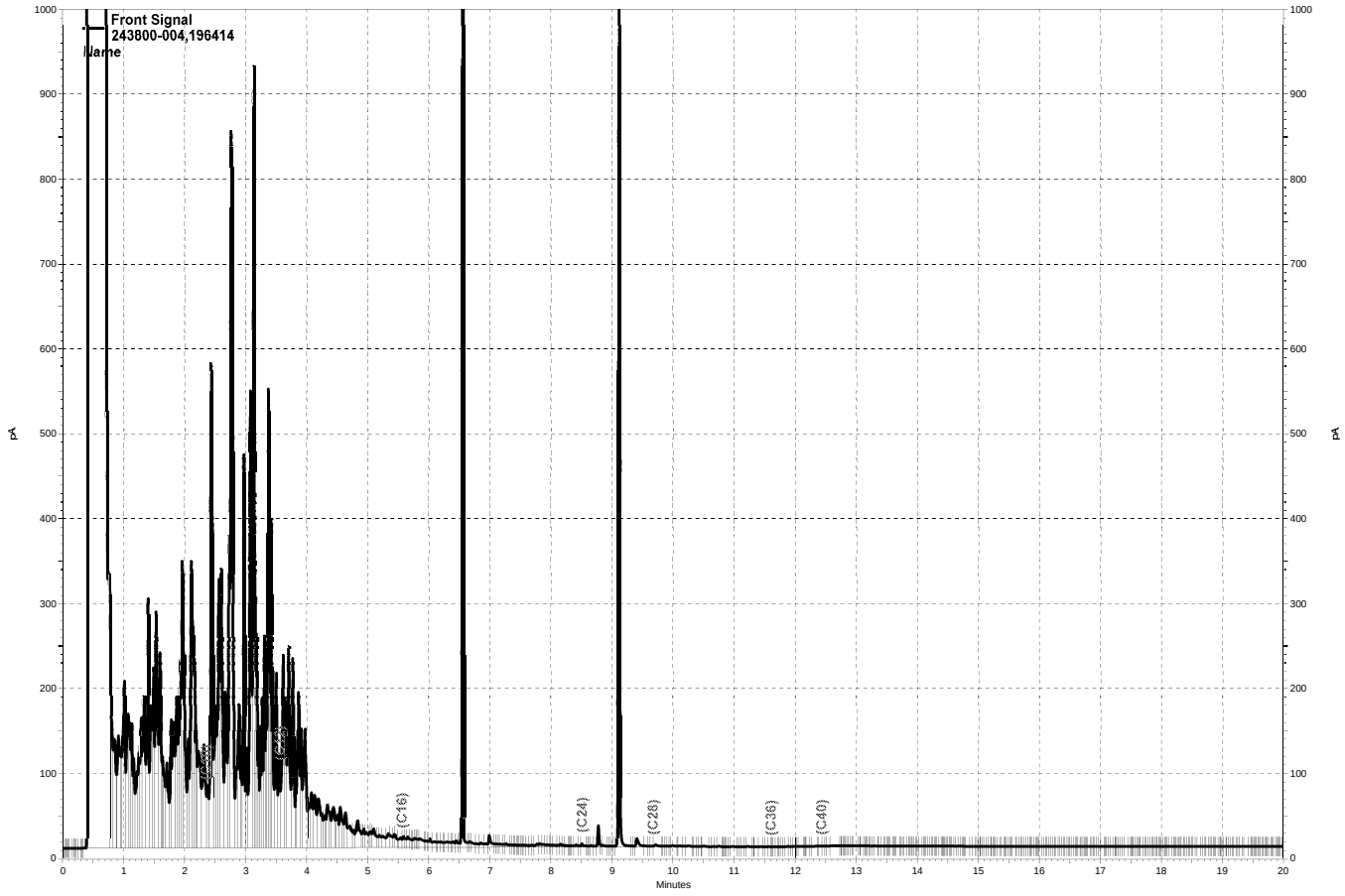
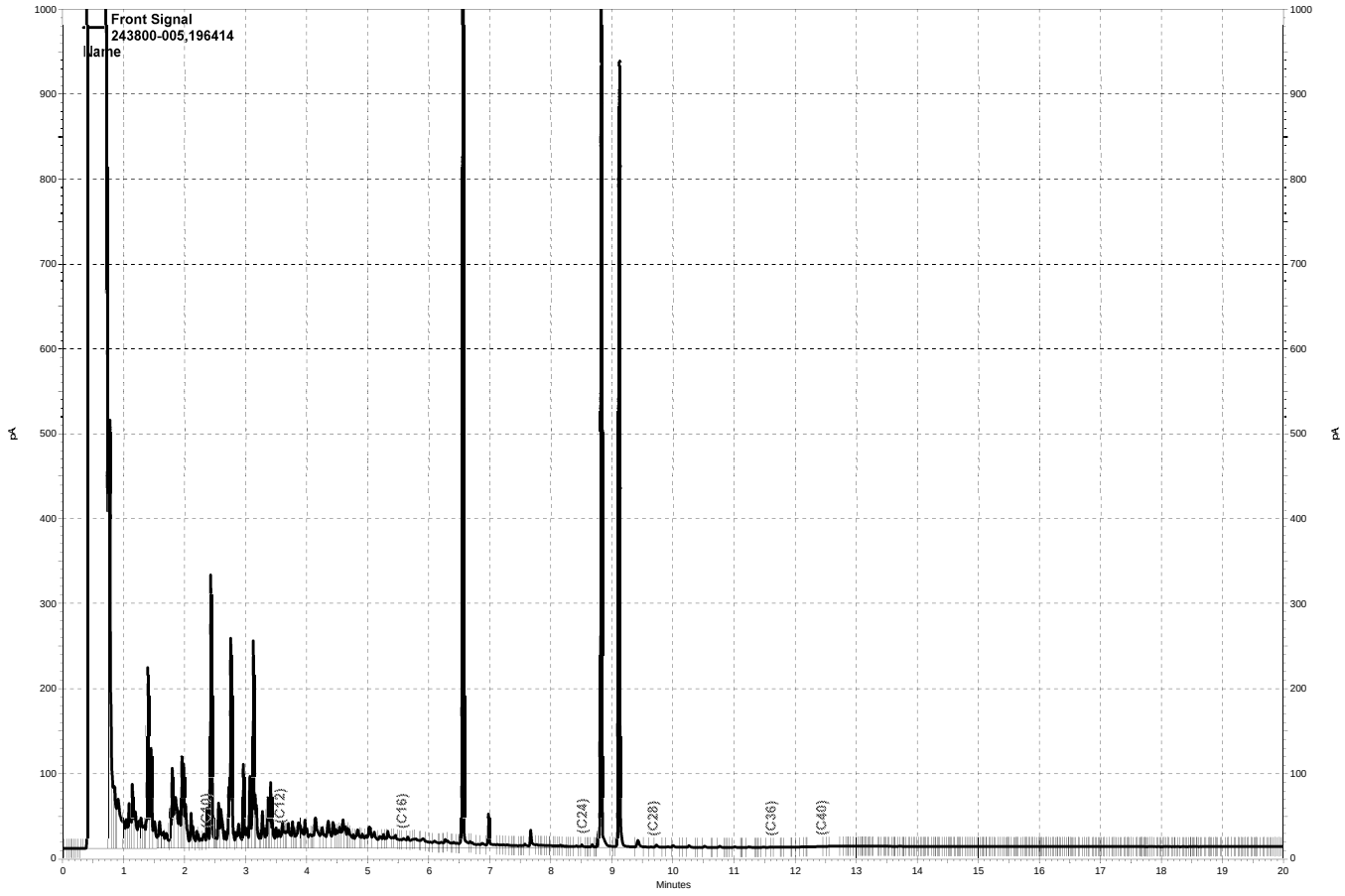
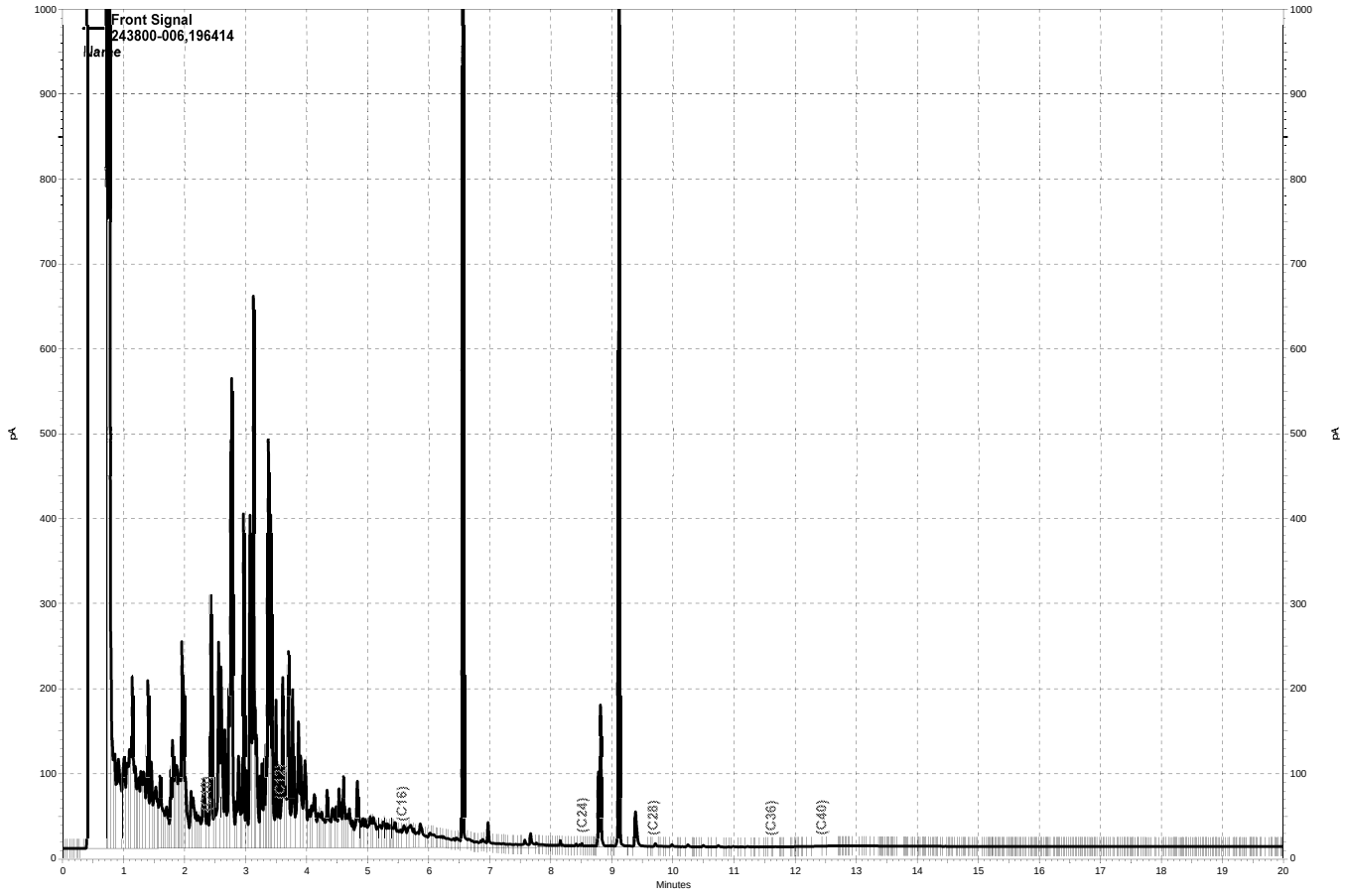


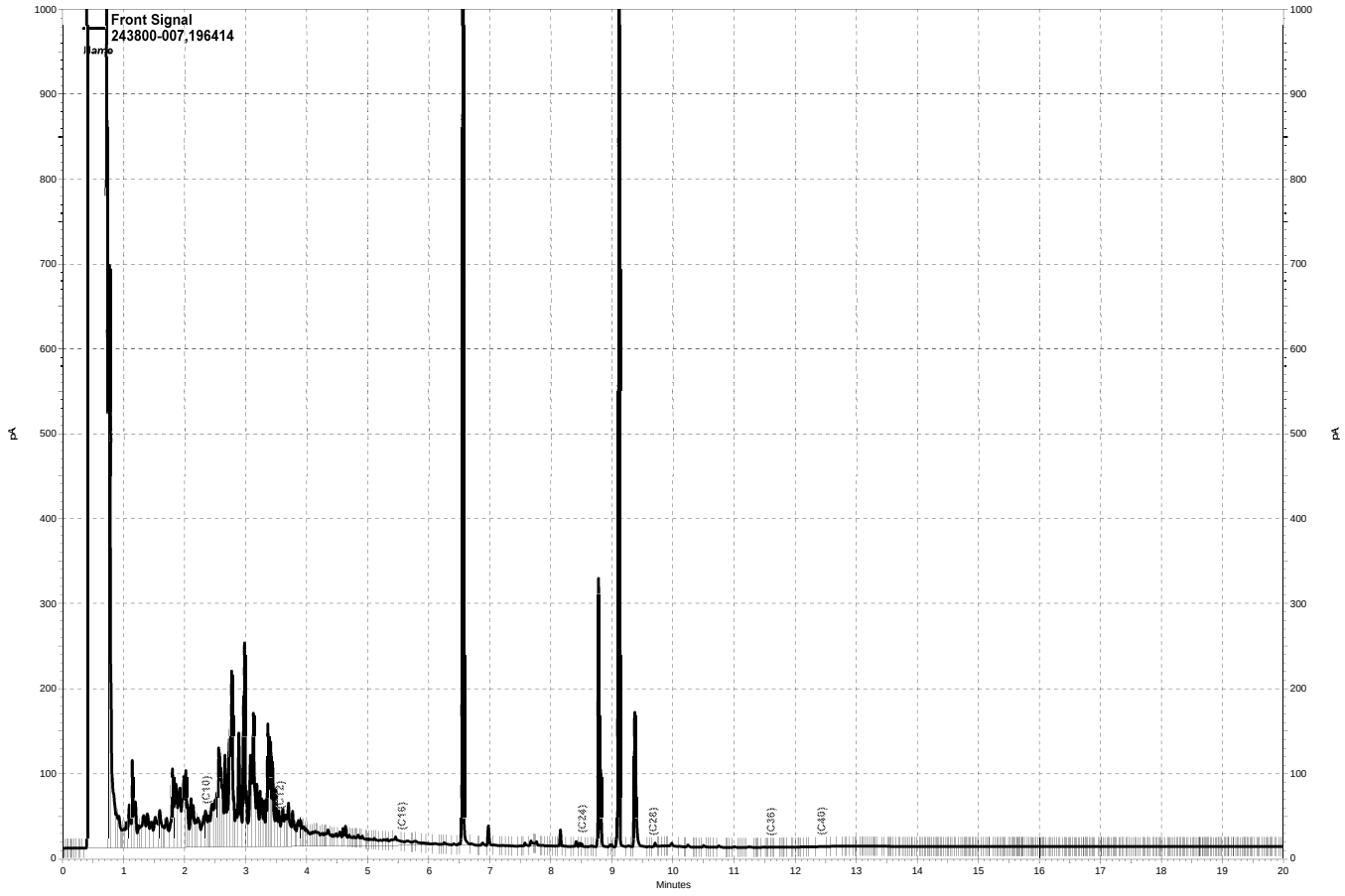
\\lims\gdrive\ezchrom\Projects\GC27\Data\077a013.dat, Front Signal



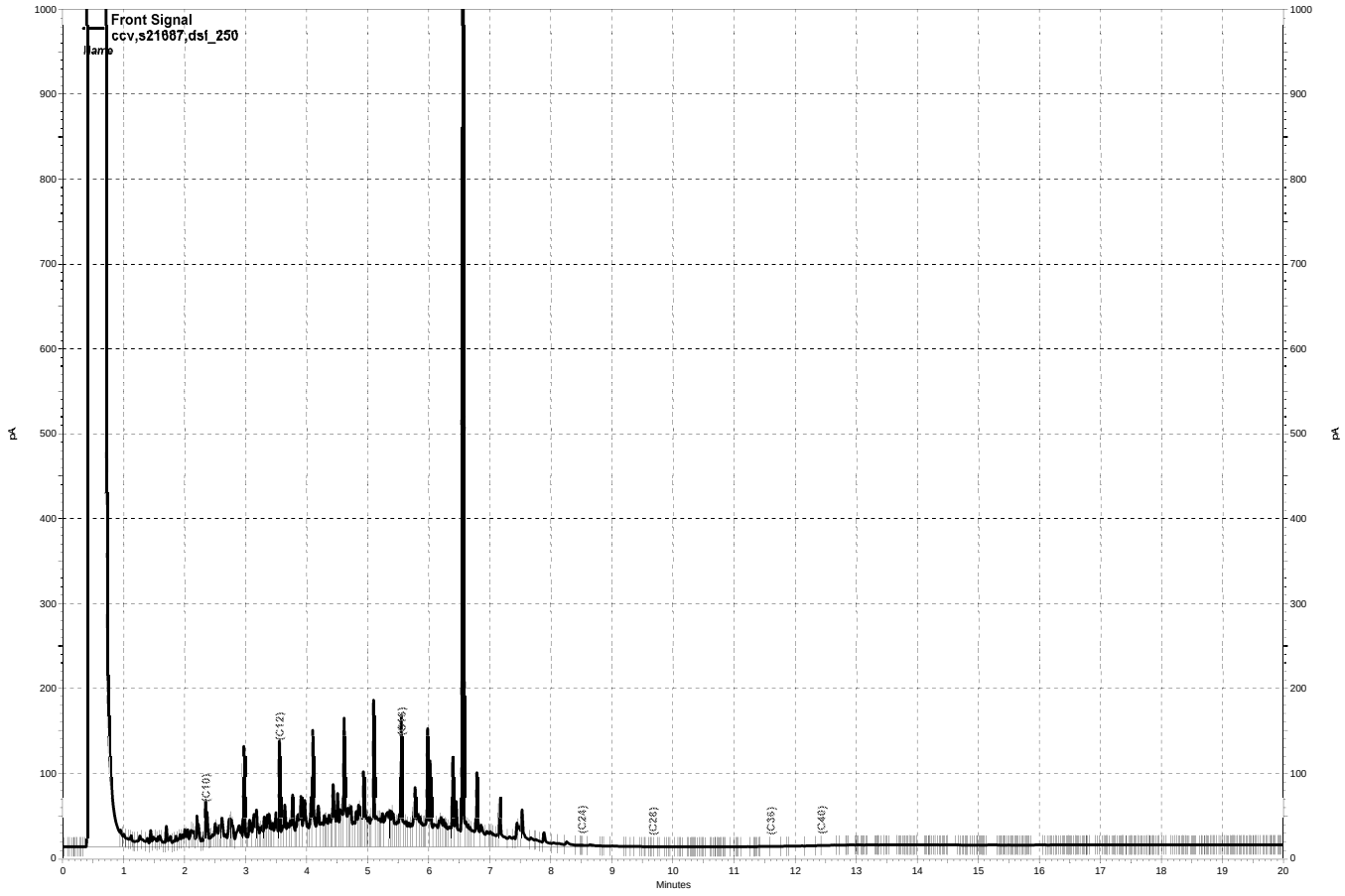
\\lims\gdrive\ezchrom\Projects\GC27\Data\077a014.dat, Front Signal



\\lims\gdrive\ezchrom\Projects\GC27\Data\077a015.dat, Front Signal



\\lims\gdrive\ezchrom\Projects\GC27\Data\077a016.dat, Front Signal



\\lims\gdrive\ezchrom\Projects\GC27\Data\077a003.dat, Front Signal

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	243800	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	METHOD
Project#:	2013-02.	Analysis:	EPA 300.0
Matrix:	Water	Batch#:	196382
Units:	mg/L	Received:	03/14/13
Diln Fac:	1.000		

Field ID: MW-7 Sampled: 03/14/13 10:40
Type: SAMPLE Analyzed: 03/14/13 14:59
Lab ID: 243800-002

Analyte	Result	RL
Nitrogen, Nitrate	ND	0.05
Sulfate	ND	0.50

Field ID: MW-12 Sampled: 03/14/13 11:25
Type: SAMPLE Analyzed: 03/14/13 15:16
Lab ID: 243800-003

Analyte	Result	RL
Nitrogen, Nitrate	ND	0.05
Sulfate	22	0.50

Field ID: MW-9 Sampled: 03/14/13 11:55
Type: SAMPLE Analyzed: 03/14/13 15:33
Lab ID: 243800-004

Analyte	Result	RL
Nitrogen, Nitrate	ND	0.05
Sulfate	12	0.50

Type: BLANK Analyzed: 03/14/13 10:00
Lab ID: QC680113

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 #:	243800	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:	QC680114	Batch#:	196382
Matrix:	Water	Analyzed:	03/14/13 10:17
Units:	mg/L		

Analyte	Spiked	Result	%REC	Limits
Nitrogen, Nitrate	1.000	1.060	106	80-120
Sulfate	10.00	10.57	106	80-120

Curtis & Tompkins, Ltd.

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	243800	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	METHOD
Project#:	2013-02.	Analysis:	EPA 300.0
Field ID:	MW-7	Diln Fac:	10.00
MSS Lab ID:	243800-002	Batch#:	196382
Matrix:	Water	Sampled:	03/14/13 10:40
Units:	mg/L	Received:	03/14/13

Type: MS Analyzed: 03/14/13 18:02
Lab ID: QC680162

Analyte	MSS Result	Spiked	Result	%REC	Limits
Nitrogen, Nitrate	<0.01127	5.000	5.010	100	80-120
Sulfate	0.3997	50.00	50.71	101	80-120

Type: MSD Analyzed: 03/14/13 18:19
Lab ID: QC680163

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Nitrogen, Nitrate	5.000	5.090	102	80-120	2	20
Sulfate	50.00	52.60	104	80-120	4	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Biochemical Oxygen Demand

Lab #:	243800	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	METHOD
Project#:	2013-02.	Analysis:	SM5210B
Analyte:	Biochemical Oxygen Demand	Batch#:	196411
Matrix:	Water	Received:	03/14/13
Units:	mg/L	Prepared:	03/15/13 12:54
Diln Fac:	1.000	Analyzed:	03/20/13 10:54

Field ID	Type	Lab ID	Result	RL	Sampled
MW-7	SAMPLE	243800-002	100	57	03/14/13 10:40
MW-12	SAMPLE	243800-003	ND	38	03/14/13 11:25
MW-9	SAMPLE	243800-004	82	27	03/14/13 11:55
	BLANK	QC680222	ND	5.0	

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Biochemical Oxygen Demand

Lab #:	243800	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	METHOD
Project#:	2013-02.	Analysis:	SM5210B
Analyte:	Biochemical Oxygen Demand	Batch#:	196411
Field ID:	ZZZZZZZZZZ	Sampled:	03/13/13 13:15
MSS Lab ID:	243761-001	Received:	03/13/13
Matrix:	Water	Prepared:	03/15/13 12:54
Units:	mg/L	Analyzed:	03/20/13 10:54
Diln Fac:	1.000		

Type	Lab ID	MSS Result	Spiked	Result	RL	%REC	Limits	RPD	Lim
BS	QC680223		198.0	174.6		88	85-115		
BSD	QC680224		198.0	179.6		91	85-115	3	31
SDUP	QC680225	1,793		1,724	400.0			4	42

RL= Reporting Limit
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Chemical Oxygen Demand

Lab #:	243800	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	METHOD
Project#:	2013-02.	Analysis:	SM5220D
Analyte:	Chemical Oxygen Demand	Batch#:	196511
Matrix:	Water	Received:	03/14/13
Units:	mg/L	Prepared:	03/19/13 11:52
Diln Fac:	1.000	Analyzed:	03/19/13 14:00

Field ID	Type	Lab ID	Result	RL	Sampled
MW-7	SAMPLE	243800-002	32	10	03/14/13 10:40
MW-12	SAMPLE	243800-003	19	10	03/14/13 11:25
MW-9	SAMPLE	243800-004	24	10	03/14/13 11:55
	BLANK	QC680637	ND	10	

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Chemical Oxygen Demand

Lab #:	243800	Location:	Redwood Regional Park
Client:	Stellar Environmental Solutions	Prep:	METHOD
Project#:	2013-02.	Analysis:	SM5220D
Analyte:	Chemical Oxygen Demand	Batch#:	196511
Field ID:	MW-9	Sampled:	03/14/13 11:55
MSS Lab ID:	243800-004	Received:	03/14/13
Matrix:	Water	Prepared:	03/19/13 11:52
Units:	mg/L	Analyzed:	03/19/13 14:00

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim	Diln Fac
LCS	QC680638		75.00	74.06	99	90-110			1.000
MS	QC680639	24.09	300.0	322.8	98	70-124			2.000
MSD	QC680640		300.0	329.8	100	70-124	NC	20	2.000

NC= Not Calculated
RPD= Relative Percent Difference

APPENDIX D

Historical Groundwater and Surface Water Analytical Results

HISTORICAL GROUNDWATER MONITORING WELLS ANALYTICAL RESULTS

REDWOOD REGIONAL PARK SERVICE YARD, OAKLAND, CALIFORNIA

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

Well MW-2									
Event	**Date**	**TVHg**	**TEHd**	**Benzene**	**Toluene**	**Ethylbenzene**	**Total Xylenes**	**Total BTEX**	**MTBE**
1	Nov-94	**66**	*< 50*	**3.4**	*< 0.5*	*< 0.5*	**0.9**	**4.3**	*NA*
2	Feb-95	**89**	*< 50*	**18**	**2.4**	**1.7**	**7.5**	**30**	*NA*
3	May-95	*< 50*	*< 50*	**3.9**	*< 0.5*	**1.6**	**2.5**	**8.0**	*NA*
4	Aug-95	*< 50*	*< 50*	**5.7**	*< 0.5*	*< 0.5*	*< 0.5*	**5.7**	*NA*
5	May-96	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*NA*
6	Aug-96	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	*NA*
7	Dec-96	*< 50*	*< 50*	**6.3**	*< 0.5*	**1.6**	*< 0.5*	**7.9**	*NA*
8	Feb-97	*< 50*	*< 50*	**0.69**	*< 0.5*	**0.55**	*< 0.5*	**1.2**	*NA*
9	May-97	**67**	*< 50*	**8.9**	*< 0.5*	**5.1**	*< 1.0*	**14**	*NA*
10	Aug-97	*< 50*	*< 50*	**4.5**	*< 0.5*	**1.1**	*< 0.5*	**5.6**	*NA*
11	Dec-97	**61**	*< 50*	**21**	*< 0.5*	**6.5**	**3.9**	**31**	*NA*
12	Feb-98	**2,000**	**200**	**270**	**92**	**150**	**600**	**1,112**	*NA*
13	Sep-98	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	**7.0**
14	Apr-99	**82**	**710**	**4.2**	*< 0.5*	**3.4**	**4.0**	**12**	**7.5**
15	Dec-99	**57**	*< 50*	**20**	**0.6**	**5.9**	*<0.5*	**27**	**4.5**
16	Sep-00	*< 50*	*< 50*	**0.72**	*< 0.5*	*< 0.5*	*< 0.5*	**0.7**	**7.9**
17	Jan-01	**51**	*< 50*	**8.3**	*< 0.5*	**1.5**	*< 0.5*	**9.8**	**8.0**
18	Apr-01	**110**	*< 50*	**10**	*< 0.5*	**11**	**6.4**	**27**	**10**
19	Aug-01	**260**	**120**	**30**	**6.7**	**1.6**	**6.4**	**45**	**27**
20	Dec-01	**74**	**69**	**14**	**0.8**	**3.7**	**3.5**	**22**	**6.6**
21	Mar-02	*< 50*	*< 50*	**2.3**	**0.51**	**1.9**	**1.3**	**8.3**	**8.2**
22	Jun-02	*< 50*	*< 50*	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	—	**7.7**
23	Sep-02	**98**	*< 50*	**5.0**	*< 0.5*	*< 0.5*	*< 0.5*	—	**13**
24	Dec-02	*< 50*	*< 50*	**4.3**	*< 0.5*	*< 0.5*	*< 0.5*	—	*< 2.0*
25	Mar-03	**130**	**82**	**39**	*< 0.5*	**20**	**4.1**	**63**	**16**
26	Jun-03	*< 50*	*< 50*	**1.9**	*< 0.5*	*< 0.5*	*< 0.5*	**1.9**	**8.7**
27	Sep-03	**120**	*< 50*	**8.6**	**0.51**	**0.53**	*< 0.5*	**9.6**	**23**
28	Dec-03	**282**	*<100*	**4.3**	**1.6**	**1.3**	**1.2**	**8.4**	**9.4**
29	Mar-04	**374**	*<100*	**81**	**1.2**	**36**	**7.3**	**126**	**18**
30	Jun-04	*< 50*	*< 50*	**0.75**	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	**15**
31	Sep-04	**200**	*< 50*	**23**	*< 0.5*	*< 0.5*	**0.70**	**24**	**16**
32	Dec-04	**80**	*< 50*	**14**	*< 0.5*	*2.9*	**0.72**	**18**	**20**
33	Mar-05	**190**	**68**	**27**	*<0.5*	**14**	**11**	**52**	**26**
34	Jun-05	**68**	*< 50*	**7.1**	*< 0.5*	**6.9**	**1.8**	**16**	**24**
35	Sep-05	*< 50*	*< 50*	**2.5**	*< 0.5*	*< 0.5*	*< 1.0*	**2.5**	**23**
36	Dec-05	*< 50*	*< 50*	**3.9**	*< 0.5*	*< 0.5*	*< 1.0*	**3.9**	**23**
37	Mar-06	**1300**	**300**	**77**	**4.4**	**91**	**250**	**422**	**18**
38	Jun-06	*< 50*	**60**	*< 0.5*	*< 0.5*	*< 0.5*	*< 1.0*	—	**17**
39	Sep-06	**270**	**52**	**31**	*< 0.5*	**15**	**6.69**	**53**	**17**
40	Dec-06	*< 50*	*< 50*	**2.1**	*< 0.5*	*< 0.5*	*< 0.5*	**2**	**16**
41	Mar-07	**59**	*< 50*	**4**	*< 0.5*	*< 0.5*	*< 0.5*	*< 0.5*	**14**
42	Jun-07	*<50*	*<50*	**3.5**	*<0.5*	*<0.5*	*<0.5*	**3.5**	**8**
43	Sep-07	**2,600**	**260**	**160**	**44**	**86**	**431**	**721**	**15**
44	Dec-07	**16,000**	**5,800**	**23**	**91**	**230**	**2,420**	**2764**	**16**
44a	Jan-08	**480**	**200**	**1.1**	**3.2**	**5.5**	**68**	**77.8**	**11**
45	Mar-08	**20,000**	**24,000**	**21**	**39**	**300**	**2,620**	**2980**	**13**
45a	Apr-08	**800**	**640**	**2.6**	**2.1**	**13**	**155**	**172.7**	**13**
46a	May-08	**7,100**	**3,900**	**14**	**8.8**	**140**	**710**	**872.8**	**11**
46	Jun-08	**5,700**	**1,000**	**9.4**	**5.2**	**80**	**550**	**644.6**	**11**
46a	Jul-08	**6,400**	**2,200**	**13**	**5.1**	**140**	**570**	**728.1**	**2.9**
46b	Jul-08	**390**	**55**	**1.3**	**0.77**	**4.6**	**44.4**	**51.07**	**9**
46c	Aug-08	**28,000**	**7,100**	**12**	**19**	**260**	**2,740**	**3031**	*<20*
46d	Aug-08	**8,700**	**2,700**	**5.7**	**7.4**	**130**	**900.0**	**1043.1**	**3.5**
47	Sep-08	**40,000**	**9,100**	**1.6**	*<0.5*	**110**	**910.0**	**1021.6**	**9.5**
48	Dec-08	**9,200**	**2,200**	**0.52**	*<0.5*	*<0.5*	**201.0**	**201.52**	**12**
49	Mar-09	**3,100**	**37,000**	**1.1**	**1.4**	**7.9**	**35.0**	**45.4**	**14**
50	May-09	**5,000**	**15,000**	**1.5**	*<0.5*	**9.8**	**39.0**	**50**	**13**
51	Jun-09	**2,400**	**8,000**	**5.4**	*<0.5*	**11**	**20.2**	**36.6**	**13**
52	Aug-09	**1,900**	**3,100**	**1.6**	**1.8**	**11**	**23.8**	**38.2**	**7.1**
53	Sep-09	**1,400**	**1,800**	*<0.5*	*<0.5*	*<0.5*	**4.2**	**4.24**	**12**
54	Dec-09	**590**	**1,800**	*<0.5*	*<0.5*	**1.2**	**1.2**	**2.4**	**3.6**
55	Mar-10	**1,900**	**3,200**	*<0.5*	*<0.5*	*<0.5*	**2.2**	**2.2**	**2.2**
56	Mar-10	**2,000**	**4,300**	*<0.5*	*<0.5*	*<0.5*	**3.5**	**3.45**	*<2.0*
57	Jun-10	**1,300**	**2,400**	*<0.5*	*<0.5*	*<0.5*	**1.7**	**FALSE**	*<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*

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

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**

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	10000	8600	25	<0.5	260	19.0	304.0	<2.0
44	Mar-13	4000	2400	9.1	<0.5	73	9.7	91.8	<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

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

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**

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*

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*

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

APPENDIX E

Non-Hazardous Waste Disposal Documentation

NON-HAZARDOUS WASTE MANIFEST

EES19

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: N/A

Manifest Document No.: NH 9854

2. Page 1 of 1

3. Generator's Name and Mailing Address
STELLAR ENVIRONMENTAL SOLUTIONS
2198 SIXTH ST STE 201
BERKELEY CA 94710

4. Generator's Phone (510) 644-3123

5. Transporter 1 Company Name: EVERGREEN ENVIRONMENTAL SERVICES

6. US EPA ID Number: CAD982413262

A. State Transporter's ID

B. Transporter 1 Phone: 510 795-4400

7. Transporter 2 Company Name

8. US EPA ID Number

C. State Transporter's ID

D. Transporter 2 Phone

9. Designated Facility Name and Site Address
EVERGREEN OIL, INC.
6880 Smith Avenue
Newark, CA 94560

10. US EPA ID Number: CAD980887418

E. State Facility's ID

F. Facility's Phone: 510 795-4400

11. WASTE DESCRIPTION	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt./Vol.
a. Non-Hazardous waste, liquid	001	TT	1100	G
b.				
c.				
d.				

G. Additional Descriptions for Materials Listed Above

H. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

Profile # 22473
Do not ingest
Wear protective clothing
In case of emergency call: CHEMTREC 800-424-9300

(JOB SITE)
RRP
7867 REDWOOD RD
OAKLAND CA 94619

Invoice: WOC121315
Sales Order:

GENERATOR

16. **GENERATOR'S CERTIFICATION:** I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.

Printed/Typed Name	Signature	Date (Month Day Year)
D. Rosario	D Rosario	4 4 13

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date (Month Day Year)
Marlon Shelton	Marlon Shelton	4 4 13

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date (Month Day Year)

FACILITY

19. Discrepancy Indication Space
H141

20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.

Printed/Typed Name	Signature	Date (Month Day Year)
Tony Foster		4 4 13

NON-HAZARDOUS WASTE