PORT OF OAKLAND

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September 5, 2014

Mr. Keith E. Nowell, P.G., C.H.G.
Hazardous Materials Specialist
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

RE: RO#0000010_2014 First Semi-Annual Groundwater Monitoring Report - Port of Oakland, 651 Maritime Street, Oakland, CA_2014-09-05

Dear Mr. Nowell:

Please find enclosed the report entitled *2014 First Semi-Annual Groundwater Monitoring Report - Port of Oakland, 651 Maritime Street, Oakland, CA ("Report")* dated September, 2014, prepared by ARCADIS, U.S., Inc. ("ARCADIS") on behalf of the Port of Oakland ("Port")[1]. This Report is being submitted in accordance with Alameda County Health Care Services Agency ("County") requirements, as specified in County letters dated March 23, 2006[2], January 19, 2007[3], September 30, 2008[4], and June 23, 2011.[5]

The Port has retained ARCADIS to perform groundwater monitoring and maintenance of the remediation system. Results of the first 2014 semi-annual sampling event are

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[1] The Site has been referred to historically as the "Shippers" and "Ringsby" sites, based on the Port tenants that occupied the site at the time of release discoveries. Prior to site redevelopment in 2004, the site was also referred to as 2277 and 2225 Seventh Street. After redevelopment, the Site address became 651 and 555 Maritime Street, although referenced hereafter (including within this Report) as only **651 Maritime Street *(Fuel Leak Case RO0000010).***

[2] Letter from Mr. Barney Chan (County) to Mr. Jeff Rubin (Port), regarding *Fuel Leak Cases RO0000010 and RO0000185, 2277 and 2225 7th St., Oakland, CA 94607*, dated March 23, 2006.

[3] Letter from Mr. Barney Chan (County) to Mr. Jeff Rubin (Port), regarding *Fuel Leak Cases RO0000010 and RO0000185, 2277 and 2225 7th St., Oakland, CA 94607*, dated January 19, 2007.

[4] Letter from Mr. Steven Plunkett (County) to Mr. Jeffrey Rubin (Port) regarding *Fuel Leak Case RO0000187 (Global ID# T0600100892), Port of Oakland, 651 Maritime Street, Oakland, CA*, dated September 30, 2008.

[5] Letter from Mr. Paresh Khatri (County) to Messrs. Jeffrey Jones and Jeffrey Rubin (Port) regarding *Feasibility Study Evaluation for Fuel Leak Case No. RO0000010 & RO0000187 (GeoTracker Global ID# T0600100892), Port of Oakland, 651 Maritime Street, Oakland, CA*, dated June 23, 2011.

530 Water Street ■ Jack London Square ■ P.O. Box 2064 ■ Oakland, California 94604-2064
Telephone: (510) 627-1100 ■ Facsimile: (510) 627-1826 ■ Web Page: www.portofoakland.com

contained in the enclosed report. If you have any questions or comments regarding the results, please contact Jeff Rubin at (510) 627-1134.

I declare, under penalty of perjury, that the information and/or recommendations contained in the attached report prepared by ARCADIS are true and correct to the best of my knowledge. Please note that the report is stamped by a Registered Professional Geologist in the State of California.

Sincerely,

Jeffrey R. Jones
Supervisor
Environmental Programs and Planning

Jeffrey L. Rubin, CPSS, REPA
Port Associate Environmental Scientist
Environmental Programs and Planning

Enclosure: noted

Cc (w encl.): Michele Heffes
James McCarty (Baseline Environmental)

Cc (w/o encl.): Katherine Brandt, P.G. (ARCADIS)
Yane Nordhav (Baseline Environmental)

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PORT OF OAKLAND

2014 First Semi-Annual Groundwater Monitoring Report

Port of Oakland
651 Maritime Street
Oakland, California

September 2014

ARCADIS

Caroline Orsi
Project Geologist

Katherine Brandt, P.G.
Principal Geologist

2014 First Semi-Annual Groundwater Monitoring Report

Port of Oakland
651 Maritime Street
Oakland, California

Prepared for:
Port of Oakland

Prepared by:
ARCADIS U.S., Inc.
2000 Powell Street
Suite 700
Emeryville
California 94608
Tel 510 652 4500
Fax 510 652 4906

Our Ref.:
04656020.HFC1

Date:
September 5, 2014

ARCADIS

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Acronyms and Abbreviations

ACHCS	Alameda County Health Care Services
amsl	above mean sea level
ARCADIS	ARCADIS U.S., Inc.
BTEX	Benzene, toluene, ethylbenzene, and total xylenes
C&T	Curtis and Tomkins, Ltd.
DO	Dissolved oxygen
ESS	Environmental Sampling Services
FS/CAP	Feasibility Study/Corrective Action Plan
GAC	Granular activated carbon
LOP	Local Oversight Program
MCL	Maximum contaminant level
MNA	Monitored natural attenuation
MSE	MSE Group
MTBE	Methyl tert-butyl ether
NESCO	National Environmental Service Company
ORC	Oxygen Releasing Compound™
ORP	Oxidation/reduction potential
PAHs	polycyclic aromatic hydrocarbons
Port	Port of Oakland
ppm	Parts per million
QA/QC	Quality assurance/quality control
RAMCON	RAMCON Engineering and Environmental Contracting
RPD	Relative percent difference
RWQCB	Regional Water Quality Control Board
TDS	Total dissolved solids
TPHd	Total petroleum hydrocarbons as diesel fuel
TPHg	Total petroleum hydrocarbons as gasoline
TPHmo	Total petroleum hydrocarbons as motor oil
Uribe	Uribe and Associates
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
µg/L	micrograms per liter
µm	micrometer

1. Introduction

This 2014 First Semi-Annual Groundwater Monitoring Report (Report) for 651 Maritime Street, Oakland, California (Site)[1] has been prepared by ARCADIS U.S., Inc (ARCADIS), on behalf of the Port of Oakland (Port). This Report includes the period from January through June 2014. The Alameda County Health Care Services (ACHCS) is providing regulatory oversight under the Local Oversight Program (LOP), case number RO0000010.

The Site encompasses an approximate 13-acre parcel, located between the former Oakland Naval Supply Center and former Oakland Army Base (Figure 1). Groundwater impacts beneath the Site are related to petroleum releases from two former underground storage tank (UST) sites located at 2277 Seventh Street and 2225 Seventh Street. A brief history of the two sites is provided below.

Former 2277 Seventh Street Site

In 1993, Uribe and Associates (Uribe) removed four Port-owned USTs from 2277 Seventh Street. Uribe collected soil samples from beneath the tanks at the time of the removal and submitted them for laboratory analyses. The laboratory reported that soil contained total petroleum hydrocarbons as diesel fuel (TPHd) and as gasoline (TPHg), as well as benzene, toluene, ethylbenzene, and total xylenes (BTEX) compounds. Uribe also observed free-phase product on the groundwater within the excavation. In 1994, Uribe installed three groundwater monitoring wells (MW-1 through MW-3) and in 1995 Alisto Engineering Group installed five additional wells (MW-4 through MW-8). Quarterly groundwater monitoring was initiated in 1996 in accordance with an ACHCS-approved workplan dated April 18, 1995.

Former 2225 Seventh Street Site

Former Port tenant Ringsby Terminals (formerly Dongary Investments) and/or its tenant owned and operated nine USTs at 2225 Seventh Street. One of the tanks in the cluster failed a tank integrity test in 1989. National Environmental Service Company (NESCO) removed the UST in March 1990. During the UST removal, NESCO collected soil and groundwater samples from the excavation. Analytical results

[1] The Site has been referred to in the past as the "Shippers" and "Ringsby" sites, based on the Port tenants occupying the site at the time of release discoveries. In addition, prior to site redevelopment in 2004, the site was referred to as 2277 and 2225 Seventh Street; the Site addresses after redevelopment are 651 and 555 Maritime Street, although referenced in this report as 651 Maritime Street.

indicated the presence of TPHd and BTEX. RAMCON Engineering and Environmental Contracting (RAMCON) removed seven of the USTs (six diesel and one fuel oil) in 1992. RAMCON observed a hole in the fuel oil tank and a thin layer of an unspecified petroleum product floating on the groundwater in the excavation. During a separate event in 1992, RAMCON removed the remaining UST (a waste oil tank). Soil samples collected from that excavation indicated the presence of TPHd, TPH as motor oil (TPHmo), benzene, xylenes, and polycyclic aromatic hydrocarbons (PAHs). A water sample collected from the excavation also contained TPHd. In 1993, RAMCON installed three groundwater monitoring wells (MW-1 through MW-3) at the site and in 1994 quarterly groundwater monitoring began, as required by the ACHCS.[2]

651 Maritime Site

In 2004, the Port completed the development of the eastern-most eight acres of the Site into the Harbor Facilities Complex with an address of 651 Maritime Street (Figure 2). In 2006, the remaining five acres of the Site were developed by the Port into the Maritime Support Center with an address of 555 Maritime Street. The Maritime Support Center is currently leased to Shippers Transport Express.

Historic site investigations indicate that groundwater beneath the Site is impacted by a co-mingled plume containing dissolved and free-phase petroleum hydrocarbons, primarily in the diesel fuel range. In addition, well MW-4 (Figure 3, the western-most well) has historically contained dissolved petroleum hydrocarbons in the gasoline range.

In 1996, the Port installed a remediation system to recover free-phase product from beneath the Site. The free product recovery system was operated until 2003 when it was removed, with approval from the ACHCS.[3] The ACHCS approved the removal of the system with the stipulation that a new free product recovery system be installed. A new system was installed in 2004.

In 1998, Harding Lawson Associates abandoned MW-8 to facilitate the expansion of the railroad tracks to the north of the Site. Replacement well MW-8A was installed in 2001 (Figure 3). In 2002, monitoring wells MW-1, MW-2, and MW-3 at the former 2225

[2] Letter from ACHCS to Dongary Investments dated July 26, 1994.
[3] Letter from ACHCS to Port of Oakland dated March 27, 2003.

Seventh Street site, and MW-6 and MW-7 at the former 2277 Seventh Street site were abandoned to facilitate construction of the new Harbor Facilities Complex. [4]

In 2006, the ACHCS approved a modification of the groundwater monitoring frequency from quarterly to semi-annually at the Site. The first semi-annual monitoring event occurred on July 28, 2006. The ACHCS also approved the use of Oxygen Release Compound™ (ORC) in well MW-4 to increase the dissolved oxygen (DO) concentration in groundwater and stimulate aerobic biodegradation of the petroleum hydrocarbons present in the groundwater at that location.[5]

In 2007, the product recovery system was enhanced by adding a low vacuum to the recovery well heads to increase product recovery rates. Air drawn from the recovery wells was treated with granular activated carbon (GAC) and discharged to the atmosphere under a permit from the Bay Area Air Quality Management District.

On September 30, 2008, ACHCS approved a plan to install four additional groundwater monitoring wells, MW-9 through MW-12 (Figure 3), to enhance the existing monitoring well network and to replace wells removed during Site redevelopment.[6] The wells were installed by MSE Group (MSE) and sampled in December 2008, along with the remaining Site wells. Well installation activities and sample results were reported by MSE in February 2009.

[4] February 2009, Second Semi-Annual 2008 Groundwater Monitoring and Remediation System Operation and Maintenance Report.

[5] Letter from ACHCS to Port of Oakland dated March 23, 2006.

[6] Letter from Mr. Steven Plunkett (ACHCS) to Mr. Jeffrey Rubin (Port of Oakland) dated September 30, 2008.

2. Groundwater Sampling Activities

Environmental Sampling Services (ESS), under contract with ARCADIS, conducted the 2014 first semi-annual groundwater monitoring event at the Site on June 24th and 25th 2014. The June 2014 groundwater monitoring event consisted of measuring the depth to groundwater and free-phase product thickness, where present, in the 10 groundwater monitoring wells on-site and collecting groundwater samples from the wells without free-phase product. In addition, groundwater samples were sampled from two of the on-site recovery wells, RW-4 and RW-8, in support of the Natural Source Zone Depletion Study and LNAPL Assessment which will be presented separately. The depth to groundwater and free-phase product thickness were measured to the nearest one-hundredth of a foot from the top of the well casing using a dual-phase interface probe where free product was anticipated or a water level meter where free product was not anticipated. Measurements of both depth to water and depth to free-phase product were collected just prior to purging to allow sufficient time for groundwater to equilibrate with ambient barometric pressure. The dual-phase interface probe and water level meter were decontaminated before each measurement by washing in a Liquinox solution then rinsing with water. Field observations and instrument readings indicated that there was free-phase product in monitoring well MW-3; hence, this well was neither purged nor sampled. Water level measurements for the June 2014 monitoring event are summarized in Table 1 and included on the groundwater sampling forms in Appendix A.

ESS purged wells MW-1, MW-2, MW-4, MW-5, MW-8A, MW-9, MW-10, MW-11, MW-12, RW-4, and RW-8 using a peristaltic pump equipped with dedicated silicone and polyethylene tubing. ESS monitored field water quality parameters (including temperature, pH, oxidation/reduction potential (ORP), DO concentration, and electrical conductivity) of the purge water using portable field instruments calibrated to manufacturer's specifications. Purging continued until water quality parameters stabilized as recharge rates permitted. Field-measured groundwater quality information collected during the June 2014 monitoring event is provided on groundwater sampling forms included in Appendix A.

After purging, ESS collected groundwater samples directly into laboratory-supplied sample bottles using the peristaltic pump. ESS collected a duplicate sample from monitoring well MW-4 (MW-4DUP). Following sample collection, each sample bottle was labeled with a project name, date and time of collection, samplers' initials, and unique sample identification and stored in a cooler containing ice. The groundwater samples were submitted to Curtis and Tompkins, Ltd. (C&T), a California-certified

analytical laboratory, under appropriate chain-of-custody procedures for the following analyses:

- TPHg in accordance with U.S. Environmental Protection Agency (USEPA) Method 8015B;
- TPHd and TPHmo in accordance with USEPA Method 8015B;
- BTEX and methyl tert-butyl ether (MTBE) in accordance with USEPA Method 8260B;
- Total dissolved solids (TDS) in accordance with USEPA Method 16.1;
- Dissolved metals and cations (sodium, potassium, calcium, magnesium, manganese, and iron) in accordance with USEPA Methods 6010B and 200.7;
- Major anions (sulfate, chloride, nitrate, and nitrite) in accordance with USEPA Method 300.0;
- Alkalinity (bicarbonate and carbonate) in accordance with Standard Method 2320B;
- Orthophosphate in accordance with Standard Method 4500P-E; and
- Dissolved sulfate in accordance with Standard Method 4500S2-D.

Samples collected for dissolved metals analysis were field filtered using a 0.45 micrometer (µm) glass fiber filter to remove suspended sediment.

Prior to analyzing the water samples for TPHd and TPHmo, each sample was passed through a silica gel column, in accordance with USEPA Method 3630C, to remove non-petroleum-based organics that could potentially interfere with the analyses.

Under approval from the ACHCS, well MW-4 had historically been outfitted with ORC socks to increase the DO concentration in groundwater and stimulate aerobic biodegradation of the petroleum hydrocarbons. The ORC socks had historically been removed one-week prior to sampling and replaced immediately after sampling. As part of the Free Product Recovery System shut-down activities in May and June 2011, the socks were removed on June 15, 2011 and not replaced.

Approximately 35 gallons of purge and decontamination water were generated during the June 2014 monitoring event. ESS placed the water in a properly labeled 55-gallon drum, which was stored in the free product recovery system enclosure located within the Harbor Facilities Complex. The Port's environmental services contractor will dispose of the water in accordance with applicable laws and regulations.

3. Results

The following sections summarize the field and laboratory results collected during the first six months of 2014.

3.1 Groundwater Flow Direction

Based on the depth-to-water measurements collected, groundwater levels beneath the Site in June 2014 were slightly higher than those observed in December 2013. In December 2013, groundwater elevations ranged from 3.24 feet above mean sea level (amsl) to 5.92 feet amsl. In June 2014, groundwater elevations ranged from 3.73 feet amsl to 6.03 feet amsl. The groundwater gradient at the Site was approximately 0.0123 feet per foot. Groundwater flow is generally to the northeast. A shallow groundwater elevation contour map for June 2014 is included as Figure 4. Current and historical depth-to-water measurements and calculated groundwater elevations are summarized in Table 1.

3.2 Product Thickness

Free-phase product was identified in monitoring well MW-3 during the June 2014 monitoring event. The product thickness in well MW-3 was measured to be 1.01 feet. Product thickness in this well has ranged from not-measurable to 2.70 feet since April 2000 (Table 1). Free-phase product was not observed in MW-1 for the fourth consecutive monitoring event. Free-phase product has not been observed in any other monitoring wells since records have been kept, beginning in 1997 for MW-2 and MW-5; 2001 for MW-8A; and 2008 for MW-9, MW-10, MW-11, and MW-12. The free-product thickness in recovery wells RW-4 and RW-8 was measured to be 5.48 and 5.86 feet, respectively, which is within the historic range measured at those wells.

3.3 Analytical Results

Analytical results for the groundwater samples collected during the June 2014 monitoring event are illustrated on Figure 5 and summarized in Tables 2 and 3. The laboratory analytical reports are provided in Appendix B.

3.3.1 TPHg

The laboratory reported TPHg in the groundwater samples collected from wells MW-1, MW-4, MW-9, MW-10, MW-12, RW-4, and RW-8 at concentrations ranging from 67 micrograms per liter (µg/L) (MW-12) to 1,500 µg/L (MW-1). The laboratory also reported that chromatograms resulting from the TPHg analyses in all wells with TPHg detections exhibited patterns that do not match the gasoline standard. Chromatograms are included in the laboratory reports in Appendix B.

Figure 6 illustrates the TPHg concentrations over time for those wells where it has been reported above the analytical method reporting limit in at least 10 percent of the samples (excluding MW-1, which historically has contained free product). The graph shows a stable trend over time for concentrations of TPHg in all wells, with the exception of slight increases in the TPHg concentration at MW-4 and MW-10 during this reporting period. The TPHg concentrations at MW-4 and MW-10 in June 2014 are within historic ranges. All TPHg concentrations reported during this sampling event are below the Site remedial goal of 3,700 µg/L.[7]

3.3.2 BTEX and MTBE

The laboratory reported benzene in the groundwater sample collected from well MW-1 at a concentration of 7 µg/L, MW-4 at a concentration of 52 µg/L, and RW-8 at a concentration of 53 µg/L. Ethylbenzene was reported in the samples collected from wells MW-1 (1.4 µg/L) and MW-9 (0.6 µg/L). Xylenes were reported in the sample collected from MW-1 at a concentration of 2.3 µg/L. MTBE was detected in the sample collected from MW-12 at a concentration of 4.2 µg/L. Toluene was detected in the sample collected from MW-1 at a concentration of 1.8 µg/L.

Figures 7 and 8 illustrate the benzene and MTBE concentrations over time for those wells where the constituents have been reported above their respective analytical method reporting limits in at least 10 percent of the samples (except MW-1, which historically contains free product). Figure 7 shows that since 2010, benzene concentrations beneath the Site are stable and/or decreasing. The benzene concentration at MW-4 increased during this reporting period; however, it is still within its historic range. The reported concentrations in MW-4, MW-10, and RW-8 are above the Site remedial goal of 46 µg/L. This benzene concentration at MW-10 may be related to the proximity of the well to the free-phase product plume. Recovery well

[7] Malcolm Pirnie, 2011, Feasibility Study / Correct Action Plan, Port of Oakland's Harbor Facilities Complex, 651 Maritime Street, Oakland, CA, March 15.

RW-8 is located within the free-phase product plume. The remaining reported benzene concentrations are below the Site remedial goal. Figure 8 shows MTBE concentrations beneath the site are decreasing, with reported concentrations below the Site remedial goal of 1,800 µg/L and the California maximum contaminant level (MCL) of 13 µg/L.

3.3.3 TPHd and TPHmo

The laboratory reported TPHd in the groundwater samples collected from monitoring wells MW-1, MW-5, MW-9, MW-10, and MW-12 at concentrations ranging from 72 µg/L (MW-5) to 1,500 µg/L (MW-1) and in recovery wells RW-4 and RW-8 at concentrations of 5,200 µg/L and 7,200 µg/L, respectively. The laboratory also reported that chromatograms resulting from the TPHg analyses at MW-5 and MW-9 exhibited patterns that do not match the gasoline standard. Chromatograms are included in the laboratory reports in Appendix B. The laboratory reported TPHmo concentrations below the analytical method reporting limit in all of the samples analyzed.

Figure 9 illustrates the TPHd concentrations over time for those wells where it has been reported above the analytical method reporting limit in at least 10 percent of the samples (except MW-1, which historically contained free product). TPHd concentrations in most of the Site monitoring wells increased slightly during this reporting period, but remain within historic ranges and below the Site remedial goal of 640 µg/L.

3.3.4 Monitored Natural Attenuation Parameters

In support of the Natural Source Zone Depletion Study and LNAPL Assessment, samples were analyzed for monitored natural attenuation (MNA) parameters in June 2014 in all sampled monitoring wells and recovery wells RW-4 and RW-8. Methane was detected in all wells at concentrations ranging from 14 µg/L to 10,000 µg/L. DO was below 1 mg/L in three of the monitoring wells (MW-2, MW-4, and MW-5) and both recovery wells. Ferrous iron was detected in eight of the nine monitoring wells (not detected in MW-2) and both recovery wells, at concentrations ranging from 0.52 mg/L to 24 mg/L. Dissolved sulfide was detected in four of the nine monitoring wells (MW-1, MW-9, MW-10, and MW-12) and both recovery wells, at concentrations ranging from 0.05 mg/L to 1.5 mg/L.

The above results indicate that groundwater conditions beneath the site are consistent with a reduced environment. The presence of methane indicates strongly reducing conditions across the site. Ferrous iron in the wells nearest the free product plume also indicates that strongly reducing conditions appear to co-locate with areas of greater

hydrocarbon impact. MW-2 appears to be in a moderately reducing area of the site, with low concentrations of ferrous iron (<0.10 mg/L). In general, the results indicate that anaerobic degradation of the petroleum hydrocarbon constituents is occurring, resulting from depressed oxygen levels and low ORP. The above results are consistent with the MNA results reported as part of the June 2011, September 2011, and December 2013 sampling events.

3.4 Quality Assurance / Quality Control

ESS collected a field duplicate from one monitoring well to assess the representativeness of the sample collection procedures. Two samples from well MW-4 (MW-4 and MW-4DUP) were analyzed for the constituents indicated in Section 2.

The laboratory reported benzene in sample MW-4 and duplicate sample MW-4DUP at concentrations of 52 µg/L and 54 µg/L, respectively. The relative percent difference (RPD) between the two samples is calculated below:

Benzene RPD |52-54| / [(52+54)/2] = 4%

The RPD is within the analytical laboratory's maximum allowable RPD for matrix spike duplicates and indicates that the field sampling procedures produced acceptable data.

The laboratory prepared trip blanks using deionized water as a water quality control sample. The trip blanks were stored in the coolers and accompanied groundwater samples from collection to transport to the laboratory. One trip blank was submitted for each day of sampling and analyzed for TPHg, BTEX, and MTBE using USEPA Methods 8015M and 8260B. The laboratory reported concentrations of the constituents of concern below their respective method reporting limits for the analyses performed, indicating that volatile constituents of concern were not introduced into the samples through the collection, transportation, storage, and analysis procedures.

ARCADIS also reviewed the laboratory data for completeness and accuracy (see Quality Control Checklist in Appendix B). Laboratory Quality Assurance / Quality Control (QA/QC) goals were met.

Based on the above QA/QC evaluation, ARCADIS considers the data collected during the June 2014 monitoring event reliable for its intended use.

4. Free Product Measurements

On June 7, 2011, in accordance with the FS/CAP and the letter submitted to the ACHCS on May 16, 2011, ARCADIS shut down the free-phase product recovery system. The skimmer pumps were removed from the wells. The low vacuum system was also shut down, and the GAC vessels were removed from the Site. Free product and water level measurements are collected from monitoring and recovery wells during each groundwater monitoring event to confirm stability of the free-phase product.

Free product and water level measurements for these dates are included in Table 4. Based on the measurements collected, the free-phase product plume appears stable. Product thickness decreased in most wells, with the exception of an increase in recovery well RW-9, located near the edge of the plume. Free product was not observed in any new wells in June 2014. The observed area of free-phase product as assessed in June 2014 is illustrated on Figure 5. Field sheets documenting these measurements are provided in Appendix C.

5. Conclusions

The June 2014 monitoring and free-phase product measurements indicate that the free-phase product plume is stable, and groundwater concentrations are generally stable and/or increasing slightly (Figures 6 through 9). Free product measurements indicate that the free-phase product plume appears stable even though the recovery system has been off for approximately 30 months. Water quality results from the June 2014 monitoring event support the assessment that groundwater concentrations are generally stable or decreasing and below their respective site-specific risk-based target levels. Results of the MNA assessment indicate that petroleum hydrocarbons are actively being reduced through anaerobic degradation.

Risk-based target levels for the Site were derived following the Regional Water Quality Control Board (RWQCB)'s Environmental Screening Level program and are based on: (1) dissolved constituents are not migrating off-Site at concentrations that would impact ecological receptors in the San Francisco Bay; (2) groundwater beneath the Site is considered non-potable (TDS in well MW-11 exceeds 3,000 parts per million (ppm)); and (3) risks are managed through implementation of institutional controls and deed restrictions.

Based on the results of the June 2014 monitoring event, as well as previous events, ARCADIS recommends that future groundwater monitoring events focus on TPHd analysis; and that the TPHg, BTEX, and MTBE analyses be removed from the program, except for the BTEX analyses on samples collected from well MW-10. Per the FS/CAP, site wells will be sampled for MNA parameters again in 2016; however, based on the consistent results of the 2011 and 2013 MNA samples, ARCADIS recommends that MNA parameters be removed from the 2016 sampling program.

ARCADIS

Tables

TABLE 1. Historical Groundwater Elevation and Free Product Data
Port of Oakland's Harbor Facilities Complex Site
555 - 651 Maritime Street, Oakland, California

Monitoring Well	Date Measured	Elevation [1] Top of Casing (feet)	Depth to Product (feet btc)	Depth to Water (feet btc)	Product Thickness (feet)	Groundwater Elevation [1] (feet)
MW-1						
	04/18/00	13.65	NM	8.21	NA	NA
	05/22/00	13.65	NM	8.51	NA	NA
	07/10/01	13.65	8.8	10.00	1.20	4.49
	12/12/01	13.65	NM	NA	NA	NA
	03/08/02	13.65	NM	NA	NA	NA
	06/13/02	13.65	8.70	10.00	1.30	4.56
	09/26/02	13.65	8.60	9.50	0.90	4.78
	03/17/03	13.65	7.61	8.88	1.27	5.66
	06/18/03	13.65	8.20	9.44	1.24	5.08
	09/03/03	13.65	8.50	9.40	0.90	4.88
	11/26/03	13.65	8.85	9.25	0.40	4.68
	03/05/04	13.65	6.76	7.07	0.31	6.80
	06/02/04	13.65	8.26	8.71	0.45	5.26
	09/03/04	13.65	8.70	9.11	0.41	4.83
	12/16/04	13.65	7.75	7.92	0.17	5.85
	03/29/05	13.65	6.21	6.38	0.17	7.39
	06/14/05	13.65	7.41	7.61	0.20	6.18
	08/10/05	13.65	8.05	8.55	0.50	5.45
	09/29/05	13.65	8.28	8.95	0.67	5.17
	12/21/05	13.65	5.70	5.90	0.20	7.89
	03/24/06	13.65	5.98	6.27	0.29	7.58
	07/28/06	13.65	7.88	8.35	0.47	5.63
	11/29/06	NA	10.58	10.81	0.23	NA
	06/01/07	15.80	11.11	11.45	0.34	4.59
	11/14/07	15.80	10.87	10.93	0.06	4.91
	06/05/08	15.80	11.36	11.46	0.10	4.41
	12/18/08	15.80	10.82	10.89	0.07	4.96
	03/04/09	15.80	9.38	9.52	0.14	6.38
	04/01/09	15.80	10.65	10.67	0.02	5.14
	06/17/09	15.80	11.21	11.28	0.07	4.57
	12/08/09	15.80	NP	10.79	0.00	5.01
	06/17/10	15.80	10.79 [4]	10.79	0.00	5.01
	12/14/10	15.80	9.42 [4]	9.42	0.00	6.38
	06/07/11	15.80	NP	10.77	0.00	5.03
	06/21/11	15.80	NP	10.37	0.00	5.43
	09/26/11	15.80	11.23 [4]	11.23	0.00	4.57
	12/05/11	15.80	11.15 [4]	11.15	0.00	4.65
	02/06/12	15.80	10.89 [4]	10.89	0.00	4.91
	06/19/12	15.80	11.01 [4]	11.01	0.00	4.79
	09/19/12	15.80	11.40	11.41	0.01	4.40
	12/04/12	15.80	NP	9.05	0.00	6.75
	06/19/13	15.80	NP	11.34	0.00	4.46
	12/12/13	15.80	NP	10.87	0.00	4.93
	06/24/14	15.80	NP	11.19	0.00	4.61
MW-2						
	12/31/97	13.87	NP	8.73	0.00	5.14
	04/13/98	13.87	NP	7.72	0.00	6.15
	11/06/98	13.87	NP	9.43	0.00	4.44
	03/19/99	13.87	NP	8.21	0.00	5.66
	06/24/99	13.87	NP	8.91	0.00	4.96
	09/28/99	13.87	NP	9.42	0.00	4.45
	11/12/99	13.87	NP	9.63	0.00	4.24
	02/11/00	13.87	NP	8.54	0.00	5.33
	05/22/00	13.87	NP	8.10	0.00	5.77
	09/06/00	13.87	NP	8.79	0.00	5.08
	12/19/00	13.87	NP	9.19	0.00	4.68
	02/21/01	13.87	NP	7.99	0.00	5.88

TABLE 1. Historical Groundwater Elevation and Free Product Data
Port of Oakland's Harbor Facilities Complex Site
555 - 651 Maritime Street, Oakland, California

Monitoring Well	Date Measured	Elevation [1] Top of Casing (feet)	Depth to Product (feet btc)	Depth to Water (feet btc)	Product Thickness (feet)	Groundwater Elevation [1] (feet)
MW-2 (cont)	04/03/01	13.87	NP	8.23	0.00	5.64
	07/10/01	13.87	NP	8.70	0.00	5.17
	12/12/01	13.87	NP	8.16	0.00	5.71
	01/22/02	13.87	NP	7.64	0.00	6.23
	03/08/02	13.87	NP	8.31	0.00	5.56
	06/13/02	13.87	NP	8.64	0.00	5.23
	09/26/02	13.87	NP	8.95	0.00	4.92
	12/12/02	13.87	NP	9.17	0.00	4.70
	03/17/03	13.87	NP	7.77	0.00	6.10
	06/18/03	13.87	NP	8.44	0.00	5.43
	09/03/03	13.87	NP	8.98	0.00	4.89
	11/26/03	16.72	NP	12.01	0.00	4.71
	03/05/04	16.72	NP	9.75	0.00	6.97
	06/02/04	16.72	NP	11.22	0.00	5.50
	09/03/04	16.72	NP	11.62	0.00	5.10
	12/16/04	16.72	NP	10.80	0.00	5.92
	03/29/05	16.72	NP	9.67	0.00	7.05
	06/14/05	16.72	NP	10.68	0.00	6.04
	08/10/05	16.72	NP	11.05	0.00	5.67
	09/29/05	16.72	NP	11.32	0.00	5.40
	12/21/05	16.47	NP	9.57	0.00	6.90
	03/24/06	16.47	NP	9.55	0.00	6.92
	07/28/06	16.47	NP	10.85	0.00	5.62
	11/29/06	NA	NP	11.69	0.00	NA
	06/01/07	16.43	NP	11.72	0.00	4.71
	11/14/07	16.43	NP	12.28	0.00	4.15
	06/05/08	16.43	NP	12.01	0.00	4.42
	12/18/08	16.43	NP	12.20	0.00	4.23
	03/04/09	16.43	NP	10.19	0.00	6.24
	04/01/09	16.43	NP	11.34	0.00	5.09
	06/17/09	16.43	NP	11.90	0.00	4.53
	12/09/09	16.43	NP	12.13	0.00	4.30
	06/16/10	16.43	NP	11.57	0.00	4.86
	12/14/10	16.43	NP	11.04	0.00	5.39
	06/07/11	16.43	NP	10.70	0.00	5.73
	06/21/11	16.43	NP	11.18	0.00	5.25
	09/26/11	16.43	NP	11.87	0.00	4.56
	12/05/11	16.43	NP	11.95	0.00	4.48
	02/06/12	16.43	NP	11.50	0.00	4.93
	06/19/12	16.43	NP	11.65	0.00	4.78
	09/19/12	16.43	NP	12.03	0.00	4.40
	12/04/12	16.43	NP	9.82	0.00	6.61
	06/19/13	16.43	NP	12.03	0.00	4.40
	12/12/13	16.43	NP	12.31	0.00	4.12
	06/24/14	16.43	NP	11.94	0.00	4.49
MW-3						
	11/06/98	13.73	8.84	9.94	1.10	4.56
	03/19/99	13.73	7.52	8.05	0.53	6.05
	06/24/99	13.73	8.38	8.56	0.18	5.30
	11/12/99	13.73	9.14	9.23	0.09	4.56
	02/11/00	13.73	7.97	8.37	0.40	5.64
	03/01/00	13.73	6.59	7.24	0.65	6.95
	03/21/00	13.73	6.50	6.56	0.06	7.21
	05/22/00	13.73	7.51	8.05	0.54	6.06
	06/26/00	13.73	7.82	8.20	0.38	5.80
	07/25/00	13.73	7.90	8.92	1.02	5.52
	08/31/00	13.73	8.15	9.50	1.35	5.18
	09/06/00	13.73	8.21	9.42	1.21	5.16

TABLE 1. Historical Groundwater Elevation and Free Product Data
Port of Oakland's Harbor Facilities Complex Site
555 - 651 Maritime Street, Oakland, California

Monitoring Well	Date Measured	Elevation [1] Top of Casing (feet)	Depth to Product (feet btc)	Depth to Water (feet btc)	Product Thickness (feet)	Groundwater Elevation [1] (feet)
MW-3 (cont)	09/21/00	13.73	8.30	8.88	0.58	5.26
	12/19/00	13.73	8.60	9.65	1.05	4.82
	02/22/01	13.73	6.36	8.15	1.79	6.83
	04/03/01	13.73	7.48	8.88	1.40	5.83
	04/23/01	13.73	7.85	9.10	1.25	5.51
	05/30/01	13.73	7.75	9.10	1.35	5.58
	07/10/01	13.73	8.10	9.60	1.50	5.18
	03/08/02	13.73	7.80	8.00	0.20	5.87
	04/03/02	13.73	7.60	7.70	0.10	6.10
	04/23/02	13.73	7.90	8.40	0.50	5.68
	04/25/02	13.73	7.90	8.80	0.90	5.56
	05/10/02	13.73	8.10	8.20	0.10	5.60
	05/24/02	13.73	8.05	8.10	0.05	5.67
	06/13/02	13.73	8.10	8.70	0.60	5.45
	07/05/02	13.73	8.10	8.95	0.85	5.38
	07/19/02	13.73	8.10	8.90	0.80	5.39
	07/30/02	13.73	8.10	8.90	0.80	5.39
	08/14/02	13.73	8.10	8.90	0.80	5.39
	09/13/02	13.73	8.30	9.30	1.00	5.13
	09/26/02	13.73	8.30	9.00	0.70	5.22
	10/14/02	13.73	8.60	9.50	0.90	4.86
	11/04/02	13.73	8.75	9.99	1.24	4.61
	11/21/02	13.73	8.59	11.29	2.70	4.33
	12/06/02	13.73	8.56	9.30	0.74	4.95
	12/18/02	13.73	7.35	8.43	1.08	6.06
	12/30/02	13.73	6.50	7.15	0.65	7.04
	01/02/03	13.73	6.20	6.20	0.00	7.53
	01/03/03	13.73	6.21	6.21	0.00	7.52
	01/14/03	13.73	6.20	6.21	0.01	7.53
	01/30/03	13.73	6.81	6.85	0.04	6.91
	02/18/02	13.73	7.09	7.15	0.06	6.62
	02/26/03	13.73	7.04	7.11	0.07	6.67
	03/13/03	13.73	7.22	8.11	0.89	6.24
	03/17/03	13.73	7.15	7.50	0.35	6.48
	04/16/03	13.73	7.27	8.25	0.98	6.17
	06/18/03	13.73	7.78	9.00	1.22	5.58
	09/03/03	13.73	8.31	9.96	1.65	4.93
	11/26/03	15.69	10.79	12.85	2.06	4.28
	03/05/04	15.69	8.39	9.85	1.46	6.86
	06/02/04	15.69	10.03	11.35	1.32	5.26
	09/03/04	15.69	10.46	12.06	1.60	4.75
	12/16/04	15.69	9.41	10.38	0.97	5.99
	03/29/05	15.69	8.17	9.01	0.84	7.27
	06/14/05	15.69	9.59	10.55	0.96	5.81
	08/10/05	15.69	9.91	11.15	1.24	5.41
	09/29/05	15.69	10.21	11.61	1.40	5.06
	12/21/05	15.69	8.21	8.28	0.07	7.46
	03/24/06	15.69	8.20	8.82	0.62	7.30
	07/28/06	15.69	9.81	9.83	0.02	5.87
	11/29/06	NA	10.72	11.70	0.98	NA
	06/01/07	15.66	10.77	11.46	0.69	4.68
	11/14/07	15.66	10.98	12.19	1.21	4.32
	06/05/08	15.66	10.51	11.96	1.45	4.72
	12/18/08	15.66	10.78	12.00	1.22	4.51
	03/04/09	15.66	9.31	9.93	0.62	6.16
	04/01/09	15.66	10.38	11.10	0.72	5.06
	06/17/09	15.66	10.79	12.30	1.51	4.42

TABLE 1. Historical Groundwater Elevation and Free Product Data
Port of Oakland's Harbor Facilities Complex Site
555 - 651 Maritime Street, Oakland, California

Monitoring Well	Date Measured	Elevation [1] Top of Casing (feet)	Depth to Product (feet btc)	Depth to Water (feet btc)	Product Thickness (feet)	Groundwater Elevation [1] (feet)
MW-3 (cont)	12/08/09	15.66	11.05	12.81	1.76	4.08
	06/17/10	15.66	10.39	12.29	1.90	4.70
	12/15/10	15.66	10.13	10.74	0.61	5.35
	06/07/11	15.66	9.91	10.95	1.04	5.44
	06/21/11	15.66	10.74	11.20	0.46	4.78
	09/26/11	15.66	10.71	12.55	1.84	4.40
	12/05/11	15.66	10.83	12.20	1.37	4.42
	02/06/12	15.66	10.60	11.42	0.82	4.81
	06/19/12	15.66	10.52	12.04	1.52	4.68
	09/19/12	15.66	10.90	13.01	2.11	4.13
	12/04/12	15.66	9.64	10.65	1.01	5.72
	06/19/13	15.66	10.92	12.45	1.53	4.28
	12/12/13	15.66	11.23	13.23	2.00	3.83
	06/24/14	15.66	10.83	11.84	1.01	4.53
MW-4						
	12/31/97	12.66	NP	7.09	0.00	5.57
	04/13/98	12.66	NP	7.71	0.00	4.95
	11/06/98	12.66	NP	8.69	0.00	3.97
	03/19/99	12.66	NP	8.00	0.00	4.66
	06/24/99	12.66	NP	8.45	0.00	4.21
	09/28/99	12.66	NP	8.73	0.00	3.93
	11/12/99	12.66	NP	8.83	0.00	3.83
	02/11/00	12.66	NP	7.71	0.00	4.95
	05/22/00	12.66	NP	8.09	0.00	4.57
	09/06/00	12.66	NP	8.32	0.00	4.34
	12/19/00	12.66	NP	8.47	0.00	4.19
	02/21/01	12.66	NP	7.51	0.00	5.15
	04/03/01	12.66	NP	8.13	0.00	4.53
	07/10/01	12.66	NP	8.12	0.00	4.54
	12/12/01	12.66	NP	7.65	0.00	5.01
	01/22/02	12.66	NP	7.60	0.00	5.06
	03/08/02	12.66	NP	7.96	0.00	4.70
	06/13/02	12.66	NP	8.20	0.00	4.46
	09/26/02	12.66	NP	8.21	0.00	4.45
	12/12/02	12.66	NP	8.38	0.00	4.28
	03/17/03	12.66	NP	7.72	0.00	4.94
	06/18/03	12.66	NP	8.02	0.00	4.64
	09/03/03	12.66	NP	8.29	0.00	4.37
	11/26/03	12.66	NP	8.69	0.00	3.97
	03/05/04	12.66	NP	7.45	0.00	5.21
	06/02/04	12.66	NP	8.25	0.00	4.41
	09/03/04	12.66	NP	8.31	0.00	4.35
	12/16/04	12.66	NP	7.96	0.00	4.70
	03/29/05	12.66	NP	7.11	0.00	5.55
	06/14/05	12.66	NP	7.90	0.00	4.76
	08/10/05	12.66	NP	7.86	0.00	4.80
	09/29/05	12.66	NP	8.00	0.00	4.66
	12/21/05	12.66	NP	7.30	0.00	5.36
	03/24/06	12.66	NP	7.05	0.00	5.61
	07/28/06	12.66	NP	7.92	0.00	4.74
	11/29/06	NA	NP	11.63	0.00	NA
	06/01/07	15.91	NP	11.82	0.00	4.09
	11/14/07	15.91	NP	11.88	0.00	4.03
	06/05/08	15.91	NP	11.67	0.00	4.24
	12/18/08	15.91	NP	11.20	0.00	4.71

TABLE 1. Historical Groundwater Elevation and Free Product Data
Port of Oakland's Harbor Facilities Complex Site
555 - 651 Maritime Street, Oakland, California

Monitoring Well	Date Measured	Elevation [1] Top of Casing (feet)	Depth to Product (feet btc)	Depth to Water (feet btc)	Product Thickness (feet)	Groundwater Elevation [1] (feet)
MW-4 (cont)	03/04/09	15.91	NP	10.93	0.00	4.98
	04/01/09	15.91	NP	11.63	0.00	4.28
	06/17/09	15.91	NP	11.88	0.00	4.03
	12/08/09	15.91	NP	12.03	0.00	3.88
	06/16/10	15.91	NP	11.75	0.00	4.16
	12/14/10	15.91	NP	11.62	0.00	4.29
	06/07/11	15.91	NP	11.80	0.00	4.11
	06/21/11	15.91	NP	11.42	0.00	4.49
	09/26/11	15.91	NP	11.83	0.00	4.08
	12/05/11	15.91	NP	12.03	0.00	3.88
	02/06/12	15.91	NP	11.71	0.00	4.20
	06/19/12	15.91	NP	11.73	0.00	4.18
	09/19/12	15.91	NP	11.90	0.00	4.01
	12/04/12	15.91	NP	10.95	0.00	4.96
	06/19/13	15.91	NP	12.04	0.00	3.87
	12/12/13	15.91	NP	12.22	0.00	3.69
	06/24/14	15.91	NP	11.88	0.00	4.03
MW-5						
	12/31/97	13.00	NP	6.38	0.00	6.62
	04/13/98	13.00	NP	5.56	0.00	7.44
	11/06/98	13.00	NP	6.59	0.00	6.41
	03/19/99	13.00	NP	6.20	0.00	6.80
	06/24/99	13.00	NP	6.73	0.00	6.27
	09/28/99	13.00	NP	6.91	0.00	6.09
	11/12/99	13.00	NP	7.06	0.00	5.94
	02/11/00	13.00	NP	7.00	0.00	6.00
	05/22/00	13.00	NP	6.21	0.00	6.79
	09/06/00	13.00	NP	6.56	0.00	6.44
	12/19/00	13.00	NP	6.68	0.00	6.32
	02/21/01	13.00	NP	6.08	0.00	6.92
	04/03/01	13.00	NP	6.38	0.00	6.62
	07/10/01	13.00	NP	6.58	0.00	6.42
	12/12/01	13.00	NP	6.40	0.00	6.60
	01/22/02	13.00	NP	6.10	0.00	6.90
	03/08/02	13.00	NP	6.10	0.00	6.90
	06/13/02	13.00	NP	6.31	0.00	6.69
	09/26/02	13.00	NP	6.60	0.00	6.40
	12/12/02	13.00	NP	6.75	0.00	6.25
	03/17/03	13.00	NP	5.73	0.00	7.27
	06/18/03	13.00	NP	6.10	0.00	6.90
	09/03/03	13.00	NP	6.50	0.00	6.50
	11/26/03	13.00	NP	6.70	0.00	6.30
	03/05/04	13.00	NP	5.70	0.00	7.30
	06/02/04	13.00	NP	6.27	0.00	6.73
	09/03/04	13.00	NP	6.61	0.00	6.39
	12/16/04	13.00	NP	6.02	0.00	6.98
	03/29/05	13.00	NP	5.25	0.00	7.75
	06/14/05	13.00	NP	5.82	0.00	7.18
	08/10/05	13.00	NP	6.00	0.00	7.00
	09/29/05	13.00	NP	6.26	0.00	6.74
	12/21/05	13.00	NP	5.91	0.00	7.09
	03/24/06	13.00	NP	NA[2]	NA[2]	NA
	07/28/06	13.00	NP	6.08	0.00	6.92
	11/29/06	NA	NP	9.39	0.00	NA
	06/01/07	15.39	NP	10.60	0.00	4.79
	11/14/07	15.39	NP	9.77	0.00	5.62
	06/05/08	15.39	NP	9.74	0.00	5.65
	12/18/08	15.39	NP	9.80	0.00	5.59

TABLE 1. Historical Groundwater Elevation and Free Product Data
Port of Oakland's Harbor Facilities Complex Site
555 - 651 Maritime Street, Oakland, California

Monitoring Well	Date Measured	Elevation [1] Top of Casing (feet)	Depth to Product (feet btc)	Depth to Water (feet btc)	Product Thickness (feet)	Groundwater Elevation [1] (feet)
MW-5 (cont)	03/04/09	15.39	NP	8.78	0.00	6.61
	04/01/09	15.39	NP	9.16	0.00	6.23
	06/17/09	15.39	NP	9.51	0.00	5.88
	12/08/09	15.39	NP	9.52	0.00	5.87
	06/16/10	15.39	NP	9.31	0.00	6.08
	12/14/10	15.39	NP	9.31	0.00	6.08
	06/07/11	15.39	NP	9.06	0.00	6.33
	06/21/11	15.39	NP	9.06	0.00	6.33
	09/26/11	15.39	NP	9.30	0.00	6.09
	12/05/11	15.39	NP	9.31	0.00	6.08
	02/06/12	15.39	NP	9.32	0.00	6.07
	06/19/12	15.39	NP	9.16	0.00	6.23
	09/19/12	15.39	NP	9.39	0.00	6.00
	12/04/12	15.39	NP	9.17	0.00	6.22
	06/19/13	15.39	NP	9.32	0.00	6.07
	12/12/13	15.39	NP	9.47	0.00	5.92
	06/24/14	15.39	NP	9.36	0.00	6.03
MW-6						
	06/24/99	13.51	NP	8.61	0.00	4.90
	09/28/99	13.51	NP	9.26	0.00	4.25
	11/12/99	13.51	NP	8.01	0.00	5.50
	02/11/00	13.51	NP	7.20	0.00	6.31
	05/22/00	13.51	NP	7.13	0.00	6.38
	09/06/00	13.51	NP	7.12	0.00	6.39
	12/19/00	13.51	NP	7.57	0.00	5.94
	02/21/01	13.51	NP	7.50	0.00	6.01
	04/03/01	13.51	NP	6.88	0.00	6.63
	07/10/01	13.51	NP	7.15	0.00	6.36
	12/12/01	13.51	NP	9.50	0.00	4.01
	01/22/02	13.51	NP	6.69	0.00	6.82
	03/08/02	13.51	NP	6.98	0.00	6.53
	06/13/02	13.51	NP	7.45	0.00	6.06
	09/26/02	13.51	NP	7.95	0.00	5.56
	12/12/02	13.51	NP	7.71	0.00	5.80
	12/18/02	Monitoring well was destroyed				
MW-7						
	12/31/97	13.86	NP	8.88	0.00	4.98
	04/13/98	13.86	NP	7.86	0.00	6.00
	11/06/98	13.86	NP	9.55	0.00	4.31
	03/19/99	13.86	NP	8.41	0.00	5.45
	06/24/99	13.86	NP	9.08	0.00	4.78
	09/28/99	13.86	NP	9.60	0.00	4.26
	11/12/99	13.86	NP	9.77	0.00	4.09
	02/11/00	13.86	NP	8.67	0.00	5.19
	05/22/00	13.86	NP	8.43	0.00	5.43
	09/06/00	13.86	NP	8.88	0.00	4.98
	12/19/00	13.86	NP	9.21	0.00	4.65
	02/21/01	13.86	NP	8.13	0.00	5.73
	04/03/01	13.86	NP	8.45	0.00	5.41
	07/10/01	13.86	NP	8.87	0.00	4.99
	12/12/01	13.86	NP	8.39	0.00	5.47
	01/22/02	13.86	NP	7.99	0.00	5.87
	03/08/02	13.86	NP	8.51	0.00	5.35
	06/13/02	13.86	NP	8.90	0.00	4.96
	09/26/02	13.86	NP	9.00	0.00	4.86
	12/12/02	13.86	NP	9.28	0.00	4.58
	12/18/02	Monitoring well was destroyed				

TABLE 1. Historical Groundwater Elevation and Free Product Data
Port of Oakland's Harbor Facilities Complex Site
555 - 651 Maritime Street, Oakland, California

Monitoring Well	Date Measured	Elevation [1] Top of Casing (feet)	Depth to Product (feet btc)	Depth to Water (feet btc)	Product Thickness (feet)	Groundwater Elevation [1] (feet)
MW-8 [3]						
	12/31/97	12.45	8.49	8.82	0.33	3.86
	11/06/98	12.45	9.25	10.30	1.05	2.89
	11/21/98	Monitoring well was destroyed and replaced with well MW-8A				
MW-8A						
	12/12/01	12.45	NP	7.20	0.00	NA
	01/22/02	12.45	NP	7.20	0.00	5.25
	03/08/02	12.45	NP	7.70	0.00	4.75
	06/13/02	12.45	NP	7.72	0.00	4.73
	09/26/02	12.45	NP	7.91	0.00	4.54
	12/12/02	12.45	NP	8.15	0.00	4.30
	03/17/03	12.45	NP	7.28	0.00	5.17
	06/18/03	12.45	NP	7.72	0.00	4.73
	09/03/03	12.45	NP	8.18	0.00	4.27
	11/26/03	12.45	NP	8.55	0.00	3.90
	03/05/04	12.45	NP	6.92	0.00	5.53
	06/02/04	12.45	NP	7.92	0.00	4.53
	09/03/04	12.45	NP	8.16	0.00	4.29
	12/16/04	12.45	NP	7.62	0.00	4.83
	03/29/05	12.45	NP	6.63	0.00	5.82
	06/14/05	12.45	NP	7.60	0.00	4.85
	08/10/05	12.45	NP	7.50	0.00	4.95
	09/29/05	12.45	NP	7.76	0.00	4.69
	12/21/05	12.45	NP	6.90	0.00	5.55
	03/24/06	12.45	NP	6.65	0.00	5.80
	07/28/06	12.45	NP	7.34	0.00	5.11
	11/29/06	NA	NP	11.41	0.00	NA
	06/01/07	14.99	NP	11.26	0.00	3.73
	11/14/07	14.99	NP	11.40	0.00	3.59
	06/05/08	14.99	NP	11.45	0.00	3.54
	12/18/08	14.99	NP	11.30	0.00	3.69
	03/04/09	14.99	NP	10.07	0.00	4.92
	04/01/09	14.99	NP	10.92	0.00	4.07
	06/17/09	14.99	NP	11.40	0.00	3.59
	12/08/09	14.99	NP	11.64	0.00	3.35
	06/16/10	14.99	NP	11.75	0.00	3.24
	12/14/10	14.99	NP	10.75	0.00	4.24
	06/07/11	14.99	NP	10.51	0.00	4.48
	06/21/11	14.99	NP	10.64	0.00	4.35
	09/26/11	14.99	NP	11.21	0.00	3.78
	12/05/11	14.99	NP	11.29	0.00	3.70
	02/06/12	14.99	NP	10.75	0.00	4.24
	06/19/12	14.99	NP	11.04	0.00	3.95
	09/19/12	14.99	NP	11.38	0.00	3.61
	12/04/12	14.99	NP	9.87	0.00	5.12
	06/19/13	14.99	NP	11.44	0.00	3.55
	12/12/13	14.99	NP	11.75	0.00	3.24
	06/24/14	14.99	NP	11.26	0.00	3.73

TABLE 1. Historical Groundwater Elevation and Free Product Data
Port of Oakland's Harbor Facilities Complex Site
555 - 651 Maritime Street, Oakland, California

Monitoring Well	Date Measured	Elevation [1] Top of Casing (feet)	Depth to Product (feet btc)	Depth to Water (feet btc)	Product Thickness (feet)	Groundwater Elevation [1] (feet)
MW-9						
	12/18/08	16.33	NP	12.88	0.00	3.45
	03/04/09	16.33	NP	11.04	0.00	5.29
	04/01/09	16.33	NP	11.51	0.00	4.82
	06/17/09	16.33	NP	11.95	0.00	4.38
	12/08/09	16.33	NP	12.30	0.00	4.03
	06/16/10	16.33	NP	11.75	0.00	4.58
	12/14/10	16.33	NP	11.51	0.00	4.82
	06/07/11	16.33	NP	11.32	0.00	5.01
	06/21/11	16.33	NP	11.37	0.00	4.96
	09/26/11	16.33	NP	11.92	0.00	4.41
	12/05/11	16.33	NP	11.99	0.00	4.34
	02/06/12	16.33	NP	11.70	0.00	4.63
	06/19/12	16.33	NP	11.76	0.00	4.57
	09/19/12	16.33	NP	12.03	0.00	4.30
	12/04/12	16.33	NP	11.15	0.00	5.18
	06/19/13	16.33	NP	12.12	0.00	4.21
	12/12/13	16.33	NP	12.41	0.00	3.92
	06/24/14	16.33	NP	12.01	0.00	4.32
MW-10						
	12/18/08	15.65	NP	14.34	0.00	1.31
	03/04/09	15.65	NP	9.78	0.00	5.87
	04/01/09	15.65	NP	10.33	0.00	5.32
	06/17/09	15.65	NP	10.79	0.00	4.86
	12/08/09	15.65	NP	10.96	0.00	4.69
	06/16/10	15.65	NP	10.62	0.00	5.03
	12/14/10	15.65	NP	10.31	0.00	5.34
	06/07/11	15.65	NP	10.11	0.00	5.54
	06/21/11	15.65	NP	10.19	0.00	5.46
	09/26/11	15.65	NP	10.79	0.00	4.86
	12/05/11	15.65	NP	10.80	0.00	4.85
	02/06/12	15.65	NP	10.51	0.00	5.14
	06/19/12	15.65	NP	10.61	0.00	5.04
	09/19/12	15.65	NP	10.57	0.00	5.08
	12/04/12	15.65	NP	9.96	0.00	5.69
	06/19/13	15.65	NP	10.90	0.00	4.75
	12/12/13	15.65	NP	11.23	0.00	4.42
	06/24/14	15.65	NP	10.77	0.00	4.88
MW-11						
	12/18/08	15.47	NP	13.42	0.00	2.05
	03/04/09	15.47	NP	9.57	0.00	5.90
	04/01/09	15.47	NP	9.94	0.00	5.53
	06/17/09	15.47	NP	10.40	0.00	5.07
	12/09/09	15.47	NP	10.68	0.00	4.79
	06/16/10	15.47	NP	10.02	0.00	5.45
	12/01/10	15.47	NP	10.02	0.00	5.45
	06/07/11	15.47	NP	10.00	0.00	5.47
	06/21/11	15.47	NP	9.85	0.00	5.62
	09/26/11	15.47	NP	10.33	0.00	5.14
	12/05/11	15.47	NP	10.59	0.00	4.88
	02/06/12	15.47	NP	10.59	0.00	4.88
	06/19/12	15.47	NP	10.12	0.00	5.35
	09/19/12	15.47	NP	10.54	0.00	4.93
	12/04/12	15.47	NP	9.65	0.00	5.82
	06/19/13	15.47	NP	10.53	0.00	4.94
	12/12/13	15.47	NP	11.04	0.00	4.43
	06/24/14	15.47	NP	10.47	0.00	5.00

TABLE 1. Historical Groundwater Elevation and Free Product Data
Port of Oakland's Harbor Facilities Complex Site
555 - 651 Maritime Street, Oakland, California

Monitoring Well	Date Measured	Elevation [1] Top of Casing (feet)	Depth to Product (feet btc)	Depth to Water (feet btc)	Product Thickness (feet)	Groundwater Elevation [1] (feet)
MW-12						
	12/18/08	16.79	NP	12.75	0.00	4.04
	03/04/09	16.79	NP	10.60	0.00	6.19
	04/01/09	16.79	NP	11.23	0.00	5.56
	6/17/2009	16.79	NP	11.83	0.00	4.96
	12/8/2009	16.79	NP	12.13	0.00	4.66
	6/16/2010	16.79	NP	11.31	0.00	5.48
	12/14/2010	16.79	NP	11.15	0.00	5.64
	6/7/2011	16.79	NP	10.81	0.00	5.98
	6/21/2011	16.79	NP	11.01	0.00	5.78
	9/26/2011	16.79	NP	11.77	0.00	5.02
	12/5/2011	16.79	NP	11.89	0.00	4.90
	2/6/2012	16.79	NP	11.60	0.00	5.19
	6/19/12	16.79	NP	11.49	0.00	5.30
	9/19/12	16.79	NP	12.04	0.00	4.75
	12/4/12	16.79	NP	10.74	0.00	6.05
	6/19/13	16.79	NP	12.01	0.00	4.78
	12/12/13	16.79	NP	12.47	0.00	4.32
	6/24/14	16.79	NP	11.92	0.00	4.87

Notes:
Source of data prior to December 2005: Innovative Technical Solutions, Inc.*Third Quarter of 2005 Groundwter Monitoring and Product Monitoring Report* , 8 November 2005.
NP = no product detected with the interface probe
NC = not calculated due to the presence of free-phase product in the well
btc = below top of the well casing
NA = not available
NM = not measured

[1] Wells were resurveyed on January 24, 2009. Elevation data is relative to North American Vertical Datum of 1988 (NAVD 88). Groundwater elevation for wells MW-1, MW-3, and MW-8, when calculated, assumes the density of the free product is 0.70 .
[2] Well could not be measured due to abundant surface water covering well head.
[3] Viscous product not related to the lighter product identified in other wells.
[4] Product not measureable, but visible evidence of product on interface probe

TABLE 2. Groundwater Analytical Results Summary
Port of Oakland's Harbor Facilities Complex Site
555 - 651 Maritime Street, Oakland, California

Monitoring Well	Date Sampled	Concentration (µg/L)							
		TPH-G	TPH-D	TPH-MO	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE
MW-1									
	05/22/00	3,600	41,000	<3,000	100	13 [8]	2.9	2.05	3.2 [8]
	12/08/09	1,400	1,200 [2]	<300	120	2.9	1.8	3.0	<1.0
	06/22/11	1,100 [2]	890 [24]	<300 [24]	46	1.9	2.6	2.0	<0.5
	06/19/13	1,600 [2]	3,100	<300	18	2.2	4.4	1.8	<0.5
	12/13/13	1,700	1,700	<300	10	2.6	1.2	3.3	<0.5
	06/24/14	1,500 [2]	1,500	<290	7	1.8	1.4	2.3	<0.5
MW-2									
	05/27/94	87	470	NA	<0.5	<0.5	<0.5	<0.5	NA
	03/29/95	<50	110	1,400	<0.4	<0.3	<0.3	<0.4	NA
	09/06/95	<50	NA	NA	<0.4	<0.3	<0.3	<0.4	NA
	01/08/96	<50	<50	1200	<0.4	<0.3	<0.3	<0.4	NA
	04/04/96	<50	160	320	<0.5	<0.5	<0.5	<1.0	NA
	07/10/96	<50	120	1400	<0.4	<0.3	<0.3	<0.4	NA
	12/03/96	<50	230 [1,2]	<250	<0.5	<0.5	<0.5	<1.0	NA
	03/28/97	<50	714	<250	<0.5	<0.5	<0.5	<1.0	NA
	06/13/97	51	<50	<250	<0.5	<0.5	<0.5	<1.0	NA
	09/18/97	82	<50	<250	0.56	<0.5	<0.5	<1.0	NA
	12/31/97	<50	<47	<280	1.4	<0.5	<0.5	<1.0	NA
	04/13/98	<50	<50	<300	<0.5	<0.5	<0.5	<1.0	NA
	11/06/98	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2.0
	03/19/99	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2.0
	06/24/99	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2.0
	09/28/99	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2.0
	11/12/99	<50	120 [2,6]	<300	<0.5	<0.5	<0.5	<0.5	6.3 [8,9]
	02/11/00	<50	<50	<300	5.4	<0.5	<0.5	<0.5	<2
	05/22/00	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2
	09/06/00	<50	<50	<300	0.76 [8]	<0.5	<0.5	<0.5	<0.5 [10]
	12/19/00	200 [3,11]	<50	<300	39	1.8	<0.5	2.6	<0.5 [10,12]
	02/21/01	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2.0
	07/10/01	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2.0
	12/05/01	<50	<50	<300	4.4	<0.5	<0.5	<0.5	5.0 [14]
	03/08/02	<50	<50	<500	<0.5	<0.5	<0.5	<0.5	<5.0
	06/13/02	62 [15]	<57	<570	<0.5	<0.5	<0.5	<0.5	<5.0
	09/26/02	69 [2]	<50	<500	1.8	<0.5	<0.5	<0.5	<5.0
	12/12/02	<50	<50	<300	0.98	<0.5	<0.5	<0.5	<2.0
	03/17/03	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2.0
	06/18/03	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2.0
	09/03/03	<50	<50	<300	3.2	<0.5	<0.5	<0.5	<2.0
	11/26/03	<50	<50	<300	3	<0.5	<0.5	<0.5	<2.0
	03/05/04	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2.0
	06/02/04	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2.0
	09/03/04	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2.0
	12/16/04	<50	96 [6, 15]	<300	<0.5	<0.5	<0.5	<0.5	<2.0

TABLE 2. Groundwater Analytical Results Summary
Port of Oakland's Harbor Facilities Complex Site
555 - 651 Maritime Street, Oakland, California

Monitoring Well	Date Sampled	Concentration (µg/L)							
		TPH-G	TPH-D	TPH-MO	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE
MW-2 (cont)	03/29/05	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2.0
	08/10/05	<50	<50	<250	<0.5	<0.5	<0.5	<0.5	<0.5
	09/29/05	<50	<50	<250	<0.5	<0.5	<0.5	<0.5	<0.5
	12/21/05	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	03/24/06	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	07/28/06	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	11/29/06	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	06/01/07	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	11/14/07	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	06/05/08	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	12/18/08	390 [2]	840	<300	1.1	<0.5	0.9	<0.5	<0.5
	03/04/09	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	04/01/09	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	06/17/09	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	12/09/09	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	06/17/10	<50	220 [2]	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	12/15/10	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	06/22/11	<50	<50	<300 [2,3]	<0.5	<0.5	<0.5	<0.5	<0.5
	09/26/11	<50	<50 [24]	<300 [24]	<0.5	<0.5	<0.5	<0.5	<0.5
	06/19/12	<50	<53	<320	<0.5	<0.5	<0.5	<0.5	<0.5
	12/04/12	<50	<53	<320	<0.5	<0.5	<0.5	<0.5	<0.5
	06/19/13	<50	<51	<310	<0.5	<0.5	<0.5	<0.5	<0.5
	12/12/13	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	06/25/14	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5
MW-3									
	Not sampled due to the presence of free-phase product								
MW-4									
	09/11/95	150	<200	500	23	<0.3	<0.3	<0.4	NA
	01/08/96	790	90	400	170	1.2	0.6	0.6	NA
	04/04/96	1,100	180	300	320	1.6	1.1	1.2	NA
	07/10/96	1,200	120	300	470	1.5	0.8	0.8	NA
	12/03/96	990	220 [1,2]	<250	350	3.3	1.3	1.3	NA
	03/28/97	440 [2]	<50	<250	190	1.2	0.64	<1.0	NA
	06/13/97	1,300	92 [5]	<250	500	5.5	3.4	2.8	NA
	09/18/97	1,300	150	<250	550	4.9	2.1	2.00	NA
	12/31/97	73 [1,2,3]	<47	<280	110 [1]	1.0 [1]	<0.5	<1.0	NA
	04/13/98	150 [2,3]	<50	<300	520	2.9	<2.5	<5.0	NA
	11/06/98	<50	<50	<300	250	1.7	<1.0	<1.0	<4
	03/19/99	81	<50	<300	250	<1	1.2	<1.0	<4
Dup.	06/24/99	190	<50	<300	360	1.4	2.2	1.0	24
	09/28/99	750 [3,5]	63 [3,5]	<300	280	1.5	<1.0	<1.0	<4
	11/12/99	330 [3]	840 [2]	<300	740	<2.5	<2.5	<2.5	42 [9]
	02/11/00	200 [2]	<50	<300	58	0.73	<0.5	<0.5	4.4 [8]
	05/22/00	240	<50	<300	500	<2.5	<2.5	<2.5	17

TABLE 2. Groundwater Analytical Results Summary
Port of Oakland's Harbor Facilities Complex Site
555 - 651 Maritime Street, Oakland, California

Monitoring Well	Date Sampled	Concentration (µg/L)							
		TPH-G	TPH-D	TPH-MO	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE
MW-4 (cont)	09/06/00	530 [2,3]	<50	<300	190	0.93	0.6	0.57	<0.5 [10]
	12/19/00	960 [3,11]	70 [5]	<300	420	<2.5	<2.5	<2.5	<0.5 [10,12]
	12/19/00	1,200 [3,11]	<50	<300	440	<2.5	<2.5	<2.5	<0.5 [10,12]
	02/21/01	450 [13]	<50	<300	120	<0.5	<0.5	<0.5	<0.5 [10]
	07/10/01	<250	110 [2,13]	<300	620	2.6	2.9	<2.5	<0.5 [8,10]
	12/05/01	180	<50	<300	61	<0.5	<0.5	<0.5	3.8 [14]
	03/08/02	490 [2]	54 [2]	<500	180	<2.5	<2.5	<2.5	<25
	06/13/02	830 [2]	<50	<500	250	<5.0	<5.0	<5.0	<50
Dup.	06/13/02	820 [2]	<56	<560	240	<5.0	<5.0	<5.0	<50
	09/26/02	390 [2]	57	<500	150	2.1	<1.0	<1.0	<10
Dup.	09/26/02	500 [2]	<50 [16]	<500 [16]	200	1.5	<1.0	<1.0	<10
	12/12/02	580	<50	<300	240	1.4	0.56	<0.5	<2.0
Dup.	12/12/02	2,400	<50	<300	680	5.0	2.3	1.4	<2.0
	03/17/03	130 [15]	<50	<300	320 [17]	<0.5	<0.5	<0.5	<0.5 [10]
Dup.	03/17/03	82 [15]	<50	<300	190	0.64 [17]	0.56	0.53	<0.5 [10]
	06/18/03	360 [11, 15]	<50	<300	150	<0.5	<0.5	<0.5	<2.0
Dup.	06/18/03	330 [11, 15]	<50	<300	140	<0.5	<0.5	<0.5	<2.0
	09/03/03	140 [11, 15]	<50	<300	240	1.3	<0.5	<0.5	<2.0
Dup.	09/03/03	83 [11, 15]	<50	<300	130	0.58 [17]	<0.5	<0.5	<2.0
	11/26/03	160 [15]	68 [15]	<300	320	0.91 [17]	<0.5	0.53	<2.0
Dup.	11/26/03	120 [15]	<50	<300	210	0.66 [17]	<0.5	<0.5	<2.0
	03/05/04	90 [11]	<50	<300	190	1.1	0.55	0.50 [17]	23 [14,17], <0.5 [10]
Dup.	03/05/04	84 [11]	<50	<300	180	0.81	<0.5	<0.5	21 [14,17], <0.5 [10]
	06/02/04	620 [13]	<50	<300	210	0.55 [17]	<0.5	<0.5	<2.0
Dup.	06/02/04	400 [13]	<50	<300	130	<0.5	<0.5	<0.5	<2.0
	09/03/04	780 [13, 15]	<50	<300	<0.5	1.0 [17]	<0.5	0.57	<2.0
Dup.	09/03/04	370 [13, 15]	<50	<300	<0.5	<0.5	<0.5	<0.5	<2.0
	12/16/04	840	<50	<300	290	1.3 [17]	0.69	0.75	<2.0
Dup.	12/16/04	670	<50	<300	230	1.3 [17]	<0.5	<0.5	<2.0
	03/29/05	440 [13]	<50	<300	140	0.57	<0.5	<0.5	<2.0
Dup.	03/29/05	540 [13]	<50	<300	170	0.72	<0.5	<0.5	<2.0
	08/10/05	500 [18]	<50	<250	180	<2.5	<2.5	<2.5	<2.5
	09/29/05	360 [18]	59 [20]	<250	160	<5.0	<5.0	<5.0	<5.0
Dup.	09/29/05	420 [18]	<50	<250	150	<5.0	<5.0	<5.0	<5.0
	12/21/05	110	<50	<300	76	<0.5	<0.5	<0.5	<0.5
Dup.	12/21/05	160	<50	<300	76	<0.5	<0.5	<0.5	<0.5
	03/24/06	420	51	<300	120	0.8	<0.7	<0.7	<0.7
Dup.	03/24/06	440	<50	<300	130	<0.7	<0.7	<0.7	<0.7
	08/04/06	560	92 [2]	<300	160	<1.3	4.3	<1.3	<1.3
Dup.	08/04/06	590	100 [2]	<300	150	<1.3	4.5	<1.3	<1.3
	11/29/06	300	<50	<300	42	<0.7	1.0	<0.7	<0.7
Dup.	11/29/06	300	<50	<300	60	<0.7	<0.7	<0.7	<0.7
	06/01/07	100 [13, 15]	<50	<300	10	<0.5	<0.5	<0.5	<0.5
Dup.	06/01/07	100 [13, 15]	<50	<300	11	<0.5	<0.5	<0.5	<0.5

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Monitoring Well	Date Sampled	Concentration (µg/L)							
		TPH-G	TPH-D	TPH-MO	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE
MW-4 (cont)	11/14/07	54 [15]	<50	<300	2.1	<0.5	<0.5	<0.5	<0.5
Dup.	11/14/07	51 [15]	<50	<300	2.1	<0.5	<0.5	<0.5	<0.5
	06/05/08	67 [15]	<50	<300	14	<0.5	<0.5	<0.5	<0.5
Dup.	06/05/08	91 [15]	<50	<300	15	<0.5	<0.5	<0.5	<0.5
	12/18/08	99 [2]	520	<300	0.5	<0.5	<0.5	<0.5	<0.5
Dup.	12/18/08	88 [2]	850	<300	0.7	<0.5	0.6	<0.5	<0.5
	03/04/09	60 [2]	<50	<300	3.8	<0.5	<0.5	<0.5	<0.5
Dup.	03/04/09	<50	<50	<300	4.4	<0.5	<0.5	<0.5	<0.5
	04/01/09	<50	<50	<300	7.5	<0.5	<0.5	<0.5	<0.5
Dup.	04/01/09	<50	<50	<300	7.8	<0.5	<0.5	<0.5	<0.5
	06/19/09	69 [2]	<50	<300	15	<0.5	<0.5	<0.5	<0.5
	12/08/09	<50	<50	<300	3.3	<0.5	<0.5	<0.5	<0.5
Dup.	12/08/09	<50	<50	<300	3.5	<0.5	<0.5	<0.5	<0.5
	06/16/10	<50	<50	<300	15	<0.5	<0.5	<0.5	<0.5
Dup.	06/16/10	<50	<50	<300	18	<0.5	<0.5	<0.5	<0.5
	12/14/10	<50	<50	<300	2.2	<0.5	<0.5	<0.5	<0.5
Dup.	12/14/10	<50	<50	<300	2.7	<0.5	<0.5	<0.5	<0.5
	06/21/11	160 [2]	<56	<330	30	<0.5	<0.5	<0.5	<0.5
Dup.	06/21/11	84 [2]	<53	<320	28	<0.5	<0.5	<0.5	<0.5
	09/27/11	130 [2]	72	<300	13	<0.5	<0.5	<0.5	<0.5
Dup.	09/27/11	130 [2]	57 [24]	<300 [24]	12	<0.5	<0.5	<0.5	<0.5
	06/19/12	120 [2]	<51	<310	19	<0.5	<0.5	<0.5	<0.5
Dup.	06/19/12	120 [2]	<52	<310	20	<0.5	<0.5	<0.5	<0.5
	12/04/12	76 [2]	<53	<320	1.7	<0.5	<0.5	<0.5	<0.5
Dup.	12/04/12	60 [2]	56 [2]	<310	1.3	<0.5	<0.5	<0.5	<0.5
	06/19/13	150 [2]	<56	<330	19	<0.5	<0.5	<0.5	<0.5
Dup.	06/19/13	150 [2]	<50	<300	19	<0.5	<0.5	<0.5	<0.5
	12/13/13	81	<50	<300	2.6	<0.5	<0.5	<0.5	<0.5
Dup.	12/13/13	85	<50	<300	2.4	<0.5	<0.5	<0.5	<0.5
	06/25/14	270 [2]	<50	<300	52	<0.5	<0.5	<0.5	<0.5
Dup.	06/25/14	280 [2]	<50	<300	54	<0.5	<0.5	<0.5	<0.5
MW-5									
	09/11/95	90	<300	2,500	3.3	<0.3	<0.3	<0.4	NA
	04/04/96	<50	180	520	<0.5	<0.5	<0.5	<1.0	NA
	07/10/96	<50	120	1,500	<0.4	<0.3	<0.3	<0.4	NA
	12/03/96	<50	200 [1,2]	<250	<0.5	<0.5	<0.5	<1.0	NA
	03/28/97	<50	<50	<250	<0.5	<0.5	<0.5	<1.0	NA
	06/13/97	<50	<50	<250	<0.5	<0.5	<0.5	<1.0	NA
	09/18/97	<50	<50	<250	<0.5	<0.5	<0.5	<1.0	NA
	12/31/97	<50	<47	<280	<0.5	<0.5	<0.5	<1.0	NA
	04/13/98	<50	<47	<280	<0.5	<0.5	<0.5	<1.0	NA
	11/06/98	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2.0
	03/19/99	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2.0
	06/24/99	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	3.1

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Monitoring Well	Date Sampled	Concentration (µg/L)							
		TPH-G	TPH-D	TPH-MO	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE
MW-5 (cont)	09/28/99	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2.0
	11/12/99	<50	110 [2,6]	<300	<0.5	<0.5	<0.5	<0.5	5.5 [9]
	02/11/00	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2.0
	05/22/00	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2.0
	09/06/00	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2.0
	12/19/00	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2.0
	02/21/01	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2.0
	07/10/01	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2.0
	12/05/01	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2.0
	03/08/02	<50	<50	<500	<0.5	<0.5	<0.5	<0.5	<5.0
	06/13/02	<50	<50	<500	<0.5	<0.5	<0.5	<0.5	<5.0
	09/26/02	<50	<50	<500	<0.5	<0.5	<0.5	<0.5	<5.0
	12/12/02	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2.0
	03/17/03	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5 [10]
	06/18/03	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2.0
	09/03/03	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2.0
	11/26/03	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	4.1 [14], <0.5 [10]
	03/05/04	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2.0
	06/02/04	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2.0
	09/03/04	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2.0
	12/16/04	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	2.2 [14], <0.5 [10]
	03/29/05	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2.0
	08/10/05	<50	<50	<250	<0.5	<0.5	<0.5	<0.5	<0.5
Dup.	08/10/05	<50 [19]	<50 [19]	<250	<0.5	<0.5	<0.5	<0.5	<0.5
	09/29/05	<50	<50	<250	<0.5	<0.5	<0.5	<0.5	<0.5
	12/21/05	<50	180 [15,22]	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	07/28/06	<50	180	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	11/29/06	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	06/01/07	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	11/14/07	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	06/05/08	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	12/18/08	3,100 [2]	3,600	<300	0.5	<0.5	<0.5	<0.5	1.8
	03/04/09	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	04/01/09	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	04/01/09	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	06/19/09	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	12/08/09	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	06/16/10	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	12/14/10	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	06/22/11	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	09/27/11	<50	<50 [24]	<300 [24]	<0.5	<0.5	<0.5	<0.5	<0.5
	06/19/12	<50	<51	<310	<0.5	<0.5	<0.5	<0.5	<0.5
	12/04/12	<50	<54	<330	<0.5	<0.5	<0.5	<0.5	<0.5
	06/19/13	<50	<53	<320	<0.5	<0.5	<0.5	<0.5	<0.5

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Monitoring Well	Date Sampled	Concentration (µg/L)							
		TPH-G	TPH-D	TPH-MO	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE
MW-5 (cont)	12/16/13	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	06/24/14	<50	72 [2]	<290	<0.5	<0.5	<0.5	<0.5	<0.5
MW-6									
	11/06/98	120	12,000	1,200	19	0.65	1.8	<0.5	<2
	03/19/99	170	3,800	580	21	0.86	1.5	2.9	<2
	06/24/99	120	1,700[7]	<300[7]	18	<0.5	1.0	<0.5	54
	09/28/99	130 [3,5]	820	<300	20	0.51	2.2	<0.5	<2
	11/12/99	150	11,000 [2,6]	3,000 [3,6]	27	<0.5	2.2	<0.5	13 [9]
	02/11/00	270 [2]	2,300	<300	23	0.51	2.7	<0.5	5.8
	05/22/00	350	3,000	<300	18	0.51	<0.5	<0.5	7.7
	09/06/00	190	610	<300	26	<0.5	1.7	<0.5	<0.5 [10]
	12/19/00	130 [3,11]	620	<300	24	<0.5	1.6	<0.5	<2
	02/21/01	120[13]	440	<300	21	<0.5	0.96	<0.5	<2
	07/10/01	120	560	<300	29	<0.5	0.99	<0.5	<2
	12/12/01	53	550	<300	27	<0.5	1.3	<0.5	<2.0
	03/08/02	160 [2]	640 [2]	<500	30	<0.5	<0.5	<0.5	5.0 [14]
	06/13/02	160 [2]	670 [2]	<500	34	<0.5	<0.5	<0.5	<5.0
	09/26/02	230 [2]	1400 [2]	<500	40	0.64	0.8	<0.5	<5.0
	12/12/02	53	110	<300	43	<0.5	<0.5	<0.5	<2.0
	12/18/02	Monitoring well was destroyed							
MW-7									
	09/06/95	<50	<300	800	<0.4	<0.3	<0.3	<0.4	NA
	01/08/96	<50	410	110	<0.4	<0.3	<0.3	<0.4	NA
	04/04/96	<50	530	340	<0.5	<0.5	<0.5	<1.0	NA
	07/10/96	80	840	1,700	<0.4	<0.3	<0.3	<0.4	NA
	12/03/96	<50	280 [1,2]	<250	<0.5	<0.5	<0.5	<1.0	NA
	03/28/97	65 [6]	94 [2]	<250	<0.5	<0.5	<0.5	<1.0	NA
	06/13/97	<50	100	<250	<0.5	<0.5	<0.5	<1.0	NA
	09/18/97	<50	240	<250	<0.5	<0.5	<0.5	<1.0	NA
	12/31/97	<50	53 [2,3]	<280	<0.5	<0.5	<0.5	<1.0	NA
	04/13/98	<50	<48	<290	<0.5	<0.5	<0.5	<1.0	NA
	11/06/98	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2
	03/19/99	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	5.3
	06/24/99	73	<50	<300	<0.5	<0.5	<0.5	<0.5	12
	09/28/99	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	14
	11/12/99	<50	600 [2,6]	420 [3]	<0.5	<0.5	<0.5	<0.5	15 [9]
	02/11/00	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	51
	05/22/00	110	53 [2]	<300	<0.5	<0.5	<0.5	<0.5	75
	09/06/00	50 [6]	<50	<300	<0.5	<0.5	<0.5	<0.5	40 [10]
	12/19/00	54 [11]	51 [5]	<300	<0.5	<0.5	<0.5	<0.5	47 [10,12]
	02/21/01	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	66 [10]
Dup.	02/21/01	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	60 [10]
	07/10/01	<50	51 [2]	<300	<0.5	<0.5	<0.5	<0.5	76 [10]
Dup.	07/10/01	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	75 [10]

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Monitoring Well	Date Sampled	Concentration (µg/L)							
		TPH-G	TPH-D	TPH-MO	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE
MW-7 (cont)	12/12/01	51	<50	<300	<0.5	<0.5	<0.5	<0.5	98 [14]
Dup.	12/12/01	64	52 [13, 15]	<300	<0.5	<0.5	<0.5	<0.5	96 [14]
	03/08/02	52 [2]	<50	<500	<0.5	<0.5	<0.5	<0.5	24 [14]
	06/13/02	87 [2]	54 [2]	<500	<0.5	<0.5	<0.5	<0.5	51
	09/26/02	83 [2]	84 [2]	<500	<0.5	<0.5	<0.5	<0.5	75 [10]
	12/12/02	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	58 [14]
	12/18/02	Monitoring well was destroyed							
MW-8									
	Not sampled due to the presence of free-phase product								
MW-8A									
	12/12/01	68	720 [11,15]	<300	<0.5	<0.5	<0.5	<0.5	<2.0
	03/08/02	<50	760 [2]	<570	<0.5	<0.5	<0.5	<0.5	<5.0
Dup.	03/08/02	<50	350 [2]	<580	<0.5	<0.5	<0.5	<0.5	<5.0
	06/13/02	<50	570 [2]	<570	<0.5	<0.5	<0.5	<0.5	<5.0
	09/26/02	<50	410 [2]	<500	<0.5	<0.5	<0.5	<0.5	<5.0
	12/12/02	<50	160 [15]	<300	<0.5	<0.5	<0.5	<0.5	<2.0
	03/17/03	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5 [10]
	06/18/03	<50	74 [15]	<300	<0.5	<0.5	<0.5	<0.5	<2.0
	09/03/03	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	3.0 [14]/<0.5 [10]
	11/26/03	<50	94 [15]	<300	<0.5	<0.5	<0.5	<0.5	<2.0
	03/05/04	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<2.0
	06/02/04	<50	67 [15]	<300	<0.5	<0.5	<0.5	<0.5	<2.0
	09/03/04	<50	86 [15]	<300	<0.5	<0.5	<0.5	<0.5	<2.0
	12/16/04	<50	160 [6, 15]	<300	<0.5	<0.5	<0.5	<0.5	<2.0
	03/29/05	<50	53	<300	<0.5	<0.5	<0.5	<0.5	<2.0
	08/10/05	<50 [19]	150 [15, 19]	<250	<0.5	<0.5	<0.5	<0.5	<0.5
	09/29/05	<50	66 [21]	<250	<0.5	<0.5	<0.5	<0.5	<0.5
	12/21/05	<50	63 [15,22]	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	03/24/06	<50	71	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	07/28/06	<50	70 [15]	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	11/29/06	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	06/01/07	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	11/14/07	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	06/05/08	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	12/18/08	350 [2]	7,800	2,200 [2]	<0.5	<0.5	<0.5	<0.5	1.3
	03/04/09	<50	51 [2]	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	04/01/09	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	06/17/09	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	12/08/09	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	06/16/10	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5

TABLE 2. Groundwater Analytical Results Summary
Port of Oakland's Harbor Facilities Complex Site
555 - 651 Maritime Street, Oakland, California

Monitoring Well	Date Sampled	Concentration (µg/L)							
		TPH-G	TPH-D	TPH-MO	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE
MW-8A (cont)	12/14/10	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	06/23/11	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	09/26/11	<50	<50 [24]	<300 [24]	<0.5	<0.5	<0.5	<0.5	<0.5
	06/19/12	<50	<51	<310	<0.5	<0.5	<0.5	<0.5	<0.5
	12/04/12	<50	<53	<320	<0.5	<0.5	<0.5	<0.5	<0.5
	06/19/13	<50	<52	<310	<0.5	<0.5	<0.5	<0.5	<0.5
	12/13/13	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	06/25/14	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5
MW-9									
	12/18/08	52 [2]	72	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	03/04/09	290 [2]	310 [2]	<300	44	<0.5	0.6	0.6	<0.5
	04/01/09	210 [2]	210 [2]	<300	36	<0.5	<0.5	<0.5	<0.5
	06/19/09	240 [2]	240 [2]	<300	43	<0.5	<0.5	<0.5	<0.5
	12/08/09	210 [2]	210 [2]	<300	48	<0.5	<0.5	<0.5	<0.5
	06/16/10	160 [2]	160 [2]	<300	49	<0.5	1.0	0.6	<0.5
	12/14/10	170 [2]	130 [2]	<300	34	<0.5	<0.5	0.6	<0.5
	06/22/11	200 [2]	160 [2]	<300	25	<0.5	<0.5	<0.5	<0.5
	09/27/11	190 [2]	180 [24]	<300 [24]	21	<0.5	<0.5	<0.5	<0.5
	06/19/12	150 [2]	96 [2]	<320	11	<0.5	<0.5	<0.5	<0.5
	12/04/12	140 [2]	200 [2]	<320	14	<0.5	1.8	1.5	<0.5
	06/19/13	130	100 [2]	<320	14	<0.5	1.1	<0.5	<0.5
	12/13/13	210	<50	<300	28	0.6	6.9	1.9	4.0
	06/24/14	200 [2]	110 [2]	<290	11	<0.5	0.6	<0.5	<0.5
MW-10									
	12/18/08	140 [2]	8,000	430 [2]	<0.5	<0.5	<0.5	<0.5	1.0
	03/04/09	96 [2]	110 [2]	<300	11	<0.5	0.5	<0.5	<0.5
	04/01/09	87 [2]	100 [2]	<300	14	<0.5	0.5	<0.5	<0.5
	06/17/09	90 [2]	220 [2]	<300	10	<0.5	1.0	<0.5	<0.5
	12/08/09	120 [2]	240 [2]	<300	26	<0.5	0.8	<0.5	<0.5
	06/16/10	140 [2]	200	<300	46	<0.5	<0.5	<0.5	<0.5
	12/14/10	150 [2]	140 [2]	<300	47	<0.5	<0.5	<0.5	<0.5
	06/22/11	320 [2]	630	<300	54	<0.5	2.2	<0.5	<0.5
	09/26/11	260 [2]	780 [24]	<300 [24]	61	1	2.4	<0.5	<0.5
	06/19/12	330 [2]	430 [2]	<310	58	<0.5	2.9	<0.5	<0.5
	12/04/12	250 [2]	1,100	<320	59	<0.5	0.9	<0.5	<0.5
	06/19/13	320 [2]	280 [2]	<310	61	<0.5	1.2	<0.5	<0.5
	12/13/13	280	130 [2]	<300	57	0.6	<0.5	<0.5	<0.5
	06/24/14	320 [2]	260	<290	60	<0.5	<0.5	<0.5	<0.5
MW-11									
	12/18/08	1,900 [2]	15,000	800 [2]	<0.5	<0.5	<0.5	<0.5	5.0
	03/04/09	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	04/01/09	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	06/19/09	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	12/09/09	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	06/16/10	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	12/14/10	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5

TABLE 2. Groundwater Analytical Results Summary
Port of Oakland's Harbor Facilities Complex Site
555 - 651 Maritime Street, Oakland, California

Monitoring Well	Date Sampled	Concentration (µg/L)							
		TPH-G	TPH-D	TPH-MO	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE
MW-11 (cont)	06/21/11	<50	<50	<300	<0.5	<0.5	<0.5	<0.5	<0.5
	09/26/11	<50	<50 [24]	<300 [24]	<0.5	<0.5	<0.5	<0.5	<0.5
	06/19/12	<50	<53	<320	<0.5	<0.5	<0.5	<0.5	<0.5
	12/04/12	<50	<53	<320	<0.5	<0.5	<0.5	<0.5	<0.5
	06/19/13	<50	<50	<300	<1.0	<1.0	<1.0	<1.0	<1.0
	12/12/13	<50	<50	<300	<1.0	<1.0	<1.0	<1.0	<1.0
	06/25/14	<50	<50	<300	<2.5	<2.5	<2.5	<2.5	<2.5
MW-12									
	12/18/08	25,000 [2]	19,000	980 [2]	<0.5	<0.5	<0.5	<0.5	5.1
	03/04/09	150 [2]	550 [2]	<300	<0.5	<0.5	<0.5	<0.5	4.8
	04/01/09	71 [2]	420 [2]	<300	<0.5	<0.5	<0.5	<0.5	5.8
	06/17/09	64 [2]	310 [2]	<300	<0.5	<0.5	<0.5	<0.5	5.7
Dup.	06/17/09	67 [2]	310 [2]	<300	<0.5	<0.5	<0.5	<0.5	5.4
	12/08/09	90 [2]	320 [2]	<300	<0.5	<0.5	<0.5	<0.5	4.7
	06/16/10	94 [2]	300	<300	<0.5	<0.5	<0.5	<0.5	4.8
	12/14/10	100 [2]	510	<300	<0.5	<0.5	<0.5	<0.5	4.0
	06/23/11	100 [2]	270 [2]	<300	<0.5	<0.5	<0.5	<0.5	3.2
	09/26/11	62 [2]	500 [24]	<300 [24]	<0.5	<0.5	<0.5	<0.5	4.2
	06/19/12	88	370 [2]	<310	<0.5	<0.5	<0.5	<0.5	2.4
	12/04/12	95 [2]	390 [2]	<320	<0.5	<0.5	<0.5	<0.5	3.9
	06/19/13	66 [2]	220 [2]	<300	<0.5	<0.5	<0.5	<0.5	4.5
	12/12/13	82 [2]	240 [2]	<300	<0.5	<0.5	<0.5	0.9	4.9
	06/25/14	67 [2]	260 [2]	<300	<0.5	<0.5	<0.5	<0.5	4.2
RW-4									
	06/25/14	1,300 [2]	5,200	<300	<0.5	<0.5	<0.5	<0.5	<0.5
RW-8									
	06/25/14	850 [2]	7,200	<290	53	<0.5	<0.5	<0.5	<0.5

Notes:

Data prior to December 2005 from *3rd Quarterly Groundwater Monitoring, and Product Recovery Report* dated 8 November 2005, by Innovative Technical Solutions, Inc.

µg/L = micrograms per liter

Dup. = duplicate sample

NA = not analyzed

TPHg = total petroleum hydrocarbons in gasoline range.

TPHd = total petroleum hydrocarbons in diesel range.

TPHmo = total petroleum hydrocarbons in motor oil range.

MTBE = methyl tert-butyl ether

[1] Analyte found in the associated blank as well as in the sample.

[2] Hydrocarbons present do not match profile of laboratory standard.

[3] Low boiling point/lighter hydrocarbons are present in the sample.

[4] Chromatographic pattern matches known laboratory contaminant.

[5] Hydrocarbons are present in the requested fuel quantification range, but do not resemble pattern of available fuel standard.

[6] High boiling point/heavier hydrocarbons are present in sample.

[7] Sample did not pass laboratory QA/QC and may be biased low.

[8] Presence of this compound confirmed by second column, however, the confirmation concentration differed from the reported result by more than a factor of two.

[9] Trip blank contained MTBE at a concentration of 4.2 µg/L.

TABLE 2. Groundwater Analytical Results Summary
Port of Oakland's Harbor Facilities Complex Site
555 - 651 Maritime Street, Oakland, California

Monitoring Well	Date Sampled	Concentration (µg/L)							
		TPH-G	TPH-D	TPH-MO	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE

[10] MTBE detections confirmed by EPA Test Method 8260; 8260 results displayed.
[11] Sample exhibits unknown single peak or peaks.
[12] EPA Method 8260 confirmation analyzed past holding time.
[13] Lighter hydrocarbons contributed to the quantitation.
[14] MTBE results from EPA Test Method 8021B.
[15] Sample exhibits fuel pattern that does not resemble standard.
[16] Sample extracted out of hold time.
[17] Presence confirmed, but Relative Percent Difference (RPD) between columns exceeds 40%.
[18] Unmodified or weakly modified gasoline is significant.
[19] Liquid sample contains greater than ~1 vol. % sediment.
[20] Gasoline compounds are significant.
[21] Diesel range compounds are significant; no recognizable pattern.
[22] Heavier hydrocarbons contributed to the quantitation.
[23] Analyzed outside of holdtime after confirmation of laboratory contamination by (2-ethylhexyl)phthalate.
[24] Analyzed both pre- and post-silica gel cleanup. Post-silica gel cleanup results are reported herein. Pre-silica gel cleanup results are included in Appendix B.

TABLE 3. Groundwater Analytical Results Summary
Monitored Natural Attenuation Parameters
Port of Oakland's Harbor Facilities Complex Site
555 - 651 Maritime Street, Oakland, California

Monitoring Well	Date Sampled	Field Parameters			Analytical Concentrations																	
		DO (mg/L)	ORP (mV)	Iron (II) (mg/L)	Carbon Dioxide (mg/L)	Methane (µg/L)	Iron (II) (mg/L)	Manganese (II) (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Potassium (mg/L)	Sodium (mg/L)	Sulfide (Dissolved, mg/L)	Nitrate (as N, mg/L)	Nitrite (as N, mg/L)	Sulfate (mg/L)	Chloride (mg/L)	Orthophosphate (as P, mg/L)	Carbonate (mg/L)	Bicarbonate (mg/L)	Alkalinity, Total (as $CaCO_3$, mg/L)	Total Dissolved Solids (mg/L)
MW-1																						
	09/26/11	Not sampled due to the presence of free-phase product																				
	12/13/13	0.10	-107.1	NA	NA	5,800	6.9	0.61	24	18	<5	58	0.17	<0.05	<0.05	<0.50	7.1	0.046	<6.7	250	250	270
	06/24/14	1.05	-99.6	NA	5.6	8,500	0.7	0.69	23	17	1.0	46	0.21	<0.05	<0.05	<0.50	8.2	0.048	<6.7	230	230	250
MW-2																						
	09/26/11	0.38	108.5	0.00	31	18	<0.10	0.19	29	29	1.3	180	<0.04	<0.05	<0.05	29	23	0.15	<10	560	560	660
	12/12/13	0.74	-15.6	NA	NA	270	<0.10	0.51	32	36	1.4	240	<0.04	<0.05	<0.05	25	21	0.17	<2.0	640	640	680
	06/25/14	0.86	43.7	NA	20	14	<0.10	0.28	28	32	1.1	140	<0.04	<0.05	<0.05	27	16	0.17	<6.7	590	590	640
MW-3																						
	09/26/11	Not sampled due to the presence of free-phase product																				
	12/12/13	Not sampled due to the presence of free-phase product																				
	06/24/14	Not sampled due to the presence of free-phase product																				
MW-4																						
	09/27/11	0.42	-137.0	0.51	15	4,100	0.46	0.31	41	68	9.8	250	<0.04	<0.05	<0.05	1.9	170	0.53	<10	860	860	1,150 [1]
Dup.	09/27/11	0.42	-137.0	0.51	16	4,100	0.27	0.25	36	65	9.2	240	<0.04	<0.05	<0.05	2.0	150	0.51	<10	810	810	1,150 [1]
	12/13/13	0.23	-162.1	NA	NA	3,900	3.0	0.89	67	100	21	450	<0.04	<0.05	<0.05	2.6	500	0.27	<6.7	890	890	1,690
Dup.	12/13/13	0.23	-162.1	NA	NA	3,200	3.0	0.87	66	100	21	470	<0.04	<0.05	<0.05	2.5	490	0.27	<6.7	890	890	1,610
	06/25/14	1.45	-159.2	NA	11.7	5,300	3.5	0.70	47	66	11	250	<0.04	<0.05	<0.05	<0.50	200	0.40	<6.7	830	830	1,090
Dup.	06/25/14	1.45	-159.2	NA	30.5	6,100	3.5	0.70	52	73	14	260	<0.04	<0.05	<0.05	<0.50	200	0.37	<6.7	800	800	1,100
MW-5																						
	09/27/11	0.33	-68.5	0.59	30	78	0.59	0.77	54	22	17	260	<0.04	<0.05	<0.05	74	290	0.33	<10	350	350	1,010 [1]
	12/16/13	0.50	-94.1	NA	NA	53	0.50	0.77	62	29	20	300	<0.04	<0.05	<0.05	72	350	<0.13	<5.0	410	410	1,080
	06/24/14	0.80	-84.9	NA	20.6	88	0.52	0.70	130	29	20	650	<0.04	<0.05	<0.05	74	400	0.25	<5.0	300	300	1,190
MW-6																						
	12/18/02	Monitoring well was destroyed																				
MW-7																						
	12/18/02	Monitoring well was destroyed																				
MW-8																						
	11/21/98	Monitoring well was destroyed and replaced with well MW-8A																				
MW-8A																						
	09/26/11	0.16	-109.1	2.57	52	310	2.9	0.85	53	65	18	280	<0.04	<0.05	<0.05	47	160	1.3	<10	810	810	360
	12/13/13	0.17	-149.8	NA	NA	89	2.8	0.85	58	72	20	290	<0.04	<0.05	<0.05	39	170	0.37	<6.7	780	780	1,150
	06/25/14	1.04	-142.5	NA	28	130	2.8	0.70	50	65	16	220	<0.04	<0.05	<0.05	45	150	0.4	<6.7	760	760	1,080
MW-9																						
	09/27/11	0.22	-122.2	3.62	71	9,500	6.6	0.93	71	46	15	350	0.08	<0.05	<0.05	0.69	270	1.3	<10	770	770	1,360 [1]
	12/13/13	0.30	-139.1	NA	NA	5,000	4.8	0.60	40	49	7.7	390	0.14	<0.05	<0.05	2.60	170	0.48	<6.7	930	930	1,260
	06/24/14	1.01	-125.7	NA	47.3	10,000	6.5	0.89	69	130	13	700	0.12	<0.05	<0.05	<0.50	290	0.13	<6.7	530	530	1,260
MW-10																						
	09/26/11	0.15	-138.7	2.1	170	7,300	8.8	4.5	150	72	31	450	0.11	<0.05	<0.05	28	520	0.60	<10	1,100	1,100	680
	12/13/13	0.15	-139.3	NA	NA	5,500	13	5.6	170	82	34	440	0.09	<0.05	<0.05	10	500	0.07	<6.7	1,100	1,100	2,050
	06/24/14	2.81	-134.7	NA	45.3	7,200	14	5.7	380	200	32	990	0.14	<0.05	<0.05	2.5	560	<0.03	<6.7	1,100	1,100	2,070
MW-11																						
	09/26/11	0.20	-198.9	0.47	46	8,300	1.5	0.38	25	51	49	1,100	<0.04	<0.05	<0.05	<1.0	1,000	7.7	<10	1,500	1,500	3,180
	12/12/13	1.00	-188.3	NA	NA	6,300	2.0	0.34	25	54	56	1,200	<0.04	<0.25	<0.25	<2.5	940	1.7	<2.0	1,500	1,500	3,130
	06/25/14	1.44	-170.2	NA	29.2	5,200	1.7	0.32	25	55	48	1,000	<0.04	<0.25	<0.25	<2.5	940	6.8	<6.7	1,500	1,500	3,130
MW-12																						
	09/26/11	0.36	-260.9	0.40	88	4,900	0.67	1.4	96	43	15	180	3.3	<0.05	<0.05	1.5	180	0.73	<10	640	640	1,000
	12/12/13	0.31	-120.3	NA	NA	6,800	1.3	1.4	91	43	16	240	0.56	<0.05	<0.05	<0.5	170	0.21	<2.0	660	660	930
	06/24/14	0.41	-180	NA	61.3	4,700	0.55	1.3	100	50	15	150	1.5	<0.05	<0.05	2.6	190	0.57	<6.7	660	660	950
RW-4																						
	06/25/14	0.37	-124.5	NA	84	6,400	13	2.2	110	27	11	66	0.05	<0.05	<0.05	<0.5	71	<0.03	<10	540	540	730
RW-8																						
	06/25/14	0.95	-134.8	NA	91.2	8,600	24	5.4	180	68	35	570	0.21	<0.25	<0.25	<2.5	890	0.04	<10	960	960	2,500

TABLE 3. Groundwater Analytical Results Summary
Monitored Natural Attenuation Parameters
Port of Oakland's Harbor Facilities Complex Site
555 - 651 Maritime Street, Oakland, California

Monitoring Well	Date Sampled	Field Parameters			Analytical Concentrations																	
		DO (mg/L)	ORP (mV)	Iron (II) (mg/L)	Carbon Dioxide (mg/L)	Methane (µg/L)	Iron (II) (mg/L)	Manganese (II) (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Potassium (mg/L)	Sodium (mg/L)	Sulfide (Dissolved, mg/L)	Nitrate (as N, mg/L)	Nitrite (as N, mg/L)	Sulfate (mg/L)	Chloride (mg/L)	Orthophosphate (as P, mg/L)	Carbonate (mg/L)	Bicarbonate (mg/L)	Alkalinity, Total (as $CaCO_3$, mg/L)	Total Dissolved Solids (mg/L)

Notes:

* Sample iron (II) concentration exceeded range of instrument.
DO = dissolved oxygen
ORP = oxidation-reduction potential
mg/L = milligrams per liter
ug/L = microgram per Liter
N = nitrogen
NA = not analyzed
P = phosphorus
$CaCO_3$ = calcium carbonate
J = estimated value
[1] Batch spike duplicate for TDS outside of acceptable relative percent difference range.
Y = Sample exhibits chromatographic pattern which does not resemble standard

TABLE 4. Free Product Recovery System Groundwater Elevation and Free Product Data
January 1, 2011 Through December 12, 2013
Port of Oakland's Harbor Facilities Complex Site
555 - 651 Maritime Street, Oakland, California

Recovery Well	Date Measured	Elevation [1] Top of Casing (feet)	Depth to Product (feet btc)	Depth to Water (feet btc)	Product Thickness (feet)	Groundwater Elevation [1] (feet)
RW-1						
Well inaccessible; product and water levels not measured						
RW-2						
	06/07/11	15.56	NP	7.19	0.00	8.37
	06/21/11	15.56	NP	9.02	0.00	6.54
	12/05/11	15.56	NP	9.44	0.00	6.12
	02/06/12	15.56	NP	9.22	0.00	6.34
	06/20/12	15.56	NP	9.80	0.00	5.76
	09/19/12	15.56	NP	10.35	0.00	5.21
	12/04/12	15.56	NP	6.89	0.00	8.67
	06/19/13	15.56	NP	10.13	0.00	5.43
	12/12/13	15.56	NP	10.11	0.00	5.45
	06/24/14	15.56	NP	10.09	0.00	5.47
RW-3						
	01/12/11	15.56	9.87	11.04	1.17	5.34
	01/26/11	15.56	10.28	10.43	0.15	5.24
	02/10/11	15.56	10.45	10.90	0.45	4.98
	02/24/11	15.56	9.42	12.13	2.71	5.33
	03/09/11	15.56	9.45	13.04	3.60	5.04
	03/23/11	15.56	8.63	12.18	3.55	5.87
	04/06/11	15.56	9.10	11.49	2.39	5.74
	04/20/11	15.56	9.70	10.88	1.18	5.51
	05/04/11	15.56	10.05	10.47	0.42	5.38
	05/18/11	15.56	9.95	10.17	0.22	5.54
	06/07/11	15.56	9.73	13.52	3.79	4.69
	06/21/11	15.56	10.10	11.20	1.10	5.13
	09/26/11	15.56	10.63	12.66	2.03	4.32
	10/05/11	15.56	10.48	10.98	0.50	4.93
	10/19/11	15.56	10.64	11.91	1.27	4.54
	12/05/11	15.56	10.75	12.67	1.92	4.23
	02/06/12	15.56	10.32	12.54	2.22	4.57
	06/20/12	15.56	10.38	12.56	2.18	4.53
	09/19/12	15.56	10.87	13.07	2.20	4.03
	12/04/12	15.56	9.35	13.54	4.19	4.95
	06/19/13	15.56	10.75	13.62	2.87	3.95
	12/12/13	15.56	11.12	14.12	3.00	3.54
	06/24/14	15.56	NP	10.84	0.00	4.72
RW-4						
	01/12/11	14.92	9.12	9.20	0.08	5.78
	01/26/11	14.92	9.39	9.89	0.50	5.38
	02/10/11	14.92	9.52	10.54	1.02	5.09
	02/24/11	14.92	8.80	9.10	0.30	6.03
	03/09/11	14.92	8.93	8.96	0.03	5.98
	03/23/11	14.92	8.39	8.43	0.04	6.52
	04/06/11	14.92	8.46	8.50	0.04	6.45

TABLE 4. Free Product Recovery System Groundwater Elevation and Free Product Data
January 1, 2011 Through December 12, 2013
Port of Oakland's Harbor Facilities Complex Site
555 - 651 Maritime Street, Oakland, California

Recovery Well	Date Measured	Elevation [1] Top of Casing (feet)	Depth to Product (feet btc)	Depth to Water (feet btc)	Product Thickness (feet)	Groundwater Elevation [1] (feet)
RW-4 (cont)	04/14/11	14.92	8.88	8.91	0.03	6.03
	05/04/11	14.92	9.13	9.17	0.04	5.78
	05/18/11	14.92	9.18	9.20	0.02	5.73
	06/07/11	14.92	NP	8.95	0.00	5.97
	06/21/11	14.92	9.33 [2]	9.33	0.00	5.59
	09/26/11	14.92	9.82	10.41	0.59	4.92
	10/05/11	14.92	9.68	10.17	0.49	5.09
	10/19/11	14.92	9.60	10.26	0.66	5.12
	12/05/11	14.92	9.70	10.00	0.30	5.13
	02/06/12	14.92	9.10	10.66	1.56	5.35
	06/20/12	14.92	9.20	9.27	0.07	5.70
	09/19/12	14.92	9.62	14.21	4.59	3.92
	12/04/12	14.92	8.37	11.69	3.32	5.55
	06/19/13	14.92	9.94	14.27	4.33	3.68
	12/12/13	14.92	9.95	14.07	4.12	3.73
	06/24/14	14.92	9.44 [2]	9.44	0.00	5.48
RW-5						
	04/14/11	14.79	6.74	9.72	2.98	7.16
	05/18/11	14.79	6.78 [2]	6.78	0.00	8.01
	06/07/11	14.79	7.38	7.47	0.09	7.38
	09/26/11	14.79	8.95	9.75	0.80	5.60
	10/05/11	14.79	8.66	9.09	0.43	6.00
	02/06/12	14.79	8.47	12.01	3.54	5.26
	06/20/12	Well not accessible				
	09/19/12	Well not accessible				
	12/04/12	Well not accessible				
	06/19/13	Well not accessible				
	12/12/13	Well not accessible				
	06/24/14	Well not accessible				
RW-6						
	01/12/11	15.75	8.51	9.68	1.17	6.89
	01/26/11	15.75	8.65	9.55	0.90	6.83
	02/10/11	15.75	8.44	9.74	1.30	6.92
	02/24/11	15.75	8.15	9.82	1.67	7.10
	03/09/11	15.75	8.25	9.37	1.12	7.16
	03/23/11	15.75	8.18	8.96	0.78	7.34
	04/06/11	15.75	8.19	8.95	0.76	7.33
	04/20/11	15.75	8.43	8.54	0.11	7.29
	05/04/11	15.75	8.51	8.62	0.11	7.21
	05/18/11	15.75	8.53	8.70	0.17	7.17
	06/07/11	15.75	8.82	9.05	0.23	6.86
	06/21/11	15.75	8.89	9.20	0.31	6.77
	09/26/11	15.75	8.86	10.20	1.34	6.49
	10/05/11	15.75	9.05	9.72	0.67	6.50

TABLE 4. Free Product Recovery System Groundwater Elevation and Free Product Data
January 1, 2011 Through December 12, 2013
Port of Oakland's Harbor Facilities Complex Site
555 - 651 Maritime Street, Oakland, California

Recovery Well	Date Measured	Elevation [1] Top of Casing (feet)	Depth to Product (feet btc)	Depth to Water (feet btc)	Product Thickness (feet)	Groundwater Elevation [1] (feet)
RW-6 (cont)	10/19/11	15.75	8.99	10.16	1.17	6.41
	12/05/12	15.75	9.05	10.62	1.57	6.23
	02/06/12	15.75	8.95	10.82	1.87	6.24
	06/20/12	15.75	8.92	9.99	1.07	6.51
	09/19/12	15.75	9.10	10.83	1.73	6.13
	12/04/12	15.75	8.83	10.79	1.96	6.33
	06/19/13	15.75	8.86	10.35	1.49	6.44
	12/12/13	15.75	9.19	14.07	4.88	5.10
	06/24/14	15.75	9.00	10.84	1.84	6.20
RW-7						
	01/12/11	15.02	7.86	7.91	0.05	7.15
	01/26/11	15.02	7.55	7.64	0.09	7.44
	02/10/11	15.02	7.50	7.68	0.18	7.47
	02/24/11	15.02	7.82	8.92	1.10	6.87
	03/09/11	15.02	7.42	7.53	0.11	7.57
	03/23/11	15.02	NP	7.24	0.00	7.78
	04/06/11	15.02	7.73	7.73	0.00	7.29
	04/20/11	15.02	7.54	7.56	0.02	7.47
	05/04/11	15.02	7.68	7.74	0.06	7.32
	05/18/11	15.02	7.35 [2]	7.35	0.00	7.67
	06/07/11	15.02	7.98 [2]	7.98	0.00	7.04
	06/21/11	15.02	8.07	8.09	0.00	6.93
	09/26/11	15.02	8.29	8.90	0.61	6.55
	10/05/11	15.02	8.19	8.45	0.26	6.75
	10/19/11	15.02	8.24	8.90	0.66	6.58
	12/05/11	15.02	8.26	9.77	1.51	6.31
	02/06/12	15.02	8.18	9.86	1.68	6.34
	06/20/12	15.02	8.35	8.41	0.06	6.65
	09/19/12	15.02	8.45	11.44	2.99	5.67
	12/04/12	15.02	8.25	8.33	0.08	6.75
	06/19/13	15.02	8.25	13.75	5.50	5.12
	12/12/13	15.02	8.47	16.13	7.66	4.25
	06/24/14	15.02	8.24	12.65	4.41	5.46
RW-8						
	01/12/11	15.91	9.07	9.21	0.14	6.80
	01/26/11	15.91	9.23	9.31	0.08	6.66
	02/10/11	15.91	9.13	9.33	0.20	6.72
	02/24/11	15.91	8.86	9.23	0.37	6.94
	03/09/11	15.91	8.78	9.01	0.23	7.06
	03/23/11	15.91	8.42	8.70	0.28	7.41
	04/06/11	15.91	8.55	8.80	0.25	7.29
	04/20/11	15.91	8.92	9.14	0.22	6.92
	05/04/11	15.91	9.04	9.20	0.16	6.82
	05/18/11	15.91	8.85	9.10	0.25	6.99
RW-8 (cont)	06/07/11	15.91	10.23	10.34	0.11	5.65
	06/21/11	15.91	9.27	9.41	0.14	6.60

TABLE 4. Free Product Recovery System Groundwater Elevation and Free Product Data
January 1, 2011 Through December 12, 2013
Port of Oakland's Harbor Facilities Complex Site
555 - 651 Maritime Street, Oakland, California

Recovery Well	Date Measured	Elevation [1] Top of Casing (feet)	Depth to Product (feet btc)	Depth to Water (feet btc)	Product Thickness (feet)	Groundwater Elevation [1] (feet)
	09/26/11	15.91	9.23	9.62	0.39	6.56
	10/05/11	15.91	9.28	9.40	0.12	6.59
	10/19/11	15.91	9.54	9.77	0.23	6.30
	12/05/11	15.91	9.62	10.19	0.57	6.12
	02/06/12	15.91	9.21	10.22	1.01	6.40
	06/20/12	15.91	9.36	10.28	0.92	6.27
	09/19/12	15.91	10.55	11.45	0.90	5.09
	12/04/12	15.91	9.29	11.32	2.03	6.01
	06/19/13	15.91	9.42	11.11	1.69	5.98
	12/12/13	15.91	9.29	12.24	2.95	5.74
	06/24/14	15.91	9.41	11.55	2.14	5.86
RW-9						
	01/12/11	16.57	9.26	9.45	0.19	7.25
	01/26/11	16.57	9.32	9.53	0.21	7.19
	02/10/11	16.57	9.42	9.63	0.21	7.09
	02/24/11	16.57	9.24	9.43	0.19	7.27
	03/09/11	16.57	9.16	9.35	0.19	7.35
	03/23/11	16.57	9.07	9.23	0.16	7.45
	04/06/11	16.57	9.00	9.16	0.16	7.52
	04/20/11	16.57	9.10	9.29	0.19	7.41
	05/04/11	16.57	9.19	9.40	0.21	7.32
	05/18/11	16.57	9.26	9.46	0.20	7.25
	06/07/11	16.57	9.35	9.56	0.21	7.16
	06/21/11	16.57	9.30	9.50	0.20	7.21
	09/26/11	16.57	9.67	9.85	0.18	6.85
	10/05/11	16.57	9.70	9.81	0.11	6.84
	10/19/11	16.57	9.67	9.78	0.11	6.87
	12/05/11	16.57	9.75	10.14	0.39	6.70
	02/06/12	16.57	9.88	10.37	0.49	6.54
	06/20/12	16.57	9.49	10.40	0.91	6.81
	09/19/12	16.57	9.81	11.04	1.23	6.39
	12/04/12	16.57	9.50	11.06	1.56	6.60
	06/19/13	16.57	9.68	10.76	1.08	6.57
	12/12/13	16.57	10.11	10.14	0.03	6.45
	06/24/14	16.57	9.90	11.91	2.01	6.07
MW-3						
	01/05/11	15.66	9.58	9.67	0.09	6.05
	01/12/11	15.66	9.85	10.39	0.54	5.65
	01/21/11	15.66	10.03	10.97	0.94	5.35
	01/26/11	15.66	9.32	9.53	0.21	6.28
	02/02/11	15.66	10.28	11.43	1.15	5.04
	02/10/11	15.66	10.35	11.50	1.15	4.97
	02/24/11	15.66	9.53	10.74	1.21	5.77
	03/09/11	15.66	9.63	10.79	1.16	5.68
	03/16/11	15.66	9.26	10.43	1.17	6.05

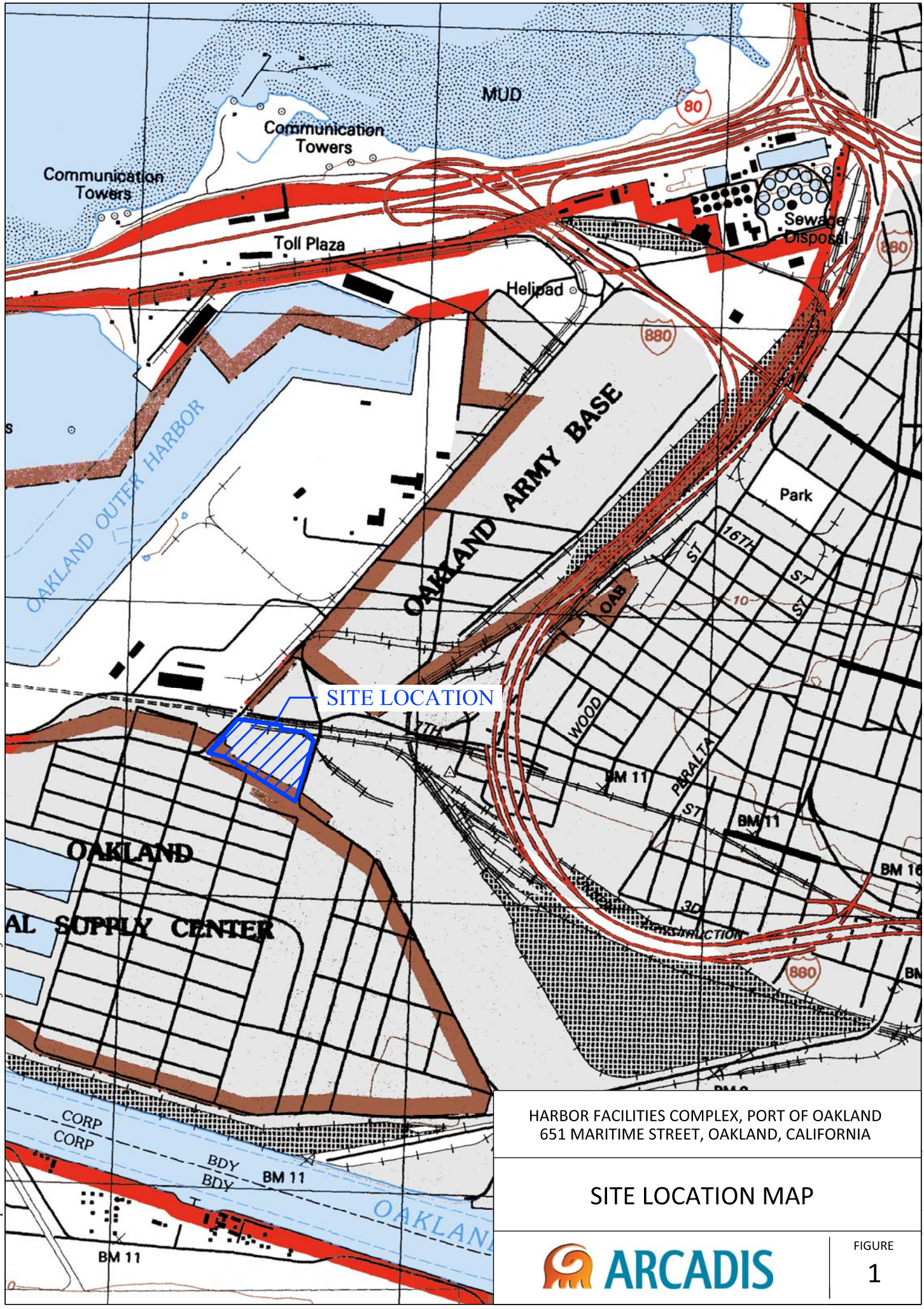
TABLE 4. Free Product Recovery System Groundwater Elevation and Free Product Data
January 1, 2011 Through December 12, 2013
Port of Oakland's Harbor Facilities Complex Site
555 - 651 Maritime Street, Oakland, California

Recovery Well	Date Measured	Elevation [1] Top of Casing (feet)	Depth to Product (feet btc)	Depth to Water (feet btc)	Product Thickness (feet)	Groundwater Elevation [1] (feet)
MW-3 (cont)	03/23/11	15.66	8.71	9.07	0.36	6.84
	03/30/11	15.66	8.87	9.54	0.67	6.59
	04/06/11	15.66	9.16	10.42	1.26	6.12
	04/14/11	15.66	9.65	10.53	0.88	5.75
	04/20/11	15.66	9.69	10.61	0.92	5.69
	04/27/11	15.66	9.88	11.07	1.19	5.42
	05/04/11	15.66	9.95	11.14	1.19	5.35
	05/13/11	15.66	10.16	11.45	1.29	5.11
	05/18/11	15.66	9.78	11.60	1.82	5.33
	06/07/11	15.66	9.91	10.95	1.04	5.44
	06/21/11	15.66	10.74	11.20	0.46	4.78
	09/26/11	15.66	10.71	12.55	1.84	4.40
	10/05/11	15.66	10.21	11.73	1.52	4.99
	10/19/11	15.66	10.65	12.11	1.46	4.57
	12/05/11	15.66	10.83	12.20	1.37	4.42
	02/06/12	15.66	10.60	11.43	0.83	4.81
	06/19/12	15.66	10.52	12.04	1.52	4.68
	09/19/12	15.66	10.90	13.01	2.11	4.13
	12/04/12	15.66	9.64	10.65	1.01	5.72
	06/19/13	15.66	10.92	12.45	1.53	4.28
	12/12/13	15.66	11.23	13.23	2.00	3.83
	06/24/14	15.66	10.83	11.84	1.01	4.53

Notes:
NP = no product detected with the interface probe
btc = below top of the well casing
NA = not available
NM = not measured
[1] Wells were resurveyed on January 24, 2009. Elevation data is relative to North American Vertical Datum of 1988 (NAVD 88). Groundwater elevation for well MW-3, when calculated, assumes the density of the free product is 0.70.
[2] Product not measureable, but visible evidence of product on interface probe.

ARCADIS

Figures



HARBOR FACILITIES COMPLEX, PORT OF OAKLAND
651 MARITIME STREET, OAKLAND, CALIFORNIA

SITE LOCATION MAP

ARCADIS

FIGURE
1

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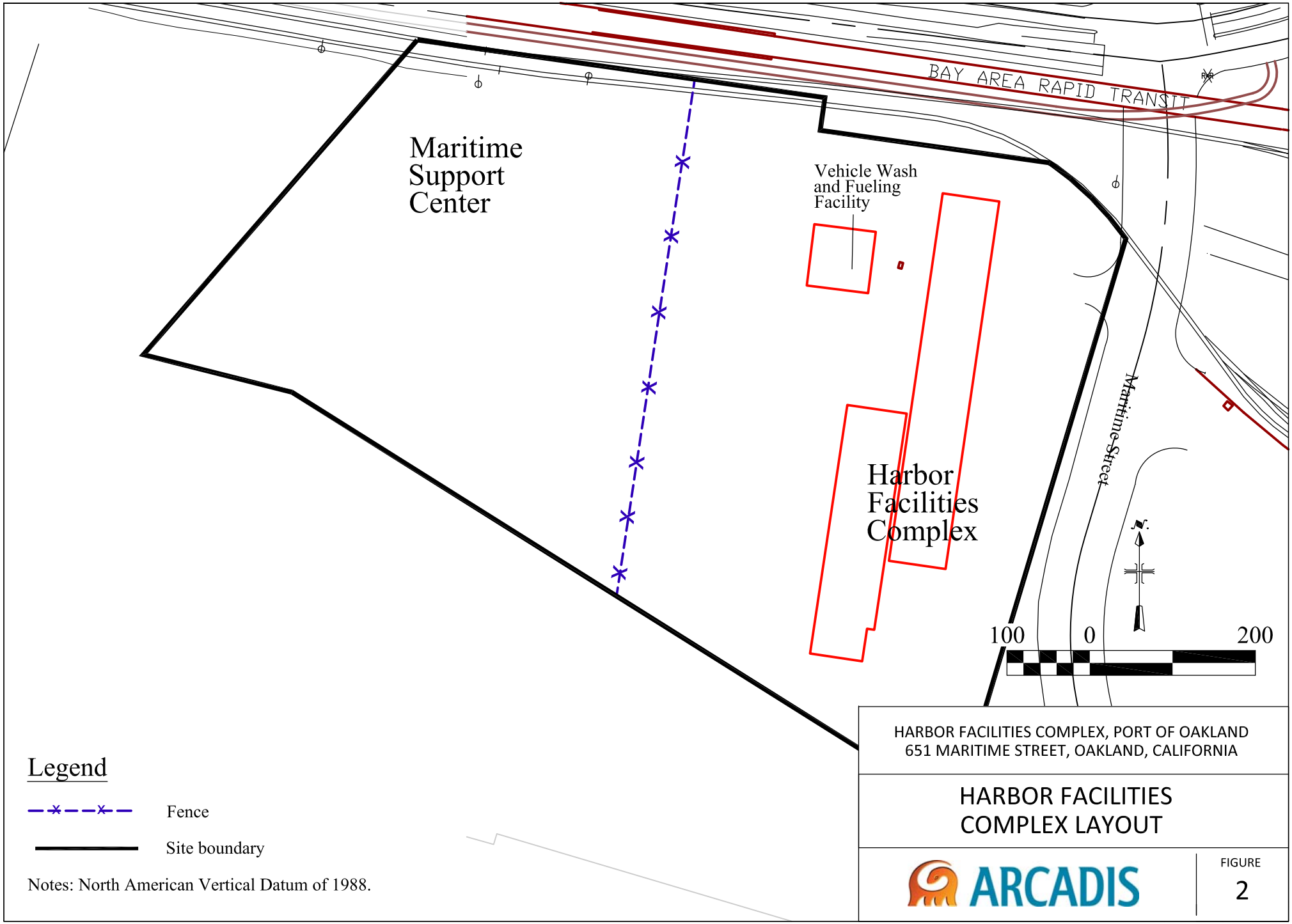


Legend

Fence

Site boundary

Notes: North American Vertical Datum of 1988.

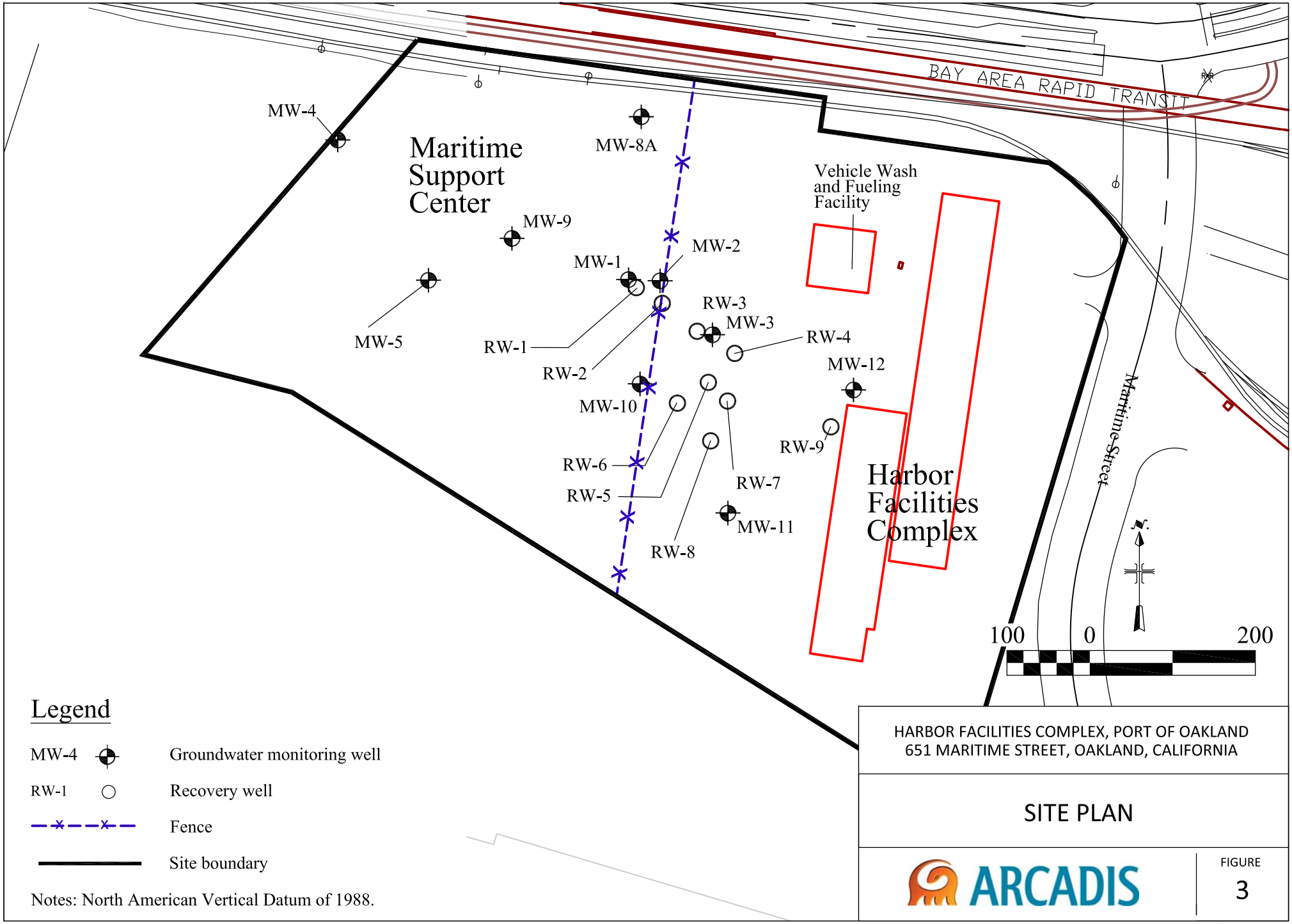
HARBOR FACILITIES COMPLEX, PORT OF OAKLAND
651 MARITIME STREET, OAKLAND, CALIFORNIA

HARBOR FACILITIES COMPLEX LAYOUT

ARCADIS

FIGURE 2

User:Orsi Spec:PIRNIE STANDARD File: G:\Projects\Projects\4656\016\acad\1st Semi 2014\FIGURES.DWG



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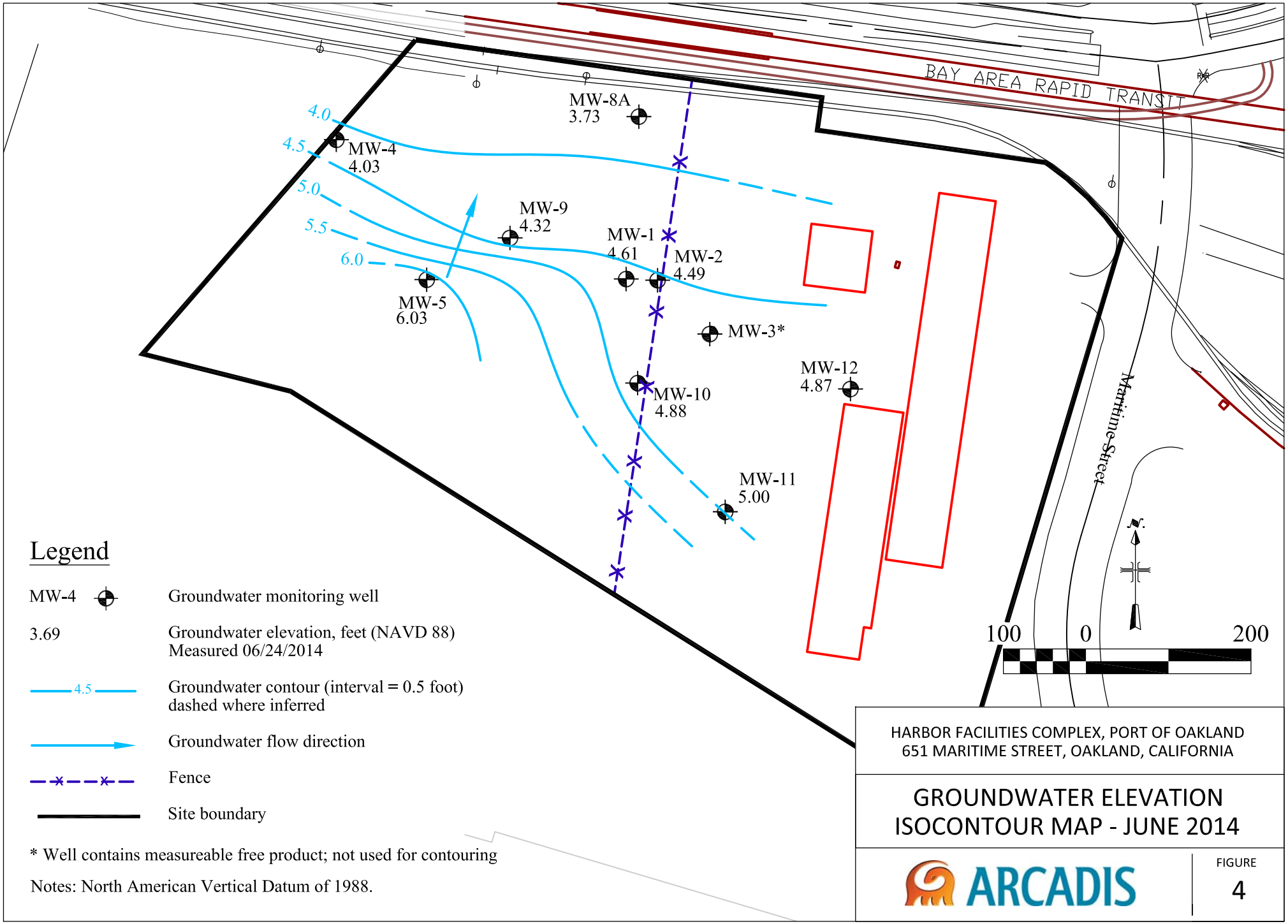


Legend

MW-4 ⊕	Groundwater monitoring well
3.69	Groundwater elevation, feet (NAVD 88) Measured 06/24/2014
4.5	Groundwater contour (interval = 0.5 foot) dashed where inferred
→	Groundwater flow direction
- x - x -	Fence
▬	Site boundary

* Well contains measureable free product; not used for contouring

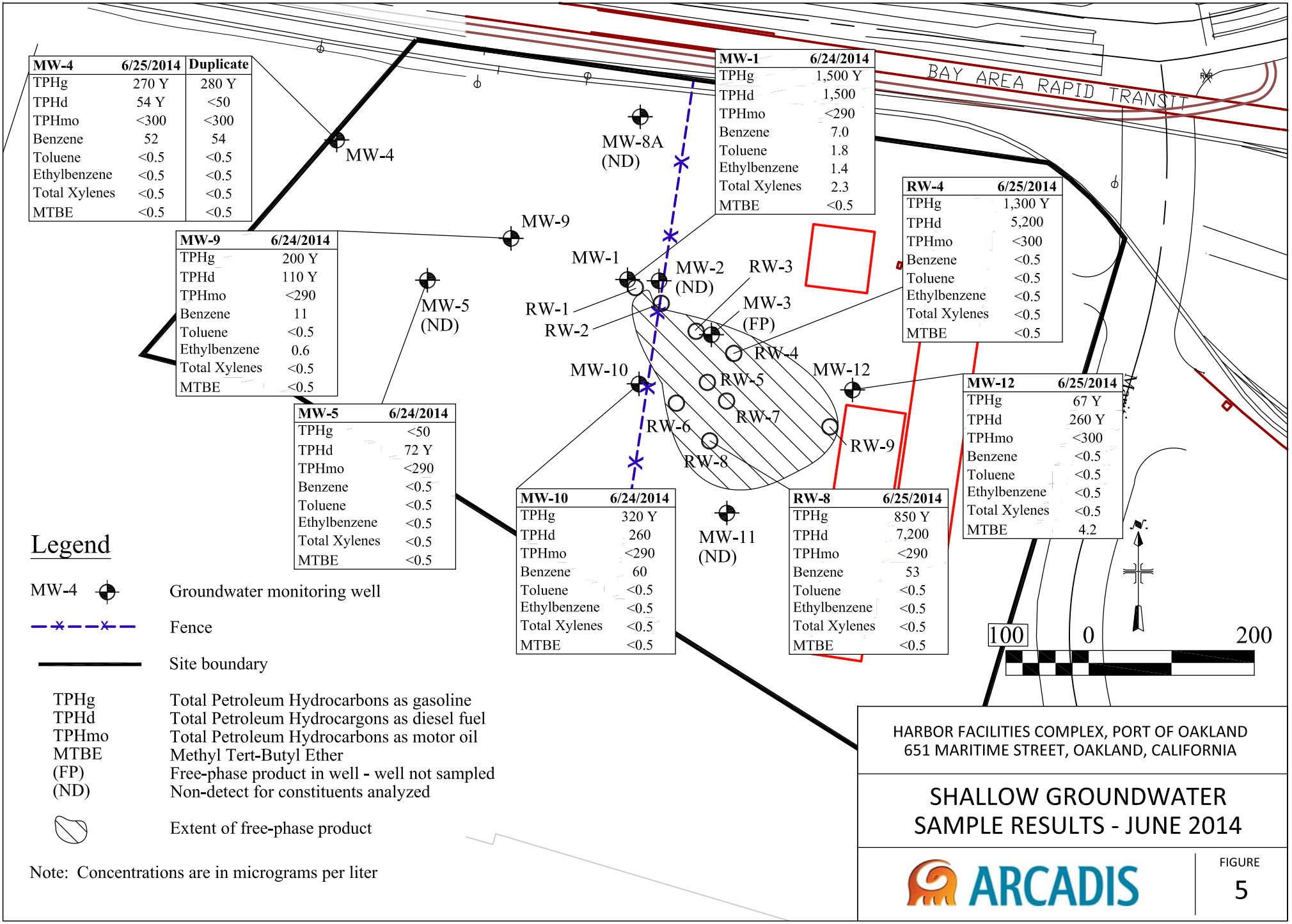
Notes: North American Vertical Datum of 1988.

HARBOR FACILITIES COMPLEX, PORT OF OAKLAND
651 MARITIME STREET, OAKLAND, CALIFORNIA

GROUNDWATER ELEVATION ISOCONTOUR MAP - JUNE 2014

ARCADIS

FIGURE 4



MW-4	6/25/2014	Duplicate
TPHg	270 Y	280 Y
TPHd	54 Y	<50
TPHmo	<300	<300
Benzene	52	54
Toluene	<0.5	<0.5
Ethylbenzene	<0.5	<0.5
Total Xylenes	<0.5	<0.5
MTBE	<0.5	<0.5

MW-1	6/24/2014
TPHg	1,500 Y
TPHd	1,500
TPHmo	<290
Benzene	7.0
Toluene	1.8
Ethylbenzene	1.4
Total Xylenes	2.3
MTBE	<0.5

RW-4	6/25/2014
TPHg	1,300 Y
TPHd	5,200
TPHmo	<300
Benzene	<0.5
Toluene	<0.5
Ethylbenzene	<0.5
Total Xylenes	<0.5
MTBE	<0.5

MW-9	6/24/2014
TPHg	200 Y
TPHd	110 Y
TPHmo	<290
Benzene	11
Toluene	<0.5
Ethylbenzene	0.6
Total Xylenes	<0.5
MTBE	<0.5

MW-5	6/24/2014
TPHg	<50
TPHd	72 Y
TPHmo	<290
Benzene	<0.5
Toluene	<0.5
Ethylbenzene	<0.5
Total Xylenes	<0.5
MTBE	<0.5

MW-12	6/25/2014
TPHg	67 Y
TPHd	260 Y
TPHmo	<300
Benzene	<0.5
Toluene	<0.5
Ethylbenzene	<0.5
Total Xylenes	<0.5
MTBE	4.2

MW-10	6/24/2014
TPHg	320 Y
TPHd	260
TPHmo	<290
Benzene	60
Toluene	<0.5
Ethylbenzene	<0.5
Total Xylenes	<0.5
MTBE	<0.5

RW-8	6/25/2014
TPHg	850 Y
TPHd	7,200
TPHmo	<290
Benzene	53
Toluene	<0.5
Ethylbenzene	<0.5
Total Xylenes	<0.5
MTBE	<0.5

Legend

MW-4 — Groundwater monitoring well

Fence

Site boundary

TPHg	Total Petroleum Hydrocarbons as gasoline
TPHd	Total Petroleum Hydrocargons as diesel fuel
TPHmo	Total Petroleum Hydrocarbons as motor oil
MTBE	Methyl Tert-Butyl Ether
(FP)	Free-phase product in well - well not sampled
(ND)	Non-detect for constituents analyzed

Extent of free-phase product

Note: Concentrations are in micrograms per liter

HARBOR FACILITIES COMPLEX, PORT OF OAKLAND
651 MARITIME STREET, OAKLAND, CALIFORNIA

SHALLOW GROUNDWATER SAMPLE RESULTS - JUNE 2014

ARCADIS

FIGURE 5

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Figure 6
TPHg Concentration versus Time

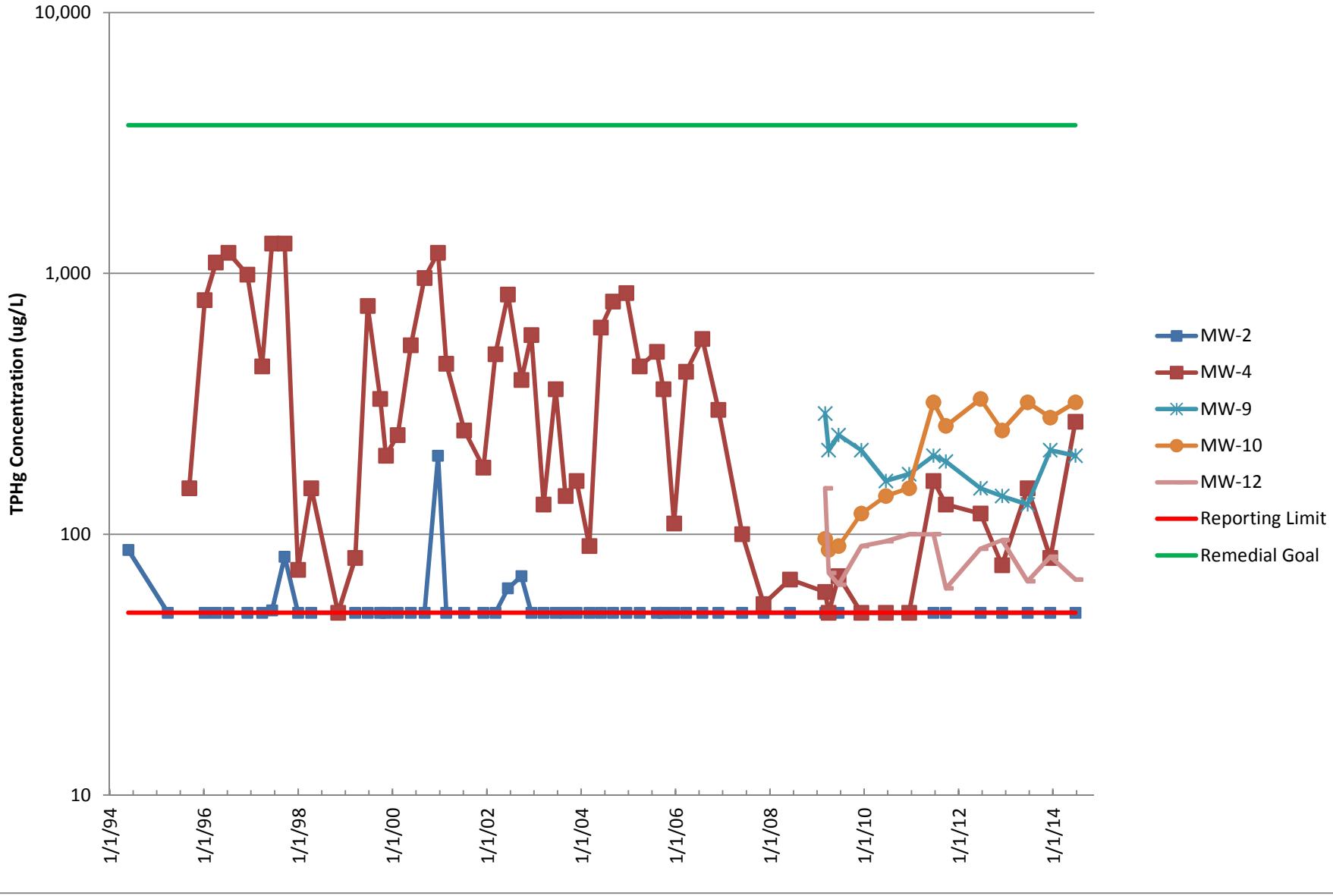


Figure 7
Benzene Concentration versus Time

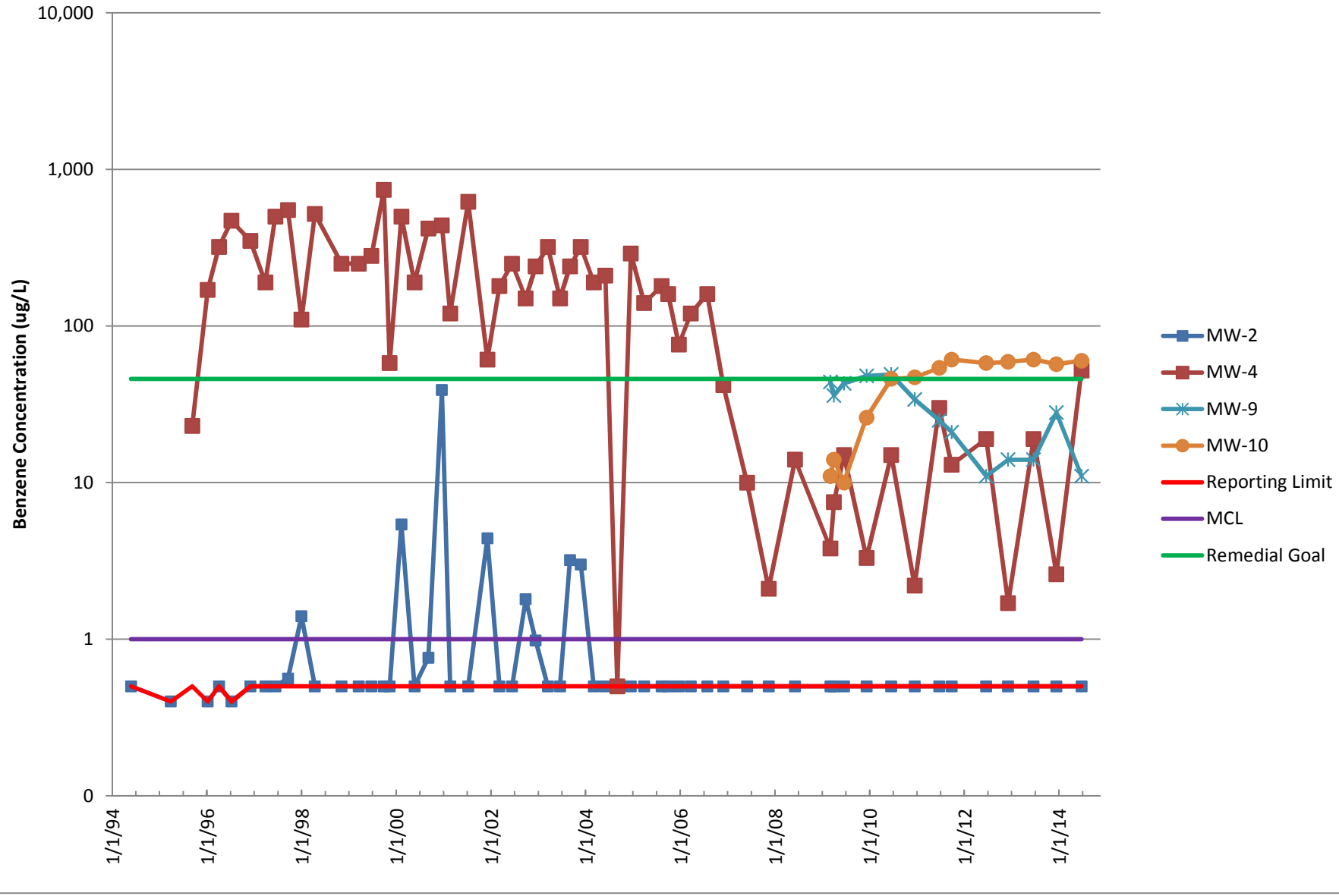


Figure 8
MTBE Concentration versus Time

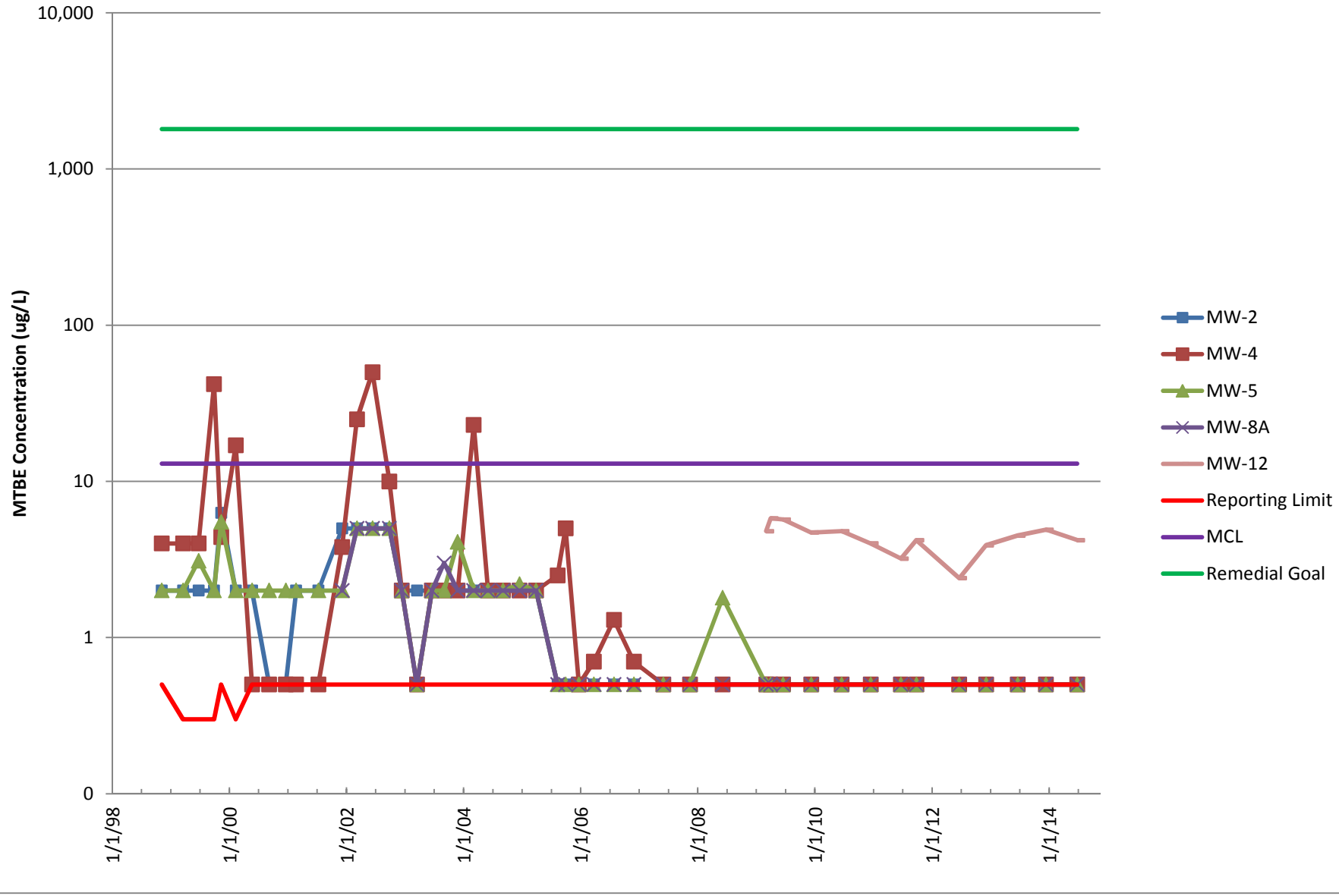
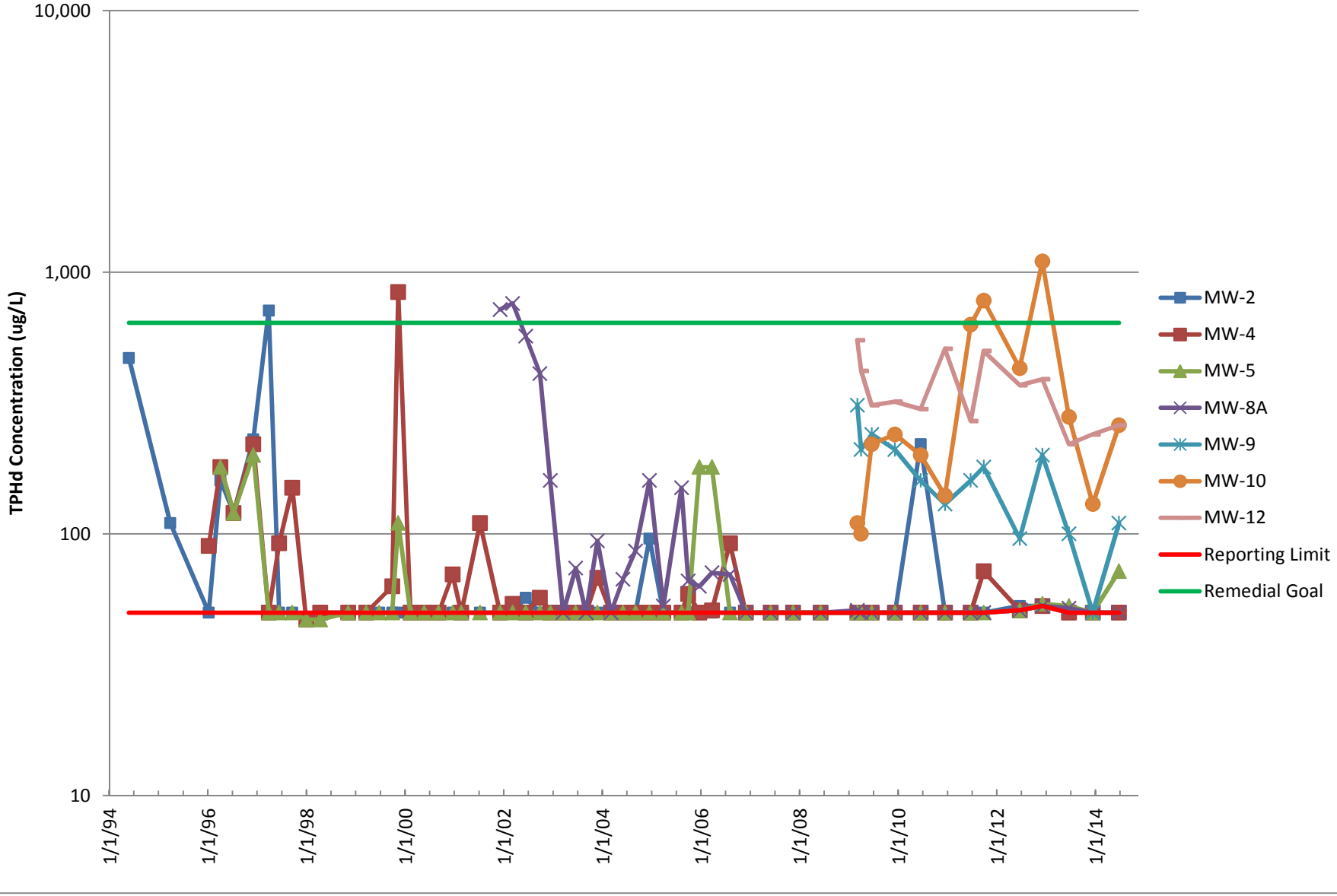


Figure 9
TPHd Concentration versus Time



ARCADIS

Appendix A

Groundwater Sampling Forms

Environmental
Sampling Services, LLC

July 1, 2014

Ms. Caroline Orsi
Staff Geologist
Arcadis U.S., Inc.
2000 Powell Street, 7th Floor
Emeryville, California 94608-1805

SUBJECT: June 2014 Semi-Annual Groundwater Monitoring Event for Port of Oakland-Harbor Facilities Complex, Oakland, California

Dear Ms. Orsi,

Please find enclosed the Field Activity Report for Port of Oakland's semi-annual groundwater monitoring event that occurred on June 24 and 25, 2014. This report contains all pertinent documentation associated with this monitoring event.

If you have any questions or concerns regarding this Field Activity Report, please do not hesitate to contact me electronically at jlee@envsampling.com or directly at (925) 260-7999.

Sincerely,
Environmental Sampling Services, LLC

Jacqueline Lee
Manager

Enclosure

6680 Alhambra Avenue, #102 • Martinez, CA 94553-6105 • (925) 372-8108
www.envsampling.com

FIELD ACTIVITY REPORT
FOR

JUNE 2014
SEMI-ANNUAL GROUNDWATER
MONITORING EVENT

HARBOR FACILITIES COMPLEX
PORT OF OAKLAND
651 MARITIME STREET
OAKLAND, CALIFORNIA

Prepared for: ARCADIS U.S., Inc.
2000 Powell Street, 7th Floor
Emeryville, California 94608-1805

Date Prepared: July 1, 2014

Environmental
Sampling Services, LLC

FIELD ACTIVITY REPORT
FOR

JUNE 2014
SEMI-ANNUAL GROUNDWATER
MONITORING EVENT

PORT OF OAKLAND
HARBOR FACILITIES COMPLEX
OAKLAND, CALIFORNIA

Task 1: Obtain depth to groundwater level measurements from ten monitoring wells and nine recovery wells
Task 2: Collect groundwater samples from monitoring wells without free product; recovery wells, RW-4 and RW-8, using low-flow sampling procedures
ESS Personnel: Stephen Penman and Jacqueline Lee
Dates of Activities: June 24 and 25, 2014

DECONTAMINATION PROCEDURES

All downhole equipment was cleaned with a Liqui-Nox® laboratory grade soap solution, rinsed with potable water, followed by a final rinse with distilled water prior to use and between each well.

TASK 1: PRODUCT/GROUNDWATER LEVEL MEASUREMENTS

Depth to groundwater for nine recovery and ten monitoring wells were measured and recorded following atmospheric equilibration of approximately thirty minutes.

All readings were performed with a Solinst® Oil/Water Level Interface Meter, Serial Number 5855-1. Three successive readings that agreed to within one-hundredth of a foot determined depth to product/groundwater. All measurements were referenced to the surveyor's mark or north rim (Table 1).

Floating product was detected in monitoring well MW-3 at 10.83 feet with groundwater at 11.84 feet, below top of well casing.

Sheen and petroleum-like odor were noted at recovery wells, RW-2 and RW-3. At RW-3, it was noted that approximately 4 inches of product was noted on the tape and probe but did not register as "oil" on the meter.

Floating product was detected in recovery well RW-6 at 9.00 feet with groundwater at 10.84 feet, below top of well casing.

Floating product was detected in recovery well RW-7 at 8.24 feet with groundwater at 12.65 feet, below top of well casing.

Floating product was detected in recovery well RW-8 at 9.41 feet with groundwater at 11.55 feet, below top of well casing.

Floating product was detected in recovery well RW-9 at 9.90 feet with groundwater at 11.91 feet, below top of well casing.

Recovery well, RW-5, was not accessible. The well cap could not be removed.

TASK 2: GROUNDWATER MONITORING AND SAMPLING

Field Equipment Calibration

Multi-parameter meters, equipped with in-line flow cell, and separate Turbidity meters were used for monitoring purposes.

Equipment calibration was performed in accordance with the instruments' calibration and operating procedures (See Daily Equipment Calibration Sheet). The following standard solutions were used for calibration purposes: pH 4, 7, and 10; 1,000 µS/cm[c] for Specific Conductivity and Zobell® for Oxidation Reduction Potential (ORP). Dissolved Oxygen (DO) was calibrated to air (100% saturation). Turbidity was checked against a 0.02 Nephelometric (NTU) standard.

Water Quality Indicator Parameters

The following water quality indicator parameters were monitored and recorded during purging activities: pH, Specific Conductivity, DO, ORP, Turbidity, and Temperature. Physical parameters such as drawdown, color and odor were also recorded (see Arcadis' Field Forms).

Low-Flow Well Purging Procedures

Nine out of ten monitoring wells and two recovery wells were purged using peristaltic pumps and dedicated or new pump tubing at each monitoring/recovery well. New pump tubing was used at MW-2, RW-4 and RW-8. Pump intake was placed either at mid-screen interval or, if water column was less than the screen length, at mid-water column.

EPA recommended stabilization guidelines for low-flow sampling were used. Stabilization was achieved after the indicator parameters stabilized for three successive readings. The following criteria were used: ± 0.1 for pH, ± 3 % for Specific Conductivity, ± 0.3 mg/L for DO and ± 10 mV for ORP.

The following criteria were used to determine turbidity stabilization:

0-10 NTU, no criterion
10-50 NTU, ±5 NTU
more than 50 NTU, ±10% NTU

Low-Flow Sampling Procedures

Following stabilization of water quality parameters, the pump tubing was disconnected from the in-line flow cell for sample collection. If necessary, pump rate was reduced for samples requiring zero headspace; otherwise, low-flow rate established during purging was maintained during sampling.

During filling, each VOA container was slightly tilted to avoid aeration or degassing and was filled until there was a meniscus at the top. After capping, the container was inverted and tapped lightly to check for air bubbles. The absence of air bubbles indicated a successful seal.

All preserved sample containers were not overfilled. All non-preserved containers were filled to maximum capacity.

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CHEMICAL ANALYSES AND LABORATORY

Nine monitoring wells and two recovery wells were sampled for: TPH-Gasoline (EPA Method 8015B), BTEX & MTBE (EPA Method 8260B); Methane and Carbon Dioxide (RSK-175), TPH-Diesel and Motor Oil with Silica Gel Cleanup (EPA Method 8015B), Major Anions (Bicarbonate, Carbonate, Sulfate, Chloride, Nitrate, Nitrite, and Orthophosphate by EPA Method 300.0), Total Dissolved Solids, TDS, (EPA Method 40 CFR 136/160.1), Dissolved Sulfide (EPA E376.2) and Dissolved Cations (Sodium, Potassium, Sulfate, Calcium and Magnesium by EPA 200.7) and Dissolved Manganese and Iron (EPA SW 6010B).

All samples were submitted to Curtis Tompkins, Ltd. of Berkeley, California (CTB).

SAMPLE CONTAINERS

All sample containers and Trip Blank sets were provided by CTB.

Each BTEX/MTBE sample set was contained in three, amber, 40-ml VOA amber, glass containers preserved with Hydrochloric Acid.

Each TPH-Gasoline sample set was contained in three, amber, 40-ml VOA amber, glass containers preserved with Hydrochloric Acid.

Each Methane sample set was contained in three, 25-ml RSK VOA containers preserved with Hydrochloric Acid.

Each Carbon Dioxide sample set was contained in three, non-preserved, 25-ml RSK VOA containers.

Each TPH-Diesel & Motor Oil sample set was contained in two, non-preserved, 500-ml amber glass containers.

Each Dissolved Sulfide sample was contained in a 500-ml HDPE container preserved with Sodium Hydroxide.

Each Anions sample was contained in a non-preserved, 500-ml High Density Polyethylene (HDPE) container. Carbonate and Bicarbonate were contained in a non-preserved 250-ml HDPE.

Each TDS sample was contained in a non-preserved, 1-liter HDPE container.

Each Dissolved Cations sample was filtered with a 0.45-micron filter. Approximately 50-100 ml was flushed through the filter prior to containment in a 500-ml HDPE container preserved with Nitric Acid.

Each Manganese and Iron sample was filtered with a 0.45-micron filter and contained in a 250-ml HDPE container preserved with Nitric Acid.

QUALITY ASSURANCE / QUALITY CONTROL (QA/QC) SAMPLES

Trip Blank
Two Trip Blank sets, prepared by CTB were submitted for 8260 and 8015 analyses. The Trip Blank was labeled "QCTB-1" and "QCTB-2".

Duplicate
One duplicate sample was collected from monitoring well MW-4. The designated duplicate sample identification of MW-4DUP was assigned to the duplicate sample set. Each VOA duplicate sample container was collected in immediate succession by alternating between each VOA primary sample container.

Each non-volatile container was filled by alternating between the primary and duplicate sample container. The duplicate sample identification was recorded on the appropriate Water Quality Sample Log sheet.

SAMPLE HANDLING

All groundwater sample sets were wiped dry, stored in Ziploc® bags and placed in chilled coolers for storage.

CHAIN OF CUSTODY (COC) DOCUMENTATION

The documentation of sample collection, storage and transportation was conducted under standard Chain of Custody procedures. The COC included: sampler's name and signature, sample date and time, and analysis request section. PDF, EDD, Electronic Data Format (EDF), Level II, and standard turnaround time were requested. All samples collected remained in ESS's possession and were relinquished to directly to CTB on a daily basis.

STORAGE/DISPOSAL OF INVESTIGATATIVE DERIVED WASTEWATER (IDW) AND SOLID DEBRIS

Approximately thirty-five (35) gallons of IDW were generated and transferred into a new 55-gallon steel drum. A "HOLD-Pending Analysis" drum labeled was completed and affixed onto the drum. The drum is stored inside the secured Treatment System compound, next to one, full, 55-gallon drum.

All solid debris was placed in a debris box for proper disposal.

The Treatment System closet door was re-locked and the gate closed after all tasks were completed.

COMMENTS

Groundwater samples from MW-11 reacted effervescently with the preservative, Hydrochloric Acid. Samples from monitoring well MW-12 reacted slightly with the Hydrochloric Acid.

Light hydrocarbon odor was noted at MW-1 and RW-4. A slight sheen in the purged water and samples collected were observed at RW-4.

Environmental Sampling Services, LLC

Jacqueline Lee
Project Manager

Attachments:
Table 1: Summary of June 2014 Semi-Annual Groundwater Monitoring
Arcadis Field Forms
Depth to Water and Free Product Measurements Field Form
Equipment Calibration Sheet
Chain of Custodies

Environmental
Sampling Services, LLC

Table 1: Summary of June 2014 Semi-Annual Groundwater Monitoring Event
Site Name: Harbor Facilities Complex, Port of Oakland
Site Location: 651 Maritime Street, Oakland, California

Well Identification	Measurement Date (mm/dd/yy)	Measurement Time	Depth to Product (Ft., below TOC)	Depth to Groundwater (Ft., below TOC)	Sample Date (mm/dd/yy)	Sample Time	QA/QC Type	QA/QC Sample Identification	QA/QC Sample Time
RW-1	06/24/14	NA	NA	INACCESSIBLE	NS	NA	NA	NA	NA
RW-2	06/24/14	8:31	ND	10.09	NS	NA	NA	NA	NA
RW-3	06/24/14	8:14	ND	10.84	NS	NA	NA	NA	NA
RW-4	06/24/14	8:18	ND	9.44	06/25/14	14:15	None	NA	NA
RW-5	06/24/14	8:29	NA	INACCESSIBLE	NS	NA	NA	NA	NA
RW-6	06/24/14	8:24	9.00	10.84	NS	NA	NA	NA	NA
RW-7	06/24/14	8:20	8.24	12.65	NS	NA	NA	NA	NA
RW-8	06/24/14	8:27	9.41	11.55	06/25/14	14:38	None	NA	NA
RW-9	06/24/14	8:35	9.90	11.91	NS	NA	NA	NA	NA
MW-1	06/24/14	8:35	ND	11.19	06/24/14	11:28	None	NA	NA
MW-2	06/24/14	8:09	ND	11.94	06/25/14	12:44	None	NA	NA
MW-3	06/24/14	8:11	10.83	11.84	06/24/14	NS	None	NA	NA
MW-4	06/24/14	8:45	ND	11.88	06/25/14	8:52	Duplicate	MW-4DUP	8:52
MW-5	06/24/14	8:47	ND	9.36	06/24/14	14:25	None	NA	NA
MW-8A	06/24/14	8:51	ND	11.26	06/25/14	10:58	None	NA	NA
MW-9	06/24/14	8:53	ND	12.01	06/24/14	13:00	None	NA	NA
MW-10	06/24/14	8:58	ND	10.77	06/24/14	9:48	None	NA	NA
MW-11	06/24/14	8:03	ND	10.47	06/25/14	10:28	None	NA	NA
MW-12	06/24/14	8:05	ND	11.92	06/25/14	12:17	None	NA	NA

Notes:
NA = Not Applicable
ND = Not Detected
TOC = Top of Casing
NS = Not Sampled

GROUNDWATER SAMPLING

Well No.: **MW-1**

Project No.	4656016	Recorded by: S. Penman	Date: 6/24/14
Project Name:	Harbor Facilities Center	Depth of well from TOC (feet):	17.65
Location:	Port of Oakland	Well diameter (inches):	2
	651 Maritime Street, Oakland, California	Screened interval from TOC (feet):	7.65-17.65
Weather:	Clear, breezy & warm ~ 66°F	TOC elevation, NAVD 88 (feet):	15.80
Precip. in past 5 days (in.):	0	Groundwater elevation, NAVD 88 (feet):	4.62
Source:	NOAA Ports	Water level from TOC (feet): 11.18	Time: 10:52
Water level instrument:	Solinst #3855-1	Product level from TOC (feet): ND	Time: 10:52

CALCULATION OF WELL VOLUME:

(17.65 ft - 11.18 ft x (0.083 ft)² x π x 7.48 gal/ft³ = 4.01 gallons in one casing volume

well depth - water level x (well radius)² x π x gal/ft³ = 1.0 total gallons removed

CALIBRATION: See "Daily Equip. Calib." Sheet

FIELD MEASUREMENTS:

Time	Temperature (°C)	pH S.U.	DO (mg/L)	ORP (mV)	EC (µmho/cm)	Turbidity (NTU)	Depth to Water (ft btoc)	Cumulative Gallons Removed
10:57	20.82	7.02	2.24	-150.1	601	8.18	11.43	0.5
11:02	20.02	6.96	1.39	-141.4	549	4.19	11.51	1.0
11:06	20.06	6.96	1.33	-132.6	530	1.81	11.55	1.5
11:11	20.09	6.94	1.15	-104.4	524	1.96	11.60	2.0
11:16	20.09	6.84	1.11	-91.9	516	1.48	11.65	2.5
11:21	20.09	6.84	1.05	-99.1	509	1.38	11.69	3.0
11:26	20.18	6.87	1.05	-99.6	496	1.29	11.75	3.5

Purge method: Peristaltic Pump — Sample Time: 11:28

Duplicate/blank number: None — Duplicate Sample Time: —

Sampling equipment: Peristaltic Pump — VOA attachment:

Sample containers: 6 VOAs (HCl); 6 RSK Vials (NPt HCl); 2-500ml ambers (HCl); 1-1L PE (NP); 2-250ml PE (NP, HNO3); 3-500ml PE (NaOH, HNO3, NP);

Sample analyses: 8260/8015; RSK-175; TDS, Anions, Cations, TPH-D+Mot

Laboratory: Diss. Metals, Dissolved GTEL Lab

Decontamination method: Tap + DI Rinse — Rinsate disposal:

Comments: Purge water has a light hydrocarbon odor

Diss. Cations, Fe+Mn = Field Filtered

TOC = top of casing

NAVD 88 = North American Vertical Datum of 1988.

GROUNDWATER SAMPLING

Well No.: **MW-2**

Project No.	4656016	Recorded by: S. Penman	Date: 6/25/14
Project Name:	Harbor Facilities Center	Depth of well from TOC (feet):	18.06
Location:	Port of Oakland	Well diameter (inches):	2
	651 Maritime Street, Oakland, California	Screened interval from TOC (feet):	8.06-18.06
Weather:	Partly Cloudy, breezy & warm ~ 64° F	TOC elevation, NAVD 88 (feet):	16.43
Precip. in past 5 days (in.):	0	Groundwater elevation, NAVD 88 (feet):	4.47
Source:	NOAA Ports	Water level from TOC (feet): 11.96	Time: 11:52
Water level instrument:	Solinst # 5955-1	Product level from TOC (feet): ND	Time: 11:52

CALCULATION OF WELL VOLUME:

(18.06 ft - 11.96 ft x (0.083 ft)² x π x 7.48 gal/ft³ =
well depth - water level x (well radius)² x π x gal/ft³ =

3.78 gallons in one casing volume
1.25 total gallons removed

CALIBRATION:

See "Daily Equip. Calib." Sheet

FIELD MEASUREMENTS:

Time	Temperature (°C)	pH S.U.	DO (mg/L)	ORP (mV)	EC (µmho/cm)	Turbidity (NTU)	Depth to Water (ft btoc)	Cumulative Liters Removed
12:02	20.38	7.31	2.89	26.6	1063	2.31	12.22	0.5
12:07	20.94	7.30	2.10	33.2	1016	2.60	12.49	1.0
12:12	20.34	7.26	1.97	38.6	1037	6.70	12.61	1.5
12:17	20.34	7.26	1.11	40.4	1032	2.15	12.75	2.0
12:22	20.30	7.27	0.96	40.5	1025	1.91	12.86	2.5
12:27	20.42	7.27	0.89	40.5	1024	1.88	13.11	3.0
12:32	20.48	7.27	0.86	42.2	1027	1.86	13.32	3.5
12:37	20.37	7.25	0.88	43.6	1048	2.04	13.48	4.0
12:42	20.36	7.25	0.86	43.7	1050	1.94	13.52	4.5

Purge method: Peristaltic Pump — Sample Time: 12:44
Duplicate/blank number: None — Duplicate Sample Time: —
Sampling equipment: Peristaltic Pump — VOA attachment: none
Sample containers: 6VOAs(HCl); 6RSK Vials (NP, HCl); 2-500ml ambers (HCl); 2-250ml PE (NP, HNO3); 1-1L PE (NP),
Sample analyses: 3-500ml PE (NP, HNO3, NaOH) 8260/8015, TPHD+MO; RSK175, TDS, Anions, Cations, Diss. Metals, Diss. Sulfide, TB = Lab
Laboratory
Decontamination method: Tap + DI Rinse — Rinsate disposal:
Comments: Installed new tubing in well
Diss. Cations, Fe+Mn = Field Filtered

TOC = top of casing
NAVD 88 = North American Vertical Datum of 1988.

GROUNDWATER SAMPLING

Well No.: **MW-3**

Project No. 4656016
Project Name: Harbor Facilities Center
Location: Port of Oakland
651 Maritime Street, Oakland, California
Weather: Overcast, breezy & warm
Precip. in past 5 days (in.): 0
Source: NOAA Ports
Water level instrument: Solinst #5855-1

Recorded by: S. Penman Date: 6/24/14
Depth of well from TOC (feet): 17.47
Well diameter (inches): 2
Screened interval from TOC (feet): 7.47-17.47
TOC elevation, NAVD 88 (feet):
Groundwater elevation, NAVD 88 (feet):
Water level from TOC (feet): 11.84 Time: 8:11
Product level from TOC (feet): 10.83 Time: 8:11

CALCULATION OF WELL VOLUME:

(17.47 ft - ____ ft x (0.083 ft)^2 x π x 7.48 gal/ft^3 = ____ gallons in one casing volume
well depth - water level x (well radius)^2 x π x gal/ft^3 = ____ total gallons removed

CALIBRATION:

FIELD MEASUREMENTS:

Time	Temperature (°C)	pH S.U.	DO (mg/L)	ORP (mV)	EC (µmho/cm)	Turbidity (NTU)	Depth to Water (ft btoc)	Cumulative Gallons Removed

Purge method: NONE
Duplicate/blank number:
Sampling equipment:
Sample containers:
Sample analyses:
Laboratory:
Decontamination method:
Comments: Product in well (Measured @ 10.83') Therefore no samples collected

Sample Time: ϕ
Duplicate Sample Time: ϕ
VOA attachment:
Rinsate disposal:

TOC = top of casing
NAVD 88 = North American Vertical Datum of 1988.

GROUNDWATER SAMPLING

Well No.: **MW-4**

Project No. 4656016
Project Name: Harbor Facilities Center
Location: Port of Oakland
651 Maritime Street, Oakland, California
Weather: Overcast & Cool ~58°F
Precip. in past 5 days (in.): -0-
Source: NOAA Ports
Water level instrument: Solinst #5855-1

Recorded by: S. Penman Date: 6/25/14
Depth of well from TOC (feet): 22.05
Well diameter (inches): 2
Screened interval from TOC (feet): 11.25-22.05
TOC elevation, NAVD 88 (feet): 15.91
Groundwater elevation, NAVD 88 (feet): 4.05
Water level from TOC (feet): 11.86 Time: 8:13
Product level from TOC (feet): ND Time: 8:13

CALCULATION OF WELL VOLUME:

(22.05 ft - 11.86 ft x (0.083 ft)² x π x 7.48 gal/ft³ = 1.66 gallons in one casing volume
well depth - water level x (well radius)² x π x gal/ft³ = 1.13 total gallons removed

CALIBRATION: See "Daily Equip. Calib" Sheet

FIELD MEASUREMENTS:

Time	Temperature (°C)	pH S.U.	DO (mg/L)	ORP (mV)	EC (µmho/cm)	Turbidity (NTU)	Depth to Water (ft btoc)	Cumulative ~~Gallons~~ Liters Removed
8:18	19.24	7.04	2.84	-132.6	1542	8.33	12.44	0.5
8:23	19.27	7.11	2.55	-150.1	1567	8.03	12.54	1.0
8:28	19.31	7.13	2.54	-163.9	1592	8.10	12.61	1.5
8:33	19.36	7.14	1.94	-153.7	1645	5.96	12.62	2.0
8:38	19.35	7.16	1.71	-156.9	1671	5.79	12.60	2.5
8:42	19.37	7.17	1.55	-156.5	1694	5.33	12.60	3.0
8:46	19.38	7.18	1.50	-161.1	1703	2.95	12.60	3.5
8:50	19.37	7.19	1.45	-159.2	1723	3.39	12.60	4.0

Purge method: Peristaltic Pump
Duplicate/blank number: MW-4 DUP
Sampling equipment: Peristaltic Pump
Sample containers: 6 VOAs (HCl); 6 RSK Vials (HCl + NP); 2-500 ambers (HCl); 1-1LPE (NP); 2-250 PE (NP, HNO3);
Sample analyses: 3-500ml (NaOH, HNO3, NP) 8260/8015/RSK-175; TPH D+MO; TDS, Anions, Cations, Diss. Metals
Laboratory Diss. Solids CTB = Lab
Decontamination method: Tap + DI Rinse
Comments: Diss. Cations, Fe + Mn = Field Filtered

Sample Time: 8:52
Duplicate Sample Time: 8:52
VOA attachment:
Rinsate disposal:

TOC = top of casing
NAVD 88 = North American Vertical Datum of 1988.

GROUNDWATER SAMPLING

Well No.: **MW-5**

Project No.	4656016	Recorded by: S. Penman	Date: 6/24/14
Project Name:	Harbor Facilities Center	Depth of well from TOC (feet):	20.8
Location:	Port of Oakland	Well diameter (inches):	2
	651 Maritime Street, Oakland, California	Screened interval from TOC (feet):	10.4-20.8
Weather:	Clear, breezy + warm 69°F	TOC elevation, NAVD 88 (feet):	15.39
Precip. in past 5 days (in.):	0	Groundwater elevation, NAVD 88 (feet):	6.06
Source:	NOAA Ports	Water level from TOC (feet): 9.33	Time: 13:41
Water level instrument:	Solinst #5055-1	Product level from TOC (feet): ND	Time: 13:41

CALCULATION OF WELL VOLUME:

(20.80 ft - 9.33 ft x (0.083 ft)² x π x 7.48 gal/ft³ = 1.87 gallons in one casing volume
well depth - water level x (well radius)² x π x gal/ft³ = 1.26 total gallons removed

CALIBRATION: See "Daily Equip. Calib" Sheet

FIELD MEASUREMENTS:

Time	Temperature (°C)	pH S.U.	DO (mg/L)	ORP (mV)	EC (µmho/cm)	Turbidity (NTU)	Depth to Water (ft btoc)	Cumulative ~~Gallons~~ Liters Removed
13:45	20.46	7.15	2.69	-117.5	2127	6.13	9.75	0.5
13:50	20.43	7.12	1.29	-95.8	2134	4.37	9.79	1.0
13:55	20.26	7.11	1.09	-90.9	2137	5.31	9.81	1.5
13:59	20.35	7.11	0.95	-87.7	2137	3.98	9.81	2.0
14:03	20.42	7.11	0.92	-86.6	2132	2.98	9.84	2.5
14:08	20.58	7.11	0.87	-86.8	2112	2.94	9.82	3.0
14:13	20.57	7.11	0.86	-86.8	2046	2.07	9.82	3.5
14:18	20.57	7.11	0.82	-86.6	2031	1.42	9.82	4.0
14:23	20.51	7.11	0.80	-84.9	2028	1.37	9.82	4.5

Purge method: Peristaltic Pump — Sample Time: 14:25
Duplicate/blank number: None — Duplicate Sample Time: —
Sampling equipment: Peristaltic Pump — VOA attachment:
Sample containers: 6 VOAs (HCl); 6-RSK vials (NP+HCl); 2-500 amber (HCl); 1-1L PE (NP); 2-250ml PE (NP+HNO3); 3-500ml PE (NP, HNO3, NaOH)
Sample analyses: 8260/BOAS; TPH-D+MO; TDS, Anions, Cations, Diss. Metals, Diss. Sulfide
Laboratory: CTB
Decontamination method: Tap + DI Rinse — Rinsate disposal:
Comments: Diss. Cations, Fe, Mn = Field Filtered

TOC = top of casing
NAVD 88 = North American Vertical Datum of 1988.

GROUNDWATER SAMPLING

Well No.: **MW-8A**

Project No. 4656016
Project Name: Harbor Facilities Center
Location: Port of Oakland
651 Maritime Street, Oakland, California
Weather: Partly Cloudy, warm ~60°F
Precip. in past 5 days (in.): 0
Source: NOAA Ports
Water level instrument: Solinst 5955-1

Recorded by: S. Penman Date: 6/25/14
Depth of well from TOC (feet): 23.14
Well diameter (inches): 2
Screened interval from TOC (feet): 7.54-22.54
TOC elevation, NAVD 88 (feet): 14.99
Groundwater elevation, NAVD 88 (feet): 3.75
Water level from TOC (feet): 11.24 Time: 10:34
Product level from TOC (feet): ND Time: 10:34

CALCULATION OF WELL VOLUME:

(23.14 ft - 11.24 ft) x (0.083 ft)^2 x π x 7.48 gal/ft^3 = 7.39 gallons in one casing volume
well depth - water level x (well radius)^2 x π x gal/ft^3 = 1.5 total gallons removed

CALIBRATION: see "Daily Equipment Calibration" sheet

FIELD MEASUREMENTS:

Time	Temperature (°C)	pH S.U.	DO (mg/L)	ORP (mV)	EC (µmho/cm)	Turbidity (NTU)	Depth to Water (ft btoc)	Cumulative Liters Gallons Removed
10:36	19.27	7.18	2.92	-156.1	2386	2.30	11.42	0.5
10:39	19.02	7.16	1.74	-153.6	2310	2.34	11.45	1.0
10:41	18.93	7.16	1.54	-147.0	2199	1.36	11.48	1.5
10:42	18.93	7.16	1.48	-145.8	2164	1.17	11.44	2.0
10:44	18.87	7.17	1.40	-139.6	2096	1.12	11.45	2.5
10:46	18.87	7.19	1.27	-138.5	2002	1.31	11.45	3.0
10:48	18.88	7.19	1.18	-141.0	1947	1.14	11.46	3.5
10:50	18.89	7.20	1.10	-141.1	1897	0.90	11.46	4.0
10:52	18.91	7.20	1.07	-141.3	1880	1.05	11.46	4.5
10:54	18.87	7.20	1.05	-142.3	1869	0.87	11.46	5.0
10:56	18.88	7.20	1.04	-142.5	1854	0.79	11.46	5.5

Purge method: Peristaltic Pump Sample Time: 10:58
Duplicate/blank number: None Duplicate Sample Time: —
Sampling equipment: Peristaltic Pump VOA attachment:
Sample containers: 6 VOAs (HCl); 6 RSK vials (HCl, NP); 2-500ml ambers (HCl); 1-1L PE (NP); 2-250ml PE (HNO3+NP);
Sample analyses: 3-500ml PE (NaOH, HNO3, NP); 8260/8015, TDS, Anions, Cations, RSK-175, TPH-D+MO; Diss.
Laboratory: Soltek/CTB = lab
Decontamination method: Tap + DI Rinse Rinsate disposal:
Comments: Diss. Cations, Fe+Mn = Field Filtered

TOC = top of casing
NAVD 88 = North American Vertical Datum of 1988.

GROUNDWATER SAMPLING

Well No.: **MW-9**

Project No.	4656016	Recorded by:	S. Perman
Project Name:	Harbor Facilities Center	Date:	6/24/14
Location:	Port of Oakland	Depth of well from TOC (feet):	25
	651 Maritime Street, Oakland, California	Well diameter (inches):	2
Weather:	Clear, breezy, warm ~69°F	Screened interval from TOC (feet):	15 - 25
Precip. in past 5 days (in.):	0	TOC elevation, NAVD 88 (feet):	16.33
Source:	NOAA Ports	Groundwater elevation, NAVD 88 (feet):	4.32
Water level instrument:	Solinst #5855-1	Water level from TOC (feet): 12.01	Time: 12:25
		Product level from TOC (feet): ND	Time: 12:25

CALCULATION OF WELL VOLUME:

(25.00 ft - 12.01 ft x (0.083 ft)^2 x π x 7.48 gal/ft^3 = 2.12 gallons in one casing volume
well depth - water level x (well radius)^2 x π x gal/ft^3 = 1.48 total gallons removed

CALIBRATION: See "Daily Equip. Calib." Sheet

FIELD MEASUREMENTS:

Time	Temperature (°C)	pH S.U.	DO (mg/L)	ORP (mV)	EC (µmho/cm)	Turbidity (NTU)	Depth to Water (ft btoc)	Cumulative ~~Gallons~~ Liters Removed
12:29	19.66	7.11	3.44	-148.4	2204	10.1	12.11	0.5
12:33	19.46	7.08	1.53	-151.5	2231	3.32	12.13	1.0
12:36	19.40	7.09	1.37	-150.3	2235	2.29	12.13	1.5
12:39	19.34	7.09	1.19	-136.1	2236	2.86	12.14	2.0
12:42	19.36	7.09	1.16	-128.8	2235	1.89	12.14	2.5
12:45	19.32	7.09	1.14	-113.5	2234	1.92	12.14	3.0
12:48	19.34	7.09	1.11	-140.3	2231	1.94	12.14	3.5
12:52	19.29	7.08	1.09	-130.6	2229	2.40	12.14	4.0
12:55	19.28	7.08	1.05	-126.3	2225	1.28	12.14	4.5
12:58	19.28	7.08	1.01	-125.7	2220	1.24	12.14	5.0

Purge method: Peristaltic pump — Sample Time: 13:00
Duplicate/blank number: None — Duplicate Sample Time: —
Sampling equipment: Peristaltic Pump — VOA attachment: ~~ND~~
Sample containers: 6 VOAs (HCl); 6-RSK Vials (HCl+NP); 2-500ml Ambers (~~ND~~); 1-1L PE (NP); 2-250 PE (NP, HNO3); 3-500ml
Sample analyses: PE (NaOH, HNO3, NP); 8260/8015, RSK-175, TPHD+MO; Anions, Cations, Diss. Metals; Diss. Sulfide
Laboratory: CTL
Decontamination method: Tap + DI Rinse — Rinsate disposal: —
Comments: Diss. Cations, Fe, Mn= Field Filtered

TOC = top of casing
NAVD 88 = North American Vertical Datum of 1988.

GROUNDWATER SAMPLING

Well No.: **MW-10**

Project No. 4656016
Project Name: Harbor Facilities Center
Location: Port of Oakland
651 Maritime Street, Oakland, California
Weather: Clear + warm 64°F
Precip. in past 5 days (in.): -0
Source: NOAA Ports
Water level instrument: Solinst #5855-1

Recorded by: S. Penman Date: 6/24/14
Depth of well from TOC (feet): 25
Well diameter (inches): 2
Screened interval from TOC (feet): 15 - 25
TOC elevation, NAVD 88 (feet): 15.65
Groundwater elevation, NAVD 88 (feet): 4.87
Water level from TOC (feet): 10.78 Time: 9:27
Product level from TOC (feet): ND Time: 9:27

CALCULATION OF WELL VOLUME:

(25.00 ft - 10.78 ft x (0.083 ft)^2 x π x 7.48 gal/ft^3 = 8.82 gallons in one casing volume
well depth - water level x (well radius)^2 x π x gal/ft^3 = 1.12 total gallons removed

CALIBRATION: See "Daily Equip. Calib" Sheet

FIELD MEASUREMENTS:

Time	Temperature (°C)	pH S.U.	DO (mg/L)	ORP (mV)	EC (µmho/cm)	Turbidity (NTU)	Depth to Water (ft btoc)	Cumulative ~~Gallons~~ Liters Removed
9:31	18.47	6.68	3.09	-110.2	3673	2.90	11.66	0.5
9:34	18.57	6.67	3.57	-119.7	3628	1.04	11.87	1.0
9:36	18.42	6.62	3.43	-122.7	3612	0.76	12.15	1.5
9:38	18.43	6.61	3.28	-124.8	3584	0.70	12.27	2.0
9:40	18.41	6.61	3.15	-124.5	3575	0.65	12.35	2.5
9:42	18.42	6.63	3.00	-128.7	3571	0.69	12.44	3.0
9:44	18.41	6.63	2.87	-132.7	3569	0.60	12.48	3.5
9:46	18.40	6.64	2.81	-134.7	3565	0.65	12.51	4.0

Purge method: Peristaltic pump Sample Time: 9:48
Duplicate/blank number: None Duplicate Sample Time: —
Sampling equipment: Peristaltic pump VOA attachment:
Sample containers: 6 VOAs (HCl); 6-RSK vials (NP+HCl); 1-1LPE (NP); 2-500ml ambers (NP); 2-250 PE (NP, HNO3); 3-500ml PE (NaOH, HNO3, NP); 8260/8015; TPHDMO; TDS, Anions, Cations, RSK-175; Diss. Metals; Diss. Sulfide
Laboratory: CTL
Decontamination method: Tap + DI Rinse Rinsate disposal:
Comments: Diss. Cations; Mn & Fe Field Filtered

TOC = top of casing
NAVD 88 = North American Vertical Datum of 1988.

GROUNDWATER SAMPLING

Well No.: **MW-11**

Project No. 4656016
Project Name: Harbor Facilities Center
Location: Port of Oakland
651 Maritime Street, Oakland, California
Weather: 50°F, overcast; early morning drizzle
Precip. in past 5 days (in.): 0
Source: NOAA Ports
Water level instrument: ~~9k 10.66@9:10~~ Solinst® 5650

Recorded by: J. Lee Date: 6/25/2014
Depth of well from TOC (feet): 25
Well diameter (inches): 2
Screened interval from TOC (feet): 15 - 25
TOC elevation, NAVD 88 (feet): 15.47
Groundwater elevation, NAVD 88 (feet): 4.81
Water level from TOC (feet): 10.66 Time: 9:10
Product level from TOC (feet): NR Time: —

CALCULATION OF WELL VOLUME:

(25.00 ft - 10.66 ft) x (0.083 ft)² x π x 7.48 gal/ft³ =
well depth - water level x (well radius)² x π x gal/ft³ =

8.90 gallons in one casing volume
2.42 total gallons removed
9.70 Liters (total removed)

CALIBRATION: see "Daily Equipment Calibration" sheet

FIELD MEASUREMENTS:

Time	Temperature (°C)	pH S.U.	DO (mg/L)	ORP (mV)	EC (µmho/cm)	Turbidity (NTU)	Depth to Water (ft btoc)	Cumulative Gallons Removed
9:20	—	—	—	—	—	—	▽=10.43 ft btoc set	
9:32	20.71	8.09	1.79	-133.2	4869	49.0	Initial (as is), 10.65	
9:34	20.80	8.15	1.75	-164.5	4911	34.1	10.65	1.0
9:37	20.93	8.18	2.52	-172.6	4927	26.1	10.66	1.5
9:40	21.02	8.17	3.08	-138.2	4938	23.3	10.67	2.0
9:43	21.13	8.17	2.96	-140.9	4941	16.6	10.66	2.5
9:46	21.17	8.19	2.67	-126.2	4947	15.2	10.65	3.0
9:49	21.13	8.19	2.41	-155.2	4951	12.4	10.65	3.5
9:51	21.17	8.19	2.30	-143.0	4951	12.1	10.65	4.0
9:55	21.18	8.19	2.16	-144.3	4950	11.4	10.66	4.5
9:59	21.13	8.19	2.09	-154.7	4948	10.3	10.66	5.0
10:02	21.15	8.17	1.91	-137.5	4949	10.7	10.66	5.5
10:05	20.97	8.18	1.93	-169.7	4954	10.2	10.67	6.0
10:08	21.14	8.17	1.75	-134.7	4953	9.39	10.66	6.5
10:11	21.16	8.16	2.58	-149.7	4952	9.43	10.67	7.0
10:14	21.12	8.16	1.72	-162.3	4954	8.59	10.66	7.5
10:18	21.37	8.12	2.04	-150.3	4955	8.20	10.66	8.0
10:21	21.30	8.15	1.63	-164.7	4961	8.07	10.66	8.5
10:24	21.40	8.16	1.52	-167.7	4961	7.69	10.66	9.0
10:27	21.50	8.14	1.44	-170.2	4962	7.30	10.66	9.5

Purge method: Peristaltic Pump & Dedicated Tubing
Sample Time: 10:28
Duplicate/blank number: None
Duplicate Sample Time: NA
Sampling equipment: Peristaltic Pumps
VOA attachment:
Sample containers: 6 VOAs, 6 BSK; 1-1L poly, 2-500ml Ambers, 1-250ml PB (H2O); 1-500ml (NaOH); 1-500ml (H2SO4); 1-500ml (HNO3); 1-250ml
Sample analyses: 8260, 8015; TPH-D+MO; Anions, cations; Diss. Metals; CO2, Diss. Gases; Diss. Sulfide
Laboratory: CTB
Decontamination method: Tap water, DI Rinse
Rinsate disposal:
Comments: Overall color: lt. yellowish/tan Diss. Cations/Fe/Mn = Field Filtered
▽ AFT. SAMPLING: 10.66 @ 11:08 Samples reacted effervescently w/ HCl.

TOC = top of casing
NAVD 88 = North American Vertical Datum of 1988.

GROUNDWATER SAMPLING

Well No.: **MW-12**

Project No. 4656016
Project Name: Harbor Facilities Center
Location: Port of Oakland
651 Maritime Street, Oakland, California
Weather: Partly sunny, 60's°F; breezy
Precip. in past 5 days (in.): 0
Source: NOAA Ports
Water level instrument: Solinst #56500

Recorded by: J. Lee Date: 6/25/2014
Depth of well from TOC (feet): 25
Well diameter (inches): 2
Screened interval from TOC (feet): 15 - 25
TOC elevation, NAVD 88 (feet): 16.79
Groundwater elevation, NAVD 88 (feet): 4.91
Water level from TOC (feet): 11.88 Time: 11:32
Product level from TOC (feet): ND Time: NA

CALCULATION OF WELL VOLUME:

(25.00 ft - 11.88 ft x (0.083 ft)² x π x 7.48 gal/ft³ =
well depth - water level x (well radius)² x π x gal/ft³ =

8.19 gallons in one casing volume
1.32 total gallons removed
5.3 total Liters removed

CALIBRATION:

see "Daily Equip. Calib." Sheet

FIELD MEASUREMENTS:

Time	Temperature (°C)	pH S.U.	DO (mg/L)	ORP (mV)	EC (µmho/cm)	Turbidity (NTU)	Depth to Water (ft btoc)	Cumulative Liters ~~Gallons~~ Removed
11:50	–	–	✓	✓	–	–	11.88 w/tape set	
11:54	18.92	7.54	1.45	-158.9	1629	34.8	Initial 12.00	0.5L (Initial)
11:56	18.64	7.79	0.71	-166.5	1619	14.8	12.00	1.0L
11:58	18.66	7.76	0.68	-172.2	1609	9.68	12.00	1.5
12:02	18.63	7.68	0.80	-173.1	1591	7.43	12.00	2.0
12:04	18.60	7.64	0.91	-168.8	1586	8.58	12.00	2.5
12:07	18.58	7.61	0.76	-171.7	1580	8.34	12.01	3.0
12:09	18.53	7.59	0.61	-172.0	1580	7.34	12.01	3.5
12:12	18.56	7.57	0.50	-174.5	1573	6.52	12.02	4.0
12:15	18.50	7.55	0.42	-176.4	1571	5.36	12.03	4.5
12:17	18.49	7.65	0.41	-180.0	1570	5.76	12.03	5.0

Purge method: Peristaltic Pump + Ded. Tubing
Sample Time: 12:17
Duplicate/blank number: NDAR
Duplicate Sample Time: NA
Sampling equipment: Peristaltic Pump
VOA attachment:
Sample containers: 6 VOAs, 6 -125K vials; 1-1L PE; 2-500ml ambers; 2-250ml PE (NPH HNO3); 3-500ml PE (NaOH, HNO3 + ZnAc)
Sample analyses: 8260, 8015, TPH-D+MO; TDS, Anions, Cations, RSK-175; Diss. Metals; Diss. Sulfide
Laboratory: CTB
Decontamination method: Tap + DI Rinse
Rinsate disposal:
Comments: Slight H2S odor. Overall color: clear. Samples reacted slightly w/HCl.
2 aft. Sampling = 12.03 @ 12:43. Diss. Cations/Mn/Fe = Field Filtered

TOC = top of casing
NAVD 88 = North American Vertical Datum of 1988

GROUNDWATER SAMPLING

Well No.: **RW-4**

Project No.	04656020.HFC1	Recorded by: J. Lee	Date: 6/25/2014
Project Name:	Harbor Facilities Center	Depth of well from TOC (feet):	17.01
Location:	Port of Oakland	Well diameter (inches):	4
	651 Maritime Street, Oakland, California	Screened interval from TOC (feet):	7.01 - 17.01
Weather:	60°s0F; slight sunny, more overcast, windy	TOC elevation, NAVD 88 (feet):	14.92
Precip. in past 5 days (in.):	0	Groundwater elevation, NAVD 88 (feet):	0.78
Source:	NOAA Ports	Water level from TOC (feet): 14.14	Time: 13:14
Water level instrument:	Solinst 9w4 5855-1	Product level from TOC (feet): 10.46	Time: 13:13

CALCULATION OF WELL VOLUME:

(17.01 ft - 14.14 ft x (0.167 ft)² x π x 7.48 gal/ft³ =
well depth - water level x (well radius)² x π x gal/ft³ =

3.58 2.68 gallons in one casing volume
1.15 total gallons removed
4.6 total Liters removed

CALIBRATION: See "Daily Equipment Calibration" Sheet

FIELD MEASUREMENTS:

Time	Temperature (°C)	pH S.U.	DO (mg/L)	ORP (mV)	EC (µmho/cm)	Turbidity (NTU)	Depth to Water (ft btoc)	Cumulative Gallons Removed
-	-	-	-	-	-	-	-	Liters Initial (0.5) 9L
13:30	22.58	7.54	1.96	-130.5	1179	9.95	14.45	Initial (0.5L)
13:35	22.80	7.37	1.41	-129.2	1169	8.24	NA	1.0L
13:39	22.90	7.34	0.81	-125.2	1166	7.56	NA	1.5L
13:44	22.77	7.35	0.64	-123.0	1164	6.44	NA	2.0
13:49	22.78	7.28	0.56	-122.7	1163	6.36	NA	2.5
13:62	22.53	7.28	0.55	-127.3	1161	6.31	NA	3.0
13:57	22.57	7.26	0.44	-122.9	1159	6.54	NA	3.5
14:01	22.64	7.26	0.40	-122.3	1158	7.41	NA	4.0
14:04	22.58	7.24	0.37	-124.5	1157	6.09	NA	4.5

Purge method: Peristaltic Pump + New Tubing (PE x2; Si tubing) Sample Time: 14:15
Duplicate/blank number: NONE Duplicate Sample Time: NONE
Sampling equipment: Peristaltic Pump VOA attachment:
Sample containers: 6 VOAs (HCl); 6-RSK vials (NP + HCl); 1-1L PE (NP); 2-250ml PE (H2SO4, NP); 3-500ml PE (NP, HNO3, NaOH)
Sample analyses: 2-500ml ambers (NP) 8015/8260; TPH-DRMO; TDS, Anions, Cations, RSK-175; DISS. Metals; DISS. Sulfide
Laboratory: CTB
Decontamination method: Tap + DI Rinse Rinsate disposal:
Comments: Set @ closest pump speed. Very light sheen and odor (pet.-like) in purged wtr; Overall color: lt tan w/blk. particles
"NA" - had to use o/w @ another well (RW-8); DTS. Cations/Mn/Fe = Field Filtered @ 19' @ 30'

TOC = top of casing
NAVD 88 = North American Vertical Datum of 1988.

GROUNDWATER SAMPLING

Well No.: **RW-8**

Project No. 04656020.HFC1
Project Name: Harbor Facilities Center
Location: Port of Oakland
651 Maritime Street, Oakland, California
Weather: Mostly cloudy, breezy & warm ~ 62°F
Precip. in past 5 days (in.): -0
Source: NOAA Ports
Water level instrument: Solinst #5855-1

Recorded by: S. Penman Date: 6/25/14
Depth of well from TOC (feet): 17.98
Well diameter (inches): 4
Screened interval from TOC (feet): 7.98 - 17.98
TOC elevation, NAVD 88 (feet): 15.91
Groundwater elevation, NAVD 88 (feet): 4.65
Water level from TOC (feet): 11.26 Time: 14:00
Product level from TOC (feet): 9.13 Time: 14:00

CALCULATION OF WELL VOLUME:

(17.98 ft - 11.26 ft) x (0.167 ft)² x π x 7.48 gal/ft³ = 4.39 gallons in one casing volume
well depth - water level x (well radius)² x π x gal/ft³ = 0.87 total gallons removed

CALIBRATION: See "Daily Equip Calib." Sheet

FIELD MEASUREMENTS:

Time	Temperature (°C)	pH S.U.	DO (mg/L)	ORP (mV)	EC (µmho/cm)	Turbidity (NTU)	Depth to Water (ft btoc)	Cumulative ~~Gallons~~ Liters Removed
14:06	22.79	6.67	2.15	-149.5	4401	7.86	11.50	0.5
14:11	22.73	6.65	1.32	-141.2	4393	6.75	11.59	1.0
14:16	23.16	6.65	1.25	-134.6	4397	11.1	11.69	1.5
14:21	22.92	6.66	1.12	-135.5	4404	7.22	11.76	2.0
14:26	23.03	6.65	1.00	-136.3	4399	7.56	11.88	2.5
14:31	23.18	6.64	0.97	-136.4	4395	7.89	11.96	3.0
14:36	23.12	6.64	0.95	-134.8	4398	8.25	12.03	3.5

Purge method: Peristaltic Pump Sample Time: 14:38
Duplicate/blank number: None Duplicate Sample Time: —
Sampling equipment: Peristaltic Pump VOA attachment:
Sample containers: 6 VOAs (HCl); 6 RSK vials (NP+ HCl); 1-1L PE (NP); 2-250ml PE (HNO3, NP); 3-500ml PE (NP, HNO3, NaOH);
Sample analyses: 2-500ml ambers (NP) 8015/8260-TPH-DtMO; TDS, Anions, Cations, RSK-175, Diss. Metals; Diss. Sulfide
Laboratory: CTB
Decontamination method: Tap + DI Rinse Rinsate disposal:
Comments: Diss. Cations/Mn/Fe= Field Filtered

TOC = top of casing
NAVD 88 = North American Vertical Datum of 1988.

Depth to Water and Free Product Measurements
Harbor Facilities Complex
Port of Oakland, CA

TIME	Recovery Well	Depth to Product (feet)	Depth to Water (feet)	Product Thickness (feet)	
	Site Visit Date:	June 24, 2014			
	Recorded By:	S. Penman + J. Lee			
	RW-1	Inaccessible			
8:31	RW-2	ND	10.09	0	sheen/odor
8:14	RW-3	ND	10.84	0	product on probe ~4" did not register on solinst
8:18	RW-4	ND	9.44	0	sheen/odor
8:29	RW-5	unaccessible			
8:24	RW-6	9.00	10.84	1.84	
8:20	RW-7	8.24	12.65	4.41	
8:27	RW-8	9.41	11.55	2.14	
8:35	RW-9	9.90	11.91	2.01	
9:00	MW-1	ND	11.19	0	
8:09	MW-2	ND	11.94	0	
8:11	MW-3	10.83	11.84	1.01	
8:45	MW-4	ND	11.88	0	
8:47	MW-5	ND	9.36	0	
8:51	MW-8A	ND	11.26	0	
8:53	MW-9	ND	12.01	0	
8:58	MW-10	ND	10.77	0	
8:03	MW-11	ND	10.47	0	
8:05	MW-12	ND	11.92	0	

Environmental
Sampling Services, LLC

Project Name: Port of Oakland
Project Address: 651 Maritime Street, California
Task: June 2014 Semi-Annual Groundwater Monitoring Event

DAILY EQUIPMENT CALIBRATION SHEET

Date	Time	Instrument Serial Number	Probe Serial Number	Dissolved Oxygen (%)	pH			Specific Conductivity (1,000 µs/cm°)	ORP (231 mV)	Turbidity (0.02 NTU)
					4	7	10			
6/24/14	9:13	556MPS	09C100612	100.4	3.99	6.99	10.01	1,000	231.0	0.02
6/25/14	7:40	556MPS	09C100612	100.1	3.99	7.00	10.01	1,000	231.0	0.02
6/25/14	9:13	556MPS	09C100611	100.3	4.00	7.00	9.95	1,000	231.7	0.02

258404

Environmental Sampling Services, LLC

6680 Alhambra Avenue, #102
Martinez, California 94553-6105
Telephone: (925) 372-8108
www.envsampling.com

CHAIN OF CUSTODY RECORD

Page 1 of 1

TURN AROUND TIME — Other:

LABORATORY: Curtis Tompkins, Ltd., Berkeley, CA

☐ 24 Hours	☐ 48 Hours	☐ 1 Week	☑ Normal

Report To:	Ms. Caroline Orsi	**Telephone/Fax:**	510-652-4500 / 510-652-4906
Company:	Arcadis U.S., Inc.	**Project Name:**	Port HFC
Address:	2000 Powell Street, 7th Floor Emeryville, CA 94608	**Project Number:** **Bill To:**	04656016.0000 Port of Oakland
E-Mail Results to & cc:	caroline.orsi@arcadis-us.com		
Sampler(s):	Jacqueline Lee ☐	**Sampler's Signature:**	
	Stephen Penman ☑	**Sampler's Signature:**	

Reporting Requirement: PDF: Yes ☑ No ☐ **EPA Data Report:** Level II

EDD File: Yes ☑ No ☐ Electronic (EDF) : Yes ☑ No ☐

	SAMPLE ID	Sample Date	Sample Time	Number of Containers	Type of Container[1]	Matrix: Water	Groundwater	Soil	Soil Vapor	Other	Preservative: Ice	HCl	HNO_3	NaOH	TPH-Gasoline (EPA 8015B)	BTEX & MTBE (EPA 8260B)	Methane (RSK-175)	Carbon Dioxide (RSK-175)	TPH-D & MO (EPA 8015B) w/Silica Gel Cleanup	TDS (40CFR136/160.1)	Major Anions (EPA 300.0) * see "comme	Dissolved Sulfide (EPA E376.2)	Field Filtered (FF): Dissolved Na, Ca, K, and Mg (EPA 200.7)	Dissolved Fe and Mn (EPA SW6010B)	Comments
1	QCTB-1	6/24/14	9:30	6	1	x					x	x			x	x									
2	MW-10	6/24/14	9:48	20	1, 2, 3		x				x	x	x	x	x	x	x	x	x	x	x	x	x	x	Major Anions =
3	MW-1	6/24/14	11:28	20	1,2,3		X				X	X	X	X	X	X	X	X	X	X	X	X	X	X	Bicarbonate,
4	MW-9	6/24/14	13:00	20	1,2,3		X				X	X	X	X	X	X	X	X	X	X	X	X	X	X	Carbonate,
5	MW-5	6/24/14	14:25	20	1,2,3		X				X	X	X	X	X	X	X	X	X	X	X	X	X	X	Sulfate, Chloride,
																									Nitrate, Nitrite,
																									and
																									Orthophosphate.

Relinquished By:	Date:	Time:	Received By:
	6/24/14	15:45	
Relinquished By:	Date:	Time:	Received By:
Relinquished By:	Date:	Time:	Received By:

[1] = Sample Container Type: 1 = VOA 2 = Glass 3 = High Density Polyethylene 4 = Summa Canister

QUESTIONS REGARDING COC, CALL ESS

Send confirmation to: caroline.orsi@arcadis-us.com

After log-in, please email COC to:

jlee@envsampling.com and spen@envsampling.com

SAMPLE RECEIPT

☑ Intact ☐ Cold
☑ On Ice ☐ Ambient
Preservative Correct?
☑ Yes ☐ No ☐ NA

258450

Environmental Sampling Services, LLC
6680 Alhambra Avenue, #102
Martinez, California 94553-6105
Telephone: (925) 372-8108
www.envsampling.com

CHAIN OF CUSTODY RECORD

Page 1 of 1

TURN AROUND TIME

LABORATORY: Curtis Tompkins, Ltd. Berkeley, CA

☐ 24 Hours ☐ 48 Hours ☐ 1 Week ☑ Normal Other:

Report To: Ms. Caroline Orsi
Company: Arcadis U.S., Inc.
Address: 2000 Powell Street, 7th Floor, Emeryville, CA 94608
E-Mail Results to: caroline.orsi@arcadis-us.com
& cc:
Telephone/Fax: 510-652-4500 / 510-652-4906
Project Name: Port HFC
Project Number: 046560016.0000
Bill To: Port of Oakland

Sampler(s): Jacqueline Lee ☐ Stephen Penman ☑
Sampler's Signature:
Sampler's Signature:

Reporting Requirement:
EDD File: Yes ☑ No ☐ PDF: Yes ☑ No ☐ EPA Data Report: Level II
Electronic (EDF): Yes ☑ No ☐

Analysis Request

SAMPLE ID	Sample Date	Sample Time	Number of Containers	Type of Container[1]	Matrix: Water	Groundwater	Soil	Soil Vapor	Other	Preservative: Ice	HCl	HNO_3	NaOH	TPH-Gasoline (EPA 8015B)	BTEX & MTBE (EPA 8260B)	Methane (RSK-175)	Carbon Dioxide (RSK-175)	TPH-D & MO (EPA 8015B) w/Silica Gel Cleanup	TDS (40CFR136/160.1)	Major Anions (EPA 300.0) * see "comme	Dissolved Sulfide (EPA E376.2)	Field Filtered (FF): Dissolved Na, Ca, K, and Mg (EPA 200.7)	Dissolved Fe and Mn (EPA SW6010B)	Comments
1 QCTB-2	6/25/14	7:50	6	1	x					x	x			x	x									
2 MW-4	6/25/14	8:52	20	1, 2, 3		x				x	x	x	x	x	x	x	x	x	x	x	x	x	x	Major Anions =
3 MW-4DUP	6/25/14	8:52	20	1,2,3		X				X	X	X	X	X	X	X	X	X	X	X	X	X	X	Bicarbonate,
4 MW-11	6/25/14	10:28	20	1,2,3		X				X	X	X	X	X	X	X	X	X	X	X	X	X	X	Carbonate,
5 MW-8A	6/25/14	10:58	20	1,2,3		X				X	X	X	X	X	X	X	X	X	X	X	X	X	X	Sulfate, Chloride,
6 MW-12	6/25/14	12:17	20	1,2,3		X				X	X	X	X	X	X	X	X	X	X	X	X	X	X	Nitrate, Nitrite,
7 MW-2	6/25/14	12:44	20	1,2,3		X				X	X	X	X	X	X	X	X	X	X	X	X	X	X	and
8 RW-4	6/25/14	14:05	20	1,2,3		X				X	X	X	X	X	X	X	X	X	X	X	X	X	X	Orthophosphate.
9 RW-8	6/25/14	14:38	20	1,2,3		X				X	X	X	X	X	X	X	X	X	X	X	X	X	X	

Relinquished By:	Date:	Time:	Received By:
	6/25/14	16:07	
Relinquished By:	Date:	Time:	Received By:
Relinquished By:	Date:	Time:	Received By:

[1] = Sample Container Type: 1 =VOA 2=Glass 3=High Density Polyethylene 4=Summa Canister

QUESTIONS REGARDING COC, CALL ESS
Send confirmation to: caroline.orsi@arcadis-us.c
After log-in, please email COC to:
jlee@envsampling.com and spen@envsampling.com

SAMPLE RECEIPT
☐ Intact ☐ Cold
☑ On Ice ☐ Ambient
Preservative Correct?
☑ Yes ☐ No ☐

Appendix B

Laboratory Analytical Reports


Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

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

Laboratory Job Number 258404
ANALYTICAL REPORT

Arcadis	Project : 04656016.0000
2000 Powell St.	Location : Port HFC
Emeryville, CA 94608	Level : II

Sample ID	Lab ID
QCTB-1	258404-001
MW-10	258404-002
MW-1	258404-003
MW-9	258404-004
MW-5	258404-005

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

Signature: _____ Date: 07/08/2014

Will S Rice
Project Manager
will.rice@ctberk.com

CA ELAP# 2896, NELAP# 4044-001

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**258404**
Client:	**Arcadis**
Project:	**04656016.0000**
Location:	**Port HFC**
Request Date:	**06/24/14**
Samples Received:	**06/24/14**

This data package contains sample and QC results for five water samples, requested for the above referenced project on 06/24/14. The samples were received cold and intact.

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.

Dissolved Gases by GC/FID (RSK-175):
No analytical problems were encountered.

Metals (EPA 6010B):
No analytical problems were encountered.

Metals (EPA 200.7):
The samples were filtered outside the 40CFR136 recommended 15 minute holding time. No other analytical problems were encountered.

Ion Chromatography (EPA 300.0):
No analytical problems were encountered.

Alkalinity (SM2320B):
No analytical problems were encountered.

Dissolved Sulfide (SM4500S2-D):
No analytical problems were encountered.

Total Dissolved Solids (TDS) (SM2540C):
No analytical problems were encountered.

Orthophosphate Phosphorous (SM4500P-E):
No analytical problems were encountered.

Dissolved CO2 by GC TCD (RSK-175):
Cal Science in Garden Grove, CA performed the analysis (NELAP certified). Please see the Cal Science case narrative.

Environmental Sampling Services, LLC
6680 Alhambra Avenue, #102
Martinez, California 94553-6105
Telephone: (925) 372-8108
www.envsampling.com

CHAIN OF CUSTODY RECORD

Page 1 of 1

TURN AROUND TIME Other:

LABORATORY: Curtis Tompkins, Ltd. Berkeley, CA

☐ 24 Hours	☐ 48 Hours	☐ 1 Week	☑ Normal

Report To: Ms. Caroline Orsi **Telephone/Fax:** 510-652-4500 / 510-652-4906
Company: Arcadis U.S., Inc. **Project Name:** Port HFC
Address: 2000 Powell Street, 7th Floor **Project Number:** 04656016.0000
Emeryville, CA 94608 **Bill To:** Port of Oakland
E-Mail Results to caroline.orsi@arcadis-us.com
& cc:
Sampler(s): Jacqueline Lee ☐ **Sampler's Signature:**
Stephen Penman ☑ **Sampler's Signature:**

Reporting Requirement: PDF: Yes ☑ No ☐ **EPA Data Report:** Level II
EDD File: Yes ☑ No ☐ Electronic (EDF) : Yes ☑ No ☐

	SAMPLE ID	Sample Date	Sample Time	Number of Containers	Type of Container[1]	Matrix: Water	Groundwater	Soil	Soil Vapor	Other	Preservative: Ice	HCl	HNO_3	NaOH
1	QCTB-1	6/24/14	9:30	6	1	x					x	x		
2	MW-10	6/24/14	9:48	20	1, 2, 3		x				x	x	x	x
3	MW-1	6/24/14	11:28	20	1,2,3		X				X	X	X	X
4	MW-9	6/24/14	13:00	20	1,2,3		X				X	X	X	X
5	MW-5	6/24/14	14:25	20	1,2,3		X				X	X	X	X

Analysis Request

TPH-Gasoline (EPA 8015B)	BTEX & MTBE (EPA 8260B)	Methane (RSK-175)	Carbon Dioxide (RSK-175)	TPH-D & MO (EPA 8015B) w/Silica Gel Cleanup	TDS (40CFR136/160.1)	Major Anions (EPA 300.0) * see "comme	Dissolved Sulfide (EPA E376.2)	Field Filtered (FF): Dissolved Na, Ca, K, and Mg (EPA 200.7)	Dissolved Fe and Mn (EPA SW6010B)
x	x								
x	x	x	x	x	x	x	x	x	x
X	X	X	X	X	X	X	X	X	X
X	X	X	X	X	X	X	X	X	X
X	X	X	X	X	X	X	X	X	X

Comments

Major Anions = Bicarbonate, Carbonate, Sulfate, Chloride, Nitrate, Nitrite, and Orthophosphate.

Relinquished By:	Date:	Time:	Received By:
	6/24/14	15:45	
Relinquished By:	Date:	Time:	Received By:
Relinquished By:	Date:	Time:	Received By:

1 = Sample Container Type: 1 =VOA 2=Glass 3=High Density Polyethylene 4=Summa Canister

QUESTIONS REGARDING COC, CALL ESS
Send confirmation to: caroline.orsi@arcadis-us.c
After log-in, please email COC to:
jlee@envsampling.com and spen@envsampling.com

SAMPLE RECEIPT
☑ Intact ☐ Cold
☑ On Ice ☐ Ambient
Preservative Correct?
☑ Yes ☐ No ☐ NA

COOLER RECEIPT CHECKLIST

Curtis & Tompkins, Ltd.

Login # 258404 Date Received 6/24/14 Number of coolers 2
Client Arcadis Project 04656016.0000

Date Opened 6/24/14 By (print) MC (sign) [signature]
Date Logged in 6/24/14 By (print) [signature] (sign) [signature]

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

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

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

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

Type of ice used: ☒ Wet ☐ Blue/Gel ☐ None Temp(°C) 1.8/2.1

☐ 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, 10/11

Curtis & Tompkins Sample Preservation for 258404

Sample	pH: <2	>9	>12	Other
-002a	[ ]	[ ]	[ ]	_____
b	[ ]	[ ]	[ ]	_____
c	[ ]	[ ]	[ ]	_____
d	[ ]	[ ]	[ ]	_____
e	[ ]	[ ]	[ ]	_____
f	[ ]	[ ]	[ ]	_____
g	[ ]	[ ]	[ ]	_____
h	[ ]	[ ]	[ ]	_____
i	[ ]	[ ]	[ ]	_____
j	[ ]	[ ]	[ ]	_____
k	[ ]	[ ]	[ ]	_____
l	[ ]	[ ]	[ ]	_____
m	[X]	[ ]	[ ]	_____
n	[ ]	[ ]	[ ]	_____
o	[X]	[ ]	[ ]	_____
p	[ ]	[ ]	[X]	_____
q	[ ]	[ ]	[ ]	_____
r	[ ]	[ ]	[ ]	_____
s	[ ]	[ ]	[ ]	_____
t	[ ]	[ ]	[ ]	_____
-003a	[ ]	[ ]	[ ]	_____
b	[ ]	[ ]	[ ]	_____
c	[ ]	[ ]	[ ]	_____
d	[ ]	[ ]	[ ]	_____
e	[ ]	[ ]	[ ]	_____
f	[ ]	[ ]	[ ]	_____
g	[ ]	[ ]	[ ]	_____
h	[ ]	[ ]	[ ]	_____
i	[ ]	[ ]	[ ]	_____
j	[ ]	[ ]	[ ]	_____
k	[ ]	[ ]	[ ]	_____
l	[ ]	[ ]	[ ]	_____
m	[X]	[ ]	[ ]	_____
n	[ ]	[ ]	[ ]	_____
o	[X]	[ ]	[ ]	_____
p	[ ]	[ ]	[X]	_____
q	[ ]	[ ]	[ ]	_____
r	[ ]	[ ]	[ ]	_____
s	[ ]	[ ]	[ ]	_____
t	[ ]	[ ]	[ ]	_____
-004a	[ ]	[ ]	[ ]	_____
b	[ ]	[ ]	[ ]	_____
c	[ ]	[ ]	[ ]	_____
d	[ ]	[ ]	[ ]	_____
e	[ ]	[ ]	[ ]	_____
f	[ ]	[ ]	[ ]	_____
g	[ ]	[ ]	[ ]	_____
h	[ ]	[ ]	[ ]	_____
i	[ ]	[ ]	[ ]	_____
j	[ ]	[ ]	[ ]	_____
k	[ ]	[ ]	[ ]	_____
l	[ ]	[ ]	[ ]	_____
m	[X]	[ ]	[ ]	_____
n	[ ]	[ ]	[ ]	_____

Sample	pH: <2	>9	>12	Other
o	[X]	[ ]	[ ]	_____
p	[ ]	[ ]	[X]	_____
q	[ ]	[ ]	[ ]	_____
r	[ ]	[ ]	[ ]	_____
s	[ ]	[ ]	[ ]	_____
t	[ ]	[ ]	[ ]	_____
-005a	[ ]	[ ]	[ ]	_____
b	[ ]	[ ]	[ ]	_____
c	[ ]	[ ]	[ ]	_____
d	[ ]	[ ]	[ ]	_____
e	[ ]	[ ]	[ ]	_____
f	[ ]	[ ]	[ ]	_____
g	[ ]	[ ]	[ ]	_____
h	[ ]	[ ]	[ ]	_____
i	[ ]	[ ]	[ ]	_____
j	[ ]	[ ]	[ ]	_____
k	[ ]	[ ]	[ ]	_____
l	[ ]	[ ]	[ ]	_____
m	[X]	[ ]	[ ]	_____
n	[ ]	[ ]	[ ]	_____
o	[X]	[ ]	[ ]	_____
p	[ ]	[ ]	[X]	_____
q	[ ]	[ ]	[ ]	_____
r	[ ]	[ ]	[ ]	_____
s	[ ]	[ ]	[ ]	_____
t	[ ]	[ ]	[ ]	_____

Analyst: MC

Date: 06/24/14

Page 1 of 1

Curtis & Tompkins, Ltd.

Detections Summary for 258404

Client : Arcadis
Project : 04656016.0000
Location : Port HFC

Client Sample ID : QCTB-1 Laboratory Sample ID : 258404-001

No Detections

Client Sample ID : MW-10 Laboratory Sample ID : 258404-002

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Gasoline C7-C12	320	Y	50	5.7	ug/L	As Recd	1.000	EPA 8015B	EPA 5030B
Diesel C10-C24	260		49	16	ug/L	As Recd	1.000	EPA 8015B	EPA 3520C
Benzene	60		0.5	0.1	ug/L	As Recd	1.000	EPA 8260B	EPA 5030B
Methane	7.2		0.005	0.001	mg/L	As Recd	1.000	RSK-175	METHOD
Iron	14,000		100	6.0	ug/L	DISS.	1.000	EPA 6010B	METHOD
Manganese	5,700		5.0	0.27	ug/L	DISS.	1.000	EPA 6010B	METHOD
Calcium	380,000		100,000	8,700	ug/L	DISS.	500.0	EPA 200.7	METHOD
Potassium	32,000		500	26	ug/L	DISS.	1.000	EPA 200.7	METHOD
Magnesium	200,000		100,000	12,000	ug/L	DISS.	500.0	EPA 200.7	METHOD
Sodium	990,000		250,000	18,000	ug/L	DISS.	500.0	EPA 200.7	METHOD
Chloride	560		20	1.4	mg/L	TOTAL	100.0	EPA 300.0	METHOD
Sulfate	2.5		0.50	0.026	mg/L	TOTAL	1.000	EPA 300.0	METHOD
Alkalinity, Bicarbonate	1,100		6.7		mg/L	TOTAL	6.700	SM2320B	METHOD
Alkalinity, Total as CaCO3	1,100		6.7		mg/L	TOTAL	6.700	SM2320B	METHOD
Dissolved Sulfide	0.14		0.04		mg/L	TOTAL	1.000	SM4500S2-D	METHOD
Total Dissolved Solids	2,070		14		mg/L	TOTAL	1.429	SM2540C	METHOD

Curtis & Tompkins, Ltd.

Client Sample ID : MW-1 Laboratory Sample ID : 258404-003

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Gasoline C7-C12	1,500	Y	50	5.7	ug/L	As Recd	1.000	EPA 8015B	EPA 5030B
Diesel C10-C24	1,500		49	16	ug/L	As Recd	1.000	EPA 8015B	EPA 3520C
Benzene	7.0		0.5	0.1	ug/L	As Recd	1.000	EPA 8260B	EPA 5030B
Toluene	1.8		0.5	0.1	ug/L	As Recd	1.000	EPA 8260B	EPA 5030B
Ethylbenzene	1.4		0.5	0.2	ug/L	As Recd	1.000	EPA 8260B	EPA 5030B
m,p-Xylenes	1.1		0.5	0.1	ug/L	As Recd	1.000	EPA 8260B	EPA 5030B
o-Xylene	1.2		0.5	0.1	ug/L	As Recd	1.000	EPA 8260B	EPA 5030B
Methane	8.5		0.005	0.001	mg/L	As Recd	1.000	RSK-175	METHOD
Iron	670		100	6.0	ug/L	DISS.	1.000	EPA 6010B	METHOD
Manganese	690		5.0	0.27	ug/L	DISS.	1.000	EPA 6010B	METHOD
Calcium	23,000		500	17	ug/L	DISS.	1.000	EPA 200.7	METHOD
Potassium	1,000		500	26	ug/L	DISS.	1.000	EPA 200.7	METHOD
Magnesium	17,000		500	24	ug/L	DISS.	1.000	EPA 200.7	METHOD
Sodium	46,000		500	37	ug/L	DISS.	1.000	EPA 200.7	METHOD
Chloride	8.2		1.0	0.069	mg/L	TOTAL	5.000	EPA 300.0	METHOD
Alkalinity, Bicarbonate	230		6.7		mg/L	TOTAL	6.700	SM2320B	METHOD
Alkalinity, Total as CaCO3	230		6.7		mg/L	TOTAL	6.700	SM2320B	METHOD
Dissolved Sulfide	0.21		0.04		mg/L	TOTAL	1.000	SM4500S2-D	METHOD
Orthophosphate (as P)	0.048		0.030	0.003	mg/L	TOTAL	1.000	SM4500P-E	METHOD
Total Dissolved Solids	250		10		mg/L	TOTAL	1.000	SM2540C	METHOD

Client Sample ID : MW-9 Laboratory Sample ID : 258404-004

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Gasoline C7-C12	200	Y	50	5.7	ug/L	As Recd	1.000	EPA 8015B	EPA 5030B
Diesel C10-C24	110	Y	49	16	ug/L	As Recd	1.000	EPA 8015B	EPA 3520C
Benzene	11		0.5	0.1	ug/L	As Recd	1.000	EPA 8260B	EPA 5030B
Ethylbenzene	0.6		0.5	0.2	ug/L	As Recd	1.000	EPA 8260B	EPA 5030B
Methane	10		0.005	0.001	mg/L	As Recd	1.000	RSK-175	METHOD
Iron	6,500		100	6.0	ug/L	DISS.	1.000	EPA 6010B	METHOD
Manganese	890		5.0	0.27	ug/L	DISS.	1.000	EPA 6010B	METHOD
Calcium	69,000		500	17	ug/L	DISS.	1.000	EPA 200.7	METHOD
Potassium	13,000		500	26	ug/L	DISS.	1.000	EPA 200.7	METHOD
Magnesium	130,000		100,000	12,000	ug/L	DISS.	500.0	EPA 200.7	METHOD
Sodium	700,000		250,000	18,000	ug/L	DISS.	500.0	EPA 200.7	METHOD
Chloride	290		4.0	0.28	mg/L	TOTAL	20.00	EPA 300.0	METHOD
Alkalinity, Bicarbonate	530		6.7		mg/L	TOTAL	6.700	SM2320B	METHOD
Alkalinity, Total as CaCO3	530		6.7		mg/L	TOTAL	6.700	SM2320B	METHOD
Dissolved Sulfide	0.12		0.04		mg/L	TOTAL	1.000	SM4500S2-D	METHOD
Orthophosphate (as P)	0.13		0.030	0.003	mg/L	TOTAL	1.000	SM4500P-E	METHOD
Total Dissolved Solids	1,260		11		mg/L	TOTAL	1.111	SM2540C	METHOD

Curtis & Tompkins, Ltd.

Client Sample ID : MW-5 Laboratory Sample ID : 258404-005

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Diesel C10-C24	72	Y	49	16	ug/L	As Recd	1.000	EPA 8015B	EPA 3520C
Methane	0.088		0.005	0.001	mg/L	As Recd	1.000	RSK-175	METHOD
Iron	520		100	6.0	ug/L	DISS.	1.000	EPA 6010B	METHOD
Manganese	700		5.0	0.27	ug/L	DISS.	1.000	EPA 6010B	METHOD
Calcium	130,000		100,000	8,700	ug/L	DISS.	500.0	EPA 200.7	METHOD
Potassium	20,000		500	26	ug/L	DISS.	1.000	EPA 200.7	METHOD
Magnesium	29,000		500	24	ug/L	DISS.	1.000	EPA 200.7	METHOD
Sodium	650,000		250,000	18,000	ug/L	DISS.	500.0	EPA 200.7	METHOD
Chloride	400		10	0.69	mg/L	TOTAL	50.00	EPA 300.0	METHOD
Sulfate	74		10	0.53	mg/L	TOTAL	20.00	EPA 300.0	METHOD
Alkalinity, Bicarbonate	300		5.0		mg/L	TOTAL	5.000	SM2320B	METHOD
Alkalinity, Total as CaCO3	300		5.0		mg/L	TOTAL	5.000	SM2320B	METHOD
Orthophosphate (as P)	0.25		0.030	0.003	mg/L	TOTAL	1.000	SM4500P-E	METHOD
Total Dissolved Solids	1,190		11		mg/L	TOTAL	1.111	SM2540C	METHOD

Y = Sample exhibits chromatographic pattern which does not resemble standard

Curtis & Tompkins, Ltd.

Total Volatile Hydrocarbons

Lab #:	258404	Location:	Port HFC
Client:	Arcadis	Prep:	EPA 5030B
Project#:	04656016.0000	Analysis:	EPA 8015B
Matrix:	Water	Batch#:	212611
Units:	ug/L	Sampled:	06/24/14
Diln Fac:	1.000	Received:	06/24/14

Field ID: QCTB-1 Lab ID: 258404-001
Type: SAMPLE Analyzed: 06/25/14

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	106	77-128

Field ID: MW-10 Lab ID: 258404-002
Type: SAMPLE Analyzed: 06/25/14

Analyte	Result	RL
Gasoline C7-C12	320 Y	50

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	115	77-128

Field ID: MW-1 Lab ID: 258404-003
Type: SAMPLE Analyzed: 06/26/14

Analyte	Result	RL
Gasoline C7-C12	1,500 Y	50

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	114	77-128

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

Curtis & Tompkins, Ltd.

Total Volatile Hydrocarbons

Lab #:	258404	Location:	Port HFC
Client:	Arcadis	Prep:	EPA 5030B
Project#:	04656016.0000	Analysis:	EPA 8015B
Matrix:	Water	Batch#:	212611
Units:	ug/L	Sampled:	06/24/14
Diln Fac:	1.000	Received:	06/24/14

Field ID: MW-9 Lab ID: 258404-004
Type: SAMPLE Analyzed: 06/26/14

Analyte	Result	RL
Gasoline C7-C12	200 Y	50

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	103	77-128

Field ID: MW-5 Lab ID: 258404-005
Type: SAMPLE Analyzed: 06/26/14

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	106	77-128

Type: BLANK Analyzed: 06/25/14
Lab ID: QC746526

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	114	77-128

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 #:	258404	Location:	Port HFC
Client:	Arcadis	Prep:	EPA 5030B
Project#:	04656016.0000	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC746525	Batch#:	212611
Matrix:	Water	Analyzed:	06/25/14
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1,000	1,038	104	80-120

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	109	77-128

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	258404	Location:	Port HFC
Client:	Arcadis	Prep:	EPA 5030B
Project#:	04656016.0000	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	212611
MSS Lab ID:	258352-006	Sampled:	06/20/14
Matrix:	Water	Received:	06/20/14
Units:	ug/L	Analyzed:	06/25/14
Diln Fac:	1.000		

Type: MS Lab ID: QC746527

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	20.68	2,000	2,119	105	74-120

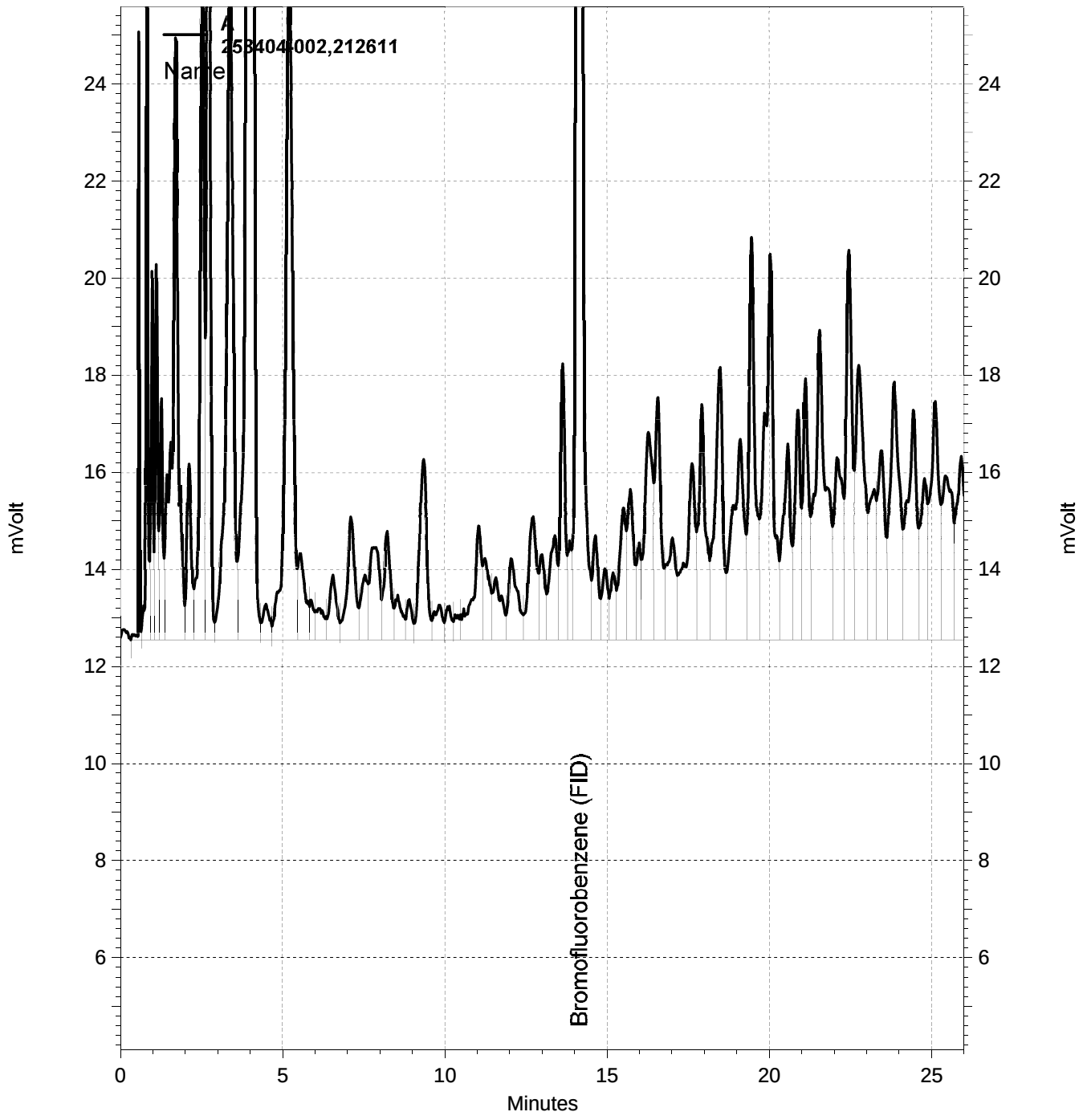
Surrogate	%REC	Limits
Bromofluorobenzene (FID)	123	77-128

Type: MSD Lab ID: QC746528

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	2,130	105	74-120	1	27

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	114	77-128

RPD= Relative Percent Difference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258404-002,212611
Name
mVolt
mVolt
Bromofluorobenzene (FID)
Minutes
0
5
10
15
20
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6
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16
18
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22
24
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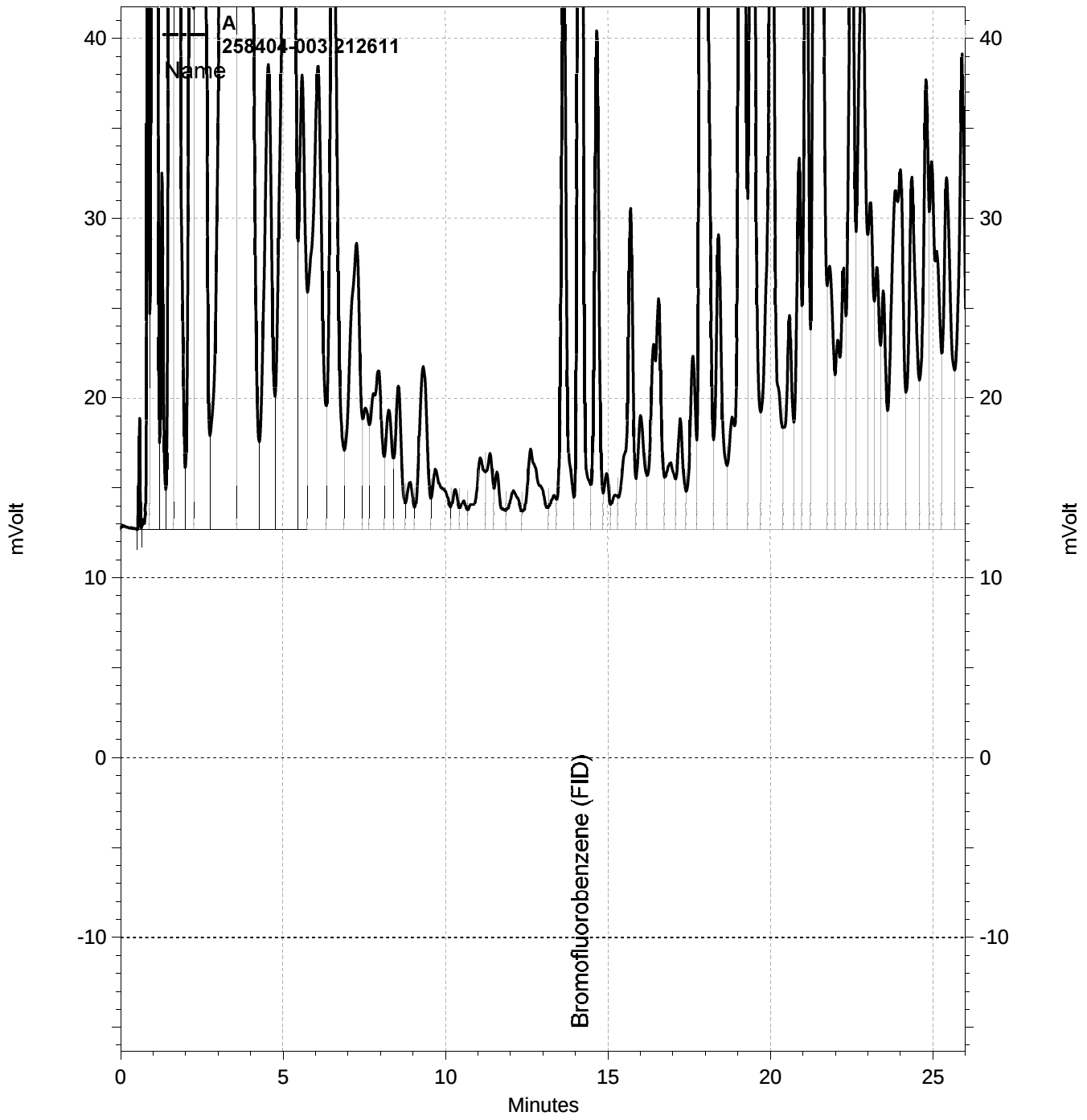

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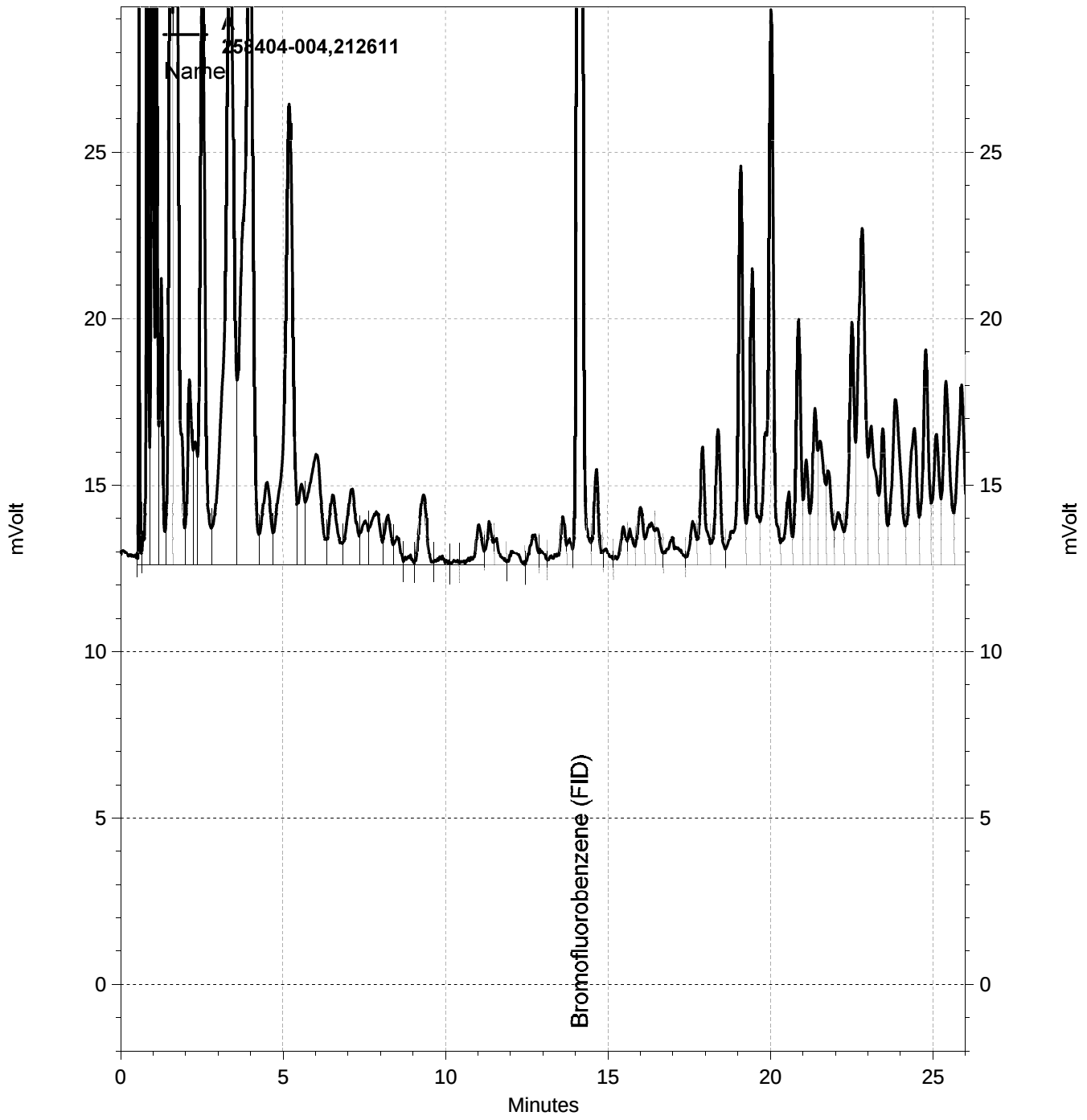

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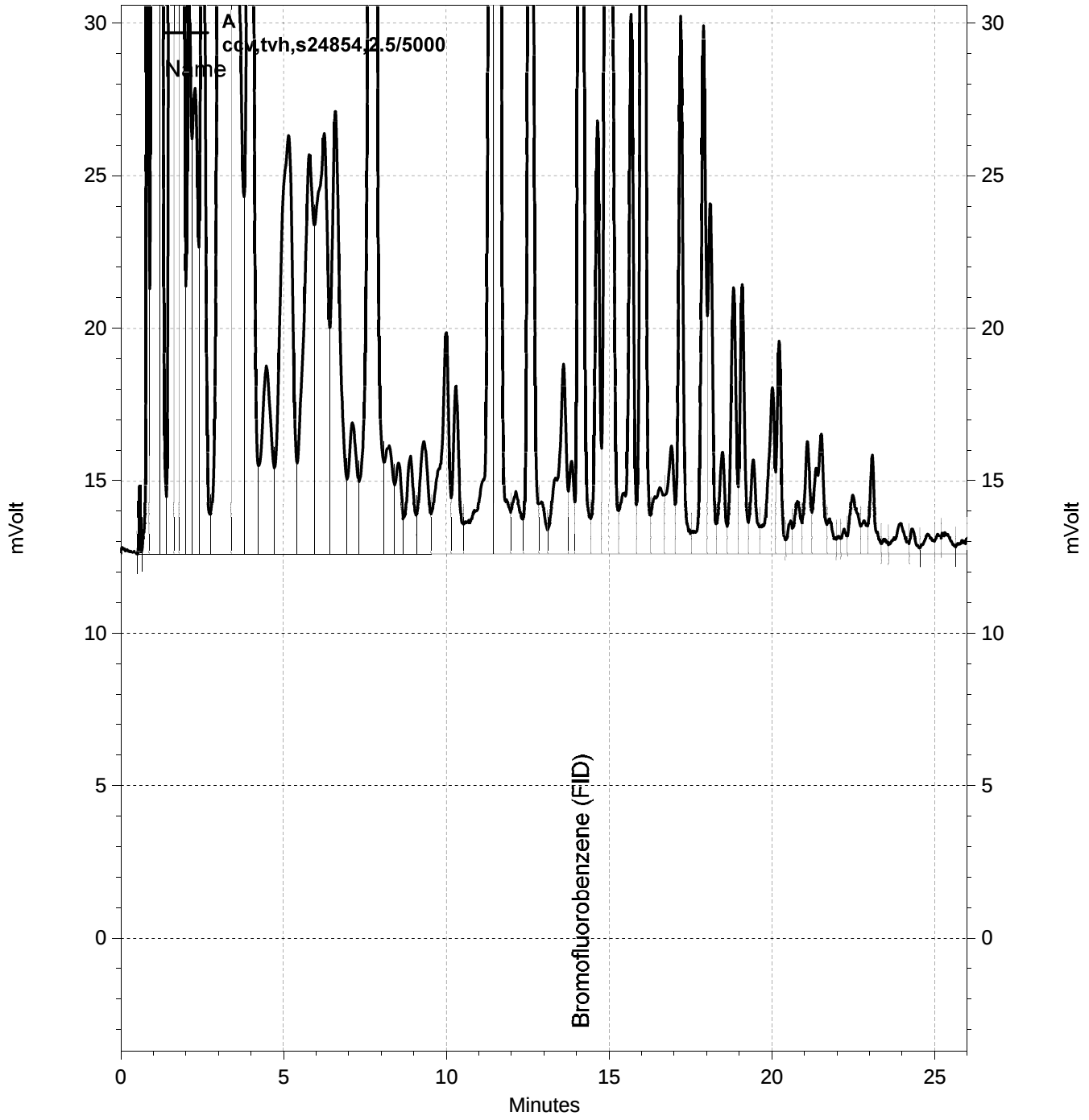

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Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	258404	Location:	Port HFC
Client:	Arcadis	Prep:	EPA 3520C
Project#:	04656016.0000	Analysis:	EPA 8015B
Matrix:	Water	Sampled:	06/24/14
Units:	ug/L	Received:	06/24/14
Diln Fac:	1.000	Prepared:	06/26/14
Batch#:	212689	Analyzed:	06/27/14

Field ID: MW-10 Lab ID: 258404-002
Type: SAMPLE Cleanup Method: EPA 3630C

Analyte	Result	RL
Diesel C10-C24	260	49
Motor Oil C24-C36	ND	290

Surrogate	%REC	Limits
o-Terphenyl	91	66-129

Field ID: MW-1 Lab ID: 258404-003
Type: SAMPLE Cleanup Method: EPA 3630C

Analyte	Result	RL
Diesel C10-C24	1,500	49
Motor Oil C24-C36	ND	290

Surrogate	%REC	Limits
o-Terphenyl	99	66-129

Field ID: MW-9 Lab ID: 258404-004
Type: SAMPLE Cleanup Method: EPA 3630C

Analyte	Result	RL
Diesel C10-C24	110 Y	49
Motor Oil C24-C36	ND	290

Surrogate	%REC	Limits
o-Terphenyl	98	66-129

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

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	258404	Location:	Port HFC
Client:	Arcadis	Prep:	EPA 3520C
Project#:	04656016.0000	Analysis:	EPA 8015B
Matrix:	Water	Sampled:	06/24/14
Units:	ug/L	Received:	06/24/14
Diln Fac:	1.000	Prepared:	06/26/14
Batch#:	212689	Analyzed:	06/27/14

Field ID: MW-5 Lab ID: 258404-005
Type: SAMPLE Cleanup Method: EPA 3630C

Analyte	Result	RL
Diesel C10-C24	72 Y	49
Motor Oil C24-C36	ND	290

Surrogate	%REC	Limits
o-Terphenyl	96	66-129

Type: BLANK Cleanup Method: EPA 3630C
Lab ID: QC746849

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

Surrogate	%REC	Limits
o-Terphenyl	93	66-129

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

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	258404	Location:	Port HFC
Client:	Arcadis	Prep:	EPA 3520C
Project#:	04656016.0000	Analysis:	EPA 8015B
Matrix:	Water	Batch#:	212689
Units:	ug/L	Prepared:	06/26/14
Diln Fac:	1.000	Analyzed:	06/27/14

Type: BS Cleanup Method: EPA 3630C
Lab ID: QC746850

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	2,500	2,514	101	61-120

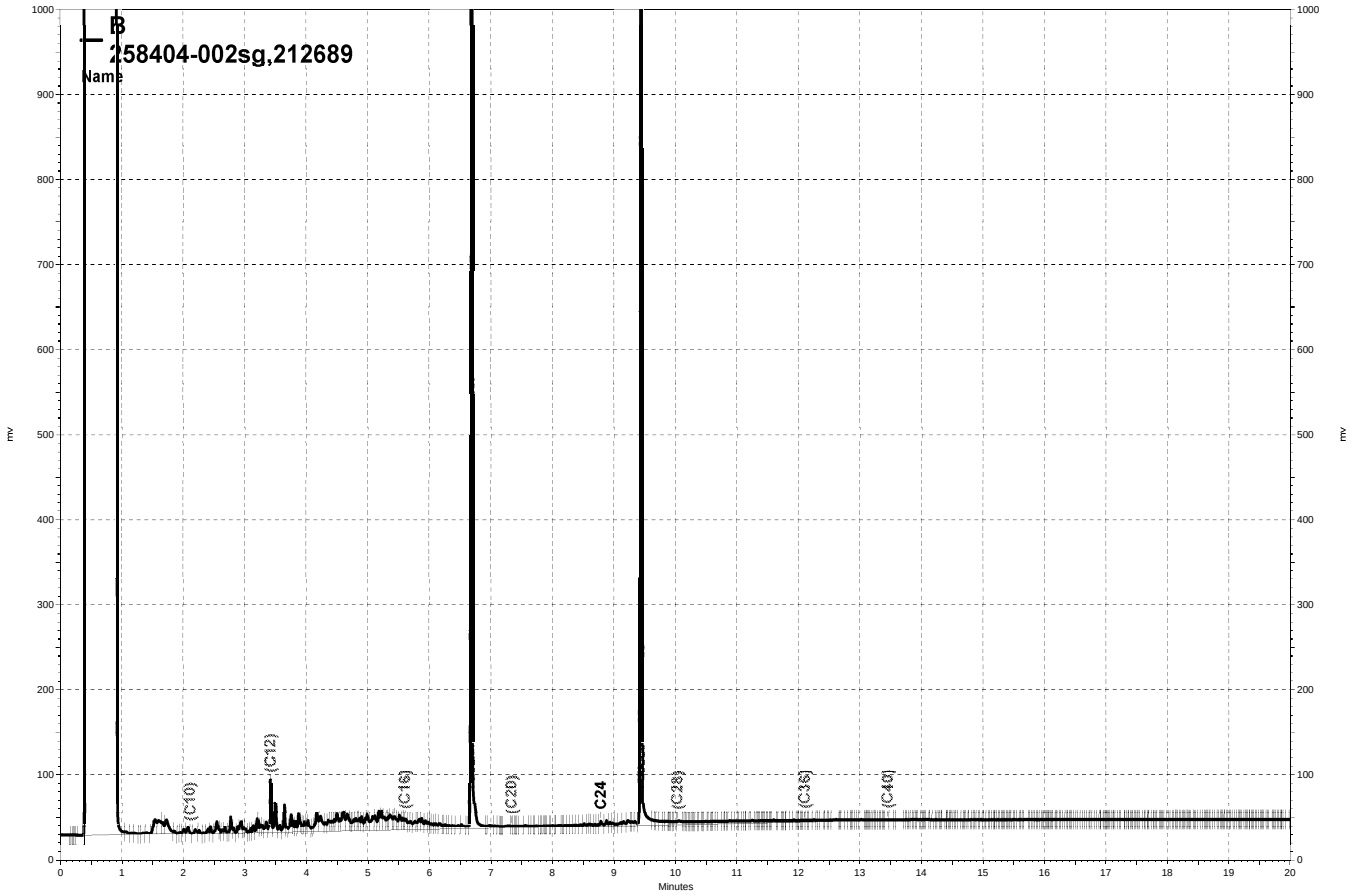
Surrogate	%REC	Limits
o-Terphenyl	110	66-129

Type: BSD Cleanup Method: EPA 3630C
Lab ID: QC746851

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	2,500	2,497	100	61-120	1	45

Surrogate	%REC	Limits
o-Terphenyl	105	66-129

RPD= Relative Percent Difference



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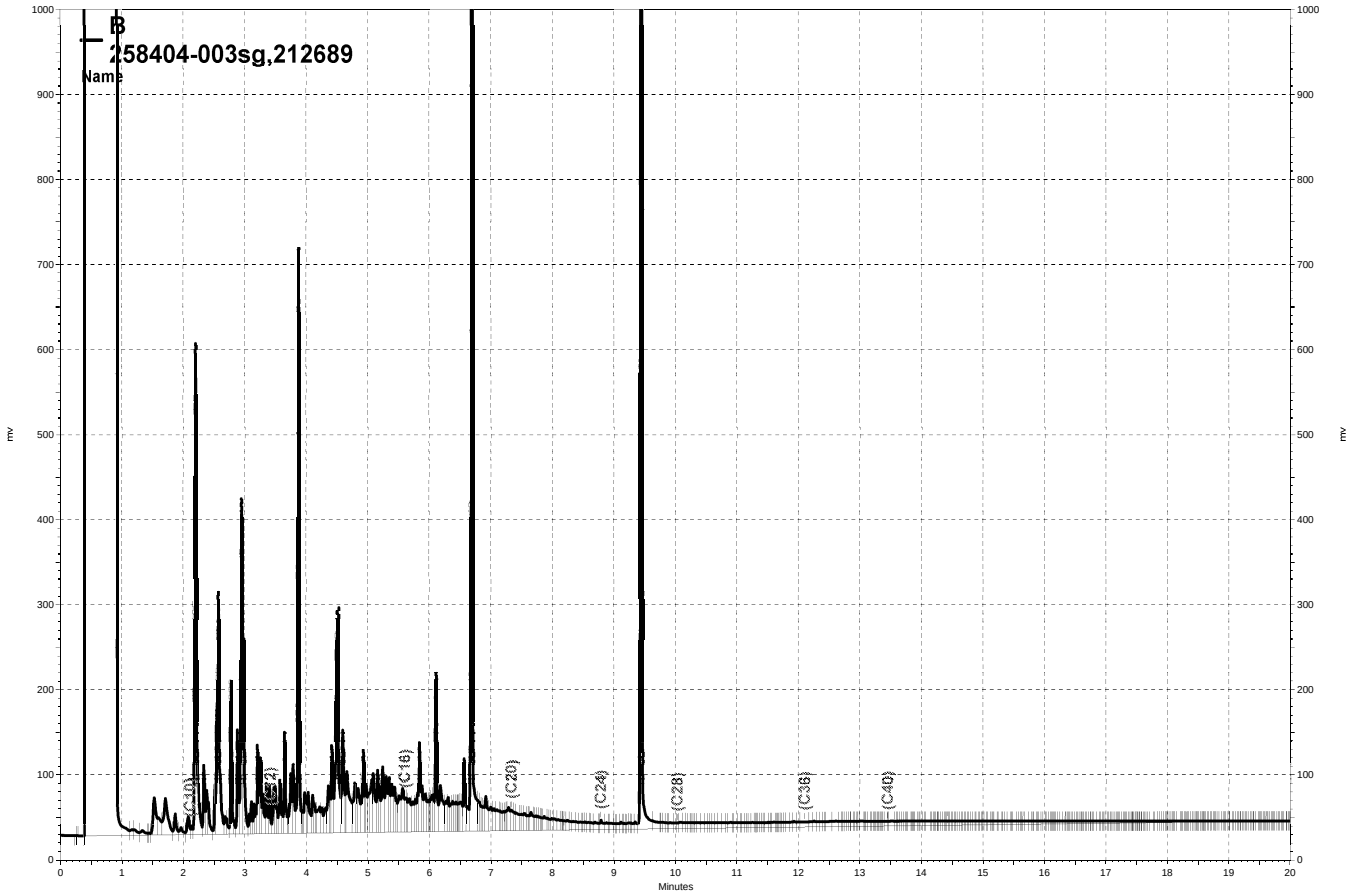

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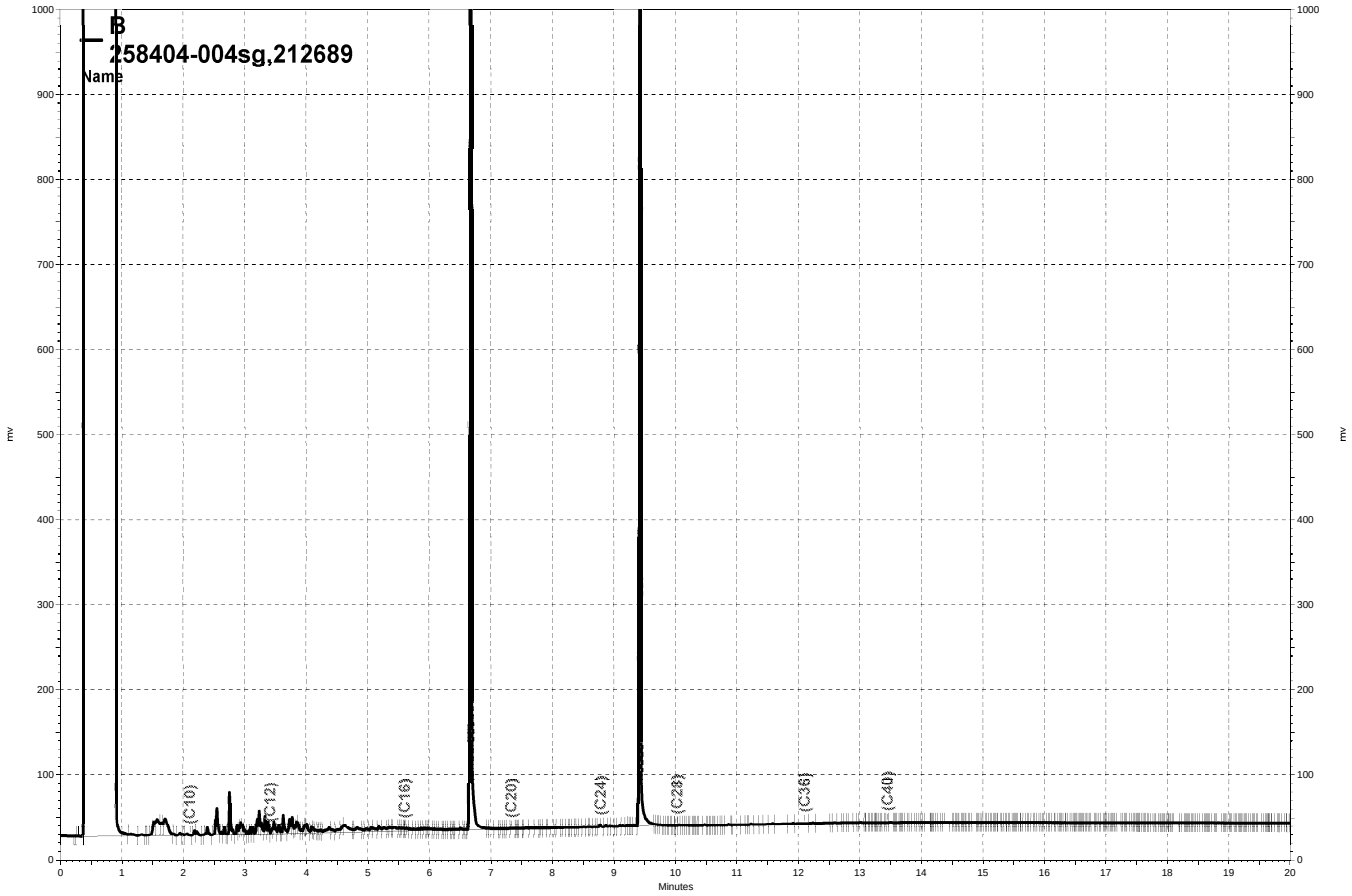

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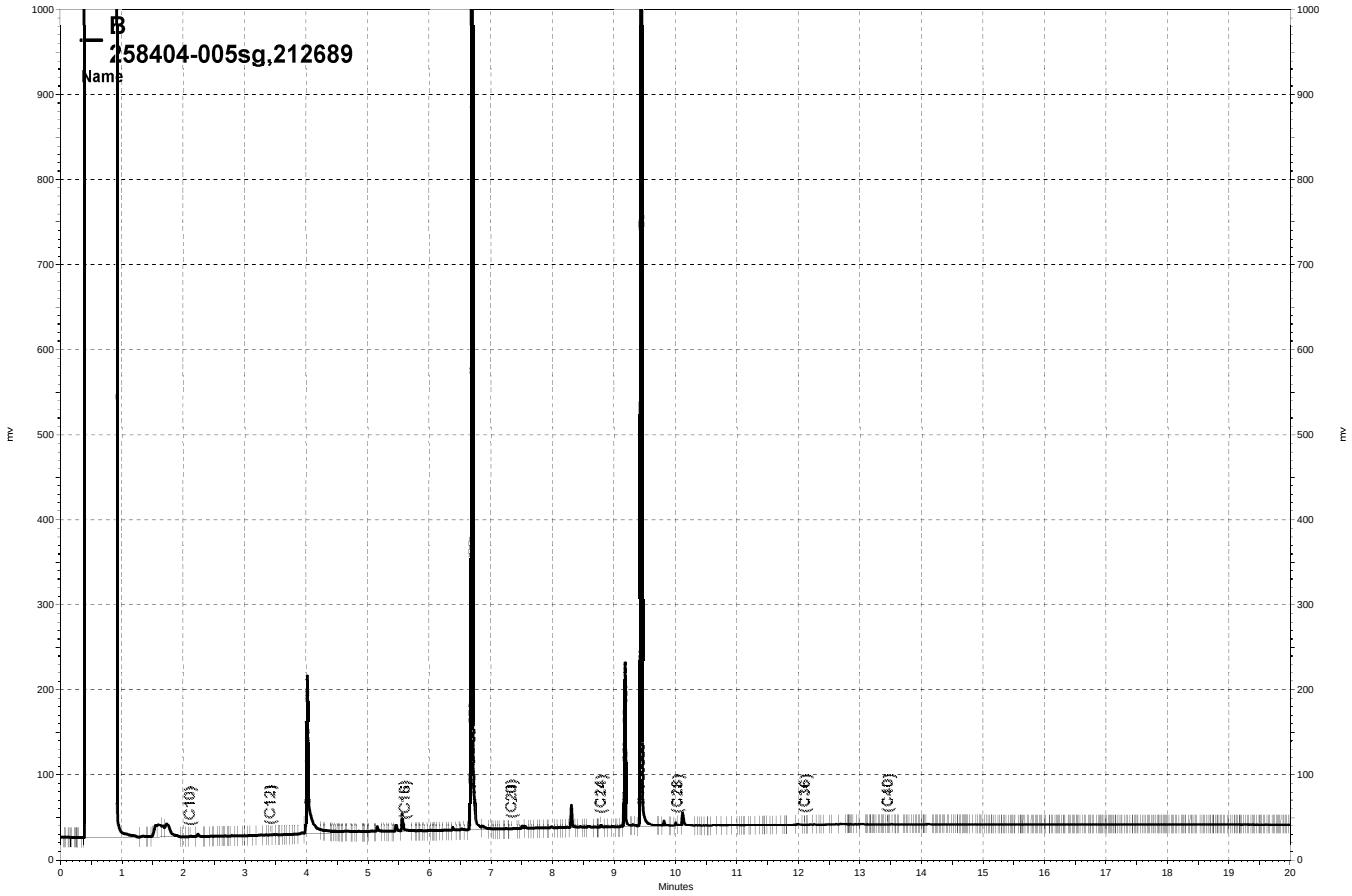

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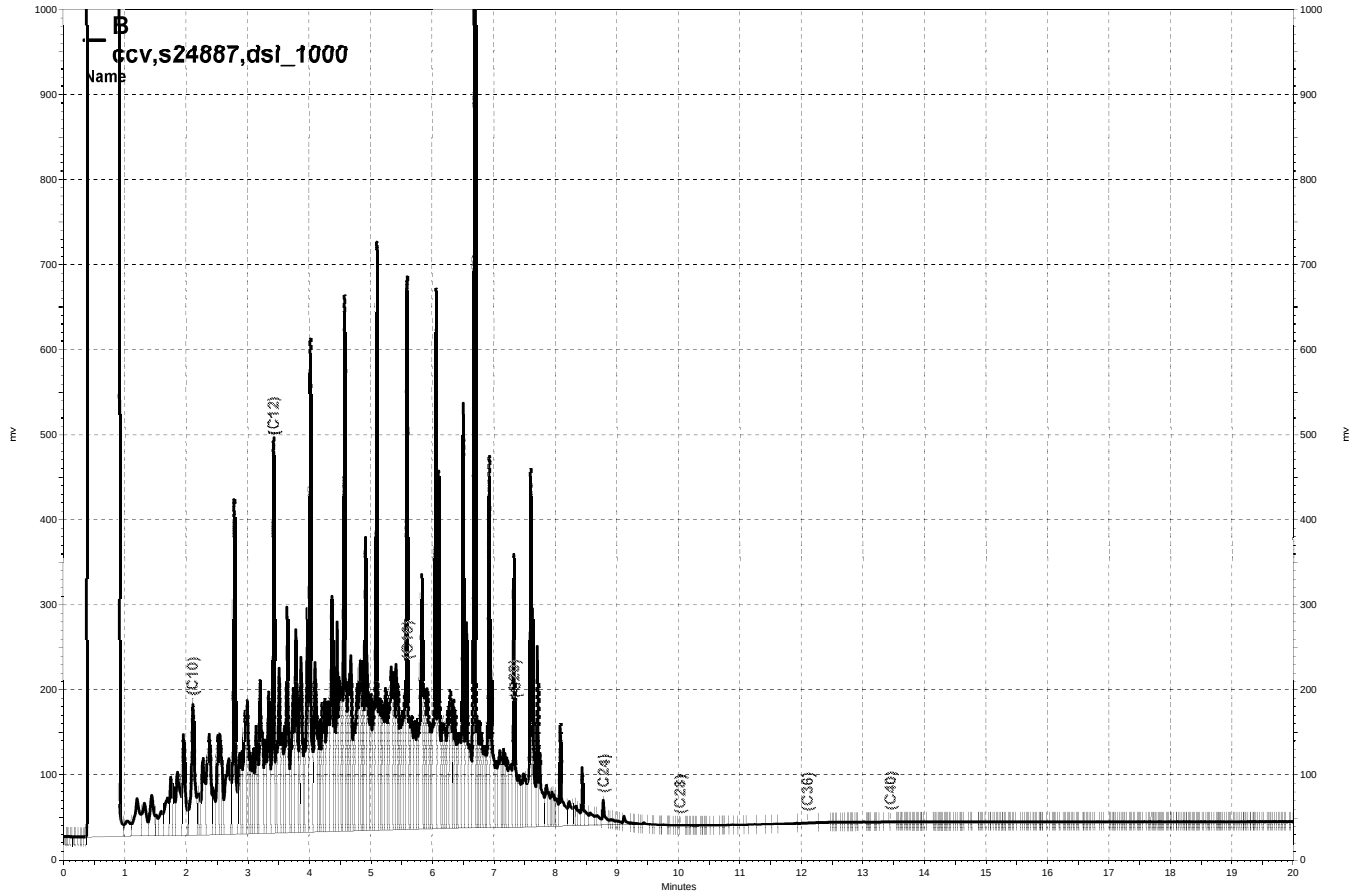

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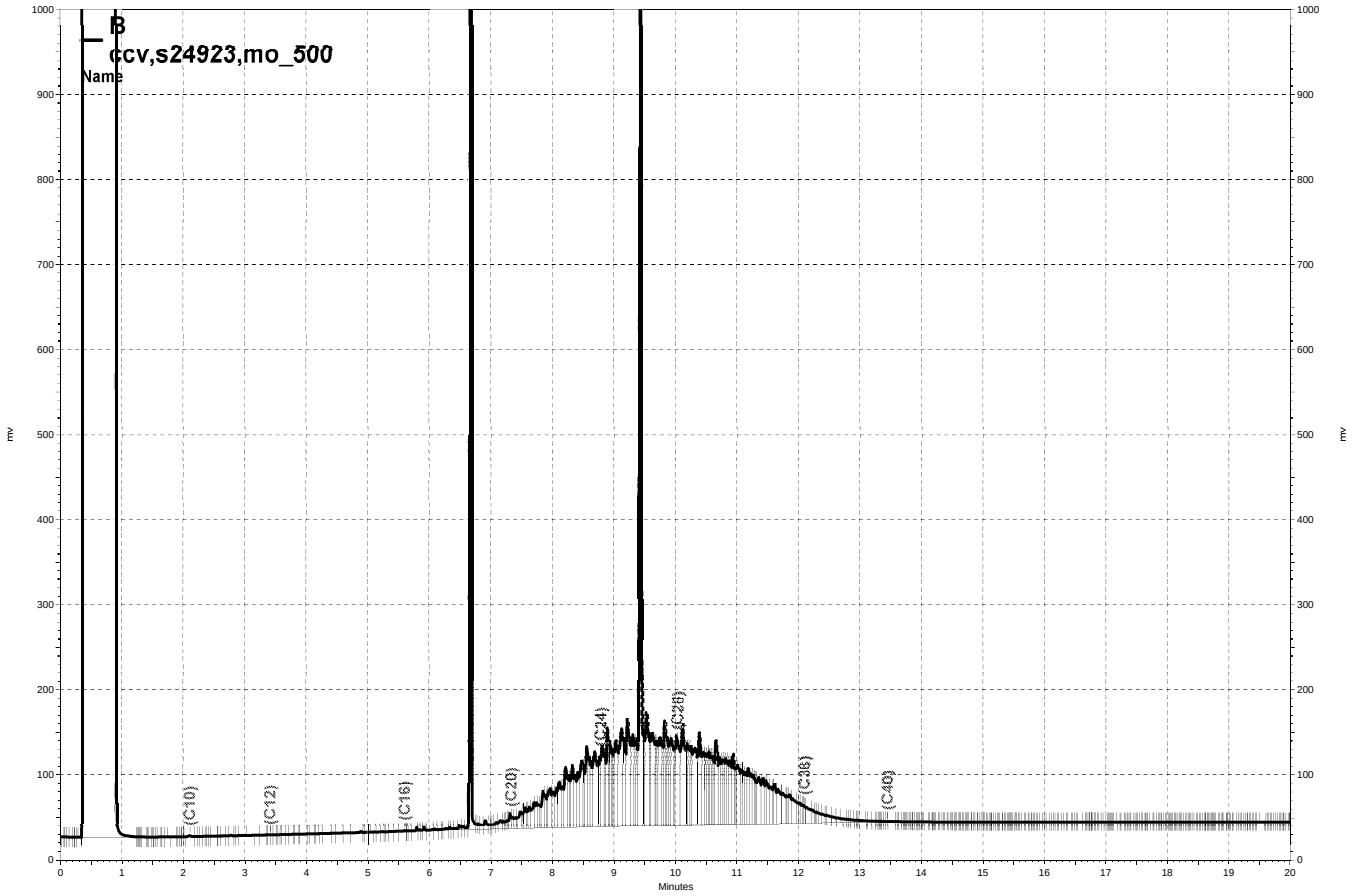

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Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	258404	Location:	Port HFC
Client:	Arcadis	Prep:	EPA 5030B
Project#:	04656016.0000	Analysis:	EPA 8260B
Field ID:	QCTB-1	Batch#:	212610
Lab ID:	258404-001	Sampled:	06/24/14
Matrix:	Water	Received:	06/24/14
Units:	ug/L	Analyzed:	06/25/14
Diln Fac:	1.000		

Analyte	Result	RL
MTBE	ND	0.5
Benzene	ND	0.5
Toluene	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	102	77-136
1,2-Dichloroethane-d4	114	75-139
Toluene-d8	104	80-120
Bromofluorobenzene	105	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	258404	Location:	Port HFC
Client:	Arcadis	Prep:	EPA 5030B
Project#:	04656016.0000	Analysis:	EPA 8260B
Field ID:	MW-10	Batch#:	212610
Lab ID:	258404-002	Sampled:	06/24/14
Matrix:	Water	Received:	06/24/14
Units:	ug/L	Analyzed:	06/25/14
Diln Fac:	1.000		

Analyte	Result	RL
MTBE	ND	0.5
Benzene	60	0.5
Toluene	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	102	77-136
1,2-Dichloroethane-d4	107	75-139
Toluene-d8	100	80-120
Bromofluorobenzene	98	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	258404	Location:	Port HFC
Client:	Arcadis	Prep:	EPA 5030B
Project#:	04656016.0000	Analysis:	EPA 8260B
Field ID:	MW-1	Batch#:	212610
Lab ID:	258404-003	Sampled:	06/24/14
Matrix:	Water	Received:	06/24/14
Units:	ug/L	Analyzed:	06/25/14
Diln Fac:	1.000		

Analyte	Result	RL
MTBE	ND	0.5
Benzene	7.0	0.5
Toluene	1.8	0.5
Ethylbenzene	1.4	0.5
m,p-Xylenes	1.1	0.5
o-Xylene	1.2	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	94	77-136
1,2-Dichloroethane-d4	105	75-139
Toluene-d8	99	80-120
Bromofluorobenzene	97	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	258404	Location:	Port HFC
Client:	Arcadis	Prep:	EPA 5030B
Project#:	04656016.0000	Analysis:	EPA 8260B
Field ID:	MW-9	Batch#:	212610
Lab ID:	258404-004	Sampled:	06/24/14
Matrix:	Water	Received:	06/24/14
Units:	ug/L	Analyzed:	06/25/14
Diln Fac:	1.000		

Analyte	Result	RL
MTBE	ND	0.5
Benzene	11	0.5
Toluene	ND	0.5
Ethylbenzene	0.6	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	92	77-136
1,2-Dichloroethane-d4	103	75-139
Toluene-d8	99	80-120
Bromofluorobenzene	97	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	258404	Location:	Port HFC
Client:	Arcadis	Prep:	EPA 5030B
Project#:	04656016.0000	Analysis:	EPA 8260B
Field ID:	MW-5	Batch#:	212610
Lab ID:	258404-005	Sampled:	06/24/14
Matrix:	Water	Received:	06/24/14
Units:	ug/L	Analyzed:	06/25/14
Diln Fac:	1.000		

Analyte	Result	RL
MTBE	ND	0.5
Benzene	ND	0.5
Toluene	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	93	77-136
1,2-Dichloroethane-d4	104	75-139
Toluene-d8	98	80-120
Bromofluorobenzene	96	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Aromatics by GC/MS

Lab #:	258404	Location:	Port HFC
Client:	Arcadis	Prep:	EPA 5030B
Project#:	04656016.0000	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC746522	Batch#:	212610
Matrix:	Water	Analyzed:	06/25/14
Units:	ug/L		

Analyte	Result	RL
MTBE	ND	0.5
Benzene	ND	0.5
Toluene	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	102	77-136
1,2-Dichloroethane-d4	117	75-139
Toluene-d8	104	80-120
Bromofluorobenzene	104	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Aromatics by GC/MS

Lab #:	258404	Location:	Port HFC
Client:	Arcadis	Prep:	EPA 5030B
Project#:	04656016.0000	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	212610
Units:	ug/L	Analyzed:	06/25/14
Diln Fac:	1.000		

Type: BS Lab ID: QC746523

Analyte	Spiked	Result	%REC	Limits
MTBE	22.50	22.43	100	64-121
Benzene	22.50	23.28	103	80-124
Toluene	22.50	23.25	103	80-122
Ethylbenzene	22.50	23.49	104	80-124
m,p-Xylenes	45.00	49.46	110	80-122
o-Xylene	22.50	24.85	110	77-120

Surrogate	%REC	Limits
Dibromofluoromethane	97	77-136
1,2-Dichloroethane-d4	111	75-139
Toluene-d8	100	80-120
Bromofluorobenzene	98	80-120

Type: BSD Lab ID: QC746524

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	22.50	20.74	92	64-121	8	20
Benzene	22.50	21.66	96	80-124	7	20
Toluene	22.50	22.56	100	80-122	3	20
Ethylbenzene	22.50	22.42	100	80-124	5	20
m,p-Xylenes	45.00	48.90	109	80-122	1	20
o-Xylene	22.50	24.33	108	77-120	2	20

Surrogate	%REC	Limits
Dibromofluoromethane	95	77-136
1,2-Dichloroethane-d4	104	75-139
Toluene-d8	103	80-120
Bromofluorobenzene	97	80-120

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Dissolved Gases

Lab #:	258404	Location:	Port HFC
Client:	Arcadis	Prep:	METHOD
Project#:	04656016.0000	Analysis:	RSK-175
Analyte:	Methane	Batch#:	212685
Matrix:	Water	Sampled:	06/24/14
Units:	mg/L	Received:	06/24/14
Diln Fac:	1.000	Analyzed:	06/26/14

Field ID	Type	Lab ID	Result	RL
MW-10	SAMPLE	258404-002	7.2	0.005
MW-1	SAMPLE	258404-003	8.5	0.005
MW-9	SAMPLE	258404-004	10	0.005
MW-5	SAMPLE	258404-005	0.088	0.005
	BLANK	QC746825	ND	0.005

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved Gases

Lab #:	258404	Location:	Port HFC
Client:	Arcadis	Prep:	METHOD
Project#:	04656016.0000	Analysis:	RSK-175
Analyte:	Methane	Diln Fac:	1.000
Matrix:	Water	Batch#:	212685
Units:	mg/L	Analyzed:	06/26/14

Type	Lab ID	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC746823	0.6544	0.5870	90	78-120		
BSD	QC746824	0.6544	0.7280	111	78-120	21	21

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Dissolved Iron

Lab #:	258404	Location:	Port HFC
Client:	Arcadis	Prep:	METHOD
Project#:	04656016.0000	Analysis:	EPA 6010B
Analyte:	Iron	Sampled:	06/24/14
Matrix:	Filtrate	Received:	06/24/14
Units:	ug/L	Prepared:	06/27/14
Diln Fac:	1.000	Analyzed:	07/02/14
Batch#:	212717		

Field ID	Type	Lab ID	Result	RL
MW-10	SAMPLE	258404-002	14,000	100
MW-1	SAMPLE	258404-003	670	100
MW-9	SAMPLE	258404-004	6,500	100
MW-5	SAMPLE	258404-005	520	100
	BLANK	QC746959	ND	100

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Dissolved Manganese

Lab #:	258404	Location:	Port HFC
Client:	Arcadis	Prep:	METHOD
Project#:	04656016.0000	Analysis:	EPA 6010B
Analyte:	Manganese	Sampled:	06/24/14
Matrix:	Filtrate	Received:	06/24/14
Units:	ug/L	Prepared:	06/27/14
Diln Fac:	1.000	Analyzed:	07/02/14
Batch#:	212717		

Field ID	Type	Lab ID	Result	RL
MW-10	SAMPLE	258404-002	5,700	5.0
MW-1	SAMPLE	258404-003	690	5.0
MW-9	SAMPLE	258404-004	890	5.0
MW-5	SAMPLE	258404-005	700	5.0
	BLANK	QC746959	ND	5.0

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved Iron

Lab #:	258404	Location:	Port HFC
Client:	Arcadis	Prep:	METHOD
Project#:	04656016.0000	Analysis:	EPA 6010B
Analyte:	Iron	Batch#:	212717
Field ID:	MW-10	Sampled:	06/24/14
MSS Lab ID:	258404-002	Received:	06/24/14
Matrix:	Filtrate	Prepared:	06/27/14
Units:	ug/L	Analyzed:	07/02/14
Diln Fac:	1.000		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC746960		1,000	922.0	92	79-120		
BSD	QC746961		1,000	925.8	93	79-120	0	21
MS	QC746962	13,970	1,000	14,290	32 NM	66-127		
MSD	QC746963		1,000	14,130	16 NM	66-127	1	21

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

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved Manganese

Lab #:	258404	Location:	Port HFC
Client:	Arcadis	Prep:	METHOD
Project#:	04656016.0000	Analysis:	EPA 6010B
Analyte:	Manganese	Batch#:	212717
Field ID:	MW-10	Sampled:	06/24/14
MSS Lab ID:	258404-002	Received:	06/24/14
Matrix:	Filtrate	Prepared:	06/27/14
Units:	ug/L	Analyzed:	07/02/14
Diln Fac:	1.000		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC746960		50.00	50.40	101	80-120		
BSD	QC746961		50.00	49.99	100	80-120	1	20
MS	QC746962	5,682	50.00	5,461	-442 NM	70-128		
MSD	QC746963		50.00	5,480	-404 NM	70-128	0	20

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

Curtis & Tompkins, Ltd.

Dissolved Metals Analytical Report

Lab #:	258404	Location:	Port HFC
Client:	Arcadis	Prep:	METHOD
Project#:	04656016.0000	Analysis:	EPA 200.7
Analyte:	Calcium	Sampled:	06/24/14
Matrix:	Filtrate	Received:	06/24/14
Units:	ug/L	Prepared:	06/27/14
Batch#:	212717	Analyzed:	07/02/14

Field ID	Type	Lab ID	Result	RL	Diln Fac
MW-10	SAMPLE	258404-002	380,000	100,000	500.0
MW-1	SAMPLE	258404-003	23,000	500	1.000
MW-9	SAMPLE	258404-004	69,000	500	1.000
MW-5	SAMPLE	258404-005	130,000	100,000	500.0
	BLANK	QC746959	ND	500	1.000

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Dissolved Metals Analytical Report

Lab #:	258404	Location:	Port HFC
Client:	Arcadis	Prep:	METHOD
Project#:	04656016.0000	Analysis:	EPA 200.7
Analyte:	Potassium	Sampled:	06/24/14
Matrix:	Filtrate	Received:	06/24/14
Units:	ug/L	Prepared:	06/27/14
Diln Fac:	1.000	Analyzed:	07/02/14
Batch#:	212717		

Field ID	Type	Lab ID	Result	RL
MW-10	SAMPLE	258404-002	32,000	500
MW-1	SAMPLE	258404-003	1,000	500
MW-9	SAMPLE	258404-004	13,000	500
MW-5	SAMPLE	258404-005	20,000	500
	BLANK	QC746959	ND	500

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Dissolved Metals Analytical Report

Lab #:	258404	Location:	Port HFC
Client:	Arcadis	Prep:	METHOD
Project#:	04656016.0000	Analysis:	EPA 200.7
Analyte:	Magnesium	Sampled:	06/24/14
Matrix:	Filtrate	Received:	06/24/14
Units:	ug/L	Prepared:	06/27/14
Batch#:	212717	Analyzed:	07/02/14

Field ID	Type	Lab ID	Result	RL	Diln Fac
MW-10	SAMPLE	258404-002	200,000	100,000	500.0
MW-1	SAMPLE	258404-003	17,000	500	1.000
MW-9	SAMPLE	258404-004	130,000	100,000	500.0
MW-5	SAMPLE	258404-005	29,000	500	1.000
	BLANK	QC746959	ND	500	1.000

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Dissolved Metals Analytical Report

Lab #:	258404	Location:	Port HFC
Client:	Arcadis	Prep:	METHOD
Project#:	04656016.0000	Analysis:	EPA 200.7
Analyte:	Sodium	Sampled:	06/24/14
Matrix:	Filtrate	Received:	06/24/14
Units:	ug/L	Prepared:	06/27/14
Batch#:	212717	Analyzed:	07/02/14

Field ID	Type	Lab ID	Result	RL	Diln Fac
MW-10	SAMPLE	258404-002	990,000	250,000	500.0
MW-1	SAMPLE	258404-003	46,000	500	1.000
MW-9	SAMPLE	258404-004	700,000	250,000	500.0
MW-5	SAMPLE	258404-005	650,000	250,000	500.0
	BLANK	QC746959	ND	500	1.000

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved Metals Analytical Report

Lab #:	258404	Location:	Port HFC
Client:	Arcadis	Prep:	METHOD
Project#:	04656016.0000	Analysis:	EPA 200.7
Analyte:	Calcium	Batch#:	212717
Field ID:	MW-10	Sampled:	06/24/14
MSS Lab ID:	258404-002	Received:	06/24/14
Matrix:	Filtrate	Prepared:	06/27/14
Units:	ug/L	Analyzed:	07/02/14

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim	Diln Fac
BS	QC746960		20,000	17,940	90	80-120			1.000
BSD	QC746961		20,000	17,610	88	80-120	2	20	1.000
MS	QC746962	382,300	20,000	342,900	NM	67-126			500.0
MSD	QC746963		20,000	398,100	NM	67-126	15	20	500.0

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

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved Metals Analytical Report

Lab #:	258404	Location:	Port HFC
Client:	Arcadis	Prep:	METHOD
Project#:	04656016.0000	Analysis:	EPA 200.7
Analyte:	Potassium	Batch#:	212717
Field ID:	MW-10	Sampled:	06/24/14
MSS Lab ID:	258404-002	Received:	06/24/14
Matrix:	Filtrate	Prepared:	06/27/14
Units:	ug/L	Analyzed:	07/02/14
Diln Fac:	1.000		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC746960		10,000	8,898	89	77-120		
BSD	QC746961		10,000	8,891	89	77-120	0	20
MS	QC746962	32,390	10,000	40,930	85	71-126		
MSD	QC746963		10,000	40,560	82	71-126	1	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved Metals Analytical Report

Lab #:	258404	Location:	Port HFC
Client:	Arcadis	Prep:	METHOD
Project#:	04656016.0000	Analysis:	EPA 200.7
Analyte:	Magnesium	Batch#:	212717
Field ID:	MW-10	Sampled:	06/24/14
MSS Lab ID:	258404-002	Received:	06/24/14
Matrix:	Filtrate	Prepared:	06/27/14
Units:	ug/L	Analyzed:	07/02/14
Diln Fac:	1.000		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC746960		20,000	18,950	95	80-120		
BSD	QC746961		20,000	19,040	95	80-120	0	20
MS	QC746962	83,310	20,000	98,210	74 NM	71-120		
MSD	QC746963		20,000	97,600	71 NM	71-120	1	20

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

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved Metals Analytical Report

Lab #:	258404	Location:	Port HFC
Client:	Arcadis	Prep:	METHOD
Project#:	04656016.0000	Analysis:	EPA 200.7
Analyte:	Sodium	Batch#:	212717
Field ID:	MW-10	Sampled:	06/24/14
MSS Lab ID:	258404-002	Received:	06/24/14
Matrix:	Filtrate	Prepared:	06/27/14
Units:	ug/L	Analyzed:	07/02/14

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim	Diln Fac
BS	QC746960		20,000	18,540	93	79-120			1.000
BSD	QC746961		20,000	18,290	91	79-120	1	20	1.000
MS	QC746962	992,400	20,000	828,600	NM	66-127			500.0
MSD	QC746963		20,000	986,700	NM	66-127	17	28	500.0

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

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	258404	Location:	Port HFC
Client:	Arcadis	Prep:	METHOD
Project#:	04656016.0000	Analysis:	EPA 300.0
Matrix:	Water	Received:	06/24/14
Units:	mg/L		

Field ID: MW-10 Batch#: 212556
Type: SAMPLE Sampled: 06/24/14 09:48
Lab ID: 258404-002

Analyte	Result	RL	Diln Fac	Analyzed
Chloride	560	20	100.0	06/24/14 23:01
Nitrogen, Nitrite	ND	0.05	1.000	06/24/14 15:57
Nitrogen, Nitrate	ND	0.05	1.000	06/24/14 15:57
Sulfate	2.5	0.50	1.000	06/24/14 15:57

Field ID: MW-1 Batch#: 212556
Type: SAMPLE Sampled: 06/24/14 11:28
Lab ID: 258404-003

Analyte	Result	RL	Diln Fac	Analyzed
Chloride	8.2	1.0	5.000	06/24/14 23:18
Nitrogen, Nitrite	ND	0.05	1.000	06/24/14 17:13
Nitrogen, Nitrate	ND	0.05	1.000	06/24/14 17:13
Sulfate	ND	0.50	1.000	06/24/14 17:13

Field ID: MW-9 Batch#: 212556
Type: SAMPLE Sampled: 06/24/14 13:00
Lab ID: 258404-004

Analyte	Result	RL	Diln Fac	Analyzed
Chloride	290	4.0	20.00	06/24/14 23:36
Nitrogen, Nitrite	ND	0.05	1.000	06/24/14 17:47
Nitrogen, Nitrate	ND	0.05	1.000	06/24/14 17:47
Sulfate	ND	0.50	1.000	06/24/14 17:47

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	258404	Location:	Port HFC
Client:	Arcadis	Prep:	METHOD
Project#:	04656016.0000	Analysis:	EPA 300.0
Matrix:	Water	Received:	06/24/14
Units:	mg/L		

Field ID: MW-5 Lab ID: 258404-005
Type: SAMPLE Sampled: 06/24/14 14:25

Analyte	Result	RL	Diln Fac	Batch#	Analyzed
Chloride	400	10	50.00	212615	06/25/14 12:40
Nitrogen, Nitrite	ND	0.05	1.000	212556	06/24/14 18:22
Nitrogen, Nitrate	ND	0.05	1.000	212556	06/24/14 18:22
Sulfate	74	10	20.00	212556	06/24/14 23:53

Type: BLANK Batch#: 212556
Lab ID: QC746308 Analyzed: 06/24/14 11:01
Diln Fac: 1.000

Analyte	Result	RL
Chloride	ND	0.20
Nitrogen, Nitrite	ND	0.05
Nitrogen, Nitrate	ND	0.05
Sulfate	ND	0.50

Type: BLANK Batch#: 212615
Lab ID: QC746555 Analyzed: 06/25/14 10:04
Diln Fac: 1.000

Analyte	Result	RL
Chloride	ND	0.20

ND= Not Detected
RL= Reporting Limit

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	258404	Location:	Port HFC
Client:	Arcadis	Prep:	METHOD
Project#:	04656016.0000	Analysis:	EPA 300.0
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC746309	Batch#:	212556
Matrix:	Water	Analyzed:	06/24/14 11:18
Units:	mg/L		

Analyte	Spiked	Result	%REC	Limits
Chloride	4.000	4.025	101	80-120
Nitrogen, Nitrite	1.000	0.9861	99	80-120
Nitrogen, Nitrate	1.000	0.9815	98	80-120
Sulfate	10.00	10.09	101	80-120

Curtis & Tompkins, Ltd.

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	258404	Location:	Port HFC
Client:	Arcadis	Prep:	METHOD
Project#:	04656016.0000	Analysis:	EPA 300.0
Field ID:	ZZZZZZZZZZ	Diln Fac:	100.0
MSS Lab ID:	258397-006	Batch#:	212556
Matrix:	Water	Sampled:	06/24/14 11:00
Units:	mg/L	Received:	06/24/14

Type: MS Analyzed: 06/25/14 02:47
Lab ID: QC746484

Analyte	MSS Result	Spiked	Result	%REC	Limits
Chloride	1,447	200.0	1,582	68 NM	75-120
Nitrogen, Nitrite	<1.287	50.00	52.43	105	80-120
Nitrogen, Nitrate	0.06138	50.00	46.26	92	80-120
Sulfate	394.0	500.0	853.3	92	79-120

Type: MSD Analyzed: 06/25/14 03:05
Lab ID: QC746485

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Chloride	200.0	1,583	68 NM	75-120	0	20
Nitrogen, Nitrite	50.00	53.53	107	80-120	2	23
Nitrogen, Nitrate	50.00	46.89	94	80-120	1	20
Sulfate	500.0	855.6	92	79-120	0	20

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

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	258404	Location:	Port HFC
Client:	Arcadis	Prep:	METHOD
Project#:	04656016.0000	Analysis:	EPA 300.0
Field ID:	ZZZZZZZZZZ	Diln Fac:	100.0
Type:	SDUP	Batch#:	212556
MSS Lab ID:	258397-006	Sampled:	06/24/14 11:00
Lab ID:	QC746486	Received:	06/24/14
Matrix:	Water	Analyzed:	06/25/14 02:30
Units:	mg/L		

Analyte	MSS Result	Result	RL	RPD	Lim
Chloride	1,447	1,430	20.00	1	20
Nitrogen, Nitrite	<5.000	ND	5.000	NC	23
Nitrogen, Nitrate	0.06138	ND	5.000	NC	20
Sulfate	394.0	380.7	50.00	3	20

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

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	258404	Location:	Port HFC
Client:	Arcadis	Prep:	METHOD
Project#:	04656016.0000	Analysis:	EPA 300.0
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC746556	Batch#:	212615
Matrix:	Water	Analyzed:	06/25/14 10:22
Units:	mg/L		

Analyte	Spiked	Result	%REC	Limits
Chloride	4.000	3.900	97	80-120

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	258404	Location:	Port HFC
Client:	Arcadis	Prep:	METHOD
Project#:	04656016.0000	Analysis:	EPA 300.0
Field ID:	ZZZZZZZZZZ	Diln Fac:	100.0
Type:	SDUP	Batch#:	212615
MSS Lab ID:	258449-006	Sampled:	06/25/14 12:35
Lab ID:	QC746660	Received:	06/25/14
Matrix:	Water	Analyzed:	06/26/14 09:16
Units:	mg/L		

Analyte	MSS Result	Result	RL	RPD	Lim
Chloride	1,080	1,084	20.00	0	20

RL= Reporting Limit
RPD= Relative Percent Difference

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	258404	Location:	Port HFC
Client:	Arcadis	Prep:	METHOD
Project#:	04656016.0000	Analysis:	EPA 300.0
Field ID:	ZZZZZZZZZZ	Diln Fac:	100.0
MSS Lab ID:	258449-006	Batch#:	212615
Matrix:	Water	Sampled:	06/25/14 12:35
Units:	mg/L	Received:	06/25/14

Type: MS Analyzed: 06/26/14 09:33
Lab ID: QC746661

Analyte	MSS Result	Spiked	Result	%REC	Limits
Chloride	1,080	200.0	1,251	85 NM	75-120

Type: MSD Analyzed: 06/26/14 09:50
Lab ID: QC746662

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Chloride	200.0	1,257	89 NM	75-120	1	20

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

Curtis & Tompkins, Ltd.

Alkalinity

Lab #:	258404	Location:	Port HFC
Client:	Arcadis	Prep:	METHOD
Project#:	04656016.0000	Analysis:	SM2320B
Matrix:	Water	Sampled:	06/24/14
Units:	mg/L	Received:	06/24/14
Batch#:	212616	Analyzed:	06/25/14

Field ID: MW-10 Lab ID: 258404-002
Type: SAMPLE Diln Fac: 6.700

Analyte	Result	RL
Alkalinity, Bicarbonate	1,100	6.7
Alkalinity, Carbonate	ND	6.7
Alkalinity, Hydroxide	ND	6.7
Alkalinity, Total as CaCO3	1,100	6.7

Field ID: MW-1 Lab ID: 258404-003
Type: SAMPLE Diln Fac: 6.700

Analyte	Result	RL
Alkalinity, Bicarbonate	230	6.7
Alkalinity, Carbonate	ND	6.7
Alkalinity, Hydroxide	ND	6.7
Alkalinity, Total as CaCO3	230	6.7

Field ID: MW-9 Lab ID: 258404-004
Type: SAMPLE Diln Fac: 6.700

Analyte	Result	RL
Alkalinity, Bicarbonate	530	6.7
Alkalinity, Carbonate	ND	6.7
Alkalinity, Hydroxide	ND	6.7
Alkalinity, Total as CaCO3	530	6.7

Field ID: MW-5 Lab ID: 258404-005
Type: SAMPLE Diln Fac: 5.000

Analyte	Result	RL
Alkalinity, Bicarbonate	300	5.0
Alkalinity, Carbonate	ND	5.0
Alkalinity, Hydroxide	ND	5.0
Alkalinity, Total as CaCO3	300	5.0

Type: BLANK Diln Fac: 1.000
Lab ID: QC746538

Analyte	Result	RL
Alkalinity, Bicarbonate	ND	1.0
Alkalinity, Carbonate	ND	1.0
Alkalinity, Hydroxide	ND	1.0
Alkalinity, Total as CaCO3	ND	1.0

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Alkalinity

Lab #:	258404	Location:	Port HFC
Client:	Arcadis	Prep:	METHOD
Project#:	04656016.0000	Analysis:	SM2320B
Analyte:	Alkalinity, Total as CaCO3	Units:	mg/L
Type:	LCS	Diln Fac:	4.000
Lab ID:	QC746539	Batch#:	212616
Matrix:	Water	Analyzed:	06/25/14

Spiked	Result	%REC	Limits
200.0	193.6	97	90-110

Curtis & Tompkins, Ltd.

Batch QC Report

Alkalinity

Lab #:	258404	Location:	Port HFC
Client:	Arcadis	Prep:	METHOD
Project#:	04656016.0000	Analysis:	SM2320B
Analyte:	Alkalinity, Total as CaCO3	Diln Fac:	10.00
Field ID:	ZZZZZZZZZZ	Batch#:	212616
MSS Lab ID:	258235-006	Sampled:	06/19/14
Matrix:	Water	Received:	06/19/14
Units:	mg/L	Analyzed:	06/25/14

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
MS	QC746540	318.0	500.0	842.0	105	80-120		
MSD	QC746541		500.0	817.0	100	80-120	3	25

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Dissolved Sulfide

Lab #:	258404	Location:	Port HFC
Client:	Arcadis	Prep:	METHOD
Project#:	04656016.0000	Analysis:	SM4500S2-D
Analyte:	Dissolved Sulfide	Batch#:	212603
Matrix:	Water	Sampled:	06/24/14
Units:	mg/L	Received:	06/24/14
Diln Fac:	1.000	Analyzed:	06/25/14

Field ID	Type	Lab ID	Result	RL
MW-10	SAMPLE	258404-002	0.14	0.04
MW-1	SAMPLE	258404-003	0.21	0.04
MW-9	SAMPLE	258404-004	0.12	0.04
MW-5	SAMPLE	258404-005	ND	0.04
	BLANK	QC746480	ND	0.04

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved Sulfide

Lab #:	258404	Location:	Port HFC
Client:	Arcadis	Prep:	METHOD
Project#:	04656016.0000	Analysis:	SM4500S2-D
Analyte:	Dissolved Sulfide	Diln Fac:	1.000
Field ID:	MW-10	Batch#:	212603
MSS Lab ID:	258404-002	Sampled:	06/24/14
Matrix:	Water	Received:	06/24/14
Units:	mg/L	Analyzed:	06/25/14

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
MS	QC746481	0.1401	0.8400	1.064	110	57-131		
MSD	QC746482		0.8400	1.030	106	57-131	3	21
LCS	QC746483		0.8400	0.9207	110	80-120		

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Orthophosphate Phosphorous

Lab #:	258404	Location:	Port HFC
Client:	Arcadis	Prep:	METHOD
Project#:	04656016.0000	Analysis:	SM4500P-E
Analyte:	Orthophosphate (as P)	Batch#:	212602
Matrix:	Water	Received:	06/24/14
Units:	mg/L	Analyzed:	06/24/14 17:42
Diln Fac:	1.000		

Field ID	Type	Lab ID	Result	RL	Sampled
MW-10	SAMPLE	258404-002	ND	0.030	06/24/14 09:48
MW-1	SAMPLE	258404-003	0.048	0.030	06/24/14 11:28
MW-9	SAMPLE	258404-004	0.13	0.030	06/24/14 13:00
MW-5	SAMPLE	258404-005	0.25	0.030	06/24/14 14:25
	BLANK	QC746473	ND	0.030	

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Orthophosphate Phosphorous

Lab #:	258404	Location:	Port HFC
Client:	Arcadis	Prep:	METHOD
Project#:	04656016.0000	Analysis:	SM4500P-E
Analyte:	Orthophosphate (as P)	Diln Fac:	1.000
Field ID:	MW-10	Batch#:	212602
MSS Lab ID:	258404-002	Sampled:	06/24/14 09:48
Matrix:	Water	Received:	06/24/14
Units:	mg/L	Analyzed:	06/24/14 17:42

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
LCS	QC746474		0.4000	0.3885	97	80-120		
MS	QC746475	<0.03000	0.4000	0.3875	97	80-120		
MSD	QC746476		0.4000	0.3854	96	80-120	1	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Total Dissolved Solids (TDS)

Lab #:	258404	Location:	Port HFC
Client:	Arcadis	Prep:	METHOD
Project#:	04656016.0000	Analysis:	SM2540C
Analyte:	Total Dissolved Solids	Sampled:	06/24/14
Matrix:	Water	Received:	06/24/14
Units:	mg/L	Prepared:	06/27/14
Batch#:	212700	Analyzed:	06/30/14

Field ID	Type	Lab ID	Result	RL	Diln Fac
MW-10	SAMPLE	258404-002	2,070	14	1.429
MW-1	SAMPLE	258404-003	250	10	1.000
MW-9	SAMPLE	258404-004	1,260	11	1.111
MW-5	SAMPLE	258404-005	1,190	11	1.111
	BLANK	QC746887	ND	10	1.000

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Total Dissolved Solids (TDS)

Lab #:	258404	Location:	Port HFC
Client:	Arcadis	Prep:	METHOD
Project#:	04656016.0000	Analysis:	SM2540C
Analyte:	Total Dissolved Solids	Diln Fac:	1.000
Field ID:	ZZZZZZZZZZ	Batch#:	212700
Matrix:	Water	Prepared:	06/27/14
Units:	mg/L	Analyzed:	06/30/14

Type	MSS Lab ID	Lab ID	MSS Result	Spiked	Result	RL	%REC	Limits	RPD	Lim	Sampled	Received
LCS		QC746888		104.0	92.00		88	74-120				
SDUP	258446-006	QC746889	228.0		220.0	10.00			4	5	06/24/14	06/25/14
SDUP	258472-001	QC746890	210.0		208.0	10.00			1	5	06/25/14	06/26/14

RL= Reporting Limit
RPD= Relative Percent Difference

Laboratory Job Number 258404

Subcontracted Products

Cal Science

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WORK ORDER NUMBER: 14-06-2068

The difference is service

AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: Curtis & Tompkins, Ltd.

Client Project Name: 258404

Attention: Will S. Rice
2323 Fifth Street
Berkeley, CA 94710-2407

Vikas Patel

Approved for release on 07/08/2014 by:
Vikas Patel
Project Manager

ResultLink ▸

Email your PM ▸

nelac

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Contents

Client Project Name: 258404
Work Order Number: 14-06-2068

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Work Order Narrative

Work Order: 14-06-2068 Page 1 of 1

Condition Upon Receipt:

Samples were received under Chain-of-Custody (COC) on 06/27/14. They were assigned to Work Order 14-06-2068.

Unless otherwise noted on the Sample Receiving forms all samples were received in good condition and within the recommended EPA temperature criteria for the methods noted on the COC. The COC and Sample Receiving Documents are integral elements of the analytical report and are presented at the back of the report.

Holding Times:

All samples were analyzed within prescribed holding times (HT) and/or in accordance with the Calscience Sample Acceptance Policy unless otherwise noted in the analytical report and/or comprehensive case narrative, if required.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

Quality Control:

All quality control parameters (QC) were within established control limits except where noted in the QC summary forms or described further within this report.

Additional Comments:

Air - Sorbent-extracted air methods (EPA TO-4A, EPA TO-10, EPA TO-13A, EPA TO-17): Analytical results are converted from mass/sample basis to mass/volume basis using client-supplied air volumes.

New York NELAP air certification does not certify for all reported methods and analytes, reference the accredited items here: http://www.calscience.com/PDF/New_York.pdf

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are always reported on a wet weight basis.

Subcontractor Information:

Unless otherwise noted below (or on the subcontract form), no samples were subcontracted.

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Detections Summary

Client:	Curtis & Tompkins, Ltd.	Work Order:	14-06-2068
	2323 Fifth Street	Project Name:	258404
	Berkeley, CA 94710-2407	Received:	06/27/14
Attn:	Will S. Rice		

Client SampleID / Analyte	Result	Qualifiers	RL	Units	Method	Extraction
MW-10 (14-06-2068-1)						
Carbon Dioxide	45300		17.0	ug/L	RSK-175M	N/A
MW-1 (14-06-2068-2)						
Carbon Dioxide	5560		1.70	ug/L	RSK-175M	N/A
MW-9 (14-06-2068-3)						
Carbon Dioxide	47300		17.0	ug/L	RSK-175M	N/A
MW-5 (14-06-2068-4)						
Carbon Dioxide	20600		17.0	ug/L	RSK-175M	N/A

Subcontracted analyses, if any, are not included in this summary.

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* MDL is shown

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Analytical Report

Curtis & Tompkins, Ltd.
2323 Fifth Street
Berkeley, CA 94710-2407

Project: 258404

Date Received: 06/27/14
Work Order: 14-06-2068
Preparation: N/A
Method: RSK-175M
Units: ug/L

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-10	**14-06-2068-1-A**	**06/24/14 09:48**	**Aqueous**	**GC 14**	**N/A**	**06/30/14 14:54**	**140630L01**

Parameter	Result	RL	DF	Qualifiers
Carbon Dioxide	45300	17.0	10.0	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-1	**14-06-2068-2-A**	**06/24/14 11:28**	**Aqueous**	**GC 14**	**N/A**	**06/30/14 16:15**	**140630L01**

Parameter	Result	RL	DF	Qualifiers
Carbon Dioxide	5560	1.70	1.00	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-9	**14-06-2068-3-A**	**06/24/14 13:00**	**Aqueous**	**GC 14**	**N/A**	**06/30/14 15:33**	**140630L01**

Parameter	Result	RL	DF	Qualifiers
Carbon Dioxide	47300	17.0	10.0	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-5	**14-06-2068-4-A**	**06/24/14 14:25**	**Aqueous**	**GC 14**	**N/A**	**06/30/14 15:55**	**140630L01**

Parameter	Result	RL	DF	Qualifiers
Carbon Dioxide	20600	17.0	10.0	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-659-715**	**N/A**	**Aqueous**	**GC 14**	**N/A**	**06/30/14 11:58**	**140630L01**

Parameter	Result	RL	DF	Qualifiers
Carbon Dioxide	ND	1.70	1.00	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Quality Control - LCS/LCSD

Curtis & Tompkins, Ltd.		Date Received:	06/27/14
2323 Fifth Street		Work Order:	14-06-2068
Berkeley, CA 94710-2407		Preparation:	N/A
		Method:	RSK-175M
Project: 258404			Page 1 of 1

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-659-715	**LCS**	**Aqueous**	**GC 14**	**N/A**	**06/30/14 11:20**	**140630L01**
099-12-659-715	**LCSD**	**Aqueous**	**GC 14**	**N/A**	**06/30/14 11:39**	**140630L01**

Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Carbon Dioxide	104.0	93.90	90	93.43	90	80-120	1	0-20	

RPD: Relative Percent Difference. CL: Control Limits

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Sample Analysis Summary Report

Work Order: 14-06-2068 Page 1 of 1

Method	Extraction	Chemist ID	Instrument	Analytical Location
RSK-175M	N/A	896	GC 14	2

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Glossary of Terms and Qualifiers

Work Order: 14-06-2068 Page 1 of 1

Qualifiers	Definition
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to suspected matrix interference. The associated LCS recovery was in control.
4	The MS/MSD RPD was out of control due to suspected matrix interference.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to suspected matrix interference.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
B	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
BV	Sample received after holding time expired.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
JA	Analyte positively identified but quantitation is an estimate.
ME	LCS Recovery Percentage is within Marginal Exceedance (ME) Control Limit range (+/- 4 SD from the mean).
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
SG	The sample extract was subjected to Silica Gel treatment prior to analysis.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

A calculated total result (Example: Total Pesticides) is the summation of each component concentration and/or, if "J" flags are reported, estimated concentration. Component concentrations showing not detected (ND) are summed into the calculated total result as zero concentrations.

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Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878
2323 Fifth Street
Berkeley, CA 94710
(510) 486-0900
(510) 486-0532

14-06-2068

Project Number: 258404
Site: Port HFC

Subcontract Laboratory:
Cal Science
7440 Lincoln Way
Garden Grove, CA 92841-1432
(714) 895-5494
ATTN: Vik Patel

Results due: Report Level: II

Please send report to: Will S Rice (will.rice@ctberk.com)
*** Please report using Sample ID rather than C&T Lab #.

Sample ID	Sampled	Matrix	Analysis	C&T Lab #	Comments
MW-10	06/24 09:48	Water	RSK-175-CO2	258604-002	
MW-1	06/24 11:28	Water	RSK-175-CO2	258404-003	
MW-9	06/24 13:00	Water	RSK-175-CO2	258404-004	
MW-5	06/24 14:25	Water	RSK-175-CO2	258404-005	

Notes:	Relinquished By:	Received By:
	Date/Time: 6/26/14 1410	Date/Time:
	Date/Time:	Date/Time: 6/27/14 0940

Signature on this form constitutes a firm Purchase Order for the services requested above.

From: (510) 486-0900
Sample Control
Curtis & Tompkins
2323 5th Street

Berkeley, CA 94710

Origin ID: JEMA

FedEx Express

J14101402070326

Ship Date: 26JUN14
ActWgt: 12.5 LB
CAD: 7603800/INET3490

Delivery Address Bar Code

2068

Ref # 258404&450
Invoice #
PO #
Dept #

SHIP TO: (714) 895-5494 BILL THIRD PARTY

Vik Patel
Cal Science Environmental Lab
7440 LINCOLN WAY

GARDEN GROVE, CA 92841

FRI - 27 JUN AA
STANDARD OVERNIGHT

TRK# 7704 3644 9640
0201

92 APVA

92841
CA-US
SNA

522G5/69C4/F220

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2. Fold the printed page along the horizontal line.
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Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com.FedEx will not be responsible for any claim in excess of $100 per package, whether the result of loss, damage, delay, non-delivery,misdelivery,or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim.Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental,consequential, or special is limited to the greater of $100 or the authorized declared value. Recovery cannot exceed actual documented loss.Maximum for items of extraordinary value is $1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our ServiceGuide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

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WORK ORDER #: 14-06-2 0 6 V

SAMPLE RECEIPT FORM

Cooler 1 of 1

CLIENT: CLT

DATE: 06/27/14

TEMPERATURE: Thermometer ID: SC2 (Criteria: 0.0 °C – 6.0 °C, not frozen except sediment/tissue)

Temperature 2.1 °C - 0.3 °C (CF) = 1.4 °C ☑ Blank ☐ Sample

☐ Sample(s) outside temperature criteria (PM/APM contacted by: _____)

☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling.

☐ **Received at ambient temperature, placed on ice for transport by Courier.**

Ambient Temperature: ☐ Air ☐ Filter Checked by: 15

CUSTODY SEALS INTACT:

☐ Cooler ☐_____ ☐ No (Not Intact) ☑ Not Present ☐ N/A Checked by: 15

☐ Sample ☐_____ ☐ No (Not Intact) ☑ Not Present Checked by: SR6

SAMPLE CONDITION:	Yes	No	N/A
Chain-Of-Custody (COC) document(s) received with samples	☑	☐	☐
COC document(s) received complete	☑	☐	☐
☐ Collection date/time, matrix, and/or # of containers logged in based on sample labels.			
☐ No analysis requested. ☐ Not relinquished. ☐ No date/time relinquished.			
Sampler's name indicated on COC	☐	☐	☑
Sample container label(s) consistent with COC	☑	☐	☐
Sample container(s) intact and good condition	☑	☐	☐
Proper containers and sufficient volume for analyses requested	☑	☐	☐
Analyses received within holding time	☑	☐	☐
Aqueous samples received within 15-minute holding time			
☐ pH ☐ Residual Chlorine ☐ Dissolved Sulfides ☐ Dissolved Oxygen	☐	☐	☑
Proper preservation noted on COC or sample container	☑	☐	☐
☐ Unpreserved vials received for Volatiles analysis			
Volatile analysis container(s) free of headspace	☑	☐	☐
Tedlar bag(s) free of condensation	☐	☐	☑

CONTAINER TYPE:

Solid: ☐4ozCGJ ☐8ozCGJ ☐16ozCGJ ☐Sleeve (_____) ☐EnCores® ☐TerraCores® ☐_____

Aqueous: ☑VOA (3) ☐VOA**h** ☐VOA**na$_2$** ☐125AGB ☐125AGB**h** ☐125AGB**p** ☐1AGB ☐1AGB**na$_2$** ☐1AGB**s**

☐500AGB ☐500AGJ ☐500AGJ**s** ☐250AGB ☐250CGB ☐250CGB**s** ☐1PB ☐1PB**na** ☐500PB

☐250PB ☐250PB**n** ☐125PB ☐125PB**znna** ☐100PJ ☐100PJ**na$_2$** ☐_____ ☐_____ ☐_____

Air: ☐Tedlar® ☐Canister **Other:** ☐_____ **Trip Blank Lot#:**_____ Labeled/Checked by: SR6

Container: **C:** Clear **A:** Amber **P:** Plastic **G:** Glass **J:** Jar **B:** Bottle **Z:** Ziploc/Resealable Bag **E:** Envelope Reviewed by: SR2

Preservative: **h:** HCL **n:** HNO_3 **na$_2$:** $Na_2S_2O_3$ **na:** NaOH **p:** H_3PO_4 **s:** H_2SO_4 **u:** Ultra-pure **znna:** $ZnAc_2$+NaOH **f:** Filtered Scanned by:


Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

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

Laboratory Job Number 258450
ANALYTICAL REPORT

Arcadis	Project : 04656016.0000
2000 Powell St.	Location : Port HFC
Emeryville, CA 94608	Level : II

Sample ID	Lab ID
QCTB-2	258450-001
MW-4	258450-002
MW-4DUP	258450-003
MW-11	258450-004
MW-8A	258450-005
MW-12	258450-006
MW-2	258450-007
RW-4	258450-008
RW-8	258450-009

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

Signature: Will Rice Date: 07/16/2014

Will S Rice
Project Manager
will.rice@ctberk.com

CA ELAP# 2896, NELAP# 4044-001

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**258450**
Client:	**Arcadis**
Project:	**04656016.0000**
Location:	**Port HFC**
Request Date:	**06/25/14**
Samples Received:	**06/25/14**

This data package contains sample and QC results for nine water samples, requested for the above referenced project on 06/25/14. The samples were received cold and intact.

TPH-Purgeables and/or BTXE by GC (EPA 8015B):
High surrogate recovery was observed for bromofluorobenzene (FID) in the MS for batch 212688; the parent sample was not a project sample. No other analytical problems were encountered.

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

Volatile Organics by GC/MS (EPA 8260B):
MW-11 (lab # 258450-004) was diluted due to foaming. No other analytical problems were encountered.

Dissolved Gases by GC/FID (RSK-175):
No analytical problems were encountered.

Metals (EPA 6010B):
Low recovery was observed for iron in the MSD of MW-4 (lab # 258450-002); the BS/BSD were within limits, and the associated RPD was within limits. No other analytical problems were encountered.

Metals (EPA 200.7):
The samples were filtered outside the 40CFR136 recommended 15 minute holding time. Low response was observed for potassium in the CCV analyzed 07/09/14 23:45; affected data was qualified with "b". High recoveries were observed for potassium and magnesium in the MS/MSD of MW-4 (lab # 258450-002); the BS/BSD were within limits, and the associated RPDs were within limits. No other analytical problems were encountered.

Ion Chromatography (EPA 300.0):
MW-11 (lab # 258450-004) and RW-8 (lab # 258450-009) were diluted due to high chloride concentrations. No other analytical problems were encountered.

Alkalinity (SM2320B):
No analytical problems were encountered.

Dissolved Sulfide (SM4500S2-D):
No analytical problems were encountered.

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**258450**
Client:	**Arcadis**
Project:	**04656016.0000**
Location:	**Port HFC**
Request Date:	**06/25/14**
Samples Received:	**06/25/14**

Total Dissolved Solids (TDS) (SM2540C):
No analytical problems were encountered.

Orthophosphate Phosphorous (SM4500P-E):
No analytical problems were encountered.

Dissolved CO2 by GC TCD (RSK-175):
Cal Science in Garden Grove, CA performed the analysis (NELAP certified).
Please see the Cal Science case narrative.

258450

Environmental Sampling Services, LLC
6680 Alhambra Avenue, #102
Martinez, California 94553-6105
Telephone: (925) 372-8108
www.envsampling.com

CHAIN OF CUSTODY RECORD

Page 1 of 1

TURN AROUND TIME

LABORATORY: Curtis Tompkins, Ltd. Berkeley, CA

☐ 24 Hours ☐ 48 Hours ☐ 1 Week ☑ Normal Other:

Report To: Ms. Caroline Orsi
Company: Arcadis U.S., Inc.
Address: 2000 Powell Street, 7th Floor, Emeryville, CA 94608
E-Mail Results to & cc: caroline.orsi@arcadis-us.com

Telephone/Fax: 510-652-4500 / 510-652-4906
Project Name: Port HFC
Project Number: 04656016.0000
Bill To: Port of Oakland

Sampler(s): Jacqueline Lee ☐ Stephen Penman ☑
Sampler's Signature:
Sampler's Signature:

Reporting Requirement:
EDD File: Yes ☑ No ☐
PDF: Yes ☑ No ☐
Electronic (EDF) : Yes ☑ No ☐
EPA Data Report: Level II

	SAMPLE ID	Sample Date	Sample Time	Number of Containers	Type of Container[1]	Matrix: Water	Groundwater	Soil	Soil Vapor	Other	Preservative: Ice	HCl	HNO_3	NaOH	TPH-Gasoline (EPA 8015B)	BTEX & MTBE (EPA 8260B)	Methane (RSK-175)	Carbon Dioxide (RSK-175)	TPH-D & MO (EPA 8015B) w/Silica Gel Cleanup	TDS (40CFR136/160.1)	Major Anions (EPA 300.0) * see "comme	Dissolved Sulfide (EPA E376.2)	Field Filtered (FF): Dissolved Na, Ca, K, and Mg (EPA 200.7)	Dissolved Fe and Mn (EPA SW6010B)	Comments
1	QCTB-2	6/25/14	7:50	6	1	x					x	x			x	x									
2	MW-4	6/25/14	8:52	20	1, 2, 3		x				x	x	x	x	x	x	x	x	x	x	x	x	x	x	Major Anions =
3	MW-4DUP	6/25/14	8:52	20	1,2,3		X				X	X	X	X	X	X	X	X	X	X	X	X	X	X	Bicarbonate,
4	MW-11	6/25/14	10:28	20	1,2,3		X				X	X	X	X	X	X	X	X	X	X	X	X	X	X	Carbonate,
5	MW-8A	6/25/14	10:58	20	1,2,3		X				X	X	X	X	X	X	X	X	X	X	X	X	X	X	Sulfate, Chloride,
6	MW-12	6/25/14	12:17	20	1,2,3		X				X	X	X	X	X	X	X	X	X	X	X	X	X	X	Nitrate, Nitrite,
7	MW-2	6/25/14	12:44	20	1,2,3		X				X	X	X	X	X	X	X	X	X	X	X	X	X	X	and
8	RW-4	6/25/14	14:05	20	1,2,3		X				X	X	X	X	X	X	X	X	X	X	X	X	X	X	Orthophosphate.
9	RW-8	6/25/14	14:38	20	1,2,3		X				X	X	X	X	X	X	X	X	X	X	X	X	X	X	

	Date:	Time:	
Relinquished By:	6/25/14	16:07	Received By: Pat Hamilton
Relinquished By:	Date:	Time:	Received By:
Relinquished By:	Date:	Time:	Received By:

1 = Sample Container Type: 1 =VOA 2=Glass 3=High Density Polyethylene 4=Summa Canister

QUESTIONS REGARDING COC, CALL ESS
Send confirmation to: caroline.orsi@arcadis-us.c
After log-in, please email COC to:
jlee@envsampling.com and spen@envsampling.com

SAMPLE RECEIPT
☐ Intact ☐ Cold
☑ On Ice ☐ Ambient
Preservative Correct?
☑ Yes ☐ No ☐

COOLER RECEIPT CHECKLIST

Curtis & Tompkins, Ltd.

Login # 258450 Date Received 06/25/14 Number of coolers 4
Client ARCADIS Project PORT HFC

Date Opened 06/25/14 By (print) NY (sign)
Date Logged in 6 By (print) MC (sign)

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

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

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

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

Type of ice used: ☐ Wet ☐ Blue/Gel ☐ None Temp(°C) 1.1, 1.3, 1.8, 2.1

☐ 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
15.) -009, pH < 12, ADDED 10mL NaOH @ 1930 (NY EXP LOT # 310917) to pH >12

Rev 10, 10/11

Curtis & Tompkins Sample Preservation for 258450

Sample	pH: <2	>9	>12	Other
-002a	[ ]	[ ]	[ ]	_____
b	[ ]	[ ]	[ ]	_____
c	[ ]	[ ]	[ ]	_____
d	[ ]	[ ]	[ ]	_____
e	[ ]	[ ]	[ ]	_____
f	[ ]	[ ]	[ ]	_____
g	[ ]	[ ]	[ ]	_____
h	[ ]	[ ]	[ ]	_____
i	[ ]	[ ]	[ ]	_____
j	[ ]	[ ]	[ ]	_____
k	[ ]	[ ]	[ ]	_____
l	[ ]	[ ]	[ ]	_____
m	[X]	[ ]	[ ]	_____
n	[ ]	[ ]	[ ]	_____
o	[X]	[ ]	[ ]	_____
p	[ ]	[ ]	[X]	_____
q	[ ]	[ ]	[ ]	_____
r	[ ]	[ ]	[ ]	_____
s	[ ]	[ ]	[ ]	_____
t	[ ]	[ ]	[ ]	_____
-003a	[ ]	[ ]	[ ]	_____
b	[ ]	[ ]	[ ]	_____
c	[ ]	[ ]	[ ]	_____
d	[ ]	[ ]	[ ]	_____
e	[ ]	[ ]	[ ]	_____
f	[ ]	[ ]	[ ]	_____
g	[ ]	[ ]	[ ]	_____
h	[ ]	[ ]	[ ]	_____
i	[ ]	[ ]	[ ]	_____
j	[ ]	[ ]	[ ]	_____
k	[ ]	[ ]	[ ]	_____
l	[ ]	[ ]	[ ]	_____
m	[X]	[ ]	[ ]	_____
n	[ ]	[ ]	[ ]	_____
o	[X]	[ ]	[ ]	_____
p	[ ]	[ ]	[X]	_____
q	[ ]	[ ]	[ ]	_____
r	[ ]	[ ]	[ ]	_____
s	[ ]	[ ]	[ ]	_____
t	[ ]	[ ]	[ ]	_____
-004a	[ ]	[ ]	[ ]	_____
b	[ ]	[ ]	[ ]	_____
c	[ ]	[ ]	[ ]	_____
d	[ ]	[ ]	[ ]	_____
e	[ ]	[ ]	[ ]	_____
f	[ ]	[ ]	[ ]	_____
g	[ ]	[ ]	[ ]	_____
h	[ ]	[ ]	[ ]	_____
i	[ ]	[ ]	[ ]	_____
j	[ ]	[ ]	[ ]	_____
k	[ ]	[ ]	[ ]	_____
l	[ ]	[ ]	[ ]	_____
m	[X]	[ ]	[ ]	_____
n	[ ]	[ ]	[ ]	_____
o	[X]	[ ]	[ ]	_____
p	[ ]	[ ]	[X]	_____
q	[ ]	[ ]	[ ]	_____
r	[ ]	[ ]	[ ]	_____
s	[ ]	[ ]	[ ]	_____
t	[ ]	[ ]	[ ]	_____

Sample	pH: <2	>9	>12	Other
k	[ ]	[ ]	[ ]	_____
l	[ ]	[ ]	[ ]	_____
m	[X]	[ ]	[ ]	_____
n	[ ]	[ ]	[ ]	_____
o	[X]	[ ]	[ ]	_____
p	[ ]	[ ]	[X]	_____
q	[ ]	[ ]	[ ]	_____
r	[ ]	[ ]	[ ]	_____
s	[ ]	[ ]	[ ]	_____
t	[ ]	[ ]	[ ]	_____
-005a	[ ]	[ ]	[ ]	_____
b	[ ]	[ ]	[ ]	_____
c	[ ]	[ ]	[ ]	_____
d	[ ]	[ ]	[ ]	_____
e	[ ]	[ ]	[ ]	_____
f	[ ]	[ ]	[ ]	_____
g	[ ]	[ ]	[ ]	_____
h	[ ]	[ ]	[ ]	_____
i	[ ]	[ ]	[ ]	_____
j	[ ]	[ ]	[ ]	_____
k	[ ]	[ ]	[ ]	_____
l	[ ]	[ ]	[ ]	_____
m	[X]	[ ]	[ ]	_____
n	[ ]	[ ]	[ ]	_____
o	[X]	[ ]	[ ]	_____
p	[ ]	[ ]	[X]	_____
q	[ ]	[ ]	[ ]	_____
r	[ ]	[ ]	[ ]	_____
s	[ ]	[ ]	[ ]	_____
t	[ ]	[ ]	[ ]	_____
-006a	[ ]	[ ]	[ ]	_____
b	[ ]	[ ]	[ ]	_____
c	[ ]	[ ]	[ ]	_____
d	[ ]	[ ]	[ ]	_____
e	[ ]	[ ]	[ ]	_____
f	[ ]	[ ]	[ ]	_____
g	[ ]	[ ]	[ ]	_____
h	[ ]	[ ]	[ ]	_____
i	[ ]	[ ]	[ ]	_____
j	[ ]	[ ]	[ ]	_____
k	[ ]	[ ]	[ ]	_____
l	[ ]	[ ]	[ ]	_____
m	[X]	[ ]	[ ]	_____
n	[ ]	[ ]	[ ]	_____
o	[X]	[ ]	[ ]	_____
p	[ ]	[ ]	[X]	_____
q	[ ]	[ ]	[ ]	_____
r	[ ]	[ ]	[ ]	_____
s	[ ]	[ ]	[ ]	_____
t	[ ]	[ ]	[ ]	_____

Sample	pH: <2	>9	>12	Other
-007a	[ ]	[ ]	[ ]	_____
b	[ ]	[ ]	[ ]	_____
c	[ ]	[ ]	[ ]	_____
d	[ ]	[ ]	[ ]	_____
e	[ ]	[ ]	[ ]	_____
f	[ ]	[ ]	[ ]	_____
g	[ ]	[ ]	[ ]	_____
h	[ ]	[ ]	[ ]	_____
i	[ ]	[ ]	[ ]	_____
j	[ ]	[ ]	[ ]	_____
k	[ ]	[ ]	[ ]	_____
l	[ ]	[ ]	[ ]	_____
m	[X]	[ ]	[ ]	_____
n	[ ]	[ ]	[ ]	_____
o	[X]	[ ]	[ ]	_____
p	[ ]	[ ]	[X]	_____
q	[ ]	[ ]	[ ]	_____
r	[ ]	[ ]	[ ]	_____
s	[ ]	[ ]	[ ]	_____
t	[ ]	[ ]	[ ]	_____
-008a	[ ]	[ ]	[ ]	_____
b	[ ]	[ ]	[ ]	_____
c	[ ]	[ ]	[ ]	_____
d	[ ]	[ ]	[ ]	_____
e	[ ]	[ ]	[ ]	_____
f	[ ]	[ ]	[ ]	_____
g	[ ]	[ ]	[ ]	_____
h	[ ]	[ ]	[ ]	_____
i	[ ]	[ ]	[ ]	_____
j	[ ]	[ ]	[ ]	_____
k	[ ]	[ ]	[ ]	_____
l	[ ]	[ ]	[ ]	_____
m	[X]	[ ]	[ ]	_____
n	[ ]	[ ]	[ ]	_____
o	[X]	[ ]	[ ]	_____
p	[ ]	[ ]	[X]	_____
q	[ ]	[ ]	[ ]	_____
r	[ ]	[ ]	[ ]	_____
s	[ ]	[ ]	[ ]	_____
t	[ ]	[ ]	[ ]	_____
-009a	[ ]	[ ]	[ ]	_____
b	[ ]	[ ]	[ ]	_____
c	[ ]	[ ]	[ ]	_____
d	[ ]	[ ]	[ ]	_____
e	[ ]	[ ]	[ ]	_____
f	[ ]	[ ]	[ ]	_____
g	[ ]	[ ]	[ ]	_____
h	[ ]	[ ]	[ ]	_____
i	[ ]	[ ]	[ ]	_____

Analyst: ME

Date: 06/25/14

Sample	pH: <2	>9	>12	Other
j	[ ]	[ ]	[ ]	____
k	[ ]	[ ]	[ ]	____
l	[ ]	[ ]	[ ]	____
m	[X]	[ ]	[ ]	____

Sample	pH: <2	>9	>12	Other
n	[ ]	[ ]	[ ]	____
o	[X]	[ ]	[ ]	____
p	[ ]	[ ]	[X]	____
q	[ ]	[ ]	[ ]	____

Sample	pH: <2	>9	>12	Other
r	[ ]	[ ]	[ ]	____
s	[ ]	[ ]	[ ]	____
t	[ ]	[ ]	[ ]	____

Analyst: MC
Date: 06/25/14
Page 2 of 2

Curtis & Tompkins, Ltd.

Detections Summary for 258450

Client : Arcadis
Project : 04656016.0000
Location : Port HFC

Client Sample ID : QCTB-2 Laboratory Sample ID : 258450-001

No Detections

Client Sample ID : MW-4 Laboratory Sample ID : 258450-002

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Gasoline C7-C12	270	Y	50	13	ug/L	As Recd	1.000	EPA 8015B	EPA 5030B
Diesel C10-C24	54	Y	50	16	ug/L	As Recd	1.000	EPA 8015B	EPA 3520C
Benzene	52		0.5	0.1	ug/L	As Recd	1.000	EPA 8260B	EPA 5030B
Methane	5.3		0.005	0.001	mg/L	As Recd	1.000	RSK-175	METHOD
Iron	3,500		100	6.0	ug/L	DISS.	1.000	EPA 6010B	METHOD
Manganese	700		5.0	0.27	ug/L	DISS.	1.000	EPA 6010B	METHOD
Calcium	47,000		2,000	170	ug/L	DISS.	10.00	EPA 200.7	METHOD
Potassium	11,000		5,000	260	ug/L	DISS.	10.00	EPA 200.7	METHOD
Magnesium	66,000		2,000	240	ug/L	DISS.	10.00	EPA 200.7	METHOD
Sodium	250,000		5,000	370	ug/L	DISS.	10.00	EPA 200.7	METHOD
Chloride	200		4.0	0.28	mg/L	TOTAL	20.00	EPA 300.0	METHOD
Alkalinity, Bicarbonate	830		6.7		mg/L	TOTAL	6.700	SM2320B	METHOD
Alkalinity, Total as CaCO3	830		6.7		mg/L	TOTAL	6.700	SM2320B	METHOD
Orthophosphate (as P)	0.40		0.030	0.003	mg/L	TOTAL	1.000	SM4500P-E	METHOD
Total Dissolved Solids	1,090		10		mg/L	TOTAL	1.000	SM2540C	METHOD

Client Sample ID : MW-4DUP Laboratory Sample ID : 258450-003

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Gasoline C7-C12	280	Y	50	13	ug/L	As Recd	1.000	EPA 8015B	EPA 5030B
Benzene	54		0.5	0.1	ug/L	As Recd	1.000	EPA 8260B	EPA 5030B
Methane	6.1		0.005	0.001	mg/L	As Recd	1.000	RSK-175	METHOD
Iron	3,500		100	6.0	ug/L	DISS.	1.000	EPA 6010B	METHOD
Manganese	700		5.0	0.27	ug/L	DISS.	1.000	EPA 6010B	METHOD
Calcium	52,000		20,000	1,700	ug/L	DISS.	100.0	EPA 200.7	METHOD
Potassium	14,000	b	500	26	ug/L	DISS.	1.000	EPA 200.7	METHOD
Magnesium	73,000		20,000	2,400	ug/L	DISS.	100.0	EPA 200.7	METHOD
Sodium	260,000		50,000	3,700	ug/L	DISS.	100.0	EPA 200.7	METHOD
Chloride	200		4.0	0.28	mg/L	TOTAL	20.00	EPA 300.0	METHOD
Alkalinity, Bicarbonate	800		6.7		mg/L	TOTAL	6.700	SM2320B	METHOD
Alkalinity, Total as CaCO3	800		6.7		mg/L	TOTAL	6.700	SM2320B	METHOD
Orthophosphate (as P)	0.37		0.030	0.003	mg/L	TOTAL	1.000	SM4500P-E	METHOD
Total Dissolved Solids	1,100		10		mg/L	TOTAL	1.000	SM2540C	METHOD

Curtis & Tompkins, Ltd.

Client Sample ID : MW-11 Laboratory Sample ID : 258450-004

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Methane	5.2		0.005	0.001	mg/L	As Recd	1.000	RSK-175	METHOD
Iron	1,700		100	6.0	ug/L	DISS.	1.000	EPA 6010B	METHOD
Manganese	320		5.0	0.27	ug/L	DISS.	1.000	EPA 6010B	METHOD
Calcium	25,000		20,000	1,700	ug/L	DISS.	100.0	EPA 200.7	METHOD
Potassium	48,000	b	500	26	ug/L	DISS.	1.000	EPA 200.7	METHOD
Magnesium	55,000		20,000	2,400	ug/L	DISS.	100.0	EPA 200.7	METHOD
Sodium	1,000,000		50,000	3,700	ug/L	DISS.	100.0	EPA 200.7	METHOD
Chloride	940		20	1.4	mg/L	TOTAL	100.0	EPA 300.0	METHOD
Alkalinity, Bicarbonate	1,500		6.7		mg/L	TOTAL	6.700	SM2320B	METHOD
Alkalinity, Total as CaCO3	1,500		6.7		mg/L	TOTAL	6.700	SM2320B	METHOD
Orthophosphate (as P)	6.8		0.30	0.025	mg/L	TOTAL	10.00	SM4500P-E	METHOD
Total Dissolved Solids	3,130		20		mg/L	TOTAL	2.000	SM2540C	METHOD

Client Sample ID : MW-8A Laboratory Sample ID : 258450-005

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Methane	0.13		0.005	0.001	mg/L	As Recd	1.000	RSK-175	METHOD
Iron	2,800		100	6.0	ug/L	DISS.	1.000	EPA 6010B	METHOD
Manganese	700		5.0	0.27	ug/L	DISS.	1.000	EPA 6010B	METHOD
Calcium	50,000		20,000	1,700	ug/L	DISS.	100.0	EPA 200.7	METHOD
Potassium	16,000	b	500	26	ug/L	DISS.	1.000	EPA 200.7	METHOD
Magnesium	65,000		20,000	2,400	ug/L	DISS.	100.0	EPA 200.7	METHOD
Sodium	220,000		50,000	3,700	ug/L	DISS.	100.0	EPA 200.7	METHOD
Chloride	150		4.0	0.28	mg/L	TOTAL	20.00	EPA 300.0	METHOD
Sulfate	45		0.50	0.026	mg/L	TOTAL	1.000	EPA 300.0	METHOD
Alkalinity, Bicarbonate	760		6.7		mg/L	TOTAL	6.700	SM2320B	METHOD
Alkalinity, Total as CaCO3	760		6.7		mg/L	TOTAL	6.700	SM2320B	METHOD
Orthophosphate (as P)	0.40		0.030	0.003	mg/L	TOTAL	1.000	SM4500P-E	METHOD
Total Dissolved Solids	1,080		10		mg/L	TOTAL	1.000	SM2540C	METHOD

Curtis & Tompkins, Ltd.

Client Sample ID : MW-12 Laboratory Sample ID : 258450-006

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Gasoline C7-C12	67	Y	50	13	ug/L	As Recd	1.000	EPA 8015B	EPA 5030B
Diesel C10-C24	260	Y	50	16	ug/L	As Recd	1.000	EPA 8015B	EPA 3520C
MTBE	4.2		0.5	0.1	ug/L	As Recd	1.000	EPA 8260B	EPA 5030B
Methane	4.7		0.005	0.001	mg/L	As Recd	1.000	RSK-175	METHOD
Iron	550		100	6.0	ug/L	DISS.	1.000	EPA 6010B	METHOD
Manganese	1,300		5.0	0.27	ug/L	DISS.	1.000	EPA 6010B	METHOD
Calcium	100,000		20,000	1,700	ug/L	DISS.	100.0	EPA 200.7	METHOD
Potassium	15,000	b	500	26	ug/L	DISS.	1.000	EPA 200.7	METHOD
Magnesium	50,000		20,000	2,400	ug/L	DISS.	100.0	EPA 200.7	METHOD
Sodium	150,000		50,000	3,700	ug/L	DISS.	100.0	EPA 200.7	METHOD
Chloride	190		4.0	0.28	mg/L	TOTAL	20.00	EPA 300.0	METHOD
Sulfate	2.6		0.50	0.026	mg/L	TOTAL	1.000	EPA 300.0	METHOD
Alkalinity, Bicarbonate	660		6.7		mg/L	TOTAL	6.700	SM2320B	METHOD
Alkalinity, Total as CaCO3	660		6.7		mg/L	TOTAL	6.700	SM2320B	METHOD
Dissolved Sulfide	1.5		0.04		mg/L	TOTAL	1.000	SM4500S2-D	METHOD
Orthophosphate (as P)	0.57		0.030	0.003	mg/L	TOTAL	1.000	SM4500P-E	METHOD
Total Dissolved Solids	950		10		mg/L	TOTAL	1.000	SM2540C	METHOD

Client Sample ID : MW-2 Laboratory Sample ID : 258450-007

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Methane	0.014		0.005	0.001	mg/L	As Recd	1.000	RSK-175	METHOD
Manganese	280		5.0	0.27	ug/L	DISS.	1.000	EPA 6010B	METHOD
Calcium	28,000		20,000	1,700	ug/L	DISS.	100.0	EPA 200.7	METHOD
Potassium	1,100	b	500	26	ug/L	DISS.	1.000	EPA 200.7	METHOD
Magnesium	32,000		20,000	2,400	ug/L	DISS.	100.0	EPA 200.7	METHOD
Sodium	140,000		50,000	3,700	ug/L	DISS.	100.0	EPA 200.7	METHOD
Chloride	16		0.20	0.014	mg/L	TOTAL	1.000	EPA 300.0	METHOD
Sulfate	27		0.50	0.026	mg/L	TOTAL	1.000	EPA 300.0	METHOD
Alkalinity, Bicarbonate	590		6.7		mg/L	TOTAL	6.700	SM2320B	METHOD
Alkalinity, Total as CaCO3	590		6.7		mg/L	TOTAL	6.700	SM2320B	METHOD
Orthophosphate (as P)	0.17		0.030	0.003	mg/L	TOTAL	1.000	SM4500P-E	METHOD
Total Dissolved Solids	640		10		mg/L	TOTAL	1.000	SM2540C	METHOD

Curtis & Tompkins, Ltd.

Client Sample ID : RW-4 Laboratory Sample ID : 258450-008

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Gasoline C7-C12	1,300	Y	50	13	ug/L	As Recd	1.000	EPA 8015B	EPA 5030B
Diesel C10-C24	5,200		50	16	ug/L	As Recd	1.000	EPA 8015B	EPA 3520C
Methane	6.4		0.005	0.001	mg/L	As Recd	1.000	RSK-175	METHOD
Iron	13,000		100	6.0	ug/L	DISS.	1.000	EPA 6010B	METHOD
Manganese	2,200		5.0	0.27	ug/L	DISS.	1.000	EPA 6010B	METHOD
Calcium	110,000		20,000	1,700	ug/L	DISS.	100.0	EPA 200.7	METHOD
Potassium	11,000	b	500	26	ug/L	DISS.	1.000	EPA 200.7	METHOD
Magnesium	27,000		20,000	2,400	ug/L	DISS.	100.0	EPA 200.7	METHOD
Sodium	66,000		50,000	3,700	ug/L	DISS.	100.0	EPA 200.7	METHOD
Chloride	71		2.0	0.14	mg/L	TOTAL	10.00	EPA 300.0	METHOD
Alkalinity, Bicarbonate	540		10		mg/L	TOTAL	10.00	SM2320B	METHOD
Alkalinity, Total as CaCO3	540		10		mg/L	TOTAL	10.00	SM2320B	METHOD
Dissolved Sulfide	0.05		0.04		mg/L	TOTAL	1.000	SM4500S2-D	METHOD
Total Dissolved Solids	730		10		mg/L	TOTAL	1.000	SM2540C	METHOD

Client Sample ID : RW-8 Laboratory Sample ID : 258450-009

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Gasoline C7-C12	850	Y	50	13	ug/L	As Recd	1.000	EPA 8015B	EPA 5030B
Diesel C10-C24	7,200		49	16	ug/L	As Recd	1.000	EPA 8015B	EPA 3520C
Benzene	53		0.5	0.1	ug/L	As Recd	1.000	EPA 8260B	EPA 5030B
Methane	8.6		0.005	0.001	mg/L	As Recd	1.000	RSK-175	METHOD
Iron	24,000		100	6.0	ug/L	DISS.	1.000	EPA 6010B	METHOD
Manganese	5,400		5.0	0.27	ug/L	DISS.	1.000	EPA 6010B	METHOD
Calcium	180,000		20,000	1,700	ug/L	DISS.	100.0	EPA 200.7	METHOD
Potassium	35,000		500	26	ug/L	DISS.	1.000	EPA 200.7	METHOD
Magnesium	68,000		500	24	ug/L	DISS.	1.000	EPA 200.7	METHOD
Sodium	570,000		50,000	3,700	ug/L	DISS.	100.0	EPA 200.7	METHOD
Chloride	890		20	1.4	mg/L	TOTAL	100.0	EPA 300.0	METHOD
Alkalinity, Bicarbonate	960		10		mg/L	TOTAL	10.00	SM2320B	METHOD
Alkalinity, Total as CaCO3	960		10		mg/L	TOTAL	10.00	SM2320B	METHOD
Dissolved Sulfide	0.21		0.04		mg/L	TOTAL	1.000	SM4500S2-D	METHOD
Orthophosphate (as P)	0.040		0.030	0.003	mg/L	TOTAL	1.000	SM4500P-E	METHOD
Total Dissolved Solids	2,500		10		mg/L	TOTAL	1.000	SM2540C	METHOD

Y = Sample exhibits chromatographic pattern which does not resemble standard

b = See narrative

Curtis & Tompkins, Ltd.

Total Volatile Hydrocarbons

Lab #:	258450	Location:	Port HFC
Client:	Arcadis	Prep:	EPA 5030B
Project#:	04656016.0000	Analysis:	EPA 8015B
Matrix:	Water	Batch#:	212688
Units:	ug/L	Sampled:	06/25/14
Diln Fac:	1.000	Received:	06/25/14

Field ID:	QCTB-2	Lab ID:	258450-001
Type:	SAMPLE	Analyzed:	06/26/14

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	112	77-128

Field ID:	MW-4	Lab ID:	258450-002
Type:	SAMPLE	Analyzed:	06/27/14

Analyte	Result	RL
Gasoline C7-C12	270 Y	50

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	112	77-128

Field ID:	MW-4DUP	Lab ID:	258450-003
Type:	SAMPLE	Analyzed:	06/27/14

Analyte	Result	RL
Gasoline C7-C12	280 Y	50

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	111	77-128

Field ID:	MW-11	Lab ID:	258450-004
Type:	SAMPLE	Analyzed:	06/27/14

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	114	77-128

Field ID:	MW-8A	Lab ID:	258450-005
Type:	SAMPLE	Analyzed:	06/27/14

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	115	77-128

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

Curtis & Tompkins, Ltd.

Total Volatile Hydrocarbons

Lab #:	258450	Location:	Port HFC
Client:	Arcadis	Prep:	EPA 5030B
Project#:	04656016.0000	Analysis:	EPA 8015B
Matrix:	Water	Batch#:	212688
Units:	ug/L	Sampled:	06/25/14
Diln Fac:	1.000	Received:	06/25/14

Field ID: MW-12 Lab ID: 258450-006
Type: SAMPLE Analyzed: 06/27/14

Analyte	Result	RL
Gasoline C7-C12	67 Y	50

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	116	77-128

Field ID: MW-2 Lab ID: 258450-007
Type: SAMPLE Analyzed: 06/27/14

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	119	77-128

Field ID: RW-4 Lab ID: 258450-008
Type: SAMPLE Analyzed: 06/27/14

Analyte	Result	RL
Gasoline C7-C12	1,300 Y	50

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	121	77-128

Field ID: RW-8 Lab ID: 258450-009
Type: SAMPLE Analyzed: 06/27/14

Analyte	Result	RL
Gasoline C7-C12	850 Y	50

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	118	77-128

Type: BLANK Analyzed: 06/26/14
Lab ID: QC746846

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	95	77-128

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 #:	258450	Location:	Port HFC
Client:	Arcadis	Prep:	EPA 5030B
Project#:	04656016.0000	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC746845	Batch#:	212688
Matrix:	Water	Analyzed:	06/26/14
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1,000	985.5	99	80-120

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

Curtis & Tompkins, Ltd.

Batch QC Report

Total Volatile Hydrocarbons

Lab #:	258450	Location:	Port HFC
Client:	Arcadis	Prep:	EPA 5030B
Project#:	04656016.0000	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	212688
MSS Lab ID:	258421-001	Sampled:	06/25/14
Matrix:	Water	Received:	06/25/14
Units:	ug/L	Analyzed:	06/26/14
Diln Fac:	1.000		

Type: MS Lab ID: QC746847

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	13.71	2,000	2,021	100	74-120

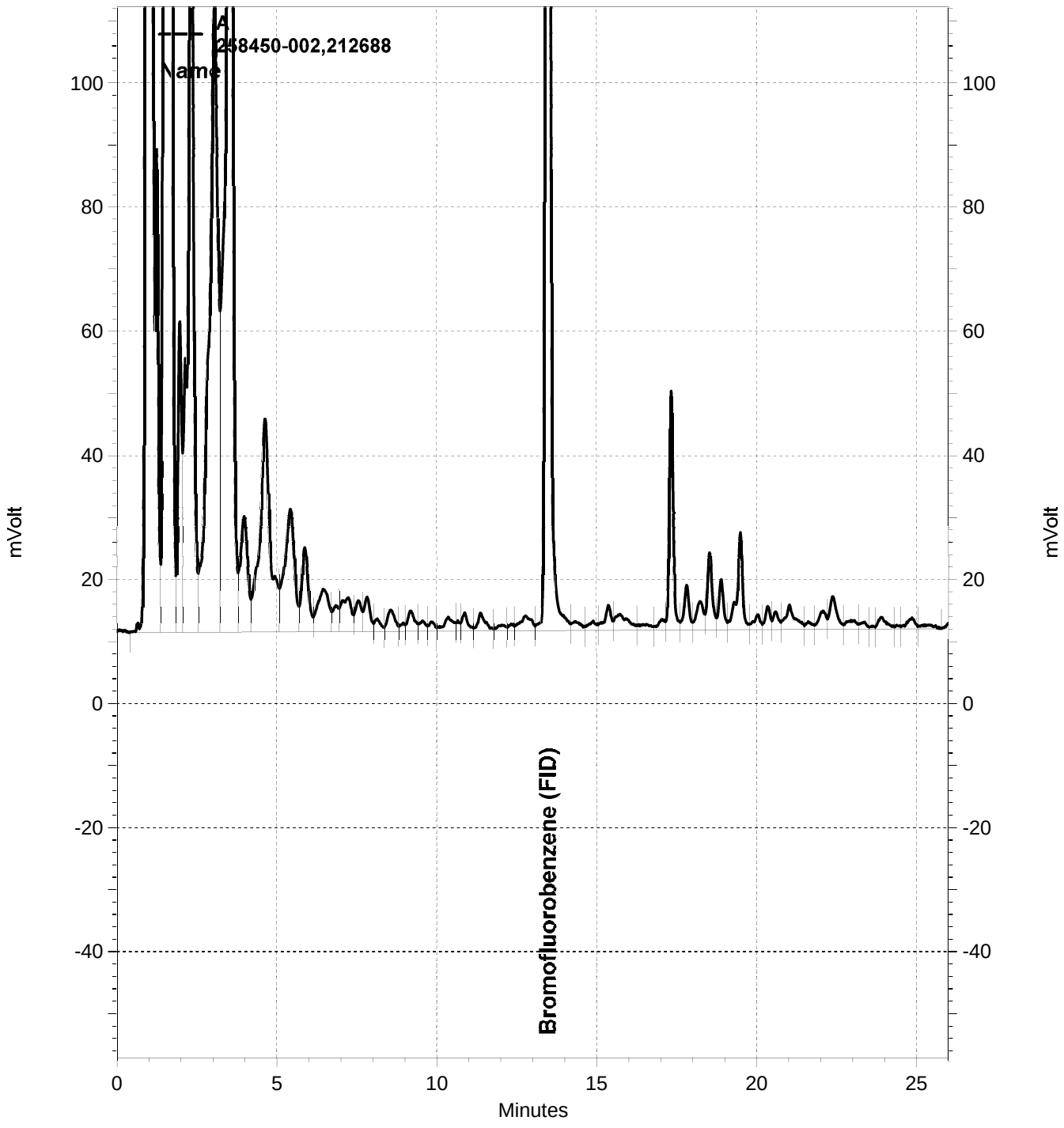
Surrogate	%REC	Limits
Bromofluorobenzene (FID)	129 *	77-128

Type: MSD Lab ID: QC746848

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	2,007	100	74-120	1	27

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	126	77-128

*= Value outside of QC limits; see narrative
RPD= Relative Percent Difference



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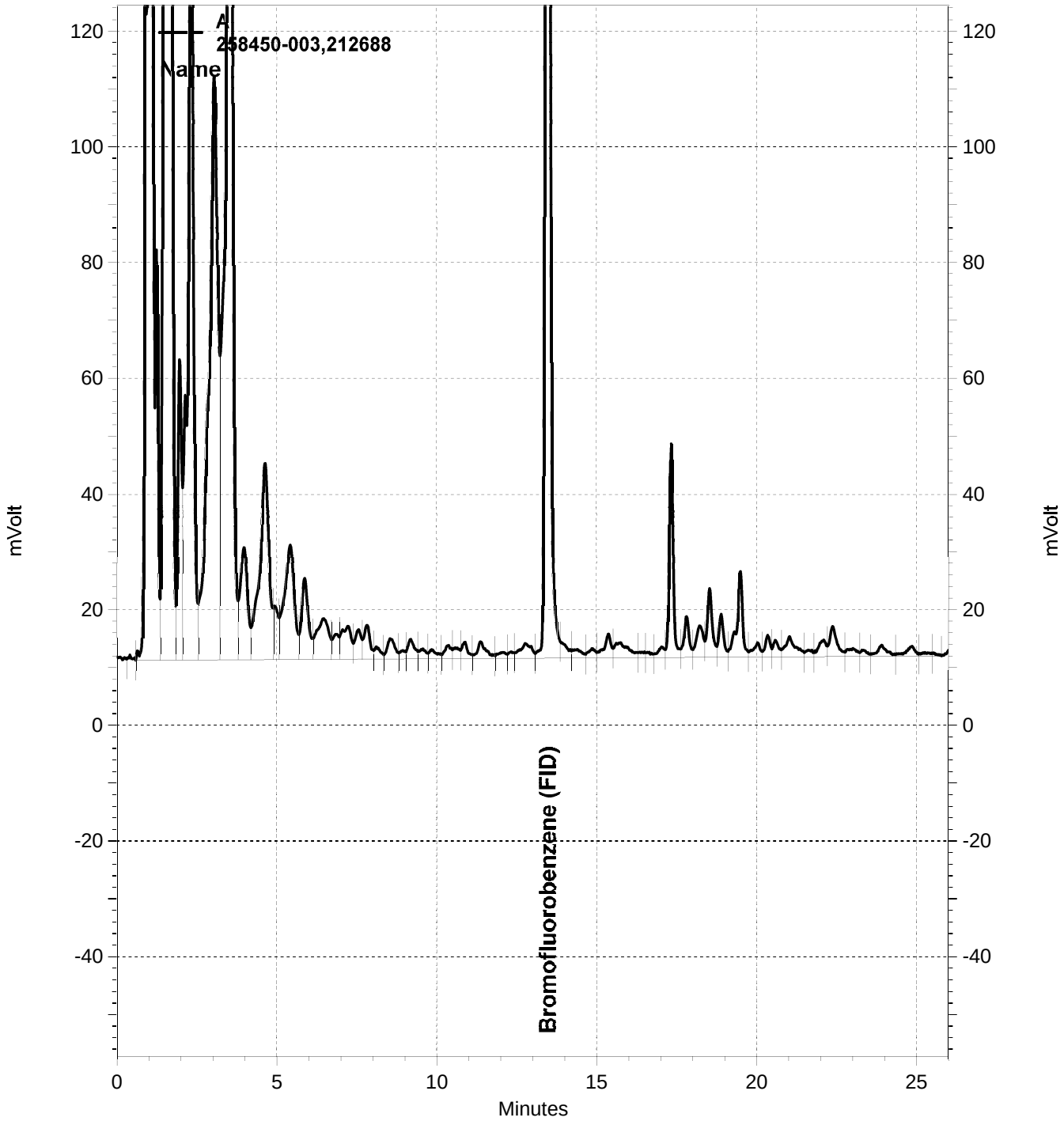

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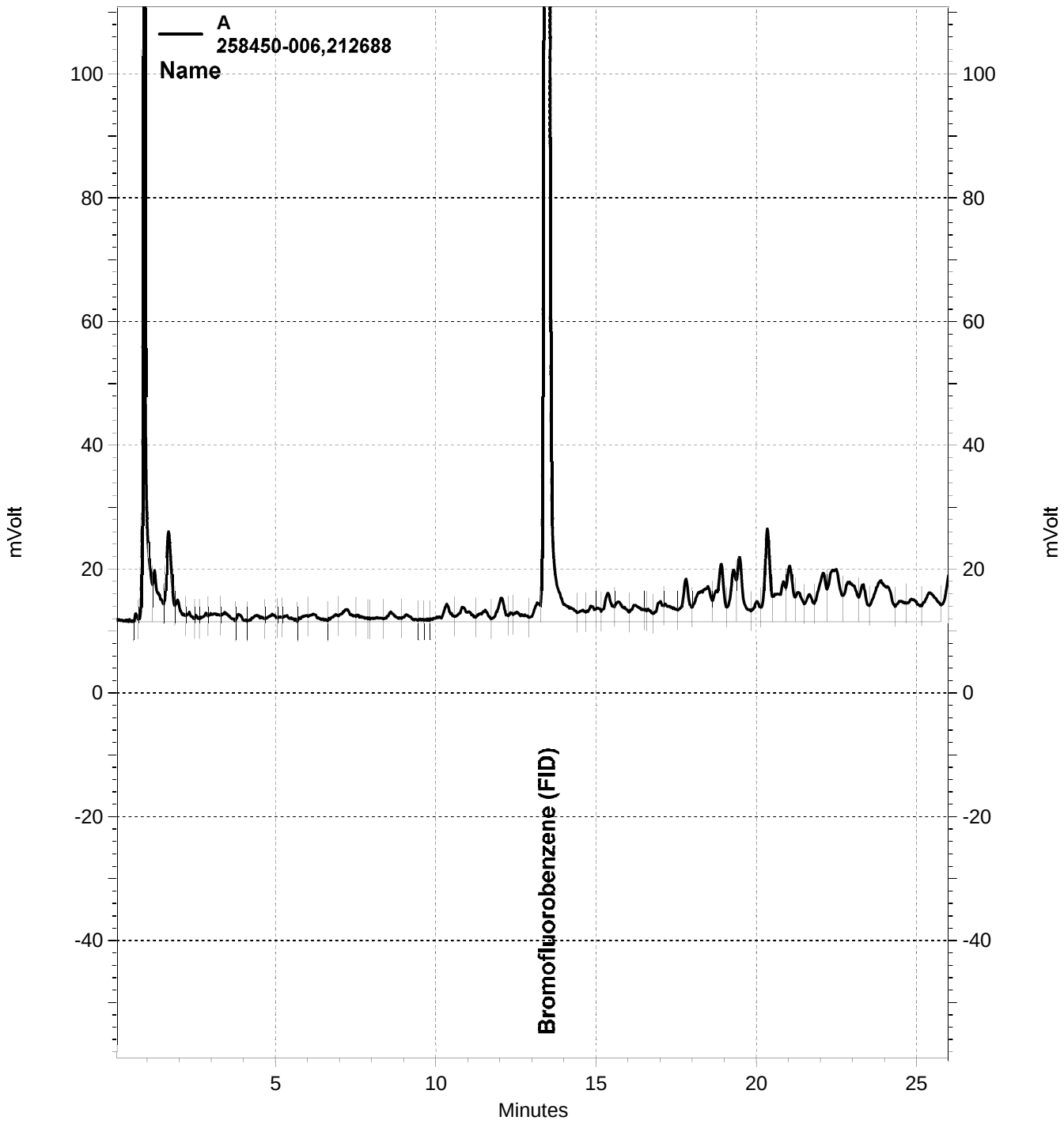

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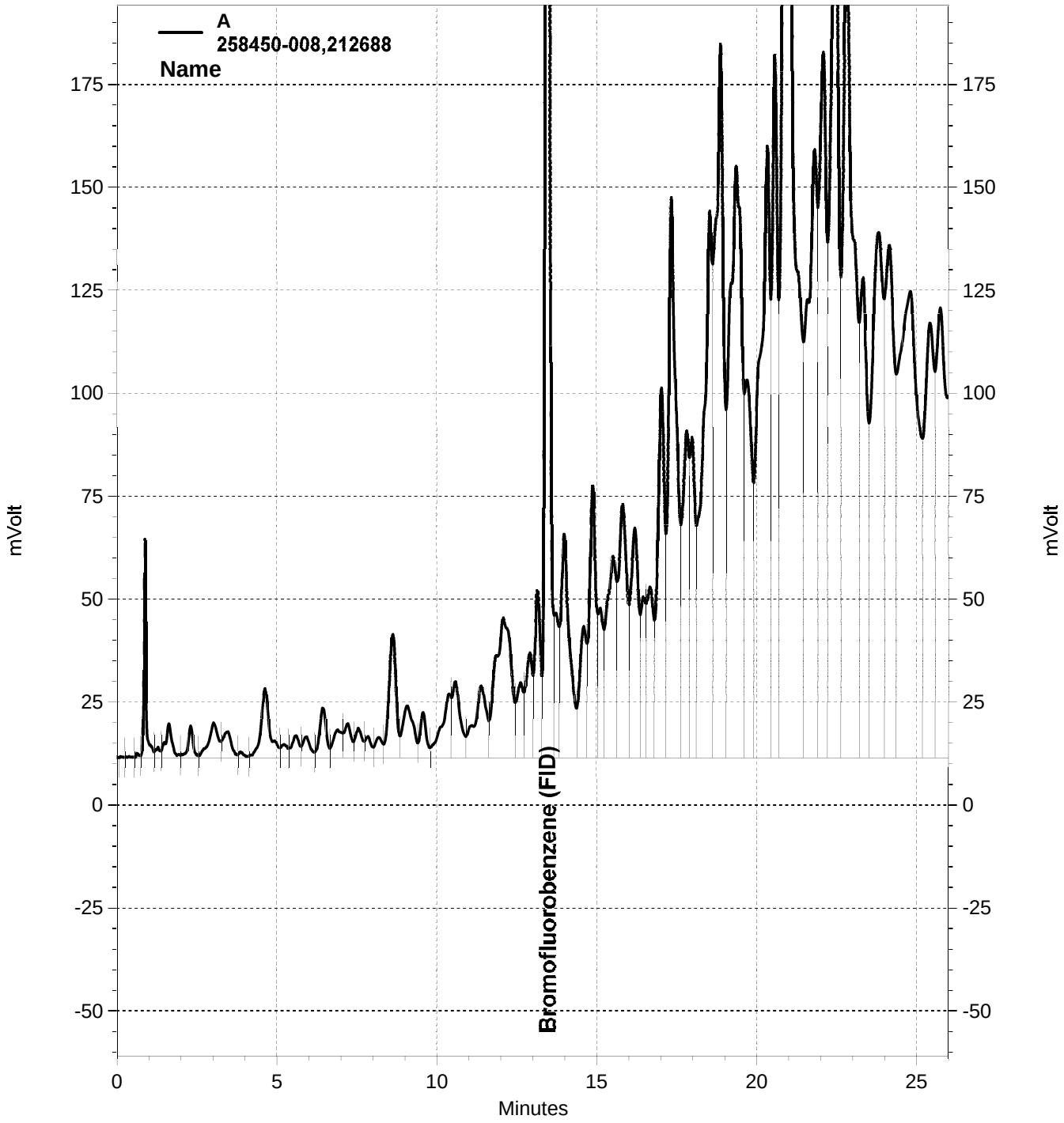

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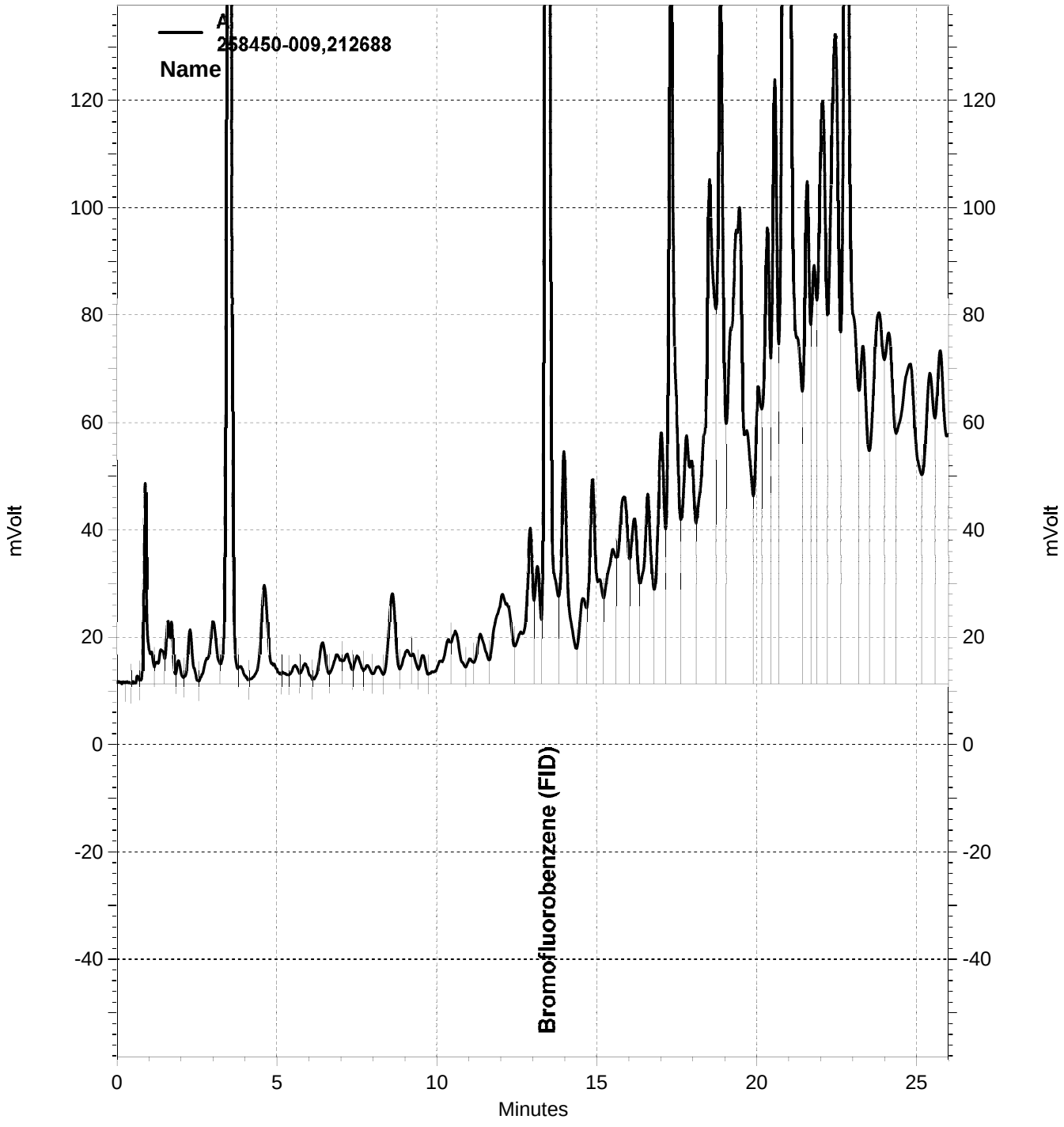

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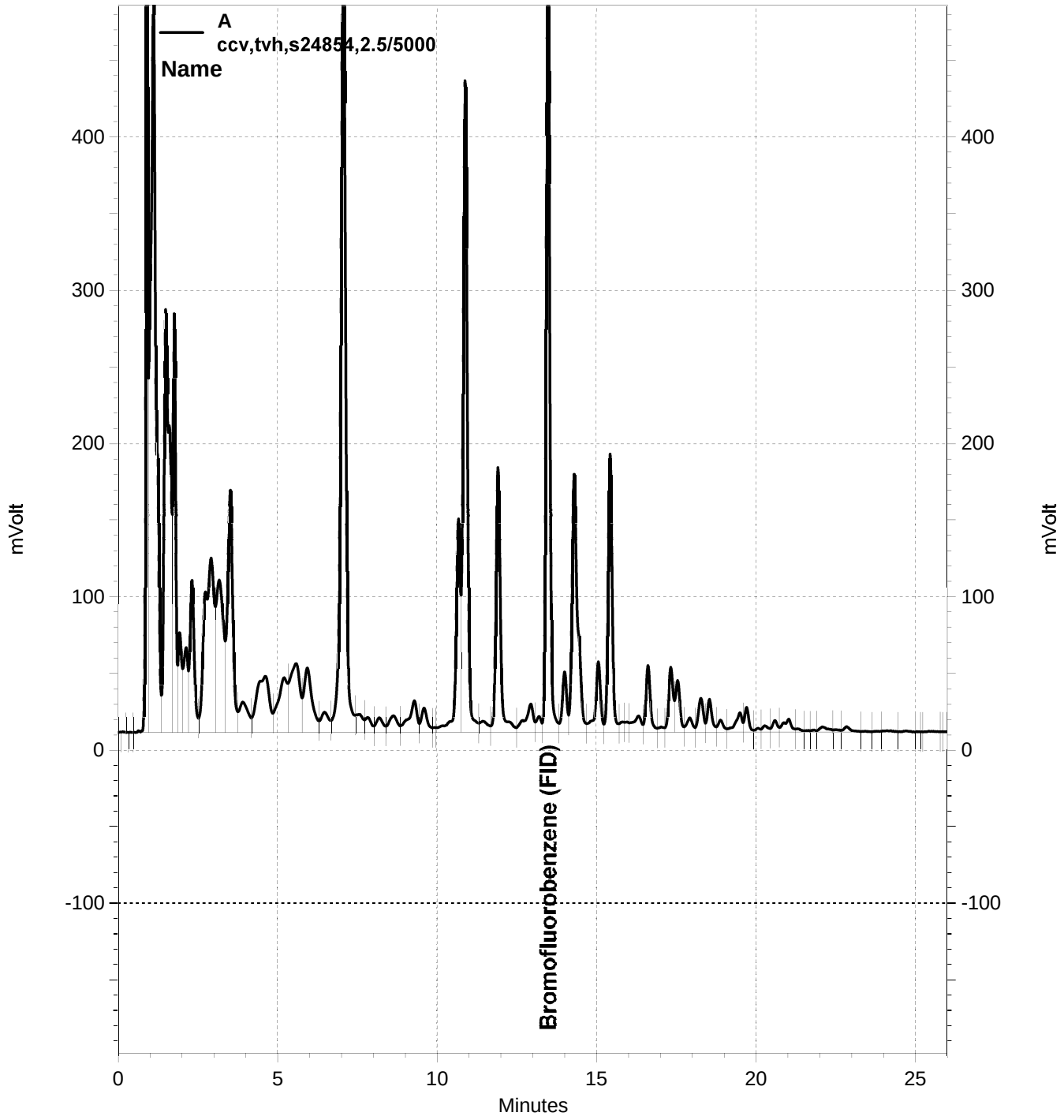

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Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	258450	Location:	Port HFC
Client:	Arcadis	Prep:	EPA 3520C
Project#:	04656016.0000	Analysis:	EPA 8015B
Matrix:	Water	Sampled:	06/25/14
Units:	ug/L	Received:	06/25/14
Diln Fac:	1.000		

Field ID:	MW-4	Prepared:	06/26/14
Type:	SAMPLE	Analyzed:	06/27/14
Lab ID:	258450-002	Cleanup Method:	EPA 3630C
Batch#:	212689		

Analyte	Result	RL
Diesel C10-C24	54 Y	50
Motor Oil C24-C36	ND	300

Surrogate	%REC	Limits
o-Terphenyl	121	66-129

Field ID:	MW-4DUP	Prepared:	06/26/14
Type:	SAMPLE	Analyzed:	06/27/14
Lab ID:	258450-003	Cleanup Method:	EPA 3630C
Batch#:	212689		

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

Surrogate	%REC	Limits
o-Terphenyl	123	66-129

Field ID:	MW-11	Prepared:	06/26/14
Type:	SAMPLE	Analyzed:	06/27/14
Lab ID:	258450-004	Cleanup Method:	EPA 3630C
Batch#:	212689		

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

Surrogate	%REC	Limits
o-Terphenyl	112	66-129

Field ID:	MW-8A	Prepared:	06/26/14
Type:	SAMPLE	Analyzed:	06/28/14
Lab ID:	258450-005	Cleanup Method:	EPA 3630C
Batch#:	212689		

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

Surrogate	%REC	Limits
o-Terphenyl	104	66-129

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

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	258450	Location:	Port HFC
Client:	Arcadis	Prep:	EPA 3520C
Project#:	04656016.0000	Analysis:	EPA 8015B
Matrix:	Water	Sampled:	06/25/14
Units:	ug/L	Received:	06/25/14
Diln Fac:	1.000		

Field ID:	MW-12	Prepared:	06/26/14
Type:	SAMPLE	Analyzed:	06/28/14
Lab ID:	258450-006	Cleanup Method:	EPA 3630C
Batch#:	212689		

Analyte	Result	RL
Diesel C10-C24	260 Y	50
Motor Oil C24-C36	ND	300

Surrogate	%REC	Limits
o-Terphenyl	92	66-129

Field ID:	MW-2	Prepared:	06/26/14
Type:	SAMPLE	Analyzed:	06/28/14
Lab ID:	258450-007	Cleanup Method:	EPA 3630C
Batch#:	212689		

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

Surrogate	%REC	Limits
o-Terphenyl	100	66-129

Field ID:	RW-4	Prepared:	06/27/14
Type:	SAMPLE	Analyzed:	07/01/14
Lab ID:	258450-008	Cleanup Method:	EPA 3630C
Batch#:	212729		

Analyte	Result	RL
Diesel C10-C24	5,200	50
Motor Oil C24-C36	ND	300

Surrogate	%REC	Limits
o-Terphenyl	119	66-129

Field ID:	RW-8	Prepared:	06/27/14
Type:	SAMPLE	Analyzed:	07/01/14
Lab ID:	258450-009	Cleanup Method:	EPA 3630C
Batch#:	212729		

Analyte	Result	RL
Diesel C10-C24	7,200	49
Motor Oil C24-C36	ND	290

Surrogate	%REC	Limits
o-Terphenyl	124	66-129

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

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	258450	Location:	Port HFC
Client:	Arcadis	Prep:	EPA 3520C
Project#:	04656016.0000	Analysis:	EPA 8015B
Matrix:	Water	Sampled:	06/25/14
Units:	ug/L	Received:	06/25/14
Diln Fac:	1.000		

Type:	BLANK	Prepared:	06/26/14
Lab ID:	QC746849	Analyzed:	06/27/14
Batch#:	212689	Cleanup Method:	EPA 3630C

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

Surrogate	%REC	Limits
o-Terphenyl	93	66-129

Type:	BLANK	Prepared:	06/27/14
Lab ID:	QC747014	Analyzed:	06/30/14
Batch#:	212729	Cleanup Method:	EPA 3630C

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

Surrogate	%REC	Limits
o-Terphenyl	117	66-129

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

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	258450	Location:	Port HFC
Client:	Arcadis	Prep:	EPA 3520C
Project#:	04656016.0000	Analysis:	EPA 8015B
Matrix:	Water	Batch#:	212689
Units:	ug/L	Prepared:	06/26/14
Diln Fac:	1.000	Analyzed:	06/27/14

Type: BS Cleanup Method: EPA 3630C
Lab ID: QC746850

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	2,500	2,514	101	61-120

Surrogate	%REC	Limits
o-Terphenyl	110	66-129

Type: BSD Cleanup Method: EPA 3630C
Lab ID: QC746851

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	2,500	2,497	100	61-120	1	45

Surrogate	%REC	Limits
o-Terphenyl	105	66-129

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	258450	Location:	Port HFC
Client:	Arcadis	Prep:	EPA 3520C
Project#:	04656016.0000	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC747015	Batch#:	212729
Matrix:	Water	Prepared:	06/27/14
Units:	ug/L	Analyzed:	06/30/14

Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	2,500	2,982	119	61-120

Surrogate	%REC	Limits
o-Terphenyl	122	66-129

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	258450	Location:	Port HFC
Client:	Arcadis	Prep:	EPA 3520C
Project#:	04656016.0000	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	212729
MSS Lab ID:	258164-001	Sampled:	06/17/14
Matrix:	Water	Received:	06/18/14
Units:	ug/L	Prepared:	06/27/14
Diln Fac:	1.000	Analyzed:	06/30/14

Type: MS Cleanup Method: EPA 3630C
Lab ID: QC747016

Analyte	MSS Result	Spiked	Result	%REC	Limits
Diesel C10-C24	<16.49	2,500	2,607	104	65-120

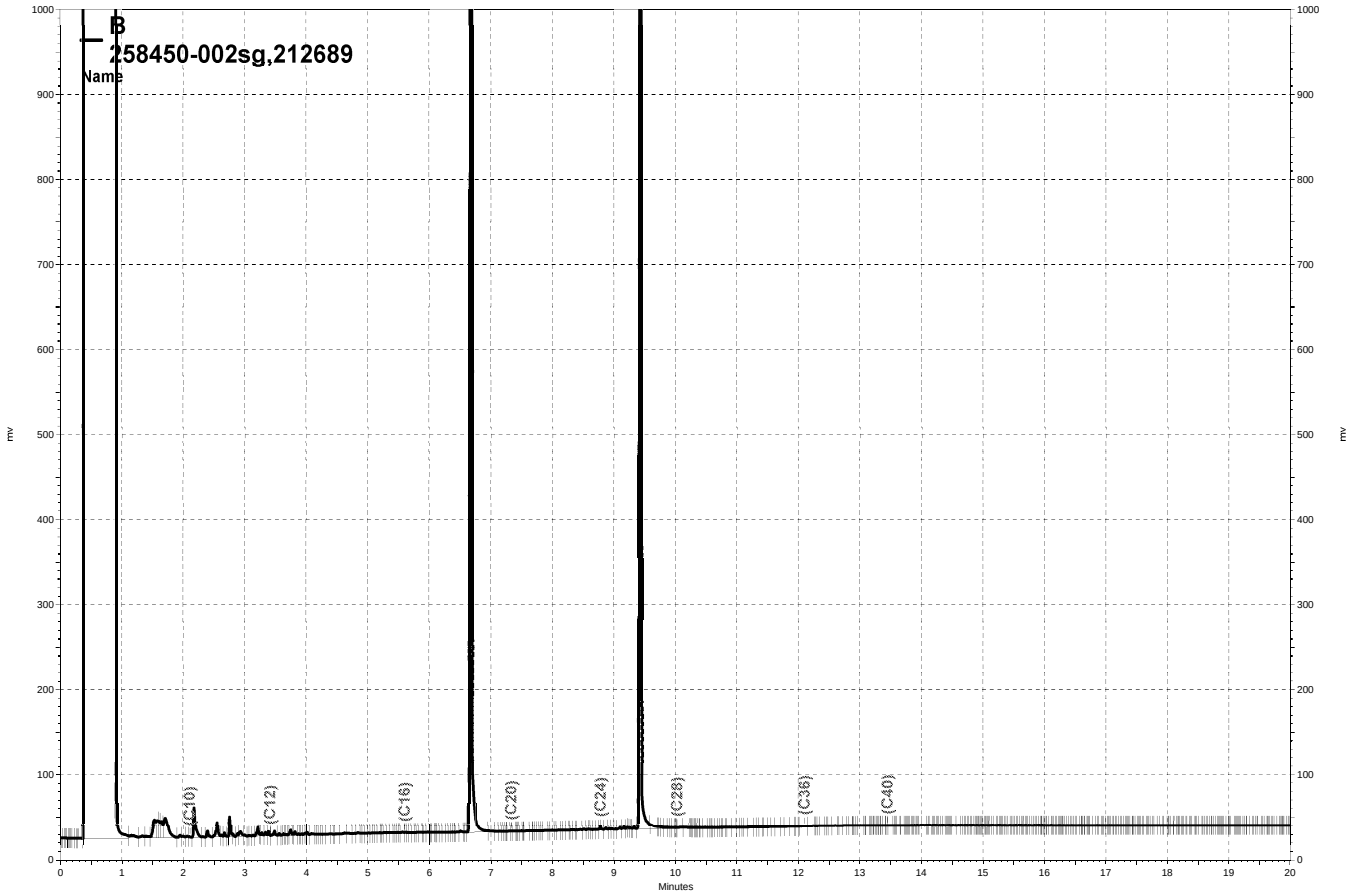
Surrogate	%REC	Limits
o-Terphenyl	109	66-129

Type: MSD Cleanup Method: EPA 3630C
Lab ID: QC747017

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	2,500	2,270	91	65-120	14	26

Surrogate	%REC	Limits
o-Terphenyl	95	66-129

RPD= Relative Percent Difference



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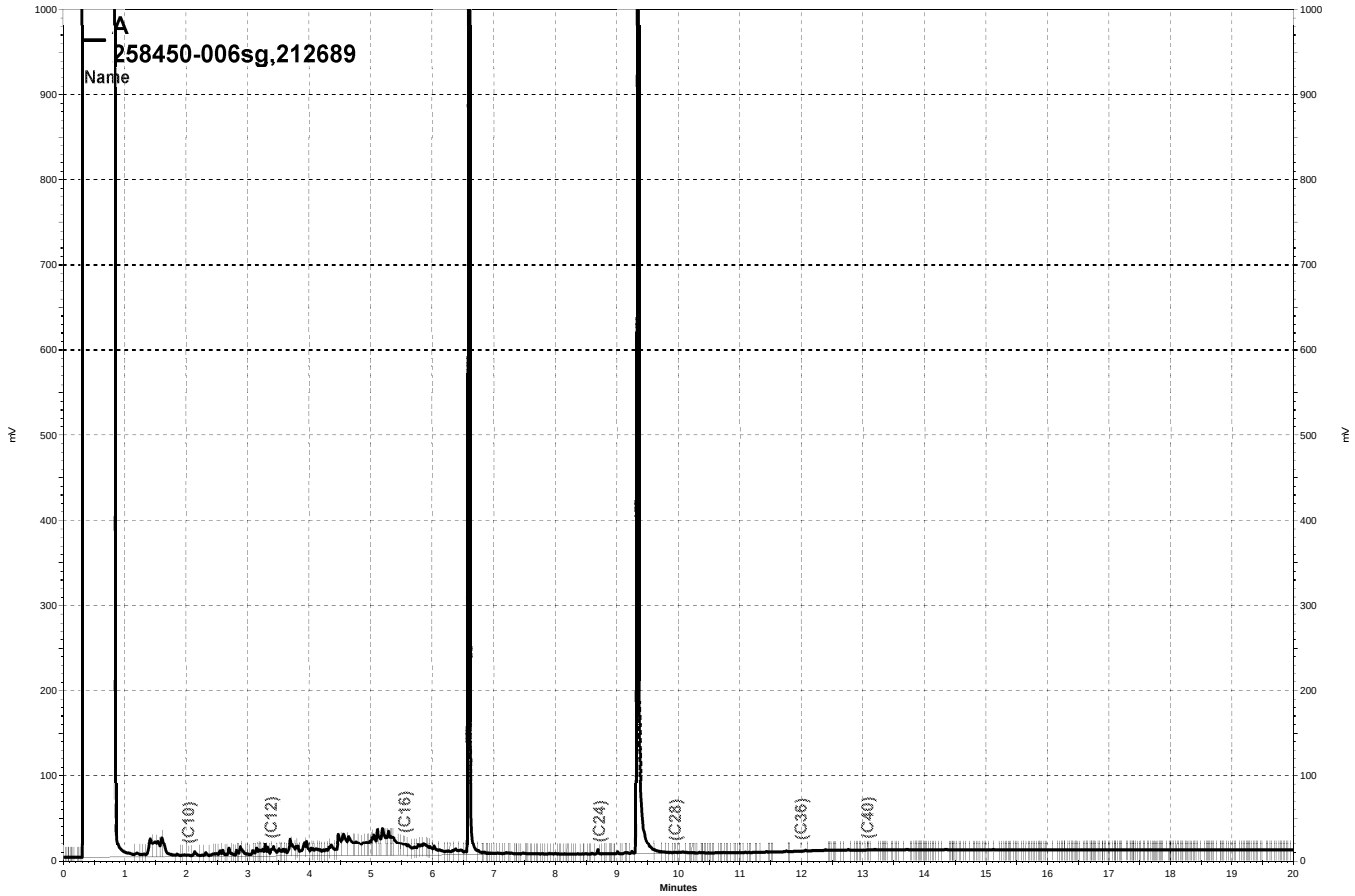

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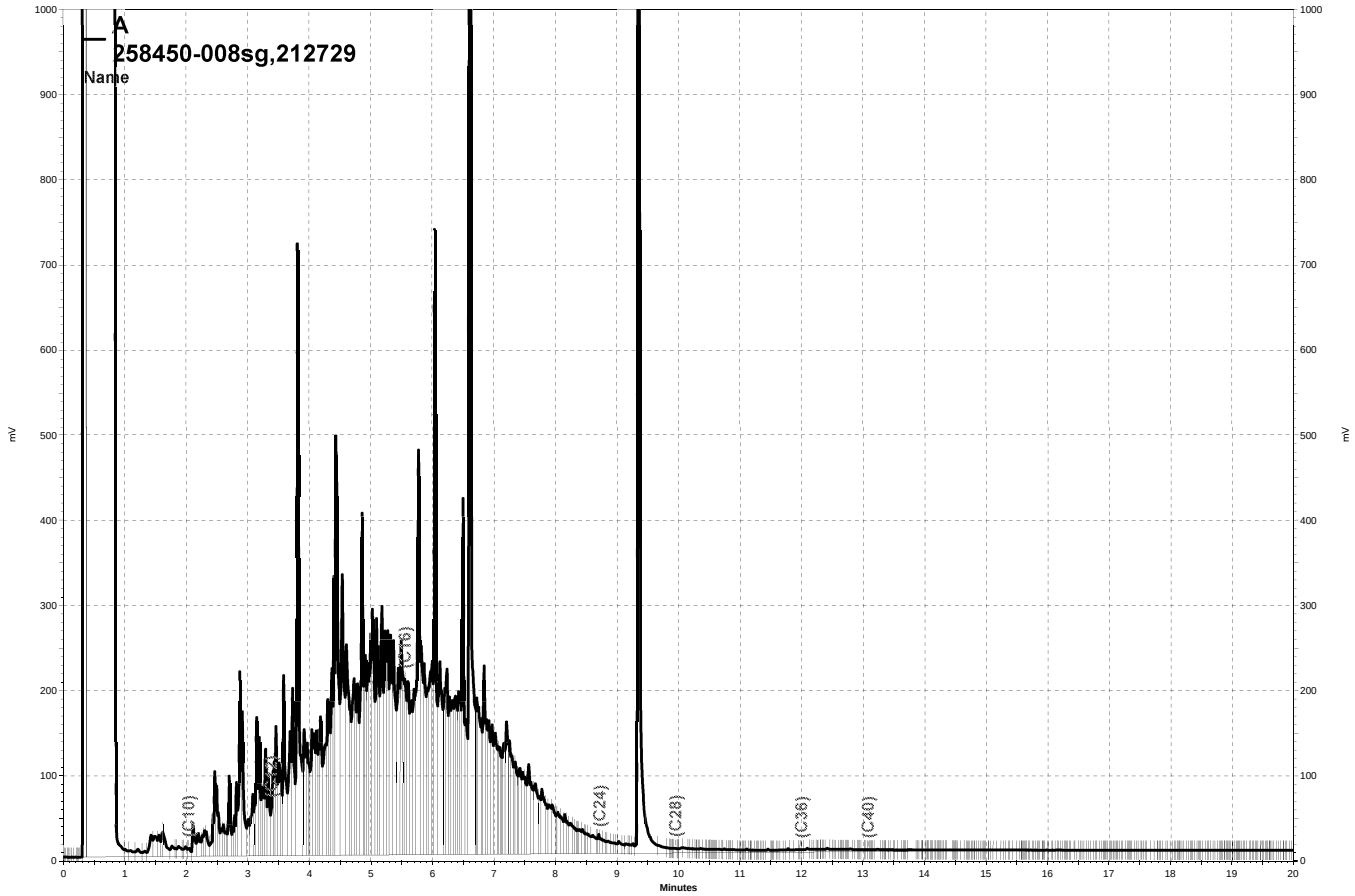

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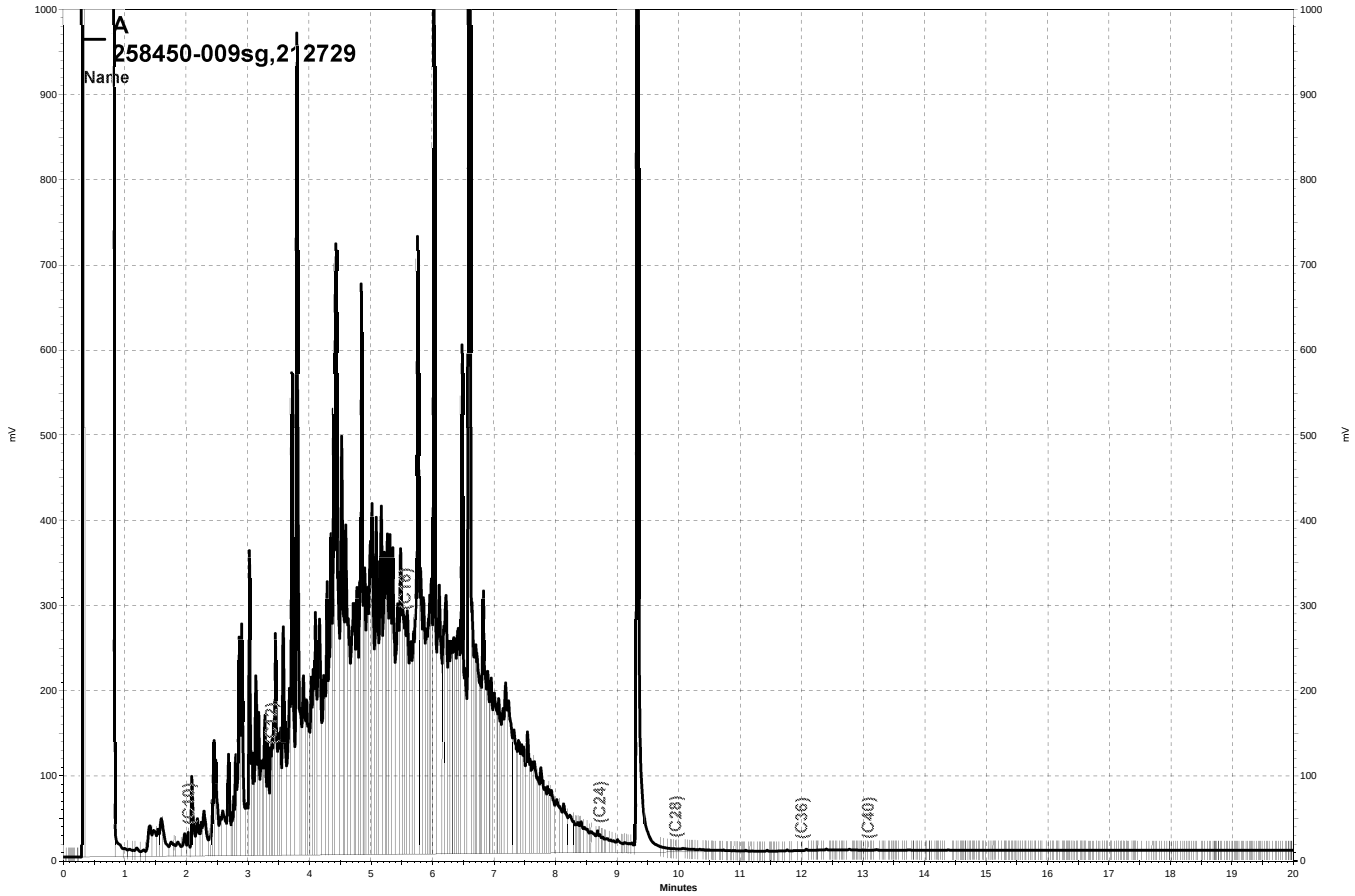

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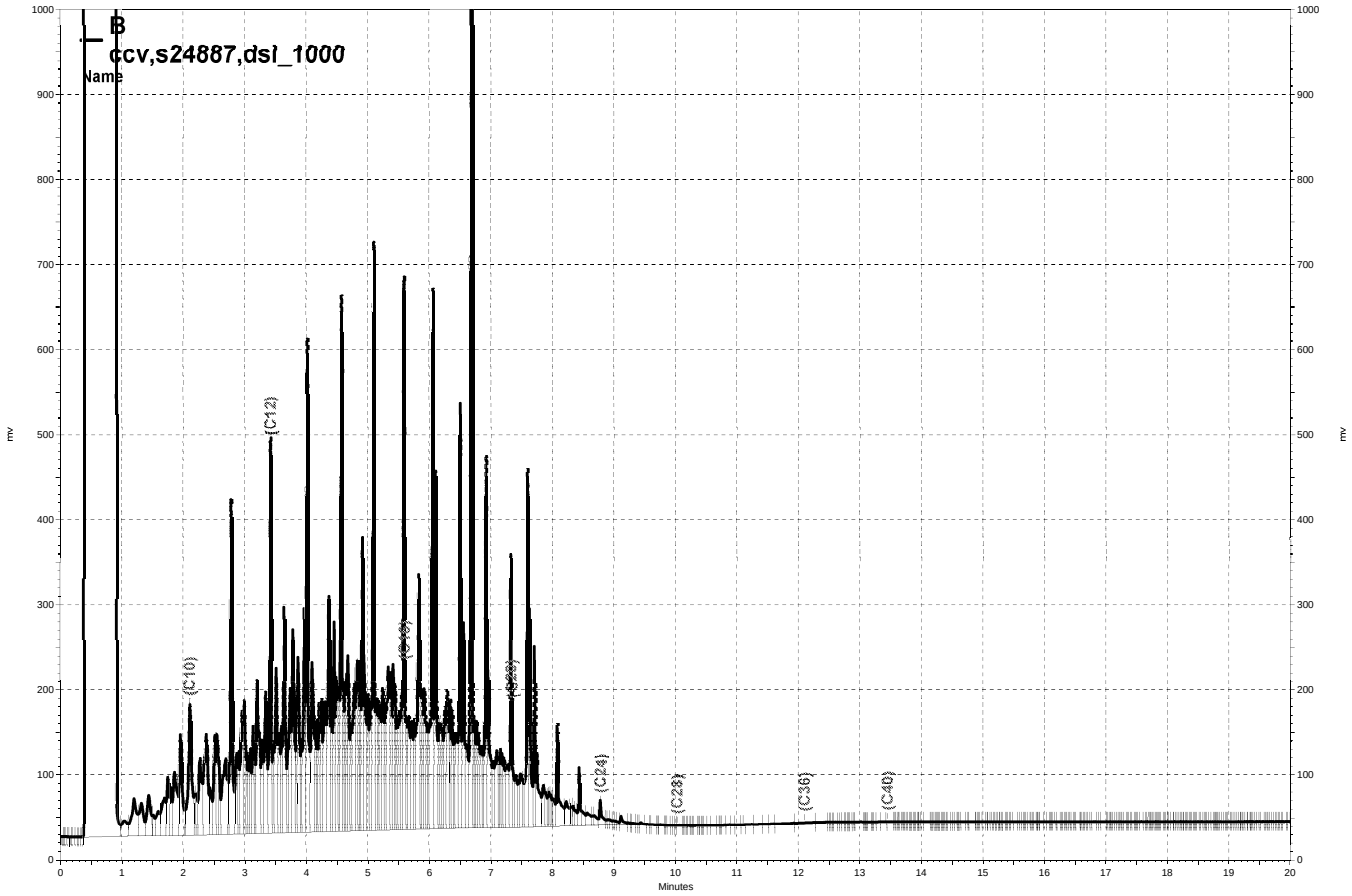

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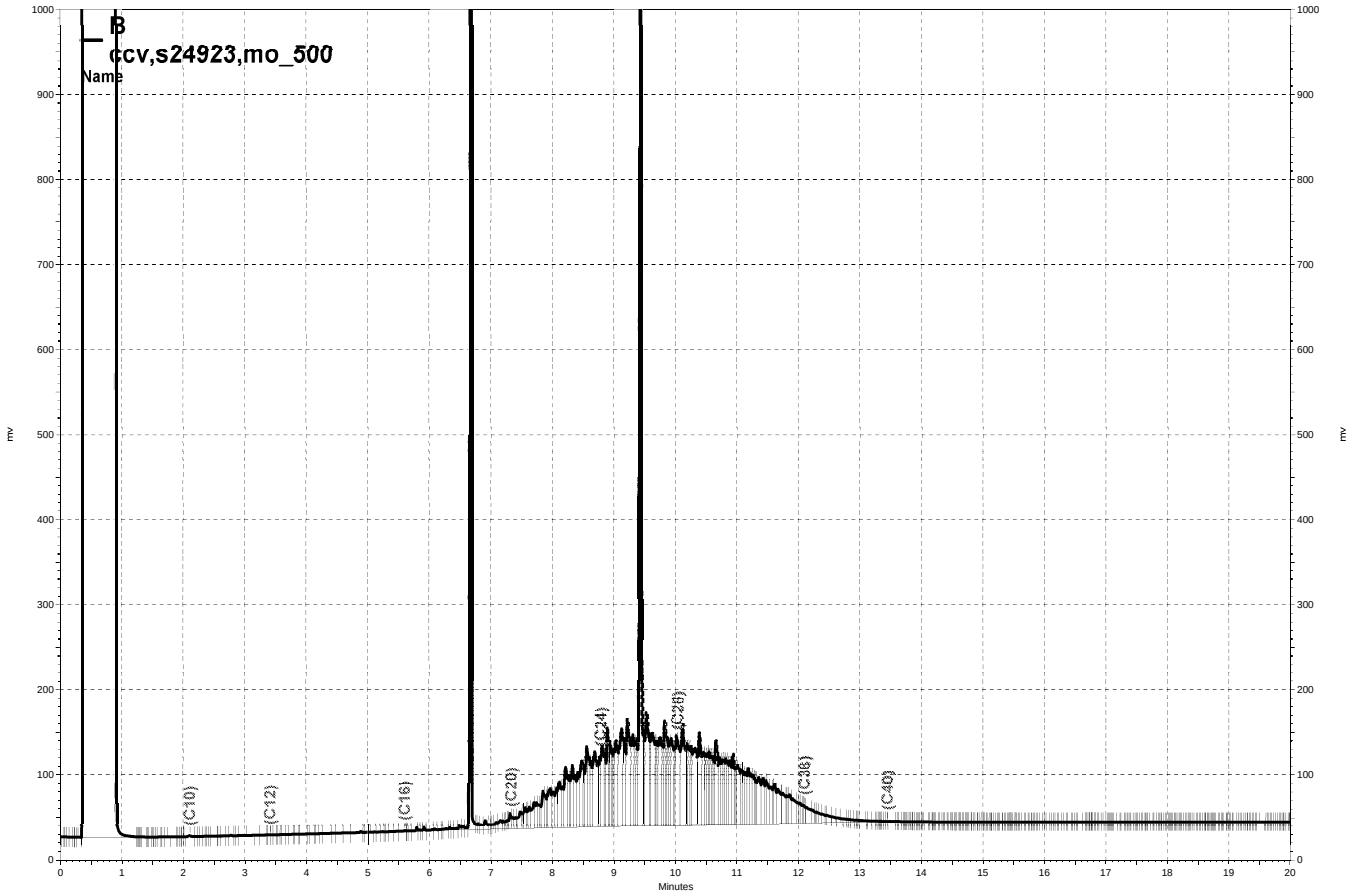

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Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	258450	Location:	Port HFC
Client:	Arcadis	Prep:	EPA 5030B
Project#:	04656016.0000	Analysis:	EPA 8260B
Field ID:	QCTB-2	Batch#:	212722
Lab ID:	258450-001	Sampled:	06/25/14
Matrix:	Water	Received:	06/25/14
Units:	ug/L	Analyzed:	06/27/14
Diln Fac:	1.000		

Analyte	Result	RL
MTBE	ND	0.5
Benzene	ND	0.5
Toluene	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	80	77-136
1,2-Dichloroethane-d4	88	75-139
Toluene-d8	102	80-120
Bromofluorobenzene	107	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	258450	Location:	Port HFC
Client:	Arcadis	Prep:	EPA 5030B
Project#:	04656016.0000	Analysis:	EPA 8260B
Field ID:	MW-4	Batch#:	212722
Lab ID:	258450-002	Sampled:	06/25/14
Matrix:	Water	Received:	06/25/14
Units:	ug/L	Analyzed:	06/27/14
Diln Fac:	1.000		

Analyte	Result	RL
MTBE	ND	0.5
Benzene	52	0.5
Toluene	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	79	77-136
1,2-Dichloroethane-d4	79	75-139
Toluene-d8	103	80-120
Bromofluorobenzene	107	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	258450	Location:	Port HFC
Client:	Arcadis	Prep:	EPA 5030B
Project#:	04656016.0000	Analysis:	EPA 8260B
Field ID:	MW-4DUP	Batch#:	212722
Lab ID:	258450-003	Sampled:	06/25/14
Matrix:	Water	Received:	06/25/14
Units:	ug/L	Analyzed:	06/27/14
Diln Fac:	1.000		

Analyte	Result	RL
MTBE	ND	0.5
Benzene	54	0.5
Toluene	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	79	77-136
1,2-Dichloroethane-d4	83	75-139
Toluene-d8	103	80-120
Bromofluorobenzene	114	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	258450	Location:	Port HFC
Client:	Arcadis	Prep:	EPA 5030B
Project#:	04656016.0000	Analysis:	EPA 8260B
Field ID:	MW-11	Batch#:	212722
Lab ID:	258450-004	Sampled:	06/25/14
Matrix:	Water	Received:	06/25/14
Units:	ug/L	Analyzed:	06/28/14
Diln Fac:	5.000		

Analyte	Result	RL
MTBE	ND	2.5
Benzene	ND	2.5
Toluene	ND	2.5
Ethylbenzene	ND	2.5
m,p-Xylenes	ND	2.5
o-Xylene	ND	2.5

Surrogate	%REC	Limits
Dibromofluoromethane	80	77-136
1,2-Dichloroethane-d4	86	75-139
Toluene-d8	100	80-120
Bromofluorobenzene	109	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	258450	Location:	Port HFC
Client:	Arcadis	Prep:	EPA 5030B
Project#:	04656016.0000	Analysis:	EPA 8260B
Field ID:	MW-8A	Batch#:	212704
Lab ID:	258450-005	Sampled:	06/25/14
Matrix:	Water	Received:	06/25/14
Units:	ug/L	Analyzed:	06/27/14
Diln Fac:	1.000		

Analyte	Result	RL
MTBE	ND	0.5
Benzene	ND	0.5
Toluene	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	104	77-136
1,2-Dichloroethane-d4	94	75-139
Toluene-d8	101	80-120
Bromofluorobenzene	109	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	258450	Location:	Port HFC
Client:	Arcadis	Prep:	EPA 5030B
Project#:	04656016.0000	Analysis:	EPA 8260B
Field ID:	MW-12	Batch#:	212704
Lab ID:	258450-006	Sampled:	06/25/14
Matrix:	Water	Received:	06/25/14
Units:	ug/L	Analyzed:	06/27/14
Diln Fac:	1.000		

Analyte	Result	RL
MTBE	4.2	0.5
Benzene	ND	0.5
Toluene	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	105	77-136
1,2-Dichloroethane-d4	94	75-139
Toluene-d8	100	80-120
Bromofluorobenzene	107	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	258450	Location:	Port HFC
Client:	Arcadis	Prep:	EPA 5030B
Project#:	04656016.0000	Analysis:	EPA 8260B
Field ID:	MW-2	Batch#:	212704
Lab ID:	258450-007	Sampled:	06/25/14
Matrix:	Water	Received:	06/25/14
Units:	ug/L	Analyzed:	06/27/14
Diln Fac:	1.000		

Analyte	Result	RL
MTBE	ND	0.5
Benzene	ND	0.5
Toluene	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	107	77-136
1,2-Dichloroethane-d4	95	75-139
Toluene-d8	100	80-120
Bromofluorobenzene	107	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	258450	Location:	Port HFC
Client:	Arcadis	Prep:	EPA 5030B
Project#:	04656016.0000	Analysis:	EPA 8260B
Field ID:	RW-4	Batch#:	212704
Lab ID:	258450-008	Sampled:	06/25/14
Matrix:	Water	Received:	06/25/14
Units:	ug/L	Analyzed:	06/27/14
Diln Fac:	1.000		

Analyte	Result	RL
MTBE	ND	0.5
Benzene	ND	0.5
Toluene	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	107	77-136
1,2-Dichloroethane-d4	93	75-139
Toluene-d8	102	80-120
Bromofluorobenzene	105	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Aromatics by GC/MS

Lab #:	258450	Location:	Port HFC
Client:	Arcadis	Prep:	EPA 5030B
Project#:	04656016.0000	Analysis:	EPA 8260B
Field ID:	RW-8	Batch#:	212704
Lab ID:	258450-009	Sampled:	06/25/14
Matrix:	Water	Received:	06/25/14
Units:	ug/L	Analyzed:	06/27/14
Diln Fac:	1.000		

Analyte	Result	RL
MTBE	ND	0.5
Benzene	53	0.5
Toluene	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	106	77-136
1,2-Dichloroethane-d4	91	75-139
Toluene-d8	100	80-120
Bromofluorobenzene	102	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Aromatics by GC/MS

Lab #:	258450	Location:	Port HFC
Client:	Arcadis	Prep:	EPA 5030B
Project#:	04656016.0000	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	212704
Units:	ug/L	Analyzed:	06/27/14
Diln Fac:	1.000		

Type: BS Lab ID: QC746900

Analyte	Spiked	Result	%REC	Limits
MTBE	25.00	23.29	93	64-121
Benzene	25.00	24.97	100	80-124
Toluene	25.00	28.41	114	80-122
Ethylbenzene	25.00	28.82	115	80-124
m,p-Xylenes	50.00	59.64	119	80-122
o-Xylene	25.00	29.83	119	77-120

Surrogate	%REC	Limits
Dibromofluoromethane	102	77-136
1,2-Dichloroethane-d4	90	75-139
Toluene-d8	102	80-120
Bromofluorobenzene	104	80-120

Type: BSD Lab ID: QC746901

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	25.00	22.91	92	64-121	2	20
Benzene	25.00	25.15	101	80-124	1	20
Toluene	25.00	27.30	109	80-122	4	20
Ethylbenzene	25.00	27.63	111	80-124	4	20
m,p-Xylenes	50.00	57.78	116	80-122	3	20
o-Xylene	25.00	28.58	114	77-120	4	20

Surrogate	%REC	Limits
Dibromofluoromethane	103	77-136
1,2-Dichloroethane-d4	92	75-139
Toluene-d8	101	80-120
Bromofluorobenzene	103	80-120

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Aromatics by GC/MS

Lab #:	258450	Location:	Port HFC
Client:	Arcadis	Prep:	EPA 5030B
Project#:	04656016.0000	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC746902	Batch#:	212704
Matrix:	Water	Analyzed:	06/27/14
Units:	ug/L		

Analyte	Result	RL
MTBE	ND	0.5
Benzene	ND	0.5
Toluene	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	103	77-136
1,2-Dichloroethane-d4	94	75-139
Toluene-d8	102	80-120
Bromofluorobenzene	115	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Aromatics by GC/MS

Lab #:	258450	Location:	Port HFC
Client:	Arcadis	Prep:	EPA 5030B
Project#:	04656016.0000	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	212722
Units:	ug/L	Analyzed:	06/27/14
Diln Fac:	1.000		

Type: BS Lab ID: QC746987

Analyte	Spiked	Result	%REC	Limits
MTBE	12.50	9.571	77	64-121
Benzene	12.50	14.07	113	80-124
Toluene	12.50	14.16	113	80-122
Ethylbenzene	12.50	14.11	113	80-124
m,p-Xylenes	25.00	30.49	122	80-122
o-Xylene	12.50	14.81	118	77-120

Surrogate	%REC	Limits
Dibromofluoromethane	78	77-136
1,2-Dichloroethane-d4	81	75-139
Toluene-d8	105	80-120
Bromofluorobenzene	105	80-120

Type: BSD Lab ID: QC746988

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	12.50	8.559	68	64-121	11	20
Benzene	12.50	15.07	121	80-124	7	20
Toluene	12.50	14.84	119	80-122	5	20
Ethylbenzene	12.50	14.37	115	80-124	2	20
m,p-Xylenes	25.00	30.59	122	80-122	0	20
o-Xylene	12.50	14.99	120	77-120	1	20

Surrogate	%REC	Limits
Dibromofluoromethane	77	77-136
1,2-Dichloroethane-d4	83	75-139
Toluene-d8	102	80-120
Bromofluorobenzene	110	80-120

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Aromatics by GC/MS

Lab #:	258450	Location:	Port HFC
Client:	Arcadis	Prep:	EPA 5030B
Project#:	04656016.0000	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC746989	Batch#:	212722
Matrix:	Water	Analyzed:	06/27/14
Units:	ug/L		

Analyte	Result	RL
MTBE	ND	0.5
Benzene	ND	0.5
Toluene	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	78	77-136
1,2-Dichloroethane-d4	83	75-139
Toluene-d8	102	80-120
Bromofluorobenzene	106	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Dissolved Gases

Lab #:	258450	Location:	Port HFC
Client:	Arcadis	Prep:	METHOD
Project#:	04656016.0000	Analysis:	RSK-175
Analyte:	Methane	Diln Fac:	1.000
Matrix:	Water	Sampled:	06/25/14
Units:	mg/L	Received:	06/25/14

Field ID	Type	Lab ID	Result	RL	Batch#	Analyzed
MW-4	SAMPLE	258450-002	5.3	0.005	212685	06/26/14
MW-4DUP	SAMPLE	258450-003	6.1	0.005	212685	06/26/14
MW-11	SAMPLE	258450-004	5.2	0.005	212685	06/26/14
MW-8A	SAMPLE	258450-005	0.13	0.005	212685	06/26/14
MW-12	SAMPLE	258450-006	4.7	0.005	212839	07/01/14
MW-2	SAMPLE	258450-007	0.014	0.005	212839	07/01/14
RW-4	SAMPLE	258450-008	6.4	0.005	212839	07/01/14
RW-8	SAMPLE	258450-009	8.6	0.005	212839	07/01/14
	BLANK	QC746825	ND	0.005	212685	06/26/14
	BLANK	QC747437	ND	0.005	212839	07/01/14

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved Gases

Lab #:	258450	Location:	Port HFC
Client:	Arcadis	Prep:	METHOD
Project#:	04656016.0000	Analysis:	RSK-175
Analyte:	Methane	Units:	mg/L
Field ID:	ZZZZZZZZZZ	Diln Fac:	1.000
MSS Lab ID:	258164-001	Sampled:	06/17/14
Matrix:	Water	Received:	06/18/14

Type	Lab ID	Spiked	Result	%REC	Limits	RPD	Lim	Batch#	Analyzed
BS	QC746823	0.6544	0.5870	90	78-120			212685	06/26/14
BSD	QC746824	0.6544	0.7280	111	78-120	21	21	212685	06/26/14
BS	QC747435	0.6544	0.7141	109	78-120			212839	07/01/14
BSD	QC747436	0.6544	0.6370	97	78-120	11	21	212839	07/01/14

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Dissolved Iron

Lab #:	258450	Location:	Port HFC
Client:	Arcadis	Prep:	METHOD
Project#:	04656016.0000	Analysis:	EPA 6010B
Analyte:	Iron	Sampled:	06/25/14
Matrix:	Filtrate	Received:	06/25/14
Units:	ug/L	Prepared:	06/30/14
Diln Fac:	1.000	Analyzed:	07/09/14
Batch#:	212775		

Field ID	Type	Lab ID	Result	RL
MW-4	SAMPLE	258450-002	3,500	100
MW-4DUP	SAMPLE	258450-003	3,500	100
MW-11	SAMPLE	258450-004	1,700	100
MW-8A	SAMPLE	258450-005	2,800	100
MW-12	SAMPLE	258450-006	550	100
MW-2	SAMPLE	258450-007	ND	100
RW-4	SAMPLE	258450-008	13,000	100
RW-8	SAMPLE	258450-009	24,000	100
	BLANK	QC747191	ND	100

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Dissolved Manganese

Lab #:	258450	Location:	Port HFC
Client:	Arcadis	Prep:	METHOD
Project#:	04656016.0000	Analysis:	EPA 6010B
Analyte:	Manganese	Batch#:	212775
Matrix:	Filtrate	Sampled:	06/25/14
Units:	ug/L	Received:	06/25/14
Diln Fac:	1.000	Prepared:	06/30/14

Field ID	Type	Lab ID	Result	RL	Analyzed
MW-4	SAMPLE	258450-002	700	5.0	07/09/14
MW-4DUP	SAMPLE	258450-003	700	5.0	07/09/14
MW-11	SAMPLE	258450-004	320	5.0	07/09/14
MW-8A	SAMPLE	258450-005	700	5.0	07/09/14
MW-12	SAMPLE	258450-006	1,300	5.0	07/09/14
MW-2	SAMPLE	258450-007	280	5.0	07/09/14
RW-4	SAMPLE	258450-008	2,200	5.0	07/09/14
RW-8	SAMPLE	258450-009	5,400	5.0	07/09/14
	BLANK	QC747191	ND	5.0	07/02/14

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved Iron

Lab #:	258450	Location:	Port HFC
Client:	Arcadis	Prep:	METHOD
Project#:	04656016.0000	Analysis:	EPA 6010B
Analyte:	Iron	Diln Fac:	1.000
Field ID:	MW-4	Batch#:	212775
MSS Lab ID:	258450-002	Sampled:	06/25/14
Matrix:	Filtrate	Received:	06/25/14
Units:	ug/L	Prepared:	06/30/14

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim	Analyzed
BS	QC747192		1,000	987.1	99	79-120			07/09/14
BSD	QC747193		1,000	993.4	99	79-120	1	21	07/09/14
MS	QC747194	3,520	1,000	4,198	68	66-127			07/11/14
MSD	QC747195		1,000	4,170	65 *	66-127	1	21	07/11/14

*= Value outside of QC limits; see narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved Manganese

Lab #:	258450	Location:	Port HFC
Client:	Arcadis	Prep:	METHOD
Project#:	04656016.0000	Analysis:	EPA 6010B
Analyte:	Manganese	Batch#:	212775
Field ID:	MW-4	Sampled:	06/25/14
MSS Lab ID:	258450-002	Received:	06/25/14
Matrix:	Filtrate	Prepared:	06/30/14
Units:	ug/L	Analyzed:	07/02/14
Diln Fac:	1.000		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC747192		50.00	48.77	98	80-120		
BSD	QC747193		50.00	49.60	99	80-120	2	20
MS	QC747194	696.7	50.00	732.5	71 NM	70-128		
MSD	QC747195		50.00	734.6	76 NM	70-128	0	20

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

Curtis & Tompkins, Ltd.

Dissolved Metals Analytical Report

Lab #:	258450	Location:	Port HFC
Client:	Arcadis	Prep:	METHOD
Project#:	04656016.0000	Analysis:	EPA 200.7
Analyte:	Calcium	Sampled:	06/25/14
Matrix:	Filtrate	Received:	06/25/14
Units:	ug/L	Prepared:	06/30/14
Batch#:	212775	Analyzed:	07/09/14

Field ID	Type	Lab ID	Result	RL	Diln Fac
MW-4	SAMPLE	258450-002	47,000	2,000	10.00
MW-4DUP	SAMPLE	258450-003	52,000	20,000	100.0
MW-11	SAMPLE	258450-004	25,000	20,000	100.0
MW-8A	SAMPLE	258450-005	50,000	20,000	100.0
MW-12	SAMPLE	258450-006	100,000	20,000	100.0
MW-2	SAMPLE	258450-007	28,000	20,000	100.0
RW-4	SAMPLE	258450-008	110,000	20,000	100.0
RW-8	SAMPLE	258450-009	180,000	20,000	100.0
	BLANK	QC747191	ND	500	1.000

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Dissolved Metals Analytical Report

Lab #:	258450	Location:	Port HFC
Client:	Arcadis	Prep:	METHOD
Project#:	04656016.0000	Analysis:	EPA 200.7
Analyte:	Potassium	Sampled:	06/25/14
Matrix:	Filtrate	Received:	06/25/14
Units:	ug/L	Prepared:	06/30/14
Batch#:	212775		

Field ID	Type	Lab ID	Result	RL	Diln Fac	Analyzed
MW-4	SAMPLE	258450-002	11,000	5,000	10.00	07/09/14
MW-4DUP	SAMPLE	258450-003	14,000 b	500	1.000	07/09/14
MW-11	SAMPLE	258450-004	48,000 b	500	1.000	07/09/14
MW-8A	SAMPLE	258450-005	16,000 b	500	1.000	07/09/14
MW-12	SAMPLE	258450-006	15,000 b	500	1.000	07/09/14
MW-2	SAMPLE	258450-007	1,100 b	500	1.000	07/09/14
RW-4	SAMPLE	258450-008	11,000 b	500	1.000	07/09/14
RW-8	SAMPLE	258450-009	35,000	500	1.000	07/02/14
	BLANK	QC747191	ND	500	1.000	07/09/14

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

Curtis & Tompkins, Ltd.

Dissolved Metals Analytical Report

Lab #:	258450	Location:	Port HFC
Client:	Arcadis	Prep:	METHOD
Project#:	04656016.0000	Analysis:	EPA 200.7
Analyte:	Magnesium	Sampled:	06/25/14
Matrix:	Filtrate	Received:	06/25/14
Units:	ug/L	Prepared:	06/30/14
Batch#:	212775		

Field ID	Type	Lab ID	Result	RL	Diln Fac	Analyzed
MW-4	SAMPLE	258450-002	66,000	2,000	10.00	07/09/14
MW-4DUP	SAMPLE	258450-003	73,000	20,000	100.0	07/09/14
MW-11	SAMPLE	258450-004	55,000	20,000	100.0	07/09/14
MW-8A	SAMPLE	258450-005	65,000	20,000	100.0	07/09/14
MW-12	SAMPLE	258450-006	50,000	20,000	100.0	07/09/14
MW-2	SAMPLE	258450-007	32,000	20,000	100.0	07/09/14
RW-4	SAMPLE	258450-008	27,000	20,000	100.0	07/09/14
RW-8	SAMPLE	258450-009	68,000	500	1.000	07/02/14
	BLANK	QC747191	ND	500	1.000	07/02/14

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Dissolved Metals Analytical Report

Lab #:	258450	Location:	Port HFC
Client:	Arcadis	Prep:	METHOD
Project#:	04656016.0000	Analysis:	EPA 200.7
Analyte:	Sodium	Sampled:	06/25/14
Matrix:	Filtrate	Received:	06/25/14
Units:	ug/L	Prepared:	06/30/14
Batch#:	212775		

Field ID	Type	Lab ID	Result	RL	Diln Fac	Analyzed
MW-4	SAMPLE	258450-002	250,000	5,000	10.00	07/09/14
MW-4DUP	SAMPLE	258450-003	260,000	50,000	100.0	07/09/14
MW-11	SAMPLE	258450-004	1,000,000	50,000	100.0	07/09/14
MW-8A	SAMPLE	258450-005	220,000	50,000	100.0	07/09/14
MW-12	SAMPLE	258450-006	150,000	50,000	100.0	07/09/14
MW-2	SAMPLE	258450-007	140,000	50,000	100.0	07/09/14
RW-4	SAMPLE	258450-008	66,000	50,000	100.0	07/09/14
RW-8	SAMPLE	258450-009	570,000	50,000	100.0	07/09/14
	BLANK	QC747191	ND	500	1.000	07/02/14

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved Metals Analytical Report

Lab #:	258450	Location:	Port HFC
Client:	Arcadis	Prep:	METHOD
Project#:	04656016.0000	Analysis:	EPA 200.7
Analyte:	Calcium	Diln Fac:	1.000
Field ID:	MW-4	Batch#:	212775
MSS Lab ID:	258450-002	Sampled:	06/25/14
Matrix:	Filtrate	Received:	06/25/14
Units:	ug/L	Prepared:	06/30/14

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim	Analyzed
BS	QC747192		20,000	17,820	89	80-120			07/09/14
BSD	QC747193		20,000	17,940	90	80-120	1	20	07/09/14
MS	QC747194	46,910	20,000	64,040	86	67-126			07/11/14
MSD	QC747195		20,000	62,890	80	67-126	2	20	07/11/14

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved Metals Analytical Report

Lab #:	258450	Location:	Port HFC
Client:	Arcadis	Prep:	METHOD
Project#:	04656016.0000	Analysis:	EPA 200.7
Analyte:	Potassium	Diln Fac:	1.000
Field ID:	MW-4	Batch#:	212775
MSS Lab ID:	258450-002	Sampled:	06/25/14
Matrix:	Filtrate	Received:	06/25/14
Units:	ug/L	Prepared:	06/30/14

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim	Analyzed
BS	QC747192		10,000	8,885	89	77-120			07/09/14
BSD	QC747193		10,000	9,026	90	77-120	2	20	07/09/14
MS	QC747194	10,940	10,000	24,350	134 *	71-126			07/11/14
MSD	QC747195		10,000	23,900	130 *	71-126	2	20	07/11/14

*= Value outside of QC limits; see narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved Metals Analytical Report

Lab #:	258450	Location:	Port HFC
Client:	Arcadis	Prep:	METHOD
Project#:	04656016.0000	Analysis:	EPA 200.7
Analyte:	Magnesium	Batch#:	212775
Field ID:	MW-4	Sampled:	06/25/14
MSS Lab ID:	258450-002	Received:	06/25/14
Matrix:	Filtrate	Prepared:	06/30/14
Units:	ug/L	Analyzed:	07/02/14
Diln Fac:	1.000		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC747192		20,000	18,290	91	80-120		
BSD	QC747193		20,000	18,370	92	80-120	0	20
MS	QC747194	66,310	20,000	83,300	85	71-120		
MSD	QC747195		20,000	92,310	130 *	71-120	10	20

*= Value outside of QC limits; see narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved Metals Analytical Report

Lab #:	258450	Location:	Port HFC
Client:	Arcadis	Prep:	METHOD
Project#:	04656016.0000	Analysis:	EPA 200.7
Analyte:	Sodium	Batch#:	212775
Field ID:	MW-4	Sampled:	06/25/14
MSS Lab ID:	258450-002	Received:	06/25/14
Matrix:	Filtrate	Prepared:	06/30/14
Units:	ug/L	Analyzed:	07/02/14
Diln Fac:	1.000		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC747192		20,000	18,100	90	79-120		
BSD	QC747193		20,000	18,380	92	79-120	2	20
MS	QC747194	249,400	20,000	290,700 >LR	207 NM	66-127		
MSD	QC747195		20,000	327,000 >LR	388 NM	66-127	NC	28

NC= Not Calculated
NM= Not Meaningful: Sample concentration > 4X spike concentration
>LR= Response exceeds instrument's linear range
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	258450	Location:	Port HFC
Client:	Arcadis	Prep:	METHOD
Project#:	04656016.0000	Analysis:	EPA 300.0
Matrix:	Water	Batch#:	212615
Units:	mg/L	Received:	06/25/14

Field ID: MW-4 Lab ID: 258450-002
Type: SAMPLE Sampled: 06/25/14 08:52

Analyte	Result	RL	Dln Fac	Analyzed
Chloride	200	4.0	20.00	06/26/14 04:02
Nitrogen, Nitrite	ND	0.05	1.000	06/25/14 16:26
Nitrogen, Nitrate	ND	0.05	1.000	06/25/14 16:26
Sulfate	ND	0.50	1.000	06/25/14 16:26

Field ID: MW-4DUP Lab ID: 258450-003
Type: SAMPLE Sampled: 06/25/14 08:52

Analyte	Result	RL	Dln Fac	Analyzed
Chloride	200	4.0	20.00	06/26/14 04:19
Nitrogen, Nitrite	ND	0.05	1.000	06/25/14 17:01
Nitrogen, Nitrate	ND	0.05	1.000	06/25/14 17:01
Sulfate	ND	0.50	1.000	06/25/14 17:01

Field ID: MW-11 Lab ID: 258450-004
Type: SAMPLE Sampled: 06/25/14 10:28

Analyte	Result	RL	Dln Fac	Analyzed
Chloride	940	20	100.0	06/26/14 04:37
Nitrogen, Nitrite	ND	0.25	5.000	06/25/14 17:35
Nitrogen, Nitrate	ND	0.25	5.000	06/25/14 17:35
Sulfate	ND	2.5	5.000	06/25/14 17:35

Field ID: MW-8A Lab ID: 258450-005
Type: SAMPLE Sampled: 06/25/14 10:58

Analyte	Result	RL	Dln Fac	Analyzed
Chloride	150	4.0	20.00	06/26/14 04:54
Nitrogen, Nitrite	ND	0.05	1.000	06/25/14 18:10
Nitrogen, Nitrate	ND	0.05	1.000	06/25/14 18:10
Sulfate	45	0.50	1.000	06/25/14 18:10

Field ID: MW-12 Lab ID: 258450-006
Type: SAMPLE Sampled: 06/25/14 12:17

Analyte	Result	RL	Dln Fac	Analyzed
Chloride	190	4.0	20.00	06/26/14 08:58
Nitrogen, Nitrite	ND	0.05	1.000	06/25/14 18:45
Nitrogen, Nitrate	ND	0.05	1.000	06/25/14 18:45
Sulfate	2.6	0.50	1.000	06/25/14 18:45

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	258450	Location:	Port HFC
Client:	Arcadis	Prep:	METHOD
Project#:	04656016.0000	Analysis:	EPA 300.0
Matrix:	Water	Batch#:	212615
Units:	mg/L	Received:	06/25/14

Field ID: MW-2 | Diln Fac: 1.000
Type: SAMPLE | Sampled: 06/25/14 12:44
Lab ID: 258450-007 | Analyzed: 06/25/14 19:20

Analyte	Result	RL
Chloride	16	0.20
Nitrogen, Nitrite	ND	0.05
Nitrogen, Nitrate	ND	0.05
Sulfate	27	0.50

Field ID: RW-4 | Lab ID: 258450-008
Type: SAMPLE | Sampled: 06/25/14 14:05

Analyte	Result	RL	Diln Fac	Analyzed
Chloride	71	2.0	10.00	06/26/14 05:47
Nitrogen, Nitrite	ND	0.05	1.000	06/25/14 19:55
Nitrogen, Nitrate	ND	0.05	1.000	06/25/14 19:55
Sulfate	ND	0.50	1.000	06/25/14 19:55

Field ID: RW-8 | Lab ID: 258450-009
Type: SAMPLE | Sampled: 06/25/14 14:38

Analyte	Result	RL	Diln Fac	Analyzed
Chloride	890	20	100.0	06/26/14 06:04
Nitrogen, Nitrite	ND	0.25	5.000	06/25/14 20:30
Nitrogen, Nitrate	ND	0.25	5.000	06/25/14 20:30
Sulfate	ND	2.5	5.000	06/25/14 20:30

Type: BLANK | Diln Fac: 1.000
Lab ID: QC746555 | Analyzed: 06/25/14 10:04

Analyte	Result	RL
Chloride	ND	0.20
Nitrogen, Nitrite	ND	0.05
Nitrogen, Nitrate	ND	0.05
Sulfate	ND	0.50

ND= Not Detected
RL= Reporting Limit

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	258450	Location:	Port HFC
Client:	Arcadis	Prep:	METHOD
Project#:	04656016.0000	Analysis:	EPA 300.0
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC746556	Batch#:	212615
Matrix:	Water	Analyzed:	06/25/14 10:22
Units:	mg/L		

Analyte	Spiked	Result	%REC	Limits
Chloride	4.000	3.900	97	80-120
Nitrogen, Nitrite	1.000	0.9525	95	80-120
Nitrogen, Nitrate	1.000	0.9417	94	80-120
Sulfate	10.00	9.735	97	80-120

Curtis & Tompkins, Ltd.

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	258450	Location:	Port HFC
Client:	Arcadis	Prep:	METHOD
Project#:	04656016.0000	Analysis:	EPA 300.0
Field ID:	ZZZZZZZZZZ	Diln Fac:	100.0
Type:	SDUP	Batch#:	212615
MSS Lab ID:	258449-006	Sampled:	06/25/14 12:35
Lab ID:	QC746660	Received:	06/25/14
Matrix:	Water	Analyzed:	06/26/14 09:16
Units:	mg/L		

Analyte	MSS Result	Result	RL	RPD	Lim
Chloride	1,080	1,084	20.00	0	20
Nitrogen, Nitrite	<5.000	ND	5.000	NC	23
Nitrogen, Nitrate	0.1349	ND	5.000	NC	20
Sulfate	260.8	265.6	50.00	2	20

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

Curtis & Tompkins, Ltd.

Batch QC Report

Curtis & Tompkins Laboratories Analytical Report

Lab #:	258450	Location:	Port HFC
Client:	Arcadis	Prep:	METHOD
Project#:	04656016.0000	Analysis:	EPA 300.0
Field ID:	ZZZZZZZZZZ	Diln Fac:	100.0
MSS Lab ID:	258449-006	Batch#:	212615
Matrix:	Water	Sampled:	06/25/14 12:35
Units:	mg/L	Received:	06/25/14

Type: MS Analyzed: 06/26/14 09:33
Lab ID: QC746661

Analyte	MSS Result	Spiked	Result	%REC	Limits
Chloride	1,080	200.0	1,251	85 NM	75-120
Nitrogen, Nitrite	<1.287	50.00	48.51	97	80-120
Nitrogen, Nitrate	0.1349	50.00	46.31	92	80-120
Sulfate	260.8	500.0	746.9	97	79-120

Type: MSD Analyzed: 06/26/14 09:50
Lab ID: QC746662

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Chloride	200.0	1,257	89 NM	75-120	1	20
Nitrogen, Nitrite	50.00	51.27	103	80-120	6	23
Nitrogen, Nitrate	50.00	46.82	93	80-120	1	20
Sulfate	500.0	746.2	97	79-120	0	20

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

Curtis & Tompkins, Ltd.

Alkalinity

Lab #:	258450	Location:	Port HFC
Client:	Arcadis	Prep:	METHOD
Project#:	04656016.0000	Analysis:	SM2320B
Matrix:	Water	Sampled:	06/25/14
Units:	mg/L	Received:	06/25/14
Batch#:	212872	Analyzed:	07/02/14

Field ID: MW-4 Lab ID: 258450-002
Type: SAMPLE Diln Fac: 6.700

Analyte	Result	RL
Alkalinity, Bicarbonate	830	6.7
Alkalinity, Carbonate	ND	6.7
Alkalinity, Hydroxide	ND	6.7
Alkalinity, Total as CaCO3	830	6.7

Field ID: MW-4DUP Lab ID: 258450-003
Type: SAMPLE Diln Fac: 6.700

Analyte	Result	RL
Alkalinity, Bicarbonate	800	6.7
Alkalinity, Carbonate	ND	6.7
Alkalinity, Hydroxide	ND	6.7
Alkalinity, Total as CaCO3	800	6.7

Field ID: MW-11 Lab ID: 258450-004
Type: SAMPLE Diln Fac: 6.700

Analyte	Result	RL
Alkalinity, Bicarbonate	1,500	6.7
Alkalinity, Carbonate	ND	6.7
Alkalinity, Hydroxide	ND	6.7
Alkalinity, Total as CaCO3	1,500	6.7

Field ID: MW-8A Lab ID: 258450-005
Type: SAMPLE Diln Fac: 6.700

Analyte	Result	RL
Alkalinity, Bicarbonate	760	6.7
Alkalinity, Carbonate	ND	6.7
Alkalinity, Hydroxide	ND	6.7
Alkalinity, Total as CaCO3	760	6.7

Field ID: MW-12 Lab ID: 258450-006
Type: SAMPLE Diln Fac: 6.700

Analyte	Result	RL
Alkalinity, Bicarbonate	660	6.7
Alkalinity, Carbonate	ND	6.7
Alkalinity, Hydroxide	ND	6.7
Alkalinity, Total as CaCO3	660	6.7

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Alkalinity

Lab #:	258450	Location:	Port HFC
Client:	Arcadis	Prep:	METHOD
Project#:	04656016.0000	Analysis:	SM2320B
Matrix:	Water	Sampled:	06/25/14
Units:	mg/L	Received:	06/25/14
Batch#:	212872	Analyzed:	07/02/14

Field ID: MW-2 Lab ID: 258450-007
Type: SAMPLE Diln Fac: 6.700

Analyte	Result	RL
Alkalinity, Bicarbonate	590	6.7
Alkalinity, Carbonate	ND	6.7
Alkalinity, Hydroxide	ND	6.7
Alkalinity, Total as CaCO3	590	6.7

Field ID: RW-4 Lab ID: 258450-008
Type: SAMPLE Diln Fac: 10.00

Analyte	Result	RL
Alkalinity, Bicarbonate	540	10
Alkalinity, Carbonate	ND	10
Alkalinity, Hydroxide	ND	10
Alkalinity, Total as CaCO3	540	10

Field ID: RW-8 Lab ID: 258450-009
Type: SAMPLE Diln Fac: 10.00

Analyte	Result	RL
Alkalinity, Bicarbonate	960	10
Alkalinity, Carbonate	ND	10
Alkalinity, Hydroxide	ND	10
Alkalinity, Total as CaCO3	960	10

Type: BLANK Diln Fac: 1.000
Lab ID: QC747546

Analyte	Result	RL
Alkalinity, Bicarbonate	ND	1.0
Alkalinity, Carbonate	ND	1.0
Alkalinity, Hydroxide	ND	1.0
Alkalinity, Total as CaCO3	ND	1.0

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Alkalinity

Lab #:	258450	Location:	Port HFC
Client:	Arcadis	Prep:	METHOD
Project#:	04656016.0000	Analysis:	SM2320B
Analyte:	Alkalinity, Total as CaCO3	Units:	mg/L
Type:	LCS	Diln Fac:	4.000
Lab ID:	QC747547	Batch#:	212872
Matrix:	Water	Analyzed:	07/02/14

Spiked	Result	%REC	Limits
200.0	191.2	96	90-110

Curtis & Tompkins, Ltd.

Batch QC Report

Alkalinity

Lab #:	258450	Location:	Port HFC
Client:	Arcadis	Prep:	METHOD
Project#:	04656016.0000	Analysis:	SM2320B
Analyte:	Alkalinity, Total as CaCO3	Diln Fac:	10.00
Field ID:	ZZZZZZZZZZ	Batch#:	212872
MSS Lab ID:	258291-005	Sampled:	06/20/14
Matrix:	Water	Received:	06/20/14
Units:	mg/L	Analyzed:	07/02/14

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
MS	QC747548	383.3	500.0	868.0	97	80-120		
MSD	QC747549		500.0	848.0	93	80-120	2	25

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Dissolved Sulfide

Lab #:	258450	Location:	Port HFC
Client:	Arcadis	Prep:	METHOD
Project#:	04656016.0000	Analysis:	SM4500S2-D
Analyte:	Dissolved Sulfide	Batch#:	212819
Matrix:	Water	Sampled:	06/25/14
Units:	mg/L	Received:	06/25/14
Diln Fac:	1.000	Analyzed:	07/01/14

Field ID	Type	Lab ID	Result	RL
MW-4	SAMPLE	258450-002	ND	0.04
MW-4DUP	SAMPLE	258450-003	ND	0.04
MW-11	SAMPLE	258450-004	ND	0.04
MW-8A	SAMPLE	258450-005	ND	0.04
MW-12	SAMPLE	258450-006	1.5	0.04
MW-2	SAMPLE	258450-007	ND	0.04
RW-4	SAMPLE	258450-008	0.05	0.04
RW-8	SAMPLE	258450-009	0.21	0.04
	BLANK	QC747350	ND	0.04

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved Sulfide

Lab #:	258450	Location:	Port HFC
Client:	Arcadis	Prep:	METHOD
Project#:	04656016.0000	Analysis:	SM4500S2-D
Analyte:	Dissolved Sulfide	Diln Fac:	1.000
Field ID:	ZZZZZZZZZZ	Batch#:	212819
MSS Lab ID:	258437-001	Sampled:	06/25/14
Matrix:	Water	Received:	06/25/14
Units:	mg/L	Analyzed:	07/01/14

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
LCS	QC747351		0.8533	0.8262	97	80-120		
MS	QC747352	<0.04000	0.8533	0.8478	99	57-131		
MSD	QC747353		0.8533	0.7535	88	57-131	12	21

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Orthophosphate Phosphorous

Lab #:	258450	Location:	Port HFC
Client:	Arcadis	Prep:	METHOD
Project#:	04656016.0000	Analysis:	SM4500P-E
Analyte:	Orthophosphate (as P)	Batch#:	212602
Matrix:	Water	Received:	06/25/14
Units:	mg/L		

Field ID	Type	Lab ID	Result	RL	Diln Fac	Sampled	Analyzed
MW-4	SAMPLE	258450-002	0.40	0.030	1.000	06/25/14 08:52	06/25/14 17:08
MW-4DUP	SAMPLE	258450-003	0.37	0.030	1.000	06/25/14 08:52	06/25/14 17:08
MW-11	SAMPLE	258450-004	6.8	0.30	10.00	06/25/14 10:28	06/25/14 17:08
MW-8A	SAMPLE	258450-005	0.40	0.030	1.000	06/25/14 10:58	06/25/14 17:08
MW-12	SAMPLE	258450-006	0.57	0.030	1.000	06/25/14 12:17	06/25/14 17:08
MW-2	SAMPLE	258450-007	0.17	0.030	1.000	06/25/14 12:44	06/25/14 17:08
RW-4	SAMPLE	258450-008	ND	0.030	1.000	06/25/14 14:05	06/25/14 17:08
RW-8	SAMPLE	258450-009	0.040	0.030	1.000	06/25/14 14:38	06/25/14 17:08
	BLANK	QC746473	ND	0.030	1.000		06/24/14 17:42

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Orthophosphate Phosphorous

Lab #:	258450	Location:	Port HFC
Client:	Arcadis	Prep:	METHOD
Project#:	04656016.0000	Analysis:	SM4500P-E
Analyte:	Orthophosphate (as P)	Diln Fac:	1.000
Field ID:	MW-10	Batch#:	212602
MSS Lab ID:	258404-002	Sampled:	06/24/14 09:48
Matrix:	Water	Received:	06/24/14
Units:	mg/L	Analyzed:	06/24/14 17:42

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
LCS	QC746474		0.4000	0.3885	97	80-120		
MS	QC746475	<0.03000	0.4000	0.3875	97	80-120		
MSD	QC746476		0.4000	0.3854	96	80-120	1	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Total Dissolved Solids (TDS)

Lab #:	258450	Location:	Port HFC
Client:	Arcadis	Prep:	METHOD
Project#:	04656016.0000	Analysis:	SM2540C
Analyte:	Total Dissolved Solids	Sampled:	06/25/14
Matrix:	Water	Received:	06/25/14
Units:	mg/L	Prepared:	07/01/14
Batch#:	212821	Analyzed:	07/02/14

Field ID	Type	Lab ID	Result	RL	Diln Fac
MW-4	SAMPLE	258450-002	1,090	10	1.000
MW-4DUP	SAMPLE	258450-003	1,100	10	1.000
MW-11	SAMPLE	258450-004	3,130	20	2.000
MW-8A	SAMPLE	258450-005	1,080	10	1.000
MW-12	SAMPLE	258450-006	950	10	1.000
MW-2	SAMPLE	258450-007	640	10	1.000
RW-4	SAMPLE	258450-008	730	10	1.000
RW-8	SAMPLE	258450-009	2,500	10	1.000
	BLANK	QC747359	ND	10	1.000

ND= Not Detected
RL= Reporting Limit

Batch QC Report

Total Dissolved Solids (TDS)

Lab #:	258450	Location:	Port HFC
Client:	Arcadis	Prep:	METHOD
Project#:	04656016.0000	Analysis:	SM2540C
Analyte:	Total Dissolved Solids	Batch#:	212821
Matrix:	Water	Prepared:	07/01/14
Units:	mg/L	Analyzed:	07/02/14

Field ID	Type	MSS Lab ID	Lab ID	MSS Result	Spiked	Result	RL	%REC	Limits	RPD	Lim	Diln Fac	Sampled	Received
	LCS		QC747360		104.0	88.00		85	74-120			1.000		
RW-8	SDUP	258450-009	QC747361	2,503		2,543	16.67			2	5	1.667	06/25/14	06/25/14
ZZZZZZZZZZ	SDUP	258531-002	QC747362	2,400		2,383	16.67			1	5	1.667	06/27/14	06/27/14

RL= Reporting Limit
RPD= Relative Percent Difference

41.0

Curtis & Tompkins, Ltd.

Laboratory Job Number 258450

Subcontracted Products

Cal Science

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WORK ORDER NUMBER: 14-06-2069

The difference is service

AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: Curtis & Tompkins, Ltd.

Client Project Name: 258450

Attention: Will S. Rice
2323 Fifth Street
Berkeley, CA 94710-2407

Vikas Patel

Approved for release on 07/08/2014 by:
Vikas Patel
Project Manager

ResultLink

Email your PM

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Client Project Name: 258450
Work Order Number: 14-06-2069

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Work Order Narrative

Work Order: 14-06-2069 Page 1 of 1

Condition Upon Receipt:

Samples were received under Chain-of-Custody (COC) on 06/27/14. They were assigned to Work Order 14-06-2069.

Unless otherwise noted on the Sample Receiving forms all samples were received in good condition and within the recommended EPA temperature criteria for the methods noted on the COC. The COC and Sample Receiving Documents are integral elements of the analytical report and are presented at the back of the report.

Holding Times:

All samples were analyzed within prescribed holding times (HT) and/or in accordance with the Calscience Sample Acceptance Policy unless otherwise noted in the analytical report and/or comprehensive case narrative, if required.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

Quality Control:

All quality control parameters (QC) were within established control limits except where noted in the QC summary forms or described further within this report.

Additional Comments:

Air - Sorbent-extracted air methods (EPA TO-4A, EPA TO-10, EPA TO-13A, EPA TO-17): Analytical results are converted from mass/sample basis to mass/volume basis using client-supplied air volumes.

New York NELAP air certification does not certify for all reported methods and analytes, reference the accredited items here: http://www.calscience.com/PDF/New_York.pdf

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are always reported on a wet weight basis.

Subcontractor Information:

Unless otherwise noted below (or on the subcontract form), no samples were subcontracted.

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Detections Summary

Client:	Curtis & Tompkins, Ltd.	Work Order:	14-06-2069
	2323 Fifth Street	Project Name:	258450
	Berkeley, CA 94710-2407	Received:	06/27/14
Attn:	Will S. Rice		

Client SampleID

Analyte	Result	Qualifiers	RL	Units	Method	Extraction
MW-4 (14-06-2069-1)						
Carbon Dioxide	11700		17.0	ug/L	RSK-175M	N/A
MW-4DUP (14-06-2069-2)						
Carbon Dioxide	30500		17.0	ug/L	RSK-175M	N/A
MW-11 (14-06-2069-3)						
Carbon Dioxide	29200		17.0	ug/L	RSK-175M	N/A
MW-8A (14-06-2069-4)						
Carbon Dioxide	28300		17.0	ug/L	RSK-175M	N/A
MW-12 (14-06-2069-5)						
Carbon Dioxide	61300		17.0	ug/L	RSK-175M	N/A
MW-2 (14-06-2069-6)						
Carbon Dioxide	20300		17.0	ug/L	RSK-175M	N/A
RW-4 (14-06-2069-7)						
Carbon Dioxide	84000		17.0	ug/L	RSK-175M	N/A
RW-8 (14-06-2069-8)						
Carbon Dioxide	91200		34.0	ug/L	RSK-175M	N/A

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Subcontracted analyses, if any, are not included in this summary.

* MDL is shown

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Analytical Report

Curtis & Tompkins, Ltd.
2323 Fifth Street
Berkeley, CA 94710-2407

Project: 258450

Date Received: 06/27/14
Work Order: 14-06-2069
Preparation: N/A
Method: RSK-175M
Units: ug/L

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-4	**14-06-2069-1-A**	**06/25/14 08:52**	**Aqueous**	**GC 14**	**N/A**	**07/02/14 11:05**	**140702L01**

Parameter	Result	RL	DF	Qualifiers
Carbon Dioxide	11700	17.0	10.0	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-4DUP	**14-06-2069-2-A**	**06/25/14 08:52**	**Aqueous**	**GC 14**	**N/A**	**07/02/14 11:24**	**140702L01**

Parameter	Result	RL	DF	Qualifiers
Carbon Dioxide	30500	17.0	10.0	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-11	**14-06-2069-3-A**	**06/25/14 10:28**	**Aqueous**	**GC 14**	**N/A**	**07/02/14 11:44**	**140702L01**

Parameter	Result	RL	DF	Qualifiers
Carbon Dioxide	29200	17.0	10.0	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-8A	**14-06-2069-4-A**	**06/25/14 10:58**	**Aqueous**	**GC 14**	**N/A**	**07/02/14 12:04**	**140702L01**

Parameter	Result	RL	DF	Qualifiers
Carbon Dioxide	28300	17.0	10.0	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-12	**14-06-2069-5-B**	**06/25/14 12:17**	**Aqueous**	**GC 14**	**N/A**	**07/02/14 12:25**	**140702L01**

Parameter	Result	RL	DF	Qualifiers
Carbon Dioxide	61300	17.0	10.0	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-2	**14-06-2069-6-A**	**06/25/14 12:44**	**Aqueous**	**GC 14**	**N/A**	**07/02/14 12:45**	**140702L01**

Parameter	Result	RL	DF	Qualifiers
Carbon Dioxide	20300	17.0	10.0	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
RW-4	**14-06-2069-7-A**	**06/25/14 14:05**	**Aqueous**	**GC 14**	**N/A**	**07/02/14 13:05**	**140702L01**

Parameter	Result	RL	DF	Qualifiers
Carbon Dioxide	84000	17.0	10.0	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
RW-8	**14-06-2069-8-A**	**06/25/14 14:38**	**Aqueous**	**GC 14**	**N/A**	**07/02/14 13:45**	**140702L01**

Parameter	Result	RL	DF	Qualifiers
Carbon Dioxide	91200	34.0	20.0	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

Curtis & Tompkins, Ltd.
2323 Fifth Street
Berkeley, CA 94710-2407

Project: 258450

Date Received: 06/27/14
Work Order: 14-06-2069
Preparation: N/A
Method: RSK-175M
Units: ug/L

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-659-717**	**N/A**	**Aqueous**	**GC 14**	**N/A**	**07/02/14 10:09**	**140702L01**

Parameter	Result	RL	DF	Qualifiers
Carbon Dioxide	ND	1.70	1.00	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Quality Control - LCS/LCSD

Curtis & Tompkins, Ltd.
2323 Fifth Street
Berkeley, CA 94710-2407

Project: 258450

Date Received: 06/27/14
Work Order: 14-06-2069
Preparation: N/A
Method: RSK-175M

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-659-717	**LCS**	**Aqueous**	**GC 14**	**N/A**	**07/02/14 09:27**	**140702L01**
099-12-659-717	**LCSD**	**Aqueous**	**GC 14**	**N/A**	**07/02/14 09:47**	**140702L01**

Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Carbon Dioxide	104.0	94.29	91	93.83	90	80-120	0	0-20	

RPD: Relative Percent Difference. CL: Control Limits

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Sample Analysis Summary Report

Work Order: 14-06-2069 Page 1 of 1

Method	Extraction	Chemist ID	Instrument	Analytical Location
RSK-175M	N/A	908	GC 14	2

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Glossary of Terms and Qualifiers

Work Order: 14-06-2069 Page 1 of 1

Qualifiers	Definition
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to suspected matrix interference. The associated LCS recovery was in control.
4	The MS/MSD RPD was out of control due to suspected matrix interference.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to suspected matrix interference.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
B	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
BV	Sample received after holding time expired.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
JA	Analyte positively identified but quantitation is an estimate.
ME	LCS Recovery Percentage is within Marginal Exceedance (ME) Control Limit range (+/- 4 SD from the mean).
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
SG	The sample extract was subjected to Silica Gel treatment prior to analysis.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

A calculated total result (Example: Total Pesticides) is the summation of each component concentration and/or, if "J" flags are reported, estimated concentration. Component concentrations showing not detected (ND) are summed into the calculated total result as zero concentrations.

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Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878
2323 Fifth Street
Berkeley, CA 94710
(510) 486-0900
(510) 486-0532

14-06-2069

Project Number: 258450
Site: Port HFC

Subcontract Laboratory:
Cal Science
7440 Lincoln Way
Garden Grove, CA 92841-1432
(714) 895-5494
ATTN: Vik Patel

Results due: Report Level: II

Please send report to: Will S Rice (will.rice@ctberk.com)
*** Please report using Sample ID rather than C&T Lab #.

	Sample ID	Sampled	Matrix	Analysis	C&T Lab #	Comments
1	MW-4	06/25 08:52	Water	RSK-175-CO2	258450-002	
2	MW-4DUP	06/25 08:52	Water	RSK-175-CO2	258450-003	
3	MW-11	06/25 10:28	Water	RSK-175-CO2	258450-004	
4	MW-8A	06/25 10:58	Water	RSK-175-CO2	258450-005	
5	MW-12	06/25 12:17	Water	RSK-175-CO2	258450-006	
6	MW-2	06/25 12:44	Water	RSK-175-CO2	258450-007	
7	RW-4	06/25 14:05	Water	RSK-175-CO2	258450-008	
8	RW-8	06/25 14:38	Water	RSK-175-CO2	258450-009	

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Notes:	Relinquished By:	Received By:
	Date/Time: 6/26/14 1410	Date/Time:
	Date/Time:	Date/Time: 6/27/14 0940

Signature on this form constitutes a firm Purchase Order for the services requested above.

2009

From: (510) 486-0900
Sample Control
Curtis & Tompkins
2323 5th Street

Berkeley, CA 94710

Origin ID: JEMA

FedEx Express

J14101402070326

Ship Date: 26JUN14
ActWgt: 12.5 LB
CAD: 7603800/INET3490

Delivery Address Bar Code

Ref # 2584048450
Invoice #
PO #
Dept #

SHIP TO: (714) 895-5494 BILL THIRD PARTY

Vik Patel
Cal Science Environmental Lab
7440 LINCOLN WAY

GARDEN GROVE, CA 92841

FRI - 27 JUN AA
STANDARD OVERNIGHT

TRK# 7704 3644 9640
0201

92 APVA

92841
CA-US
SNA

522G5/9BC4/F220

After printing this label:
1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

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WORK ORDER #: 14-06-2 0 6 9

SAMPLE RECEIPT FORM

Cooler 1 of 1

CLIENT: C I T

DATE: 06/27/14

TEMPERATURE: Thermometer ID: SC2 (Criteria: 0.0 °C – 6.0 °C, not frozen except sediment/tissue)

Temperature 2.1 °C - 0.3 °C (CF) = 1.8 °C ☑ Blank ☐ Sample

☐ Sample(s) outside temperature criteria (PM/APM contacted by: _____)

☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling.

☐ **Received at ambient temperature, placed on ice for transport by Courier.**

Ambient Temperature: ☐ Air ☐ Filter Checked by: 15

CUSTODY SEALS INTACT:

☐ Cooler ☐_____ ☐ No (Not Intact) ☑ Not Present ☐ N/A Checked by: 15

☐ Sample ☐_____ ☐ No (Not Intact) ☑ Not Present Checked by: SR6

SAMPLE CONDITION:	Yes	No	N/A
Chain-Of-Custody (COC) document(s) received with samples	☑	☐	☐
COC document(s) received complete	☑	☐	☐
☐ Collection date/time, matrix, and/or # of containers logged in based on sample labels.			
☐ No analysis requested. ☐ Not relinquished. ☐ No date/time relinquished.			
Sampler's name indicated on COC	☐	☐	☑
Sample container label(s) consistent with COC	☑	☐	☐
Sample container(s) intact and good condition	☑	☐	☐
Proper containers and sufficient volume for analyses requested	☑	☐	☐
Analyses received within holding time	☑	☐	☐
Aqueous samples received within 15-minute holding time			
☐ pH ☐ Residual Chlorine ☐ Dissolved Sulfides ☐ Dissolved Oxygen	☐	☐	☑
Proper preservation noted on COC or sample container	☑	☐	☐
☐ Unpreserved vials received for Volatiles analysis			
Volatile analysis container(s) free of headspace	☑	☐	☐
Tedlar bag(s) free of condensation	☐	☐	☑

CONTAINER TYPE:

Solid: ☐4ozCGJ ☐8ozCGJ ☐16ozCGJ ☐Sleeve (_____) ☐EnCores® ☐TerraCores® ☐_____

Aqueous: ☑VOA (3) ☐VOAh ☐VOAna_2 ☐125AGB ☐125AGBh ☐125AGBp ☐1AGB ☐1AGBna_2 ☐1AGBs

☐500AGB ☐500AGJ ☐500AGJs ☐250AGB ☐250CGB ☐250CGBs ☐1PB ☐1PBna ☐500PB

☐250PB ☐250PBn ☐125PB ☐125PBznna ☐100PJ ☐100PJna_2 ☐_____ ☐_____ ☐_____

Air: ☐Tedlar® ☐Canister **Other:** ☐_____ **Trip Blank Lot#:**_____ Labeled/Checked by: SR6

Container: C: Clear A: Amber P: Plastic G: Glass J: Jar B: Bottle Z: Ziploc/Resealable Bag E: Envelope Reviewed by: SR2

Preservative: h: HCL n: HNO_3 na_2:$Na_2S_2O_3$ na: NaOH p: H_3PO_4 s: H_2SO_4 u: Ultra-pure znna: $ZnAc_2$+NaOH f: Filtered Scanned by: SR2

(-7) Received 2 containers, SR6

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ARCADIS

Appendix C

Free Product and Water Level Measurement Field Sheets

Depth to Water and Free Product Measurements
Harbor Facilities Complex
Port of Oakland, CA

TIME	Recovery Well	Depth to Product (feet)	Depth to Water (feet)	Product Thickness (feet)	
	Site Visit Date:	June 24, 2014			
	Recorded By:	S. Penman + J. Lee			
	RW-1	Inaccessible			
8:31	RW-2	ND	10.09	0	sheen/odor
8:14	RW-3	ND	10.84	0	product on probe ~4" did not register on bailer
8:18	RW-4	ND	9.44	0	sheen/odor
8:29	RW-5	unaccessible			
8:24	RW-6	9.00	10.84	1.84	
8:20	RW-7	8.24	12.65	4.41	
8:27	RW-8	9.41	11.55	2.14	
8:35	RW-9	9.90	11.91	2.01	
9:00	MW-1	ND	11.19	0	
8:09	MW-2	ND	11.94	0	
8:11	MW-3	10.83	11.84	1.01	
8:45	MW-4	ND	11.88	0	
8:47	MW-5	ND	9.36	0	
8:51	MW-8A	ND	11.26	0	
8:53	MW-9	ND	12.01	0	
8:58	MW-10	ND	10.77	0	
8:03	MW-11	ND	10.47	0	
8:05	MW-12	ND	11.92	0	