VOLKSWAGEN
GROUP OF AMERICA

August 28, 2013

Ms. Barbara J. Jakub, PG
Alameda County Health Care Services
Environmental Health Services
Environmental Protection
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Subject:
Submittal of the Soil and Groundwater Investigation Report for Volkswagen Automobile Dealership
2740 Broadway Avenue, Oakland, California Fuel Leak Case No. RO0000400 and GeoTracker Global ID T0600100227

Dear Ms. Jakub:

VOLKSWAGEN GROUP OF AMERICA, INC.
2200 FERDINAND PORSCHE DRIVE
HERNDON, VA 20171
PHONE +1 703 364 7000

Enclosed please find the Soil and Groundwater Investigation Report that was prepared by ARCADIS-US for CBRE – Global Corporate Services (CBRE) on behalf of Volkswagen Group of America (VWoA). Based on the results of the groundwater monitoring activities conducted at the Site in June 2012, the Alameda County Department of Environmental Health (ACEH) requested a work plan for an additional subsurface investigation and light non-aqueous phase liquid (LNAPL) removal. A work plan presenting the requested scope of work was submitted to ACEH on September 13, 2012 and was revised on November 29, 2012 per comments provided by the ACEH. The investigation was conducted in accordance with a work plan and the enclosed report provides the findings of the investigation.

I certify under penalty of law that this document and all attachments are prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who managed the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

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VWoA, CBRE, and ARCADIS appreciate the opportunity to submit the enclosed report to the ACEH for your consideration, and we look forward to working with you and your team to bring this project to regulatory case closure. If you have any questions or comments, please call me at (248) 754 4339 or Ron Goloubow of ARCADIS at (510) 596-9550.

Sincerely,

Eric Carlson
Director, Group Marketing, Real Estate, and Affiliate Operations

Attachment

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Environment

Ms. Barbara J. Jakub, P.G.
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Environmental Protection
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Subject:
Submittal of the Soil and Groundwater Investigation Report for
Volkswagon Automobile Dealership
2740 Broadway Avenue, Oakland, California
Fuel Leak Case No. RO0000400 and GeoTracker Global ID T0600100227

Date:
September 12, 2013

Contact:
Ron Goloubow

Phone:
510.596.9550

Email:
ron.goloubow
@arcadis-us.com

Our ref:
EM001048.0001

Dear Ms. Jakub:

ARCADIS U.S., Inc. (ARCADIS) was retained by CBRE Global Corporate Services to provide environmental consulting services for the Volkswagen Automobile Dealership located at 2740 Broadway Avenue, Oakland, California (the Site).

Based on the results of the groundwater monitoring activities conducted at the Site in June 2012, the Alameda County Department of Environmental Health (ACEH) requested a work plan for an additional subsurface investigation and light non-aqueous phase liquid (LNAPL) removal. An initial work plan was submitted to ACEH on September 13, 2012 and revised on November 29, 2012 per comments from the ACEH. The scope of the work plan includes conducting a subsurface soil and groundwater investigation to better define the horizontal extent of the affected area as well as limited LNAPL removal from former soil vapor extraction well VW-3 where LNAPL was observed in June 2012. This report serves to communicate the results of the subsurface investigation, per the ACEH's request.

Per the instructions from the ACEH, this report is being submitted via the ACEH FTP site and the State Water Resources Control Board GeoTracker website.

We look forward to working with you on this important project. If you have questions regarding this report, please call Ron Goloubow at 510.596.9550 or Jay Shipley at 562.496.3001.

Sincerely,

ARCADIS U.S., Inc.

Jay M. Shipley, P.E.
Senior Vice President

Ron Goloubow, P.G.
Principal Geologist

ARCADIS
Infrastructure · Water · Environment · Buildings

Imagine the result

Volkswagen Group of America, Inc., in care of CBRE Global Corporate Services

Soil and Groundwater Investigation Report

Volkswagen Automobile Dealership
2740 Broadway Avenue
Oakland, California

September 12, 2013

ARCADIS

Caitlin Bell, PE
Staff Environmental Engineer

Ron Goloubow, PG
Principal Geologist
California Professional Geologist (8655)

Jay M. Shipley, PE
Senior Vice President

Soil and Groundwater Investigation Report

Volkswagen Automobile Dealership
2740 Broadway Avenue
Oakland, California

Prepared for:
Volkswagen Group of America, Inc., in care of CBRE Global Corporate Services

Prepared by:
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Date:
September 12, 2013

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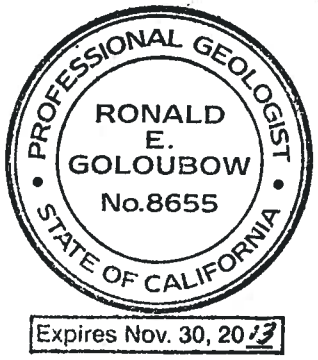
Certification

All hydrogeologic and geologic information, conclusions, and recommendations in this document have been prepared under the supervision of and reviewed by an ARCADIS U.S., Inc., California Professional Geologist.

9/12/13

Ronald E. Goloubow
Principal Geologist
California Professional Geologist (8655)

Date



Acronyms and Abbreviations

ACEH	Alameda County Department of Environmental Health
ACPWA	Alameda County Public Works Agency
ARCADIS	ARCADIS U.S., Inc.
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and total xylenes
C&T	Curtis and Tompkins Laboratories
cis-1,2-DCE	cis-1,2-dichloroethene
Confluence	Confluence Environmental, Inc.
CVOC	chlorinated volatile organic compound
1,2-DCA	1,2-dichloroethane
EC	electrical conductivity
ECD	electron capture detector
ESE	Environmental Science & Engineering, Inc.
ESL	Environmental Screening Level
FID	flame ionization detector
Instrat	Instrat, Inc.
LNAPL	light non-aqueous phase liquid
mg/kg	milligrams per kilogram
MIP	membrane interface probe
PID	photoionization detector
PVC	polyvinyl chloride
SFBRWQCB	California Regional Water Quality Control Board – San Francisco Bay Region
Site	Volkswagen Automobile Dealership located at 2740 Broadway Avenue, Oakland, California
TCE	trichloroethene
TPHd	total petroleum hydrocarbons as diesel
TPHg	total petroleum hydrocarbons as gasoline
TPHmo	total petroleum hydrocarbons as motor oil
µg/L	micrograms per liter
USEPA	United States Environmental Protection Agency

UST	underground storage tank
uV	microvolts
VOC	volatile organic compound
XSD	halogen specific detector

Executive Summary

CBRE Global Corporate Services on behalf of Volkswagen Group of America, Inc., retained ARCADIS U.S., Inc. (ARCADIS) to conduct a subsurface investigation to further assess the lateral distribution of fuel-affected soil and groundwater at the Volkswagen Automobile Dealership located at 2740 Broadway Avenue, Oakland, California (the Site). A Site Location Map and a Site Plan are included as Figures 1 and 2, respectively. This work was completed under the direction of the Alameda County Department of Environmental Health (ACEH).

Site History

Based on a review of available historical reports, soil and groundwater investigation activities have taken place at this Site since 1988 when four underground storage tanks (USTs) were removed (Engineering-Science, Inc. 1989; Figure 2). Historical investigation reports characterize the subsurface at the Site as being predominantly clay, with thin intervals (1 to 2 feet thick) of sand layers. A shallow groundwater-bearing sand layer was documented at 11 to 17 feet below ground surface (bgs) that increases in depth from east to west. Historical groundwater analytical data indicate this shallow sand layer contains groundwater affected with petroleum hydrocarbons. The soil below the shallow sand layer continues with lower-permeability clay to a depth of approximately 22 to 23 feet bgs where sandy clay with semi-confined groundwater has been observed (ESE 1994).

Current Investigation

Per the request of the ACEH, ARCADIS performed a subsurface investigation in April and June 2013 that included a bail down test of light non-aqueous phase liquid (LNAPL) observed in well VW-3, the collection of grab groundwater samples, and the installation of two groundwater monitoring wells.

The bail down test was conducted to assess the potential mobility of the LNAPL observed within monitoring well VW-3 in June 2012. On June 19, 2013, no measurable thickness of LNAPL or sheen of petroleum product was observed in monitoring well VW-3. The depth to water measured in June 2012, when the LNAPL was observed, was 7.70 feet bgs, while the depth to water measured on June 19, 2013 was lower (8.20 feet bgs). This decrease in groundwater elevation would suggest that if the LNAPL were mobile, more would have accumulated in monitoring well VW-3 since

2012. Because this was not the case, it can be inferred that any residual LNAPL present in the vicinity of VW-3 is not mobile.

As part of the soil and groundwater investigation activities, ARCADIS advanced five soil borings (MIP-1 through MIP-5; Figure 2) to approximately 30 to 35 feet bgs using a direct-push drill rig equipped with an electrical conductivity (EC) measurement device and membrane interface probe (MIP) sample collector. The MIP provides a qualitative indication of the location and magnitude of organic compounds in the subsurface. The response from the petroleum-related MIP detectors suggests the presence of petroleum-related compounds within the identified sand layer, located approximately 18 to 21 feet bgs at MIP-1 and MIP-2; 15 to 18 feet bgs at MIP-3; and 12 to 15 feet bgs at MIP-4 and MIP-5. The response from the EC/MIP detectors that detect concentrations of chlorinated or other halogenated organic compounds indicates that these compounds are not present at locations MIP-1 and MIP-2. The response at boring locations MIP-3, MIP-4, and MIP-5 did indicate the presence of low concentrations of halogenated organic compounds at these locations.

Grab groundwater samples were collected from each of the EC/MIP boring locations. Concentrations of petroleum-related constituents ranged from 1.1 micrograms per liter (µg/L) of toluene at location MIP-2 to 14,000 µg/L of total petroleum hydrocarbons as gasoline (TPHg) at MIP-4. Concentrations of TPHg, TPH as diesel (TPHd), TPH as motor oil (TPHmo), benzene, ethylbenzene, and naphthalene were detected at various locations above the applicable 2013 Tier 1 Environmental Screening Levels (ESLs) put forth by the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB 2008; see Table 1).

ARCADIS installed two groundwater monitoring wells on June 13, 2013. Soil samples collected at each well location indicated the presence of low concentrations of TPHg, TPHd, and TPHmo (see Table 3). Other constituents detected above laboratory reporting limits but below the applicable SFBRWQCB Tier I ESL include ethylbenzene and xylenes. Therefore, there is not expected to be residual petroleum in the soil in the vicinity of monitoring wells MW-8 and MW-9 that would warrant addition investigation (see Table 3).

The results of the groundwater samples collected from the six existing and two newly installed groundwater monitoring wells indicated the highest concentrations of TPHg, TPHd, and TPHmo were detected in samples collected from monitoring well VW-3, located closest to the former USTs that are suspected to have released the fuel to the subsurface (see Table 1 and Figure 4). The highest concentrations of benzene were

detected in the sample collected from well MW-9 (1,500 µg/L; see Figure 5). Additionally, other constituents were detected above the applicable SFBRWQCB Tier I ESLs at various monitoring well locations (see Table 1). The concentrations of TPHg and benzene decrease toward the northwest (see Figures 4 and 5). Based on the concentrations of benzene and TPHg detected in groundwater samples collected at the Site since 1989 and given that the USTs were removed in 1988 (25 years ago), the plume of TPHg- and benzene-affected groundwater appears stable and is likely undergoing natural attenuation and degradation.

Based on the results of this investigation, and the request of the ACEH, ARCADIS has developed a Soil Vapor Sampling Plan to evaluate the potential for migration of petroleum hydrocarbons in the subsurface into the site building, which will be submitted under separate cover. Pending the approval of the Soil Vapor Sampling Plan by ACEH, ARCADIS will conduct the soil vapor sampling and groundwater monitoring, report the findings, and provide recommendations to further assess the rate at which natural attenuation and degradation of the TPHg- and benzene-affected groundwater is taking place and/or the potential human health risk posed by the affected media under the current land use scenario.

1. Introduction

CBRE Global Corporate Services on behalf of Volkswagen Group of America, Inc., has retained ARCADIS U.S., Inc. (ARCADIS) to conduct a subsurface investigation to further assess the lateral distribution of fuel-affected soil and groundwater at the Volkswagen Automobile Dealership located at 2740 Broadway Avenue, Oakland, California (the Site). A Site Location Map and a Site Plan are included as Figures 1 and 2, respectively.

Based on the results of the groundwater monitoring activities conducted at the Site in June 2012, the Alameda County Department of Environmental Health (ACEH) requested a work plan for an additional subsurface investigation and light non-aqueous phase liquid (LNAPL) removal. A work plan presenting the requested scope of work was submitted to ACEH on September 13, 2012 and was revised on November 29, 2012 per comments provided by the ACEH. The scope of the work plan included the following tasks:

- conducting a subsurface soil and groundwater investigation to further define the lateral extent of the fuel-affected soil and ground water at the Site; and

- conducting a LNAPL bail down test to assess the presence of LNAPL at former soil vapor extraction well VW-3 where LNAPL was observed in June 2012.

This report provides the results of the subsurface investigation, per the ACEH's request.

2. Background

Based on a review of available historical reports acquired from the ACEH website, soil and groundwater investigation activities have taken place at this Site since 1988 when four underground storage tanks (USTs) were removed from the Site (Engineering-Science, Inc. 1989): one 1,000-gallon capacity UST (Tank A) used to store waste oil (formerly located near the garage near 27th Street); one 300-gallon capacity UST (Tank B) used to store waste oil (formerly located along Broadway Avenue); and one 550-gallon capacity UST (Tank C) and one 1,500-gallon capacity UST (Tank D) both used to store gasoline (formerly located along 28th Street). Figure 2 illustrates the locations of the former USTs, current and former groundwater monitoring wells, and soil vapor extraction wells, as adapted from recent site reconnaissance and historical reports (ESE 1991b and QST Environmental 1999).

Soil samples collected during the removal of Tank A did not contain total petroleum hydrocarbons as gasoline (TPHg), or benzene, toluene, ethylbenzene and total xylenes (BTEX) above laboratory reporting limits (Engineering-Science, Inc. 1989). Soil samples collected during the removal of Tank B contained TPHg at 640 milligrams per kilogram (mg/kg) and total oil and grease at 2,400 mg/kg. Soil samples collected during the removal of Tanks C and D and from soil borings drilled near theses USTs contained elevated concentrations of TPHg as well as BTEX. In addition, LNAPL was reported to be observed in the excavation during the removal of these USTs.

Based on the soil samples collected and observations made during the removal of these USTs a total of six groundwater monitoring wells (MW-1 and MW-3 through MW-7) were installed to a total depth of between 20 and 30 feet below grade in the sidewalk and 28th Street near former USTs C and D. Groundwater monitoring well MW-2 was installed near the former waste oil UST located near Broadway Avenue (Tank B). Reportedly, three wells (MW-4, MW-5, and MW-6) were abandoned in 1994, leaving wells MW-1, MW-2, MW-3, and MW-7 in place. Additionally, well MW-2 was indicated as an abandoned well in a map included in an ESE report dated 1991 (ESE 1991a) and does not appear to be accessible during recent site reconnaissance. The highest concentrations of TPHg and BTEX have historically been detected in groundwater samples collected from well MW-3 located approximately 50 feet west of USTs C and D located along 28th Street (Mactec 2003).

A soil vapor and groundwater extraction system reportedly operated at the Site from February 1996 through March 1998. The extraction system was comprised of four vapor and groundwater extraction wells (VW-1 through VW-3 and MW-3; Mactec 2003). The details regarding the operational history of this extraction system were not provided (i.e., flow rates, mass of contaminants removed).

2.1 Groundwater Monitoring 2012

Reportedly, prior to the June 2012 groundwater monitoring event, the most recent previous monitoring event took place at the Site in 1999 (Mactec 2003). Two requests for case closure were provided to the ACEH, one in March 1999 and one in April 2003 (QST Environmental 1999 and Mactec 2003). Based on the ACEH letter both requests for case closure were denied. The requests for case closure were likely denied because the analytical results for the groundwater samples collected from well MW-3 in 1999 after the soil vapor and groundwater extraction system was shut down increased to concentrations comparable to those detected prior to operating the soil vapor and groundwater extraction system.

In June 2012, ARCADIS coordinated the redevelopment and sampling of the remaining groundwater monitoring and vapor extraction wells on site. Three groundwater monitoring wells, MW-1, MW-3, and MW-7, and the three former soil vapor extraction wells, VW-1, VW-2, and VW-3, were redeveloped (Figure 2). The wells were redeveloped by Confluence Environmental, Inc. (Confluence) on June 6, 2012. Prior to redevelopment, down-hole piping associated with the former vapor extraction wells was removed. Redevelopment included removal of the 6 to 10 well casing volumes of groundwater and measurement of indicator parameters. While turbidity measurements were high, greater than 1,000 nephelometric turbidity units, field observations indicated that the groundwater was relatively sediment-free and the bottom of the well casing did not contain accumulated sediment. Based on these observations, the development was considered successful. Confluence observed approximately 0.02 feet of LNAPL in vapor extraction well VW-3. Therefore, this well was not redeveloped in June 2012.

Confluence conducted groundwater sampling at the Site on June 8, 2012. Groundwater purging and sampling was completed using conventional low-flow techniques in accordance with the United States Environmental Protection Agency (USEPA) protocol (USEPA 1996). The exception to this purging and sampling method was vapor extraction well VW-3. In that case, a grab groundwater sample was collected from below the LNAPL present in the well. Analytical results for groundwater samples collected at the Site indicate that detectable concentrations of petroleum-related compounds are present in the vicinity of the former gasoline USTs (see Table 1).

2.2 Groundwater Occurrence

Historical investigation reports characterize the geology at the Site as being predominantly clay, with thin intervals (1 to 2 feet thick) of higher permeability sand layers. A shallow sand layer was documented at 11 to 17 feet below ground surface (bgs) that increases in depth from east to west. Historical groundwater analytical data indicate this shallow sand layer contains groundwater affected with petroleum hydrocarbons. The groundwater within this shallow sand layer was reported to be perched because clay sediment observed during advancement of soil borings located above and below the sand layer was observed to be dry. The soil below the shallow sand layer continues with lower permeability clays until a depth of approximately 22 to 23 feet bgs in monitoring wells MW-4, MW-5, and MW-6. At this depth, the soil was described as a sandy clay with a semi-confined groundwater aquifer (ESE 1994).

The groundwater flow direction was determined to be toward the west-northwest under a gradient of 0.02 feet per foot between wells MW-1 and MW-7 and MW-1 and VW-1 (ARCADIS 2012). This flow direction was consistent with the flow directions previously measured at the Site.

2.3 Chlorinated Volatile Organic Compounds

The focus of the historical soil and groundwater investigations conducted at the Site has been on the release of petroleum hydrocarbons from the former USTs. The majority of the analyses performed at various soil borings, monitoring well locations, and soil excavations have included light-range and heavy-range petroleum hydrocarbons and an abbreviated list of petroleum-related volatile organic compounds (VOCs). However, some soil samples collected in the vicinity of the former USTs were analyzed for the full suite of VOCs. In these cases, no additional VOCs, such as chlorinated VOCs (CVOCs), were detected in the soil samples above the laboratory reporting limits. These results suggest that petroleum-related constituents are the only compounds attributable to the former USTs at the Site.

Analytical results for groundwater samples collected from 1991 to 1993 indicate that CVOCs were present above laboratory reporting limits, specifically trichloroethene (TCE) and 1,2-dichloroethane (1,2-DCA), in samples collected from monitoring wells MW-1, MW-3, MW-4, MW-5, and MW-6 (see Table 1). Three of these wells (MW-4, MW-5, and MW-6) were screened within both the shallow sand layer (located at 11 or 17 feet bgs) and the deeper semi-confined aquifer (22 to 23 feet bgs; ESE 1994). Concentrations of TCE detected in samples collected from monitoring wells MW-4, MW-5, and MW-6 in 1993 were significantly higher (530 to 2,100 micrograms per liter [µg/L]) than in the samples collected from monitoring wells MW-1 and MW-3 (6.4 to 14 µg/L). The highest concentrations of CVOCs were detected in groundwater samples collected from wells screened within the deeper semi-confined aquifer.

Based on the lack of CVOCs detected in soil samples collected at the Site and the detection of CVOCs in groundwater samples collected from wells that were screened below the perched groundwater, ESE suggested that the source of TCE in groundwater was from an unknown off-site property (ESE 1994). The occurrence of CVOCs in groundwater samples collected from monitoring wells MW-1 and MW-3 was likely due to vertical migration of CVOCs from the deeper semi-confined aquifer into the shallow sand layer via the monitoring wells screened within both zones. Therefore, monitoring wells MW-4, MW-5, and MW-6 were abandoned in 1993 to prevent continued vertical migration of CVOCs to the shallow sand layer.

Groundwater samples collected at the Site were not routinely submitted for analysis of CVOCs after the abandonment of these wells. The groundwater samples collected during the June 2012 groundwater monitoring event included analysis for CVOCs. Concentrations of CVOCs were not detected above the applicable laboratory reporting limit at monitoring wells MW-1 and MW-3, but TCE, cis-1,2-dichloroethene (cis-1,2-DCE), and 1,2-DCA were detected above the laboratory reporting limit in monitoring well MW-7 (see Table 1). The monitoring well screen interval for MW-7 is from approximately 20 to 25 feet bgs and appears to be screened within the shallow sand layer (ESE 1994).

3. Scope of Work

The scope of work for this subsurface investigation included the following:

- Advancement of five soil borings with a direct-push drill rig equipped with an electrical conductivity (EC) measurement device and membrane interface probe (MIP) sample collector.
- Collection of grab groundwater samples at five locations.
- Based on the results of the EC/MIP and the analytical results for grab groundwater samples, advancement of two additional borings and installation of two permanent groundwater monitoring wells.
- Performance of a LNAPL bail down test at monitoring well VW-3, if a measureable amount of LNAPL is present.
- Development of the newly installed groundwater monitoring wells and monitoring well VW-3, if no LNAPL observed.
- Sampling of the six existing and two newly installed groundwater monitoring wells.

3.1 Pre-Field Activities

Prior to initiation of field activities, ARCADIS prepared a site-specific health and safety plan detailing the scope of work and identifying the potential health and safety risks associated with the work. Additionally, ARCADIS performed the following tasks to ensure all proper permits were obtained and tasks completed prior to initiation:

- Prepared a traffic control plan and obtained approval of the City of Oakland Traffic Engineering Office.
- Obtained an encroachment permit from the City of Oakland for subsurface investigation work to be completed in 28th Street.
- Obtained an excavation permit from the City of Oakland to perform drilling activities.
- Obtained an obstruction permit from the City of Oakland to request that no cars be parked along 28th Street in the area of the subsurface investigation.
- Obtained a drilling permit from the Alameda County Public Works Agency, Water Resources Section (ACPWA) and scheduled a grouting inspection with an agent from the county.
- Notified ACEH prior to the initiation of the preliminary subsurface investigation, per their request.
- Notified Underground Service Alert North utility service at least 72 hours prior to initiation of subsurface activities to coordinate utility mark out.
- Retained a private utility locator, Subdynamic Locating Services, to identify any subsurface utilities within the subsurface investigation area.
- Notified the residents of 28th Street at least 72 hours prior to initiation of subsurface activities that traffic control would be in place during that time.
- Retained a traffic control company, Statewide Traffic Safety and Signs, Inc., to delineate the work area using appropriate traffic control signs and monitor the safety of workers during the subsurface investigation.
- Cleared each soil boring location for utilities using a hand auger and/or air knife to approximately 5 feet bgs.

3.2 EC/MIP Soil Boring Advancement

ARCADIS retained Vironex, a California-licensed drilling company, to perform the preliminary subsurface investigation on April 4 and 5, 2013. In accordance with the work plan, five soil borings (MIP-1 through MIP-5; Figure 2) were advanced to approximately 30 or 35 feet bgs using a direct-push drill rig equipped with EC/MIP technology. Four of the boring locations (MIP-1 through MIP-4) were advanced using a Geoprobe 6600 direct-push rig, while the other boring (MIP-5) was advanced using a smaller, track-mounted rig due to the limited overhead access within the service bay.

As the probe was driven below grade into undisturbed soil, the advancement was stopped at desired intervals (typically 6 inches) to heat the permeable membrane interface located on the wall of the probe and gather VOC data. Conductivity logging EC data (which provide lithologic soil-type information) were gathered on a continuous basis. VOCs that are exposed to the membrane are volatilized and picked up by the carrier gas behind the membrane, which in turn delivers the gas to the detectors at the surface (an electron capture detector [ECD], halogen specific detector [XSD], photoionization detector [PID], and flame ionization detector [FID]). The data from the EC/MIP testing, as provided by Vironex, are included in Appendix A.

3.3 Grab Groundwater Sample Collection

After advancement of each of the soil borings with the EC/MIP testing, a temporary groundwater monitoring well was installed within the open borehole. Each temporary groundwater monitoring well was constructed of 1-inch-diameter polyvinyl chloride (PVC) piping with 5 feet of slotted screen set at the bottom of the boring (30 to 35 feet bgs).

Grab groundwater samples were collected from each of the temporary monitoring wells on April 5, 2013. Tubing augmented with a check valve on the end was used to collect a grab groundwater sample. Each groundwater sample was collected into clean, laboratory-provided sample containers, stored in an ice-chilled cooler and transported under chain-of-custody protocol to Curtis and Tompkins Laboratories (C&T), a California-certified analytical laboratory. Groundwater samples were analyzed for the following:

- VOCs with fuel oxygenates using USEPA Method 8260B

- TPHg, TPH as diesel (TPHd), and TPH as motor oil (TPHmo) using USEPA Method 8015

After each grab groundwater sample was collected, the PVC piping was removed and the borehole was backfilled with grout under the supervision of an agent from the ACPWA, per the requirements of the drilling permit.

4. Investigation Results

This section provides the results for the EC/MIP testing, grab groundwater samples, installation of the two monitoring wells, soil samples collected during the installation of the wells, and groundwater samples collected from the newly installed wells and the LNAPL bail down test.

4.1 EC/MIP Results

The data from the EC/MIP testing, as provided by Vironex, are included in Appendix A. The figures provided for each EC/MIP location show the EC response and MIP detector responses across the vertical depth of the boring. The EC response gives an indication of the relative permeability of the subsurface geology at various vertical locations within the boring. Generally, the response from the EC, below the area that was hand augered, indicated the subsurface geology is interbedded sand, silt, and clay, with a more permeable sand layer located approximately 18 to 20 feet bgs at MIP-1 and MIP-2; 15 to 17 feet bgs at MIP-3; and 12 to 15 feet bgs at MIP-4 and MIP-5. The depth and thickness of this shallow, more permeable, sand layer tends to increase from east to west along 28th Street. This was also the direction of groundwater flow observed in June 2012 (ARCADIS 2012).

The absolute value of the response from the MIP detectors cannot be used to quantify the concentration of VOCs in the subsurface, but the relative values can provide a qualitative indication of the location and magnitude of organic compounds in the subsurface. The ECD and XSD MIP detectors are designed to identify the presence of halogenated organic compounds (e.g., CVOCs) while the PID and FID detectors are designed to identify the presence of hydrocarbons (i.e., petroleum-related compounds). Based on the response from the ECD and XSD detectors, there is no indication of concentrations of chlorinated or other halogenated organic compounds above the detection limit of the detectors at boring locations MIP-1 and MIP-2. The response of the ECD at boring locations MIP-3, MIP-4, and MIP-5 indicates there may be low levels of halogenated organic compounds at these locations. The response from the PID and

FID detectors suggests the presence of petroleum-related compounds within the identified sand layer.

4.2 Grab Groundwater Sample Results

The analytical results of the grab groundwater samples collected at locations MIP-1 though MIP-5 are summarized in Table 1; the laboratory analytical report for these samples is included as Appendix B. Concentrations of petroleum-related constituents ranged from 1.1 µg/L of toluene at location MIP-2 to 14,000 µg/L of TPHg at MIP-4. Concentrations of TPHg, TPHd, TPHmo, benzene, ethylbenzene and naphthalene were detected at various locations above the applicable 2013 Tier 1 Environmental Screening Levels (ESLs) put forth by the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB 2008; see Table 1).

Additionally, concentrations of TCE, cis-1,2-DCE, and/or 1,2-DCA were detected in grab groundwater samples from each of the MIP boring locations, with the highest concentration of TCE (960 µg/L) at MIP-4. Each of these temporary monitoring wells were set at the bottom of the boring (approximately 30 to 35 feet bgs) and had 5 feet of slotted screen. Therefore, water collected from these temporary monitoring wells likely originated from both the shallow sandy layer and the deeper semi-confined aquifer.

4.3 Monitoring Well Installation

The locations for monitoring wells MW-8 and MW-9 were chosen based on the analytical results of the soil and groundwater samples previously collected at the Site, and the results of the EC/MIP investigation (see Figure 2). These well locations were selected in accordance with the letter from the ACEH dated September 7, 2012. ACEH suggested locating the permanent monitoring wells in the vicinity of the highest MIP detector readings.

As shown on the MIP logs in Appendix A, the response of the PID detector was higher at soil borings MIP-4 and MIP-5 (approximately $1x10^7$ microvolts [uV]), lower at MIP-1 (approximately $2x10^6$ uV), and lowest at MIP-2 and MIP-3 (approximately $1x10^6$ uV). The response of the FID detector was higher at MIP-1, MIP-4, and MIP-5 (approximately $1x10^6$ uV) and lower at MIP-2 and MIP-3 (approximately $3\text{-}4x10^5$ uV). Additionally, the logs for soil borings MIP-3 and MIP-4 had notable responses from the ECD detector (see logs in Appendix A).

The results of the EC/MIP and grab groundwater sampling, as well as proposed groundwater monitoring well locations and construction, were discussed with the ACEH prior to mobilization to the Site to install the wells. As discussed with ACEH, monitoring wells MW-8 and MW-9 were located in the vicinity of borings MIP-1 and MIP-4, respectively.

Additionally, ACEH approved well construction including 2-inch PVC with no more than 5 feet of well screen. Site-specific constraints, in the form of overhead clearance in the service garage, limit the capability of installing a groundwater monitoring well using the methods described in the work plan (i.e., auger rig) near MIP-5. Therefore, while MIP response was elevated at MIP-5, a permanent groundwater monitoring well was not installed there.

ARCADIS retained the services of PeneCore Drilling, a licensed drilling subcontractor, to install two groundwater monitoring wells under the supervision of a California-licensed professional geologist on June 13, 2013. Prior to installing each well, a "pilot hole" was drilled using the direct-push drilling method and soil samples were collected on a continuous basis for lithologic description and selected soil samples were submitted for laboratory analyses. Following the completion of the pilot hole, the soil boring was drilled using hollow stem augers.

Observations made during drilling regarding the lithology of the soil were described and recorded in accordance with the Unified Soil Classification System (Appendix C). Generally, the lithology observed was similar to that described previously and included interbedded sand, silt, clay, and gravel. Depth to groundwater was observed during drilling to be approximately 10 to 13 feet bgs. An effort was made not to penetrate the deeper semi-confined aquifer to avoid the vertical migration of CVOCs observed historically.

During advancement to approximately 20 feet, collected soil was screened using a PID to identify the areas of highest petroleum hydrocarbon concentration. Generally, PID results indicated field screening results of 10 to 35 parts per million by volume organic vapors. Discrete soil samples were collected at approximately 5, 10, and 15 feet bgs to satisfy the requirement for closure under the California low-threat closure policy. Soil samples were collected and stored in laboratory-provided glassware, stored on ice and shipped under chain-of-custody procedures to C&T. Soil samples were analyzed for the following parameters:

- TPHg, TPHd, and TPHmo via USEPA Method 8015B

- BTEX and methyl tertiary-butyl ether via USEPA Method 8260

- Soil moisture via ASTM Method D2216/CLP

The groundwater monitoring wells were installed such that the well screen was located within the shallow water-bearing sandy interval as observed during the EC/MIP investigation and confirmed via the soil samples collected during the drilling of the "pilot hole". Each well was constructed of 2-inch-diameter PVC slotted screen, followed by 2-inch-diameter flush threaded Schedule 40 PVC blank casing to approximately ground surface. Monitoring well MW-8 was screened from approximately 11 to 15 feet bgs while MW-9 was screened from approximately 16 to 20 feet bgs. The annular well space was filled with sand pack from the total depth to approximately 1 foot above the screen interval, followed by 1 foot of hydrated bentonite seal above the sand pack. Neat cement grout was placed above the bentonite seal to about 1 foot bgs in accordance with well permit requirements and the under the inspection of a representative of ACPWA. The final surface completion consisted of a traffic-rated flush-mound well box set in concrete. Well completion details are included on the boring logs that are included in Appendix C.

Investigation-derived waste generated during the field activities, including soil cuttings, decontamination or rinse water, and personal protective equipment, was stored temporarily at the Site in clean, labeled, Department of Transportation-approved 55-gallon drums or similar, prior to disposal. Waste was transported and disposed of as non-hazardous waste by Instrat, Inc. (Instrat) of Rio Vista, California on July 8, 2013 (Appendix D).

ARCADIS retained PLS Suveys, Inc., a California-licensed land surveyor to determine the northing, easting, and top-of-casing elevation of the six existing and two newly installed groundwater monitoring wells (Table 2).

4.4 Soil Sampling Results

The analytical results for the soil samples collected from the pilot hole drilled during the installation of the wells are summarized in Table 3. The laboratory analytical reports are provided in Appendix B. TPHg concentrations ranged from below laboratory reporting limits to 2.2 mg/kg in the soil sample collected 10.0-10.5 feet bgs at MW-9. TPHd concentrations ranged from below laboratory reporting limits to 6.7 mg/kg in the soil sample collected 5.0-5.5 feet bgs at MW-9. TPHmo concentrations ranged from below laboratory reporting limits to 49 mg/kg in the soil sample collected 5.0-5.5 feet

bgs at MW-9. Detected VOCs include ethylbenzene and xylenes at concentrations below the applicable SFBRWQCB Tier I ESL for soil less than 3 meters bgs on commercially used land (see Table 3). Therefore, there is not expected to be concentrations of petroleum (or petroleum-related compounds) in the soil in the vicinity of monitoring wells MW-8 and MW-9 that would be indicative of a source area for affected soil or groundwater or warrant further investigation. This is consistent with the site history and suspected releases.

4.5 Newly Installed Monitoring Well Development and Sampling

ARCADIS retained Confluence to develop the two newly installed groundwater monitoring wells. After installation, monitoring wells MW-8 and MW-9 were allowed to equilibrate for 48 hours prior to development. Therefore, on June 17, 2013 Confluence mobilized to the Site to develop monitoring wells MW-8 and MW-9 via positive air displacement. At each location, at least 10 well volumes of water were extracted until the turbidity readings decreased and the water was visually clear. Monitoring well MW-9 could not sustain a pumping rate during development but recharged at a rate of approximately 0.07 gallons per minute. Field notes from the monitoring well development are included as Appendix E.

The newly developed groundwater monitoring wells were allowed to equilibrate for an additional 48 hours prior to sampling. Therefore, on June 19, 2013 Confluence mobilized to the Site to collect groundwater samples from the six existing and the two newly installed groundwater monitoring wells.

Depth to water measurements were collected using a water level meter (Table 2). The depth to water level measurement from each well was recorded in the field and the field data are included in Appendix E. The groundwater elevations measured at the Site were used to generate a relative groundwater elevation contour map (Figure 3). From this information, groundwater direction was determined to be toward the west-northwest under a gradient of 0.02 feet per foot between wells MW-1 and MW-7 and MW-1 and VW-1.

Groundwater purging and sampling was completed using conventional low-flow techniques in accordance with the USEPA protocol (USEPA 1996). A low-flow peristaltic pump was used to minimize the drawdown during purging. Water quality parameters were monitored during well purging using an in-line monitoring device. Groundwater samples were collected after the water quality parameters had stabilized

for at least three successive readings. These water quality parameters were recorded in the field and the field data are included in Appendix E.

Groundwater samples were collected using a low-flow pump into the appropriate laboratory-supplied groundwater sample containers. The sample containers were stored on ice and delivered under chain-of-custody procedure to C&T. Groundwater samples, a duplicate sample, and a trip blank were submitted for the following analyses:

- VOCs via USEPA Method 8260B (this analyses includes BTEX, chlorinated solvents, and fuel oxygenates)

- TPHg, TPHd, and TPHmo via USEPA Method 8015

All investigation-derived waste was stored on site in appropriately labeled 55-gallon drums. Waste was transported and disposed of as non-hazardous waste by Instrat on July 8, 2013 (Appendix D).

4.6 Groundwater Monitoring Results

The results of the groundwater sampling analysis are summarized in Table 1 and on Figures 4 and 5, with the laboratory analytical reports presented in Appendix B. TPHg concentrations ranged from below laboratory reporting limits to 13,000 µg/L in monitoring well VW-3. TPHd concentrations ranged from below laboratory reporting limits to 6,200 µg/L in monitoring well VW-3. TPHmo concentrations ranged from below laboratory reporting limits to 650 µg/L in monitoring well VW-3. VOCs, including BTEX, cis-1,2-DCE, 1,2-DCA, and naphthalene were detected above the applicable SFBRWQCB Tier I ESLs at various monitoring well locations.

Figure 4 illustrates the distribution of TPHg detected in groundwater samples collected for the project in April and June 2013. As indicated, the highest concentrations of TPHg were detected in samples collected from wells VW-3 (13,000 µg/L) and MW-9 (5,400 µg/L) and the grab groundwater sample collected at MIP-4 (14,000 µg/L). These samples were collected at locations closest to former USTs C and D (see Figure 4). The concentrations of TPHg decrease towards the northwest (toward well MW-8; TPHg at 1,800 µg/L).

Figure 5 illustrates the distribution of benzene detected in groundwater samples collected for the project in April and June 2013. As indicated, the highest concentration

of benzene was detected in the sample collected from well MW-9 (1,500 µg/L). The concentrations of benzene decrease towards the northwest (toward well MW-8; benzene at 360 µg/L).

4.7 LNAPL Bail Down Test

During the June 2012 groundwater monitoring event, Confluence observed approximately 0.02 feet of LNAPL in vapor extraction well VW-3. Therefore, ARCADIS developed a work plan for a LNAPL bail down test to determine the potential mobility of LNAPL within the subsurface.

ARCADIS retained Confluence to perform the LNAPL bail down test on June 13, 2013. There was no measurable thickness of LNAPL in monitoring well VW-3, or any observed sheen of petroleum product within the well on June 13, 2013. For comparison, the depth to water measured in June 2012, when the LNAPL was observed, was 7.70 feet bgs, while the depth to water measured on June 19, 2013 was lower (8.20 feet bgs). This decrease in groundwater elevation would suggest that if the LNAPL were mobile, more would have accumulated in monitoring well VW-3. Because this was not the case, it can be inferred that any residual LNAPL present in the vicinity of VW-3 is not mobile.

Because LNAPL was not observed in monitoring well VW-3 in June 2013, the LNAPL bail down test was not performed. Instead, the monitoring well was redeveloped by purging approximately 38 gallons of groundwater from the well. This redevelopment was performed in June 2013 because monitoring well VW-3 could not be redeveloped prior to the June 2012 groundwater sampling event. Even during redevelopment, LNAPL was not observed on the groundwater extracted from the monitoring well. Observations for LNAPL at well VW-3 will be conducted during future groundwater monitoring events to asses if the redevelopment of well VW-3 will cause more LNAPL to accumulate in the well.

5. Conclusions and Recommendations

Recent soil and groundwater investigation activities included an EC/MIP investigation to further assess the lateral and vertical extent of affected subsurface media, installation and sampling of two new groundwater monitoring wells, a LNAPL bail down test, and groundwater sampling of the existing and newly installed monitoring wells.

The results of the EC/MIP investigation indicate the presence of petroleum-related compounds in the thin sand interval (1 to 4 feet thick) that is located at a depth between approximately 12 to 21 feet bgs, depending on the location of the sandy lens within the boring, and the presence of CVOCs at a depth of approximately 27 to 30 feet bgs along the northern side of 28th Street and within the service center. The results of the soil sampling from newly installed monitoring wells MW-8 and MW-9 suggest there are no significant residual petroleum hydrocarbons in soil along the north side of 28th Street and the elevated MIP responses were likely due to elevated concentrations of fuel and fuel-related constituents in groundwater. This is confirmed by the elevated concentrations of TPHg, TPHd, benzene, ethylbenzene, xylenes, naphthalene, TCE, and cis-1,2-DCE in newly installed monitoring wells MW-8 and MW-9.

Based on the groundwater samples collected in April and June 2013, the TPHg- and benzene-affected groundwater has migrated in a north-northwesterly direction from USTs C and D, which is the suspected source of the affected groundwater. The lateral extent of the affected groundwater appears to extend to Broadway (approximately 100 feet west of the former UST). The northern extent of affected groundwater has not been defined and a building located immediately north of 28th Street is limiting access to this area. However, based on the concentrations of benzene and TPHg detected in groundwater samples collected at the Site since 1989 and given that the USTs were removed in 1988 (25 years ago); the plume of TPHg- and benzene-affected groundwater appears stable and is undergoing natural attenuation and degradation.

Based on the results of this investigation, and the request of the ACEH, ARCADIS has developed a Soil Vapor Sampling Plan to evaluate the potential for migration of petroleum hydrocarbons in the subsurface into the site building. The Soil Vapor Sampling Plan will be submitted under separate cover. Pending the approval of the Soil Vapor Sampling Plan by ACEH, ARCADIS will conduct the soil vapor sampling and groundwater monitoring, report the findings, and provide recommendations to further assess the rate at which natural attenuation and degradation of the TPHg- and benzene-affected groundwater is taking place and/or the potential human health risk posed by the affected media under the current land use scenario.

6. References and Documents Related to the Project

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Tables

Table 1
Summary of Groundwater Analytical Results
Volkswagen Automobile Dealership
2740 Broadway Avenue, Oakland, California

Well Number	Sample Date	TPHg µg/L	TPHd µg/L	TPHmo µg/L	Benzene µg/L	Toluene µg/L	Ethyl benzene µg/L	Total Xylenes µg/L	MTBE µg/L	TCE µg/L	cDCE µg/L	1,1-Dichlorothene µg/L	1,2-Dichloroethane µg/L	1,3,5-Trimethyl benzene µg/L	1,2,4-Trimethyl benzene µg/L	n-Butyl benzene µg/L	Naphthalene µg/L	trans-1,2-Dichloroethene µg/L	TDS µg/L
Tier I ESL µg/L		**100**	**100**	**100**	**1**	**40**	**30**	**20**	**5**	**5**	**6**	**5**	**0.5**	**na**	**na**	**na**	**17**	**na**	**na**
VI ESL (Fine-Coarse Mix) µg/L		**No Value**	**No Value**	**No Value**	**270**	**Sample Soil Gas**	**3,100**	**Sample Soil Gas**	**100,000**	**1,300**	**No Value**	**130,000**	**1,000**	**No Value**	**No Value**	**No Value**	**1,600**	**120,000**	**No Value**
MW-1	01/21/89	ND	na	na	**53**	13	1.4	8.2	---	na	na	---	na	na	na	na	na	---	na
	05/13/91	130	na	na	ND	ND	ND	ND	---	**58**	na	---	ND	na	na	na	na	---	na
	10/18/91	ND	na	na	ND	ND	ND	ND	---	**120**	na	---	ND	na	na	na	na	---	na
	10/27/91	ND	na	na	ND	ND	ND	ND	---	11	na	---	ND	na	na	na	na	---	na
	07/13/93	ND	na	na	ND	ND	ND	ND	---	**6.4**	na	---	ND	na	na	na	na	---	na
	06/27/96	ND	na	na	ND	ND	ND	ND	---	na	na	---	na	na	na	na	na	---	na
	09/19/96	ND	na	na	ND	ND	ND	ND	---	na	na	---	na	na	na	na	na	---	na
	12/13/96	ND	na	na	ND	ND	ND	ND	---	na	na	---	na	na	na	na	na	---	na
	10/07/97	ND	na	na	ND	ND	ND	ND	ND	na	na	---	na	na	na	na	na	---	na
	08/03/99	ND	na	na	ND	ND	ND	ND	ND	na	na	---	na	na	na	na	na	---	na
	06/08/12	<50	**290 Y**	<300	<0.5	<0.5	<0.5	<0.5	0.3 J	<0.5	<0.5	---	<0.5	<0.5	<0.5	<0.5	<2.0	---	410
	06/19/13	<50	**290 Y**	<300	<0.5	<0.5	<0.5	<0.5	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<0.5	na
MW-2*	01/21/89	ND	na	na	ND	ND	ND	ND	---	na	na	---	na	na	na	na	na	---	na
MW-3	01/21/89	**32,000**	na	na	***9,600***	**8,200**	**1,800**	**6,200**	---	na	na	---	na	na	na	na	na	---	na
	05/13/91	**81,000**	na	na	***7,800***	**12,000**	**1,200**	**4,000**	---	**14**	na	---	**380**	na	na	na	na	---	na
	10/18/91	**73,000**	na	na	***9,400***	**8,600**	**750**	**3,300**	---	**14**	na	---	**8.3**	na	na	na	na	---	na
	10/27/91	**37000**	na	na	***7,100***	**4,900**	**970**	**3,500**	---	ND	na	---	**170**	na	na	na	na	---	na
	07/13/93	**41,000**	na	na	***8,100***	**6,200**	***8,100***	**4,400**	---	**14**	na	---	**150**	na	na	na	na	---	na
	06/27/96	370	na	na	**120**	**75**	**6.2**	**47**	---	na	na	---	na	na	na	na	na	---	na
	09/19/96	**15,000**	na	na	***6,000***	**2,700**	**450**	**2,180**	---	na	na	---	na	na	na	na	na	---	na
	12/13/96	ND	na	na	**30**	10	2	7.4	---	na	na	---	na	na	na	na	na	---	na
Dup	12/13/96	ND	na	na	**21**	7	1	4.9	---	na	na	---	na	na	na	na	na	---	na
	10/07/97	ND	na	na	ND	ND	ND	ND	ND	na	na	---	na	na	na	na	na	---	na
Dup	10/07/97	ND	na	na	**21**	7	1	4.9	**5.7**	na	na	---	na	na	na	na	na	---	na
	08/03/99	**21,000**	na	na	***5,500***	**2,300**	**470**	**990**	---	na	na	---	na	na	na	na	na	---	na
	06/08/12	<50	56	<300	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	---	<0.5	<0.5	<0.5	<0.5	<2.0	---	310
	06/19/13	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<0.5	na
MW-4*	01/21/89	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	05/13/91	**13,000**	---	---	**160**	**690**	**250**	**1,100**	---	**490**	---	---	ND	---	---	---	---	---	---
	10/18/91	ND	---	---	**11**	11	ND	15	---	**450**	---	---	**3.9**	---	---	---	---	---	---
	10/27/91	180	---	---	**6.4**	2.8	1.2	6.2	---	**520**	---	---	ND	---	---	---	---	---	---
	07/13/93	320	---	---	**36**	4.4	1.8	5.3	---	**550**	---	---	ND	---	---	---	---	---	---
MW-5*	01/21/89	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	05/13/91	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10/18/91	**16,000**	---	---	***3,500***	**530**	**670**	**1,100**	---	**120**	---	---	**32**	---	---	---	---	---	---
	10/27/91	87	---	---	ND	ND	ND	ND	---	**410**	---	---	ND	---	---	---	---	---	---
	07/13/93	90	---	---	ND	ND	ND	ND	---	**530**	---	---	ND	---	---	---	---	---	---

Table 1
Summary of Groundwater Analytical Results
Volkswagen Automobile Dealership
2740 Broadway Avenue, Oakland, California

Well Number	Sample Date	TPHg µg/L	TPHd µg/L	TPHmo µg/L	Benzene µg/L	Toluene µg/L	Ethyl benzene µg/L	Total Xylenes µg/L	MTBE µg/L	TCE µg/L	cDCE µg/L	1,1-Dichlorothene µg/L	1,2-Dichloroethane µg/L	1,3,5-Trimethyl benzene µg/L	1,2,4-Trimethyl benzene µg/L	n-Butyl benzene µg/L	Naphthalene µg/L	trans-1,2-Dichloroethene µg/L	TDS µg/L
Tier I ESL µg/L		**100**	**100**	**100**	**1**	**40**	**30**	**20**	**5**	**5**	**6**	**5**	**0.5**	**na**	**na**	**na**	**17**	**na**	**na**
MW-6*	01/21/89	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	05/13/91	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10/18/91	**28,000**	---	---	***640***	**2,700**	**1,100**	**4,500**	---	**230**	---	---	**60**	---	---	---	---	---	---
	10/27/91	**1,300**	---	---	**48**	**130**	**55**	**230**	---	***2,000***	---	---	ND	---	---	---	---	---	---
	07/13/93	**1,100**	---	---	**5.1**	30	**30**	**230**	---	***2,100***	---	---	ND	---	---	---	---	---	---
MW-7	06/27/96	ND	na	na	ND	ND	ND	ND	ND	na	na	---	na	na	na	na	na	---	na
	09/19/96	67	na	na	ND	ND	ND	ND	ND	na	na	---	na	na	na	na	na	---	na
	12/13/96	ND	na	na	ND	ND	ND	ND	ND	na	na	---	na	na	na	na	na	---	na
	10/07/97	ND	na	na	ND	ND	ND	ND	ND	na	na	---	na	na	na	na	na	---	na
	06/08/12	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5	4.6	0.5	---	**1.2**	<0.5	<0.5	<0.5	<2.0	---	290
	06/19/13	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5	3.2	0.3 J	<0.5	**0.5**	<0.5	<0.5	<0.5	<2.0	<0.5	na
Dup	06/19/13	<50	<50	<300	**3.1**	<0.5	<0.5	<0.5	<0.5	<0.5	0.3 J	<0.5	**0.5**	<0.5	<0.5	<0.5	<2.0	<0.5	na
MW-8	06/19/13	**1,800 Y**	**650**	<300	***360***	2.3 J	16	2.2 J	1.3 J	<2.5	**19**	<2.5	**2.3 J**	<2.5	<2.5	<2.5	<10	<2.5	na
MW-9	06/19/13	**5,400**	**1,100**	<300	***1,500***	19	**110**	**37**	<8.3	**13**	**14**	<8.3	<8.3	<8.3	10	<8.3	**42**	<8.3	na
VW-1	06/08/12	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	---	<0.5	<0.5	<0.5	<0.5	<2.0	---	210
Dup	06/08/12	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	---	<0.5	<0.5	<0.5	<0.5	<2.0	---	210
	06/19/13	<50	70 Y	<300	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<0.5	na
VW-2	06/08/12	**36,000**	**3,400 Y**	<300	***1,800***	**3,000**	**1,200**	**4,900**	<25	<25	<25	---	<25	240	960	70	**480**	---	370
	06/19/13	**4,300**	**830**	<300	***270***	**58**	**280**	**430**	<1.7	<1.7	<1.7	<1.7	**1.7**	16	260	<1.7	**22 J**	<1.7	na
VW-3	06/08/12	**120,000 Y**	**9,300**	**2,000**	**54**	<20	**84**	**640**	<20	<20	<20	---	<20	650	2,000	83	**240**	---	370
	06/19/13	**13,000**	**6,200**	**650**	**72**	<7.1	16	**119.7**	<7.1	<7.1	<7.1	<7.1	<7.1	300	1,000	58	**70**	<7.1	na
MIP-1	04/05/13	**630 Y**	**590**	<300	**52**	1.0	0.5 J	0.7	1.6	**18**	**40**	0.3 J	**2.8**	<0.5	<0.5	<0.5	<2.0	0.3 J	---
MIP-2	04/05/13	**510 Y**	**450**	<300	**140**	1.1	<1.0	0.7 J	<1.0	**42**	4.4	<1.0	**1.5**	<1.0	<1.0	<1.0	<4.0	<1.0	---
MIP-3	04/05/13	**1,800**	**600**	<300	***270***	2.1	**120**	**135**	1.2 J	**270**	**17**	<1.7	**1.1 J**	<1.7	1.5 J	3.0	**17**	<1.7	---
MIP-4	04/05/13	**13,000**	**4,300**	**320**	**15**	5.7	**510**	**1,490**	<5.0	**960**	**11**	<5.0	<5.0	290	850	57	**150**	<5.0	---
Dup	04/05/13	**14,000**	**1,700**	<300	**29**	8.5	**670**	**1,970**	<6.3	**750**	**7.0**	<6.3	<6.3	340	1,000	73	**200**	<6.3	---
MIP-5	04/05/13	**4,200**	**1,000**	<300	**9.0**	18	**46**	**189**	<1.3	**170**	**10**	<1.3	**1.2 J**	58	170	19	**18**	<1.3	---

Notes:

Tier I ESL	Tier I Environmental Screening Levels (ESLs) for shallow soils of less than 3 meters below ground surface and groundwater that is a current or potential source of drinking water
TPHg	total petroleum hydrocarbons as gasoline
TPHd	total petroleum hydrocarbons as diesel
TPHmo	total petroleum hydrocarbons as motor oil
MTBE	methyl tertiary-butyl ether
cDCE	cis-1,2-dichloroethene
TCE	trichloroethene
TDS	total dissolved solids
µg/L	micrograms per liter
ND	not detected at or above detection limits (historical limits unknown)
---	not analyzed
na	historical data not available
Dup	duplicate sample
*	wells abandoned
<	Not detected at or above the laboratory detection limit noted
Y	Laboratory reports the sample exhibits chromatographic pattern which does not resemble standard
J	Laboratory reports estimated value
VI ESL	Groundwater Screening Levels for Evaluation of Potential Vapor Intrusion for Fine to Coarse Media for Commercial/Industrial Land Use
	Bolded values are above the Tier I ESL
	Italicized values are above the VI ESL

Table 2
Groundwater Elevation Data
Volkswagen Automobile Dealership
2740 Broadway Avenue, Oakland, California

Well	Well Casing Elevation [1][2]	Screen Interval feet below ground surface	Well Diameter (inches)	Total Well Depth (feet)	Depth to Product [3] 8-Jun-12	Depth to Water [3] 8-Jun-12	Groundwater Elevation [2] 8-Jun-12
MW-1	31.28	5 to 20	2	19.20	NM	6.03	25.25
MW-3	31.68	5 to 20	2	18.60	NM	8.90	22.78
MW-7	31.53	20 to 25	4	23.50	NM	9.10	22.43
MW-8	32.70	16 to 20	2	20.04	Not yet installed	Not yet installed	Not yet installed
MW-9	31.85	11 to 15	2	14.94	Not yet installed	Not yet installed	Not yet installed
VW-1	31.67	14.5 to 19.5	4	18.55	NM	9.01	22.66
VW-2	31.71	12 to 16.5	4	16.93	NM	8.82	22.89
VW-3	31.11	5 to 15.5	4	NM	7.70	7.72	23.41

Notes:

(1) Survey conducted by PLS Surveys Inc. on July 1, 2013.

(2) In reference to feet above mean sea level.

(3) In feet below top of casing (approximately at ground surface).

NM = not measured

Table 3
Summary of Soil Analytical Results
Volkswagen Automobile Dealership
2740 Broadway Avenue, Oakland, California

Well Number	Sample Date	Sample Depth ft bgs	TPHg mg/kg	TPHd mg/kg	TPHmo mg/kg	MTBE mg/kg	Benzene mg/kg	Toluene mg/kg	Ethylbenzene mg/kg	m,p-Xylenes mg/kg	o-Xylene mg/kg
Tier I ESL mg/kg			**83**	**83**	**250**	**230**	**0.044**	**2.9**	**3.3**	**2.3**	**2.3**
MW-8	06/13/13	5.0 - 5.5	<1.1	1.9 Y	9.1	<0.025	<0.0063	<0.0063	<0.0063	<0.0063	<0.0063
	06/13/13	10.0 - 10.5	<1.4	<1.3	<6.3	<0.026	<0.0064	<0.0064	<0.0064	<0.0064	<0.0064
	06/13/13	15.0 - 15.5	<1.3	<1.3	<6.4	<0.028	<0.0069	<0.0069	<0.0069	<0.0069	<0.0069
MW-9	06/13/13	5.0 - 5.5	<1.2	6.7 Y	49	<0.022	<0.0055	<0.0055	<0.0055	<0.0055	<0.0055
	06/13/13	10.0 - 10.5	2.2	<1.3	<6.3	<0.023	<0.0061	<0.0057	0.016	0.035	<0.0057
	06/13/13	15.0 - 15.5	<1.3	<1.2	<6.1	<0.027	<0.0067	<0.0067	<0.0067	<0.0067	<0.0067

Notes:

Tier I ESL	Tier I Environmental Screening Levels (ESLs) for shallow soils of less than 3 meters below ground surface and commercial land use
ft bgs	feet below ground surface
mg/kg	milligrams per kilogram
TPHg	total petroleum hydrocarbons as gasoline
TPHd	total petroleum hydrocarbons as diesel
TPHmo	total petroleum hydrocarbons as motor oil
MTBE	methyl tertiary-butyl ether
<	Not detected at or above the laboratory detection limit noted
Y	Laboratory reports the sample exhibits chromatographic pattern which does not resemble standard

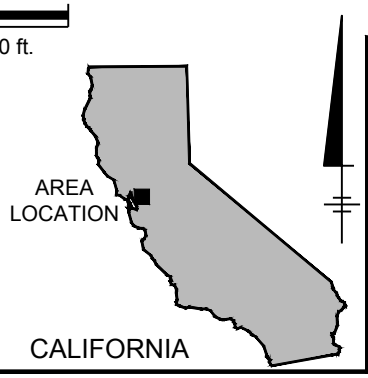
ARCADIS

Figures

SOURCE: GOOGLE EARTH PRO

0 250' 500'

Approximate Scale: 1 in. = 250 ft.



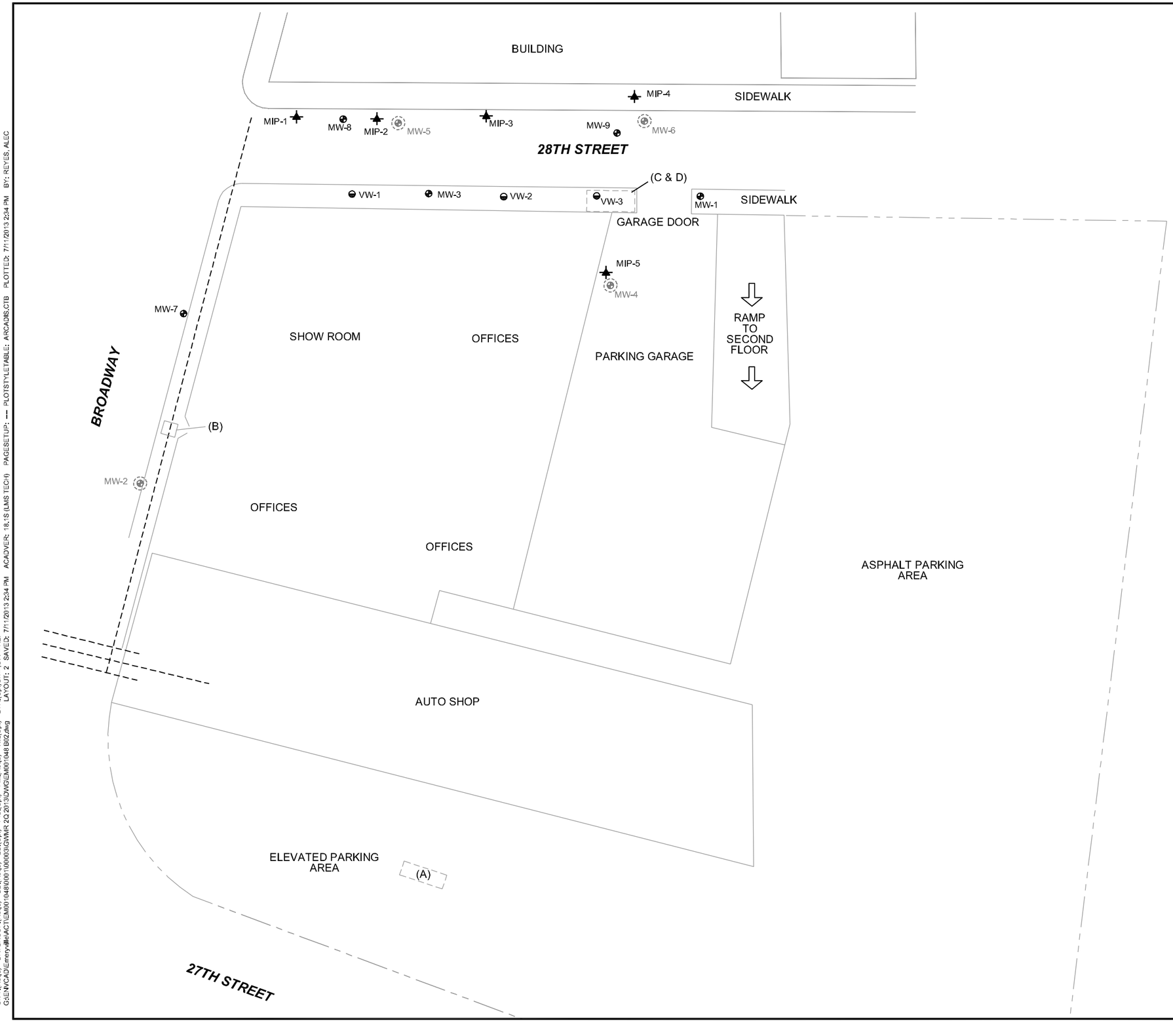
VW OAKLAND
2740 BROADWAY
OAKLAND, CALIFORNIA

SITE LOCATION MAP

ARCADIS

FIGURE
1

CITY:(Reqd) DIV/GROUP:(Reqd) DB:(Reqd) LD:(Opt) PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF*
G:\ENVCAD\Emeryville\ACT\EM001048\0001\0003\GWMR 1Q 2013\DWG\EM001048 N01.dwg LAYOUT: 1 SAVED: 4/15/2013 2:00 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 7/16/2013 1:17 PM BY: REYES, ALEC
XREFS: IMAGES: PROJECTNAME: ---
EM001048 0001 Aerial.jpg



LEGEND

- PROPERTY LINE
- FENCE LINE
- UTILITY LINE
- MW-3 — MONITORING WELL LOCATION
- MW-5 — ABANDONED MONITORING WELL
- VW-1 — VAPOR EXTRACTION WELL
- FORMER UNDERGROUND STORAGE TANK LOCATION
  - (A) WASTE OIL (1,000 GAL); TANK REMOVED, SITE CLEAN
  - (B) WASTE OIL (550 GAL); TANK REMOVED
  - (C&D) WASTE OIL (550 GAL) AND UNLEADED GASOLINE (3,000 GAL); TANKS REMOVED
- MIP-1 — SOIL BORING LOCATIONS WITH EC/MIP CAPABILITIES
- EC/MIP — ELECTRICAL CONDUCTIVITY / MEMBRANE INTERFACE PROBE

0 30 Feet

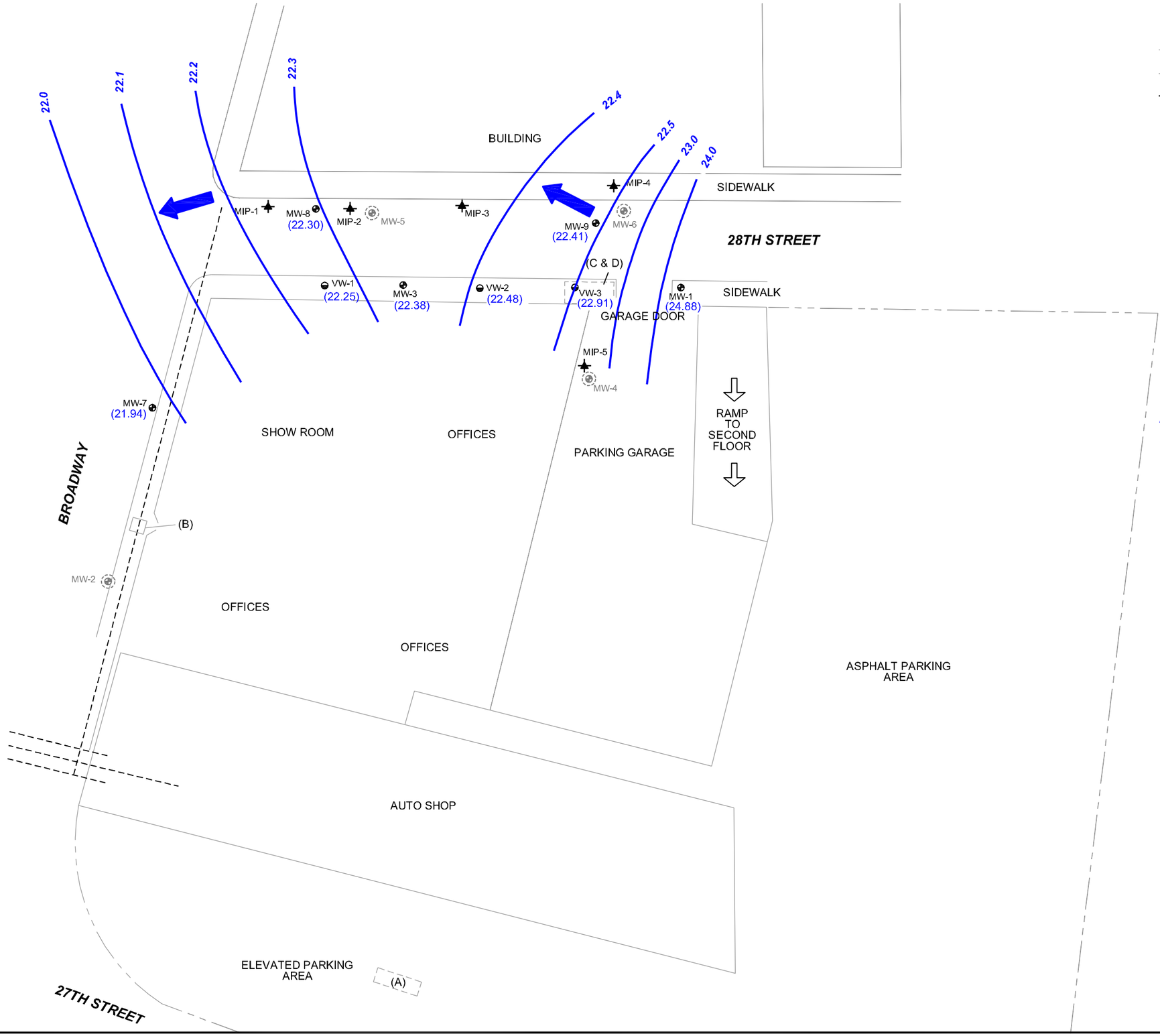
REFERENCES:
MAP DIGITIZED FROM A SITE PLAN BY ENVIRONMENTAL SCIENCE & ENGINEERING (6/91) AND A SITE PLAN BY QST ENVIRONMENTAL (12/02/96 - REVISED 12/28/98)

VW OAKLAND
2740 BROADWAY
OAKLAND, CALIFORNIA

SITE PLAN

ARCADIS

FIGURE
2



LEGEND

- PROPERTY LINE
- FENCE LINE
- UTILITY LINE
- MW-3 — MONITORING WELL LOCATION
- MW-5 — ABANDONED MONITORING WELL
- VW-1 — VAPOR EXTRACTION WELL
- FORMER UNDERGROUND STORAGE TANK LOCATION
  - (A) WASTE OIL (1,000 GAL); TANK REMOVED, SITE CLEAN
  - (B) WASTE OIL (550 GAL); TANK REMOVED
  - (C&D) WASTE OIL (550 GAL) AND UNLEADED GASOLINE (3,000 GAL); TANKS REMOVED
- MIP-1 — SOIL BORING LOCATIONS WITH EC/MIP CAPABILITIES
- EC/MIP — ELECTRICAL CONDUCTIVITY / MEMBRANE INTERFACE PROBE
- (24,88) — GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL
- 25.0 — CONTOUR OF CONSTANT GROUNDWATER ELEVATION
- INFERRED GROUNDWATER FLOW DIRECTION

0 30 Feet

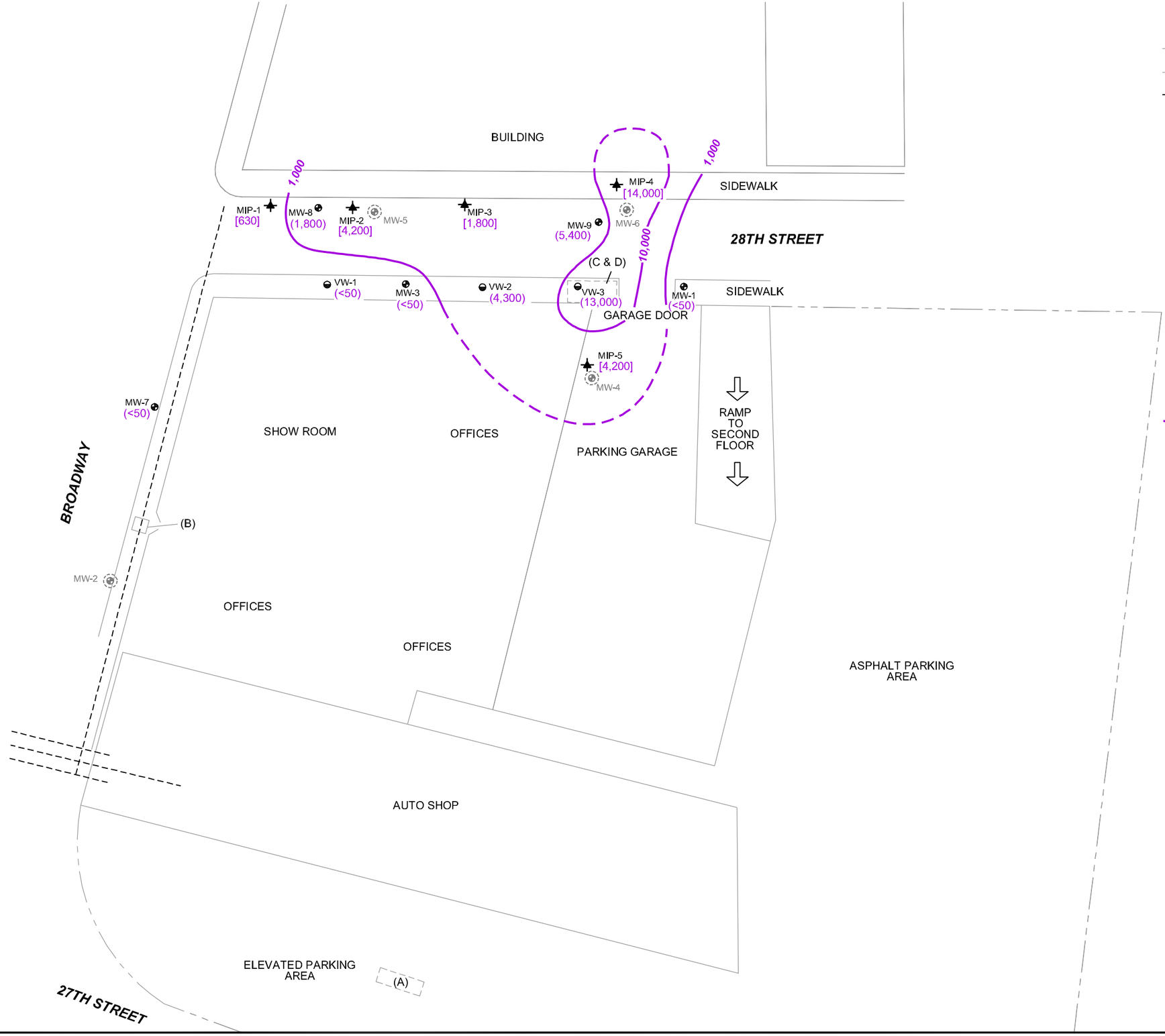
REFERENCES:
MAP DIGITIZED FROM A SITE PLAN BY ENVIRONMENTAL SCIENCE & ENGINEERING (6/91) AND A SITE PLAN BY QST ENVIRONMENTAL (12/02/96 - REVISED 12/28/98)

VW OAKLAND
2740 BROADWAY
OAKLAND, CALIFORNIA

GROUNDWATER CONTOUR MAP

ARCADIS

FIGURE 3



LEGEND

- PROPERTY LINE
- FENCE LINE
- UTILITY LINE
- MW-3 — MONITORING WELL LOCATION
- MW-5 — ABANDONED MONITORING WELL
- VW-1 — VAPOR EXTRACTION WELL
- FORMER UNDERGROUND STORAGE TANK LOCATION
  - (A) WASTE OIL (1,000 GAL); TANK REMOVED, SITE CLEAN
  - (B) WASTE OIL (550 GAL); TANK REMOVED
  - (C&D) WASTE OIL (550 GAL) AND UNLEADED GASOLINE (3,000 GAL); TANKS REMOVED
- MIP-1 — SOIL BORING LOCATIONS WITH EC/MIP CAPABILITIES
- EC/MIP — ELECTRICAL CONDUCTIVITY / MEMBRANE INTERFACE PROBE
- (6,500) — TPHg CONCENTRATION IN MICROGRAMS PER LITER (µg/L) (JUNE 2013)
- 10,000 — APPROXIMATE EXTENTS OF CONCENTRATION CONTOUR (DASHED WHERE INFERRED)
- [4,200] — TPHg CONCENTRATION IN GRAB GROUNDWATER SAMPLES IN µg/L (APRIL 2013)
- TPHg — GASOLINE-RANGE TOTAL PETROLEUM HYDROCARBONS

0 30 Feet

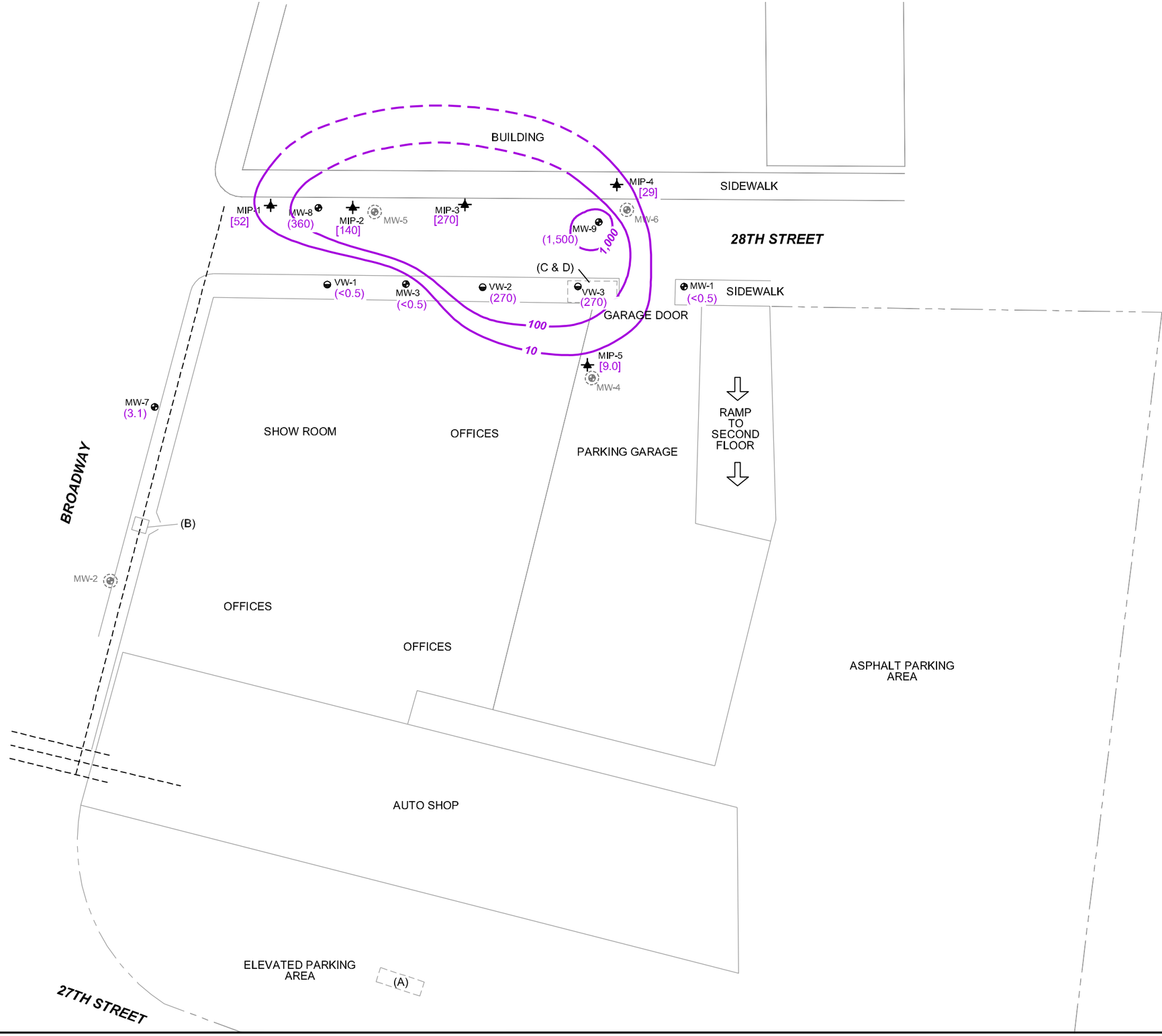
REFERENCES:
MAP DIGITIZED FROM A SITE PLAN BY ENVIRONMENTAL SCIENCE & ENGINEERING (6/91) AND A SITE PLAN BY QST ENVIRONMENTAL (12/02/96 - REVISED 12/28/98)

VW OAKLAND
2740 BROADWAY
OAKLAND, CALIFORNIA

TPHg GROUNDWATER CONCENTRATION CONTOUR MAP

ARCADIS

FIGURE 4



LEGEND

- PROPERTY LINE
- FENCE LINE
- UTILITY LINE
- MW-3 — MONITORING WELL LOCATION
- MW-5 — ABANDONED MONITORING WELL
- VW-1 — VAPOR EXTRACTION WELL
- FORMER UNDERGROUND STORAGE TANK LOCATION
  - (A) WASTE OIL (1,000 GAL); TANK REMOVED, SITE CLEAN
  - (B) WASTE OIL (550 GAL); TANK REMOVED
  - (C&D) WASTE OIL (550 GAL) AND UNLEADED GASOLINE (3,000 GAL); TANKS REMOVED
- MIP-1 — SOIL BORING LOCATIONS WITH EC/MIP CAPABILITIES
- EC/MIP — ELECTRICAL CONDUCTIVITY / MEMBRANE INTERFACE PROBE
- (1,038) — GROUNDWATER CONCENTRATION OF BENZENE IN MICROGRAMS PER LITER (µg/L) (JUNE 2013)
- 100 — APPROXIMATE EXTENTS OF CONCENTRATION CONTOUR (DASHED WHERE INFERRED)
- [50] — CONCENTRATION OF BENZENE FROM GRAB GROUNDWATER SAMPLES IN µg/L (APRIL 2013)

0 30 Feet

REFERENCES:
MAP DIGITIZED FROM A SITE PLAN BY ENVIRONMENTAL SCIENCE & ENGINEERING (6/91) AND A SITE PLAN BY QST ENVIRONMENTAL (12/02/96 - REVISED 12/28/98)

VW OAKLAND
2740 BROADWAY
OAKLAND, CALIFORNIA

BENZENE GROUNDWATER CONCENTRATION CONTOUR MAP

ARCADIS

FIGURE 5

ARCADIS

Appendix A

Vironex EC/MIP Report

Membrane Interface Probe Investigation Report

VW Oakland
2740 Broadway
Oakland, California

Prepared for:

ARCADIS
2000 Powell Street
Emeryville, California 94608

Prepared by:

Vironex, Inc.
1641 Challenge Drive
Oakland, California 94520

April 12, 2013

Project Summary

Project Name: VW Oakland

Project Dates: April 4th and 5th, 2013.

Equipment/Manpower: Vironex mobilized one custom Membrane Interface Probe (MIP) System, one direct push technology unit, and two team members to the project site.

Contaminant(s) of Concern: Petroleum hydrocarbons and BTEX.

Project Summary: Vironex advanced 5 direct push MIP borings from the ground surface to between approximately 30 to 37 feet below ground surface (bgs). For the purposes of this project, the MIP system was equipped with an electron capture detector (ECD), halogen-specific detector (XSD), photo-ionization detector (PID), and flame-ionization detector (FID). During the advancement of each boring, the response of each detector, relative to depth, was recorded in accordance with the standard operating procedures for the MIP system. Additionally, the electrical conductivity of soil, relative to depth, was collected during each MIP boring to provide a relative indication of soil types across the boring interval. The details associated with each boring are presented below.

MIP Boring	Date	Time	Total Depth	Notes
MIP-1	04.05.13	09:59	31.15	Hand auger to 5 feet bgs.
MIP-2	04.04.13	10:00	30.25	Hand auger to 5 feet bgs. No backfill.
MIP-3	04.04.13	11:54	36.85	Hand auger to 5 feet bgs.
MIP-4	04.04.13	14:44	36.45	Hand auger to 5 feet bgs.
MIP-5	04.05.13	14:11	36.75	Hand auger to 5 feet bgs.

The MIP boring logs are presented in Appendix A and B. The detector response scales for boring logs in Appendix A are automatically chosen based on the highest response during each boring. The detector response scales for boring logs in Appendix B are set to a common scaled based on the highest detector response observed across all borings at the site. Additional information regarding the principals and procedures associated with the MIP system is presented in Appendix C.

Quality Assurance/Quality Control: In order to maintain quality assurance and quality control standards during the course of the project, a response test was completed before and after each MIP boring (additional details regarding response testing are provided in Appendix C). The response test indicates that the MIP system is operating properly, and therefore, may be advanced into the subsurface. All response testing conducted during the project were within the applicable Geoprobe guidelines. Additionally, the internal carrier gas pressure of the system and MIP temperature were monitored during the advancement of each MIP boring to ensure the system was functioning properly.

Appendix A – MIP Boring Logs (Auto-Scale)

VIRONEX
1641 Challenge Drive
Concord, CA 94520
P: 925-849-6970
F: 925-849-6973
www.vironex.com

Boring Name : MIP-1

Total Depth : 31.15
GW Depth (ft) : Not Provided
Depth of GW Provided by Client.
Blue line on each graph denotes depth of GW.

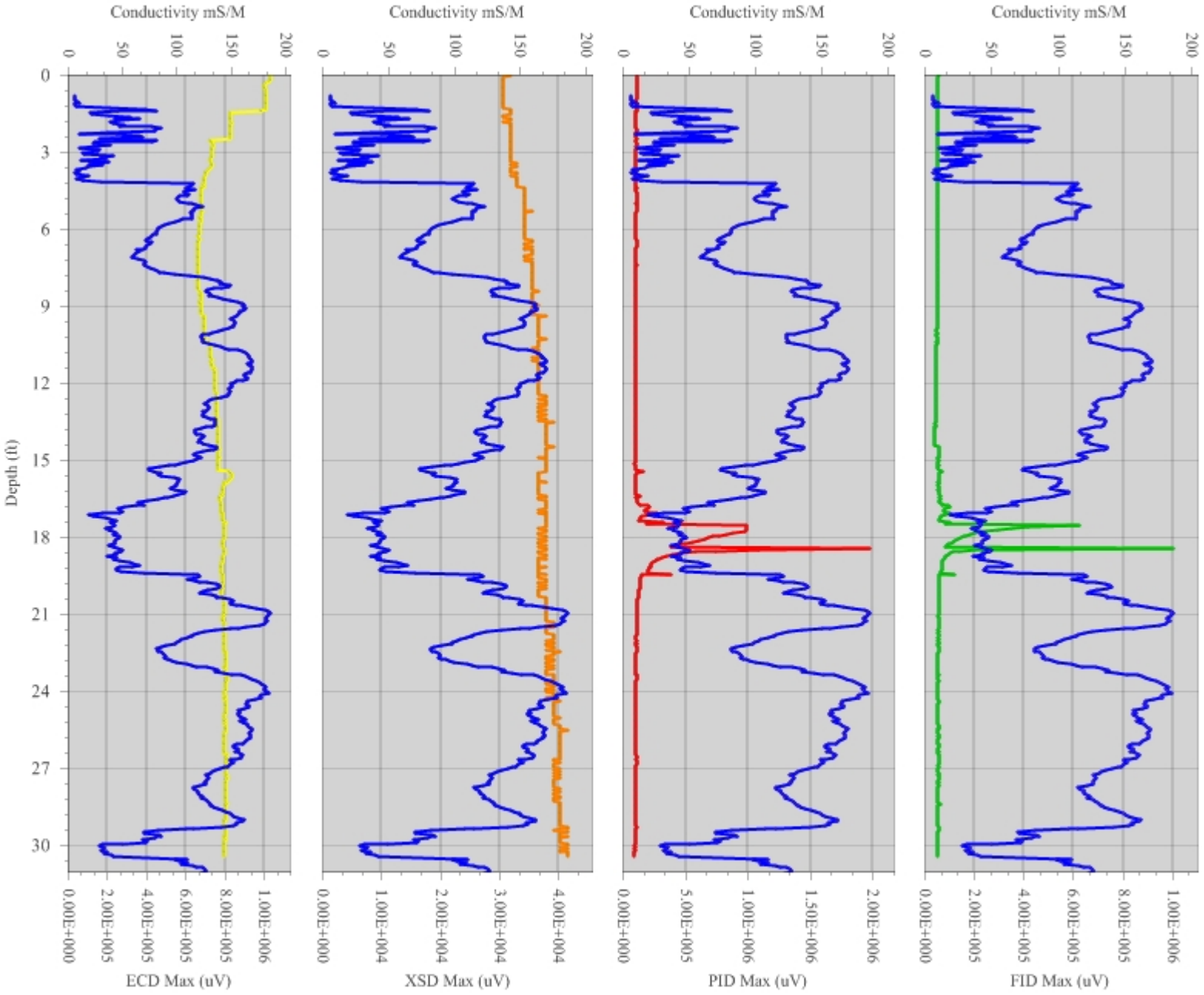
Hand auger to 5 feet bgs.

Project Information

Client Company :	ARCADIS U.S., Inc.	Trunkline Length :	150
Project Name :	VW Oakland	Probe Type :	6520
Site Address :	2740 Broadway, Oakland, CA	Rig Type :	Geoprobe 6600

Boring Information

Start Boring Time:	Apr 05 2013 09:59:16
End Boring Time :	Apr 05 2013 10:37:47
MIP Specialist :	Jeff Paul



VIRONEX
1641 Challenge Drive
Concord, CA 94520
P: 925-849-6970
F: 925-849-6973
www.vironex.com

Boring Name : MIP-2

Total Depth : 30.25
GW Depth (ft) : Not Provided
Depth of GW Provided by Client.
Blue line on each graph denotes depth of GW.

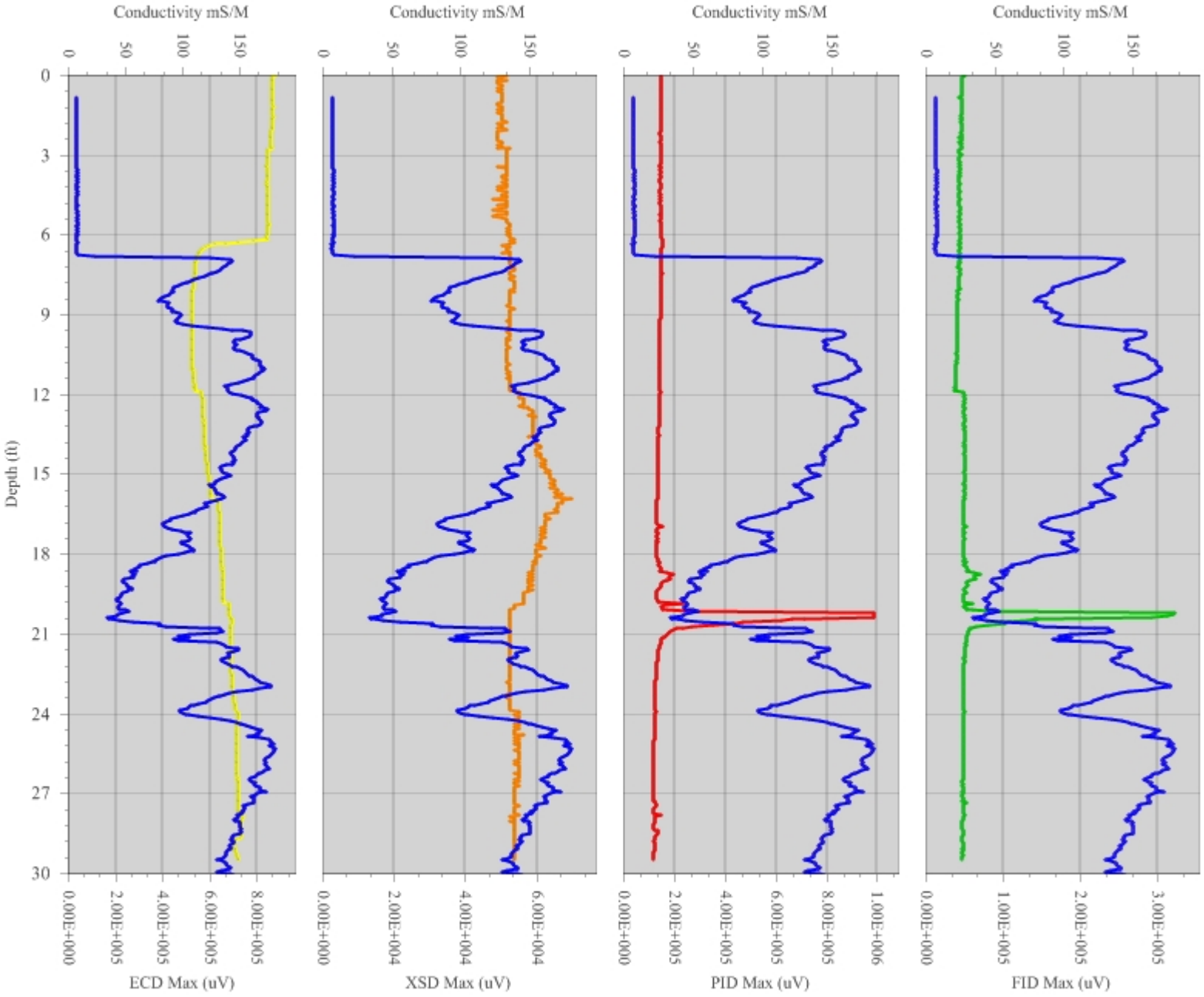
Hand auger to 5 feet bgs. No backfill.

Project Information

Client Company :	ARCADIS U.S., Inc.	Trunkline Length :	150
Project Name :	VW Oakland	Probe Type :	6520
Site Address :	2740 Broadway, Oakland, CA	Rig Type :	Geoprobe 6600

Boring Information

Start Boring Time:	Apr 04 2013 10:00:04
End Boring Time :	Apr 04 2013 10:35:30
MIP Specialist :	Jeff Paul



VIRONEX
1641 Challenge Drive
Concord, CA 94520
P: 925-849-6970
F: 925-849-6973
www.vironex.com

Boring Name : MIP-3

Total Depth : 36.85
GW Depth (ft) : Not Provided
Depth of GW Provided by Client.
Blue line on each graph denotes depth of GW.

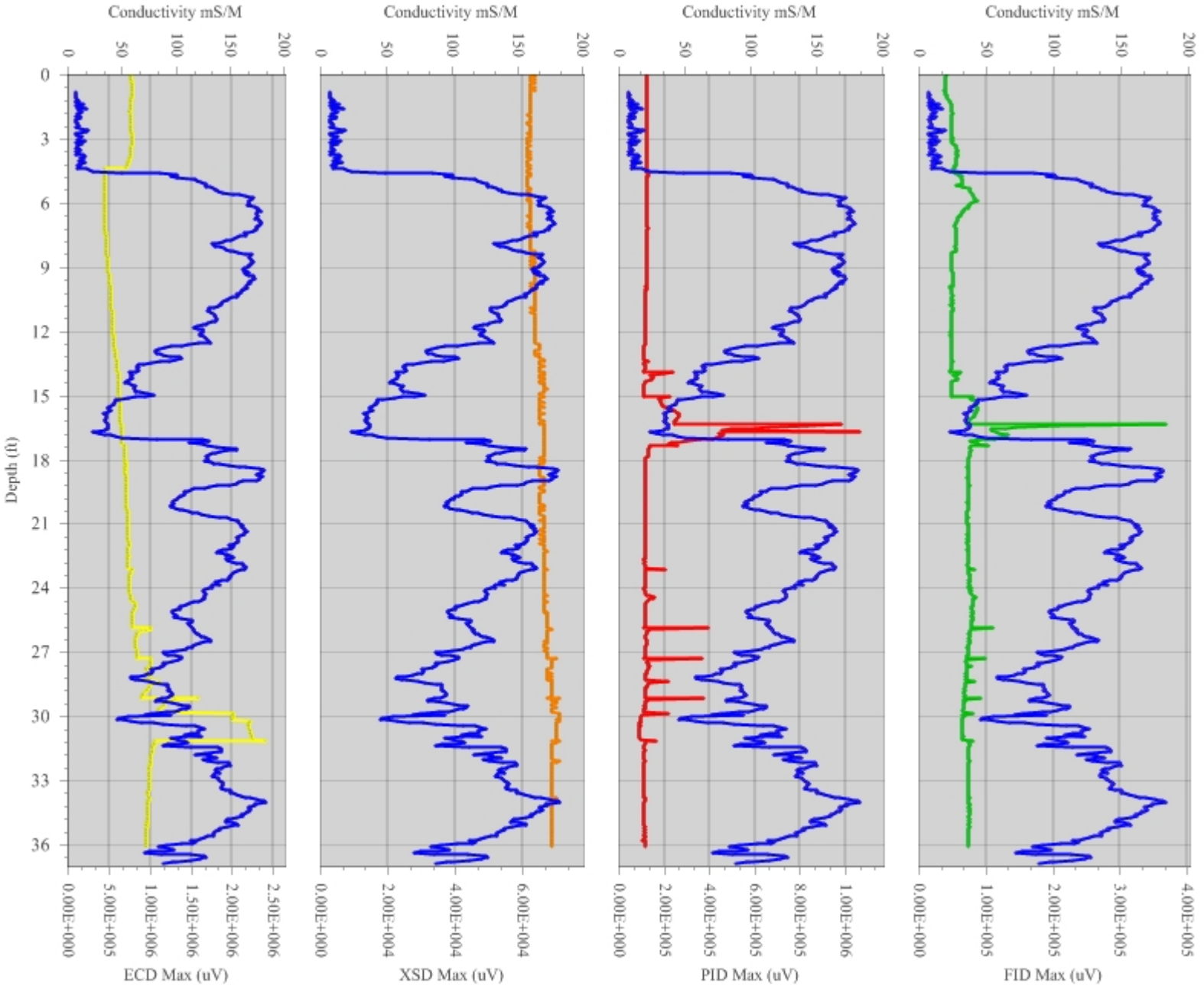
Hand auger to 5 feet bgs.

Project Information

Client Company :	ARCADIS U.S., Inc.	Trunkline Length :	150
Project Name :	VW Oakland	Probe Type :	6520
Site Address :	2740 Broadway, Oakland, CA	Rig Type :	Geoprobe 6600

Boring Information

Start Boring Time:	Apr 04 2013 11:54:34
End Boring Time :	Apr 04 2013 12:40:59
MIP Specialist :	Jeff Paul



1641 Challenge Drive
Concord, CA 94520
P: 925-849-6970
F: 925-849-6973
www.vironex.com

Boring Name : MIP-4

Total Depth : 36.45
GW Depth (ft) : Not Provided
Depth of GW Provided by Client.
Blue line on each graph denotes depth of GW.

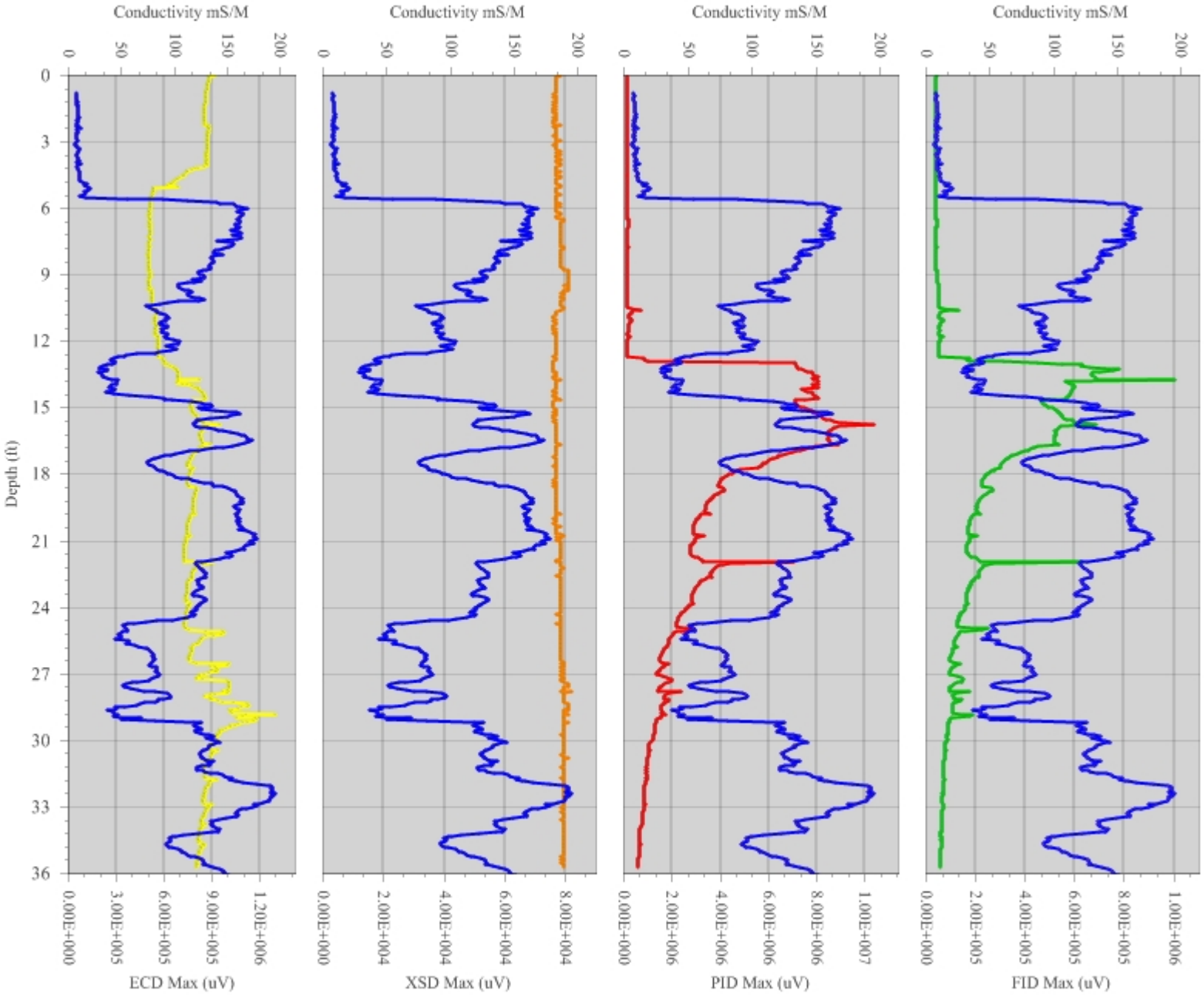
Hand auger to 5 feet bgs.

Project Information

Client Company :	ARCADIS U.S., Inc.	Trunkline Length :	150
Project Name :	VW Oakland	Probe Type :	6520
Site Address :	2740 Broadway, Oakland, CA	Rig Type :	Geoprobe 6600

Boring Information

Start Boring Time:	Apr 04 2013 14:44:13
End Boring Time :	Apr 04 2013 15:19:55
MIP Specialist :	Jeff Paul



1641 Challenge Drive
Concord, CA 94520
P: 925-849-6970
F: 925-849-6973
www.vironex.com

Boring Name : MIP-5

Total Depth : 36.75
GW Depth (ft) : Not Provided
Depth of GW Provided by Client.
Blue line on each graph denotes depth of GW.

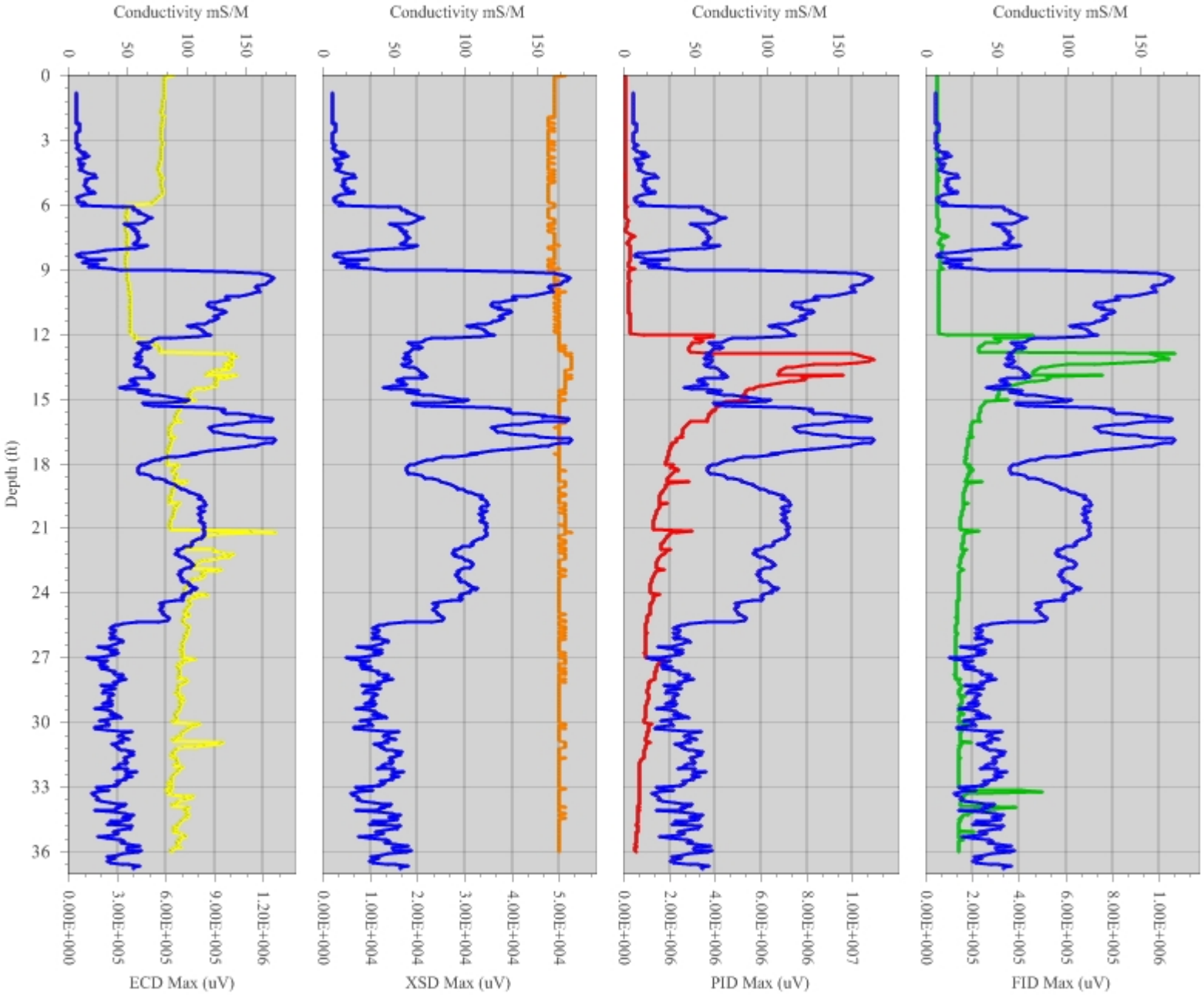
Hand auger to 5 feet bgs.

Project Information

Client Company :	ARCADIS U.S., Inc.	Trunkline Length :	150
Project Name :	VW Oakland	Probe Type :	6520
Site Address :	2740 Broadway, Oakland, CA	Rig Type :	Geoprobe 6600

Boring Information

Start Boring Time:	Apr 05 2013 14:11:15
End Boring Time :	Apr 05 2013 15:07:01
MIP Specialist :	Jeff Paul



Appendix B – MIP Boring Logs (Common-Scale)

VIRONEX
1641 Challenge Drive
Concord, CA 94520
P: 925-849-6970
F: 925-849-6973
www.vironex.com

Boring Name : MIP-1

Total Depth : 31.15
GW Depth (ft) : Not Provided
Depth of GW Provided by Client.
Blue line on each graph denotes depth of GW.

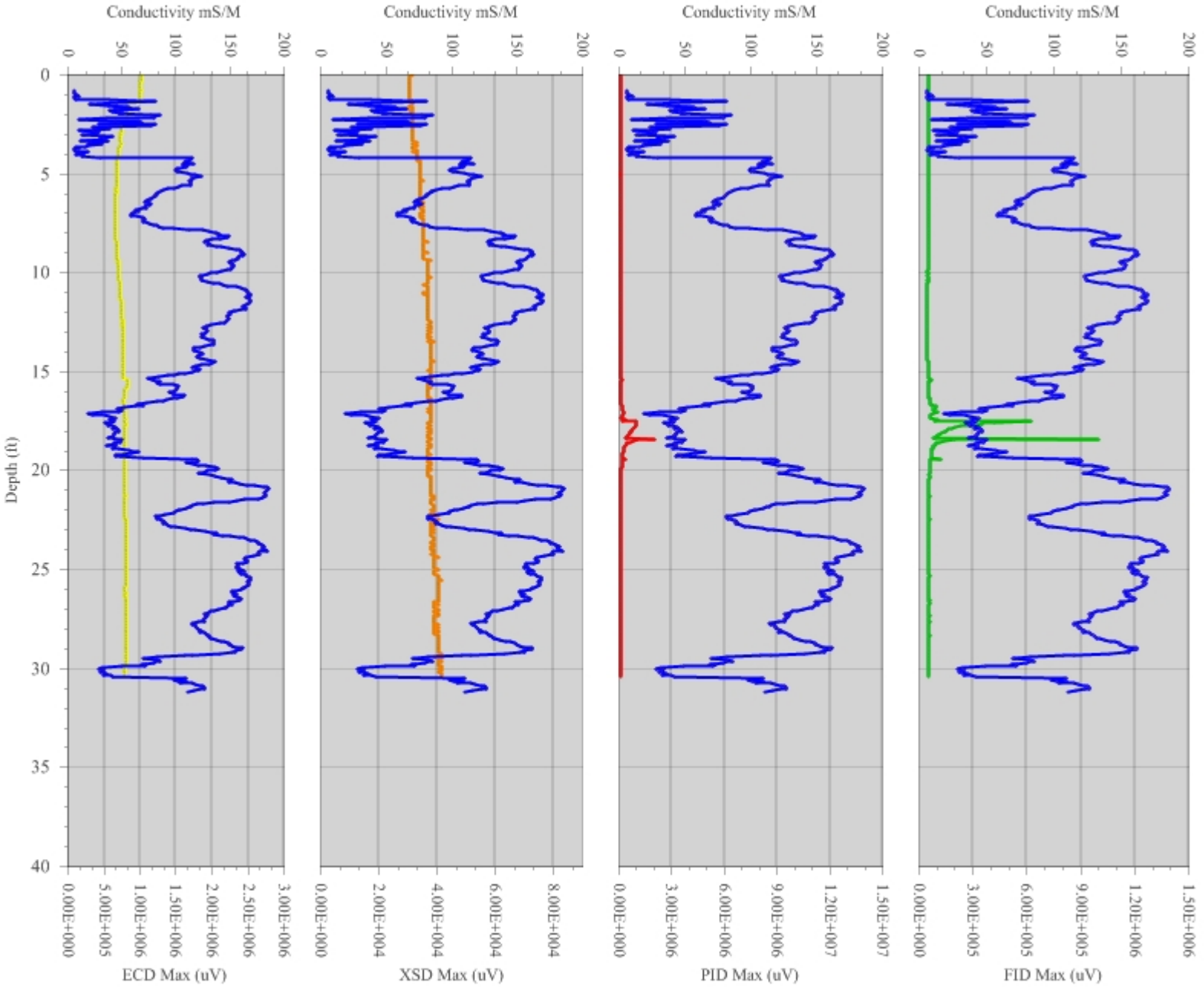
Hand auger to 5 feet bgs.

Project Information

Client Company :	ARCADIS U.S., Inc.	Trunkline Length :	150
Project Name :	VW Oakland	Probe Type :	6520
Site Address :	2740 Broadway, Oakland, CA	Rig Type :	Geoprobe 6600

Boring Information

Start Boring Time:	Apr 05 2013 09:59:16
End Boring Time :	Apr 05 2013 10:37:47
MIP Specialist :	Jeff Paul



VIRONEX
1641 Challenge Drive
Concord, CA 94520
P: 925-849-6970
F: 925-849-6973
www.vironex.com

Boring Name : MIP-2

Total Depth : 30.25
GW Depth (ft) : Not Provided
Depth of GW Provided by Client.
Blue line on each graph denotes depth of GW.

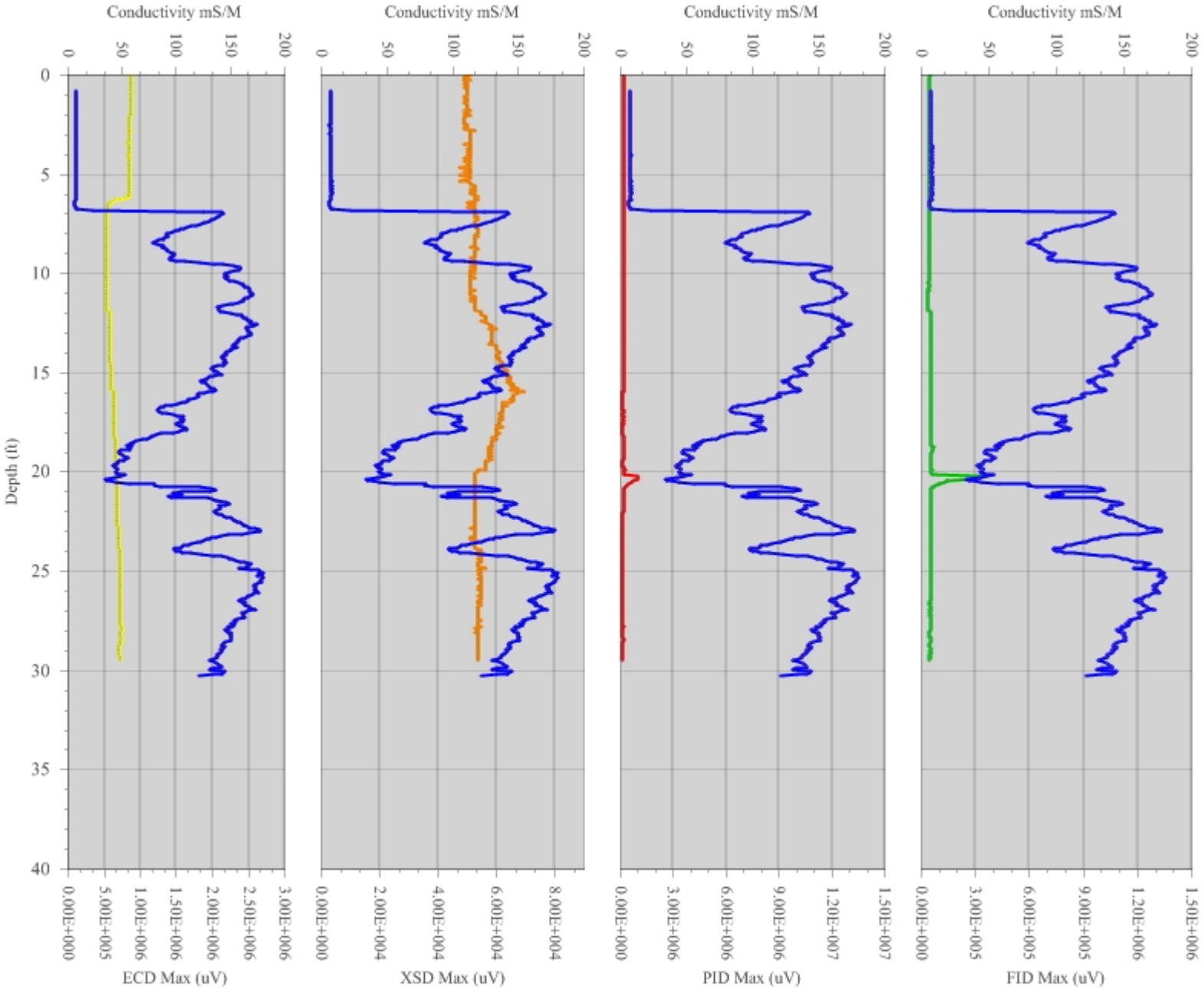
Hand auger to 5 feet bgs. No backfill.

Project Information

Client Company :	ARCADIS U.S., Inc.	Trunkline Length :	150
Project Name :	VW Oakland	Probe Type :	6520
Site Address :	2740 Broadway, Oakland, CA	Rig Type :	Geoprobe 6600

Boring Information

Start Boring Time:	Apr 04 2013 10:00:04
End Boring Time :	Apr 04 2013 10:35:30
MIP Specialist :	Jeff Paul



VIRONEX
1641 Challenge Drive
Concord, CA 94520
P: 925-849-6970
F: 925-849-6973
www.vironex.com

Boring Name : MIP-3

Total Depth : 36.85
GW Depth (ft) : Not Provided
Depth of GW Provided by Client.
Blue line on each graph denotes depth of GW.

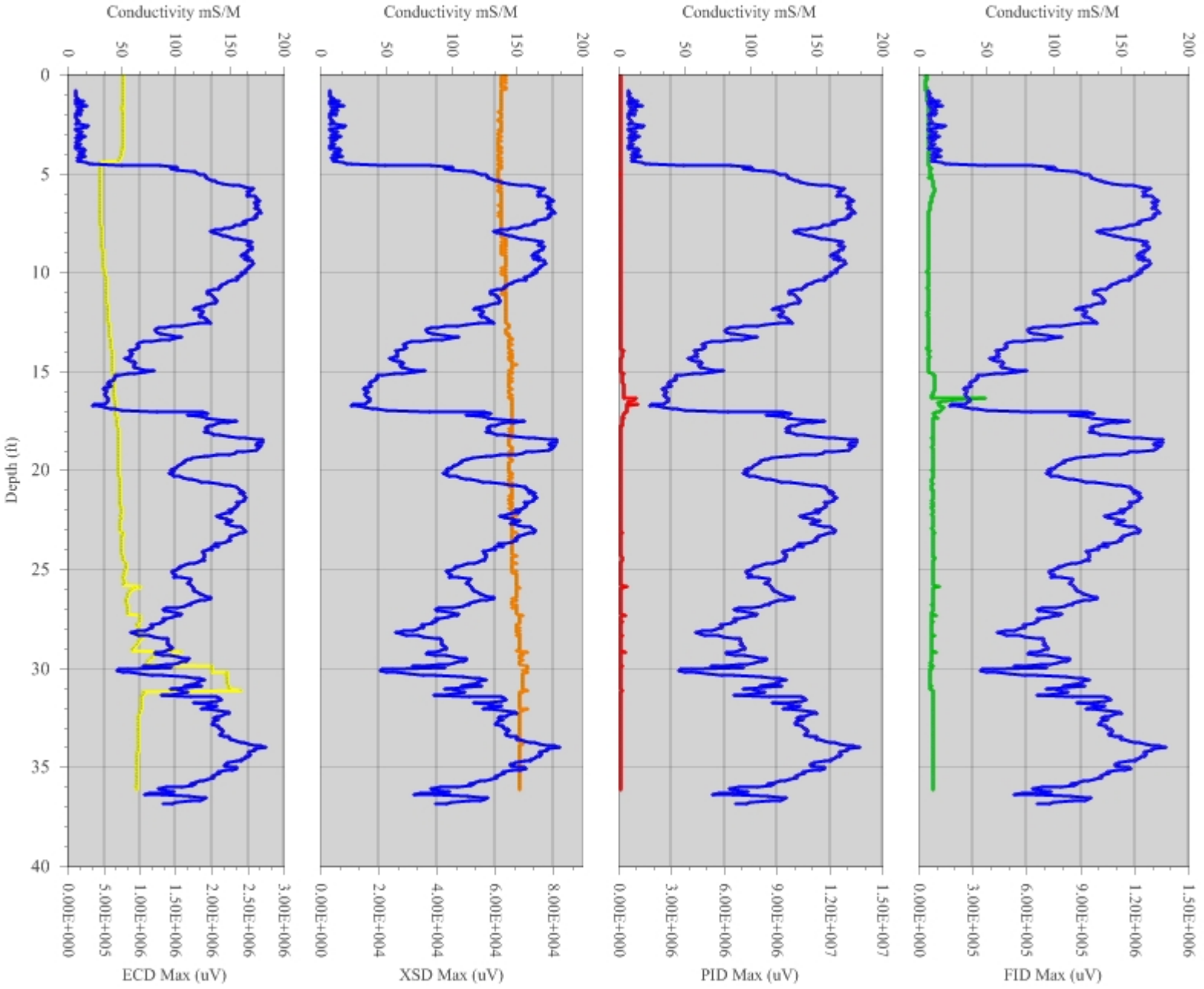
Hand auger to 5 feet bgs.

Project Information

Client Company :	ARCADIS U.S., Inc.	Trunkline Length :	150
Project Name :	VW Oakland	Probe Type :	6520
Site Address :	2740 Broadway, Oakland, CA	Rig Type :	Geoprobe 6600

Boring Information

Start Boring Time:	Apr 04 2013 11:54:34
End Boring Time :	Apr 04 2013 12:40:59
MIP Specialist :	Jeff Paul



VIRONEX
1641 Challenge Drive
Concord, CA 94520
P: 925-849-6970
F: 925-849-6973
www.vironex.com

Boring Name : MIP-4

Total Depth : 36.45
GW Depth (ft) : Not Provided
Depth of GW Provided by Client.
Blue line on each graph denotes depth of GW.

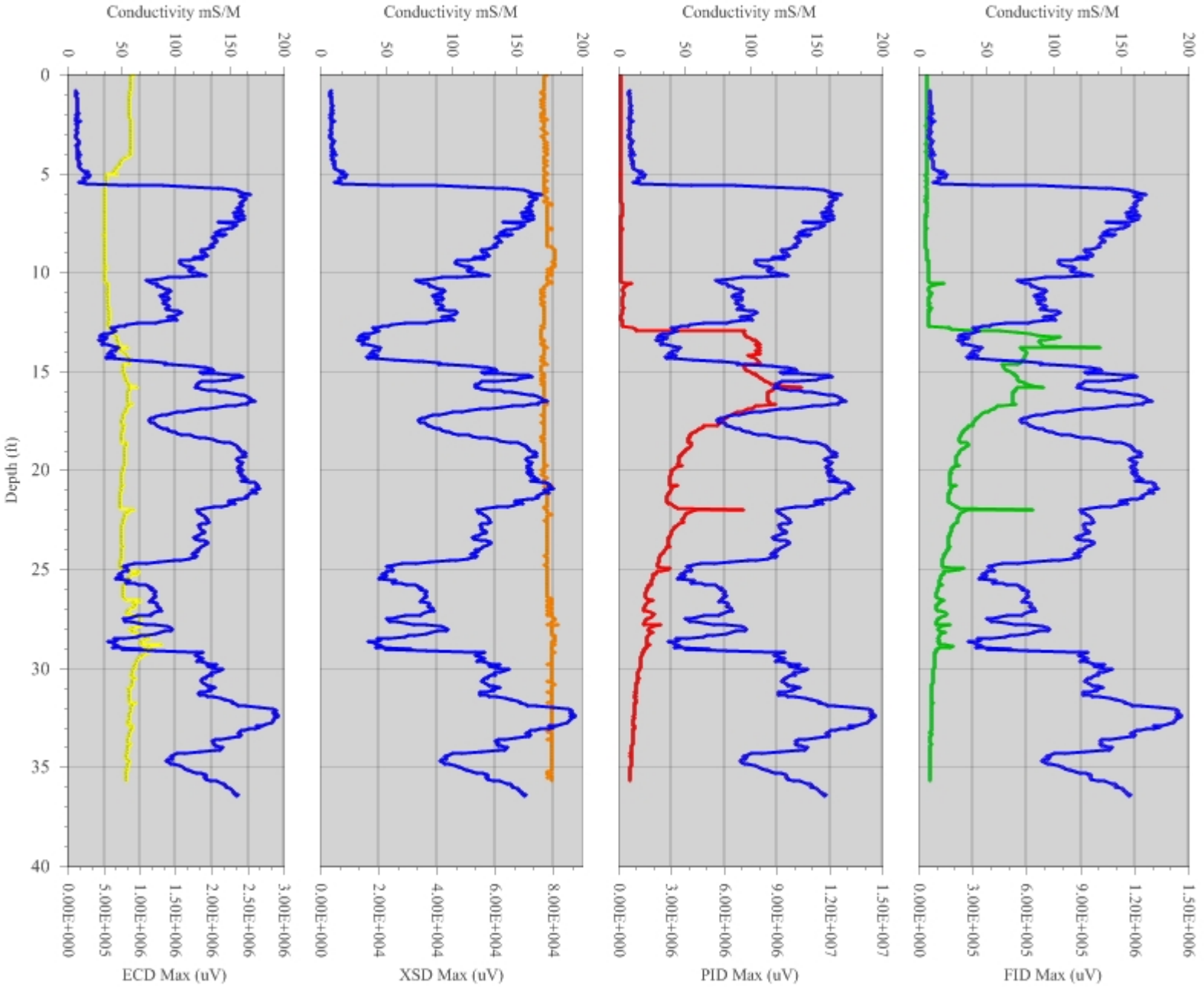
Hand auger to 5 feet bgs.

Project Information

Client Company :	ARCADIS U.S., Inc.	Trunkline Length :	150
Project Name :	VW Oakland	Probe Type :	6520
Site Address :	2740 Broadway, Oakland, CA	Rig Type :	Geoprobe 6600

Boring Information

Start Boring Time:	Apr 04 2013 14:44:13
End Boring Time :	Apr 04 2013 15:19:55
MIP Specialist :	Jeff Paul



VIRONEX
1641 Challenge Drive
Concord, CA 94520
P: 925-849-6970
F: 925-849-6973
www.vironex.com

Boring Name : MIP-5

Total Depth : 36.75
GW Depth (ft) : Not Provided
Depth of GW Provided by Client.
Blue line on each graph denotes depth of GW.

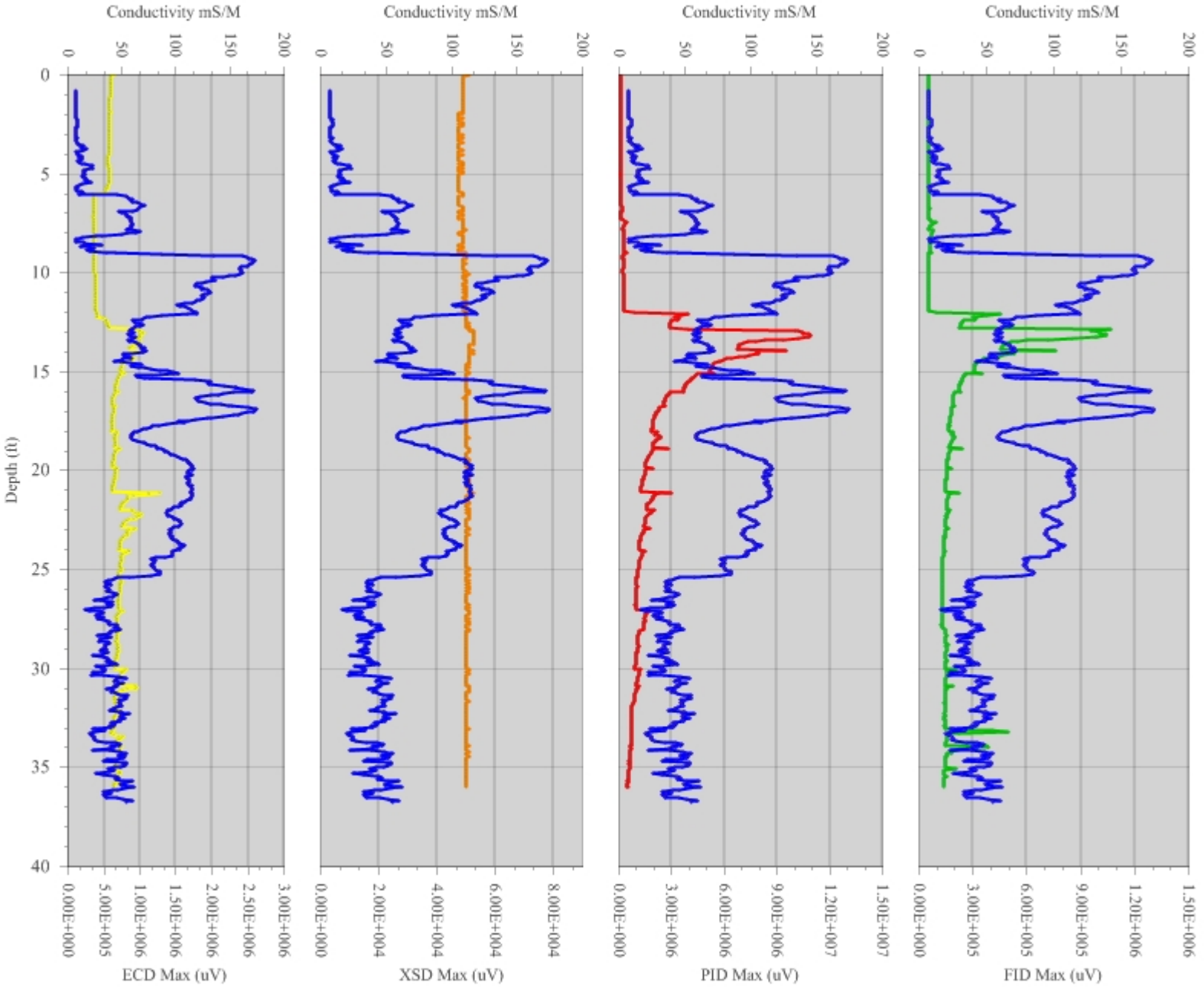
Hand auger to 5 feet bgs.

Project Information

Client Company :	ARCADIS U.S., Inc.	Trunkline Length :	150
Project Name :	VW Oakland	Probe Type :	6520
Site Address :	2740 Broadway, Oakland, CA	Rig Type :	Geoprobe 6600

Boring Information

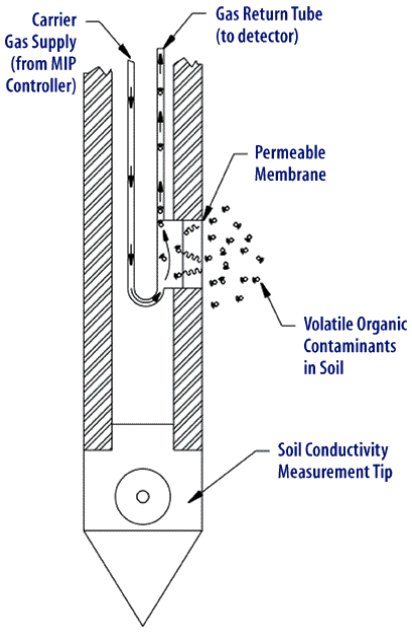
Start Boring Time:	Apr 05 2013 14:11:15
End Boring Time :	Apr 05 2013 15:07:01
MIP Specialist :	Jeff Paul



Appendix C – MIP System Overview

The MIP is a direct push system that produces quantitative vertical profiles of volatile organic compound (VOC) concentrations, in relation to lithology, in the subsurface. Multiple vertical profiles, or borings, may be advanced to develop more complex visual representations of site contamination, such as transects, three dimensional models, and interactive maps. This system provides real-time information which allows users to make timely decisions during the mobilization of equipment.

The MIP system operates by heating the soil and groundwater adjacent to the probe to 120 degrees Celsius to volatize VOCs in the immediate vicinity of the MIP membrane. This allows for the volatized VOCs to diffuse across the membrane into a closed, inert gas loop that carries these vapors to a series of detectors housed at the surface. Each detector produces a continuous profile, which is plotted with respect to depth, which indicates the presence of specific compounds. Each detector operates differently and therefore can detect different compounds. Vironex operates the MIP system with an electron capture detector (ECD), halogen specific detector (XSD), photo-ionization detector (PID), and flame-ionization detector (FID). Soil conductivity is also measured during each boring and can be compared to the chemical logs to better understand where the VOCs are present. More information regarding the equipment used, the operation of each detector, and collected MIP data is provided below.



Equipment:

- Geoprobe Direct Push Drill Rig
- MIP Controller (Nitrogen Flow and Heater)
- Geoprobe FC 5000 Computer
- HP 5890 Gas Chromatograph
- ECD (Electron Capture Detector)
- XSD (Halogen Specific Detector)
- PID (Photo Ionization Detector) 10.2 eV Lamp
- FID (Flame Ionization Detector)
- 150' Heated Trunkline
- 1.75" O.D. 6520 MIP Probe
- 1.5" O.D. Drive Rods

Detector Overview

- ECD – Electron Capture Detector uses a radioactive Beta emitter (electrons) to ionize some of the carrier gas and produce a current between a biased pair of electrodes. When organic molecules contain electronegative functional groups, such as halogens, phosphorous, and nitro groups pass by the detector, they capture some of the electrons and reduce the current measured between the electrodes.
- XSD – The Halogen Specific Detector converts compounds containing halogens to their oxidation products and free halogen atoms by oxidative pyrolysis. These halogen atoms are

adsorbed onto the activated platinum surface of the detector probe assembly resulting in an increase thermionic emission. This emission current provides a corresponding voltage that is measured via an electrometer circuit in the detector controller.

- PID – Photo Ionization Detector sample stream flows through the detector's reaction chamber where it is continuously irradiated with high energy ultraviolet light. When compounds are present that have a lower ionization potential than that of the irradiation energy (10.2 electron volts with standard lamp) they are ionized. The ions formed are collected in an electrical field, producing an ion current that is proportional to compound concentration. The ion current is amplified and output by the gas chromatograph's electrometer.
- FID – Flame Ionization Detector consists of a hydrogen / air flame and a collector plate. The effluent from the GC (trunkline) passes through the flame, which breaks down organic molecules and produces ions. The ions are collected on a biased electrode and produce an electric signal.

MIP Data Collected

- Depth - Data is collected from twenty data points per foot. 0.05', 0.10', 0.15', etc…
- Electrical Conductivity - Electrical Conductivity data is measured/collected in milli-siemens per Meter (ms/M). The conductivity of soils is different for each type of media. Finer grained sediments, such as silts or clays, will have a higher EC signal. While coarser grained sediments, sands and gravel, will have a lower EC signal. The coarser grained sediments will allow the migration of contaminants and the finer grained sediments will trap the contaminant.
- Speed / Advancement Rate - Speed data is measured/collected in feet per minute (ft/min). Speed is an indication of the physical advancement rate of the MIP probe. Speed of the MIP probe can vary due to operator advancement and dense soil types. Speed log can provide soil type information which can be correlated with electrical conductivity. Lower advancement speed, correlated with lower conductivity or larger grained soils would more than likely be associated with dense or compacted sands.
- Temperature - Temperature data is measured/collected in Degrees Celsius. Temperature is an indication of the physical temperature of the MIP block. Minimum and Maximum temperature is collected at each vertical interval. Vironex's temperature protocol indicates that the MIP probe temperature shall maintain a minimum temperature of 75 Degrees Celsius.
- Pressure - Pressure data is measured/collected in PSI. Pressure is an indication of the internal pressure of the nitrogen lines located within the trunkline and the pressure behind the membrane. Minimum and Maximum temperature is collected at each vertical interval. Geoprobe's temperature protocol indicates that the MIP probe pressure shall not exceed 1.5 PSI difference from baseline.
- Detector (XSD, ECD, PID, FID) - Detector responses are measured/collected in micro Volts (uV). Detector responses are an indication of relative contaminant responses. Minimum and Maximum detector responses are collected at each vertical interval.

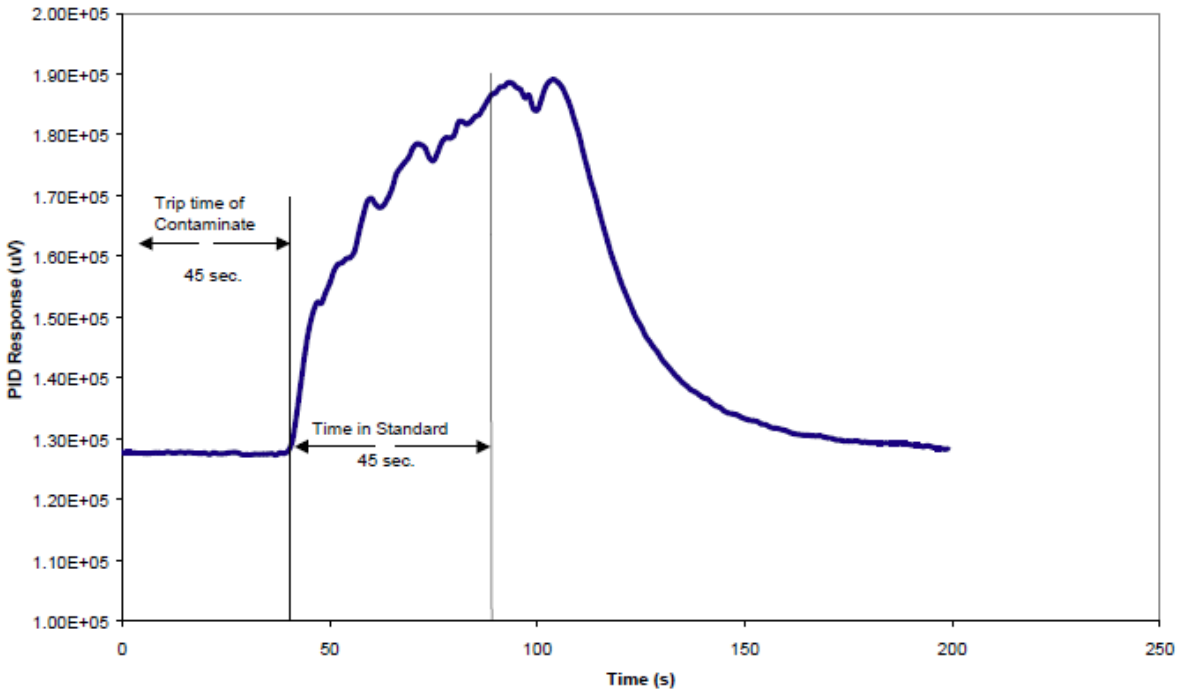
Response Testing

Response testing is an integral part of ensuring the quality of data from the MIP system. Response testing must be conducted before and after each log. This will ensure the validity of the data and the integrity of the system. Response testing also provides for comparison of data for later MIP logs at a particular site. However, results of the response test may change due to membrane wear from soil contact and abrasion.

Prior to conducting a response test, a response test standard solution is prepared by adding an appropriate volume of stock standard solution to 0.5 liters of clean water in a suitable measuring container (beaker or graduated cylinder) to produce a working standard, for example, 10 µL of 50 mg/mL concentration stock standard is added to 0.5 liters of water to yield a 1mg/L working standard. Generally, response test standard solutions are prepared using trichloroethene and toluene. However, response test standard solutions may be prepared based on the specific contaminants of concern at a site of necessary. Also prior to conducting the response test, the MIP is placed in clean water until detector response stabilization has occurred.

The working standard is poured into a 2-inch diameter by 30-inch long PVC or stainless steel pipe that is capped at one end. A stabilized MIP is inserted in the working standard for a duration of 30 seconds (Note: in the response test shown below, the MIP was inserted into the working standard for a duration of 45 seconds). At the end of 30 seconds the MIP is removed from the working standard, and placed into clean water. The working standard cannot be reused after a response test.

The results of the response test are shown on the MIP data acquisition unit (shown below). The trip time is measured by recording the time between the moment when the MIP is placed in the working standard solution and the response of the detectors, as viewed on the MIP data acquisition unit. The baseline and peak response value are also recorded for comparison with other MIP response tests. The trip time is entered manually into the data acquisition system account for the time it takes for compounds in the subsurface to travel the length of the trunkline during the MIP boring.



PID Response Test – 10 ppm Benzene

ARCADIS

Appendix B

Laboratory Analytical Reports

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

Laboratory Job Number 244355
ANALYTICAL REPORT

Arcadis	Project : EM001048.0001.0003
2000 Powell St.	Location : VW Oakland
Emeryville, CA 94608	Level : II

Sample ID	Lab ID
MIP-1	244355-001
MIP-2	244355-002
MIP-3	244355-003
MIP-4	244355-004
MIP-4-DUP	244355-005
MIP-5	244355-006
QCTB	244355-007
QCEB	244355-008

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

Signature: Tracy Babjar Date: 04/15/2013

Tracy Babjar
Project Manager
(510) 204-2226

NELAP # 01107CA

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**244355**
Client:	**Arcadis**
Project:	**EM001048.0001.0003**
Location:	**VW Oakland**
Request Date:	**04/05/13**
Samples Received:	**04/05/13**

This data package contains sample and QC results for eight water samples, requested for the above referenced project on 04/05/13. The samples were received cold and intact. All data were e-mailed to Colin McNeece on 04/10/13.

TPH-Purgeables and/or BTXE by GC (EPA 8015B):
No analytical problems were encountered.

TPH-Extractables by GC (EPA 8015B):
No analytical problems were encountered.

Volatile Organics by GC/MS (EPA 8260B):
M,p-xylenes was detected above the RL in the method blank for batch 197131; this analyte was detected in samples at a level at least 10 times that of the blank. No other analytical problems were encountered.

ARCADIS
Infrastructure · Water · Environment · Buildings

ID#: 244355

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page 1 of 1

Lab Work Order #

Send Results to:	
Contact & Company Name: Colin McNeece AUS	Telephone: (760)234-8888
Address: 2000 Powell STE 700	Fax:
City: Emeryville State: CA Zip: 94608	E-mail Address: colin.mcneece@arcadis-us.com
Project Name/Location (City, State): VW Oakland, Oakland, CA	Project #: EM001048.0001.0003
Sampler's Printed Name: Colin Joseph McNeece	Sampler's Signature: [signature]

Preservative	HCL	HCL	N/A					
Filtered (✓)								
# of Containers	3	3	2 CJM					
Container Information	40ml VOA	40ml VOA	~~250ml~~ 500ml amber					

Keys

Preservation Key:	Container Information Key:
A. H_2SO_4	1. 40 ml Vial
B. HCL	2. 1 L Amber
C. HNO_3	3. 250 ml Plastic
D. NaOH	4. 500 ml Plastic
E. None	5. Encore
F. Other: ______	6. 2 oz. Glass
G. Other: ______	7. 4 oz. Glass
H. Other: ______	8. 8 oz. Glass
	9. Other: ______
	10. Other: ______

Matrix Key: SO - Soil; W - Water; T - Tissue; SE - Sediment; SL - Sludge; A - Air; NL - NAPL/Oil; SW - Sample Wipe; Other: ______

PARAMETER ANALYSIS & METHOD

	Sample ID	Collection Date	Collection Time	Type (✓) Comp	Type (✓) Grab	Matrix	VOCs 8260B	TPH-g 8015	TPH-d, mo 8015						REMARKS
1	MIP-1	4/5/13	10:55		✓	W	X	X	X						
2	MIP-2	4/5/13	8:50		✓	W	X	X	X						
3	MIP-3	4/5/13	9:40		✓	W	X	X	X						
4	MIP-4	4/5/13	9:10		✓	W	X	X	X						
5	MIP-4-DUP	4/5/13	9:10		✓	W	X	X	X						
6	MIP-5	4/5/13	15:15		✓	W	X	X	X						
7	QCTB					W	X								
8	QCEB	4/5/13	8:50			W	X								

Special Instructions/Comments: 3 day turn around if possible

☐ Special QA/QC Instructions(✓):

Laboratory Information and Receipt		Relinquished By	Received By	Relinquished By	Laboratory Received By
Lab Name:	Cooler Custody Seal (✓)	Printed Name: Colin McNeece	Printed Name: Will Rice	Printed Name:	Printed Name:
☐ Cooler packed with ice (✓)	☐ Intact ☐ Not Intact	Signature: [signature]	Signature: [signature]	Signature:	Signature:
Specify Turnaround Requirements:	Sample Receipt:	Firm: ARCADIS U.S.	Firm/Courier: Curtis and Tompkins	Firm/Courier:	Firm:
Shipping Tracking #:	Condition/Cooler Temp: ______	Date/Time: 4/5/13 17:10	Date/Time: 4/5/13 17:10	Date/Time:	Date/Time:

Distribution: WHITE – Laboratory returns with results YELLOW – Lab copy PINK – Retained by ARCADIS

COOLER RECEIPT CHECKLIST

Curtis & Tompkins, Ltd.

Login # 244355 Date Received 4/5/13 Number of coolers 1
Client ARCADIS Project EM 001048-0001-0003

Date Opened 4/5/13 By (print) EL (sign) E. Le
Date Logged in ↓ By (print) ↓ (sign) ↓

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

2A. Were custody seals present? .... ☐ YES (circle) on cooler on samples ☒ NO
How many _____ Name _____ Date _____
2B. Were custody seals intact upon arrival? _____ YES NO (N/A)
3. Were custody papers dry and intact when received? _____ (YES) NO
4. Were custody papers filled out properly (ink, signed, etc)? _____ (YES) NO
5. Is the project identifiable from custody papers? (If so fill out top of form) ___ (YES) NO
6. Indicate the packing in cooler: (if other, describe) _____

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

7. Temperature documentation: * Notify PM if temperature exceeds 6°C

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

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

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

8. Were Method 5035 sampling containers present? _____ YES (NO)
If YES, what time were they transferred to freezer? _____
9. Did all bottles arrive unbroken/unopened? _____ YES (NO)
10. Are there any missing / extra samples? _____ YES (NO)
11. Are samples in the appropriate containers for indicated tests? _____ (YES) NO
12. Are sample labels present, in good condition and complete? _____ (YES) NO
13. Do the sample labels agree with custody papers? _____ (YES) NO
14. Was sufficient amount of sample sent for tests requested? _____ (YES) NO
15. Are the samples appropriately preserved? _____ (YES) NO N/A
16. Did you check preservatives for all bottles for each sample? _____ YES NO (N/A)
17. Did you document your preservative check? _____ YES NO (N/A)
18. Did you change the hold time in LIMS for unpreserved VOAs? _____ YES NO (N/A)
19. Did you change the hold time in LIMS for preserved terracores? _____ YES NO (N/A)
20. Are bubbles > 6mm absent in VOA samples? _____ YES (NO) N/A
21. Was the client contacted concerning this sample delivery? _____ YES (NO)
If YES, Who was called? _____ By _____ Date: _____

COMMENTS
9) -003: 1 of 6 VOAs rec'd broken
20) -001: 3 of 6 VOAs rec'd w/bubbles
-002, -005: 2 of 6 VOAs rec'd w/bubbles
-003: 2 of 5 VOAs rec'd w/bubbles
-004: 1 of 6 VOAs rec'd w/bubbles
-006: 6 of 6 VOAs rec'd w/bubbles

Rev 10, 11/11

Curtis & Tompkins, Ltd.

Total Volatile Hydrocarbons

Lab #:	244355	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8015B
Matrix:	Water	Sampled:	04/05/13
Units:	ug/L	Received:	04/05/13

Field ID:	MIP-1	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	197113
Lab ID:	244355-001	Analyzed:	04/06/13

Analyte	Result	RL
Gasoline C7-C12	630 Y	50

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	105	76-128

Field ID:	MIP-2	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	197113
Lab ID:	244355-002	Analyzed:	04/06/13

Analyte	Result	RL
Gasoline C7-C12	510 Y	50

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	101	76-128

Field ID:	MIP-3	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	197113
Lab ID:	244355-003	Analyzed:	04/06/13

Analyte	Result	RL
Gasoline C7-C12	1,800	50

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	109	76-128

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

Curtis & Tompkins, Ltd.

Total Volatile Hydrocarbons

Lab #:	244355	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8015B
Matrix:	Water	Sampled:	04/05/13
Units:	ug/L	Received:	04/05/13

Field ID:	MIP-4	Diln Fac:	14.29
Type:	SAMPLE	Batch#:	197186
Lab ID:	244355-004	Analyzed:	04/09/13

Analyte	Result	RL
Gasoline C7-C12	13,000	710

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	108	76-128

Field ID:	MIP-4-DUP	Diln Fac:	10.00
Type:	SAMPLE	Batch#:	197142
Lab ID:	244355-005	Analyzed:	04/09/13

Analyte	Result	RL
Gasoline C7-C12	14,000	500

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

Field ID:	MIP-5	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	197142
Lab ID:	244355-006	Analyzed:	04/09/13

Analyte	Result	RL
Gasoline C7-C12	4,200	50

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	108	76-128

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

Curtis & Tompkins, Ltd.

Total Volatile Hydrocarbons

Lab #:	244355	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8015B
Matrix:	Water	Sampled:	04/05/13
Units:	ug/L	Received:	04/05/13

Type: BLANK Batch#: 197113
Lab ID: QC683153 Analyzed: 04/06/13
Diln Fac: 1.000

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	90	76-128

Type: BLANK Batch#: 197142
Lab ID: QC683253 Analyzed: 04/08/13
Diln Fac: 1.000

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	80	76-128

Type: BLANK Batch#: 197186
Lab ID: QC683462 Analyzed: 04/09/13
Diln Fac: 1.000

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	110	76-128

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

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	244355	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC683152	Batch#:	197113
Matrix:	Water	Analyzed:	04/06/13
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	2,000	1,850	93	80-120

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	97	76-128

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	244355	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	197113
MSS Lab ID:	244337-001	Sampled:	04/04/13
Matrix:	Water	Received:	04/04/13
Units:	ug/L	Analyzed:	04/07/13
Diln Fac:	1.000		

Type: MS Lab ID: QC683154

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	28.99	2,000	1,872	92	76-120

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	101	76-128

Type: MSD Lab ID: QC683155

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	1,902	94	76-120	2	20

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	107	76-128

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	244355	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC683252	Batch#:	197142
Matrix:	Water	Analyzed:	04/08/13
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1,000	925.2	93	80-120

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

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	244355	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	197142
MSS Lab ID:	244354-003	Sampled:	04/05/13
Matrix:	Water	Received:	04/05/13
Units:	ug/L	Analyzed:	04/08/13
Diln Fac:	1.000		

Type: MS Lab ID: QC683254

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	361.5	2,000	2,154	90	76-120

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	105	76-128

Type: MSD Lab ID: QC683255

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	2,142	89	76-120	1	20

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	107	76-128

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	244355	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC683461	Batch#:	197186
Matrix:	Water	Analyzed:	04/09/13
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1,000	908.1	91	80-120

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	108	76-128

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	244355	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	197186
MSS Lab ID:	244354-020	Sampled:	04/05/13
Matrix:	Water	Received:	04/05/13
Units:	ug/L	Analyzed:	04/09/13
Diln Fac:	1.000		

Type: MS Lab ID: QC683463

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	12.73	2,000	1,941	96	76-120

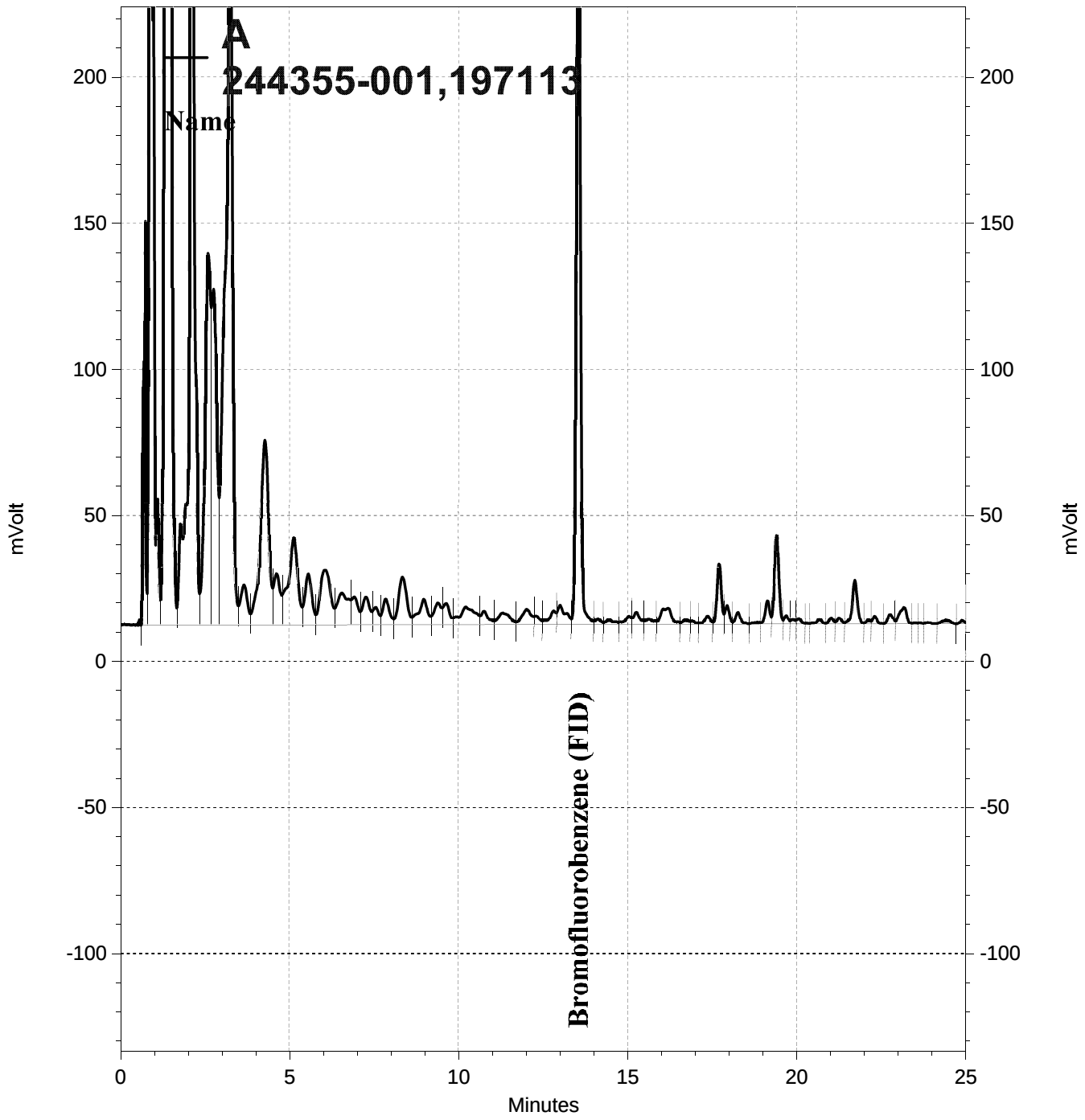
Surrogate	%REC	Limits
Bromofluorobenzene (FID)	116	76-128

Type: MSD Lab ID: QC683464

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	1,943	97	76-120	0	20

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	109	76-128

RPD= Relative Percent Difference



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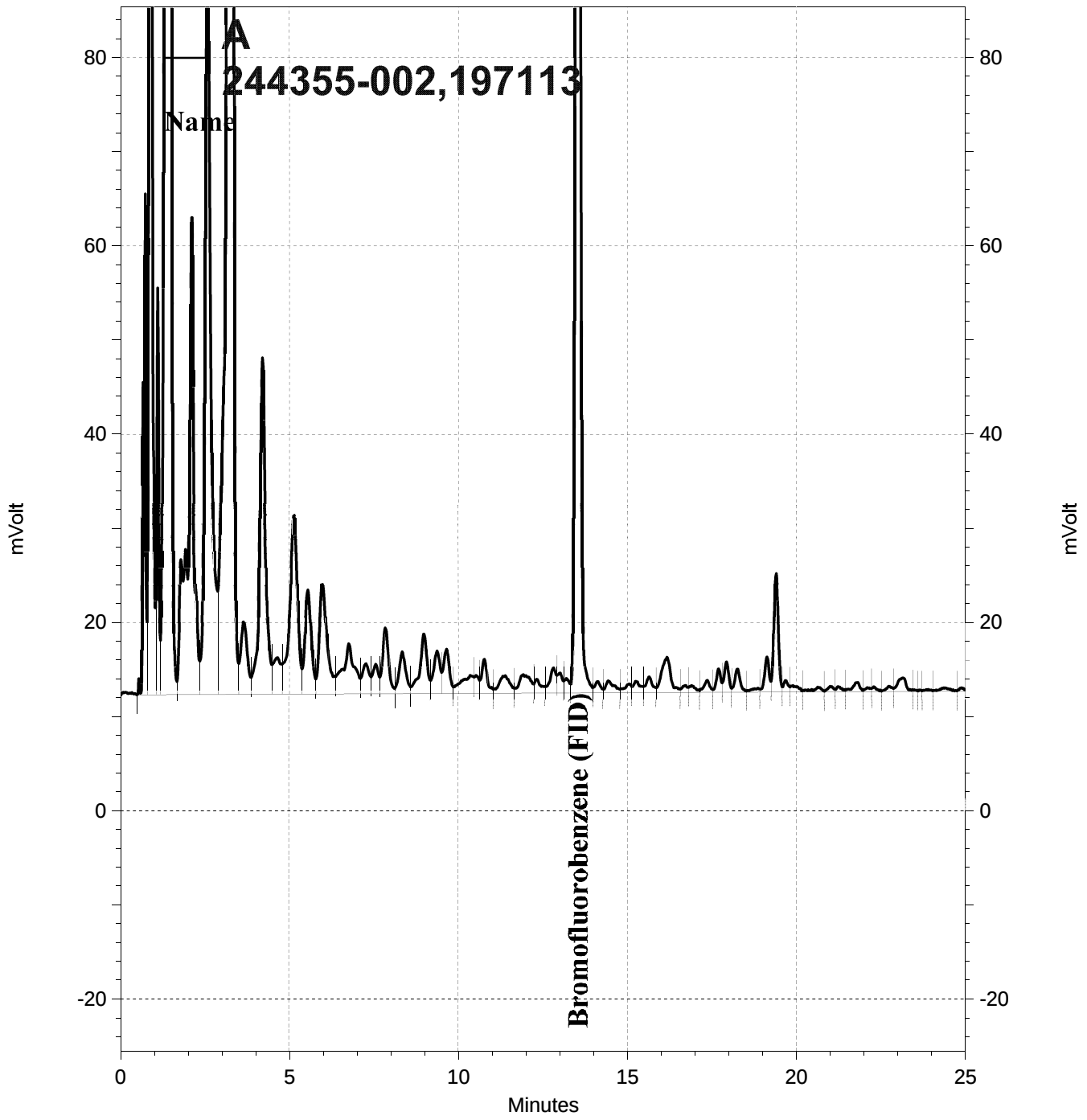
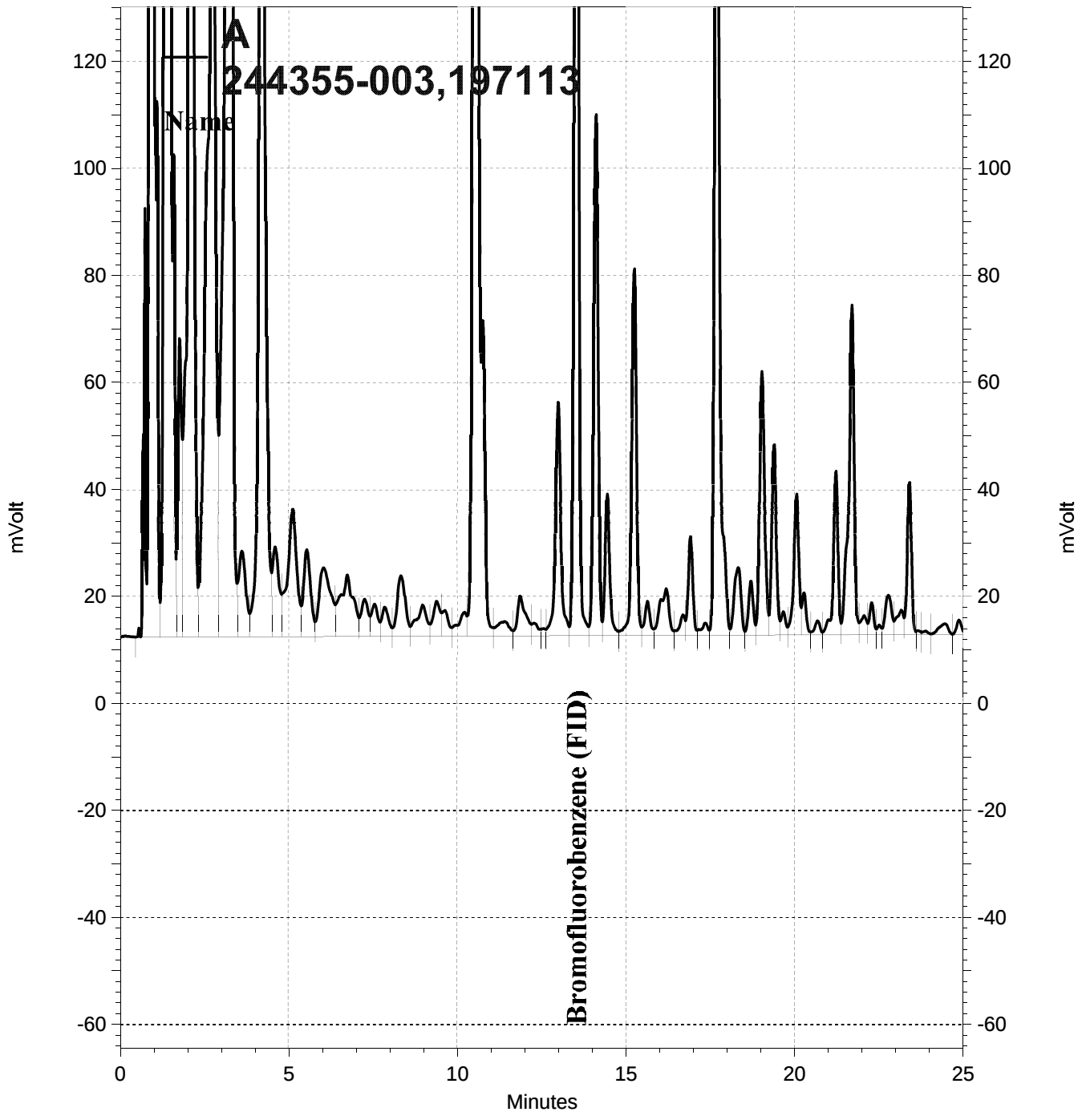

A
244355-002,197113
Name
Bromofluorobenzene (FID)
mVolt
mVolt
Minutes
80
60
40
20
0
-20
0
5
10
15
20
25
\\Lims\gdrive\ezchrom\Projects\GC05\Data\095-047, A



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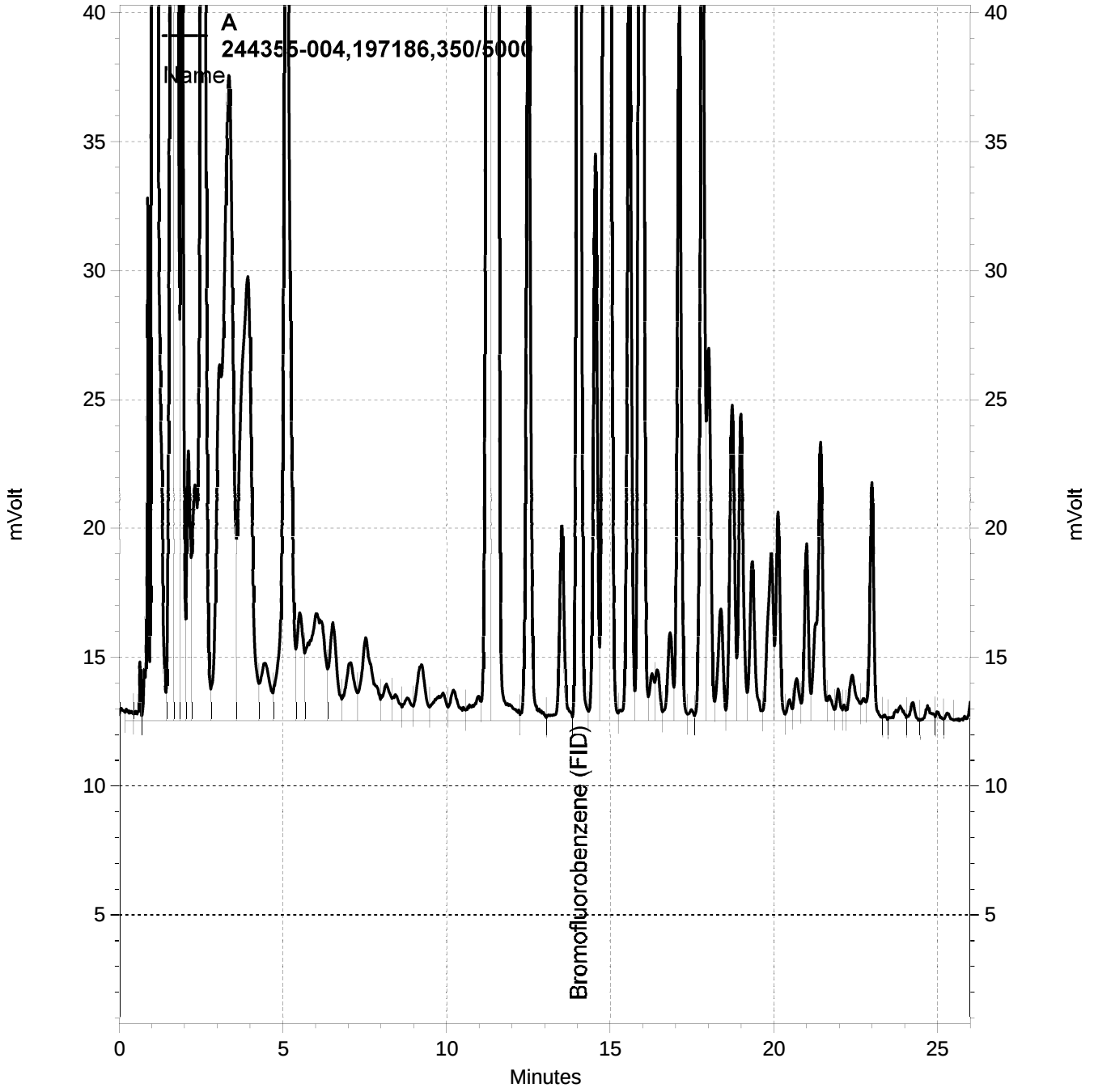

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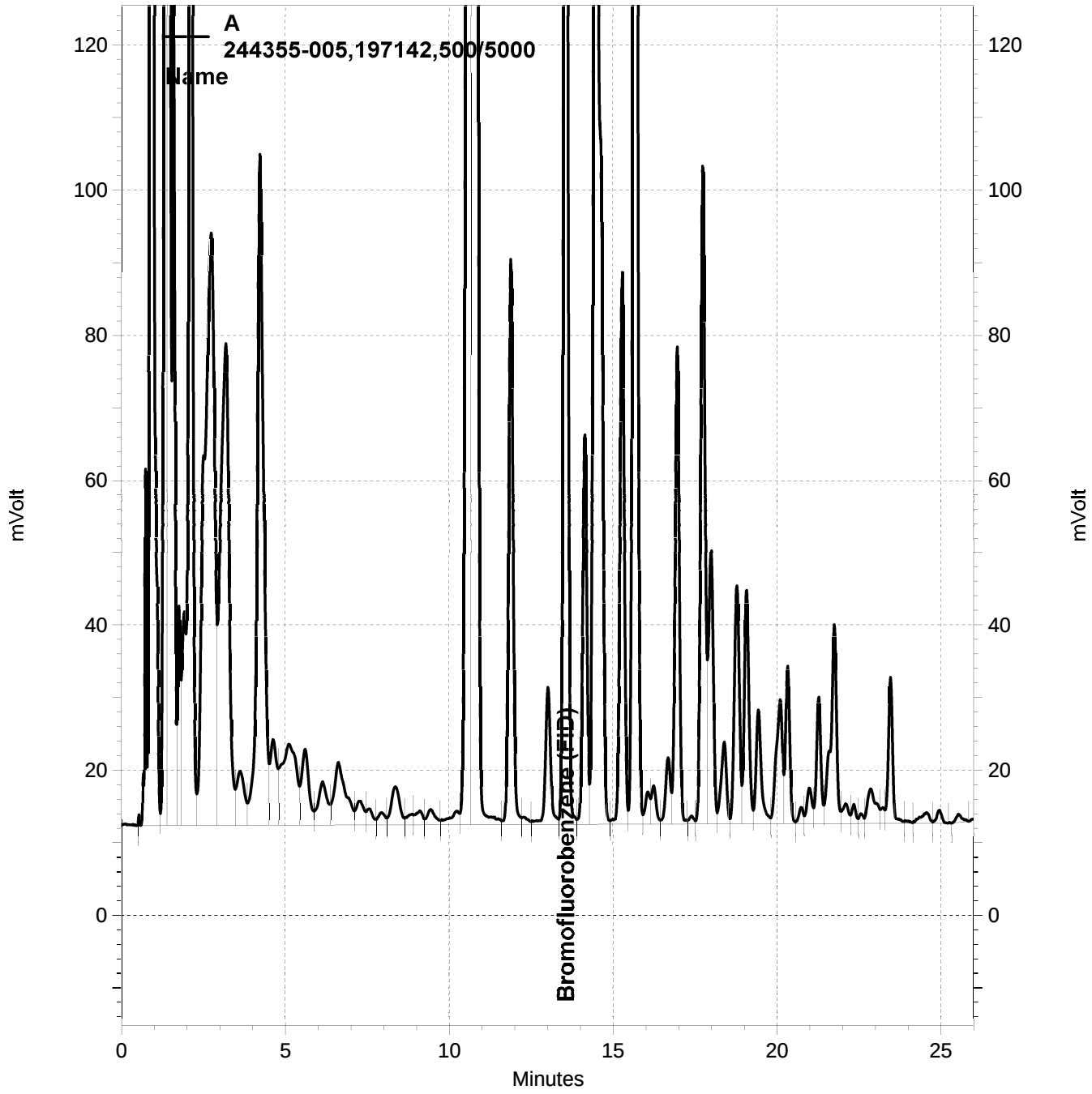
A
244355-005,197142,500/5000
Name
mVolt
mVolt
120
100
80
60
40
20
0
Bromofluorobenzene (FID)
0
5
10
15
20
25
Minutes
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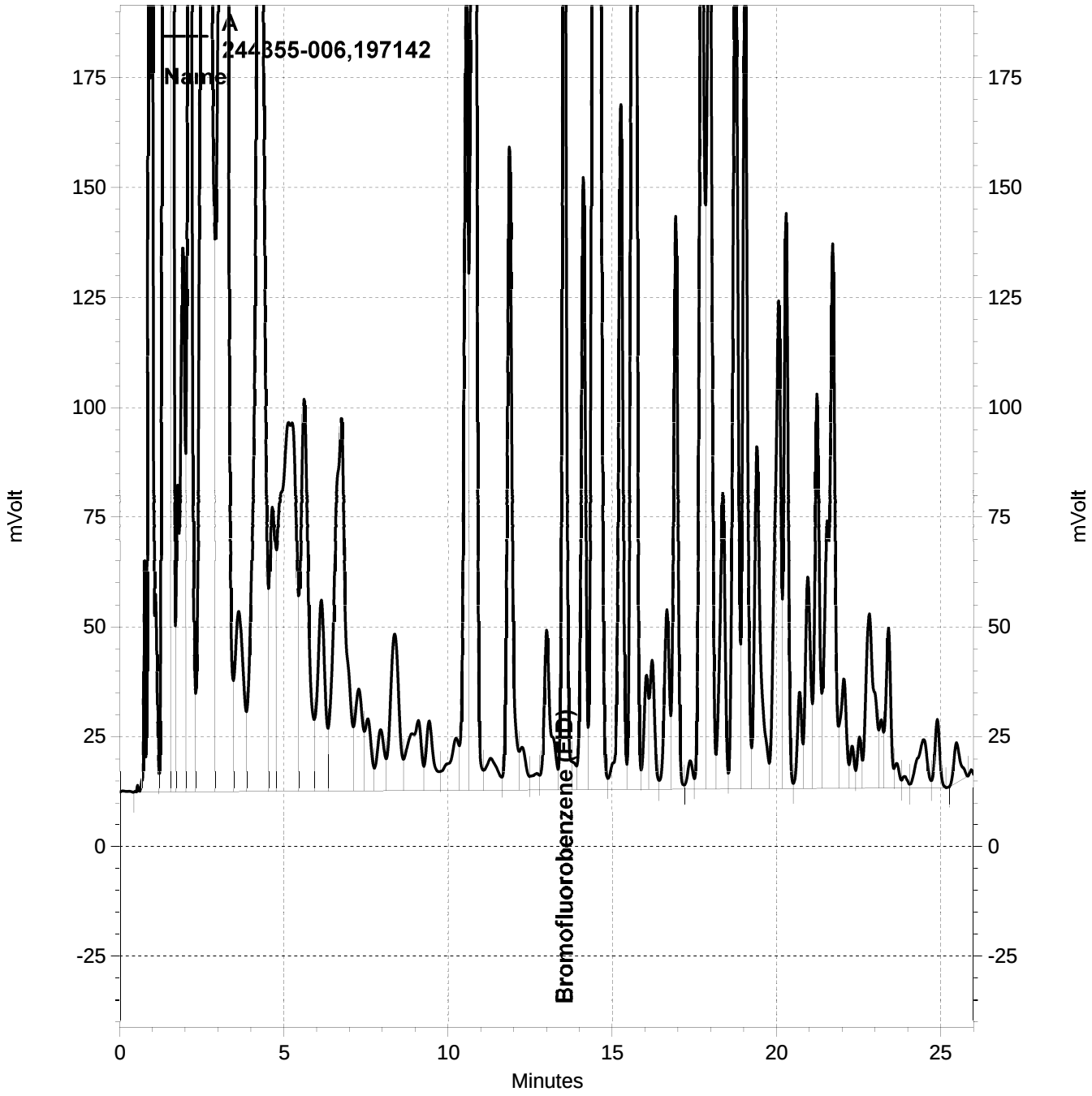

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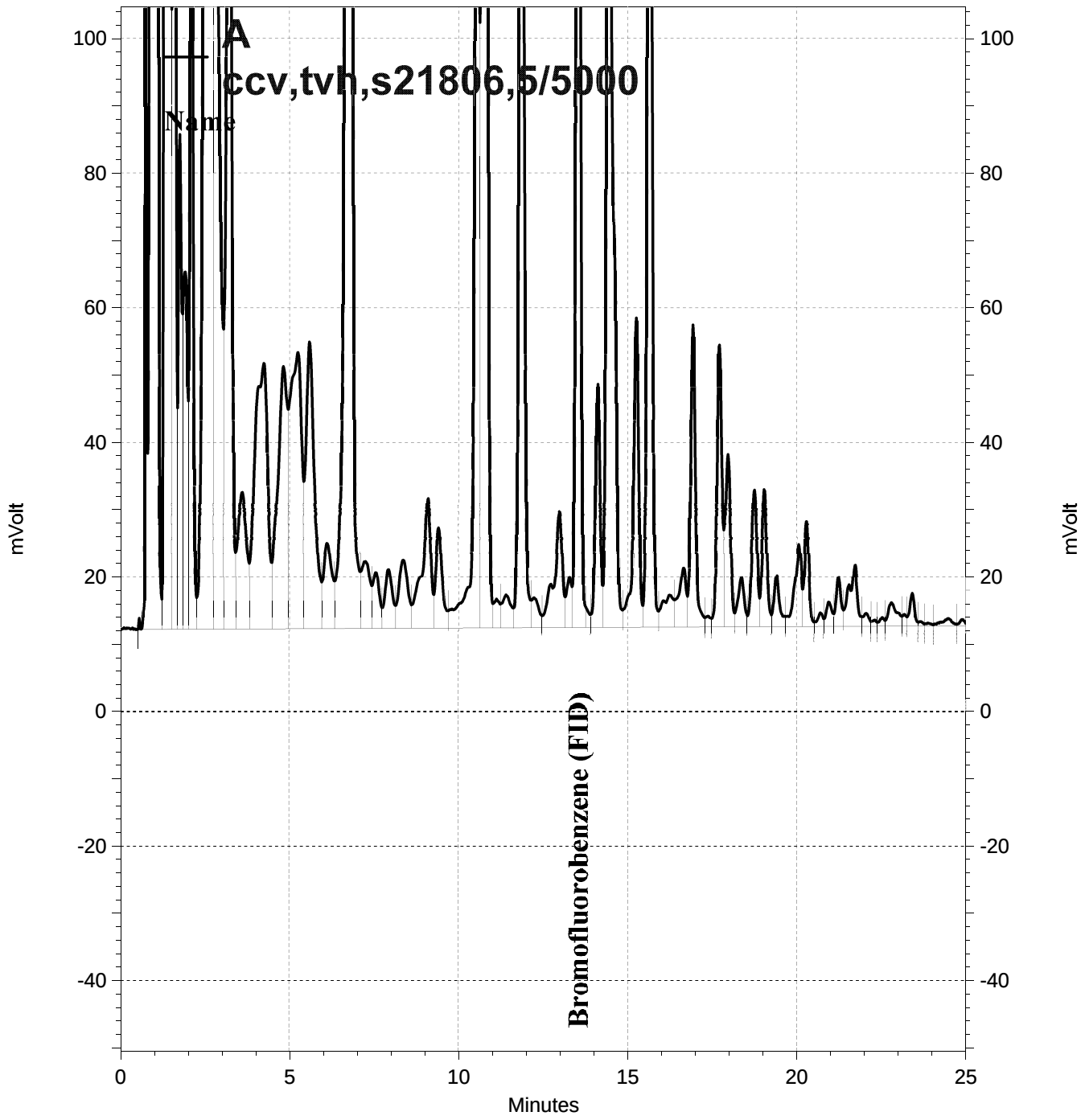

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Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	244355	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 3520C
Project#:	EM001048.0001.0003	Analysis:	EPA 8015B
Matrix:	Water	Sampled:	04/05/13
Units:	ug/L	Received:	04/05/13
Diln Fac:	1.000	Prepared:	04/08/13
Batch#:	197149	Analyzed:	04/09/13

Field ID: MIP-1 Lab ID: 244355-001
Type: SAMPLE

Analyte	Result	RL
Diesel C10-C24	590	50
Motor Oil C24-C36	ND	300

Surrogate	%REC	Limits
o-Terphenyl	101	62-133

Field ID: MIP-2 Lab ID: 244355-002
Type: SAMPLE

Analyte	Result	RL
Diesel C10-C24	450	50
Motor Oil C24-C36	ND	300

Surrogate	%REC	Limits
o-Terphenyl	102	62-133

Field ID: MIP-3 Lab ID: 244355-003
Type: SAMPLE

Analyte	Result	RL
Diesel C10-C24	600	50
Motor Oil C24-C36	ND	300

Surrogate	%REC	Limits
o-Terphenyl	101	62-133

Field ID: MIP-4 Lab ID: 244355-004
Type: SAMPLE

Analyte	Result	RL
Diesel C10-C24	4,300 Y	50
Motor Oil C24-C36	320	300

Surrogate	%REC	Limits
o-Terphenyl	102	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 #:	244355	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 3520C
Project#:	EM001048.0001.0003	Analysis:	EPA 8015B
Matrix:	Water	Sampled:	04/05/13
Units:	ug/L	Received:	04/05/13
Diln Fac:	1.000	Prepared:	04/08/13
Batch#:	197149	Analyzed:	04/09/13

Field ID: MIP-4-DUP
Type: SAMPLE
Lab ID: 244355-005

Analyte	Result	RL
Diesel C10-C24	1,700 Y	50
Motor Oil C24-C36	ND	300

Surrogate	%REC	Limits
o-Terphenyl	104	62-133

Field ID: MIP-5
Type: SAMPLE
Lab ID: 244355-006

Analyte	Result	RL
Diesel C10-C24	1,000 Y	50
Motor Oil C24-C36	ND	300

Surrogate	%REC	Limits
o-Terphenyl	103	62-133

Type: BLANK
Lab ID: QC683280

Analyte	Result	RL
Diesel C10-C24	ND	50
Motor Oil C24-C36	ND	300

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 #:	244355	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 3520C
Project#:	EM001048.0001.0003	Analysis:	EPA 8015B
Matrix:	Water	Batch#:	197149
Units:	ug/L	Prepared:	04/08/13
Diln Fac:	1.000	Analyzed:	04/09/13

Type: BS Cleanup Method: EPA 3630C
Lab ID: QC683281

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	2,500	2,038	82	59-120

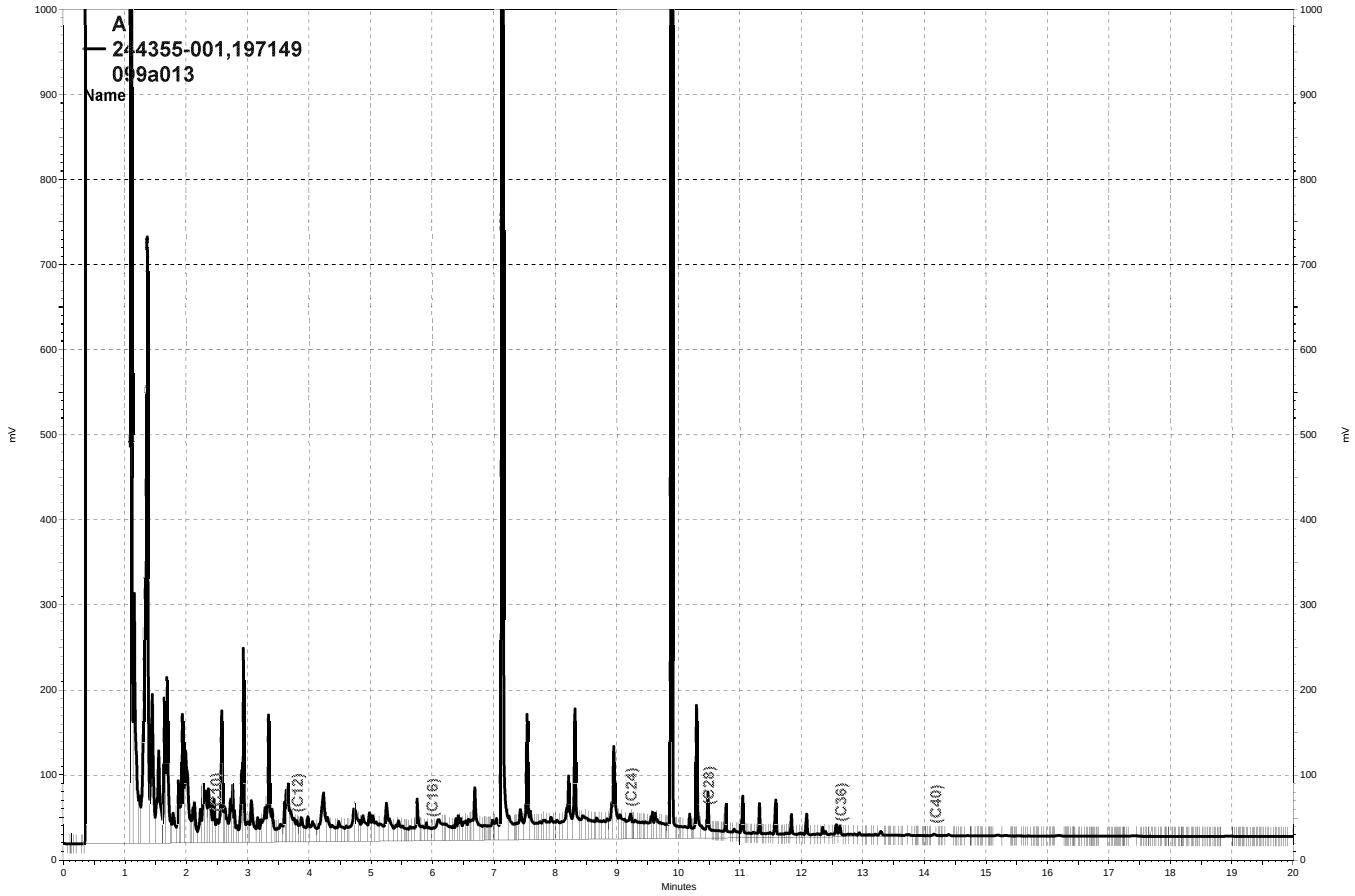
Surrogate	%REC	Limits
o-Terphenyl	100	62-133

Type: BSD Cleanup Method: EPA 3630C
Lab ID: QC683282

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	2,500	2,114	85	59-120	4	46

Surrogate	%REC	Limits
o-Terphenyl	108	62-133

RPD= Relative Percent Difference



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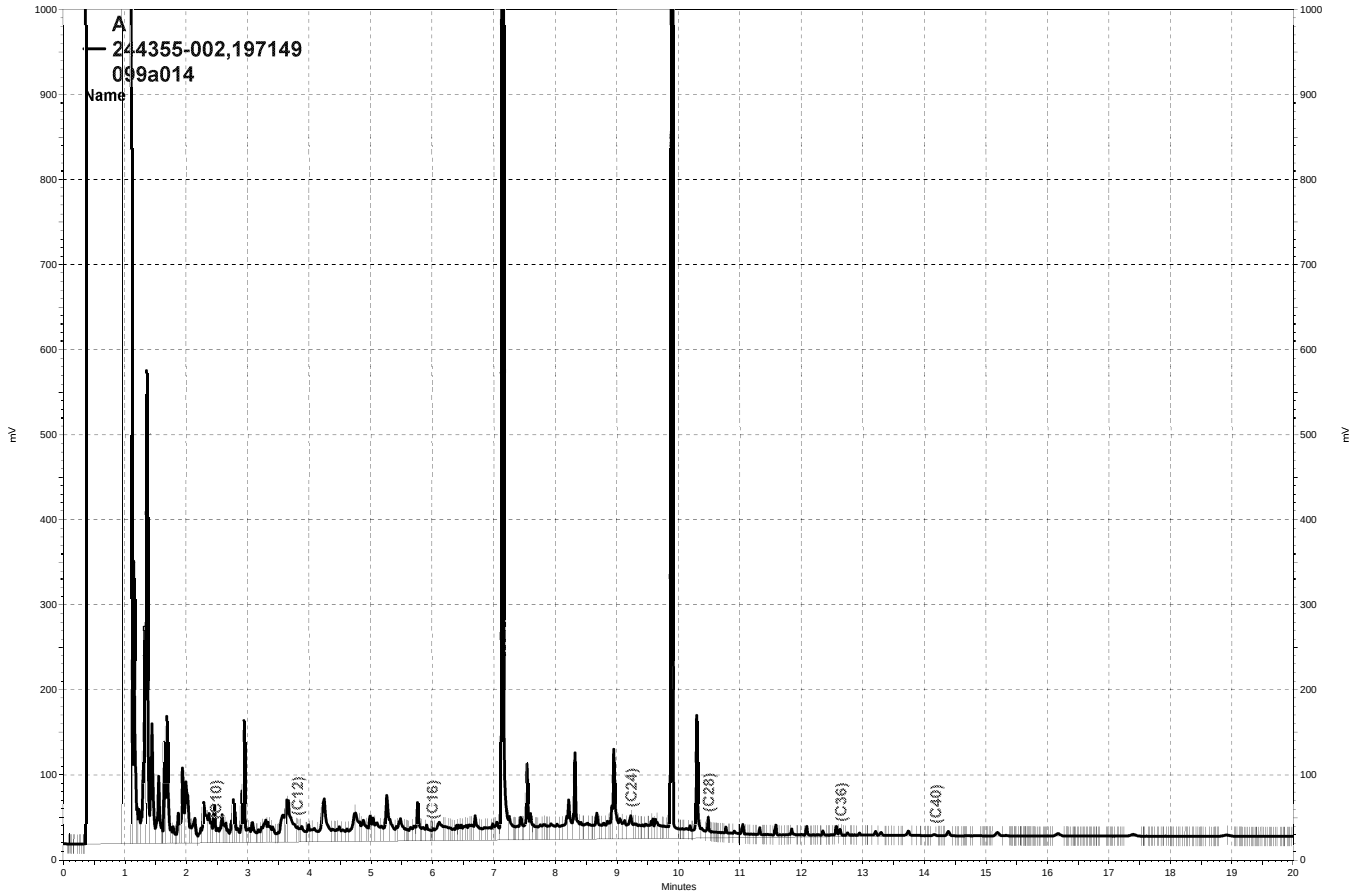

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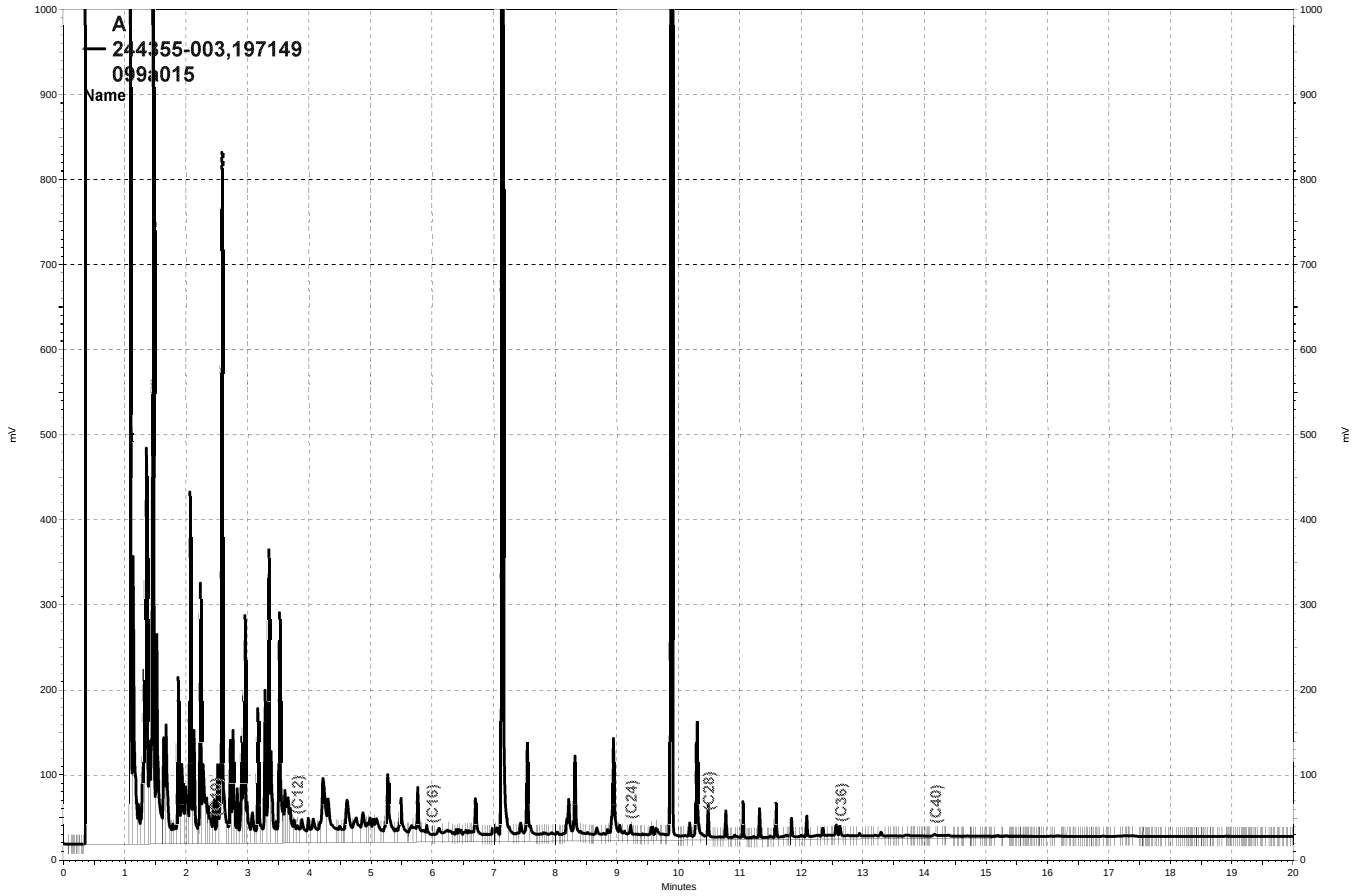

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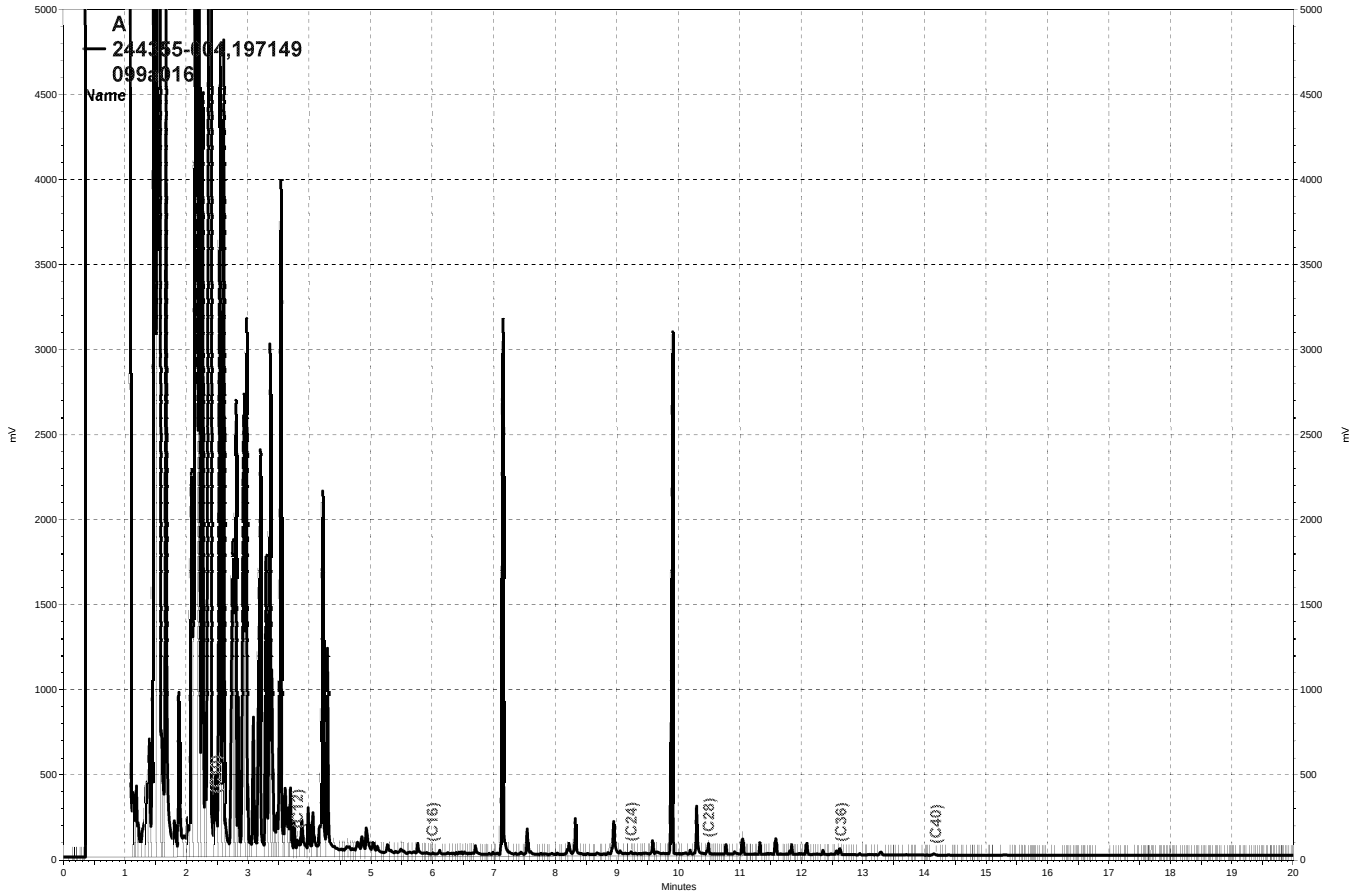

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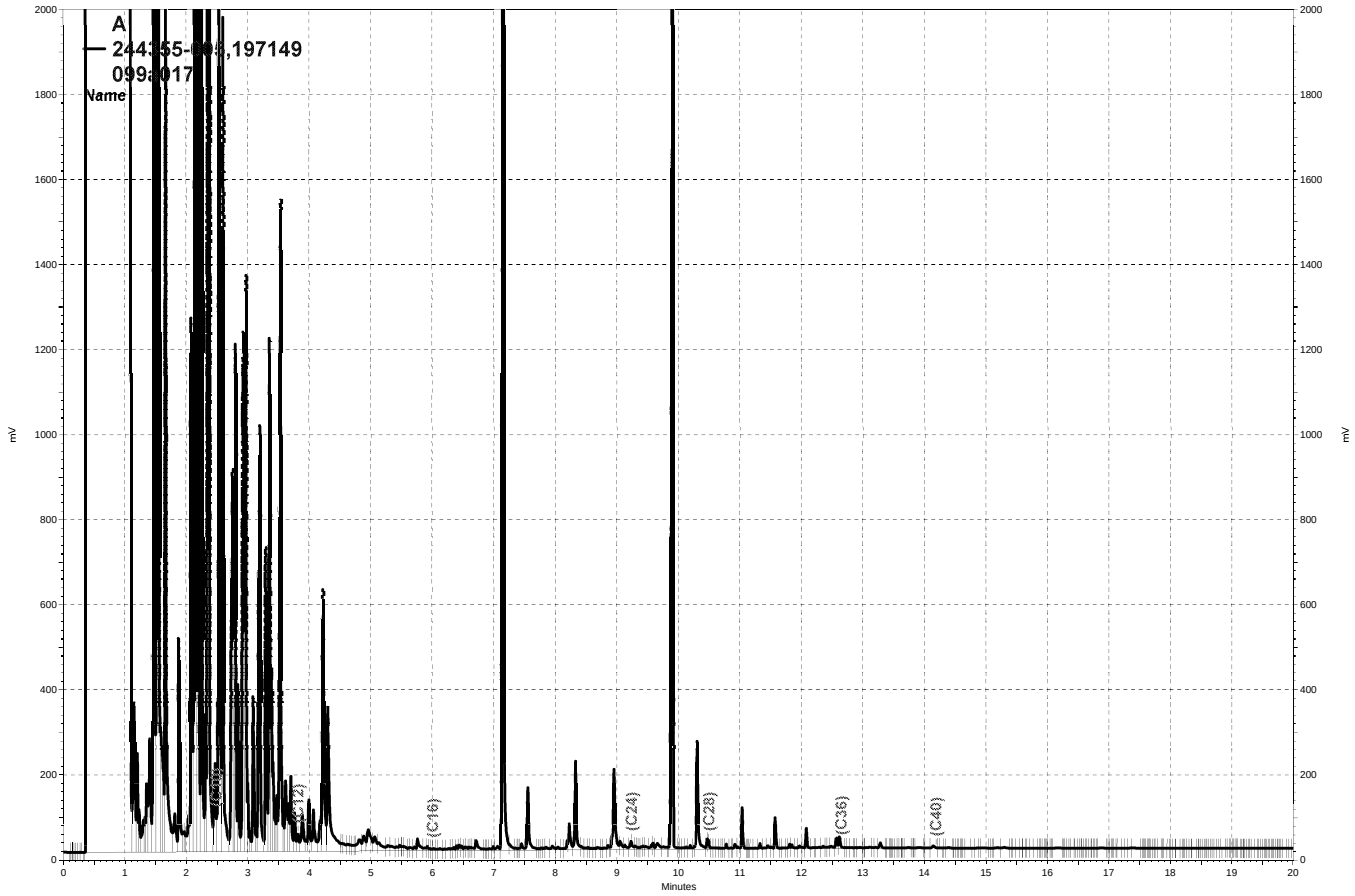

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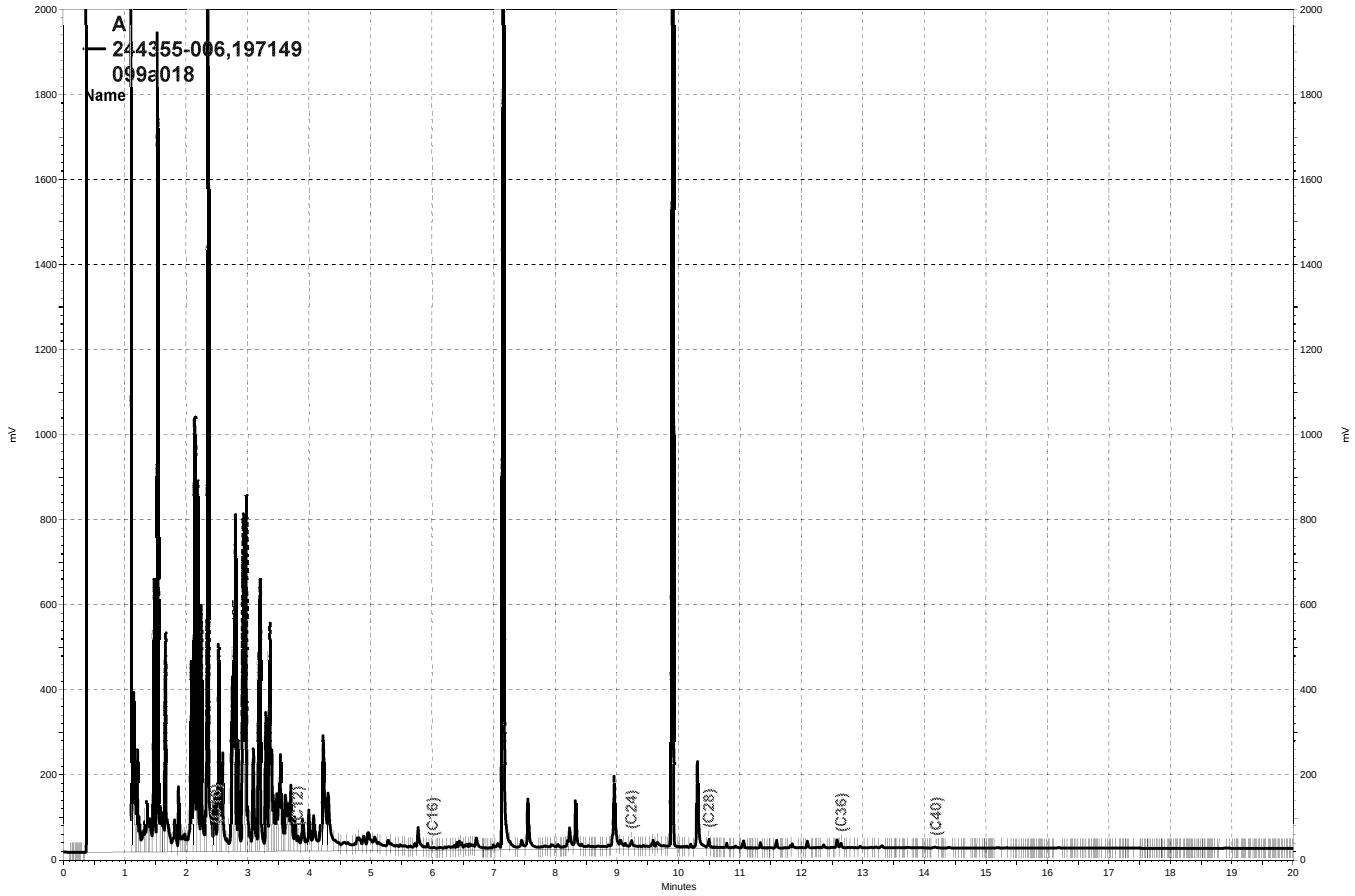

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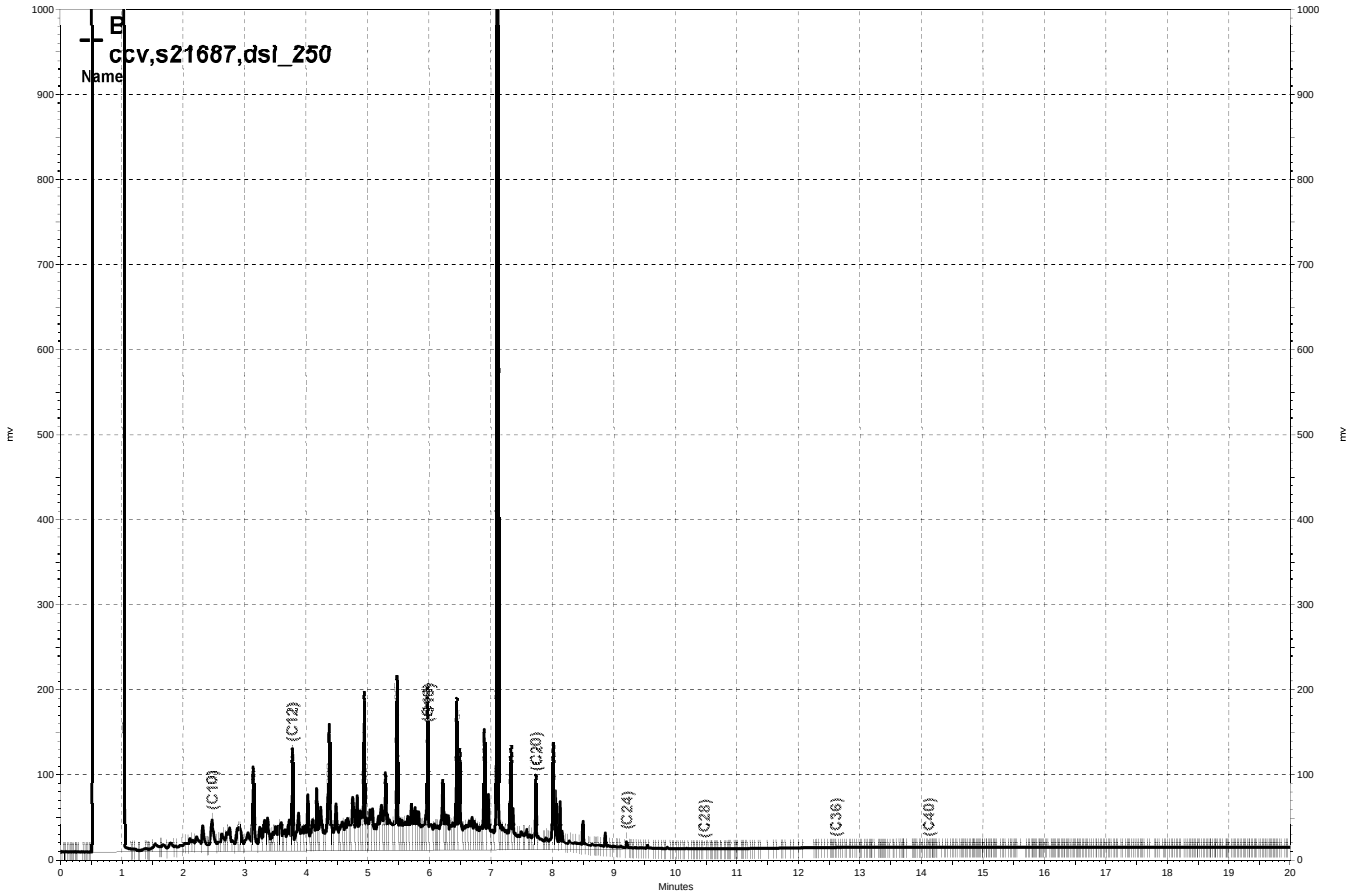

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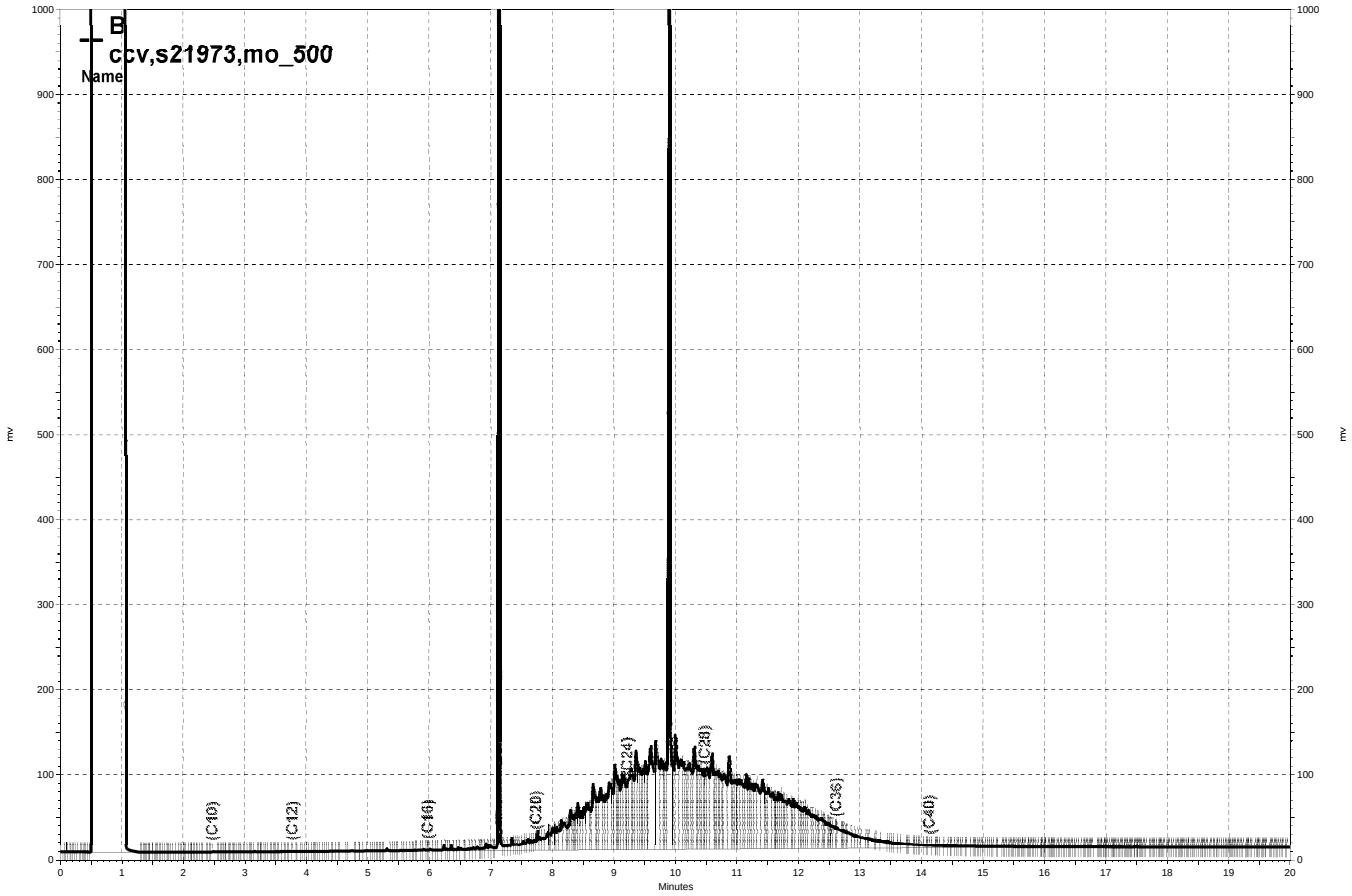

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Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	244355	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8260B
Field ID:	MIP-1	Batch#:	197237
Lab ID:	244355-001	Sampled:	04/05/13
Matrix:	Water	Received:	04/05/13
Units:	ug/L	Analyzed:	04/10/13
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	7.8 J	10
Freon 113	ND	5.0
1,1-Dichloroethene	0.3 J	0.5
Methylene Chloride	ND	5.0
Carbon Disulfide	ND	0.5
MTBE	1.6	0.5
trans-1,2-Dichloroethene	0.3 J	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	40	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	2.8	0.5
Benzene	52	0.5
Trichloroethene	18	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	1.0	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	0.5 J	0.5
m,p-Xylenes	0.7	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	1.9	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	0.4 J	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5

J= Estimated value
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	244355	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8260B
Field ID:	MIP-1	Batch#:	197237
Lab ID:	244355-001	Sampled:	04/05/13
Matrix:	Water	Received:	04/05/13
Units:	ug/L	Analyzed:	04/10/13
Diln Fac:	1.000		

Analyte	Result	RL
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	1.6	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	2.0
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	2.0
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	91	77-134
1,2-Dichloroethane-d4	89	72-140
Toluene-d8	97	80-120
Bromofluorobenzene	99	80-120

J= Estimated value
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	244355	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8260B
Field ID:	MIP-2	Batch#:	197179
Lab ID:	244355-002	Sampled:	04/05/13
Matrix:	Water	Received:	04/05/13
Units:	ug/L	Analyzed:	04/09/13
Diln Fac:	2.000		

Analyte	Result	RL
Freon 12	ND	2.0
Chloromethane	ND	2.0
Vinyl Chloride	ND	1.0
Bromomethane	ND	2.0
Chloroethane	ND	2.0
Trichlorofluoromethane	ND	2.0
Acetone	ND	20
Freon 113	ND	10
1,1-Dichloroethene	ND	1.0
Methylene Chloride	ND	10
Carbon Disulfide	ND	1.0
MTBE	ND	1.0
trans-1,2-Dichloroethene	ND	1.0
Vinyl Acetate	ND	20
1,1-Dichloroethane	ND	1.0
2-Butanone	ND	20
cis-1,2-Dichloroethene	4.4	1.0
2,2-Dichloropropane	ND	1.0
Chloroform	ND	1.0
Bromochloromethane	ND	1.0
1,1,1-Trichloroethane	ND	1.0
1,1-Dichloropropene	ND	1.0
Carbon Tetrachloride	ND	1.0
1,2-Dichloroethane	1.5	1.0
Benzene	140	1.0
Trichloroethene	42	1.0
1,2-Dichloropropane	ND	1.0
Bromodichloromethane	ND	1.0
Dibromomethane	ND	1.0
4-Methyl-2-Pentanone	ND	20
cis-1,3-Dichloropropene	ND	1.0
Toluene	1.1	1.0
trans-1,3-Dichloropropene	ND	1.0
1,1,2-Trichloroethane	ND	1.0
2-Hexanone	ND	20
1,3-Dichloropropane	ND	1.0
Tetrachloroethene	ND	1.0
Dibromochloromethane	ND	1.0
1,2-Dibromoethane	ND	1.0
Chlorobenzene	ND	1.0
1,1,1,2-Tetrachloroethane	ND	1.0
Ethylbenzene	ND	1.0
m,p-Xylenes	0.7 J	1.0
o-Xylene	ND	1.0
Styrene	ND	1.0
Bromoform	ND	2.0
Isopropylbenzene	0.6 J	1.0
1,1,2,2-Tetrachloroethane	ND	1.0
1,2,3-Trichloropropane	ND	1.0
Propylbenzene	0.5 J	1.0
Bromobenzene	ND	1.0
1,3,5-Trimethylbenzene	ND	1.0
2-Chlorotoluene	ND	1.0

J= Estimated value
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	244355	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8260B
Field ID:	MIP-2	Batch#:	197179
Lab ID:	244355-002	Sampled:	04/05/13
Matrix:	Water	Received:	04/05/13
Units:	ug/L	Analyzed:	04/09/13
Diln Fac:	2.000		

Analyte	Result	RL
4-Chlorotoluene	ND	1.0
tert-Butylbenzene	ND	1.0
1,2,4-Trimethylbenzene	ND	1.0
sec-Butylbenzene	1.0	1.0
para-Isopropyl Toluene	ND	1.0
1,3-Dichlorobenzene	ND	1.0
1,4-Dichlorobenzene	ND	1.0
n-Butylbenzene	ND	1.0
1,2-Dichlorobenzene	ND	1.0
1,2-Dibromo-3-Chloropropane	ND	4.0
1,2,4-Trichlorobenzene	ND	1.0
Hexachlorobutadiene	ND	4.0
Naphthalene	ND	4.0
1,2,3-Trichlorobenzene	ND	1.0

Surrogate	%REC	Limits
Dibromofluoromethane	108	77-134
1,2-Dichloroethane-d4	108	72-140
Toluene-d8	99	80-120
Bromofluorobenzene	104	80-120

J= Estimated value
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	244355	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8260B
Field ID:	MIP-3	Batch#:	197179
Lab ID:	244355-003	Sampled:	04/05/13
Matrix:	Water	Received:	04/05/13
Units:	ug/L	Analyzed:	04/09/13
Diln Fac:	3.333		

Analyte	Result	RL
Freon 12	ND	3.3
Chloromethane	ND	3.3
Vinyl Chloride	ND	1.7
Bromomethane	ND	3.3
Chloroethane	ND	3.3
Trichlorofluoromethane	ND	3.3
Acetone	ND	33
Freon 113	ND	17
1,1-Dichloroethene	ND	1.7
Methylene Chloride	ND	17
Carbon Disulfide	ND	1.7
MTBE	1.2 J	1.7
trans-1,2-Dichloroethene	ND	1.7
Vinyl Acetate	ND	33
1,1-Dichloroethane	ND	1.7
2-Butanone	ND	33
cis-1,2-Dichloroethene	17	1.7
2,2-Dichloropropane	ND	1.7
Chloroform	1.0 J	1.7
Bromochloromethane	ND	1.7
1,1,1-Trichloroethane	ND	1.7
1,1-Dichloropropene	ND	1.7
Carbon Tetrachloride	ND	1.7
1,2-Dichloroethane	1.1 J	1.7
Benzene	270	1.7
Trichloroethene	270	1.7
1,2-Dichloropropane	ND	1.7
Bromodichloromethane	ND	1.7
Dibromomethane	ND	1.7
4-Methyl-2-Pentanone	ND	33
cis-1,3-Dichloropropene	ND	1.7
Toluene	2.1	1.7
trans-1,3-Dichloropropene	ND	1.7
1,1,2-Trichloroethane	ND	1.7
2-Hexanone	ND	33
1,3-Dichloropropane	ND	1.7
Tetrachloroethene	ND	1.7
Dibromochloromethane	ND	1.7
1,2-Dibromoethane	ND	1.7
Chlorobenzene	ND	1.7
1,1,1,2-Tetrachloroethane	ND	1.7
Ethylbenzene	120	1.7
m,p-Xylenes	15	1.7
o-Xylene	1.5 J	1.7
Styrene	ND	1.7
Bromoform	ND	3.3
Isopropylbenzene	13	1.7
1,1,2,2-Tetrachloroethane	ND	1.7
1,2,3-Trichloropropane	ND	1.7
Propylbenzene	29	1.7
Bromobenzene	ND	1.7
1,3,5-Trimethylbenzene	ND	1.7
2-Chlorotoluene	ND	1.7

J= Estimated value
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	244355	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8260B
Field ID:	MIP-3	Batch#:	197179
Lab ID:	244355-003	Sampled:	04/05/13
Matrix:	Water	Received:	04/05/13
Units:	ug/L	Analyzed:	04/09/13
Diln Fac:	3.333		

Analyte	Result	RL
4-Chlorotoluene	ND	1.7
tert-Butylbenzene	ND	1.7
1,2,4-Trimethylbenzene	1.5 J	1.7
sec-Butylbenzene	2.3	1.7
para-Isopropyl Toluene	ND	1.7
1,3-Dichlorobenzene	ND	1.7
1,4-Dichlorobenzene	ND	1.7
n-Butylbenzene	3.0	1.7
1,2-Dichlorobenzene	ND	1.7
1,2-Dibromo-3-Chloropropane	ND	6.7
1,2,4-Trichlorobenzene	ND	1.7
Hexachlorobutadiene	ND	6.7
Naphthalene	17	6.7
1,2,3-Trichlorobenzene	ND	1.7

Surrogate	%REC	Limits
Dibromofluoromethane	109	77-134
1,2-Dichloroethane-d4	109	72-140
Toluene-d8	100	80-120
Bromofluorobenzene	103	80-120

J= Estimated value
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	244355	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8260B
Field ID:	MIP-4	Batch#:	197131
Lab ID:	244355-004	Sampled:	04/05/13
Matrix:	Water	Received:	04/05/13
Units:	ug/L	Analyzed:	04/08/13
Diln Fac:	10.00		

Analyte	Result	RL
Freon 12	ND	10
Chloromethane	ND	10
Vinyl Chloride	ND	5.0
Bromomethane	ND	10
Chloroethane	ND	10
Trichlorofluoromethane	ND	10
Acetone	ND	100
Freon 113	ND	50
1,1-Dichloroethene	ND	5.0
Methylene Chloride	ND	50
Carbon Disulfide	ND	5.0
MTBE	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
Vinyl Acetate	ND	100
1,1-Dichloroethane	ND	5.0
2-Butanone	ND	100
cis-1,2-Dichloroethene	11	5.0
2,2-Dichloropropane	ND	5.0
Chloroform	ND	5.0
Bromochloromethane	ND	5.0
1,1,1-Trichloroethane	ND	5.0
1,1-Dichloropropene	ND	5.0
Carbon Tetrachloride	ND	5.0
1,2-Dichloroethane	ND	5.0
Benzene	15	5.0
Trichloroethene	960	5.0
1,2-Dichloropropane	ND	5.0
Bromodichloromethane	ND	5.0
Dibromomethane	ND	5.0
4-Methyl-2-Pentanone	ND	100
cis-1,3-Dichloropropene	ND	5.0
Toluene	5.7	5.0
trans-1,3-Dichloropropene	ND	5.0
1,1,2-Trichloroethane	ND	5.0
2-Hexanone	ND	100
1,3-Dichloropropane	ND	5.0
Tetrachloroethene	ND	5.0

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	244355	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8260B
Field ID:	MIP-4	Batch#:	197131
Lab ID:	244355-004	Sampled:	04/05/13
Matrix:	Water	Received:	04/05/13
Units:	ug/L	Analyzed:	04/08/13
Diln Fac:	10.00		

Analyte	Result	RL
Dibromochloromethane	ND	5.0
1,2-Dibromoethane	ND	5.0
Chlorobenzene	ND	5.0
1,1,1,2-Tetrachloroethane	ND	5.0
Ethylbenzene	510	5.0
m,p-Xylenes	1,300	5.0
o-Xylene	190	5.0
Styrene	ND	5.0
Bromoform	ND	10
Isopropylbenzene	57	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
1,2,3-Trichloropropane	ND	5.0
Propylbenzene	170	5.0
Bromobenzene	ND	5.0
1,3,5-Trimethylbenzene	290	5.0
2-Chlorotoluene	ND	5.0
4-Chlorotoluene	ND	5.0
tert-Butylbenzene	ND	5.0
1,2,4-Trimethylbenzene	850	5.0
sec-Butylbenzene	16	5.0
para-Isopropyl Toluene	8.7	5.0
1,3-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0
n-Butylbenzene	57	5.0
1,2-Dichlorobenzene	ND	5.0
1,2-Dibromo-3-Chloropropane	ND	20
1,2,4-Trichlorobenzene	ND	5.0
Hexachlorobutadiene	ND	20
Naphthalene	150	20
1,2,3-Trichlorobenzene	ND	5.0

Surrogate	%REC	Limits
Dibromofluoromethane	106	77-134
1,2-Dichloroethane-d4	112	72-140
Toluene-d8	92	80-120
Bromofluorobenzene	101	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	244355	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8260B
Field ID:	MIP-4-DUP	Batch#:	197131
Lab ID:	244355-005	Sampled:	04/05/13
Matrix:	Water	Received:	04/05/13
Units:	ug/L	Analyzed:	04/08/13
Diln Fac:	12.50		

Analyte	Result	RL
Freon 12	ND	13
Chloromethane	ND	13
Vinyl Chloride	ND	6.3
Bromomethane	ND	13
Chloroethane	ND	13
Trichlorofluoromethane	ND	13
Acetone	ND	130
Freon 113	ND	63
1,1-Dichloroethene	ND	6.3
Methylene Chloride	ND	63
Carbon Disulfide	ND	6.3
MTBE	ND	6.3
trans-1,2-Dichloroethene	ND	6.3
Vinyl Acetate	ND	130
1,1-Dichloroethane	ND	6.3
2-Butanone	ND	130
cis-1,2-Dichloroethene	7.0	6.3
2,2-Dichloropropane	ND	6.3
Chloroform	ND	6.3
Bromochloromethane	ND	6.3
1,1,1-Trichloroethane	ND	6.3
1,1-Dichloropropene	ND	6.3
Carbon Tetrachloride	ND	6.3
1,2-Dichloroethane	ND	6.3
Benzene	29	6.3
Trichloroethene	750	6.3
1,2-Dichloropropane	ND	6.3
Bromodichloromethane	ND	6.3
Dibromomethane	ND	6.3
4-Methyl-2-Pentanone	ND	130
cis-1,3-Dichloropropene	ND	6.3
Toluene	8.5	6.3
trans-1,3-Dichloropropene	ND	6.3
1,1,2-Trichloroethane	ND	6.3
2-Hexanone	ND	130
1,3-Dichloropropane	ND	6.3
Tetrachloroethene	ND	6.3

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	244355	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8260B
Field ID:	MIP-4-DUP	Batch#:	197131
Lab ID:	244355-005	Sampled:	04/05/13
Matrix:	Water	Received:	04/05/13
Units:	ug/L	Analyzed:	04/08/13
Diln Fac:	12.50		

Analyte	Result	RL
Dibromochloromethane	ND	6.3
1,2-Dibromoethane	ND	6.3
Chlorobenzene	ND	6.3
1,1,1,2-Tetrachloroethane	ND	6.3
Ethylbenzene	670	6.3
m,p-Xylenes	1,700	6.3
o-Xylene	270	6.3
Styrene	ND	6.3
Bromoform	ND	13
Isopropylbenzene	68	6.3
1,1,2,2-Tetrachloroethane	ND	6.3
1,2,3-Trichloropropane	ND	6.3
Propylbenzene	200	6.3
Bromobenzene	ND	6.3
1,3,5-Trimethylbenzene	340	6.3
2-Chlorotoluene	ND	6.3
4-Chlorotoluene	ND	6.3
tert-Butylbenzene	ND	6.3
1,2,4-Trimethylbenzene	1,000	6.3
sec-Butylbenzene	20	6.3
para-Isopropyl Toluene	11	6.3
1,3-Dichlorobenzene	ND	6.3
1,4-Dichlorobenzene	ND	6.3
n-Butylbenzene	73	6.3
1,2-Dichlorobenzene	ND	6.3
1,2-Dibromo-3-Chloropropane	ND	25
1,2,4-Trichlorobenzene	ND	6.3
Hexachlorobutadiene	ND	25
Naphthalene	200	25
1,2,3-Trichlorobenzene	ND	6.3

Surrogate	%REC	Limits
Dibromofluoromethane	106	77-134
1,2-Dichloroethane-d4	113	72-140
Toluene-d8	90	80-120
Bromofluorobenzene	100	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	244355	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8260B
Field ID:	MIP-5	Batch#:	197131
Lab ID:	244355-006	Sampled:	04/05/13
Matrix:	Water	Received:	04/05/13
Units:	ug/L	Analyzed:	04/08/13
Diln Fac:	2.500		

Analyte	Result	RL
Freon 12	ND	2.5
Chloromethane	ND	2.5
Vinyl Chloride	ND	1.3
Bromomethane	ND	2.5
Chloroethane	ND	2.5
Trichlorofluoromethane	ND	2.5
Acetone	ND	25
Freon 113	ND	13
1,1-Dichloroethene	ND	1.3
Methylene Chloride	ND	13
Carbon Disulfide	ND	1.3
MTBE	ND	1.3
trans-1,2-Dichloroethene	ND	1.3
Vinyl Acetate	ND	25
1,1-Dichloroethane	ND	1.3
2-Butanone	ND	25
cis-1,2-Dichloroethene	9.7	1.3
2,2-Dichloropropane	ND	1.3
Chloroform	1.1 J	1.3
Bromochloromethane	ND	1.3
1,1,1-Trichloroethane	ND	1.3
1,1-Dichloropropene	ND	1.3
Carbon Tetrachloride	ND	1.3
1,2-Dichloroethane	1.2 J	1.3
Benzene	9.0	1.3
Trichloroethene	170	1.3
1,2-Dichloropropane	ND	1.3
Bromodichloromethane	ND	1.3
Dibromomethane	ND	1.3
4-Methyl-2-Pentanone	ND	25
cis-1,3-Dichloropropene	ND	1.3
Toluene	18	1.3
trans-1,3-Dichloropropene	ND	1.3
1,1,2-Trichloroethane	ND	1.3
2-Hexanone	ND	25
1,3-Dichloropropane	ND	1.3
Tetrachloroethene	ND	1.3
Dibromochloromethane	ND	1.3
1,2-Dibromoethane	ND	1.3
Chlorobenzene	ND	1.3
1,1,1,2-Tetrachloroethane	ND	1.3
Ethylbenzene	46	1.3
m,p-Xylenes	150	1.3
o-Xylene	39	1.3
Styrene	ND	1.3
Bromoform	ND	2.5
Isopropylbenzene	8.9	1.3
1,1,2,2-Tetrachloroethane	ND	1.3
1,2,3-Trichloropropane	ND	1.3
Propylbenzene	34	1.3
Bromobenzene	ND	1.3
1,3,5-Trimethylbenzene	58	1.3
2-Chlorotoluene	ND	1.3

J= Estimated value
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	244355	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8260B
Field ID:	MIP-5	Batch#:	197131
Lab ID:	244355-006	Sampled:	04/05/13
Matrix:	Water	Received:	04/05/13
Units:	ug/L	Analyzed:	04/08/13
Diln Fac:	2.500		

Analyte	Result	RL
4-Chlorotoluene	ND	1.3
tert-Butylbenzene	ND	1.3
1,2,4-Trimethylbenzene	170	1.3
sec-Butylbenzene	7.7	1.3
para-Isopropyl Toluene	4.2	1.3
1,3-Dichlorobenzene	ND	1.3
1,4-Dichlorobenzene	ND	1.3
n-Butylbenzene	19	1.3
1,2-Dichlorobenzene	ND	1.3
1,2-Dibromo-3-Chloropropane	ND	5.0
1,2,4-Trichlorobenzene	ND	1.3
Hexachlorobutadiene	ND	5.0
Naphthalene	18	5.0
1,2,3-Trichlorobenzene	ND	1.3

Surrogate	%REC	Limits
Dibromofluoromethane	104	77-134
1,2-Dichloroethane-d4	107	72-140
Toluene-d8	94	80-120
Bromofluorobenzene	102	80-120

J= Estimated value
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	244355	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8260B
Field ID:	QCTB	Batch#:	197120
Lab ID:	244355-007	Sampled:	04/05/13
Matrix:	Water	Received:	04/05/13
Units:	ug/L	Analyzed:	04/07/13
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	5.0
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5
Tetrachloroethene	ND	0.5

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	244355	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8260B
Field ID:	QCTB	Batch#:	197120
Lab ID:	244355-007	Sampled:	04/05/13
Matrix:	Water	Received:	04/05/13
Units:	ug/L	Analyzed:	04/07/13
Diln Fac:	1.000		

Analyte	Result	RL
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	2.0
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	2.0
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	101	77-134
1,2-Dichloroethane-d4	97	72-140
Toluene-d8	101	80-120
Bromofluorobenzene	97	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	244355	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8260B
Field ID:	QCEB	Batch#:	197120
Lab ID:	244355-008	Sampled:	04/05/13
Matrix:	Water	Received:	04/05/13
Units:	ug/L	Analyzed:	04/07/13
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	5.0
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	0.4 J	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5

J= Estimated value
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	244355	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8260B
Field ID:	QCEB	Batch#:	197120
Lab ID:	244355-008	Sampled:	04/05/13
Matrix:	Water	Received:	04/05/13
Units:	ug/L	Analyzed:	04/07/13
Diln Fac:	1.000		

Analyte	Result	RL
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	2.0
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	2.0
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	102	77-134
1,2-Dichloroethane-d4	97	72-140
Toluene-d8	98	80-120
Bromofluorobenzene	100	80-120

J= Estimated value
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	244355	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC683179	Batch#:	197120
Matrix:	Water	Analyzed:	04/07/13
Units:	ug/L		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	5.0
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5
Tetrachloroethene	ND	0.5

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	244355	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC683179	Batch#:	197120
Matrix:	Water	Analyzed:	04/07/13
Units:	ug/L		

Analyte	Result	RL
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	2.0
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	2.0
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	99	77-134
1,2-Dichloroethane-d4	95	72-140
Toluene-d8	98	80-120
Bromofluorobenzene	101	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	244355	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	197120
Units:	ug/L	Analyzed:	04/07/13
Diln Fac:	1.000		

Type: BS Lab ID: QC683180

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	20.00	23.20	116	61-137
Benzene	20.00	21.40	107	78-125
Trichloroethene	20.00	21.41	107	77-122
Toluene	20.00	21.85	109	79-123
Chlorobenzene	20.00	19.97	100	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	100	77-134
1,2-Dichloroethane-d4	93	72-140
Toluene-d8	96	80-120
Bromofluorobenzene	94	80-120

Type: BSD Lab ID: QC683181

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	20.00	21.92	110	61-137	6	24
Benzene	20.00	20.39	102	78-125	5	20
Trichloroethene	20.00	19.94	100	77-122	7	20
Toluene	20.00	21.52	108	79-123	2	20
Chlorobenzene	20.00	19.26	96	80-120	4	20

Surrogate	%REC	Limits
Dibromofluoromethane	100	77-134
1,2-Dichloroethane-d4	94	72-140
Toluene-d8	100	80-120
Bromofluorobenzene	94	80-120

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	244355	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	197131
Units:	ug/L	Analyzed:	04/08/13
Diln Fac:	1.000		

Type: BS Lab ID: QC683218

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	25.00	32.68	131	61-137
Benzene	25.00	28.69	115	78-125
Trichloroethene	25.00	29.10	116	77-122
Toluene	25.00	27.88	112	79-123
Chlorobenzene	25.00	26.43	106	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	104	77-134
1,2-Dichloroethane-d4	103	72-140
Toluene-d8	97	80-120
Bromofluorobenzene	99	80-120

Type: BSD Lab ID: QC683219

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	25.00	30.87	123	61-137	6	24
Benzene	25.00	28.98	116	78-125	1	20
Trichloroethene	25.00	27.86	111	77-122	4	20
Toluene	25.00	26.75	107	79-123	4	20
Chlorobenzene	25.00	24.33	97	80-120	8	20

Surrogate	%REC	Limits
Dibromofluoromethane	103	77-134
1,2-Dichloroethane-d4	107	72-140
Toluene-d8	96	80-120
Bromofluorobenzene	99	80-120

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	244355	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC683220	Batch#:	197131
Matrix:	Water	Analyzed:	04/08/13
Units:	ug/L		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	5.0
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	0.8 b	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5

b= See narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	244355	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC683220	Batch#:	197131
Matrix:	Water	Analyzed:	04/08/13
Units:	ug/L		

Analyte	Result	RL
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	2.0
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	2.0
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	105	77-134
1,2-Dichloroethane-d4	110	72-140
Toluene-d8	95	80-120
Bromofluorobenzene	97	80-120

b= See narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	244355	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	197179
Units:	ug/L	Analyzed:	04/09/13
Diln Fac:	1.000		

Type: BS Lab ID: QC683440

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	25.00	25.85	103	61-137
Benzene	25.00	26.88	108	78-125
Trichloroethene	25.00	26.18	105	77-122
Toluene	25.00	25.12	100	79-123
Chlorobenzene	25.00	23.38	94	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	110	77-134
1,2-Dichloroethane-d4	114	72-140
Toluene-d8	100	80-120
Bromofluorobenzene	100	80-120

Type: BSD Lab ID: QC683441

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	25.00	24.30	97	61-137	6	24
Benzene	25.00	25.80	103	78-125	4	20
Trichloroethene	25.00	25.27	101	77-122	4	20
Toluene	25.00	24.33	97	79-123	3	20
Chlorobenzene	25.00	23.16	93	80-120	1	20

Surrogate	%REC	Limits
Dibromofluoromethane	110	77-134
1,2-Dichloroethane-d4	113	72-140
Toluene-d8	101	80-120
Bromofluorobenzene	100	80-120

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	244355	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC683442	Batch#:	197179
Matrix:	Water	Analyzed:	04/09/13
Units:	ug/L		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	5.0
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5
Tetrachloroethene	ND	0.5

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	244355	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC683442	Batch#:	197179
Matrix:	Water	Analyzed:	04/09/13
Units:	ug/L		

Analyte	Result	RL
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	2.0
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	2.0
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	114	77-134
1,2-Dichloroethane-d4	120	72-140
Toluene-d8	101	80-120
Bromofluorobenzene	103	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	244355	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8260B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC683662	Batch#:	197237
Matrix:	Water	Analyzed:	04/10/13
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	18.75	19.07	102	61-137
Benzene	18.75	20.45	109	78-125
Trichloroethene	18.75	19.24	103	77-122
Toluene	18.75	20.01	107	79-123
Chlorobenzene	18.75	18.97	101	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	101	77-134
1,2-Dichloroethane-d4	105	72-140
Toluene-d8	100	80-120
Bromofluorobenzene	95	80-120

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	244355	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC683663	Batch#:	197237
Matrix:	Water	Analyzed:	04/10/13
Units:	ug/L		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	5.0
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5
Tetrachloroethene	ND	0.5

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	244355	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC683663	Batch#:	197237
Matrix:	Water	Analyzed:	04/10/13
Units:	ug/L		

Analyte	Result	RL
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	2.0
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	2.0
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	101	77-134
1,2-Dichloroethane-d4	106	72-140
Toluene-d8	100	80-120
Bromofluorobenzene	98	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	244355	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8260B
Field ID:	ZZZZZZZZZZ	Batch#:	197237
MSS Lab ID:	244359-008	Sampled:	04/04/13
Matrix:	Water	Received:	04/05/13
Units:	ug/L	Analyzed:	04/10/13
Diln Fac:	1.000		

Type: MS Lab ID: QC683723

Analyte	MSS Result	Spiked	Result	%REC	Limits
1,1-Dichloroethene	<0.1591	25.00	25.97	104	68-130
Benzene	<0.1000	25.00	27.26	109	80-125
Trichloroethene	<0.1000	25.00	25.50	102	72-123
Toluene	<0.1000	25.00	26.70	107	80-122
Chlorobenzene	<0.1000	25.00	25.25	101	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	102	77-134
1,2-Dichloroethane-d4	100	72-140
Toluene-d8	99	80-120
Bromofluorobenzene	94	80-120

Type: MSD Lab ID: QC683724

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	25.00	24.67	99	68-130	5	26
Benzene	25.00	26.17	105	80-125	4	21
Trichloroethene	25.00	24.07	96	72-123	6	20
Toluene	25.00	25.68	103	80-122	4	21
Chlorobenzene	25.00	24.32	97	80-120	4	21

Surrogate	%REC	Limits
Dibromofluoromethane	101	77-134
1,2-Dichloroethane-d4	100	72-140
Toluene-d8	99	80-120
Bromofluorobenzene	95	80-120

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

Laboratory Job Number 246124
ANALYTICAL REPORT

Arcadis	Project : EM001048.0001.0003
2000 Powell St.	Location : VW Oakland
Emeryville, CA 94608	Level : II

Sample ID	Lab ID
MW8-5.0-5.5	246124-001
MW8-10-10.5	246124-002
MW8-15-15.5	246124-003

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: _____ Date: 06/21/2013

Tracy Babjar
Project Manager
(510) 204-2226

NELAP # 01107CA

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**246124**
Client:	**Arcadis**
Project:	**EM001048.0001.0003**
Location:	**VW Oakland**
Request Date:	**06/13/13**
Samples Received:	**06/13/13**

This data package contains sample and QC results for three soil samples, requested for the above referenced project on 06/13/13. The samples were received cold and intact. All data were e-mailed to Ron Goloubow on 06/20/13.

TPH-Purgeables and/or BTXE by GC (EPA 8015B):
No analytical problems were encountered.

TPH-Extractables by GC (EPA 8015B):
No analytical problems were encountered.

Moisture (ASTM D2216/CLP):
No analytical problems were encountered.

246124

ARCADIS
Infrastructure · Water · Environment · Buildings

ID#:

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page ___ of ___

Lab Work Order #

Send Results to:

Contact & Company Name: Ron Golonbow
Telephone: ~~510-~~ 510-596-9550
Address: 2000 Powell St. 7th Floor
Fax:
City: Emeryville State: CA Zip: 94608
E-mail Address: Ron.Golonbow@arcadis-us.com
Project Name/Location (City, State): VW Oakland/Oakland, CA
Project #: EM001048.0001.00003
Sampler's Printed Name: Saumya Bose ~~ARCADIS~~
Sampler's Signature: S Bose

Preservative	None	None					
Filtered (✓)	No	No					
# of Containers	3	3					
Container Information	8oz	40z					

PARAMETER ANALYSIS & METHOD

Keys

Preservation Key:
A. H_2SO_4
B. HCL
C. HNO_3
D. NaOH
E. None
F. Other: _____
G. Other: _____
H. Other: _____

Container Information Key:
1. 40 ml Vial
2. 1 L Amber
3. 250 ml Plastic
4. 500 ml Plastic
5. Encore
6. 2 oz. Glass
7. 4 oz. Glass
8. 8 oz. Glass
9. Other: _____
10. Other: _____

Matrix Key:
SO - Soil
SE - Sediment
NL - NAPL/Oil
W - Water
SL - Sludge
SW - Sample Wipe
T - Tissue
A - Air
Other: _____

Sample ID	Collection Date	Collection Time	Type (✓) Comp	Type (✓) Grab	Matrix	TPH-D & MO	TPH-G & BTEX	REMARKS
MW8-5.0-5.5	6/13/13	9:45		✓	Solid	X	X	
MW8-10-10.5	↓	9:50		↓	↓	↓	↓	
MW8-15-15.5	↓	9:55		↓	↓	↓	↓	

Special Instructions/Comments:

☐ Special QA/QC Instructions(✓):

Laboratory Information and Receipt		Relinquished By	Received By	Relinquished By	Laboratory Received By
Lab Name:	Cooler Custody Seal (✓)	Printed Name: Saumya Bose	Printed Name: Pat Gonzalez	Printed Name:	Printed Name:
☐ Cooler packed with ice (✓)	☐ Intact ☐ Not Intact	Signature: S Bose	Signature: Pat Gonzalez	Signature:	Signature:
Specify Turnaround Requirements:	Sample Receipt:	Firm: ARCADIS	Firm/Courier: CT	Firm/Courier:	Firm:
Shipping Tracking #:	Condition/Cooler Temp: _____	Date/Time: 6/13/13 1520	Date/Time: 6/13/13 1520	Date/Time:	Date/Time:

Distribution: WHITE – Laboratory returns with results YELLOW – Lab copy PINK – Retained by ARCADIS

Subject: EM001048 - Sample Log in Summaries
From: "Goloubow, Ron" <Ron.Goloubow@arcadis-us.com>
Date: 6/14/2013 7:03 AM
To: Tracy Babjar <tracy.babjar@ctberk.com>
CC: "Bose, Saumyaditya" <Saumyaditya.Bose@arcadis-us.com>, "Bell, Caitlin" <Caitlin.Bell@arcadis-us.com>

Can you please analyzed the soil samples for moisture too so that we can get the "dry weight concentrations"?

Thanks Ron.

Subject: EM001048.0001.0003 - C&T Login Summary (246125)
From: Tracy Babjar <tracy.babjar@ctberk.com>
Date: 6/13/2013 5:08 PM
To: "McNeece, Colin" <Colin.McNeece@arcadis-us.com>, "Goloubow, Ron" <Ron.Goloubow@arcadis-us.com>

C&T Login Summary for 246125

Project: EM001048.0001.0003	**Report To:** Arcadis	**Bill To:** Arcadis
Site: VW Oakland	2000 Powell St.	630 Plaza Drive
Lab Login #: 246125	7th Floor	Suite 600
Report Level: II	Emeryville, CA 94608	Highlands Ranch, CO 80129
Report Due: 06/20/13	ATTN: Ron Goloubow	ATTN: Accounts Payable
PO#:	(510) 652-4500	(720) 344-3500
C&T Proj Mgr: Tracy Babjar		

Client ID	Lab ID	Sampled	Received	Matrix	Analyses	COC #	Comments
MW9-5.0-5.5	001	06/13	06/13				
				Soil	TEHM		
				Soil	TVH		
MW9-10-10.5	002	06/13	06/13				
				Soil	TEHM		
				Soil	TVH		

COOLER RECEIPT CHECKLIST

Curtis & Tompkins, Ltd.

Login # 246127 Date Received 6/13/13 Number of coolers 1
Client ARCADIS Project VW OAKLAND (EM001048.0001.00003)

Date Opened 6/13/13 By (print) TR (sign) Tina Raikar
Date Logged in 6/13/13 By (print) MG (sign) MG

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) 15.8

☐ 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, Ltd.

Total Volatile Hydrocarbons

Lab #:	246124	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8015B
Matrix:	Soil	Batch#:	199716
Units:	mg/Kg	Sampled:	06/13/13
Basis:	dry	Received:	06/13/13
Diln Fac:	1.000		

Field ID: MW8-5.0-5.5 Moisture: 18%
Type: SAMPLE Analyzed: 06/15/13
Lab ID: 246124-001

Analyte	Result	RL
Gasoline C7-C12	ND	1.1

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	91	64-139

Field ID: MW8-10-10.5 Moisture: 21%
Type: SAMPLE Analyzed: 06/15/13
Lab ID: 246124-002

Analyte	Result	RL
Gasoline C7-C12	ND	1.4

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	95	64-139

Field ID: MW8-15-15.5 Moisture: 21%
Type: SAMPLE Analyzed: 06/15/13
Lab ID: 246124-003

Analyte	Result	RL
Gasoline C7-C12	ND	1.3

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	96	64-139

Type: BLANK Analyzed: 06/14/13
Lab ID: QC693724

Analyte	Result	RL
Gasoline C7-C12	ND	1.0

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	88	64-139

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	246124	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC693723	Batch#:	199716
Matrix:	Soil	Analyzed:	06/14/13
Units:	mg/Kg		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1.000	0.9177	92	80-120

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	92	64-139

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	246124	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8015B
Field ID:	MW8-15-15.5	Diln Fac:	1.000
MSS Lab ID:	246124-003	Batch#:	199716
Matrix:	Soil	Sampled:	06/13/13
Units:	mg/Kg	Received:	06/13/13
Basis:	dry	Analyzed:	06/15/13

Type: MS Moisture: 21%
Lab ID: QC693725

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	<0.08635	14.06	11.71	83	42-120

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	92	64-139

Type: MSD Moisture: 21%
Lab ID: QC693726

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	13.76	11.56	84	42-120	1	42

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	95	64-139

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	246124	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 3550B
Project#:	EM001048.0001.0003	Analysis:	EPA 8015B
Matrix:	Soil	Batch#:	199818
Units:	mg/Kg	Sampled:	06/13/13
Basis:	dry	Received:	06/13/13
Diln Fac:	1.000	Prepared:	06/18/13

Field ID: MW8-5.0-5.5 Moisture: 18%
Type: SAMPLE Analyzed: 06/18/13
Lab ID: 246124-001

Analyte	Result	RL
Diesel C10-C24	1.9 Y	1.2
Motor Oil C24-C36	9.1	6.1

Surrogate	%REC	Limits
o-Terphenyl	112	62-136

Field ID: MW8-10-10.5 Moisture: 21%
Type: SAMPLE Analyzed: 06/18/13
Lab ID: 246124-002

Analyte	Result	RL
Diesel C10-C24	ND	1.3
Motor Oil C24-C36	ND	6.3

Surrogate	%REC	Limits
o-Terphenyl	105	62-136

Field ID: MW8-15-15.5 Moisture: 21%
Type: SAMPLE Analyzed: 06/19/13
Lab ID: 246124-003

Analyte	Result	RL
Diesel C10-C24	ND	1.3
Motor Oil C24-C36	ND	6.4

Surrogate	%REC	Limits
o-Terphenyl	99	62-136

Type: BLANK Analyzed: 06/19/13
Lab ID: QC694140

Analyte	Result	RL
Diesel C10-C24	ND	1.0
Motor Oil C24-C36	ND	5.0

Surrogate	%REC	Limits
o-Terphenyl	98	62-136

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 #:	246124	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 3550B
Project#:	EM001048.0001.0003	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC694141	Batch#:	199818
Matrix:	Soil	Prepared:	06/18/13
Units:	mg/Kg	Analyzed:	06/18/13

Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	50.20	45.04	90	62-130

Surrogate	%REC	Limits
o-Terphenyl	115	62-136

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	246124	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 3550B
Project#:	EM001048.0001.0003	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	199818
MSS Lab ID:	246199-001	Sampled:	06/17/13
Matrix:	Soil	Received:	06/17/13
Units:	mg/Kg	Prepared:	06/18/13
Basis:	as received	Analyzed:	06/18/13
Diln Fac:	1.000		

Type: MS Lab ID: QC694142

Analyte	MSS Result	Spiked	Result	%REC	Limits
Diesel C10-C24	4.211	49.85	46.85	86	39-148

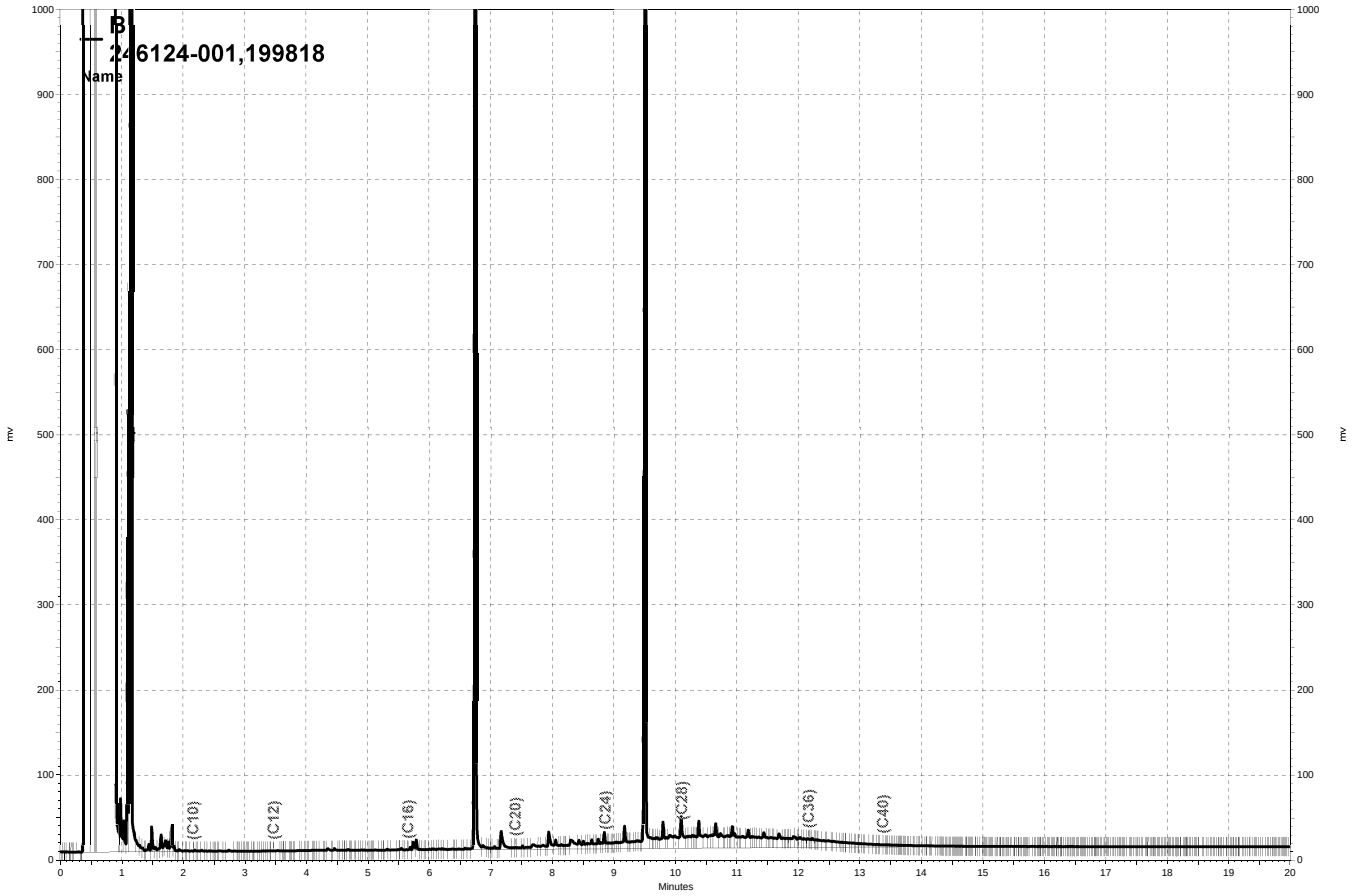
Surrogate	%REC	Limits
o-Terphenyl	113	62-136

Type: MSD Lab ID: QC694143

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	50.38	53.10	97	39-148	12	45

Surrogate	%REC	Limits
o-Terphenyl	117	62-136

RPD= Relative Percent Difference



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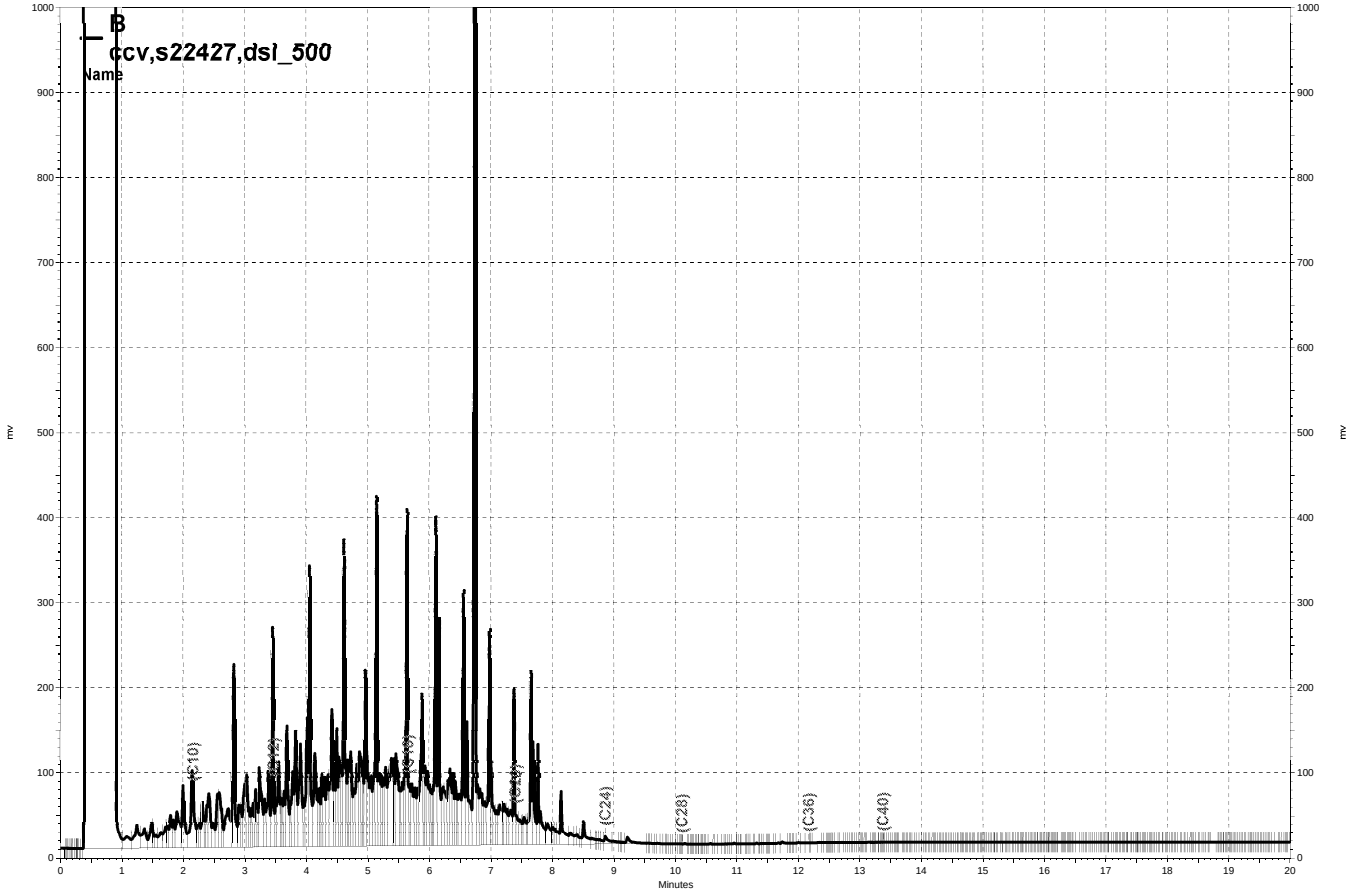

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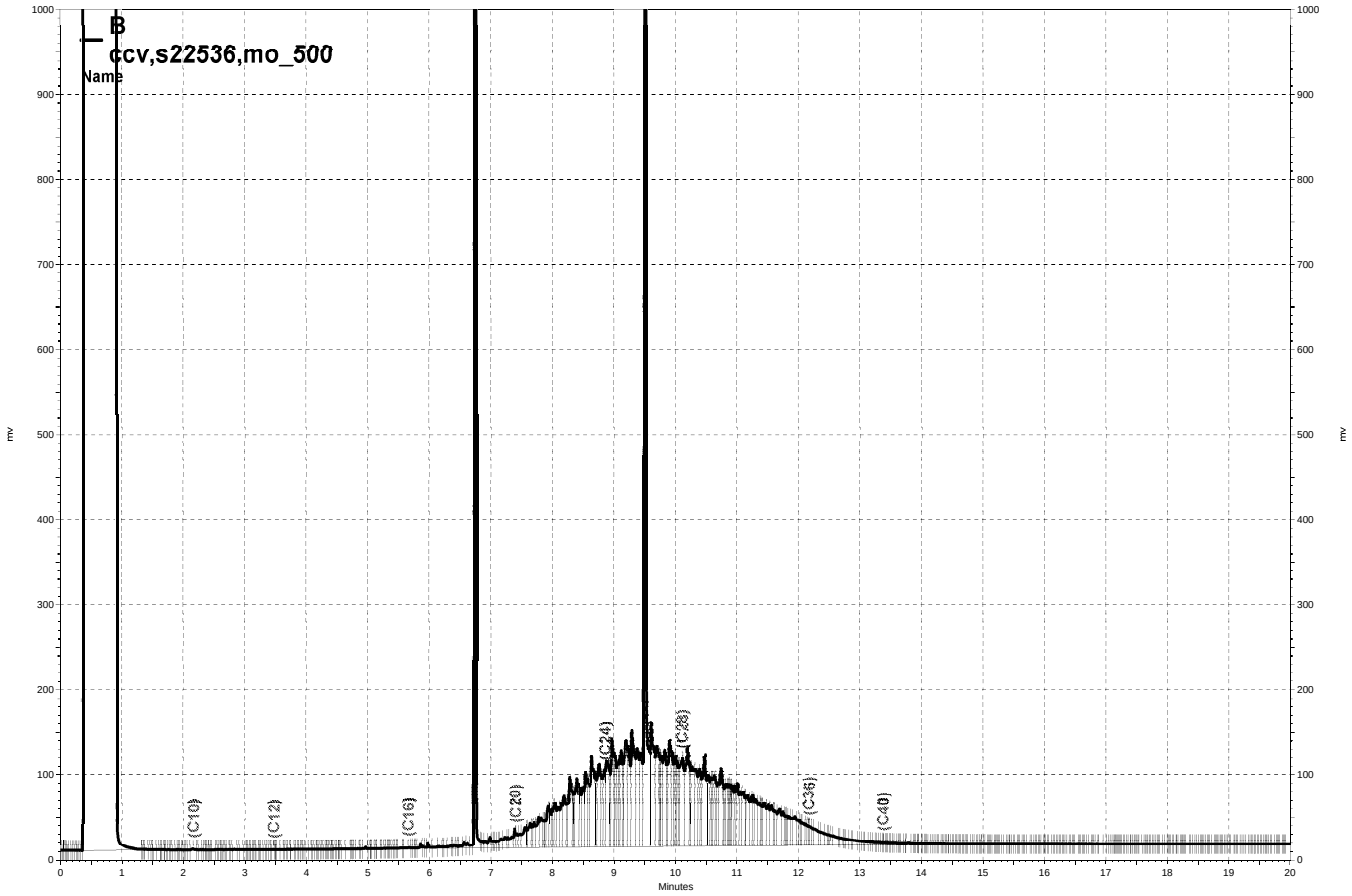

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Curtis & Tompkins, Ltd.

Moisture

Lab #:	246124	Location:	VW Oakland
Client:	Arcadis	Prep:	METHOD
Project#:	EM001048.0001.0003	Analysis:	ASTM D2216/CLP
Analyte:	Moisture, Percent	Batch#:	199736
Matrix:	Soil	Sampled:	06/13/13
Units:	%	Received:	06/13/13
Diln Fac:	1.000	Analyzed:	06/17/13

Field ID	Lab ID	Result	RL
MW8-5.0-5.5	246124-001	18	1
MW8-10-10.5	246124-002	21	1
MW8-15-15.5	246124-003	21	1

RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Moisture

Lab #:	246124	Location:	VW Oakland
Client:	Arcadis	Prep:	METHOD
Project#:	EM001048.0001.0003	Analysis:	ASTM D2216/CLP
Analyte:	Moisture, Percent	Units:	%
Field ID:	ZZZZZZZZZZ	Diln Fac:	1.000
Type:	SDUP	Batch#:	199736
MSS Lab ID:	246171-003	Sampled:	04/29/13
Lab ID:	QC693804	Received:	06/14/13
Matrix:	Soil	Analyzed:	06/17/13

MSS Result	Result	RL	RPD	Lim
28.81	26.99	1.000	7	24

RL= Reporting Limit
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

Laboratory Job Number 246125
ANALYTICAL REPORT

Arcadis	Project : EM001048.0001.0003
2000 Powell St.	Location : VW Oakland
Emeryville, CA 94608	Level : II

Sample ID	Lab ID
MW9-5.0-5.5	246125-001
MW9-10-10.5	246125-002
MW9-15-15.5	246125-003

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: _____ Date: 06/20/2013

Tracy Babjar
Project Manager
(510) 204-2226

NELAP # 01107CA

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**246125**
Client:	**Arcadis**
Project:	**EM001048.0001.0003**
Location:	**VW Oakland**
Request Date:	**06/13/13**
Samples Received:	**06/13/13**

This data package contains sample and QC results for three soil samples, requested for the above referenced project on 06/13/13. The samples were received cold and intact. All data were e-mailed to Ron Goloubow on 06/20/13.

TPH-Purgeables and/or BTXE by GC (EPA 8015B):
No analytical problems were encountered.

TPH-Extractables by GC (EPA 8015B):
No analytical problems were encountered.

Moisture (ASTM D2216/CLP):
No analytical problems were encountered.

246125

ARCADIS
Infrastructure · Water · Environment · Buildings

ID#:

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page ___ of ___

Lab Work Order #

Send Results to:

Contact & Company Name: Ron Golombow	Telephone: 510-596-9550
Address: 2000 Powell St. 7th Floor	Fax:
City: Emeryville State: CA Zip: 94608	E-mail Address: Ron.Golombow@arcadis-us.com
Project Name/Location (City, State): VW Oakland/Oakland, CA	Project #: EM001048.0001.00003
Sampler's Printed Name: Saumya Bose	Sampler's Signature: S Bose

Sample ID	Collection Date	Collection Time	Type (✓) Comp	Type (✓) Grab	Matrix	Preservative	Filtered (✓)	# of Containers	Container Information	TPH-D&MO	TPH-G&BTEX						
						None	None										
						NO	NO										
						3	3										
						8oz	40z										
MW9 - 5.0-5.5	6/13/13	11:55		✓	Solid	X	X										
MW9 - 10-10.5	↓	12:00		↓	↓	↓	↓										
MW9 - 15-15.5	↓	12:05		↓	↓	↓	↓										

Keys

Preservation Key:
A. H_2SO_4
B. HCL
C. HNO_3
D. NaOH
E. None
F. Other: _____
G. Other: _____
H. Other: _____

Container Information Key:
1. 40 ml Vial
2. 1 L Amber
3. 250 ml Plastic
4. 500 ml Plastic
5. Encore
6. 2 oz. Glass
7. 4 oz. Glass
8. 8 oz. Glass
9. Other: _____
10. Other: _____

Matrix Key:
SO - Soil
W - Water
T - Tissue
SE - Sediment
SL - Sludge
A - Air
NL - NAPL/Oil
SW - Sample Wipe
Other: _____

PARAMETER ANALYSIS & METHOD

REMARKS

Special Instructions/Comments:

☐ Special QA/QC Instructions(✓):

Laboratory Information and Receipt		Relinquished By	Received By	Relinquished By	Laboratory Received By
Lab Name:	Cooler Custody Seal (✓)	Printed Name: Saumya Bose	Printed Name: Pat Gonzalez	Printed Name:	Printed Name:
☐ Cooler packed with ice (✓)	☐ Intact ☐ Not Intact	Signature: S Bose	Signature: Pat Gonzalez	Signature:	Signature:
Specify Turnaround Requirements:	Sample Receipt:	Firm: ARCADIS	Firm/Courier: CT	Firm/Courier:	Firm:
Shipping Tracking #:	Condition/Cooler Temp: _____	Date/Time: 6/13/13 1520	Date/Time: 6/13/13 1520	Date/Time:	Date/Time:

20730826 CofC AR Form 01.12.2007

Distribution: WHITE – Laboratory returns with results YELLOW – Lab copy PINK – Retained by ARCADIS

Subject: EM001048 - Sample Log in Summaries
From: "Goloubow, Ron" <Ron.Goloubow@arcadis-us.com>
Date: 6/14/2013 7:03 AM
To: Tracy Babjar <tracy.babjar@ctberk.com>
CC: "Bose, Saumyaditya" <Saumyaditya.Bose@arcadis-us.com>, "Bell, Caitlin" <Caitlin.Bell@arcadis-us.com>

Can you please analyzed the soil samples for moisture too so that we can get the "dry weight concentrations"?

Thanks Ron.

Subject: EM001048.0001.0003 - C&T Login Summary (246125)
From: Tracy Babjar <tracy.babjar@ctberk.com>
Date: 6/13/2013 5:08 PM
To: "McNeece, Colin" <Colin.McNeece@arcadis-us.com>, "Goloubow, Ron" <Ron.Goloubow@arcadis-us.com>

C&T Login Summary for 246125

Project: EM001048.0001.0003 **Site:** VW Oakland **Lab Login #:** 246125 **Report Level:** II **Report Due:** 06/20/13 **PO#:** **C&T Proj Mgr:** Tracy Babjar	**Report To:** Arcadis 2000 Powell St. 7th Floor Emeryville, CA 94608 ATTN: Ron Goloubow (510) 652-4500	**Bill To:** Arcadis 630 Plaza Drive Suite 600 Highlands Ranch, CO 80129 ATTN: Accounts Payable (720) 344-3500

Client ID	Lab ID	Sampled	Received	Matrix	Analyses	COC #	Comments
MW9-5.0-5.5	001	06/13	06/13				
				Soil	TEHM		
				Soil	TVH		
MW9-10-10.5	002	06/13	06/13				
				Soil	TEHM		
				Soil	TVH		

COOLER RECEIPT CHECKLIST

Curtis & Tompkins, Ltd.

Login # 246125 Date Received 6/13/13 Number of coolers 1
Client ARCADIS Project VW OAKLAND (EM001048.0001.00003)

Date Opened 6/13/13 By (print) TR (sign) Tina Raikar
Date Logged in 6/13/13 By (print) MG (sign) MG

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) 15.8

☐ 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, Ltd.

Total Volatile Hydrocarbons

Lab #:	246125	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8015B
Matrix:	Soil	Batch#:	199716
Units:	mg/Kg	Sampled:	06/13/13
Basis:	dry	Received:	06/13/13
Diln Fac:	1.000		

Field ID: MW9-5.0-5.5 Moisture: 12%
Type: SAMPLE Analyzed: 06/14/13
Lab ID: 246125-001

Analyte	Result	RL
Gasoline C7-C12	ND	1.2

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	96	64-139

Field ID: MW9-10-10.5 Moisture: 20%
Type: SAMPLE Analyzed: 06/15/13
Lab ID: 246125-002

Analyte	Result	RL
Gasoline C7-C12	2.2	1.3

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	96	64-139

Field ID: MW9-15-15.5 Moisture: 18%
Type: SAMPLE Analyzed: 06/15/13
Lab ID: 246125-003

Analyte	Result	RL
Gasoline C7-C12	ND	1.3

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	94	64-139

Type: BLANK Analyzed: 06/14/13
Lab ID: QC693724

Analyte	Result	RL
Gasoline C7-C12	ND	1.0

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	88	64-139

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	246125	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC693723	Batch#:	199716
Matrix:	Soil	Analyzed:	06/14/13
Units:	mg/Kg		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1.000	0.9177	92	80-120

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	92	64-139

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	246125	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8015B
Field ID:	MW8-15-15.5	Diln Fac:	1.000
MSS Lab ID:	246124-003	Batch#:	199716
Matrix:	Soil	Sampled:	06/13/13
Units:	mg/Kg	Received:	06/13/13
Basis:	dry	Analyzed:	06/15/13

Type: MS Moisture: 21%
Lab ID: QC693725

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	<0.08635	14.06	11.71	83	42-120

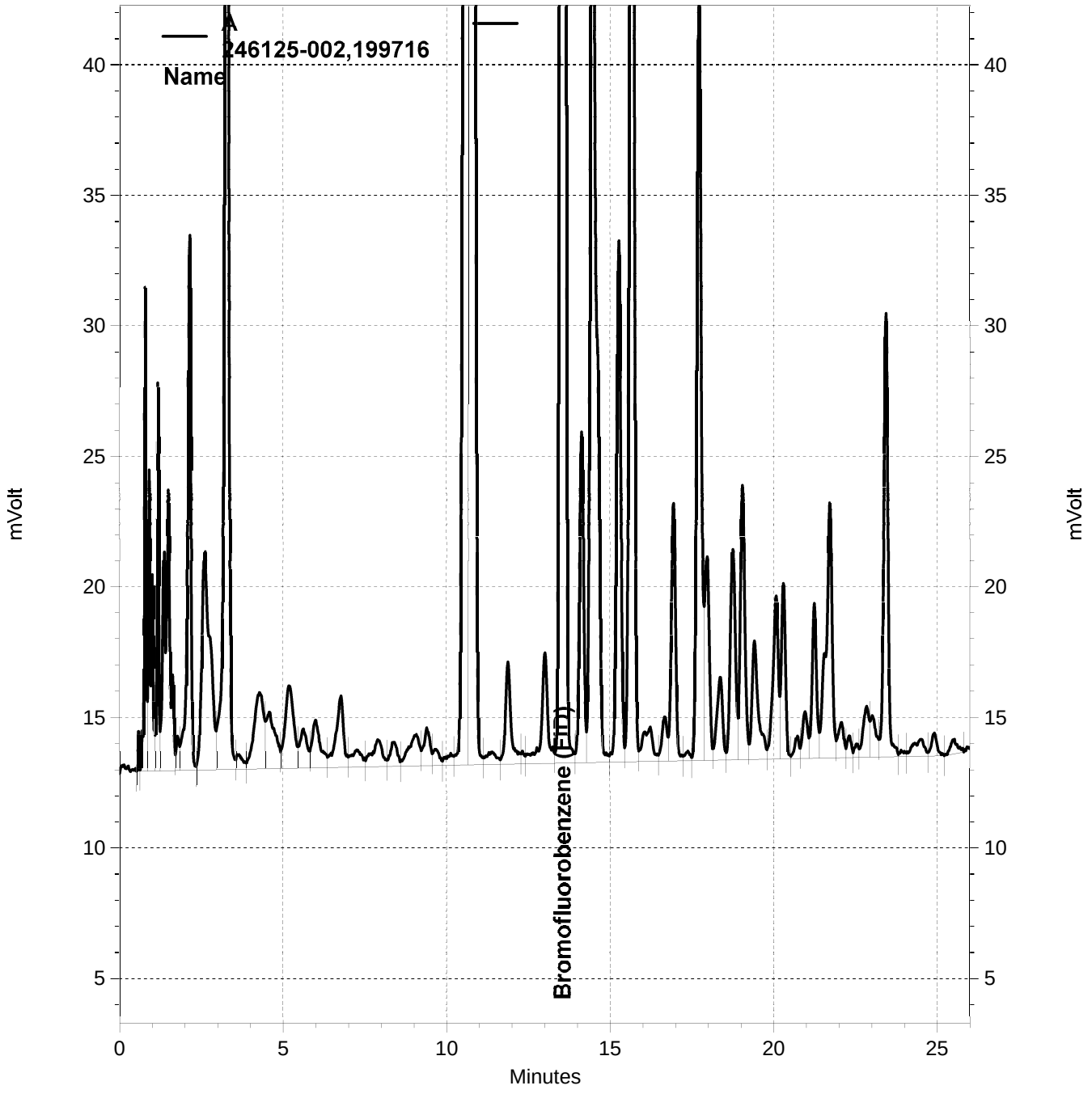
Surrogate	%REC	Limits
Bromofluorobenzene (FID)	92	64-139

Type: MSD Moisture: 21%
Lab ID: QC693726

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	13.76	11.56	84	42-120	1	42

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	95	64-139

RPD= Relative Percent Difference



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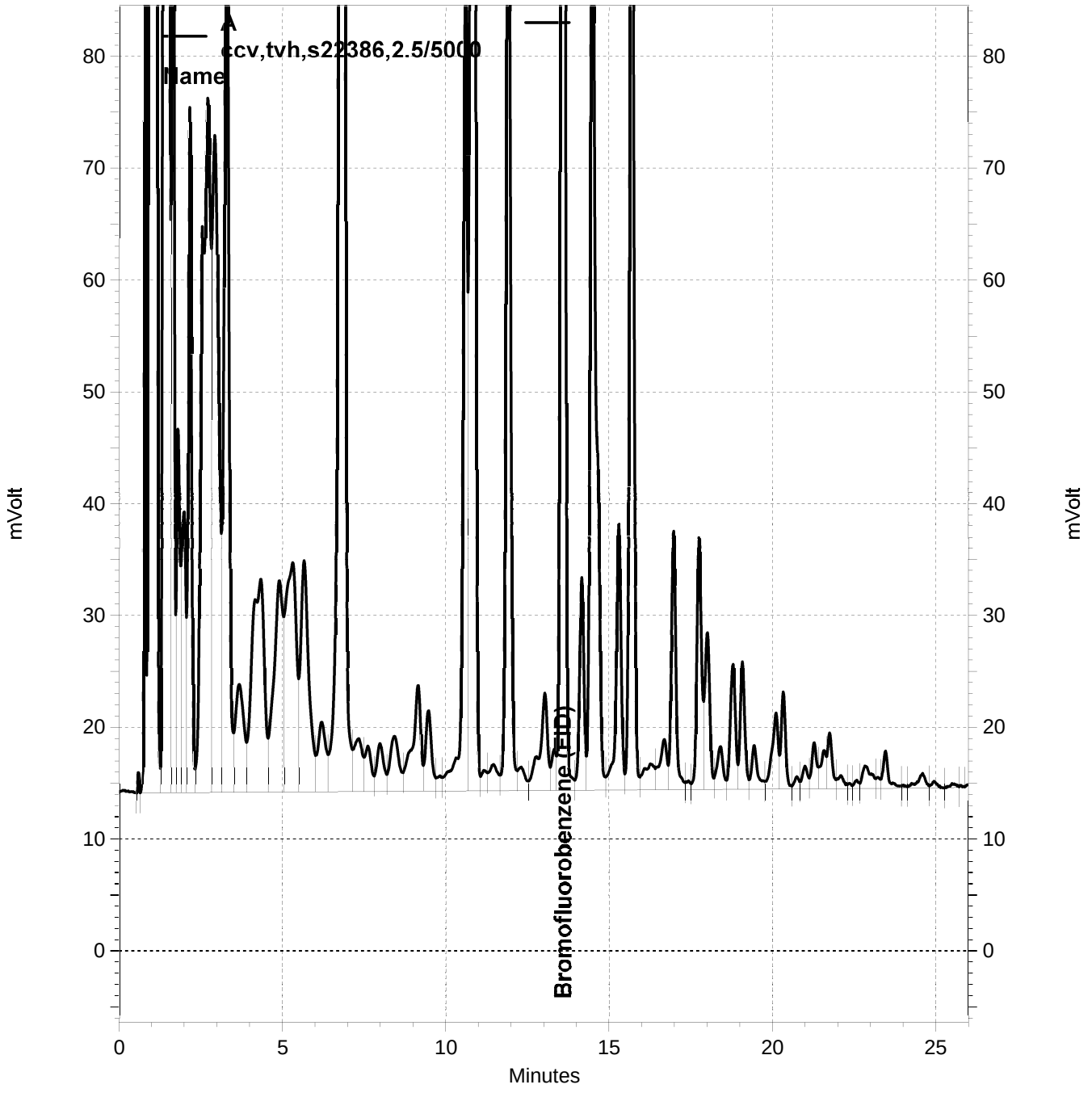

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Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	246125	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 3550B
Project#:	EM001048.0001.0003	Analysis:	EPA 8015B
Matrix:	Soil	Sampled:	06/13/13
Units:	mg/Kg	Received:	06/13/13
Basis:	dry	Prepared:	06/17/13
Diln Fac:	1.000	Analyzed:	06/18/13
Batch#:	199771		

Field ID: MW9-5.0-5.5 Lab ID: 246125-001
Type: SAMPLE Moisture: 12%

Analyte	Result	RL
Diesel C10-C24	6.7 Y	1.1
Motor Oil C24-C36	49	5.6

Surrogate	%REC	Limits
o-Terphenyl	92	62-136

Field ID: MW9-10-10.5 Lab ID: 246125-002
Type: SAMPLE Moisture: 20%

Analyte	Result	RL
Diesel C10-C24	ND	1.3
Motor Oil C24-C36	ND	6.3

Surrogate	%REC	Limits
o-Terphenyl	100	62-136

Field ID: MW9-15-15.5 Lab ID: 246125-003
Type: SAMPLE Moisture: 18%

Analyte	Result	RL
Diesel C10-C24	ND	1.2
Motor Oil C24-C36	ND	6.1

Surrogate	%REC	Limits
o-Terphenyl	93	62-136

Type: BLANK Lab ID: QC693933

Analyte	Result	RL
Diesel C10-C24	ND	1.0
Motor Oil C24-C36	ND	5.0

Surrogate	%REC	Limits
o-Terphenyl	111	62-136

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 #:	246125	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 3550B
Project#:	EM001048.0001.0003	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC693934	Batch#:	199771
Matrix:	Soil	Prepared:	06/17/13
Units:	mg/Kg	Analyzed:	06/18/13

Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	50.13	53.14	106	62-130

Surrogate	%REC	Limits
o-Terphenyl	115	62-136

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	246125	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 3550B
Project#:	EM001048.0001.0003	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	199771
MSS Lab ID:	246166-001	Sampled:	06/14/13
Matrix:	Soil	Received:	06/14/13
Units:	mg/Kg	Prepared:	06/17/13
Basis:	as received	Analyzed:	06/18/13
Diln Fac:	1.000		

Type: MS Lab ID: QC693935

Analyte	MSS Result	Spiked	Result	%REC	Limits
Diesel C10-C24	21.42	49.56	83.10	124	39-148

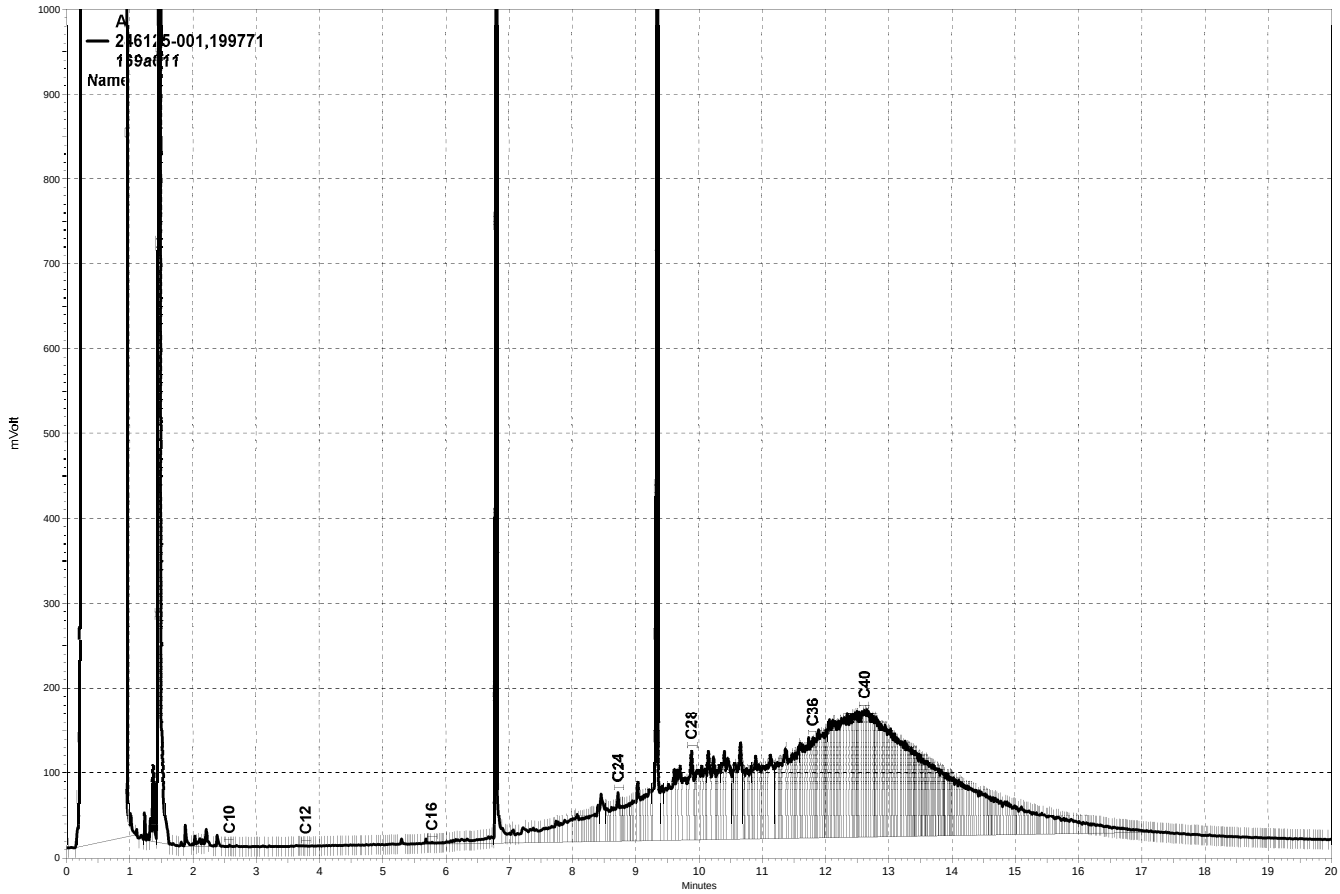
Surrogate	%REC	Limits
o-Terphenyl	119	62-136

Type: MSD Lab ID: QC693936

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	50.11	71.38	100	39-148	16	45

Surrogate	%REC	Limits
o-Terphenyl	127	62-136

RPD= Relative Percent Difference



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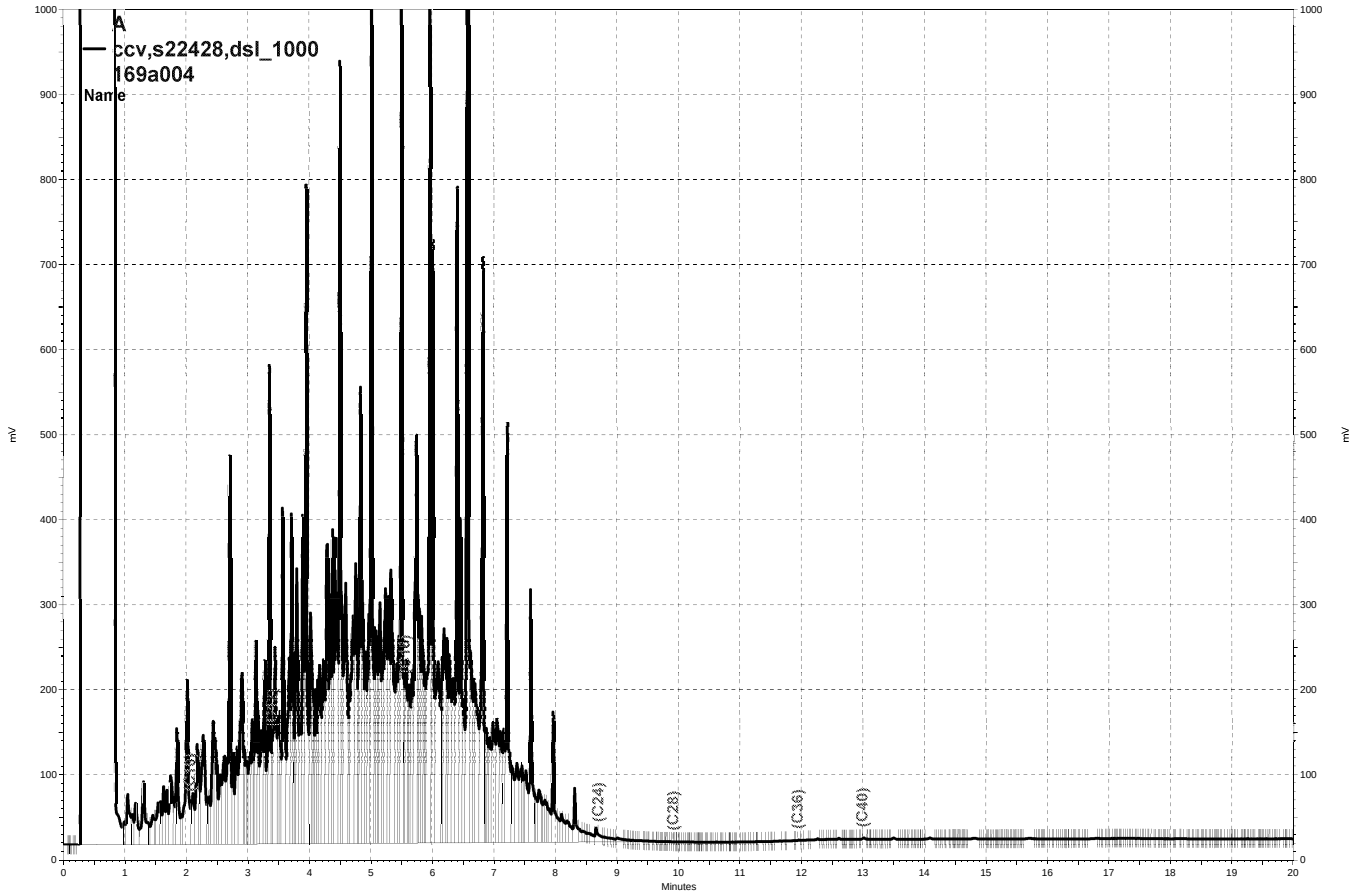

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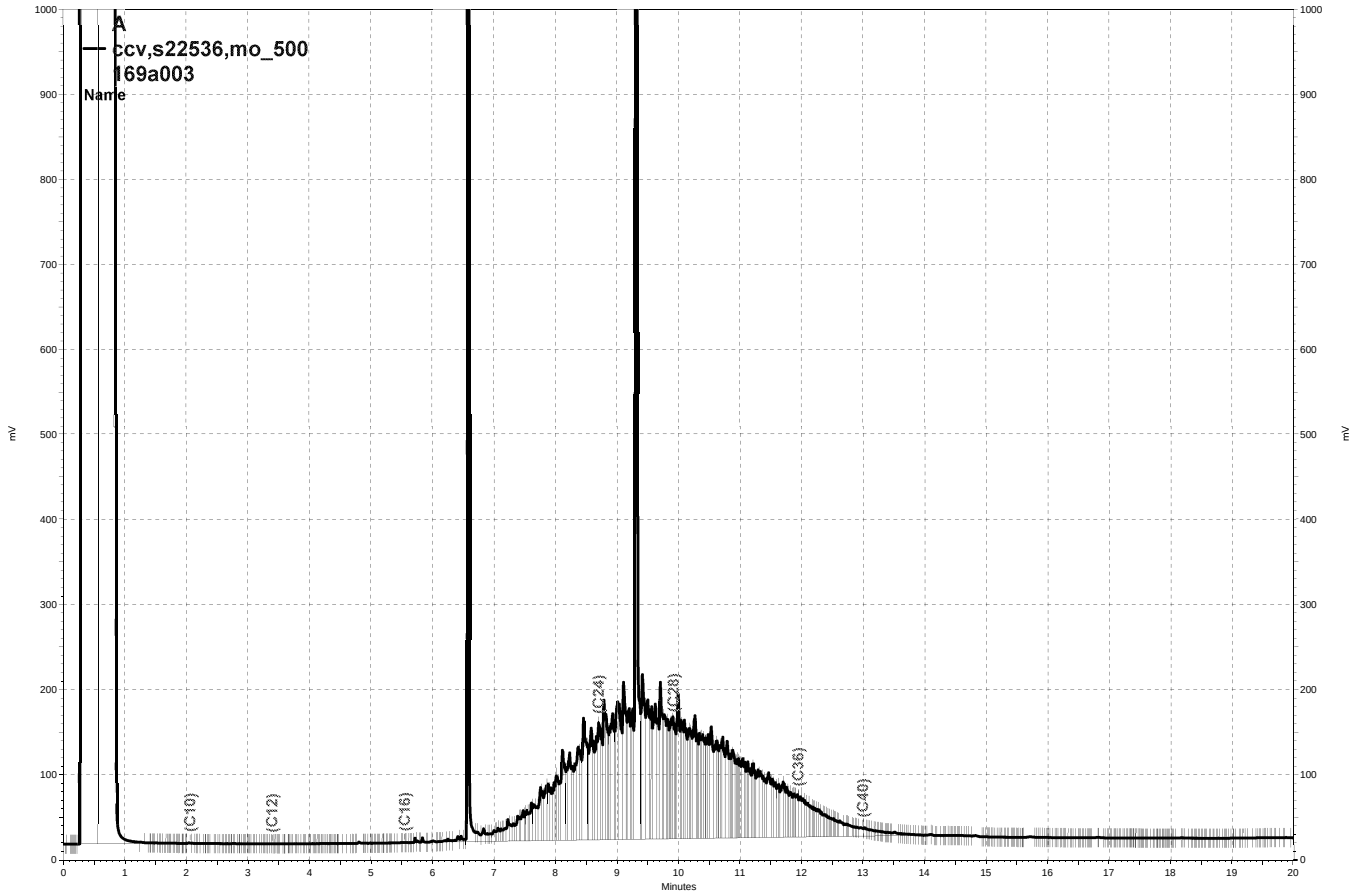

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Curtis & Tompkins, Ltd.

Moisture

Lab #:	246125	Location:	VW Oakland
Client:	Arcadis	Prep:	METHOD
Project#:	EM001048.0001.0003	Analysis:	ASTM D2216/CLP
Analyte:	Moisture, Percent	Batch#:	199736
Matrix:	Soil	Sampled:	06/13/13
Units:	%	Received:	06/13/13
Diln Fac:	1.000	Analyzed:	06/17/13

Field ID	Lab ID	Result	RL
MW9-5.0-5.5	246125-001	12	1
MW9-10-10.5	246125-002	20	1
MW9-15-15.5	246125-003	18	1

RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Moisture

Lab #:	246125	Location:	VW Oakland
Client:	Arcadis	Prep:	METHOD
Project#:	EM001048.0001.0003	Analysis:	ASTM D2216/CLP
Analyte:	Moisture, Percent	Units:	%
Field ID:	ZZZZZZZZZZ	Diln Fac:	1.000
Type:	SDUP	Batch#:	199736
MSS Lab ID:	246171-003	Sampled:	04/29/13
Lab ID:	QC693804	Received:	06/14/13
Matrix:	Soil	Analyzed:	06/17/13

MSS Result	Result	RL	RPD	Lim
28.81	26.99	1.000	7	24

RL= Reporting Limit
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

Laboratory Job Number 246385
ANALYTICAL REPORT

Arcadis	Project : EM001048.0001.0003
2000 Powell St.	Location : VW Oakland
Emeryville, CA 94608	Level : II

Sample ID	Lab ID
MW8-5.0-5.5	246385-001
MW8-10-10.5	246385-002
MW8-15-15.5	246385-003
MW9-5.0-5.5	246385-004
MW9-10-10.5	246385-005
MW9-15-15.5	246385-006

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: 06/28/2013

Tracy Babjar
Project Manager
(510) 204-2226

NELAP # 01107CA

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**246385**
Client:	**Arcadis**
Project:	**EM001048.0001.0003**
Location:	**VW Oakland**
Request Date:	**06/21/13**
Samples Received:	**06/13/13**

This data package contains sample and QC results for six soil samples, requested for the above referenced project on 06/21/13. The samples were received cold and intact. All data were e-mailed to Ron Goloubow on 06/28/13.

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

No analytical problems were encountered.

CT # 246385

Subject: VW Oakland BTEX & MTBE Analyses
From: "Goloubow, Ron" <Ron.Goloubow@arcadis-us.com>
Date: 6/21/2013 1:54 PM
To: "tracy.babjar@ctberk.com" <tracy.babjar@ctberk.com>
CC: "Bell, Caitlin" <Caitlin.Bell@arcadis-us.com>, "Bose, Saumyaditya" <Saumyaditya.Bose@arcadis-us.com>

Upon further review...

If C&T can run the soil samples on the attached report for BTEX & MTBE using EPA test method 8021 for $45 per analysis we would do that...

Tracy can you confirm that C&T can do the BTEX & MTBE analyses for $45?

Thanks

Subject: EM001048.0001.0003 - C&T Reports (246124)
From: Tracy Babjar <tracy.babjar@ctberk.com>
Date: 6/20/2013 3:32 PM
To: "Bose, Saumyaditya" <Saumyaditya.Bose@arcadis-us.com>, "Bell, Caitlin" <Caitlin.Bell@arcadis-us.com>, "Goloubow, Ron" <Ron.Goloubow@arcadis-us.com>

We missed the 8260 request for these soils as well both in login and review. Just like 246125. I apologize for the error. Please let me know if you want us to go back and analyze. Tracy

C&T sends its e-reports via the Internet as Portable Document Format (PDF) files. Reports in this format, when accompanied by a signed cover page, are considered official reports. **No hardcopy reports will be sent either by fax or U.S. Postal Service unless otherwise requested.** You may distribute your PDF files electronically or as printed hardcopies, as long as they are distributed in their entirety.

Email compiled and sent 06/20/13 03:32 PM.

246124

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ID#:

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page ___ of ___

Lab Work Order #

Send Results to:

Contact & Company Name: Ron Golonbow	Telephone: ~~50-5~~ 510-596-9550
Address: 2000 Powell St. 7th Floor	Fax:
City: Emeryville State: CA Zip: 94608	E-mail Address: Ron.Golonbow@arcadis-us.com
Project Name/Location (City, State): VW Oakland/Oakland, CA	Project #: EM001048.0001.00003
Sampler's Printed Name: Saumya Bose/RG	Sampler's Signature: S.Bose

Preservative	None	None
Filtered (✓)	No	No
# of Containers	3	3
Container Information	8oz	4oz

Keys

Preservation Key: A. H_2SO_4 B. HCL C. HNO_3 D. NaOH E. None F. Other: ____ G. Other: ____ H. Other: ____

Container Information Key: 1. 40 ml Vial 2. 1 L Amber 3. 250 ml Plastic 4. 500 ml Plastic 5. Encore 6. 2 oz. Glass 7. 4 oz. Glass 8. 8 oz. Glass 9. Other: ____ 10. Other: ____

Matrix Key: SO - Soil, W - Water, T - Tissue, SE - Sediment, SL - Sludge, A - Air, NL - NAPL/Oil, SW - Sample Wipe, Other: ____

PARAMETER ANALYSIS & METHOD

Sample ID	Collection Date	Collection Time	Type Comp	Type Grab	Matrix	TPH-D&MO	TPH-G 8260						REMARKS
MW8-5.0-5.5	6/13/13	9:45		✓	Solid	X	X						
MW8-10-10.5	↓	9:50		↓	↓	↓	↓						
MW8-15-15.5	↓	9:55		↓	↓	↓	↓						

Special Instructions/Comments:

☐ Special QA/QC Instructions(✓):

Laboratory Information and Receipt

Lab Name:

☐ Cooler packed with ice (✓)

Specify Turnaround Requirements:

Shipping Tracking #:

Cooler Custody Seal (✓) ☐ Intact ☐ Not Intact

Sample Receipt:

Condition/Cooler Temp: ____

	Relinquished By	Received By	Relinquished By	Laboratory Received By
Printed Name:	Saumya Bose	Pat Gonzalez		
Signature:	S.Bose	Pat Gonzalez		
Firm/Courier:	ARCADIS	CAT		
Date/Time:	6/13/13 1520	6/13/13 1520		

20730826 CofC AR Form 01.12.2007

Distribution: WHITE – Laboratory returns with results YELLOW – Lab copy PINK – Retained by ARCADIS

Subject: EM001048 - Sample Log in Summaries
From: "Goloubow, Ron" <Ron.Goloubow@arcadis-us.com>
Date: 6/14/2013 7:03 AM
To: Tracy Babjar <tracy.babjar@ctberk.com>
CC: "Bose, Saumyaditya" <Saumyaditya.Bose@arcadis-us.com>, "Bell, Caitlin" <Caitlin.Bell@arcadis-us.com>

Can you please analyzed the soil samples for moisture too so that we can get the "dry weight concentrations"?

Thanks Ron.

Subject: EM001048.0001.0003 - C&T Login Summary (246125)
From: Tracy Babjar <tracy.babjar@ctberk.com>
Date: 6/13/2013 5:08 PM
To: "McNeece, Colin" <Colin.McNeece@arcadis-us.com>, "Goloubow, Ron" <Ron.Goloubow@arcadis-us.com>

C&T Login Summary for 246125

Project: EM001048.0001.0003 **Site:** VW Oakland **Lab Login #:** 246125 **Report Level:** II **Report Due:** 06/20/13 **PO#:** **C&T Proj Mgr:** Tracy Babjar	**Report To:** Arcadis 2000 Powell St. 7th Floor Emeryville, CA 94608 ATTN: Ron Goloubow (510) 652-4500	**Bill To:** Arcadis 630 Plaza Drive Suite 600 Highlands Ranch, CO 80129 ATTN: Accounts Payable (720) 344-3500

Client ID	Lab ID	Sampled	Received	Matrix	Analyses	COC #	Comments
MW9-5.0-5.5	001	06/13	06/13				
				Soil	TEHM		
				Soil	TVH		
MW9-10-10.5	002	06/13	06/13				
				Soil	TEHM		
				Soil	TVH		

COOLER RECEIPT CHECKLIST

Curtis & Tompkins, Ltd.

Login # 246124 Date Received 6/13/13 Number of coolers 1
Client ARCADIS Project VW OAKLAND (EM001048.0001.0003)

Date Opened 6/13/13 By (print) TR (sign) Tina Raikar
Date Logged in 6/13/13 By (print) MG (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) 15.8

☐ 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

246125

ARCADIS
Infrastructure · Water · Environment · Buildings

ID#:

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page ___ of ___

Lab Work Order #

Send Results to:

Contact & Company Name: Ron Golombow
Telephone: 510-596-9550
Address: 2000 Powell St 7th Floor
Fax:
City: Emeryville State: CA Zip: 94608
E-mail Address: Ron.Golombow@arcadis-us.com
Project Name/Location (City, State): VW Oakland/Oakland, CA
Project #: EM001048.0001.00003
Sampler's Printed Name: Saumya Bose
Sampler's Signature: S Bose

Sample ID	Collection Date	Collection Time	Type (✓) Comp	Type (✓) Grab	Matrix	Preservative	Filtered (✓)	# of Containers	Container Information	TPH - DRO	TPH - GRO 8260	PARAMETER ANALYSIS & METHOD	REMARKS
MW9 - 5.0-5.5	6/13/13	11:55		✓	Solid	None	NO	2	8oz	X	X		
MW9 - 10-10.5	↓	12:00		↓	↓	None	NO	2	4oz	1	↓		
MW9 - 15-15.5	↓	12:05		↓	↓	None	NO	2	4oz	↓			

Keys

Preservation Key:
A. H_2SO_4
B. HCL
C. HNO_3
D. NaOH
E. None
F. Other: _____
G. Other: _____
H. Other: _____

Container Information Key:
1. 40 ml Vial
2. 1 L Amber
3. 250 ml Plastic
4. 500 ml Plastic
5. Encore
6. 2 oz. Glass
7. 4 oz. Glass
8. 8 oz. Glass
9. Other: _____
10. Other: _____

Matrix Key:
SO - Soil
W - Water
T - Tissue
SE - Sediment
SL - Sludge
A - Air
NL - NAPL/Oil
SW - Sample Wipe
Other: _____

Special Instructions/Comments:

☐ Special QA/QC Instructions(✓):

Laboratory Information and Receipt

Lab Name:
☐ Cooler packed with ice (✓)
Specify Turnaround Requirements:
Shipping Tracking #:
Cooler Custody Seal (✓) ☐ Intact ☐ Not Intact
Sample Receipt:
Condition/Cooler Temp: _____

Relinquished By	Received By	Relinquished By	Laboratory Received By
Printed Name: Saumya Bose	Printed Name: Pat Gonzalez	Printed Name:	Printed Name:
Signature: S Bose	Signature: Pat Gonzalez	Signature:	Signature:
Firm: ARCADIS	Firm/Courier: CT	Firm/Courier:	Firm:
Date/Time: 6/13/13 1520	Date/Time: 6/13/13 1520	Date/Time:	Date/Time:

20730826 CofC AR Form 01.12.2007

Distribution: WHITE – Laboratory returns with results YELLOW – Lab copy PINK – Retained by ARCADIS

Subject: EM001048 - Sample Log in Summaries
From: "Goloubow, Ron" <Ron.Goloubow@arcadis-us.com>
Date: 6/14/2013 7:03 AM
To: Tracy Babjar <tracy.babjar@ctberk.com>
CC: "Bose, Saumyaditya" <Saumyaditya.Bose@arcadis-us.com>, "Bell, Caitlin" <Caitlin.Bell@arcadis-us.com>

Can you please analyzed the soil samples for moisture too so that we can get the "dry weight concentrations"?

Thanks Ron.

Subject: EM001048.0001.0003 - C&T Login Summary (246125)
From: Tracy Babjar <tracy.babjar@ctberk.com>
Date: 6/13/2013 5:08 PM
To: "McNeece, Colin" <Colin.McNeece@arcadis-us.com>, "Goloubow, Ron" <Ron.Goloubow@arcadis-us.com>

C&T Login Summary for 246125

Project: EM001048.0001.0003 **Site:** VW Oakland **Lab Login #:** 246125 **Report Level:** II **Report Due:** 06/20/13 **PO#:** **C&T Proj Mgr:** Tracy Babjar	**Report To:** Arcadis 2000 Powell St. 7th Floor Emeryville, CA 94608 ATTN: Ron Goloubow (510) 652-4500	**Bill To:** Arcadis 630 Plaza Drive Suite 600 Highlands Ranch, CO 80129 ATTN: Accounts Payable (720) 344-3500

Client ID	Lab ID	Sampled	Received	Matrix	Analyses	COC #	Comments
MW9-5.0-5.5	001	06/13	06/13				
				Soil	TEHM		
				Soil	TVH		
MW9-10-10.5	002	06/13	06/13				
				Soil	TEHM		
				Soil	TVH		

COOLER RECEIPT CHECKLIST

Curtis & Tompkins, Ltd.

Login # 246125 Date Received 6/13/13 Number of coolers 1
Client ARCADIS Project VW OAKLAND (EM001048.0001.00003)

Date Opened 6/13/13 By (print) TR (sign) Tina Raikar
Date Logged in 6/13/13 By (print) MG (sign) MG

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) 15.8

☐ 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, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	246385	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8021B
Matrix:	Soil	Dil'n Fac:	1.000
Units:	ug/Kg	Sampled:	06/13/13
Basis:	dry	Received:	06/13/13

Field ID:	MW8-5.0-5.5	Moisture:	18%
Type:	SAMPLE	Batch#:	199963
Lab ID:	246385-001	Analyzed:	06/22/13

Analyte	Result	RL
MTBE	ND	25
Benzene	ND	6.3
Toluene	ND	6.3
Ethylbenzene	ND	6.3
m,p-Xylenes	ND	6.3
o-Xylene	ND	6.3

Surrogate	%REC	Limits
Bromofluorobenzene (PID)	96	61-138

Field ID:	MW8-10-10.5	Moisture:	21%
Type:	SAMPLE	Batch#:	199963
Lab ID:	246385-002	Analyzed:	06/22/13

Analyte	Result	RL
MTBE	ND	26
Benzene	ND	6.4
Toluene	ND	6.4
Ethylbenzene	ND	6.4
m,p-Xylenes	ND	6.4
o-Xylene	ND	6.4

Surrogate	%REC	Limits
Bromofluorobenzene (PID)	93	61-138

Field ID:	MW8-15-15.5	Moisture:	21%
Type:	SAMPLE	Batch#:	199963
Lab ID:	246385-003	Analyzed:	06/22/13

Analyte	Result	RL
MTBE	ND	28
Benzene	ND	6.9
Toluene	ND	6.9
Ethylbenzene	ND	6.9
m,p-Xylenes	ND	6.9
o-Xylene	ND	6.9

Surrogate	%REC	Limits
Bromofluorobenzene (PID)	95	61-138

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	246385	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8021B
Matrix:	Soil	Dil'n Fac:	1.000
Units:	ug/Kg	Sampled:	06/13/13
Basis:	dry	Received:	06/13/13

Field ID:	MW9-5.0-5.5	Moisture:	12%
Type:	SAMPLE	Batch#:	199963
Lab ID:	246385-004	Analyzed:	06/22/13

Analyte	Result	RL
MTBE	ND	22
Benzene	ND	5.5
Toluene	ND	5.5
Ethylbenzene	ND	5.5
m,p-Xylenes	ND	5.5
o-Xylene	ND	5.5

Surrogate	%REC	Limits
Bromofluorobenzene (PID)	93	61-138

Field ID:	MW9-10-10.5	Lab ID:	246385-005
Type:	SAMPLE	Moisture:	20%

Analyte	Result	RL	Batch#	Analyzed
MTBE	ND	23	199963	06/22/13
Benzene	ND	6.1	199990	06/24/13
Toluene	ND	5.7	199963	06/22/13
Ethylbenzene	16	5.7	199963	06/22/13
m,p-Xylenes	35	5.7	199963	06/22/13
o-Xylene	ND	5.7	199963	06/22/13

Surrogate	%REC	Limits	Batch#	Analyzed
Bromofluorobenzene (PID)	94	61-138	199963	06/22/13

Field ID:	MW9-15-15.5	Moisture:	18%
Type:	SAMPLE	Batch#:	199963
Lab ID:	246385-006	Analyzed:	06/22/13

Analyte	Result	RL
MTBE	ND	27
Benzene	ND	6.7
Toluene	ND	6.7
Ethylbenzene	ND	6.7
m,p-Xylenes	ND	6.7
o-Xylene	ND	6.7

Surrogate	%REC	Limits
Bromofluorobenzene (PID)	94	61-138

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	246385	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8021B
Matrix:	Soil	Dil'n Fac:	1.000
Units:	ug/Kg	Sampled:	06/13/13
Basis:	dry	Received:	06/13/13

Type: BLANK
Lab ID: QC694728
Batch#: 199963
Analyzed: 06/21/13

Analyte	Result	RL
MTBE	ND	4.0
Benzene	ND	1.0
Toluene	ND	1.0
Ethylbenzene	ND	1.0
m,p-Xylenes	ND	1.0
o-Xylene	ND	1.0

Surrogate	%REC	Limits
Bromofluorobenzene (PID)	94	61-138

Type: BLANK
Lab ID: QC694848
Batch#: 199990
Analyzed: 06/23/13

Analyte	Result	RL
Benzene	ND	1.0

Surrogate	%REC	Limits
Bromofluorobenzene (PID)	116	61-138

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	246385	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8021B
Matrix:	Soil	Batch#:	199963
Units:	ug/Kg	Analyzed:	06/21/13
Diln Fac:	1.000		

Type: BS Lab ID: QC694760

Analyte	Spiked	Result	%REC	Limits
MTBE	10.00	9.356	94	56-148
Benzene	10.00	9.336	93	80-120
Toluene	10.00	9.366	94	79-120
Ethylbenzene	10.00	9.702	97	80-120
m,p-Xylenes	10.00	9.800	98	80-120
o-Xylene	10.00	9.814	98	80-120

Surrogate	%REC	Limits
Bromofluorobenzene (PID)	95	61-138

Type: BSD Lab ID: QC694761

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	10.00	9.628	96	56-148	3	51
Benzene	10.00	9.746	97	80-120	4	25
Toluene	10.00	9.725	97	79-120	4	20
Ethylbenzene	10.00	9.881	99	80-120	2	20
m,p-Xylenes	10.00	10.06	101	80-120	3	20
o-Xylene	10.00	10.01	100	80-120	2	20

Surrogate	%REC	Limits
Bromofluorobenzene (PID)	95	61-138

RPD= Relative Percent Difference

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	246385	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8021B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC694847	Batch#:	199990
Matrix:	Soil	Analyzed:	06/23/13
Units:	ug/Kg		

Analyte	Spiked	Result	%REC	Limits
Benzene	10.00	10.41	104	80-120

Surrogate	%REC	Limits
Bromofluorobenzene (PID)	106	61-138

Curtis & Tompkins, Ltd.

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	246385	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8021B
Field ID:	ZZZZZZZZZZ	Diln Fac:	1.000
MSS Lab ID:	246378-001	Batch#:	199990
Matrix:	Soil	Sampled:	06/20/13
Units:	ug/Kg	Received:	06/21/13
Basis:	as received	Analyzed:	06/24/13

Type: MS Lab ID: QC694849

Analyte	MSS Result	Spiked	Result	%REC	Limits
Benzene	<0.9804	106.4	105.5	99	70-130

Surrogate	%REC	Limits
Bromofluorobenzene (PID)	119	61-138

Type: MSD Lab ID: QC694850

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Benzene	90.91	89.47	98	70-130	1	35

Surrogate	%REC	Limits
Bromofluorobenzene (PID)	119	61-138

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

Laboratory Job Number 246316
ANALYTICAL REPORT

Arcadis	Project : EM001048.0001.0003
2000 Powell St.	Location : VW Oakland
Emeryville, CA 94608	Level : II

Sample ID	Lab ID
MW-7	246316-001
MW-8	246316-002
VW-1	246316-003
MW-3	246316-004
VW-2	246316-005
MW-9	246316-006
MW-1	246316-007
VW-3	246316-008
DUP	246316-009
TB	246316-010

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: 06/26/2013

Tracy Babjar
Project Manager
(510) 204-2226

NELAP # 01107CA

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**246316**
Client:	**Arcadis**
Project:	**EM001048.0001.0003**
Location:	**VW Oakland**
Request Date:	**06/19/13**
Samples Received:	**06/19/13**

This data package contains sample and QC results for ten water samples, requested for the above referenced project on 06/19/13. The samples were received cold and intact. All data were e-mailed to Ron Goloubow on 06/26/13.

TPH-Purgeables and/or BTXE by GC (EPA 8015B):
No analytical problems were encountered.

TPH-Extractables by GC (EPA 8015B):
No analytical problems were encountered.

Volatile Organics by GC/MS (EPA 8260B):
No analytical problems were encountered.

Confluence Environmental, Inc.
3308 El Camino Ave, Suite 300 #148
Sacramento, CA 95821
916-760-7641 - main
916-473-8617 - fax
www.confluence-env.com

Chain of Custody

246316

Project Name: VW Dealership, Oakland

Job Number: M1-130619

TAT: (STANDARD) 5 DAY 2 DAY 24 HOUR OTHER:

Lab: **Curtis & Tompkins**	Site Address: 2740 Broadway, Oakland	Confluence PM: Jason Brown
Address: 2323 Fifth St, Berkeley, CA	California Global ID No.: TO6001002227	Phone / Fax: 916-760-7641 / 916-473-8617
Contact:	Include EDF w/ Report: Yes No *Per agreement with Arcadis	Confluence Log Code: **CESC**
Phone/ Fax: 510-486-0900	Consultant / PM: Arcadis / Ron Golobouw	Report to: Ron Golobouw & Caitlin Bell
	Phone / Fax: 510-596-9550	Invoice to: Arcadis

	Sample ID	Time	Date	Matrix: Soil/Solid	Matrix: Water/Liquid	Matrix: Air	Laboratory No.	No. of Containers	Preservative: Unpreserved	Preservative: H_2SO_4	Preservative: HNO_3	Preservative: HCl	Preservative: NaOH	Requested Analysis: VOC's with fuel Oxy's (8260B)	Requested Analysis: TPH-G (8015)	Requested Analysis: TPH-D & MO (8015)	Notes and Comments
1	MW7	720	6/19		X			8	2			6		X	X	X	
2	MW8	805	"		X			8	2			6		X	X	X	
3	VW1	825	"		X			8	2			6		X	X	X	
4	MW3	855	"		X			8	2			6		X	X	X	
5	VW2	930	"		X			8	2			6		X	X	X	
6	MW9	955	"		X			8	2			6		X	X	X	
7	MW1	1030	"		X			8	2			6		X	X	X	
8	VW3	1100	"		X			8	2			6		X	X	X	
9	DUP	—	"		X			8	2			6		X	X	X	
10	TB	—	—		X			3				3		X			

	Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Sampler's Name: B. Myers		6/19/13	1130	Pat Hamilton	6/19/13	1130
Sampler's Company: Confluence Environmental						
Shipment Date:						
Shipment Method:						

Special Instructions:

COOLER RECEIPT CHECKLIST

Curtis & Tompkins, Ltd.

Login # 246316 Date Received 6/19/13 Number of coolers 1

Client ~~CONFLUENCE~~ ARCADIS TR Project VW DEALERSHIP, OAKLAND

Date Opened 6/19/13 By (print) TR (sign) Tina Raikar

Date Logged in 6/19/13 By (print) MS (sign) MS

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

2A. Were custody seals present? .... ☐ YES (circle) on cooler on samples ☒ NO
   How many _____ Name_____ Date_____

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

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

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

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

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

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

7. Temperature documentation: * Notify PM if temperature exceeds 6°C

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

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

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

8. Were Method 5035 sampling containers present?_____ YES (NO)
   If YES, what time were they transferred to freezer?_____

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

10. Are there any missing / extra samples? _____ YES (NO)

11. Are samples in the appropriate containers for indicated tests? _____ (YES) NO

12. Are sample labels present, in good condition and complete? _____ (YES) NO

13. Do the sample labels agree with custody papers? _____ (YES) NO

14. Was sufficient amount of sample sent for tests requested? _____ (YES) NO

15. Are the samples appropriately preserved? _____ YES NO (N/A)

16. Did you check preservatives for all bottles for each sample? _____ YES NO (N/A)

17. Did you document your preservative check? _____ YES NO (N/A)

18. Did you change the hold time in LIMS for unpreserved VOAs? _____ YES NO (N/A)

19. Did you change the hold time in LIMS for preserved terracores? _____ YES NO (N/A)

20. Are bubbles > 6mm absent in VOA samples? _____ (YES) NO N/A

21. Was the client contacted concerning this sample delivery? _____ YES (NO)
   If YES, Who was called?_____ By_____ Date:_____

COMMENTS

_____

_____

_____

_____

_____

_____

Rev 10, 11/11

Curtis & Tompkins, Ltd.

Total Volatile Hydrocarbons

Lab #:	246316	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8015B
Matrix:	Water	Sampled:	06/19/13
Units:	ug/L	Received:	06/19/13

Field ID:	MW-7	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	199896
Lab ID:	246316-001	Analyzed:	06/20/13

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	97	76-128

Field ID:	MW-8	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	199896
Lab ID:	246316-002	Analyzed:	06/20/13

Analyte	Result	RL
Gasoline C7-C12	1,800 Y	50

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	106	76-128

Field ID:	VW-1	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	199896
Lab ID:	246316-003	Analyzed:	06/20/13

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	96	76-128

Field ID:	MW-3	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	199896
Lab ID:	246316-004	Analyzed:	06/20/13

Analyte	Result	RL
Gasoline C7-C12	ND	50

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

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

Curtis & Tompkins, Ltd.

Total Volatile Hydrocarbons

Lab #:	246316	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8015B
Matrix:	Water	Sampled:	06/19/13
Units:	ug/L	Received:	06/19/13

Field ID:	VW-2	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	199896
Lab ID:	246316-005	Analyzed:	06/20/13

Analyte	Result	RL
Gasoline C7-C12	4,300	50

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	103	76-128

Field ID:	MW-9	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	199896
Lab ID:	246316-006	Analyzed:	06/20/13

Analyte	Result	RL
Gasoline C7-C12	5,400	50

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	103	76-128

Field ID:	MW-1	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	199896
Lab ID:	246316-007	Analyzed:	06/20/13

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	97	76-128

Field ID:	VW-3	Diln Fac:	10.00
Type:	SAMPLE	Batch#:	199972
Lab ID:	246316-008	Analyzed:	06/22/13

Analyte	Result	RL
Gasoline C7-C12	13,000	500

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	99	76-128

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

Curtis & Tompkins, Ltd.

Total Volatile Hydrocarbons

Lab #:	246316	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8015B
Matrix:	Water	Sampled:	06/19/13
Units:	ug/L	Received:	06/19/13

Field ID:	DUP	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	199972
Lab ID:	246316-009	Analyzed:	06/22/13

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	97	76-128

Type:	BLANK	Batch#:	199896
Lab ID:	QC694457	Analyzed:	06/20/13
Diln Fac:	1.000		

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	89	76-128

Type:	BLANK	Batch#:	199972
Lab ID:	QC694757	Analyzed:	06/21/13
Diln Fac:	1.000		

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	93	76-128

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

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	246316	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC694456	Batch#:	199896
Matrix:	Water	Analyzed:	06/20/13
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1,000	937.3	94	80-120

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	96	76-128

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	246316	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8015B
Field ID:	MW-7	Batch#:	199896
MSS Lab ID:	246316-001	Sampled:	06/19/13
Matrix:	Water	Received:	06/19/13
Units:	ug/L	Analyzed:	06/21/13
Diln Fac:	1.000		

Type: MS Lab ID: QC694458

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	<12.82	2,000	1,766	88	76-120

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	103	76-128

Type: MSD Lab ID: QC694459

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	1,695	85	76-120	4	20

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	103	76-128

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	246316	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC694756	Batch#:	199972
Matrix:	Water	Analyzed:	06/21/13
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1,000	909.1	91	80-120

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	90	76-128

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	246316	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	199972
MSS Lab ID:	246357-001	Sampled:	06/20/13
Matrix:	Water	Received:	06/20/13
Units:	ug/L	Analyzed:	06/22/13
Diln Fac:	1.000		

Type: MS Lab ID: QC694758

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	26.15	2,000	1,796	88	76-120

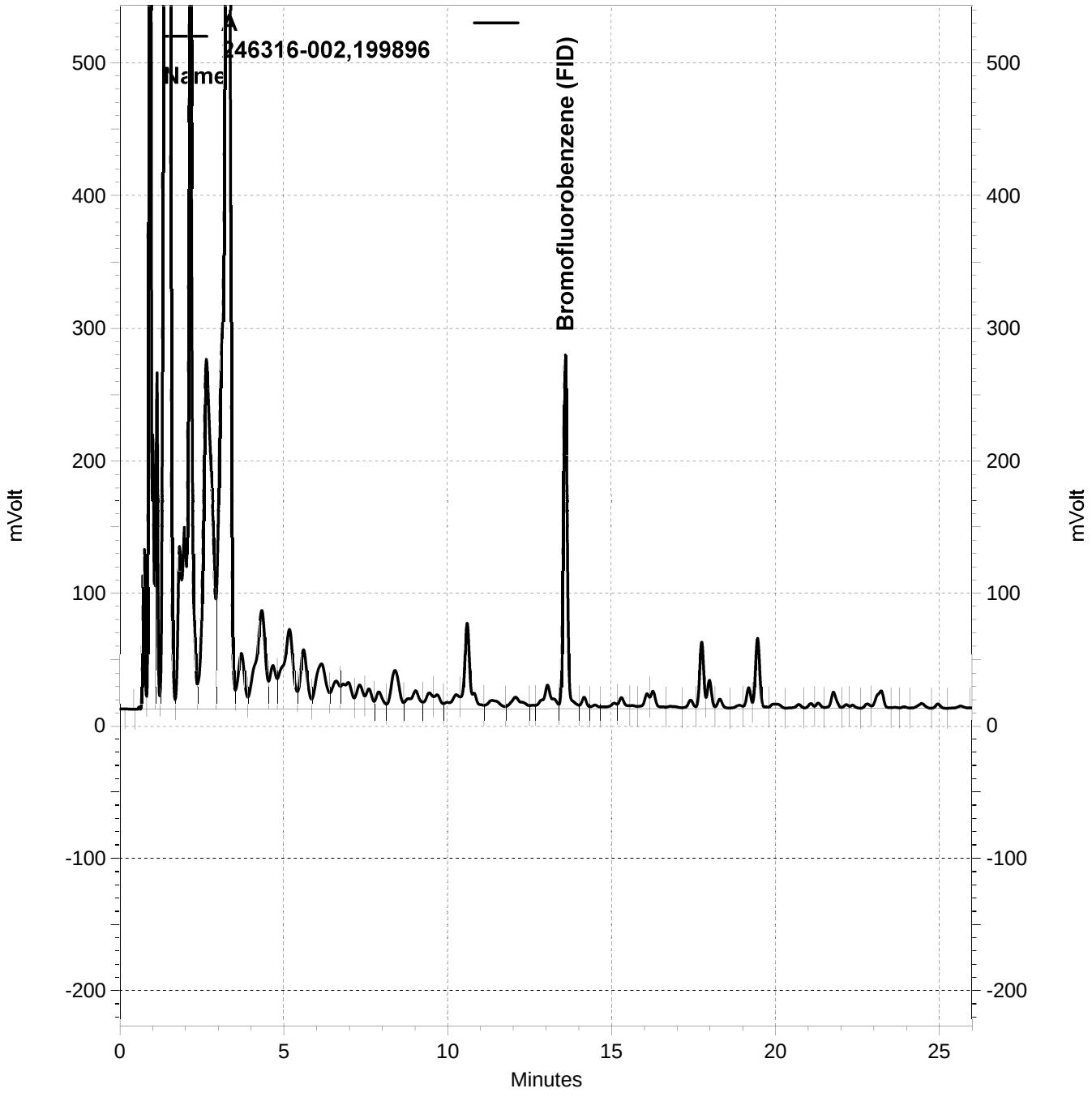
Surrogate	%REC	Limits
Bromofluorobenzene (FID)	102	76-128

Type: MSD Lab ID: QC694759

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	1,772	87	76-120	1	20

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	100	76-128

RPD= Relative Percent Difference



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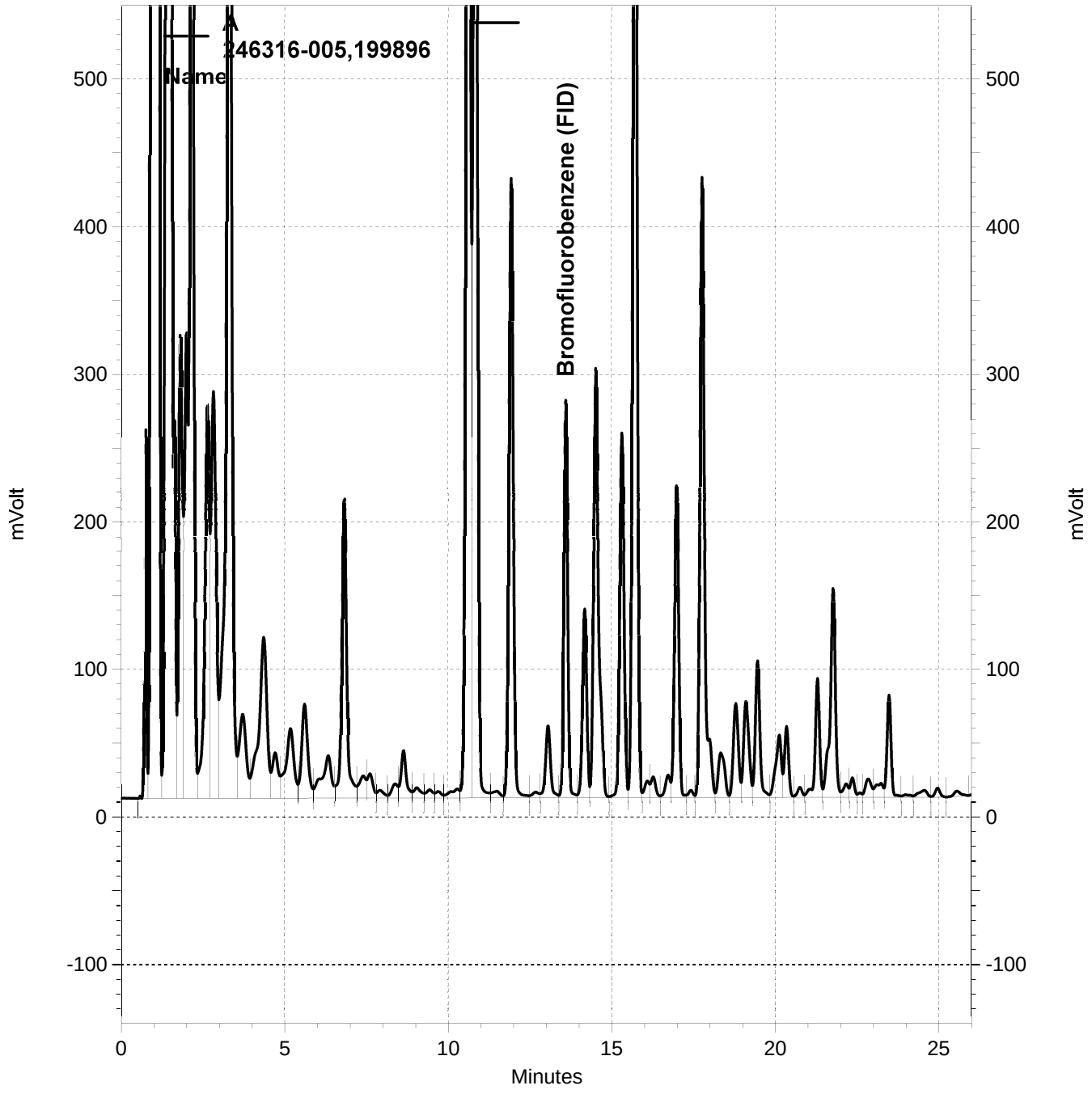

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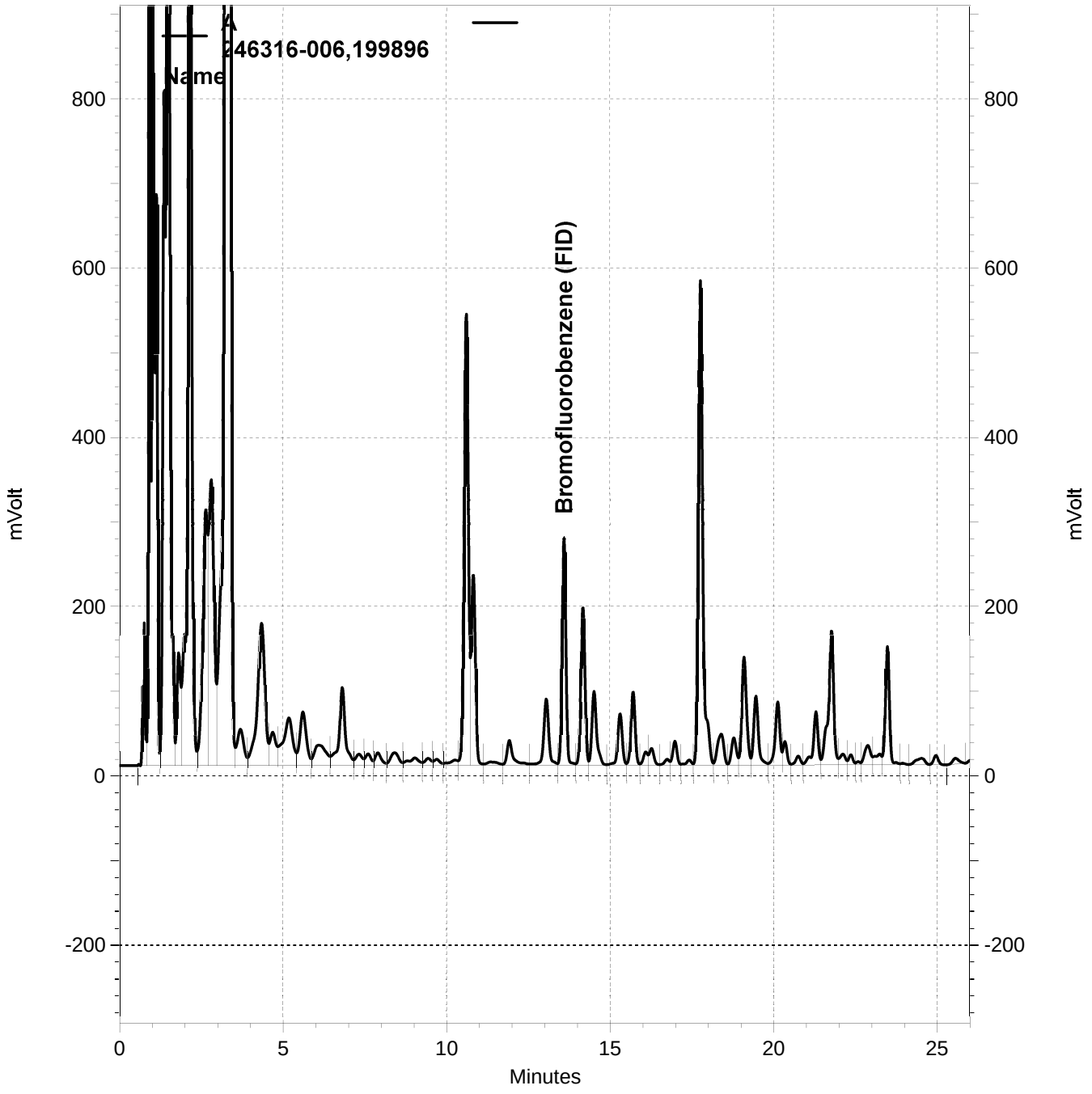

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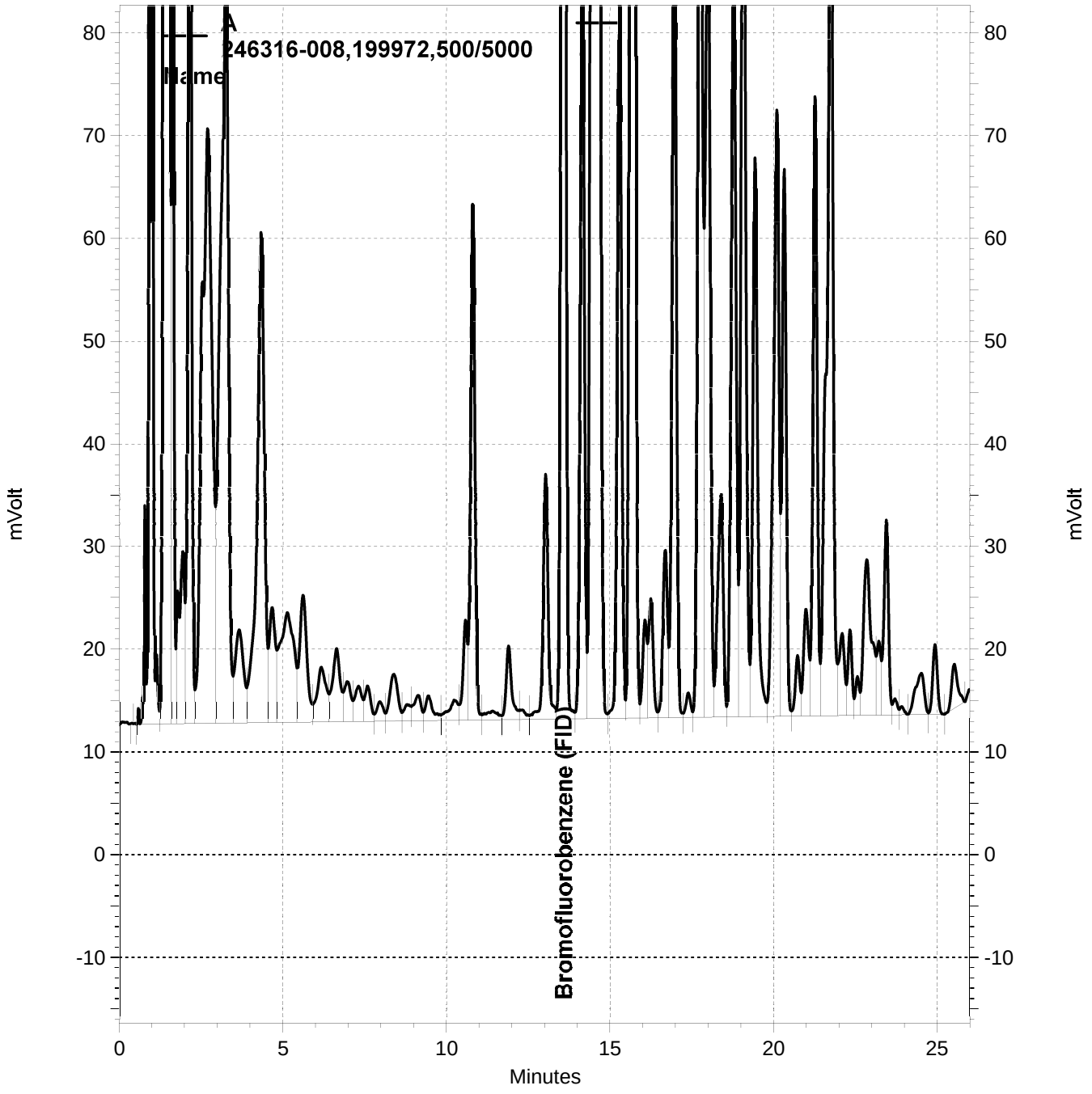

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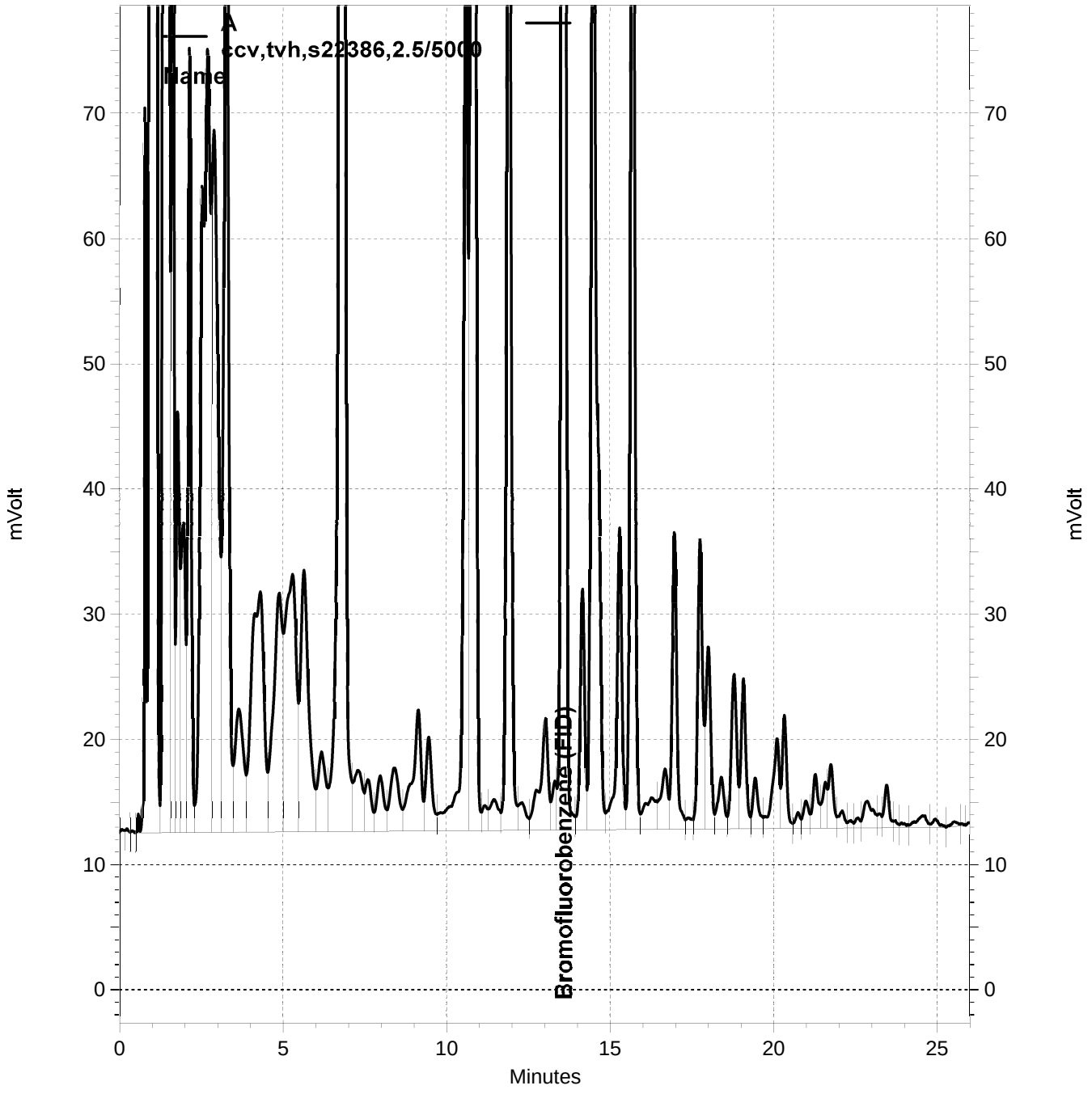

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Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	246316	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 3520C
Project#:	EM001048.0001.0003	Analysis:	EPA 8015B
Matrix:	Water	Sampled:	06/19/13
Units:	ug/L	Received:	06/19/13
Diln Fac:	1.000	Prepared:	06/20/13
Batch#:	199910	Analyzed:	06/21/13

Field ID: MW-7 Lab ID: 246316-001
Type: SAMPLE

Analyte	Result	RL
Diesel C10-C24	ND	50
Motor Oil C24-C36	ND	300

Surrogate	%REC	Limits
o-Terphenyl	115	62-133

Field ID: MW-8 Lab ID: 246316-002
Type: SAMPLE

Analyte	Result	RL
Diesel C10-C24	650	50
Motor Oil C24-C36	ND	300

Surrogate	%REC	Limits
o-Terphenyl	116	62-133

Field ID: VW-1 Lab ID: 246316-003
Type: SAMPLE

Analyte	Result	RL
Diesel C10-C24	70 Y	50
Motor Oil C24-C36	ND	300

Surrogate	%REC	Limits
o-Terphenyl	113	62-133

Field ID: MW-3 Lab ID: 246316-004
Type: SAMPLE

Analyte	Result	RL
Diesel C10-C24	ND	50
Motor Oil C24-C36	ND	300

Surrogate	%REC	Limits
o-Terphenyl	115	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 #:	246316	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 3520C
Project#:	EM001048.0001.0003	Analysis:	EPA 8015B
Matrix:	Water	Sampled:	06/19/13
Units:	ug/L	Received:	06/19/13
Diln Fac:	1.000	Prepared:	06/20/13
Batch#:	199910	Analyzed:	06/21/13

Field ID: VW-2 Lab ID: 246316-005
Type: SAMPLE

Analyte	Result	RL
Diesel C10-C24	830	50
Motor Oil C24-C36	ND	300

Surrogate	%REC	Limits
o-Terphenyl	111	62-133

Field ID: MW-9 Lab ID: 246316-006
Type: SAMPLE

Analyte	Result	RL
Diesel C10-C24	1,100	50
Motor Oil C24-C36	ND	300

Surrogate	%REC	Limits
o-Terphenyl	109	62-133

Field ID: MW-1 Lab ID: 246316-007
Type: SAMPLE

Analyte	Result	RL
Diesel C10-C24	290 Y	50
Motor Oil C24-C36	ND	300

Surrogate	%REC	Limits
o-Terphenyl	111	62-133

Field ID: VW-3 Lab ID: 246316-008
Type: SAMPLE

Analyte	Result	RL
Diesel C10-C24	6,200	51
Motor Oil C24-C36	650	310

Surrogate	%REC	Limits
o-Terphenyl	121	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 #:	246316	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 3520C
Project#:	EM001048.0001.0003	Analysis:	EPA 8015B
Matrix:	Water	Sampled:	06/19/13
Units:	ug/L	Received:	06/19/13
Diln Fac:	1.000	Prepared:	06/20/13
Batch#:	199910	Analyzed:	06/21/13

Field ID: DUP
Type: SAMPLE
Lab ID: 246316-009

Analyte	Result	RL
Diesel C10-C24	ND	50
Motor Oil C24-C36	ND	300

Surrogate	%REC	Limits
o-Terphenyl	109	62-133

Type: BLANK
Lab ID: QC694508

Analyte	Result	RL
Diesel C10-C24	ND	50
Motor Oil C24-C36	ND	300

Surrogate	%REC	Limits
o-Terphenyl	104	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 #:	246316	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 3520C
Project#:	EM001048.0001.0003	Analysis:	EPA 8015B
Matrix:	Water	Batch#:	199910
Units:	ug/L	Prepared:	06/20/13
Diln Fac:	1.000	Analyzed:	06/21/13

Type: BS Cleanup Method: EPA 3630C
Lab ID: QC694509

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	2,500	2,120	85	59-120

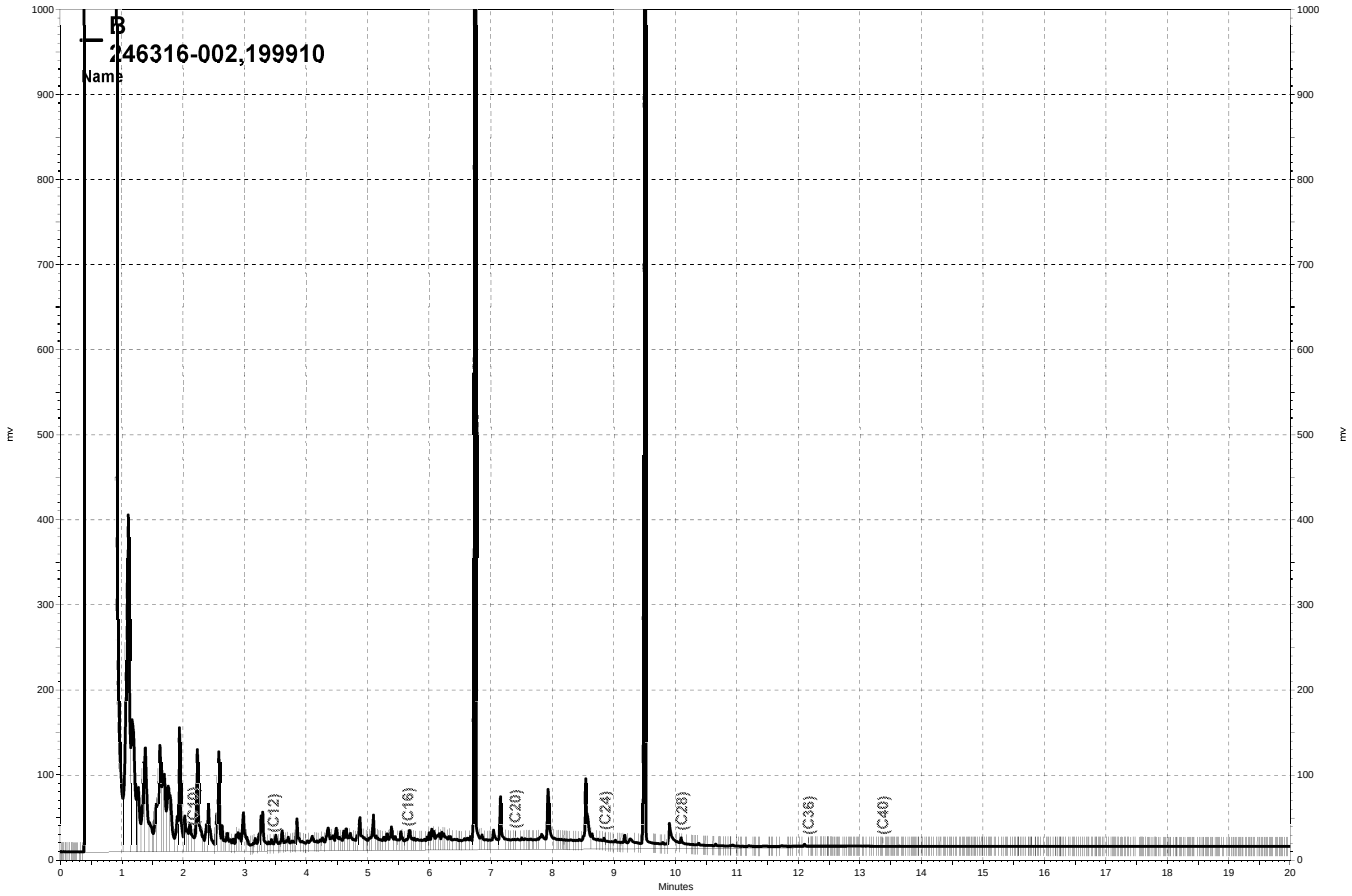
Surrogate	%REC	Limits
o-Terphenyl	104	62-133

Type: BSD Cleanup Method: EPA 3630C
Lab ID: QC694510

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	2,500	2,051	82	59-120	3	46

Surrogate	%REC	Limits
o-Terphenyl	104	62-133

RPD= Relative Percent Difference



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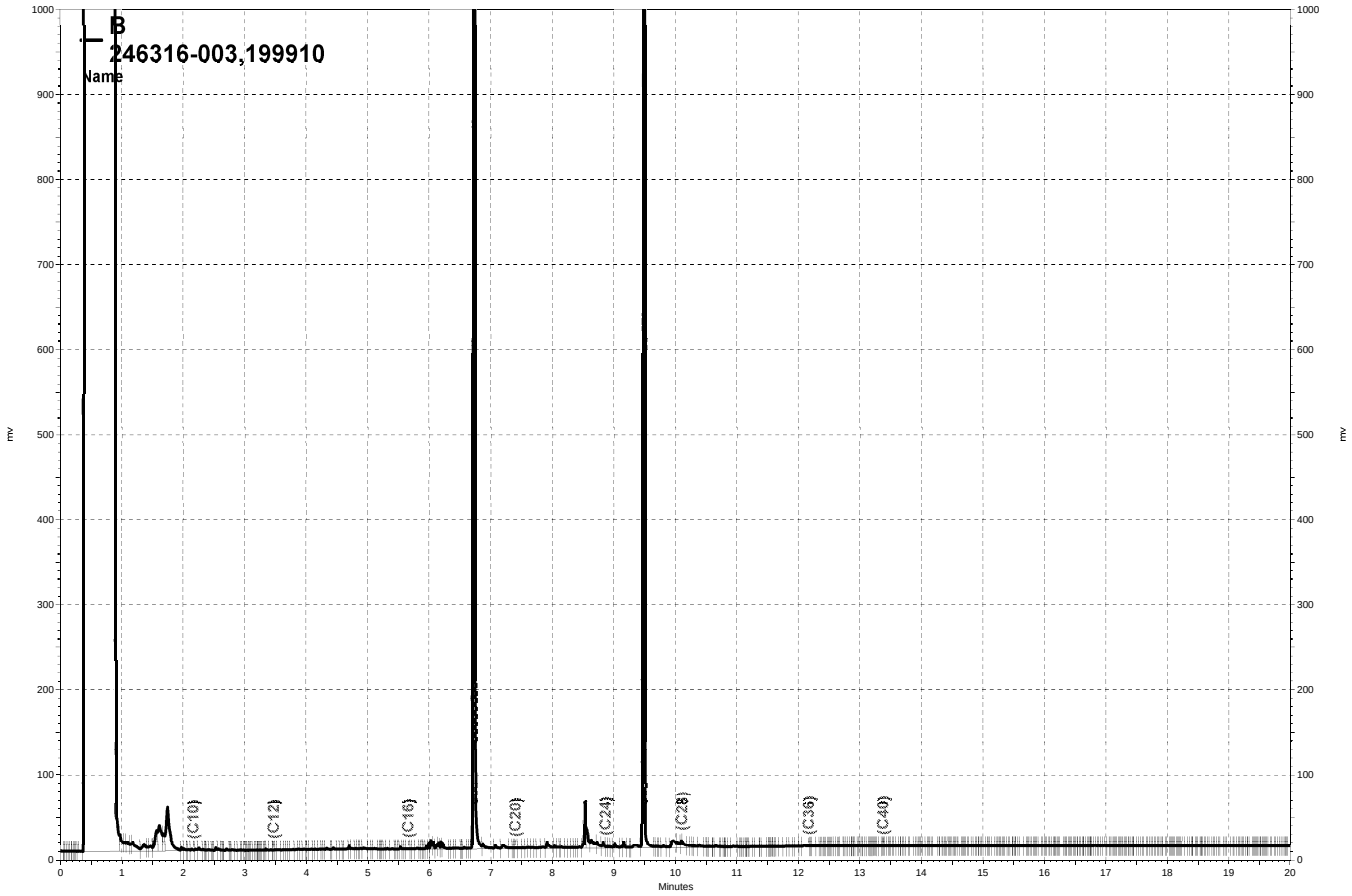

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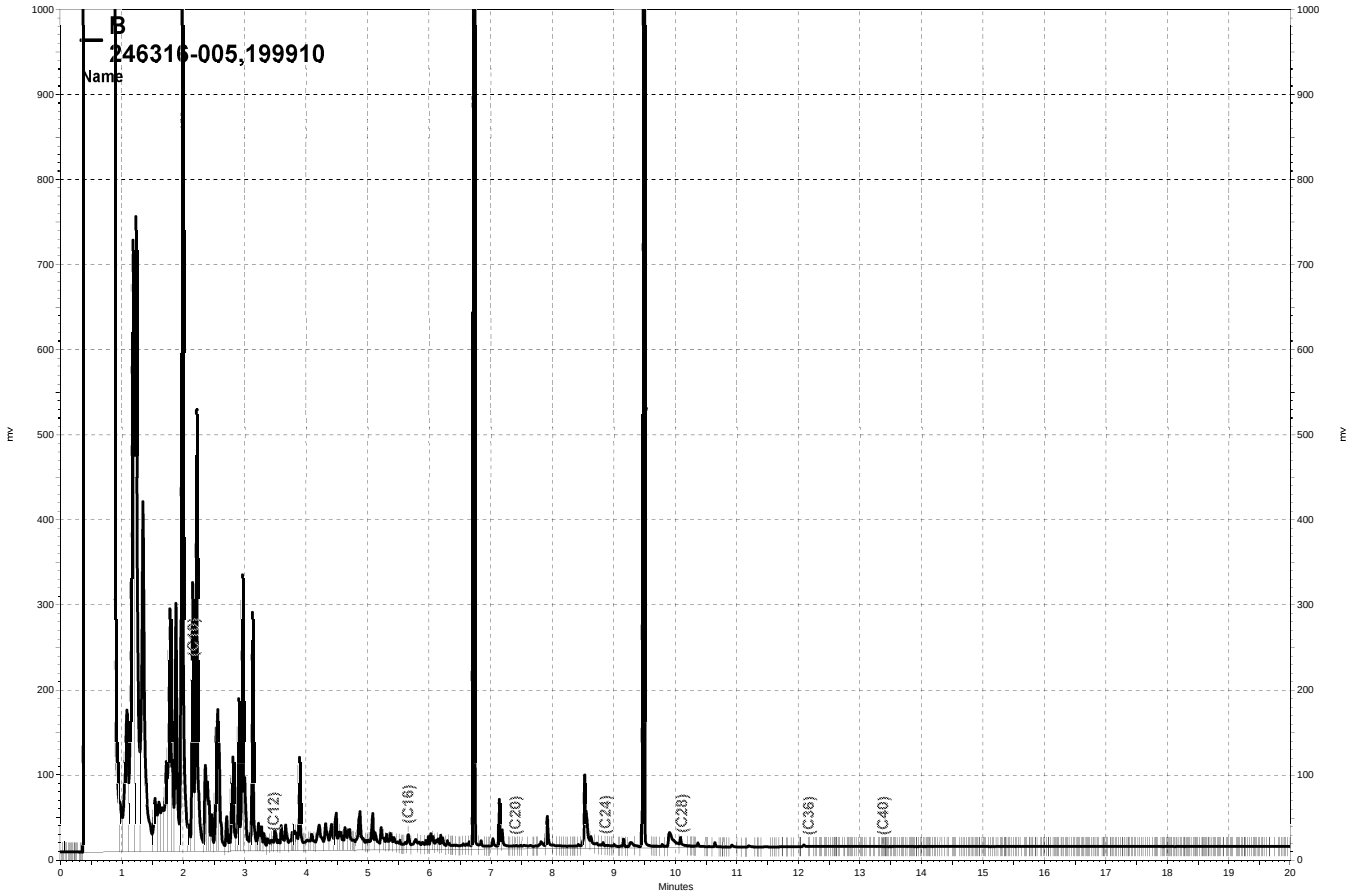

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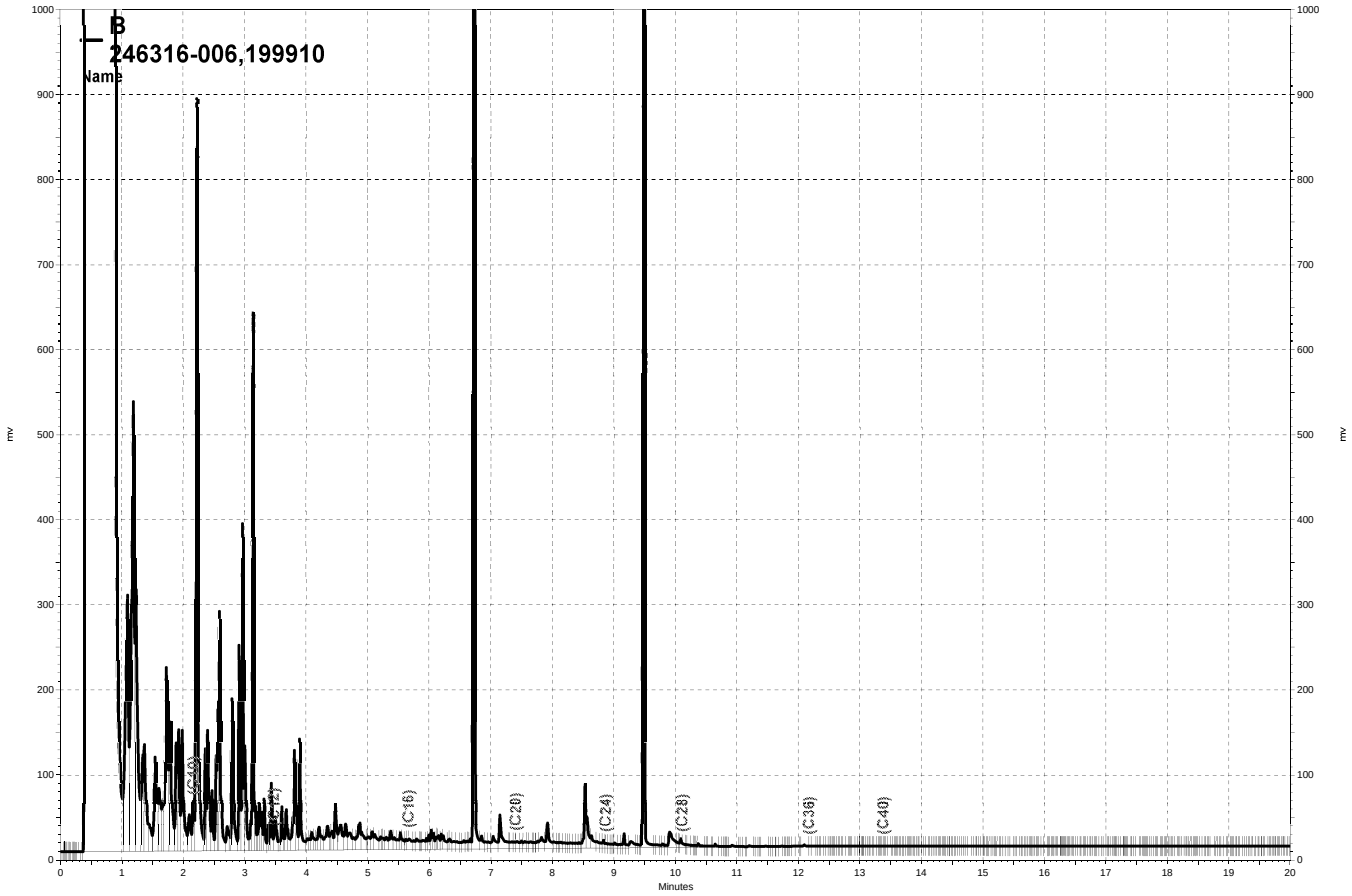

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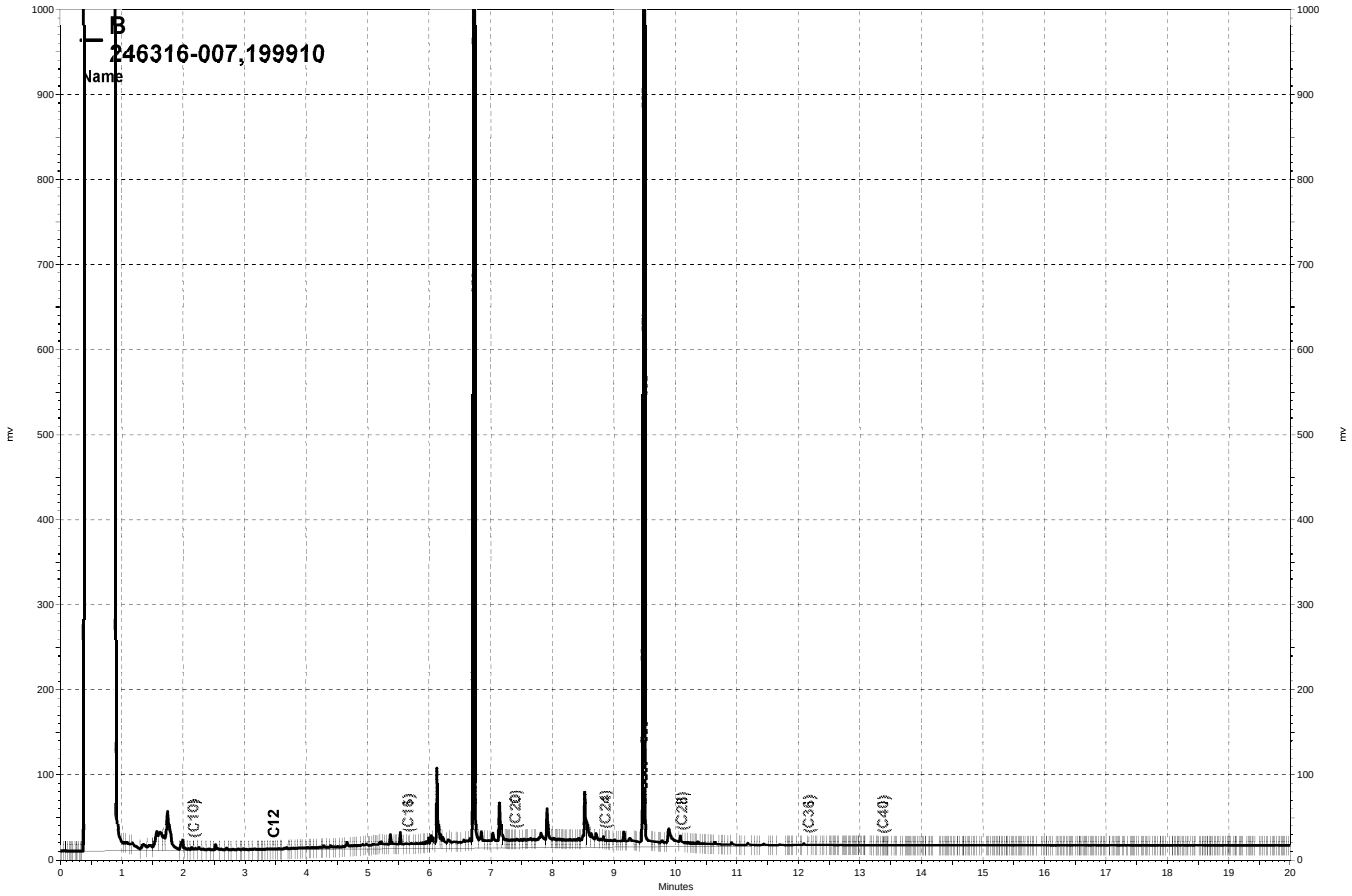

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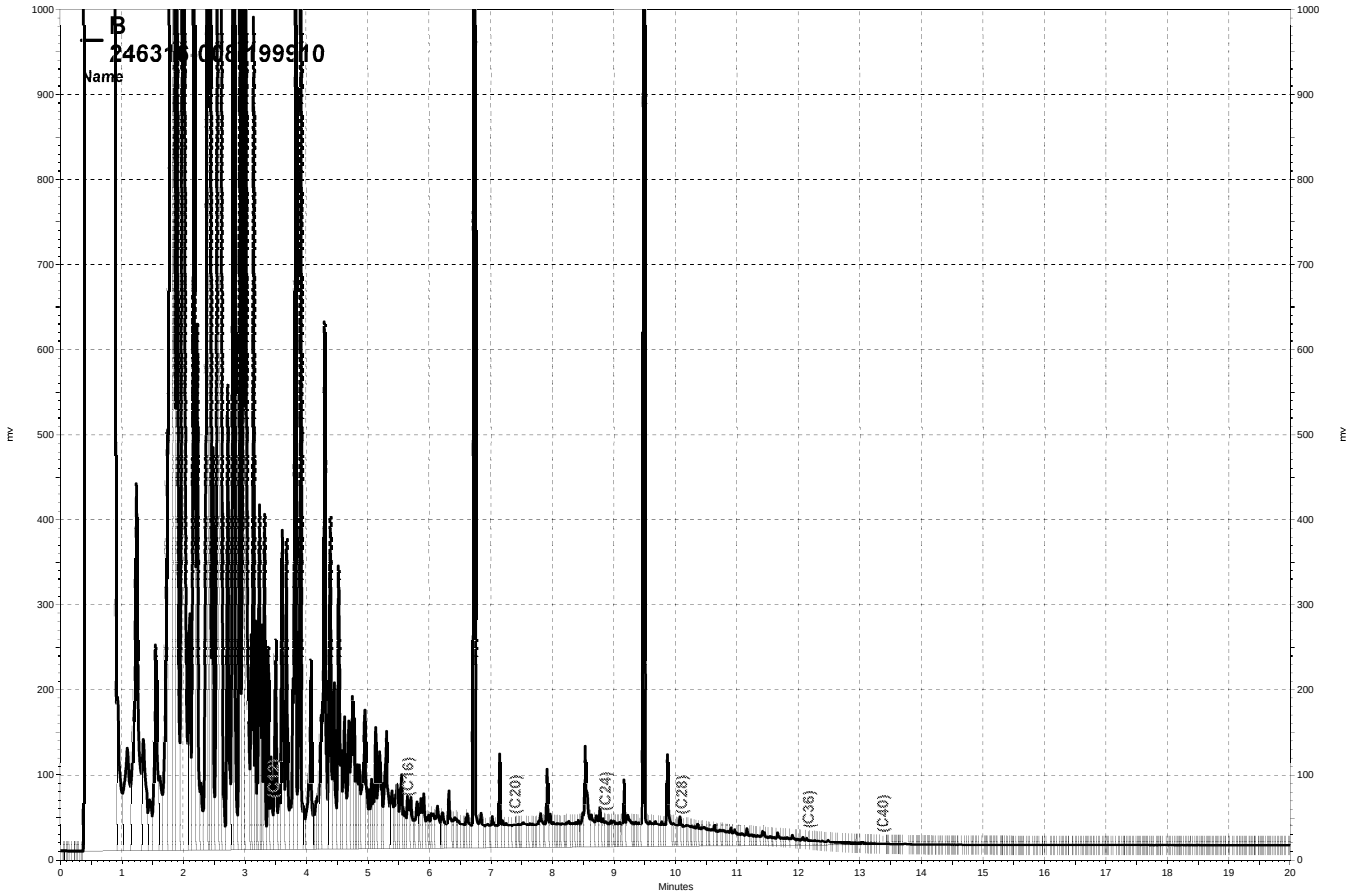

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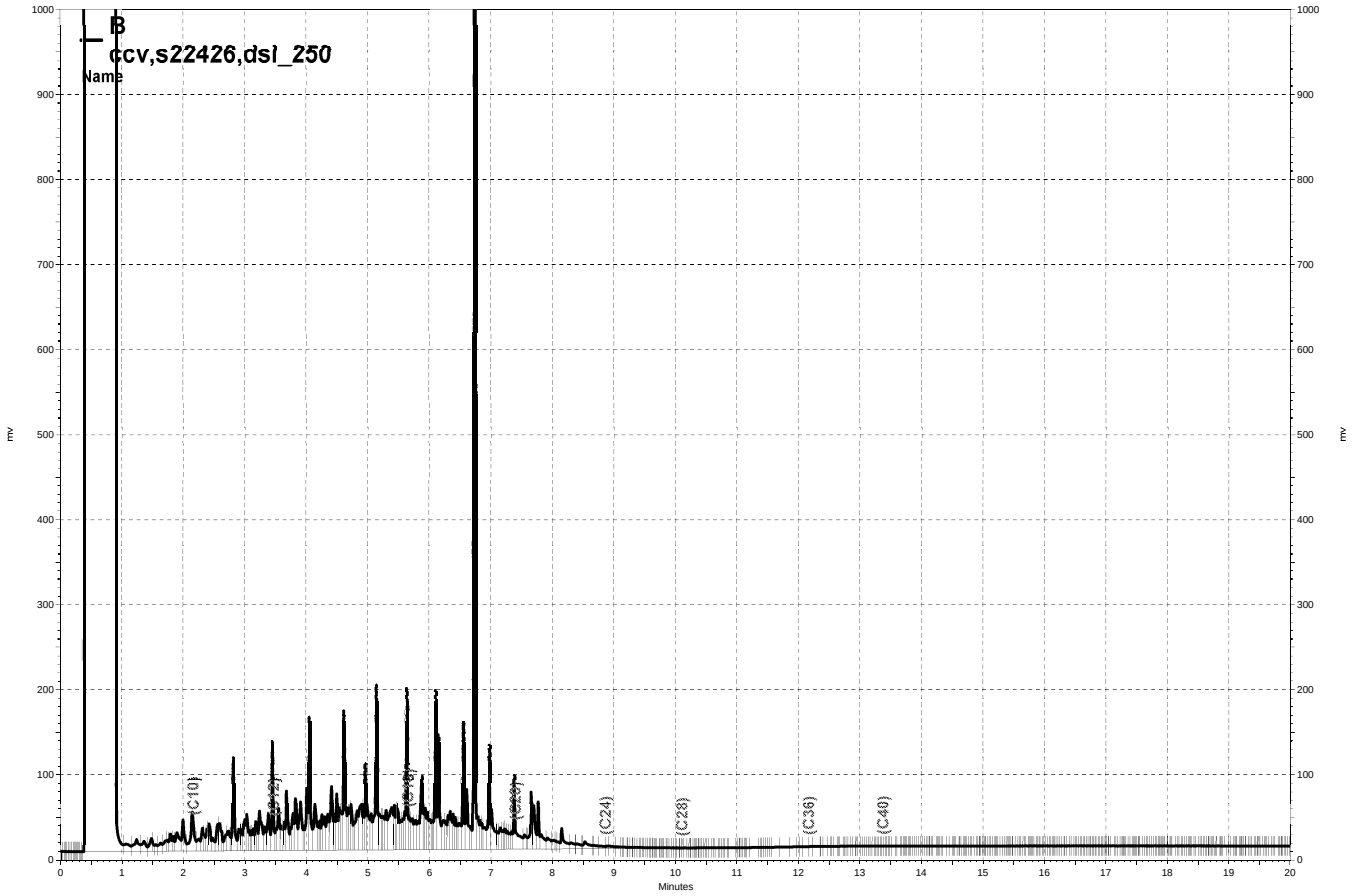

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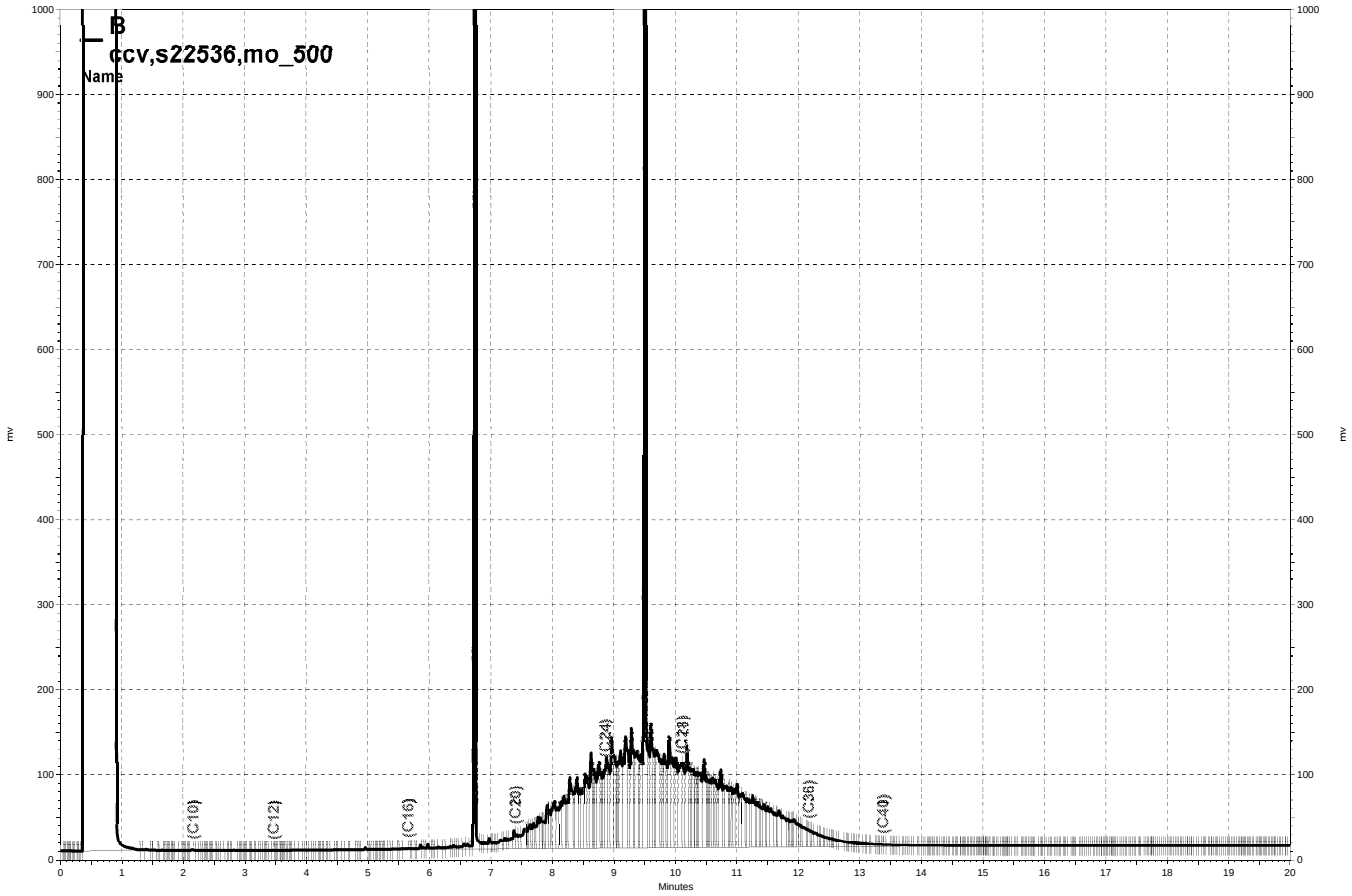

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Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	246316	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8260B
Field ID:	MW-7	Batch#:	199878
Lab ID:	246316-001	Sampled:	06/19/13
Matrix:	Water	Received:	06/19/13
Units:	ug/L	Analyzed:	06/20/13
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	1.0
tert-Butyl Alcohol (TBA)	ND	10
Chloromethane	ND	1.0
Isopropyl Ether (DIPE)	ND	0.5
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Ethyl tert-Butyl Ether (ETBE)	ND	0.5
Chloroethane	ND	1.0
Methyl tert-Amyl Ether (TAME)	ND	0.5
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	5.0
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	0.3 J	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	0.5	0.5
Benzene	ND	0.5
Trichloroethene	3.2	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5

J= Estimated value
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	246316	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8260B
Field ID:	MW-7	Batch#:	199878
Lab ID:	246316-001	Sampled:	06/19/13
Matrix:	Water	Received:	06/19/13
Units:	ug/L	Analyzed:	06/20/13
Diln Fac:	1.000		

Analyte	Result	RL
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	2.0
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	2.0
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	129	77-134
1,2-Dichloroethane-d4	120	72-140
Toluene-d8	98	80-120
Bromofluorobenzene	91	80-120

J= Estimated value
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	246316	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8260B
Field ID:	MW-8	Batch#:	199932
Lab ID:	246316-002	Sampled:	06/19/13
Matrix:	Water	Received:	06/19/13
Units:	ug/L	Analyzed:	06/21/13
Diln Fac:	5.000		

Analyte	Result	RL
Freon 12	ND	5.0
tert-Butyl Alcohol (TBA)	ND	50
Chloromethane	ND	5.0
Isopropyl Ether (DIPE)	ND	2.5
Vinyl Chloride	ND	2.5
Bromomethane	ND	5.0
Ethyl tert-Butyl Ether (ETBE)	ND	2.5
Chloroethane	ND	5.0
Methyl tert-Amyl Ether (TAME)	ND	2.5
Trichlorofluoromethane	ND	5.0
Acetone	ND	50
Freon 113	ND	25
1,1-Dichloroethene	ND	2.5
Methylene Chloride	ND	25
Carbon Disulfide	ND	2.5
MTBE	1.3 J	2.5
trans-1,2-Dichloroethene	ND	2.5
Vinyl Acetate	ND	50
1,1-Dichloroethane	ND	2.5
2-Butanone	ND	50
cis-1,2-Dichloroethene	19	2.5
2,2-Dichloropropane	ND	2.5
Chloroform	ND	2.5
Bromochloromethane	ND	2.5
1,1,1-Trichloroethane	ND	2.5
1,1-Dichloropropene	ND	2.5
Carbon Tetrachloride	ND	2.5
1,2-Dichloroethane	2.3 J	2.5
Benzene	360	2.5
Trichloroethene	ND	2.5
1,2-Dichloropropane	ND	2.5
Bromodichloromethane	ND	2.5
Dibromomethane	ND	2.5
4-Methyl-2-Pentanone	ND	50
cis-1,3-Dichloropropene	ND	2.5
Toluene	2.3 J	2.5
trans-1,3-Dichloropropene	ND	2.5
1,1,2-Trichloroethane	ND	2.5
2-Hexanone	ND	50
1,3-Dichloropropane	ND	2.5
Tetrachloroethene	ND	2.5
Dibromochloromethane	ND	2.5
1,2-Dibromoethane	ND	2.5
Chlorobenzene	ND	2.5
1,1,1,2-Tetrachloroethane	ND	2.5
Ethylbenzene	16	2.5
m,p-Xylenes	2.2 J	2.5
o-Xylene	ND	2.5
Styrene	ND	2.5
Bromoform	ND	5.0
Isopropylbenzene	2.9	2.5
1,1,2,2-Tetrachloroethane	ND	2.5
1,2,3-Trichloropropane	ND	2.5

J= Estimated value
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	246316	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8260B
Field ID:	MW-8	Batch#:	199932
Lab ID:	246316-002	Sampled:	06/19/13
Matrix:	Water	Received:	06/19/13
Units:	ug/L	Analyzed:	06/21/13
Diln Fac:	5.000		

Analyte	Result	RL
Propylbenzene	1.9 J	2.5
Bromobenzene	ND	2.5
1,3,5-Trimethylbenzene	ND	2.5
2-Chlorotoluene	ND	2.5
4-Chlorotoluene	ND	2.5
tert-Butylbenzene	ND	2.5
1,2,4-Trimethylbenzene	ND	2.5
sec-Butylbenzene	2.1 J	2.5
para-Isopropyl Toluene	ND	2.5
1,3-Dichlorobenzene	ND	2.5
1,4-Dichlorobenzene	ND	2.5
n-Butylbenzene	ND	2.5
1,2-Dichlorobenzene	ND	2.5
1,2-Dibromo-3-Chloropropane	ND	10
1,2,4-Trichlorobenzene	ND	2.5
Hexachlorobutadiene	ND	10
Naphthalene	ND	10
1,2,3-Trichlorobenzene	ND	2.5

Surrogate	%REC	Limits
Dibromofluoromethane	109	77-134
1,2-Dichloroethane-d4	114	72-140
Toluene-d8	100	80-120
Bromofluorobenzene	92	80-120

J= Estimated value
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	246316	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8260B
Field ID:	VW-1	Batch#:	199878
Lab ID:	246316-003	Sampled:	06/19/13
Matrix:	Water	Received:	06/19/13
Units:	ug/L	Analyzed:	06/20/13
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	1.0
tert-Butyl Alcohol (TBA)	ND	10
Chloromethane	ND	1.0
Isopropyl Ether (DIPE)	ND	0.5
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Ethyl tert-Butyl Ether (ETBE)	ND	0.5
Chloroethane	ND	1.0
Methyl tert-Amyl Ether (TAME)	ND	0.5
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	5.0
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	246316	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8260B
Field ID:	VW-1	Batch#:	199878
Lab ID:	246316-003	Sampled:	06/19/13
Matrix:	Water	Received:	06/19/13
Units:	ug/L	Analyzed:	06/20/13
Diln Fac:	1.000		

Analyte	Result	RL
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	2.0
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	2.0
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	133	77-134
1,2-Dichloroethane-d4	118	72-140
Toluene-d8	97	80-120
Bromofluorobenzene	91	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	246316	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8260B
Field ID:	MW-3	Batch#:	199878
Lab ID:	246316-004	Sampled:	06/19/13
Matrix:	Water	Received:	06/19/13
Units:	ug/L	Analyzed:	06/20/13
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	1.0
tert-Butyl Alcohol (TBA)	ND	10
Chloromethane	ND	1.0
Isopropyl Ether (DIPE)	ND	0.5
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Ethyl tert-Butyl Ether (ETBE)	ND	0.5
Chloroethane	ND	1.0
Methyl tert-Amyl Ether (TAME)	ND	0.5
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	5.0
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	246316	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8260B
Field ID:	MW-3	Batch#:	199878
Lab ID:	246316-004	Sampled:	06/19/13
Matrix:	Water	Received:	06/19/13
Units:	ug/L	Analyzed:	06/20/13
Diln Fac:	1.000		

Analyte	Result	RL
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	2.0
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	2.0
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	133	77-134
1,2-Dichloroethane-d4	123	72-140
Toluene-d8	99	80-120
Bromofluorobenzene	89	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	246316	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8260B
Field ID:	VW-2	Units:	ug/L
Lab ID:	246316-005	Sampled:	06/19/13
Matrix:	Water	Received:	06/19/13

Analyte	Result	RL	Dil'n Fac	Batch#	Analyzed
Freon 12	ND	3.3	3.333	199932	06/21/13
tert-Butyl Alcohol (TBA)	ND	33	3.333	199932	06/21/13
Chloromethane	ND	3.3	3.333	199932	06/21/13
Isopropyl Ether (DIPE)	ND	1.7	3.333	199932	06/21/13
Vinyl Chloride	ND	1.7	3.333	199932	06/21/13
Bromomethane	ND	3.3	3.333	199932	06/21/13
Ethyl tert-Butyl Ether (ETBE)	ND	1.7	3.333	199932	06/21/13
Chloroethane	ND	3.3	3.333	199932	06/21/13
Methyl tert-Amyl Ether (TAME)	ND	1.7	3.333	199932	06/21/13
Trichlorofluoromethane	ND	3.3	3.333	199932	06/21/13
Acetone	ND	33	3.333	199932	06/21/13
Freon 113	ND	17	3.333	199932	06/21/13
1,1-Dichloroethene	ND	1.7	3.333	199932	06/21/13
Methylene Chloride	ND	17	3.333	199932	06/21/13
Carbon Disulfide	7.5	1.7	3.333	199932	06/21/13
MTBE	ND	1.7	3.333	199932	06/21/13
trans-1,2-Dichloroethene	ND	1.7	3.333	199932	06/21/13
Vinyl Acetate	ND	33	3.333	199932	06/21/13
1,1-Dichloroethane	ND	1.7	3.333	199932	06/21/13
2-Butanone	ND	33	3.333	199932	06/21/13
cis-1,2-Dichloroethene	ND	1.7	3.333	199932	06/21/13
2,2-Dichloropropane	ND	1.7	3.333	199932	06/21/13
Chloroform	ND	1.7	3.333	199932	06/21/13
Bromochloromethane	ND	1.7	3.333	199932	06/21/13
1,1,1-Trichloroethane	ND	1.7	3.333	199932	06/21/13
1,1-Dichloropropene	ND	1.7	3.333	199932	06/21/13
Carbon Tetrachloride	ND	1.7	3.333	199932	06/21/13
1,2-Dichloroethane	1.7	1.7	3.333	199932	06/21/13
Benzene	270	1.7	3.333	199932	06/21/13
Trichloroethene	ND	1.7	3.333	199932	06/21/13
1,2-Dichloropropane	ND	1.7	3.333	199932	06/21/13
Bromodichloromethane	ND	1.7	3.333	199932	06/21/13
Dibromomethane	ND	1.7	3.333	199932	06/21/13
4-Methyl-2-Pentanone	ND	33	3.333	199932	06/21/13
cis-1,3-Dichloropropene	ND	1.7	3.333	199932	06/21/13
Toluene	58	1.7	3.333	199932	06/21/13
trans-1,3-Dichloropropene	ND	1.7	3.333	199932	06/21/13
1,1,2-Trichloroethane	ND	1.7	3.333	199932	06/21/13
2-Hexanone	ND	33	3.333	199932	06/21/13
1,3-Dichloropropane	ND	1.7	3.333	199932	06/21/13
Tetrachloroethene	ND	1.7	3.333	199932	06/21/13
Dibromochloromethane	ND	1.7	3.333	199932	06/21/13
1,2-Dibromoethane	ND	1.7	3.333	199932	06/21/13
Chlorobenzene	ND	1.7	3.333	199932	06/21/13
1,1,1,2-Tetrachloroethane	ND	1.7	3.333	199932	06/21/13
Ethylbenzene	280	10	20.00	199878	06/20/13
m,p-Xylenes	300	1.7	3.333	199932	06/21/13
o-Xylene	130	1.7	3.333	199932	06/21/13
Styrene	ND	1.7	3.333	199932	06/21/13
Bromoform	ND	3.3	3.333	199932	06/21/13
Isopropylbenzene	9.9	1.7	3.333	199932	06/21/13
1,1,2,2-Tetrachloroethane	ND	1.7	3.333	199932	06/21/13
1,2,3-Trichloropropane	ND	1.7	3.333	199932	06/21/13
Propylbenzene	30	1.7	3.333	199932	06/21/13
Bromobenzene	ND	1.7	3.333	199932	06/21/13

J= Estimated value
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	246316	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8260B
Field ID:	VW-2	Units:	ug/L
Lab ID:	246316-005	Sampled:	06/19/13
Matrix:	Water	Received:	06/19/13

Analyte	Result	RL	Diln Fac	Batch#	Analyzed
1,3,5-Trimethylbenzene	16	1.7	3.333	199932	06/21/13
2-Chlorotoluene	ND	1.7	3.333	199932	06/21/13
4-Chlorotoluene	ND	1.7	3.333	199932	06/21/13
tert-Butylbenzene	ND	1.7	3.333	199932	06/21/13
1,2,4-Trimethylbenzene	260	1.7	3.333	199932	06/21/13
sec-Butylbenzene	3.0	1.7	3.333	199932	06/21/13
para-Isopropyl Toluene	1.4 J	1.7	3.333	199932	06/21/13
1,3-Dichlorobenzene	ND	1.7	3.333	199932	06/21/13
1,4-Dichlorobenzene	ND	1.7	3.333	199932	06/21/13
n-Butylbenzene	ND	1.7	3.333	199932	06/21/13
1,2-Dichlorobenzene	ND	1.7	3.333	199932	06/21/13
1,2-Dibromo-3-Chloropropane	ND	6.7	3.333	199932	06/21/13
1,2,4-Trichlorobenzene	ND	1.7	3.333	199932	06/21/13
Hexachlorobutadiene	ND	6.7	3.333	199932	06/21/13
Naphthalene	22 J	40	20.00	199878	06/20/13
1,2,3-Trichlorobenzene	ND	1.7	3.333	199932	06/21/13

Surrogate	%REC	Limits	Diln Fac	Batch#	Analyzed
Dibromofluoromethane	109	77-134	3.333	199932	06/21/13
1,2-Dichloroethane-d4	116	72-140	3.333	199932	06/21/13
Toluene-d8	100	80-120	3.333	199932	06/21/13
Bromofluorobenzene	84	80-120	3.333	199932	06/21/13

J= Estimated value
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	246316	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8260B
Field ID:	MW-9	Batch#:	199878
Lab ID:	246316-006	Sampled:	06/19/13
Matrix:	Water	Received:	06/19/13
Units:	ug/L	Analyzed:	06/20/13
Diln Fac:	16.67		

Analyte	Result	RL
Freon 12	ND	17
tert-Butyl Alcohol (TBA)	ND	170
Chloromethane	ND	17
Isopropyl Ether (DIPE)	ND	8.3
Vinyl Chloride	ND	8.3
Bromomethane	ND	17
Ethyl tert-Butyl Ether (ETBE)	ND	8.3
Chloroethane	ND	17
Methyl tert-Amyl Ether (TAME)	ND	8.3
Trichlorofluoromethane	ND	17
Acetone	ND	170
Freon 113	ND	83
1,1-Dichloroethene	ND	8.3
Methylene Chloride	ND	83
Carbon Disulfide	ND	8.3
MTBE	ND	8.3
trans-1,2-Dichloroethene	ND	8.3
Vinyl Acetate	ND	170
1,1-Dichloroethane	ND	8.3
2-Butanone	ND	170
cis-1,2-Dichloroethene	14	8.3
2,2-Dichloropropane	ND	8.3
Chloroform	ND	8.3
Bromochloromethane	ND	8.3
1,1,1-Trichloroethane	ND	8.3
1,1-Dichloropropene	ND	8.3
Carbon Tetrachloride	ND	8.3
1,2-Dichloroethane	ND	8.3
Benzene	1,500	8.3
Trichloroethene	13	8.3
1,2-Dichloropropane	ND	8.3
Bromodichloromethane	ND	8.3
Dibromomethane	ND	8.3
4-Methyl-2-Pentanone	ND	170
cis-1,3-Dichloropropene	ND	8.3
Toluene	19	8.3
trans-1,3-Dichloropropene	ND	8.3
1,1,2-Trichloroethane	ND	8.3
2-Hexanone	ND	170
1,3-Dichloropropane	ND	8.3
Tetrachloroethene	ND	8.3
Dibromochloromethane	ND	8.3
1,2-Dibromoethane	ND	8.3
Chlorobenzene	ND	8.3
1,1,1,2-Tetrachloroethane	ND	8.3
Ethylbenzene	110	8.3
m,p-Xylenes	37	8.3
o-Xylene	ND	8.3
Styrene	ND	8.3
Bromoform	ND	17
Isopropylbenzene	12	8.3
1,1,2,2-Tetrachloroethane	ND	8.3
1,2,3-Trichloropropane	ND	8.3
Propylbenzene	40	8.3

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	246316	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8260B
Field ID:	MW-9	Batch#:	199878
Lab ID:	246316-006	Sampled:	06/19/13
Matrix:	Water	Received:	06/19/13
Units:	ug/L	Analyzed:	06/20/13
Diln Fac:	16.67		

Analyte	Result	RL
Bromobenzene	ND	8.3
1,3,5-Trimethylbenzene	ND	8.3
2-Chlorotoluene	ND	8.3
4-Chlorotoluene	ND	8.3
tert-Butylbenzene	ND	8.3
1,2,4-Trimethylbenzene	10	8.3
sec-Butylbenzene	ND	8.3
para-Isopropyl Toluene	ND	8.3
1,3-Dichlorobenzene	ND	8.3
1,4-Dichlorobenzene	ND	8.3
n-Butylbenzene	ND	8.3
1,2-Dichlorobenzene	ND	8.3
1,2-Dibromo-3-Chloropropane	ND	33
1,2,4-Trichlorobenzene	ND	8.3
Hexachlorobutadiene	ND	33
Naphthalene	42	33
1,2,3-Trichlorobenzene	ND	8.3

Surrogate	%REC	Limits
Dibromofluoromethane	119	77-134
1,2-Dichloroethane-d4	119	72-140
Toluene-d8	99	80-120
Bromofluorobenzene	90	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	246316	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8260B
Field ID:	MW-1	Batch#:	199878
Lab ID:	246316-007	Sampled:	06/19/13
Matrix:	Water	Received:	06/19/13
Units:	ug/L	Analyzed:	06/20/13
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	1.0
tert-Butyl Alcohol (TBA)	ND	10
Chloromethane	ND	1.0
Isopropyl Ether (DIPE)	ND	0.5
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Ethyl tert-Butyl Ether (ETBE)	ND	0.5
Chloroethane	ND	1.0
Methyl tert-Amyl Ether (TAME)	ND	0.5
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	5.0
Carbon Disulfide	ND	0.5
MTBE	0.5	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	246316	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8260B
Field ID:	MW-1	Batch#:	199878
Lab ID:	246316-007	Sampled:	06/19/13
Matrix:	Water	Received:	06/19/13
Units:	ug/L	Analyzed:	06/20/13
Diln Fac:	1.000		

Analyte	Result	RL
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	2.0
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	2.0
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	132	77-134
1,2-Dichloroethane-d4	123	72-140
Toluene-d8	98	80-120
Bromofluorobenzene	88	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	246316	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8260B
Field ID:	VW-3	Units:	ug/L
Lab ID:	246316-008	Sampled:	06/19/13
Matrix:	Water	Received:	06/19/13

Analyte	Result	RL	Diln Fac	Batch#	Analyzed
Freon 12	ND	14	14.29	199932	06/21/13
tert-Butyl Alcohol (TBA)	ND	140	14.29	199932	06/21/13
Chloromethane	ND	14	14.29	199932	06/21/13
Isopropyl Ether (DIPE)	ND	7.1	14.29	199932	06/21/13
Vinyl Chloride	ND	7.1	14.29	199932	06/21/13
Bromomethane	ND	14	14.29	199932	06/21/13
Ethyl tert-Butyl Ether (ETBE)	ND	7.1	14.29	199932	06/21/13
Chloroethane	ND	14	14.29	199932	06/21/13
Methyl tert-Amyl Ether (TAME)	ND	7.1	14.29	199932	06/21/13
Trichlorofluoromethane	ND	14	14.29	199932	06/21/13
Acetone	ND	140	14.29	199932	06/21/13
Freon 113	ND	71	14.29	199932	06/21/13
1,1-Dichloroethene	ND	7.1	14.29	199932	06/21/13
Methylene Chloride	ND	71	14.29	199932	06/21/13
Carbon Disulfide	ND	7.1	14.29	199932	06/21/13
MTBE	ND	7.1	14.29	199932	06/21/13
trans-1,2-Dichloroethene	ND	7.1	14.29	199932	06/21/13
Vinyl Acetate	ND	140	14.29	199932	06/21/13
1,1-Dichloroethane	ND	7.1	14.29	199932	06/21/13
2-Butanone	ND	140	14.29	199932	06/21/13
cis-1,2-Dichloroethene	ND	7.1	14.29	199932	06/21/13
2,2-Dichloropropane	ND	7.1	14.29	199932	06/21/13
Chloroform	ND	7.1	14.29	199932	06/21/13
Bromochloromethane	ND	7.1	14.29	199932	06/21/13
1,1,1-Trichloroethane	ND	7.1	14.29	199932	06/21/13
1,1-Dichloropropene	ND	7.1	14.29	199932	06/21/13
Carbon Tetrachloride	ND	7.1	14.29	199932	06/21/13
1,2-Dichloroethane	ND	7.1	14.29	199932	06/21/13
Benzene	72	7.1	14.29	199932	06/21/13
Trichloroethene	ND	7.1	14.29	199932	06/21/13
1,2-Dichloropropane	ND	7.1	14.29	199932	06/21/13
Bromodichloromethane	ND	7.1	14.29	199932	06/21/13
Dibromomethane	ND	7.1	14.29	199932	06/21/13
4-Methyl-2-Pentanone	ND	140	14.29	199932	06/21/13
cis-1,3-Dichloropropene	ND	7.1	14.29	199932	06/21/13
Toluene	ND	7.1	14.29	199932	06/21/13
trans-1,3-Dichloropropene	ND	7.1	14.29	199932	06/21/13
1,1,2-Trichloroethane	ND	7.1	14.29	199932	06/21/13
2-Hexanone	ND	140	14.29	199932	06/21/13

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	246316	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8260B
Field ID:	VW-3	Units:	ug/L
Lab ID:	246316-008	Sampled:	06/19/13
Matrix:	Water	Received:	06/19/13

Analyte	Result	RL	Diln Fac	Batch#	Analyzed
1,3-Dichloropropane	ND	7.1	14.29	199932	06/21/13
Tetrachloroethene	ND	7.1	14.29	199932	06/21/13
Dibromochloromethane	ND	7.1	14.29	199932	06/21/13
1,2-Dibromoethane	ND	7.1	14.29	199932	06/21/13
Chlorobenzene	ND	7.1	14.29	199932	06/21/13
1,1,1,2-Tetrachloroethane	ND	7.1	14.29	199932	06/21/13
Ethylbenzene	16	7.1	14.29	199932	06/21/13
m,p-Xylenes	110	7.1	14.29	199932	06/21/13
o-Xylene	9.7	7.1	14.29	199932	06/21/13
Styrene	ND	7.1	14.29	199932	06/21/13
Bromoform	ND	14	14.29	199932	06/21/13
Isopropylbenzene	35	7.1	14.29	199932	06/21/13
1,1,2,2-Tetrachloroethane	ND	7.1	14.29	199932	06/21/13
1,2,3-Trichloropropane	ND	7.1	14.29	199932	06/21/13
Propylbenzene	170	7.1	14.29	199932	06/21/13
Bromobenzene	ND	7.1	14.29	199932	06/21/13
1,3,5-Trimethylbenzene	300	7.1	14.29	199932	06/21/13
2-Chlorotoluene	ND	7.1	14.29	199932	06/21/13
4-Chlorotoluene	ND	7.1	14.29	199932	06/21/13
tert-Butylbenzene	ND	7.1	14.29	199932	06/21/13
1,2,4-Trimethylbenzene	1,000	7.1	14.29	199932	06/21/13
sec-Butylbenzene	26	7.1	14.29	199932	06/21/13
para-Isopropyl Toluene	9.8	7.1	14.29	199932	06/21/13
1,3-Dichlorobenzene	ND	7.1	14.29	199932	06/21/13
1,4-Dichlorobenzene	ND	7.1	14.29	199932	06/21/13
n-Butylbenzene	58	7.1	14.29	199932	06/21/13
1,2-Dichlorobenzene	ND	7.1	14.29	199932	06/21/13
1,2-Dibromo-3-Chloropropane	ND	29	14.29	199932	06/21/13
1,2,4-Trichlorobenzene	ND	7.1	14.29	199932	06/21/13
Hexachlorobutadiene	ND	29	14.29	199932	06/21/13
Naphthalene	70	50	25.00	199878	06/20/13
1,2,3-Trichlorobenzene	ND	7.1	14.29	199932	06/21/13

Surrogate	%REC	Limits	Diln Fac	Batch#	Analyzed
Dibromofluoromethane	113	77-134	14.29	199932	06/21/13
1,2-Dichloroethane-d4	119	72-140	14.29	199932	06/21/13
Toluene-d8	102	80-120	14.29	199932	06/21/13
Bromofluorobenzene	80	80-120	14.29	199932	06/21/13

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	246316	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8260B
Field ID:	DUP	Batch#:	199878
Lab ID:	246316-009	Sampled:	06/19/13
Matrix:	Water	Received:	06/19/13
Units:	ug/L	Analyzed:	06/20/13
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	1.0
tert-Butyl Alcohol (TBA)	ND	10
Chloromethane	ND	1.0
Isopropyl Ether (DIPE)	ND	0.5
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Ethyl tert-Butyl Ether (ETBE)	ND	0.5
Chloroethane	ND	1.0
Methyl tert-Amyl Ether (TAME)	ND	0.5
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	5.0
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	0.3 J	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	0.5	0.5
Benzene	ND	0.5
Trichloroethene	3.1	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5

J= Estimated value
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	246316	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8260B
Field ID:	DUP	Batch#:	199878
Lab ID:	246316-009	Sampled:	06/19/13
Matrix:	Water	Received:	06/19/13
Units:	ug/L	Analyzed:	06/20/13
Diln Fac:	1.000		

Analyte	Result	RL
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	2.0
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	2.0
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	133	77-134
1,2-Dichloroethane-d4	121	72-140
Toluene-d8	98	80-120
Bromofluorobenzene	90	80-120

J= Estimated value
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	246316	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8260B
Field ID:	TB	Batch#:	199878
Lab ID:	246316-010	Sampled:	06/19/13
Matrix:	Water	Received:	06/19/13
Units:	ug/L	Analyzed:	06/20/13
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	1.0
tert-Butyl Alcohol (TBA)	ND	10
Chloromethane	ND	1.0
Isopropyl Ether (DIPE)	ND	0.5
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Ethyl tert-Butyl Ether (ETBE)	ND	0.5
Chloroethane	ND	1.0
Methyl tert-Amyl Ether (TAME)	ND	0.5
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	5.0
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	246316	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8260B
Field ID:	TB	Batch#:	199878
Lab ID:	246316-010	Sampled:	06/19/13
Matrix:	Water	Received:	06/19/13
Units:	ug/L	Analyzed:	06/20/13
Diln Fac:	1.000		

Analyte	Result	RL
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	2.0
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	2.0
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	132	77-134
1,2-Dichloroethane-d4	120	72-140
Toluene-d8	99	80-120
Bromofluorobenzene	89	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	246316	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	199878
Units:	ug/L	Analyzed:	06/20/13
Diln Fac:	1.000		

Type: BS Lab ID: QC694388

Analyte	Spiked	Result	%REC	Limits
tert-Butyl Alcohol (TBA)	62.50	71.66	115	37-144
Isopropyl Ether (DIPE)	12.50	13.11	105	52-123
Ethyl tert-Butyl Ether (ETBE)	12.50	10.19	82	57-120
Methyl tert-Amyl Ether (TAME)	12.50	10.65	85	59-120
1,1-Dichloroethene	12.50	12.69	102	61-137
Benzene	12.50	12.61	101	78-125
Trichloroethene	12.50	11.91	95	77-122
Toluene	12.50	12.23	98	79-123
Chlorobenzene	12.50	11.61	93	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	118	77-134
1,2-Dichloroethane-d4	117	72-140
Toluene-d8	97	80-120
Bromofluorobenzene	89	80-120

Type: BSD Lab ID: QC694389

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
tert-Butyl Alcohol (TBA)	62.50	72.71	116	37-144	1	31
Isopropyl Ether (DIPE)	12.50	12.75	102	52-123	3	20
Ethyl tert-Butyl Ether (ETBE)	12.50	10.24	82	57-120	0	23
Methyl tert-Amyl Ether (TAME)	12.50	11.01	88	59-120	3	22
1,1-Dichloroethene	12.50	12.25	98	61-137	4	24
Benzene	12.50	12.48	100	78-125	1	20
Trichloroethene	12.50	12.01	96	77-122	1	20
Toluene	12.50	11.95	96	79-123	2	20
Chlorobenzene	12.50	11.79	94	80-120	1	20

Surrogate	%REC	Limits
Dibromofluoromethane	114	77-134
1,2-Dichloroethane-d4	117	72-140
Toluene-d8	97	80-120
Bromofluorobenzene	91	80-120

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	246316	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC694390	Batch#:	199878
Matrix:	Water	Analyzed:	06/20/13
Units:	ug/L		

Analyte	Result	RL
Freon 12	ND	1.0
tert-Butyl Alcohol (TBA)	ND	10
Chloromethane	ND	1.0
Isopropyl Ether (DIPE)	ND	0.5
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Ethyl tert-Butyl Ether (ETBE)	ND	0.5
Chloroethane	ND	1.0
Methyl tert-Amyl Ether (TAME)	ND	0.5
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	5.0
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5

ND= Not Detected
RL= Reporting Limit

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	246316	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC694390	Batch#:	199878
Matrix:	Water	Analyzed:	06/20/13
Units:	ug/L		

Analyte	Result	RL
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	2.0
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	2.0
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	129	77-134
1,2-Dichloroethane-d4	119	72-140
Toluene-d8	99	80-120
Bromofluorobenzene	92	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	246316	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	199932
Units:	ug/L	Analyzed:	06/21/13
Diln Fac:	1.000		

Type: BS Lab ID: QC694610

Analyte	Spiked	Result	%REC	Limits
tert-Butyl Alcohol (TBA)	62.50	67.31	108	37-144
Isopropyl Ether (DIPE)	12.50	12.46	100	52-123
Ethyl tert-Butyl Ether (ETBE)	12.50	9.631	77	57-120
Methyl tert-Amyl Ether (TAME)	12.50	10.30	82	59-120
1,1-Dichloroethene	12.50	11.55	92	61-137
Benzene	12.50	12.45	100	78-125
Trichloroethene	12.50	11.39	91	77-122
Toluene	12.50	11.95	96	79-123
Chlorobenzene	12.50	11.87	95	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	116	77-134
1,2-Dichloroethane-d4	117	72-140
Toluene-d8	98	80-120
Bromofluorobenzene	90	80-120

Type: BSD Lab ID: QC694611

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
tert-Butyl Alcohol (TBA)	62.50	73.13	117	37-144	8	31
Isopropyl Ether (DIPE)	12.50	11.99	96	52-123	4	20
Ethyl tert-Butyl Ether (ETBE)	12.50	9.741	78	57-120	1	23
Methyl tert-Amyl Ether (TAME)	12.50	10.65	85	59-120	3	22
1,1-Dichloroethene	12.50	11.32	91	61-137	2	24
Benzene	12.50	12.10	97	78-125	3	20
Trichloroethene	12.50	11.33	91	77-122	1	20
Toluene	12.50	11.66	93	79-123	2	20
Chlorobenzene	12.50	11.45	92	80-120	4	20

Surrogate	%REC	Limits
Dibromofluoromethane	117	77-134
1,2-Dichloroethane-d4	117	72-140
Toluene-d8	97	80-120
Bromofluorobenzene	90	80-120

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	246316	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC694612	Batch#:	199932
Matrix:	Water	Analyzed:	06/21/13
Units:	ug/L		

Analyte	Result	RL
Freon 12	ND	1.0
tert-Butyl Alcohol (TBA)	ND	10
Chloromethane	ND	1.0
Isopropyl Ether (DIPE)	ND	0.5
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Ethyl tert-Butyl Ether (ETBE)	ND	0.5
Chloroethane	ND	1.0
Methyl tert-Amyl Ether (TAME)	ND	0.5
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	5.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	5.0
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5
Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	246316	Location:	VW Oakland
Client:	Arcadis	Prep:	EPA 5030B
Project#:	EM001048.0001.0003	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC694612	Batch#:	199932
Matrix:	Water	Analyzed:	06/21/13
Units:	ug/L		

Analyte	Result	RL
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	2.0
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	2.0
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	128	77-134
1,2-Dichloroethane-d4	117	72-140
Toluene-d8	98	80-120
Bromofluorobenzene	91	80-120

ND= Not Detected
RL= Reporting Limit

ARCADIS

Appendix C

Soil Boring Logs and Well Completion Details

Date Start/Finish: 6/13/2013 **Drilling Company:** Penecore **Driller's Name:** Shawn **Drilling Method:** Hollow Stem Auger (HSA) **Auger Size:** 8-inches **Rig Type:** **Sampling Method:** Split Spoon **OVA Equipment:** PID	**Northing:** 2124505.31 (CA NAD83) **Easting:** 6052311.39 (CA NAD83) **Casing Elevation:** 32.70 (NAVD88) **Surface Elevation:** **Borehole Depth:** 20.5 ft bgs **Descriptions By:** SB	**Well/Boring ID: MW-8** **Client:** Volkswagen **Location:** 2740 Broadway Ave. Oakland, California **Reviewed By:** C. Bell / R. Goloubow

DEPTH	ELEVATION	Sample Run Number	Analytical Sample Interval	Blow Counts	N - Value	PID Headspace (ppm)	Recovery (inches)	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	0								Hand Auger to 5.0' Gravel	Flush-mount Well Cap
5	-5	MW-8-5.0-5.5				0			5.0' - 10.0': CLAY, trace silt (CL), non-plastic, 5.0' - 12.5' dry, increase in moisture at 12.5', dark brown	Neat Cement
10	-10	MW-8-10.0-10.5				0			10.0' - 12.5': CLAY. trace silt (CL), non-plastic, moist to wet, dark brown	8-inch-dia. borehole with 2-inch-dia. Sch 40 PVC Casing
									12.5' - 15.0': CLAY (CL), moist, brown	
15	-15	MW-8-15.0-15.5				0			15.0' - 17.0': CLAY, trace silt (CL), low plasticity, inrease in moisture, brown	Bentonite
						10			17.0' - 17.5': SAND, little clay (SC), slow dilatancy, wet, brown	Sand Pack
									17.5' - 18.75': Silty SAND (SM), angular gravel, wet, dark brown	2-inch-dia Sch.40 PVC Slotted Well Screen
									18.75' - 20.0': CLAY (CL), stiff, damp, brown	
20	-20								Bottom of boring: 20 ft bgs	

ARCADIS

Remarks: Abbreviations: ft bgs = feet below ground surface, PID = photoionization detector; ppm = parts per million

▽ : Depth to water measured on June 8, 2013

Date Start/Finish: 6/13/2013
Drilling Company: Penecore
Driller's Name: Shawn
Drilling Method: Hollow Stem Auger (HSA)
Auger Size: 8-inches
Rig Type:
Sampling Method: Split Spoon
OVA Equipment: PID

Northing: 2124482.62 (CA NAD83)
Easting: 6052391.03 (CA NAD83)
Casing Elevation: 31.85 (NAVD88)
Surface Elevation:
Borehole Depth: 20 ft bgs

Descriptions By: SB

Well/Boring ID: **MW-9**
Client: Volkswagen

Location: 2740 Broadway Ave.
Oakland, California

Reviewed By: C. Bell / R. Goloubow

DEPTH	ELEVATION	Sample Run Number	Analytical Sample Interval	Blow Counts	N - Value	PID Headspace (ppm)	Recovery (inches)	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	0								Hand Auger to 5.0'	Flush-mount Well Cap
5	-5	MW-9-5.0-5.5				0			5.0' - 9.5': SILT (ML) with angular cobbles, reddish brown with traces of green, dry	Neat Cement; 8-inch-dia. borehole with 2-inch-dia. Sch 40 PVC Casing
10	-10	MW-9-10.0-10.5				0			9.5' - 10.0': CLAY (CL) with trace silt, brown, dry 10.0' - 13.0': CLAY (CL), with trace silt, greenish brown, moist	Bentonite
						35			13.0' - 14.5': SAND (SP), trace silt, angular pebbles, dark brown, wet	Sand Pack; 2-inch-dia Sch.40 PVC Slotted Well Screen
15	-15	MW-9-15.0-15.5							14.5' - 15.0': CLAY (CL), trace sand, light gray, low plasticity, moist 15.0' - 17.5': CLAY (CL), trace sand, dark gray, low plasticity, stiff, moist	
									17.5' - 18.5': CLAY (CL), greenish brown, moist, stiff	
									18.5' - 20.0': CLAY (CL), brown with brown and black mottling, moist, stiff	
20	-20								Bottom of boring: 20 ft bgs	

ARCADIS

Remarks: Abbreviations: ft bgs = feet below ground surface, PID = photoionization detector; ppm = parts per million

▽ : Depth to water measured on June 8, 2013

CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

ARCADIS

Appendix D

Waste Disposal Documentation

NON-HAZARDOUS WASTE MANIFEST

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.

Manifest Document No. ARC13-0161

2. Page 1 of 1

3. Generator's Name and Mailing Address: Volkswagon of Oakland, 2740 Broadway St, Oakland CA

4. Generator's Phone ( )

ARCADIS-USA

5. Transporter 1 Company Name: TriStrat Inc

6. US EPA ID Number

A. State Transporter's ID

B. Transporter 1 Phone

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: TRISTRAT, INC. 1105 C AIRPORT RD. RIO VISTA, CA 94571

10. US EPA ID Number

E. State Facility's ID

F. Facility's Phone (707) 374-3894

11. WASTE DESCRIPTION	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt./Vol.
a. Non Hazardous Drill cuttings	5	SOIL DRM	2800	lbs
b. Non Hazardous Decon/Purge Water	7	DRM	350	gal
c.				
d.				

GENERATOR

NON-HAZARDOUS WASTE

G. Additional Descriptions for Materials Listed Above

H. Handling Codes for Wastes Listed Above

15. Special Handling instructions and Additional information

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: Caitlin Bell as agent for generator | Signature: Caitlin Bell | Date: Month 07 Day 08 Year 13

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: Patrick McLaughlin | Signature: P McLaughlin | Date: Month 7 Day 8 Year 13

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name | Signature | Date: Month Day Year

FACILITY

19. Discrepancy Indication Space

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

ARCADIS

Appendix E

Field Notes

Well Maintenance Inspection Form

Client: Arcadis Site: 2740 Broadway Oakland Date: 6/17/13

Job #: 111-30017 Technician: BV Page 1 of 1

Inspection Point	Well Inspected - No Corrective Action Required	Entry Indicates Deficiency: Cap non-functional	Lock non-functional	Lock missing	Bolts missing (# missing / # total tabs)	Tabs stripped (# stripped / # total tabs.)	Tabs broken (# broken / # of total tabs)	Annular seal incomplete	Apron damaged	Rim / Lid broken	Trip Hazard	Below Grade	Other (explain in notes)	Well Not Inspected (explain in notes)	Notes (Note any repairs made while on site)
MW-8				X											
MW-9				X											

Notes:

Repair codes: **rt**=retap/ bolts added or replaced **as**=annular seal repair,

Confluence Environmental, Inc 3308 El Camino Ave, Suite 300 #148, Sacramento CA, 95821, 916-760-7641

Confluence Environmental, Inc

Equipment Calibration Log

Equipment make/model	Equipment ID/ serial number	Date	Time	Calibration Standards	Equipment Reading	Equipment Calibrated	Temp (°C) (°F)	Tech init.	Comments
Ultrameter	0216871	6/7/13	1000	4, 7, 10	4.0, 7.0 10.0	X	22	RM	
1	1	1	1	1413	1413	Y	72	RM	

Notes/comments:

Water Level Measurements

Job Number: MH130617 Date: 6/17/13 Client: Arcadis

Site: 2740 Broadway Oakland

Well I.D.	Time	Dia	Depth to NAPL	Thickness of NAPL	Depth to water (DTW)	Total Depth (measured)	Total Depth (historical)	Ref Point TOC/TOB		
MW-8	945	2			10.43	20.00/20.04		TOC		
MW-9	1015	2			9.22	14.92/14.94		↓		

Development Data Sheet

Job#: 11-130657	**Developer:** JM	**Client:** Arcadis
Well ID: MW-8	**Date:** 6/7/13	**Site:** 2740 Broadway, Oakland
Well diam: 1/4" 1" (2") 3" 4" 6" Other:	**DTW:** 10.43	**TD Before:** 20.00 **TD After:** 20.04
Purge equip: ES - diam: Bladder Peri Waterra (Positive Air Displacement) Ext. System		
disp bailer teflon bailer other:	**Surge block used:** (Y) N	
Length of time surged prior to development: 10 mins		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 1.5 X **10** = 15 (Total Purge) Meter(s): Ultrameter

Time	Temp (°C / °F)	pH	Cond (mS / (µS))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed ((gal) / L)	DTW	Notes
1010	19.5	6.3	1042	~~>1000~~	—	1.5	—	soft bottom, Turbid, Silty
1015	19.3	6.6	1001	>1000	—	3	—	hard bottom
1020	19.3	6.6	943	>1000	—	4.5	11.40	clearing but cloudy
1025	19.2	6.6	912	>1000	—	6	—	
1030	19.2	6.6	890	>1000	—	7.5	—	
1035	19.0	6.5	871	973	—	9	11.40	
1040	18.9	6.5	862	819	—	10.5	—	
1045	19.0	6.4	858	479	—	12	—	clearing
~~1049~~	19.1	6.4	852	114	—	13.5	—	
~~1054~~	19.0	6.4	825	53	—	15	11.40	
1058	19.0	6.4	819	9	—	17.5	—	
1102	19.0	6.4	810	5	—	20	11.66	
Well bottom clear + mud								

Did well dewater? YES (NO) Total volume removed: 20 (gal) / L)

Sample method (if applicable): Disp Bailer Ded. Tubing New Tubing / Ext. Port Other:

Sample date:	Sample time:	DTW at sample:
Sample ID:	Lab:	Number of bottles:
Analysis:		

Development Data Sheet

Pg: 1 of 2

Job#: M1-130617	**Developer:** BM	**Client:** Arcadis
Well ID: MW-9	**Date:** 6/17/13	**Site:** 2740 Broadway
Well diam: 1/4" 1" (2") 3" 4" 6" Other:	**DTW:** 9.22	**TD Before:** 14.92 **TD After:** 14.94

Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System
disp bailer teflon bailer other: **Surge block used:** (Y) N

Length of time surged prior to development: 10 mins

Pump depth/ intake: **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163

(TD - DTW X Multiplier = 1 Volume | 80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = 1 X 10 = 10 (Total Purge) Meter(s):

Time	Temp (°C) / °F	pH	Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DTW	Notes
1111	24.4	7.0	1773	71000	~	1	—	soft bottom
1114	24.0	7.0	1821	71000	—	2	—	Hard bottom, Turbid, silty
1117	23.2	7.0	1955	71000	—	3	10.31	Turbid, silty
1120	23.5	6.8	1973	71000	—	4	—	Turbid
1123	23.7	6.6	1999	71000	—	5	—	
1126	24.0	6.5	1671	71000	—	6	12.56	
1130	24.2	6.4	1467	71000	—	7	—	
1134	24.4	6.4	1221	71000	—	8	—	
1137	24.5	6.4	1157	71000	—	9	—	
1140	24.5	6.4	1093	71000	—	10	13.73	
well dewatered @ 11 gallons					recharge rate = 0.43 ft/min			resurged 5 mins 0.0069 ppm
1200	25.0	6.4	985	71000	—	12	—	cloudy
1204	25.0	6.3	939	71000	—	13	—	
1208	24.7	6.6	904	71000	—	14	—	
1211	24.7	6.6	896	71000	—	15	—	see next pg

Did well dewater? (YES) NO Total volume removed: (gal) / L)

Sample method (if applicable): Disp Bailer Ded. Tubing New Tubing Ext. Port Other:

Sample date:	Sample time:	DTW at sample:
Sample ID:	Lab:	Number of bottles:
Analysis:		

Development Data Sheet

Job#: M1-130617	**Developer:** BM	**Client:** Arcadis
Well ID: MW-9	**Date:** 6/17/13	**Site:** 2740 Broadway Oakland
Well diam: 1/4" 1" (2") 3" 4" 6" Other:	**DTW:** 9.22	**TD Before:** 14.92 **TD After:** 14.94
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Surge block used:** (Y) N	
Length of time surged prior to development:	10 mins	
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X **10** = _____ (Total Purge) Meter(s): _____

Time	Temp (°C / °F)	pH	Cond (mS / (S))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed ((gal) / L)	DTW	Notes
1214	24.8	6.60	891	71000	—	16	—	cloudy
1217	24.8	6.60	887	572	—	17	—	cloudy but clearing
1225	25.0	6.60	881	44	—	18	—	clearing
1230	25.0	6.6	879	22	—	19	—	clear
	Well bottom clean + hard							

Did well dewater? (YES) NO Total volume removed: 19 (gal / L)

Sample method (if applicable): Disp Bailer Ded. Tubing New Tubing Ext. Port Other:

Sample date:	Sample time:	DTW at sample:
Sample ID:	Lab:	Number of bottles:
Analysis:		

Confluence Environmental, Inc.
3308 El Camino Ave, Suite 300 #148
Sacramento, CA 95821
916-760-7641 - main
916-473-8617 - fax
www.confluence-env.com

Chain of Custody

Project Name: VW Dealership, Oakland

Job Number: 41-130619

TAT: (STANDARD) 5 DAY 2 DAY 24 HOUR OTHER:

Lab: Curtis & Tompkins	Site Address: 2740 Broadway, Oakland	Confluence PM: Jason Brown
Address: 2323 Fifth St, Berkeley, CA	California Global ID No.: TO6001002227	Phone / Fax: 916-760-7641 / 916-473-8617
Contact:	Include EDF w/ Report: Yes No *Per agreement with Arcadis	Confluence Log Code: CESC
Phone/ Fax: 510-486-0900	Consultant / PM: Arcadis / Ron Golobouw	Report to: Ron Golobouw & Caitlin Bell
	Phone / Fax: 510-596-9550	Invoice to: Arcadis

	Sample ID	Time	Date	Matrix: Soil/Solid	Matrix: Water/Liquid	Matrix: Air	Laboratory No.	No. of Containers	Preservative: Unpreserved	Preservative: H_2SO_4	Preservative: HNO_3	Preservative: HCl	Preservative: NaOH	Requested Analysis: VOC's with fuel Oxy's (8260B)	Requested Analysis: TPH-G (8015)	Requested Analysis: TPH-D & MO (8015)	Notes and Comments
	MW-7	720	6/19		X			8	2			6		X	X	X	
	MW-8	805	"		X			8	2			6		X	X	X	
	VW-1	825	"		X			8	2			6		X	X	X	
	MW-3	855	"		X			8	2			6		X	X	X	
	VW-2	930	"		X			8	2			6		X	X	X	
	MW-9	955	"		X			8	2			6		X	X	X	
	MW-1	1030	"		X			8	2			6		X	X	X	
	VW-3	1100	"		X			8	2			6		X	X	X	
	DUP	—	"		X			8	2			6		X	X	X	
	TB	—	—		X			3				3		X			

Sampler's Name: B. Myers	Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Sampler's Company: Confluence Environmental		6/19/13	1130		6/19/13	1130
Shipment Date:						
Shipment Method:						

Special Instructions:

Confluence Environmental, Inc

Equipment Calibration Log

Equipment make/model	Equipment ID/ serial number	Date	Time	Calibration Standards	Equipment Reading	Equipment Calibrated	Temp (°C / °F)	Tech init.	Comments
Pro Plus	#4	6/19/13	1045	4, 7, 10	4.0, 7.0 10.0	√	20	BM	
↓	↓	↓	↓	1413	1413	√	20	BM	
↓	↓	↓	↓	100%	100%	√	20	BM	
↓	↓	↓	↓	237.5	237.5	√	20	BM	

Notes/comments:

Well Maintenance Inspection Form

Client: Arcadis Site: VW Oakland Date: 6/19/13

Job #: MI-130619 Technician: BM Page 1 of 1

Inspection Point	Well Inspected - No Corrective Action Required	Entry Indicates Deficiency: Cap non-functional	Lock non-functional	Lock missing	Bolts missing (# missing / # total tabs)	Tabs stripped (# stripped / # total tabs.)	Tabs broken (# broken / # of total tabs)	Annular seal incomplete	Apron damaged	Rim / Lid broken	Trip Hazard	Below Grade	Other (explain in notes)	Well Not Inspected (explain in notes)	Notes (Note any repairs made while on site)
MW-1				X											
MW-3				X	4/4										
MW-7				X			1/2								
MW-8				X											
MW-9				X											
VW-1				X	4/4										
VW-2				X	4/4										
VW-3				X	4/4										

Notes:

Repair codes: **rt**=retap/ bolts added or replaced **as**=annular seal repair,

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Water Level Measurements

Job Number: M1-130619 Date: 6/19/13 Client: Arcadis

Site: VW Oakland

Well I.D.	Time	Dia	Depth to NAPL	Thickness of NAPL	Depth to water (DTW)	Total Depth (measured)	Total Depth (historical)	Ref Point TOC/TOB		
MW-1	1236	2			10.40		19.20	TOC		
MW-3	1241	2			9.30		18.60			
MW-7	1230	4			9.59		23.50			
MW-8	1232	2			10.40	20.04				
MW-9	1234	2			9.44	14.94				
VW-1	1239	4			9.42		18.55			
VW-2	1243	4			9.23 ~~9.30~~		16.93			
VW-3	1245	4			8.20					
VW-3 - no spill detected w/ I.P. - confirmed w/ bailer										

Purging And Sampling Data Sheet

Job#: M1-130619	**Sampler:** B Myers	**Client:** Arcadis
Well ID: MW-1	**Date:** 6/19/13	**Site:** VW Dealership, Oakland
Well diam: 1/4" 1" (2") 3" 4" 6" Other:		**DTW:** 6.40 **Total Depth:** 19.20
Purge equip: ES - diam: Bladder (Peri) Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: (New) Dedicated NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 15	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X **3** = _____ (Total Purge) 80%=_____

Time	Temp (°C) °F	pH	Cond (mS /(µS))	Turbidity (NTU)	Purge Rate (gal or (mL/ min))	Volume Removed (gal/(L))	DO (mg/l)	ORP (mv)	DTW	Notes
1008	18.5	6.3	555	10	200	600	0.63	10	6.78	
1011	18.7	6.3	555	9		1.2	1.3	16	6.82	
1014	18.9	6.3	550	9		1.8	2.0	17	6.85	
1017	19.1	6.3	546	8		2.4	2.6	14	6.86	
1020	19.2	6.3	545	8		3	2.7	12	6.87	
1023	19.2	6.3	544	8		3.6	3.0	8	6.88	
1026	19.2	6.4	544	7		4.2	3.1	7	6.89	
1029	19.4	6.3	544	7		4.8	3.2	5	6.89	

Did well dewater? YES (NO)	Total volume removed: 4.8 (gal/(L))	
Sample method: Disp Bailer Ded. Tubing (New Tubing) Ext. Port Other:		
Sample date: 6/19/13	Sample time: 1030	DTW at sample: 6.89
Sample ID: MW-1	Lab: C&T	Number of bottles: 8
Analysis: VOC's plus Oxy's, TPH-G, TPH-D & MO		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:

Purging And Sampling Data Sheet

Job#: M1-130619	**Sampler:** B Myers	**Client:** Arcadis
Well ID: MW3	**Date:** 6/19/13	**Site:** VW Dealership, Oakland
Well diam: 1/4" 1" (2") 3" 4" 6" Other:		**DTW:** 9.30 **Total Depth:** 18.60
Purge equip: ES - diam: Bladder (Peri) Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: (New) Dedicated NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 15	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X 3 = _____ (Total Purge) 80%=_____

Time	Temp (C / °F)	pH	Cond (mS / (uS))	Turbidity (NTU)	Purge Rate (gal or (mL/ min))	Volume Removed (gal (L))	DO (mg/l)	ORP (mv)	DTW	Notes
840	18.0	6.5	429	12	300	900	6.7	90	9.53	
843	18.0	6.4	428	8	1	1.8	6.7	92	9.62	
846	18.0	6.4	426	8	150	2.25	6.3	94	9.65	
849	18.0	6.4	425	7	|	2.7	6.4	97	9.66	
852	18.0	6.4	425	7	—	3.15	6.4	98	9.66	

Did well dewater? YES (NO)	Total volume removed: 3.15 (gal / L)	
Sample method: Disp Bailer (Ded. Tubing) New Tubing Ext. Port Other:		
Sample date: 6/19/13	Sample time: 855	DTW at sample: 9.66
Sample ID: MW-3	Lab: C&T	Number of bottles: 8
Analysis: VOC's plus Oxy's, TPH-G, TPH-D & MO		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:

Purging And Sampling Data Sheet

Job#: M1-130619	**Sampler:** B Myers	**Client:** Arcadis
Well ID: MW-7	**Date:** 6/19/13	**Site:** VW Dealership, Oakland
Well diam: 1/4" 1" 2" 3" (4") 6" Other:		**DTW:** 9.59 **Total Depth:** 23.50
Purge equip: ES - diam: Bladder (Peri) Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: (New) Dedicated NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 15	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius^2 X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X **3** = _____ (Total Purge) 80%=_____

Time	Temp (°C/ °F)	pH	Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal/ L)	DO (mg/l)	ORP (mv)	DTW	Notes
706	18.4	6.4	354	9	300	900 ml	0.64	150	9.72	
709	18.4	6.3	354	9		1.8L	0.62	151	9.75	
712	18.4	6.3	354	8		2.7L	0.61	151	9.75	
715	18.3	6.3	353	8		3.6	0.60	151	9.75	
718	18.4	6.3	354	8		4.5	0.61	151	9.75	

Did well dewater? YES (NO)	Total volume removed: 4.5 (gal (L))	
Sample method: Disp Bailer (Ded. Tubing) New Tubing Ext. Port Other:		
Sample date: 6/19/13	Sample time: 720	DTW at sample: 9.75
Sample ID: MW-7	Lab: C&T	Number of bottles: 8
Analysis: VOC's plus Oxy's, TPH-G, TPH-D & MO		
Equipment blank ID @	Field blank ID @	
Duplicate ID: DUP	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:

Purging And Sampling Data Sheet

Job#: M1-130619	**Sampler:** B Myers	**Client:** Arcadis
Well ID: MW-8	**Date:** 6/19/13	**Site:** VW Dealership, Oakland
Well diam: 1/4" 1" (2") 3" 4" 6" Other:		**DTW:** 10.40 **Total Depth:** 20.04
Purge equip: ES - diam: Bladder (Peri) Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: (New) Dedicated NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 18	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X 3 = _____ (Total Purge) 80%=_____

Time	Temp (°C) °F	pH	Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
741	18.7	6.5	748	12	300	900 ml	0.46	137	10.60	
744	18.6	6.5	765	12		1.9	0.46	116	10.63	
747	18.7	6.5	768	10		2.7	0.97	110	10.63	
750	18.7	6.5	770	10		3.6	1.4	99	10.63	
753	18.7	6.5	775	10		4.5	1.8	91	10.63	
756	18.6	6.5	775	9		5.4	2.0	86	10.63	
759	18.6	6.5	777	9		6.3	2.1	81	10.63	
803	18.6	6.5	780	9	↓	7.2	2.1	77	10.64	

Did well dewater? YES (NO)	Total volume removed: 7.2 (gal / (L))	
Sample method: Disp Bailer Ded. Tubing (New Tubing) Ext. Port Other:		
Sample date: 6/19/13	Sample time: 805	DTW at sample: 10.64
Sample ID: MW-8	Lab: C&T	Number of bottles: 8
Analysis: VOC's plus Oxy's, TPH-G, TPH-D & MO		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:

Purging And Sampling Data Sheet

Job#: M1-130619	**Sampler:** B Myers	**Client:** Arcadis
Well ID: MW-9	**Date:** 6/19/13	**Site:** VW Dealership, Oakland
Well diam: 1/4" 1" (2") 3" 4" 6" Other:		**DTW:** 9.44 **Total Depth:** 14.94
Purge equip: ES - diam: Bladder (Peri) Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: (New) Dedicated NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 15	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius^2 X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X 3 = _____ (Total Purge) 80%=_____

Time	Temp (°C) °F)	pH	Cond (mS (µS))	Turbidity (NTU)	Purge Rate (gal or (mL/ min))	Volume Removed (gal/ (L))	DO (mg/l)	ORP (mv)	DTW	Notes
946	18.9	6.5	942	57	200	600 ml	3.1	-16	10.28	
949	19.0	6.5	955	64	↓	1.2	4.1	-10	10.30	
952	18.9	6.5	944	63	↓	1.8	4.0	-9	10.30	
955	18.9	6.5	932	62	↓	2.4	4.0	-12	10.30	

Did well dewater? YES (NO)	Total volume removed: 2.4 (gal/ (L))		
Sample method: Disp Bailer Ded. Tubing (New Tubing) Ext. Port Other:			
Sample date: 6/19/13	Sample time: 955	DTW at sample: 10.30	
Sample ID: MW-9	Lab: C&T	Number of bottles: 8	
Analysis: VOC's plus Oxy's, TPH-G, TPH-D & MO			
Equipment blank ID @	Field blank ID @		
Duplicate ID:	Pre-purge DO:	Post purge DO:	
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:	

Purging And Sampling Data Sheet

Job#: M1-130619	**Sampler:** B Myers	**Client:** Arcadis
Well ID: VW-1	**Date:** 6/19/13	**Site:** VW Dealership, Oakland
Well diam: 1/4" 1" 2" 3" (4") 6" Other:		**DTW:** 9.42 **Total Depth:** 18.55
Purge equip: ES - diam: Bladder (Peri) Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: (New) Dedicated NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 17	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius^2 X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X 3 = _____ (Total Purge) 80%=_____

Time	Temp (°C / °F)	pH	Cond (mS / (µS))	Turbidity (NTU)	Purge Rate (gal or (mL/ min))	Volume Removed (gal (L))	DO (mg/l)	ORP (mv)	DTW	Notes
812	18.0	6.8	317	8	300	900	2.3	55	9.60	
815	18.0	6.6	315	7	|	1.8	2.2	63	9.64	
818	17.9	6.6	315	7	|	2.7	2.2	67	9.65	
821	18.0	6.6	315	7	|	3.6	2.2	72	9.65	
824	18.1	6.6	315	7	—	4.5	2.2	75	9.65	

Did well dewater? YES (NO)	Total volume removed: 4.5 (gal (L))	
Sample method: Disp Bailer (Ded. Tubing) New Tubing Ext. Port Other:		
Sample date: 6/19/13	Sample time: 825	DTW at sample: 9.65
Sample ID: VW-1	Lab: C&T	Number of bottles: 8
Analysis: VOC's plus Oxy's, TPH-G, TPH-D & MO		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:

Purging And Sampling Data Sheet

Job#: M1-130619	**Sampler:** B Myers	**Client:** Arcadis
Well ID: VW2	**Date:** 6/19/13	**Site:** VW Dealership, Oakland
Well diam: 1/4" 1" 2" 3" (4") 6" Other:		**DTW:** 9.23 **Total Depth:** 16.93
Purge equip: ES - diam: Bladder (Peri) Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: (New) Dedicated NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 14	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X 3 = _____ (Total Purge) 80%=_____

Time	Temp (°C) °F)	pH	Cond (mS /(µS))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal/ (L))	DO (mg/l)	ORP (mv)	DTW	Notes
909	18.1	6.3	547	7	300	(000ml	0.50	-66	9.42	
912	17.9	6.3	549	6	|	1.2	0.54	-78	9.50	
915	17.9	6.3	549	6	|	1.8	1.0	-82	9.51	
918	17.9	6.3	551	6	|	2.4	1.7	-86	9.51	
921	17.9	6.3	553	6	|	3	2.0	-87	9.51	
924	17.8	6.3	556	6	|	3.6	2.4	-89	9.51	
927	17.9	6.3	556	5	|	4.2	2.5	-90	9.51	
930	17.9	6.3	557	5	|	4.8 ~~5.4~~	2.5	-90	9.51	

Did well dewater? YES (NO)	Total volume removed: 4.8 (gal (L))	
Sample method: Disp Bailer (Ded. Tubing) New Tubing Ext. Port Other:		
Sample date: 6/19/13	Sample time: 930	DTW at sample: 9.51
Sample ID: VW2	Lab: C&T	Number of bottles: 8
Analysis: VOC's plus Oxy's, TPH-G, TPH-D & MO		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:

Purging And Sampling Data Sheet

Job#: M1-130619	**Sampler:** B Myers	**Client:** Arcadis
Well ID: VW-3	**Date:** 6/19/13	**Site:** VW Dealership, Oakland
Well diam: 1/4" 1" 2" 3" (4") 6" Other:		**DTW:** 8.20 **Total Depth:**
Purge equip: ES - diam: Bladder (Peri) Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: (New) Dedicated NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 12	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X 3 = _____ (Total Purge) 80%= _____

Time	Temp (°C) °F)	pH	Cond (mS (µS))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal (L))	DO (mg/l)	ORP (mv)	DTW	Notes
1042	17.8	7.0	654	10	200	600 ml	0.51	-96	8.20	
1045	18.0	7.0	651	9	|	1.2	0.80	-104	8.20	
1048	18.0	7.0	648	9	|	1.8	0.90	-105	8.20	
1051	18.0	7.1	644	8	|	2.4	1.2	-109	8.20	
1054	18.0	7.1	642	8	|	3	1.2	-110	8.20	
1057	18.0	7.1	641	7	↓	3.6	1.3	-111	8.20	

Did well dewater? YES (NO)	Total volume removed: 3.6 (gal (L))
Sample method: Disp Bailer Ded. Tubing (New Tubing) Ext. Port Other:	
Sample date: 6/19/13 Sample time: 1100	DTW at sample: 8.20
Sample ID: VW-3 Lab: C&T	Number of bottles: 8
Analysis: VOC's plus Oxy's, TPH-G, TPH-D & MO	
Equipment blank ID @	Field blank ID @
Duplicate ID:	Pre-purge DO: Post purge DO:
$Fe2^{+}$:	Pre-purge ORP: Post purge ORP: