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# SECOND SEMIANNUAL 2016 GROUNDWATER MONITORING AND PRODUCT EXTRACTION REPORT

## BRIDGEWATER APARTMENTS PHASE I PARKING GARAGE
## 6400 CHRISTIE AVENUE
## EMERYVILLE, CALIFORNIA

***Prepared for:***

**EMERYBAY COMMERCIAL ASSOCIATION**
**EMERYVILLE, CA 94608**

**November 2016**

STELLAR
ENVIRONMENTAL SOLUTIONS, INC.
GEOSCIENCE & ENGINEERING CONSULTING

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## 6400 CHRISTIE AVENUE
## EMERYVILLE, CALIFORNIA

***Prepared for:***

**EMERYBAY COMMERCIAL ASSOCIATION**
**6475 CHRISTIE AVENUE, SUITE 550**
**EMERYVILLE, CA 94608**

***Prepared by:***

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

**November 29, 2016**

Project No. 2007-65

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November 29, 2016

Mr. Mark Detterman
Hazardous Materials Specialist
Alameda County Department of Environmental Health
Local Oversight Program
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502

Subject: Second Semiannual 2016 Groundwater Monitoring & Product Extraction Report
EmeryBay Commercial Association Phase I Condo Parking Garage
6400 Christie Avenue, Emeryville, California.

Dear Mr. Detterman:

Enclosed is the Stellar Environmental Solutions, Inc. report summarizing the site activities conducted in September 2016 at the referenced site. This report is being submitted on behalf of the owner and Responsible Party, Emerybay Commercial Association. Subject site activities since the first semiannual monitoring event of 2016 include a surfactant injection into five select wells, injection of a high sulfate metabolic supplement into two site trench well arrays, one product extraction event and the second semiannual 2016 groundwater monitoring event.

This report summarizes the 26th sampling event conducted at the site since 1988. The bulk of the residual contamination beneath the site remains concentrated around wells MW-8, MW-10, MW-12, MW-13, MW-14, MW-15, MW-E, RW-1, and the plume underlying the parking garage. In accordance with regulatory requirements, an electronic copy of this report has been uploaded to ACEH and to the State Water Resources Control Board's GeoTracker system.

We declare, under penalty of perjury, that the information and/or recommendations contained in the attached document or report are true and correct to the best of our knowledge. If you have any questions regarding this report, please contact us at (510) 644-3123.

Sincerely,

Richard S. Makdisi, P.G.
Principal Geochemist & President

Ms. Katherine Collins
Emerybay Commercial Assoc.

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# 1.0 INTRODUCTION

## PROJECT BACKGROUND

The subject property, located at 6400 Christie Avenue in Emeryville, California, is owned by the Emerybay Commercial Association, for which Stellar Environmental Solutions, Inc. (Stellar Environmental) provides environmental consulting services. The site has undergone fuel tank-related investigations and remediation since 1988 (by Stellar Environmental since 2007). All known environmental documents for the subject property are listed in the References and Bibliography section (Section 7.0) of this report. Previous remediation and investigation activities are outlined in the final subsection of this chapter.

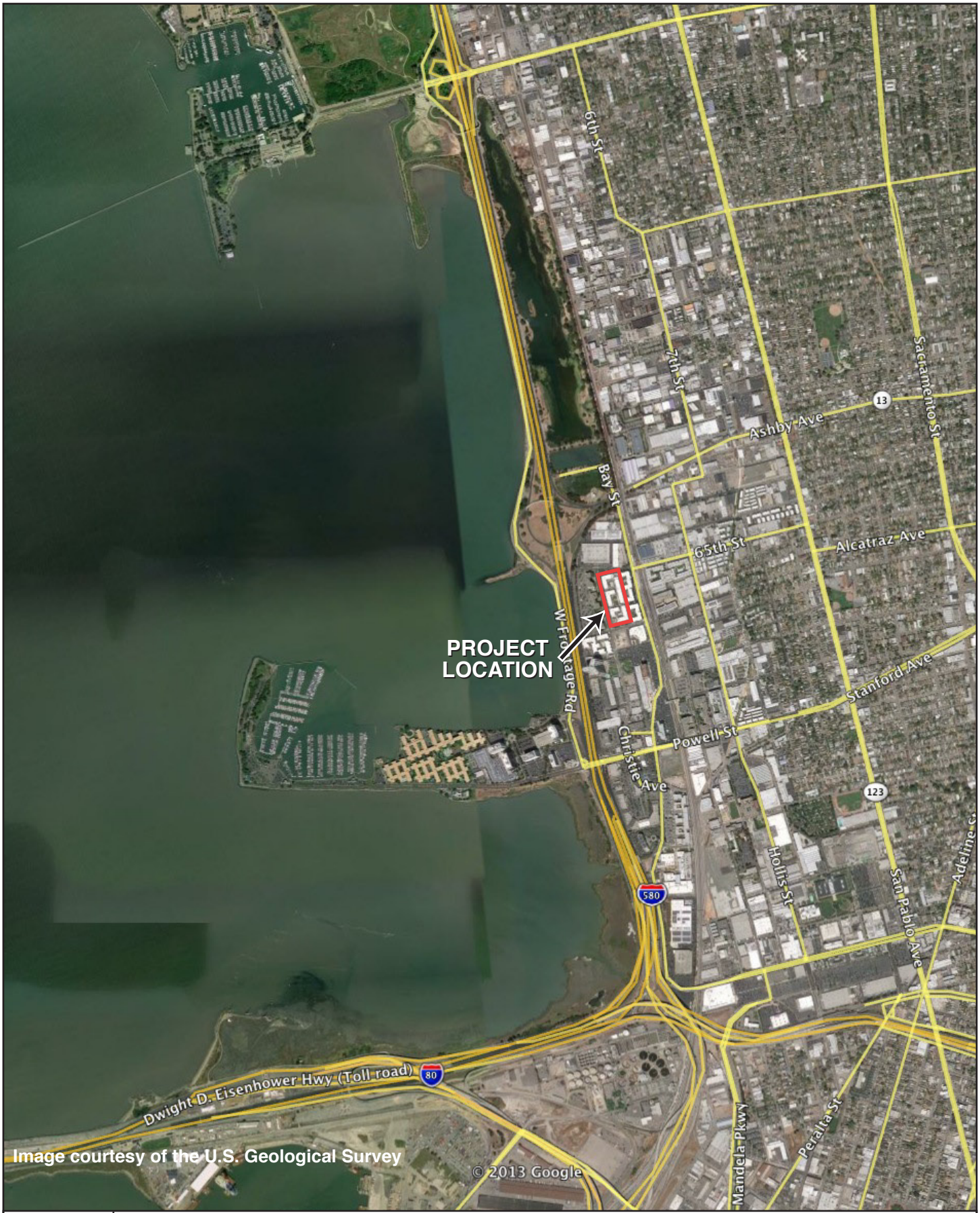
## SITE AND VICINITY DESCRIPTION

The project site is located at 6400 Christie Avenue in Emeryville, California (see Figure 1). The project site, which slopes to the south, is wholly developed with an open ground-floor parking area and apartment complex known as the Bridgewater Phase I Condos and parking garage. The area of monitoring and product extraction is primarily located in the northeastern portion of the parking garage. Figure 2 is a site plan. The site is bordered to the east by the Emery Bay Phase II Condos and parking garage, to the north by 65$^{th}$ Street, beyond Christie Avenue and to the west by the Bay Center Offices, and to the south by 64$^{th}$ Street. The surrounding area is developed with apartment complexes, offices, and commercial stores.

## PREVIOUS INVESTIGATIONS

Historical groundwater well analytical results are presented in Appendix A, and are discussed in detail in Section 5.0 of this report.

The subject property parcel was developed as early as 1958 with the Garrett Motor Freight Station, associated with Delta Lines, Inc. The Delta Lines complex contained an "Oil and Gas" building, located at the site of the present-day Emery Bay Phase I Condo complex and parking garage. The building remained on the property until 1986, when it was demolished to build the present-day structures. Twelve underground fuel storage tanks (UFSTs) containing diesel and gasoline were removed from the Emery Bay Phase I and Phase II Condo complex parcels in 1987, at which time soil and groundwater contamination was discovered.

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# SITE LOCATION ON AERIAL PHOTO

6400 Christie Ave.
Emeryville, CA

By: MJC | NOVEMBER 2016

Figure 1

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2007-65-01


N

# SITE PLAN AND ADJACENT LAND USE

| | | |
|---|---|---|
| 6400 Christie Ave.<br>Emeryville, CA | By: MJC | NOVEMBER 2016 |
| | Figure 2 | |

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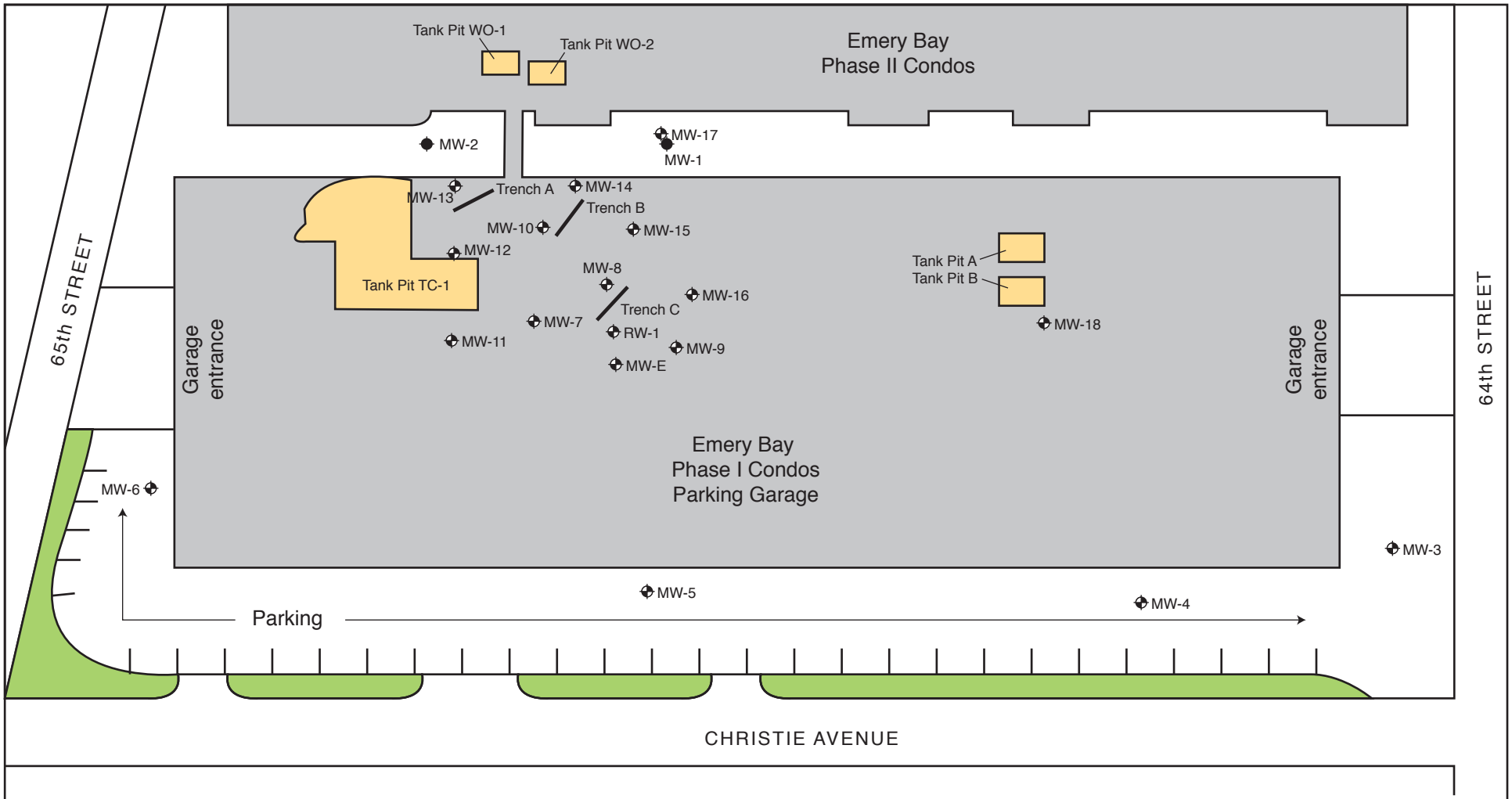
2007-65-80

The subsurface contamination originated from the trucking terminal that was operated by the Garrett Freight Line and Delta Lines, and existed at the site of the Bay Center Apartments before its development in the late 1980s. Site investigations identified a total of 12 UFSTs in three areas of the trucking terminal. These UFST areas were referred to as: 1) Tank Pits A and B (each containing one 10,000-gallon diesel tank); 2) Tank Pit TC-1 (four 12,000-gallon diesel tanks, two 10,000-gallon diesel tanks, and one 6,000-gallon gasoline tank); and 3) Tank Pit WO-1 and WO-2 (one 6,000-gallon tank, one 4,000-gallon tank, and one 1,000-gallon tank). Nine UFSTs were located beneath the current footprint of the Emery Bay Phase I Condo complex, while three were beneath the Emery Bay Phase II Condo complex. Figure 2 shows the historical locations where the tanks were removed.

To remediate the hydrocarbon contamination beneath the garage area of the Emery Bay Phase I Condo complex, a light non-aqueous phase liquid (LNAPL) groundwater pump-and-treat system was installed by Groundwater Technology, Inc. (GTI) in 1989. The system extracted approximately one million gallons of groundwater, yielding approximately 100 gallons of LNAPL from recovery well RW-1 from July 1990 to March 1991. Three monitoring wells had previously been installed in 1985. GTI installed (and repaired) several more monitoring wells between 1987 and 1990, for a total of seven monitoring wells and one extraction well by 1990. The system and groundwater monitoring wells were designed and monitored as a condition of discharge permits granted by the East Bay Municipal Utility District (EBMUD) and the Bay Area Air Quality Management District (BAAQMD). The first groundwater monitoring event for MW-1 through MW-6 occurred in December 1988. The second monitoring event, which also included MW-E and RW-1, was conducted in March 1989. Subsequently, the groundwater extraction system operated by GTI was closed in late 1990 when corrosion and other mechanical problems caused the system to fail. Recovery of LNAPL continued manually on RW-1 until 1991, and a third groundwater sampling event occurred in February 1991. In 1994, the GTI system was abandoned. Appendix A contains the historical analytical results. Figure 3 shows the locations of the monitoring wells and trenches.

No groundwater monitoring events had occurred at the site between 1991 and 2004, when PES Environmental, Inc. (PES) was retained to evaluate and implement remediation of the residual contamination at the TC-1 (former location of seven UFSTs) Emery Bay Phase I Condo complex area. (Note: Harding Lawson Associates conducted soil and groundwater sampling on the Phase II Apartment complex area during this time, but not for the purpose of product extraction or remediation.) In 2004, PES installed an additional 10 groundwater monitoring wells (monitoring wells MW-1 and MW-2 were either abandoned or paved over with asphalt during construction), bringing the current total to 17 monitoring wells and one extraction well in the Phase I parking garage area. The first groundwater monitoring event for the current wells was conducted in March 2004 and the second event conducted in December 2006. A previous Stellar Environmental report




**LEGEND**

- Monitoring well
- Monitoring well (presumed abandoned)
- Trench location
- Historical tank pit area
- Landscaping

0 60

SCALE: 1/2" = 60 FEET

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# MONITORING WELL AND TRENCH LOCATIONS

## 6400 Christie Ave., Emeryville, CA

**Figure 3**

by: MJC | NOVEMBER 2016

2007-65-02

(Stellar Environmental, 2007) discusses previous site remediation and investigations, site geology and hydrogeology, and residual site contamination. Tabular summaries of historical groundwater well water elevations and analytical results are included in Appendices D and A, respectively.

In March 2014, Stellar Environmental Solutions conducted a groundwater investigation that consisted of advancing five soil borings in the areas between wells MW-3 on the southern edge of the site and MW-18 in the garage and downgradient of MW-3, with the goal to locate a suspected source of residual subsurface hydrocarbons. The reason for this additional work was based on the recent uptrend in diesel concentration noted in well MW-3 since the late 2012 initiation of construction de-watering at the 6340 Christie Avenue (ACHCSA Case # RO0000057) property across 64$^{th}$ Street, south of the subject property garage area.

The impact the dewatering had on the subject site was apparent in terms of both the changes to the site hydrology—with the change in the groundwater flow regime from west/northwest to having a southern component—as well as a hydrochemical impact. The hydochemical impact, as documented in the Y2013 and Y2014 site monitoring reports, was to draw the hydrocarbon plume southward, increasing the concentrations of TEHd by orders of magnitude at well MW-3 near the subject property south border, compared to the previous 5 years of monitoring that showed stable results. The TEHd concentration at MW-3 on the southern property line increased from 15,000 µg/L TEHd in April 2013 to 250,000 µg/L TEHd in September 2013. The relatively stable TEHd concentration present in well MW-18 since 2012, suggested a possible undiscovered source between these two wells that was impacting well MW-3. However, the plume appears to have stabilized since the cessation of construction dewatering at the site across 64$^{th}$ Street along with the product recovery efforts in the garage area. The groundwater flow direction and plume geometry has now reverted to the pre-pumping groundwater regime. The TVHg and TEHd concentrations in well MW-3 have substantially decreased with March 2015 through the current September 2016 monitoring events since the highest concentrations of 2013.

## OBJECTIVES AND SCOPE OF WORK

This report discusses the following activities conducted/coordinated by Stellar Environmental in the current annual monitoring period:

- Introduction of an electron acceptor solution (Nutrisulfate®) into trench wells TA-E, TA-M, TA-W, TC-E, TC-M and TC-W on August 3, 2016. A previous introduction of this product was conducted into the same wells on February 17, 2016. Nutrisulfate® is a high sulfate metabolic supplement designed to enhance the kinetics and efficiency of microbial systems specifically related to bioremediation of BTEX, MTBE, and other petroleum hydrocarbons. Trench wells TB-E, TB-M and TB-W are not receiving the product and act as control wells.

- Collect groundwater samples from the central trench well (TA-M, TB-M and TC-M) in each of the three arrays on June 24, 2016. The goal of this work is to track hydrochemical trends in wells TA-M and TC-M receiving the Nutrisulfate® product and to compare trends against the trench well TB-M which is not receiving the Nutrisulfate®.
- Injection of surfactant into wells MW-8, MW-10, MW-11, MW-13 and MW-15 on June 24, 2016.
- Active extraction on all groundwater monitoring wells and recovery well RW-1 on September 27 and 28, 2016.
- Record water levels in site wells to determine groundwater flow direction.
- Sampling of site monitoring wells for contaminant analysis on September 30, 2016.
- Evaluation of hydrochemical and groundwater elevation trends in the context of plume stability and case closure assessment.

## REGULATORY OVERSIGHT

Alameda Department of Environmental Health (ACEH) is the lead regulatory agency for the case, acting as a Local Oversight Program for the Regional Water Quality Control Board (Water Board). There are currently no ACEH or Water Board cleanup orders for the site; however, all site work has been conducted under the oversight of ACEH. ACEH assigned the site to its fuel leak case system (RO #2799), currently overseen by Mr. Mark Detterman. In a November 2008 meeting with the Responsible Party (represented by Ms. Sarah Irving), Stellar Environmental (represented by Ms. Teal Glass and Mr. Richard Makdisi), and ACEH (represented by Ms. Jakub and Ms. Donna Drogas), it was agreed that quarterly sampling could be reduced to a semiannual schedule with the stipulation that an indoor air and preferential pathway study be completed. Stellar Environmental submitted a letter on November 24, 2008 to ACEH documenting the change in sampling frequency. The Indoor Air Survey and Preferential Pathway Report (Stellar Environmental, 2009b) was submitted to ACEH on April 6, 2009. Stellar Environmental conducted an additional indoor air survey in the ground floor office area on March 22, 2010. The results were presented in a separate report, submitted to ACEH on April 6, 2010 (Stellar Environmental, 2010). The case has been assigned No. SLT2O05561 in the Water Board's GeoTracker system. Electronic uploads of required data/reports are submitted to both agencies. The November 2012 and March 2013 monitoring reports warned ACEH of impacts from the adjacent site dewatering at 6340 Christie Avenue and tracked the pull of the hydrocarbon plume to the southern property boundaries. The cessation of dewatering from the adjacent southern development, along with selected well purging at Bay Center, resulted in a re-equilibration of the plume back closer to its former geometry since the 2014 monitoring events.

# 2.0 PHYSICAL SETTING

The following evaluation of the physical setting of the site—including topography, drainage, and geologic and hydrogeologic conditions—is based on previous (1986 through 2006) site investigations conducted by others, and site inspections and subsurface data collection by Stellar Environmental in 2007, 2008 and 2014.

## TOPOGRAPHY AND DRAINAGE

The mean elevation of the property is about 13 feet above mean sea level, and the general topographic gradient in the vicinity of the property is to the southwest, although the regional gradient is to the west-southwest.

The nearest receiving water body is San Francisco Bay, located approximately 700 feet to the west of the subject property. East of the site lies the Oakland Hills, which rise to an elevation of approximately 1,000 feet and are situated 2.5 miles east of the subject property. The subject property is not listed within a 100- or 500-year flood zone.

Storm drains from the roof collect storm runoff for discharge onto the asphalt-paved parking lots. Drainage collected in storm sewers from the parking lot and from Christie, 64$^{th}$, and 65$^{th}$ Streets discharges into San Francisco Bay. Stellar Environmental noted several storm drains, in the parking lot area and on the surrounding streets.

## GEOLOGY

The subject property area is underlain with material mapped "Qhbm," designated early Pleistocene alluvium, that is moderately consolidated, deeply weathered, poorly sorted, irregularly interbedded clay, silt, sand, and gravel. A geotechnical survey conducted in 1985 revealed that the upper 15 to 20 feet of soil consists of a combination of fill and soft bay sediment. The upper 1 to 2 feet of soil is generally pavement and imported fill. This is underlain by approximately 20 feet of firm soil consisting of primarily dense, silty sand with intermittent layers of silty and sandy clay. Stiff to very stiff clay lies a depth of approximately 40 feet and extends to the depth of the borings, approximately 101.5 feet (Geomatrix, 1988).

The closest major fault, the Hayward Fault, is located about 3 miles east of the property. While the site is located in a seismically active area, it is not within an Alquist-Priolo Special Studies active

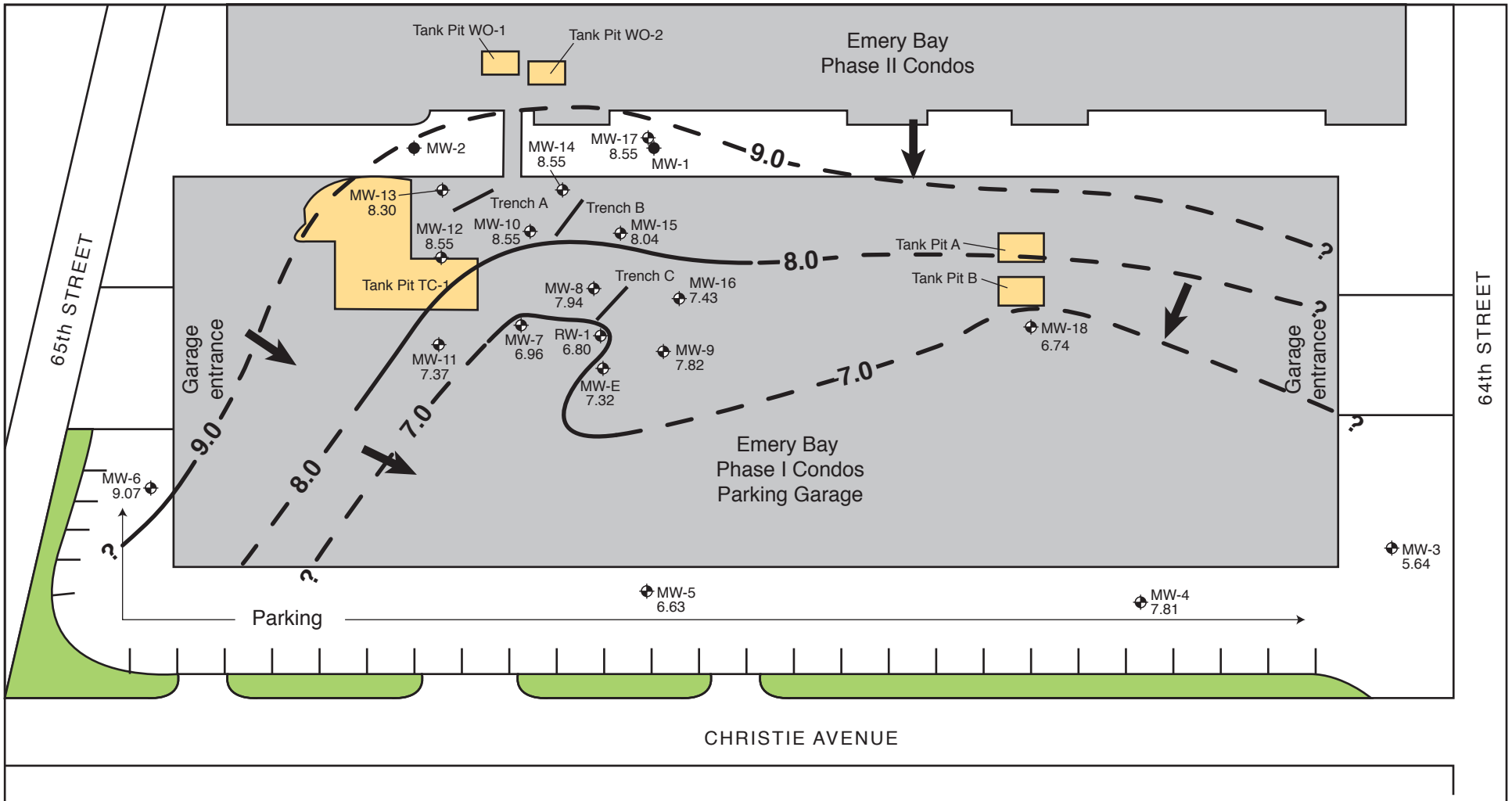
fault zone, the legislatively defined zone of restricted land use 200 feet around an active fault due to the high probability of ground rupture.

## GROUNDWATER HYDROLOGY

Regulatory agency records indicate that the direction of shallow groundwater flow in the site vicinity is to the west-northwest, toward San Francisco Bay. However, water levels and flow direction in this area are influenced by tidal patterns, natural topography modifications and the historical LNAPL, resulting in a relatively slow moving and stable plume pattern.

The groundwater flow direction measured during the September 2016 monitoring event was generally towards the west. The localized, approximately southerly direction to groundwater flow in the area of MW-3 noted in the 2013 monitoring events, thought to be the result of construction dewatering that had been occurring during 2013 at the re-development site across 64$^{th}$ Street, appears to have dissipated for the current event, since that de-watering has been discontinued since February of 2014. According to current and historical water level data obtained from onsite monitoring wells, depth to groundwater beneath the site ranges from approximately 7.5 to 10.5 feet below ground surface (bgs). Groundwater elevations recorded during the previous Fall monitoring event in September 2015, ranged from 7.01 feet (RW-1) to 9.24 feet (MW-16) above mean sea level. For this Fall monitoring event of September 2016, groundwater elevations ranged from 5.69 feet (MW-3) to 9.77 feet (MW-6) above mean sea level, with the average groundwater gradient for the current monitoring event being 0.007 foot/foot.

Figure 4 is a groundwater elevation map from the recent groundwater-monitoring event (activities discussed in Section 4.0).




**LEGEND**

- Monitoring well
- Monitoring well (presumed abandoned)
- Trench location
- NM = Not measured
- Historical tank pit area
- Landscaping
- 8.0 Groundwater elevation contour in feet amsl
- Extrapolated groundwater elevation contour
- Groundwater flow direction

0 60

SCALE: 1/2" = 60 FEET

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# MONITORING WELL AND TRENCH LOCATIONS

## 6400 Christie Ave., Emeryville, CA

**Figure 4**

by: MJC | OCTOBER 2016

2007-65-104

# 3.0 SEPTEMBER 2016 GROUNDWATER MONITORING AND SAMPLING ACTIVITIES

This section presents the groundwater sampling and analytical methods for the most recent event. Table 1 summarizes monitoring well construction and groundwater monitoring data. Groundwater analytical results are summarized in Section 4.0.

## SAMPLING METHODS AND ACTIVITIES

Activities for this event include:

- Measuring static water levels in 18 site wells.
- Collecting post-purge groundwater samples from the 18 wells for laboratory analysis of the following contaminants:
  - benzene, toluene, ethyl benzene, and xylenes (BTEX)
  - methyl tertiary-butyl ether (MTBE)
  - total petroleum hydrocarbons as gasoline (TPHg)
  - total petroleum hydrocarbons as diesel (TPHd)

The site monitoring well sampling locations are shown on Figure 3. Well construction information and water level data are summarized in Table 1. Appendix B contains the groundwater monitoring field records.

## JUNE 2016 TRENCH WELL SAMPLING

Stellar Environmental collected groundwater samples from the central trench well (TA-M, TB-M and TC-M) in each of the three trench well arrays on June 24, 2016. The goal of this work is to track hydrochemical trends in wells TA-M and TC-M receiving the Nutrisulfate® product and to compare trends against the trench well TB-M which is not receiving the Nutrisulfate®.

## JUNE 2016 SURFACTANT INJECTION

After the trench well sampling was conducted on June 24, 2016, Stellar Environmental conducted the injection of surfactant into wells MW-8, MW-10, MW-11, MW-13 and MW-15 the same day. Previous surfactant injections into selected wells were conducted March 2013, September 2013, July 2014, September, 2014, February 2015 and January 2016 (see Section 5).

## AUGUST 2016 NUTRISULFATE INJECTION

Stellar Environmental introduced the electron acceptor solution (Nutrisulfate®) into trench wells TA-E, TA-M, TA-W, TC-E, TC-M and TC-W on August 3, 2016. Previous injections of this product were conducted into the same wells on September 3, 2015 and February 17, 2016. Nutrisulfate® is a high sulfate metabolic supplement designed to enhance the kinetics and efficiency of microbial systems specifically related to bioremediation of BTEX, MTBE, and other petroleum hydrocarbons. Trench wells TB-E, TB-M and TB-W are not receiving the product and act as control wells.

## CURRENT SEPTEMBER 2016 MONITORING EVENT

Blaine Tech Services conducted groundwater monitoring well level measurements, purging, sampling, and field analyses on September 30, 2016 under the supervision of Stellar Environmental personnel. Groundwater sampling was conducted in accordance with State of California guidelines for sampling dissolved analytes in groundwater associated with leaking UFSTs. As the first task of the monitoring event, static water levels and free product levels were measured in the 18 wells using an electric water level indicator. The depth of free product was recorded, and the water level was adjusted to reflect the groundwater elevation. Table 1 summarizes the September 2016 groundwater level data.

Approximately 525 gallons of water and a trace of product (0.008 gallons or about 1 oz) of product were removed/purged from wells during the active product removal on September 27 and 28, 2016. The water generated during the active product and water removal was stored in a 1,100 gallon above ground storage tank located in a fenced compound onsite.

## Table 1

## September 30, 2016
## Groundwater Monitoring Well Construction and Groundwater Elevation Data
## 6400 Christie Avenue, Emeryville, California

| Well | Well Depth (feet bgs) | Screened Interval | Top of Well Casing Elevation [(a)] | Depth to Free Product (TOC) | Thickness of Free Product (feet) | Groundwater Elevation (September 30, 2016) |
|---|---|---|---|---|---|---|
| MW-3 | 25 | 5 to 20 | 16.65 | 10.99 | 0.02 | 5.64 |
| MW-4 | 25 | 5 to 20 | 16.29 | NP | NP | 7.81 |
| MW-5 | 25 | 5 to 20 | 16.72 | NP | NP | 6.63 |
| MW-6 | 25 | 5 to 20 | 16.82 | NP | NP | 9.07 |
| MW-7 | 20 | 5 to 20 | 17.73 | NP | NP | 6.96 |
| MW-8 | 16 | 5 to 16 | 17.84 | 9.89 | 0.01 | 7.94 |
| MW-9 | 20 | 5 to 20 | 17.84 | NP | NP | 7.82 |
| MW-10 | 20 | 5 to 20 | 17.83 | 9.27 | 0.01 | 8.55 |
| MW-11 | 20 | 5 to 20 | 17.76 | NP | NP | 7.37 |
| MW-12 | 20 | 5 to 20 | 17.83 | NP | NP | 8.55 |
| MW-13 | 20 | 5 to 20 | 17.66 | 9.35 | 0.01 | 8.30 |
| MW-14 | 20 | 5 to 20 | 17.60 | NP | NP | 8.55 |
| MW-15 | 20 | 5 to 20 | 17.80 | 9.75 | 0.01 | 8.04 |
| MW-16 | 20 | 5 to 20 | 17.74 | NP | NP | 7.43 |
| MW-17 | 20 | 5 to 20 | 18.17 | NP | NP | 8.19 |
| MW-18 | 20 | 5 to 20 | 16.35 | NP | NP | 6.74 |
| MW-E | 47 | 7 to 40 | 17.47 | NP | NP | 7.32 |
| RW-1 | 30 | unknown | 16.70 | NM | NM | 6.80 |
| TA-E | 11-13 | 6-8 to 11-13 | 17.20 | NM | NM | NM |
| TA-M | 11-13 | 6-8 to 11-13 | 17.21 | NM | NM | NM |
| TA-W | 11-13 | 6-8 to 11-13 | 17.28 | NM | NM | NM |
| TB-E | 11-13 | 6-8 to 11-13 | 17.24 | NM | NM | NM |
| TB-M | 11-13 | 6-8 to 11-13 | 17.30 | NM | NM | NM |
| TB-W | 11-13 | 6-8 to 11-13 | 17.33 | NM | NM | NM |
| TC-E | 11-13 | 6-8 to 11-13 | 17.07 | NM | NM | NM |
| TC-M | 11-13 | 6-8 to 11-13 | 17.37 | NM | NM | NM |
| TC-W | 11-13 | 6-8 to 11-13 | 17.32 | NM | NM | NM |

Notes:

[(a)] Relative to mean sea level.

[(b)] Depth to groundwater and/or of free product could not be determined because free product density would not allow a clear delineation.

bgs = below ground surface
TOC = below top of casing
NP = no free product in well)
NM = depth to groundwater and/or free product could not be determined due to the presence of product

MW-3 through MW-6 and MW-E are 2-inch PVC. MW-7 through MW-18 are ¾-inch PVC. RW-1 is 10-inch steel.

# 4.0 REGULATORY CONSIDERATIONS, ANALYTICAL RESULTS, AND DISCUSSION OF FINDINGS

This section presents analytical results of the current monitoring event and summarizes relevant regulatory considerations. Appendix C contains the certified analytical laboratory report.

## REGULATORY CONSIDERATIONS

As specified in the East Bay Plain Groundwater beneficial Use Evaluation Report by the San Francisco Bay Region Water Board (Water Board, 1999), all groundwater is considered a potential source of drinking water unless otherwise indicated by the Water Board, and is assumed to ultimately discharge to a surface water body and potentially impact aquatic organisms. The subject property is listed as occurring within Zone B, designated as groundwater that is unlikely to be used as a drinking water resource. This western area of Emeryville is also generally known as a brownfield area where ubiquitous groundwater contamination makes groundwater use problematic. The basin is shallow in this area, with depths of less than 300 feet. Groundwater in this area has been used for backyard irrigation, industrial supply, and commercial irrigation. There is a low likelihood that this water will be used as a public water supply in the near future.

The Water Board publishes Environmental Screening Levels (ESLs) for residential and commercial/industrial properties where groundwater is/is not a likely drinking water resource. As stipulated in the ESL document (Water Board, 2016), ESLs are not cleanup criteria; rather, they are conservative screening-level criteria designed to be protective of both drinking water resources and aquatic environments. The groundwater ESLs are composed of one or more components—including ceiling value, human toxicity, indoor air impacts, and aquatic life protection. Exceedance of ESLs suggests that additional remediation and/or investigation (e.g., monitoring plume stability to demonstrate no risk to sensitive receptors where drinking water is not threatened) may be warranted. Because the subject property is a residential property where groundwater is not a likely drinking water resource, the contaminant levels at the site will be compared to the ESLs for these criteria.

Contaminants detected above the ESLs during this sampling event include gasoline, diesel, benzene, toluene, ethylbenzene, and total xylenes. In general, concentrations of gasoline and diesel have decreased as compared to both the previous quarter and the same quarter last year.

## GROUNDWATER SAMPLE RESULTS

Table 2 and Figure 5 summarize the analytical results of the current monitoring event samples.

**Table 2**
**Groundwater Sample Analytical Results – September 30, 2016**
**6400 Christie Avenue, Emeryville, California**

| Well ID | Analytical Results | | | | | | |
|---|---|---|---|---|---|---|---|
| | TPHg | TPHd | Benzene | Toluene | Ethyl-benzene | Total Xylenes | MTBE |
| MW-3 | < 250 | **5,600** | < 2.5 | < 2.5 | < 2.5 | < 2.5 | 13 |
| MW-4 | < 50 | 350 | <0.5 | <0.5 | <0.5 | <0.5 | < 2.0 |
| MW-5 | < 250 | **3,800** | < 2.5 | < 2.5 | < 2.5 | < 2.5 | < 10 |
| MW-6 | <50 | **1,200** | 1.0 | <0.5 | <0.5 | <0.5 | < 2.0 |
| MW-7 | **860** | **10,000** | **170** | 8.6 | 5.1 | 23.7 | < 10 |
| MW-8 | **24,000** | **8,600** | **5,300** | 77 | **400** | **180** | < 170 |
| MW-9 | < 500 | **9,200** | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 20 |
| MW-10 | **19,000** | **2,100** | **1,200** | < 170 | < 170 | < 170 | < 670 |
| MW-11 | **1,300** | **5,800** | **130** | 6.2 | 3.3 | 6.2 | < 10 |
| MW-12 | **7,800** | **2,700** | **1,300** | 25 | **19** | < 13 | < 50 |
| MW-13 | **20,000** | **15,000** | **3,700** | 66 | **480** | **205** | < 100 |
| MW-14 | **9,900** | **4,700** | **2,100** | 100 | **150** | 77 | **180** |
| MW-15 | **18,000** | **5,300** | **5,000** | 66 | < 25 | 49 | < 100 |
| MW-16 | 330 | **8,500** | **7.9** | <2.5 | < 2.5 | < 2.5 | < 10 |
| MW-17 | **7,900** | **1,900** | **1,200** | **230** | **81** | **146** | < 5 0 |
| MW-18 | < 250 | **9,900** | <0.5 | < 2.5 | < 2.5 | < 2.5 | < 10 |
| MW-E | **29,000** | **9,400** | **3,500** | **190** | **360** | **370** | < 670 |
| RW-1 | **1,100** | **1,500** | **49** | 4.6 | 6.5 | 8.9 | < 2.0 |
| **ESLs [(a)]** | **100 / 440** | **100 / 640** | **1.0 / 1.1** | **40 / 130** | **13 / 13** | **20 / 100** | **5.0 / 180** |

Notes:

[(a)] Water Board Environmental Screening Levels for residential sites where groundwater *is*/*is not* a drinking water resource (Water Board, 2016).

MTBE = methyl tertiary-butyl ether
TPHd = total petroleum hydrocarbons – diesel range (equivalent to total extractable hydrocarbons – diesel range)
TPHg = total petroleum hydrocarbons – gasoline range (equivalent to total volatile hydrocarbons – gasoline range)

All concentrations are expressed in micrograms per liter (µg/L), equivalent to parts per billion (ppb).
Results listed in **bold-face type** are at or above the ESLs where groundwater *is not* a drinking water resource.

**Table 2 Cont.**
**Trench Well Groundwater Samples Analytical Results – June 24, 2016**
**6400 Christie Avenue, Emeryville, California**

| Well ID | Analytical Results | | | | | | |
|---|---|---|---|---|---|---|---|
| | TPHg | TPHd | Benzene | Toluene | Ethyl-benzene | Total Xylenes | MTBE |
| **June 24, 2016** | | | | | | | |
| TAM | **22,000** | **23,000** | **4,400** | **160** | **1,000** | **128** | <20 |
| TBM | **3,400** | **8,100** | **820** | 18 | <0.50 | 14.4 | <2.0 |
| TCM | **5,200** | **62,000** | **830** | 7.2 | **14** | 10.2 | <2.0 |
| **ESLs [(a)]** | **100 / 440** | **100 / 640** | **1.0 / 1.1** | **40 / 130** | **13 / 13** | **20 / 100** | **5.0 / 180** |

Notes:

[(a)] Water Board Environmental Screening Levels for residential sites where groundwater *is*/*is not* a drinking water resource (Water Board, 2016). MTBE = methyl tertiary-butyl ether; TPHd = total petroleum hydrocarbons – diesel range (equivalent to total extractable hydrocarbons – diesel range); TPHg = total petroleum hydrocarbons – gasoline range (equivalent to total volatile hydrocarbons – gasoline range)

All concentrations are expressed in micrograms per liter (µg/L), equivalent to parts per billion (ppb).
Results listed in **bold-face type** are at or above the ESLs where groundwater *is not* a drinking water resource.

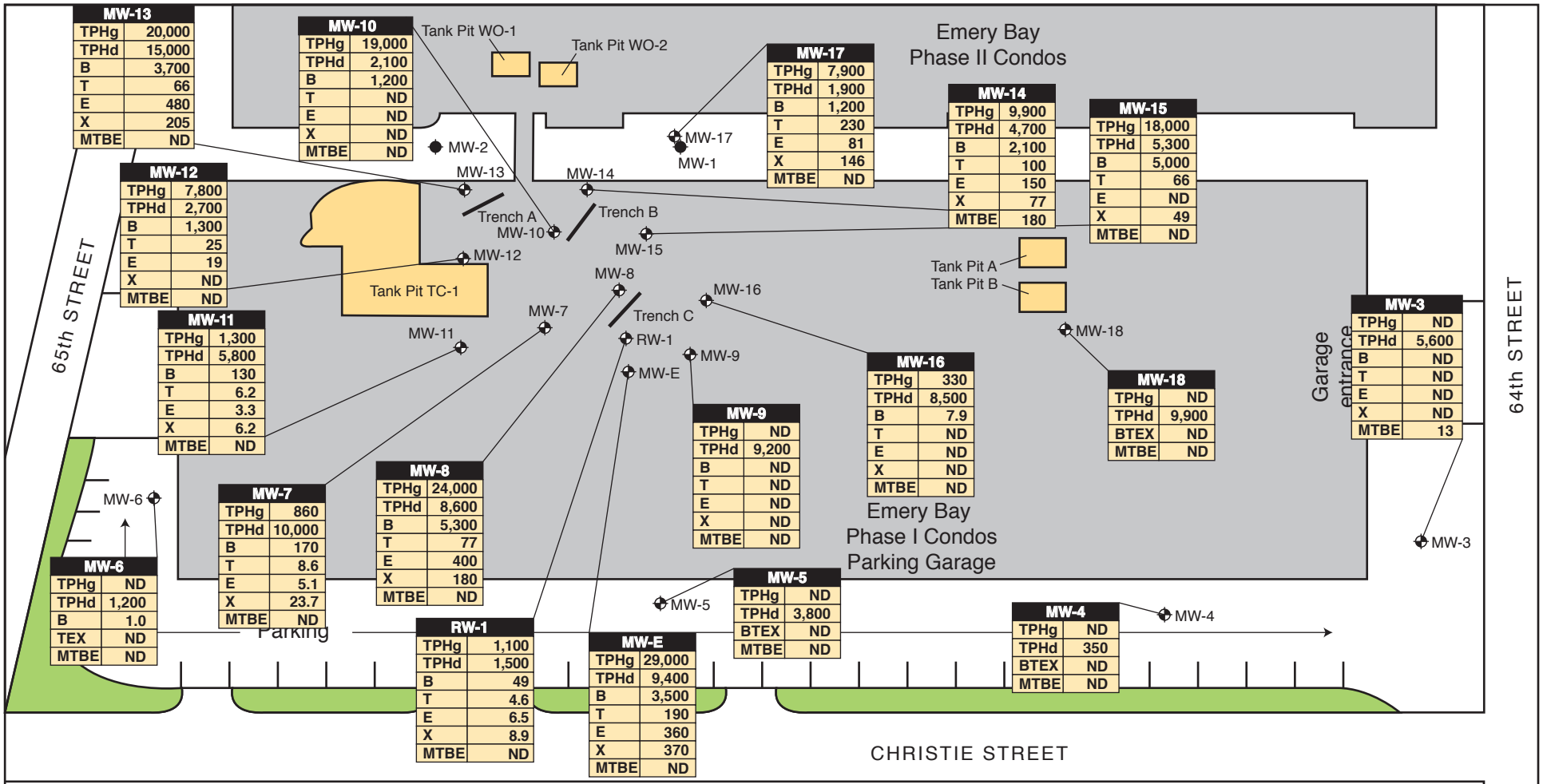
## Distribution of Hydrocarbon Contaminants

For the current sampling event, several wells have hydrocarbon concentrations significantly above Water Board ESLs. However, hydrocarbon concentrations in wells can be significantly affected by the purging of accumulated hydrocarbons product, so large swings in concentration (both reductions and increases) are possible due to this occurrence. In addition, the introduction of surfactant since 2013 and Nutrisulfate® since 2015 (see Section 5) into the trench and/or selected monitoring wells with the aim of reducing accumulated LNAPL and to enhance the kinetics and efficiency of microbial systems in site groundwater is likely to affect dissolved concentrations.

Increases in September 30, 2016 TVHg concentrations compared to the September 2015 monitoring event were observed at wells MW-8, MW-10, MW-13, MW-14, MW-15, MW-16, MW-E and RW-1. This represents eight wells exhibiting an increase in TVHg as compared to eight wells reported in September 2016.

Gasoline was detected above the ESL where groundwater is not a likely drinking water resource (440 micrograms per liter [µg/L]) in all wells except wells MW-3, MW-4, MW-5, MW-6, MW-9, MW-16 and MW-18 where Gasoline was also detected, but at concentrations below the ESL.

Diesel was detected in all site wells above the ESL of 640 µg/L (where groundwater is not a likely drinking water resource) except for well MW-4, but showed a decrease in concentration in 12 of the 18 wells sampled as compared to 11 of 18 wells in the September 2015 sampling event.




**LEGEND**

- Monitoring well
- Monitoring well (presumed abandoned)
- Trench location
- Historical tank pit area
- Landscaping

TPHg = Total petroleum hydrocarbons as gasoline
TPHd = Total petroleum hydrocarbons as diesel
B = Benzene
T = Toluene
E = Ethylbenzene
X = Total xylenes
ND = Below the laboratory detection limit
MTBE = Methyl Tertiary Butyl Ether
All concentrations in micrograms per liter (µg/L)

0 60
SCALE: 1/2" = 60 FEET

N

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# GROUNDWATER MONITORING WELL ANALYTICAL RESULTS – SEPTEMBER 30, 2016
## 6400 Christie Ave., Emeryville, CA

**Figure 5**

by: MJC | NOVEMBER 2016

2007-65-105

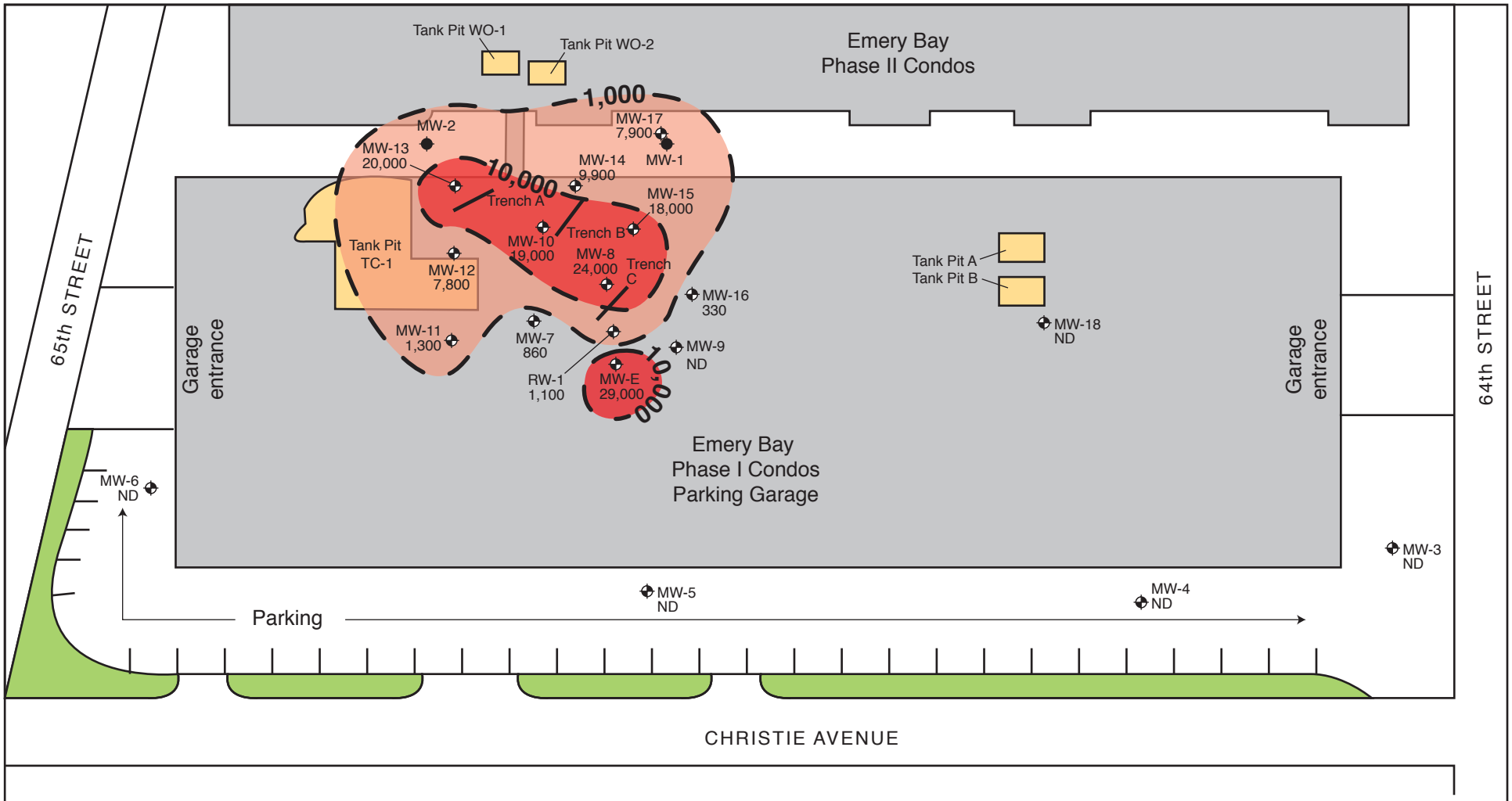
The highest concentrations of TVHg (29,000 µg/L in MW-E) and TEHd (15,000 µg/L in MW-13) for the current event compares to concentrations of 36,000 µg/L TVHg in MW-8 and 11,000 µg/L TEHd in wells MW-11, MW-13 and MW-E in September 2015. Concentrations of hydrocarbons in well MW-13 have trended higher since the September 2015 sampling event with TVHg increasing from 13,000 µg/L to 20,000 µg/L, and TEHd increasing from 8,300 µg/L in 2015 to the current 15,000 µg/L. Concentrations of hydrocarbons in well MW-10 showed the largest change in hydrocarbon concentrations compared to the September 2015 sampling event, with TVHg increasing from 190 µg/L in to 19,000 µg/L for the current event, and TEHd decreasing from 11,000 µg/L in 2015 to the current 2,100 µg/L.

Multiple applications of surfactant in wells MW-3, MW-8, MW-10, MW-11, MW-12, MW-13, MW-14, MW-15 and into all nine trench wells between 2013 and 2016 have had the primary effect of reducing the amount of recoverable oily product during the pumping activities that occur before each semi-annual monitoring event. Fluctuating concentrations of TVHg and TEHd in these wells may be attributed to seasonal groundwater level, reduction of LNAPL and the reduced volume of groundwater being pumped from the trench wells. Since the application of the Nutrisulfate® product into trach well arrays A and C, no pumping of those trench wells has occurred while the Nutrisulfate® product is releasing into the shallow water bearing zone.

In monitoring wells MW-7, MW-8, MW-10, MW-11, MW-12, MW-13, MW-14, MW-15, MW-16, MW-17, MW-E and RW-1 concentrations of benzene exceeded the ESL of 1.0 µg/L for residential property where groundwater is not a drinking water resource. Comparing September 2015 results to the current results showed a decrease in benzene in 9 of the 18 site wells sampled. An increase in benzene was detected in 5 of the 18 wells. Benzene was detected in well MW-6 but at a concentration below the ESL. Perimeter wells MW-4 and MW-5 remain stable at concentrations below laboratory reporting limits for the current event.

Figures 6 and 7 are isoconcentration maps of TPHg and TEHd concentrations in groundwater based on the September 30, 2016 analytical results.

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




**LEGEND**

- Monitoring well
- Monitoring well (presumed abandoned)
- Trench location
- Historical tank pit area
- Landscaping
- 1,000 Gasoline concentration contour

0 60

SCALE: 1/2" = 60 FEET

N

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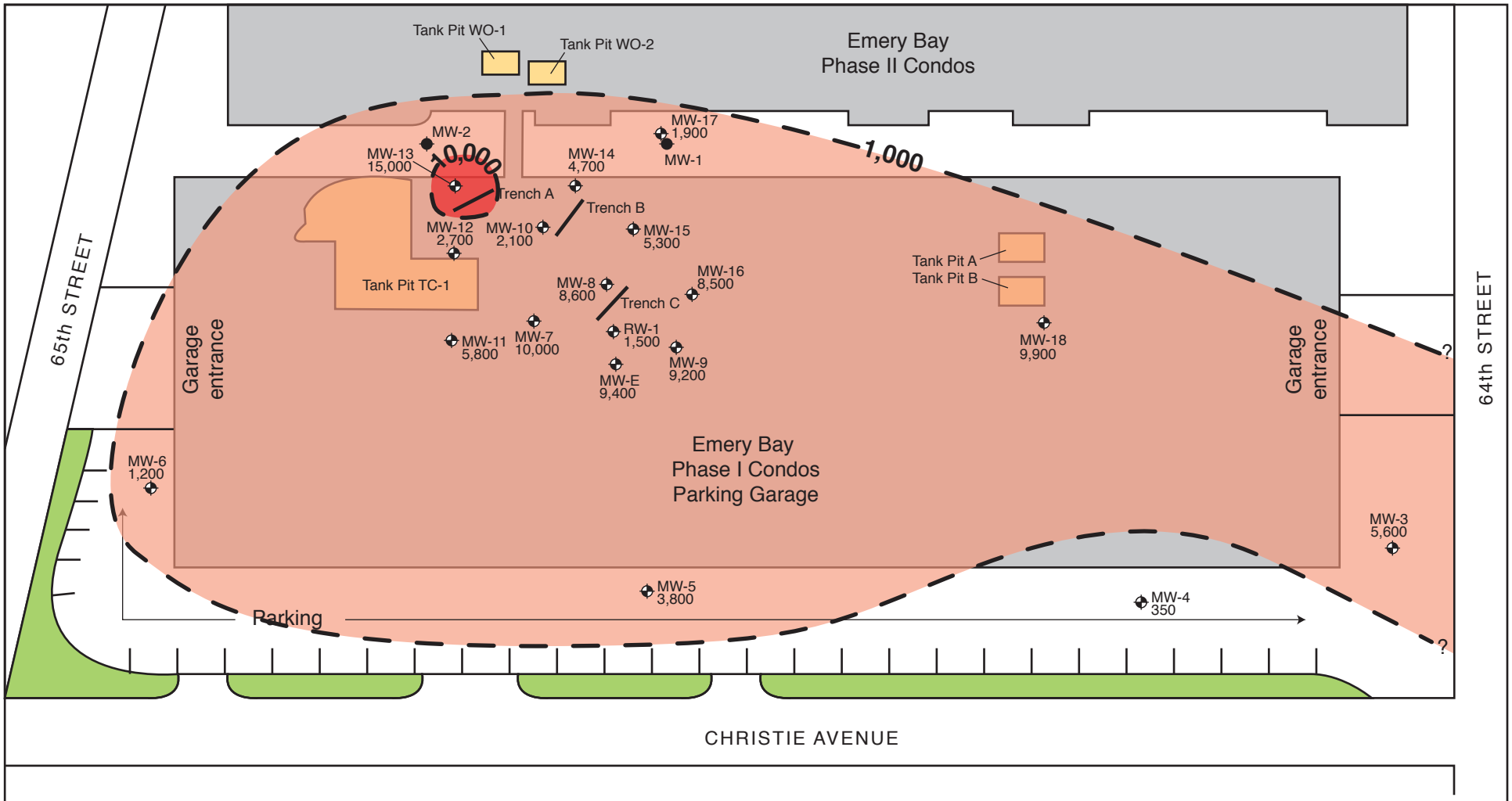
# TOTAL PETROLEUM HYDROCARBONS AS GASOLINE— SEPTEMBER 30, 2016
## 6400 Christie Ave., Emeryville, CA

**Figure 6**

by: MJC | NOVEMBER 2016

2007-65-106




**LEGEND**

- Monitoring well
- Monitoring well (presumed abandoned)
- Trench location
- Historical tank pit area
- Landscaping
- 1,000 — Diesel concentration contour

0 60

SCALE: 1/2" = 60 FEET

N

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# TOTAL PETROLEUM HYDROCARBONS AS DIESEL— SEPTEMBER 30, 2016
## 6400 Christie Ave., Emeryville, CA

**Figure 7**

by: MJC | NOVEMBER 2016

2007-65-107

Toluene was detected at or above the ESL of 130 µg/L in monitoring wells MW-17 and MW-E. Toluene was also detected in wells MW-7, MW-8, MW-11, MW-12, MW-13, MW-14 and RW-1 but at levels below the ESL but at levels below the ESL.

Ethylbenzene was detected above the 43 µg/L ESL in monitoring wells MW-8, MW-13, MW-14, MW-17 and MW-E. Ethylbenzene was also detected in wells MW-7, MW-11, MW-12 and RW-1 but at levels below the ESL.

Total xylene concentrations in wells MW-8, MW-13, MW-17 and MW-E were above the 100-µg/L ESL where groundwater is not a likely drinking water resource. Total xylenes were detected in MW-7, MW-10, MW-14, MW-15 and RW-1 but below the ESL.

MTBE was detected at the ESL of 180 µg/L in well MW-14. MTBE was detected in MW-3 but below the ESL. MTBE was not detected above the reporting limit in any other site well.

The central well (wells TAM, TBM and TCM) in each of the three trench well arrays was sampled June 14, 2016 for the purpose of tracking hydrocarbon concentrations in the trench well arrays and to monitor differences in hydrocarbon concentrations in trenches A and C which have been receiving the Nutrisulfate® injections, versus trench B which has not received the Nutrisulfate®. As can be seen in Table 2, trench well TAM contained concentrations of TPHg, TPHd and MBTEX exceeding ESLs for all constituents. Well TCM contained TPHg and TPHd and benzene and ethylbenzene in concentrations exceeding ESLs but with the primary contaminant being TPHd at 62,000 µg/L. Trench well TBM which has not received the Nutrisulfate®, contained lower concentrations of TPHg and TPHd overall (3,400 µg/L and 8,100 µg/L respectively) as compared to wells TAM and TCM. Benzene was detected at 18 µg/L in trench well TBM.

Figure 8 depicts groundwater analytical trends for TPHd in downgradient wells MW-5 and MW-6. Figure 9 depicts groundwater analytical trends for TPHd in source wells MW-11 and MW-12. Figure 10 depicts groundwater analytical trends for TPHd in crossgradient wells MW-3 and MW-18.

**Figure 8**
**Historical Groundwater Analytical Results**
**Total Petroleum Hydrocarbons as Diesel (TPHd)**
**Downgradient Wells MW-5 and MW-6**
**February 1991 - September 2016**

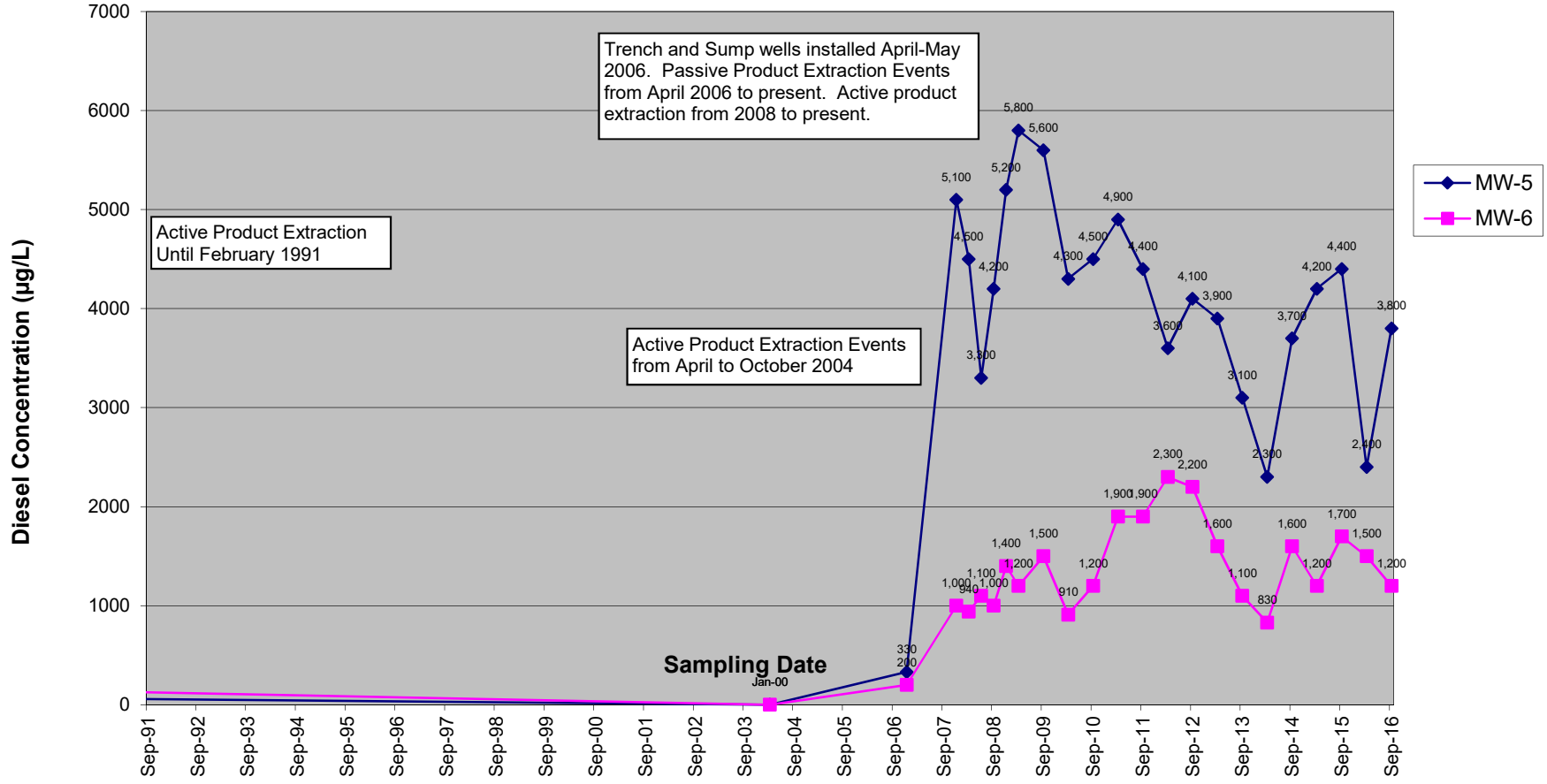


**Figure 9**
**Historical Groundwater Analytical Results**
**Total Petroleum Hydrocarbons as Diesel (TPHd)**
**Source Wells MW-11 and MW-12**
**December 2006 - September 2016**

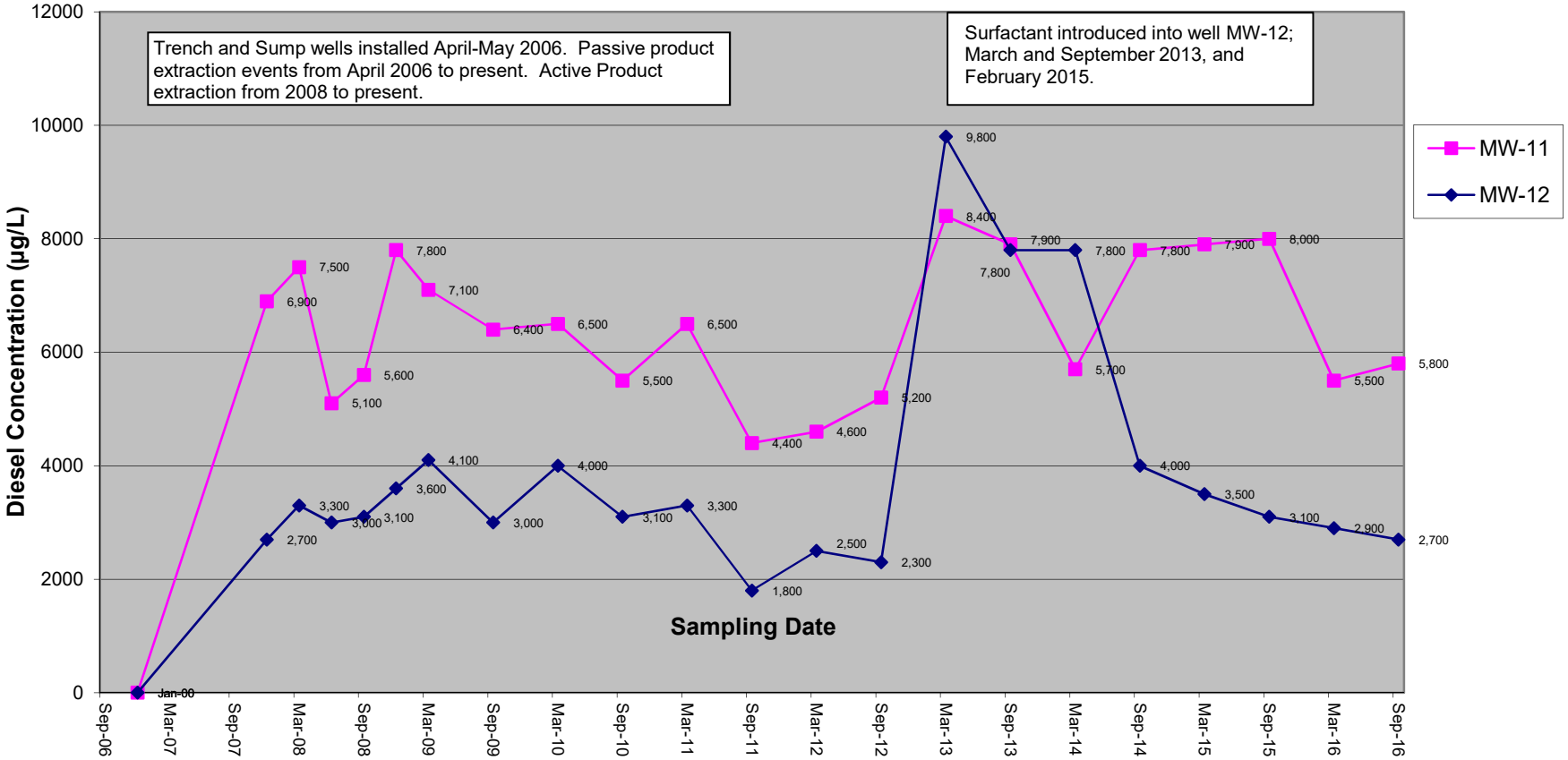
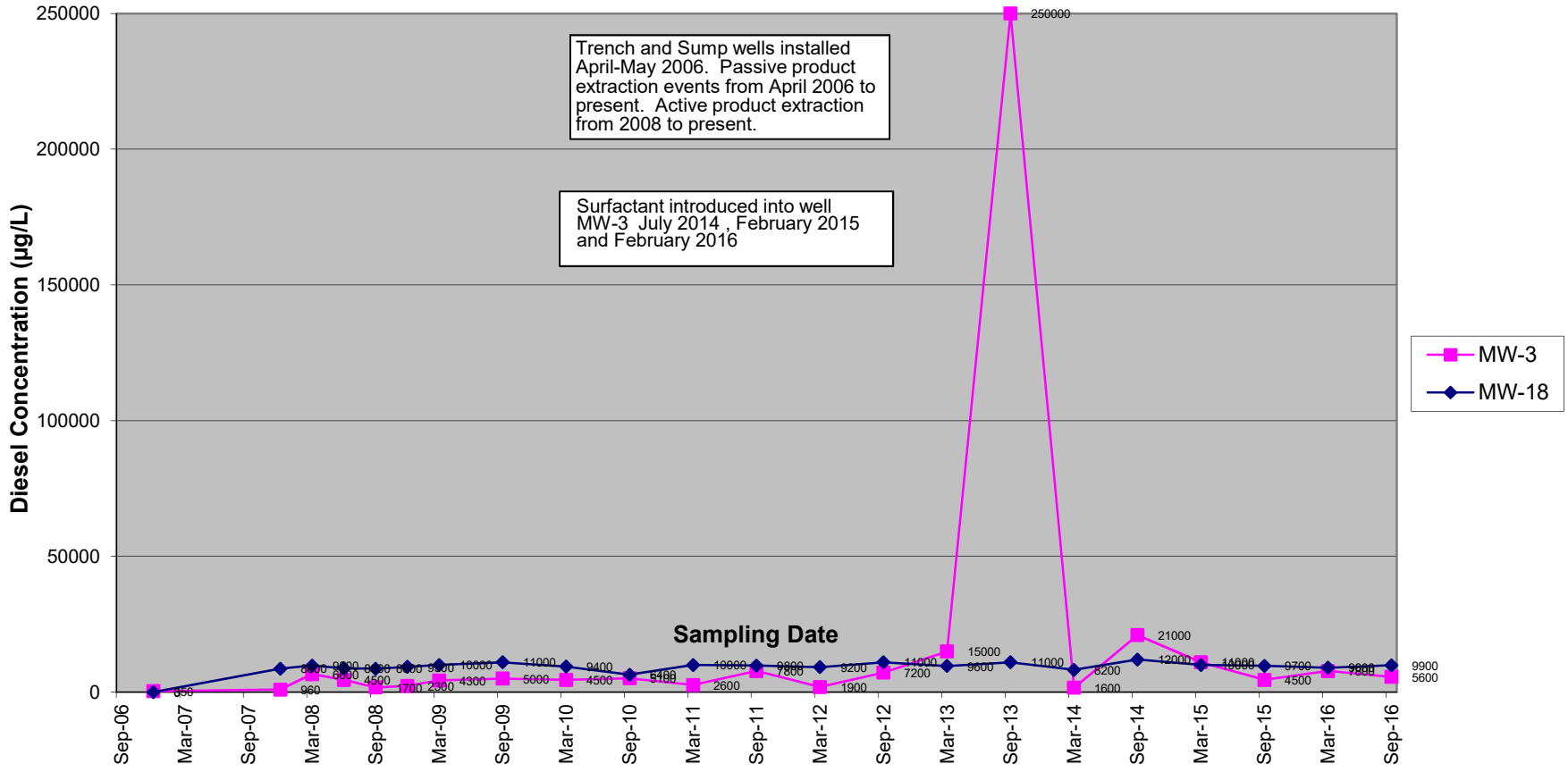


**Figure 10**
**Historical Groundwater Analytical Results**
**Total Petroleum Hydrocarbons as Diesel (TPHd)**
**Crossgradient Wells MW-3 and MW-18**
**December 2006 - September 2016**



# 5.0 FREE-PHASE HYDROCARBON PRODUCT REMEDIATION SYSTEM

This section describes the historical extraction of the free product from the Emery Bay/Bridgewater Phase I Condo parking garage, the construction details of the current LNAPL remediation system located on the northeastern portion of the garage, and the most recent product removal activities conducted on September 27 and 28, 2016 (prior to the sampling event on September 30, 2016). Appendix E summarizes historical product removal.

## LNAPL REMEDIATION SYSTEM CONSTRUCTION

In an attempt to maximize free product removal, PES constructed three trenches, each containing three sump wells, in the northeastern area of the parking garage. Historically, this area has had the highest concentrations of contamination and accumulation of free product. The trenches (TA, TB, and TC) extend to depths of approximately 12.5 to 13 feet bgs, while the collection sumps in the trenches (TA-W, TA-M, TA-E, TB-W, TB-M, TB-E, TC-W, TC-M, and TC-E) extend to approximately 11 to 13 feet bgs. The sumps were constructed using 10-inch-diameter schedule 40 polyvinyl chloride (PVC) casing. Blank casing was used from approximately 0.5 feet bgs to between 6 and 8 feet bgs. Slotted 0.06-inch PVC was used from between 6 and 8 feet bgs to 6 inches from the total depth of the trench. The trenches were then backfilled with high-porosity, high-permeability gravel designed to promote LNAPL migration (PES, 2007). Passive skimmers, manufactured by QED Environmental Systems were then placed in each of the sumps in Trench A and in one of the sumps (TC-E) in Trench C.

Skimmers operate in principal by floating on the surface of the water. Water and free product collect in a filtration reservoir, which allows water to pass through. A tube connected to the reservoir then filters the free product into a collection reservoir located below the water surface. The reservoir can be emptied by opening a valve located on the bottom of the cylindrical shaped reservoir. Each of these skimmers is attached to the sump lid by a rope, and can be removed and transferred to another sump as needed. However, the skimmers were never particularly effective at capturing the petroleum product as designed, and by 2013, they contained nearly no free oil. Because the skimmers were no longer effective as of 2014, and because the skimmer equipment was covered with oily residue, possibly contributing to the hydrocarbon impacts to site groundwater, the skimmers were removed from the wells in trenches A (six skimmers) and C (one skimmer) on September 4, 2014.

## HISTORICAL FREE PRODUCT EXTRACTION

As mentioned under the "Previous Investigations" subsection in Section 1.0, in approximately 1986, contaminated soil and groundwater were discovered during the removal of 12 UFSTs from the Emery Bay Phase I and Phase II parcels. To dewater the excavation during the Phase I and Phase II Condo construction, a groundwater extraction and remediation system was installed by GTI in 1988. Approximately 1 million gallons of water yielding 100 gallons of hydrocarbon product was removed from RW-1 during its operation (PES, 2007). However, corrosion and other mechanical problems caused the system to fail in 1991, and it was decommissioned in 1994. In February 2008, Stellar Environmental removed all of the old parts of the system from the well and vault.

In 2004, PES began manual extraction on RW-1, and was reported to have removed approximately 48 gallons of LNAPL (PES, 2004a)—although it is unclear whether the removed material was pure product or product mixed with water. To accelerate free product removal, PES constructed a new LNAPL hydrocarbon remediation system (described previously) between April and May 2004 (PES, 2007). Several extraction events were conducted by PES from May 2004 through March 2007; the extraction events yielded a total of approximately 51 gallons of LNAPL. No extraction events were conducted by PES in 2005; approximately 50 gallons of hydrocarbons was removed in 2006; and approximately 0.6 gallon of hydrocarbons was removed by PES between January and November 2007. In November and December 2007, after Stellar Environmental was retained for the project, the skimmer system yielded 2.82 gallons. Figure 11 graphs the comparison of free product extraction on a yearly basis.

No historical product extraction reports were provided to Stellar Environmental by the previous owner or by PES. Therefore, there is little to no information on how active product extraction occurred during 2004 and 2006. Based on better defined recovery in 2008 through 2011 the volume of free product indicated to have been recovered during 2004 and 2006 appears unrealistically high, suggesting that free-phase project mixed with water was reported as free-phase product recovery.

## 2013-2016 SURFACTANT INJECTIONS

Many of the centrally located wells and well MW-3 contain a molasses-like, degraded product that has made well purging and sampling increasingly difficult. Equipment lowered down into the well casings come back out coated with a tar like substance that is difficult or impossible to clean, and may account for low water yield in some wells due to sand pack and well screen fouling. Six of the worst wells in this regard have been MW-3, MW-8, MW-10, MW-12, MW-13 and MW-14. All these wells are constructed with ¾-inch diameter PVC casing, and are screened to total depth across the same interval of 5 to 20 feet bgs, except for MW-8 which is screened from 5 to 16 feet bgs. In

order to attempt to clean the well casings and emulsify the tar thought to exist in the well pack, a surfactant was chosen as a solution.

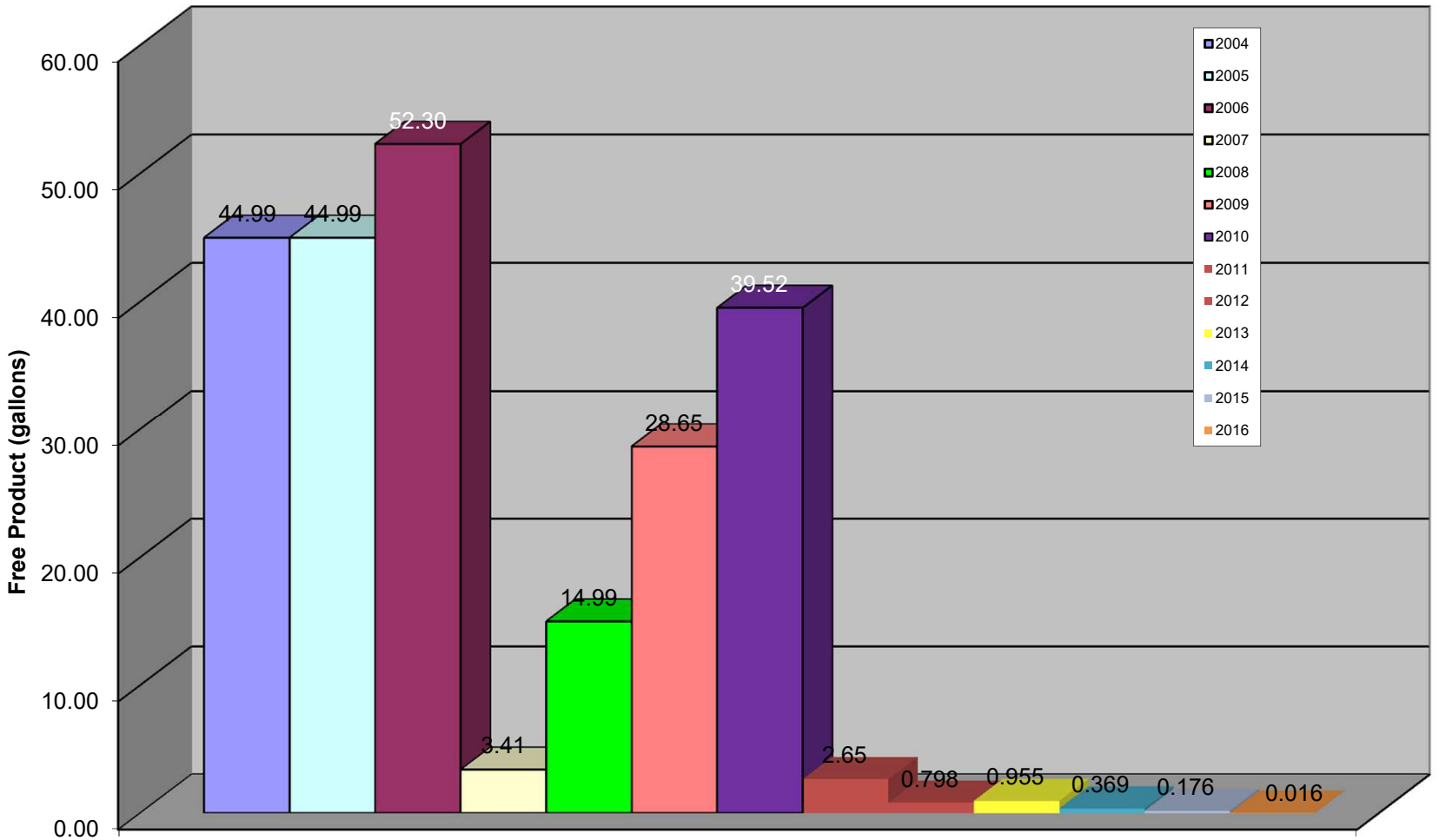
Surfactants are designed to change the interfacial tension between the water and NAPL and desorb the residual LNAPLs entrained in the soil matrix by micro-emulsifying the organic particles, and forming a micelle. In the case of weathered LNAPLs, surfactants have been used to decrease the viscosity of the material, resulting in increased and more efficient recovery. Surfactants can also be considered bioremediation enhancing and vapor suppression agents. The use of mobile multi-phase extraction that has been occurring at the site twice-yearly since 2008, allows a focused remediation effort at a targeted area of the site, and increases the effective radius of influence of the pumping. This combined approach involves the in-situ application of a surfactant mixture, under pressure, into the site subsurface. The injection is followed by high-vacuum induced multi-phase recovery from the injected wells as well as surrounding wells via a mobile vacuum truck.

In March and September 2013 wells MW-8, MW-12, MW-13 and MW-14 were injected with EnviroClean® supplied by Enviro Clean Services, LLC. EnviroClean® is described the manufacturer as a non-flammable, non-toxic, water-based, proprietary blend of non-toxic, non-ionic ethoxylated octylphenolic surfactants that has been specifically engineered as a cleanup/mitigation agent for a wide range of hydrocarbon products. EnviroClean® product information is included in Appendix F. A working solution of 4% EnviroClean® was mixed per manufacturer recommendations using clean water. Approximately 5 gallons of the solution was introduced each well using a funnel. The well casing and screen in each well were then scrubbed using a stiff bristle brush attached to an extension. After the scrubbing, approximately 15 gallons of the working EnviroClean® solution was injected under pressure into each well using a dual-diaphragm pump.

Based on the positive results of the non-hazardous surfactant injection into wells MW-8, MW-12, MW-13 and MW-14 in 2013 which resulted in reduced or eliminated oil residue, the same surfactant was introduced into well MW-3 which has historically been difficult to gauge and sample due to the thick oil in the well. On July 2, 2014, approximately 10 gallons of a 5% mixture of the surfactant was introduced into MW-3 and the well casing scrubbed. On September 4, 2014, approximately 20 gallons of the 5% surfactant mixture was introduced into each of the nine trench wells onsite after the skimmers had been removed from the wells in trenches A and C, to test the ability of the surfactant to re-dissolve the viscous hydrocarbon buildup in those wells.

Additional surfactant application occurred on February 3, 2015. Approximately 1 gallon of an 8% surfactant mixture was introduced into wells MW-8, MW-12, MW-13, MW-18 and MW-E. Each well was swabbed as described above. 2 gallons of a 10% mixture and 5 gallons of a 15% solution was introduced into wells MW-10 and NMW-3 respectively, and swabbed.

**Figure 11**
**Total Free Product Extracted Per Year**
**6400 Christie Avenue, Emeryville, CA**



Further surfactant application occurred on January 14, 2016. Approximately 1 gallon of a 5% surfactant mixture was introduced into wells MW-8 and MW-10. Each well was swabbed as described above. Three gallons of a 5% solution was introduced into MW-3, then swabbed.

The most recent surfactant application was conducted on June 24, 2016 based on the observation of LNAPL in site wells by Blaine Tech Services during their sampling activities conducted on March 31, 2016. Approximately 1 gallon of a 5% surfactant mixture was introduced into wells MW-8, MW-10, MW-11, MW-13 and MW-15. Each well was swabbed after the introduction of surfactant as described above.

**BIOREMEDIATION COMPOUND INJECTION 2015-2016**

Surfactant injection efforts since 2013 have reduced free-floating product phase in the area of the trench wells and other nearby monitoring well hotspots such as MW-8, MW-10 and MW-13. Based on the very low volumes of free product being recovered from site monitoring and extraction wells, introduction of a bioremediation compound into the trench wells was conducted to reduce the hydrocarbon plume hotspot.

After reviewing the various options for in-situ bioremediation Stellar Environmental concluded that for this particular site, with the apparent concentration and type of hydrocarbons evident, the most promising remedy is to use a product designed to degrade the petroleum hydrocarbons anaerobically. The proposed remedial design accomplishes this through enhanced natural attenuation/ biodegradation and *in situ* chemical reduction uniquely induced via the use of a sulfate delivery bioremediation compound. The method relies on sulfate utilization. In fact, the vast majority of petroleum hydrocarbon sites are sulfate depleted. Sulfate is readily soluble therefore large amounts of it can quickly dissolve into groundwater. Sulfate reducing bacteria will use the petroleum hydrocarbons as a food source and the sulfate as the terminal electron acceptor. The result is the rapid bioremediation of aqueous phase petroleum hydrocarbons and gasoline additives. The product chose for the remedial injection is Nutrisulfate®. The metabolites in Nutrisulfate® greatly enhance microbial growth. Advantages include:

- Improved bioremediation kinetics
- Thinner (parallel to groundwater flow) bio-barriers
- Faster remedies
- Reduced costs

For the proposed 14,400 cubic feet treatment volume (60ft x 60ft x 4ft) one, 500 lb. drum (55-gallons) of Nutrisulfate® was introduced into Trench Well arrays A and C on September 3, 2015. An additional 110 gallons of the product was introduced into the Trench Well arrays A and C on

February 17, 2016 and again on August 3, 2016. The product loading is based on the averaging the concentrations in the six monitoring wells MW-8, MW-10, and MW-12-through MW-15 collected in Y-2014. The product is engineered for the slow release of sulfate and nutrients to stimulate the bioremediation of the hydrocarbon groundwater environment at the site. The injected product has no harmful products or byproducts associated with it.

## SEPTEMBER 2016 PRODUCT REMOVAL EVENT

Product yield from the trench recovery system has been unproductive and inconsistent, with the passive skimmer collection reservoirs not filling up completely, or filling up with water rather than product. As mentioned above, due to their ineffectiveness at collecting free product over the past several monitoring events, and due to the oily residue on the skimmers, the skimmers were removed from the wells in trenches A and C prior to the first surfactant injection into those trench wells on September 4, 2014. As described above, the bioremediation product, Nutrisulfate® was introduced into trench well arrays A and C on September 3, 2015, February 17, 2016 and most recently on June 24, 2016. No product recovery was conducted from Trench well arrays A and C for the current monitoring event so as to not disturb/remove the Nutrisulfate® product. Product recovery was conducted for trench well array B, recovery well RW-1 and all site monitoring wells.

Stellar Environmental conducted active product removal on site during the 2 days prior (September 27 and 28, 2016) to the groundwater sampling event (September 30). Approximately 525 gallons of groundwater along with less than an ounce of free product were removed during the current active product removal event.

**Table 3**
**Active Product Extraction – September 27 and 28, 2016**
**6400 Christie Avenue, Emeryville, California**

| Well | Total Gallons of Product Removed | Well | Total Gallons of Product Removed |
|---|---|---|---|
| MW-3 | 0 | MW-17 | 0 |
| MW-4 | 0 | MW-18 | 0 |
| MW-5 | 0 | MW-E | 0 |
| MW-6 | 0 | RW-1 | 0.0078 |
| MW-7 | 0 | TA-E | Not Pumped |
| MW-8 | 0 | TA-M | Not Pumped |
| MW-9 | 0 | TA-W | Not Pumped |
| MW-10 | 0 | TB-E | 0 |
| MW-11 | 0 | TB-M | 0 |
| MW-12 | 0 | TB-W | 0 |
| MW-13 | 0 | TC-E | Not Pumped |
| MW-14 | 0 | TC-M | Not Pumped |
| MW-15 | 0 | TC-W | Not Pumped |
| MW-16 | 0 | | |
| | | **Second 2016 Event Total** | **0.0078** |

Notes:

Product removal estimates are based on the total amount of free product measured in the purge drum after pumping each well

The removal activities for September 27 and 28, 2016 can be summarized as follows:

- Stellar Environmental removed a total of 150 gallons of water from trench wells TB-W, TB-E and TB-M with no measurable free product. No removal was attempted from trench wells TA-W, TA-E TA-M, TC-W, TC-E or TC-M due to the Nutrisulfate® product that had been introduced into those wells most recently on June 24, 2016.
- Stellar Environmental removed a total of 140 gallons of groundwater from recovery well RW-1 along with an estimated 0.0078 gallons of product or less.
- No observable quantity of petroleum product was removed along with the 285 gallons of liquid that was pumped from all of the monitoring wells.
- All of the purge water and free product extracted was contained onsite in the 1,100-gallon AST located in the northeastern gated area of the garage.

## DISCUSSION OF FREE PRODUCT REMOVAL AND LIMITATIONS

As mentioned under the "Historical Free Product Extraction" subsection of this chapter, no product extraction was conducted by PES in 2005. "Product" removal in 2006 was reported at a significant 52 gallons by PES; however, it was not achieved through collection from the trench hydrocarbon skimmers, but rather through active pumping; in addition, the "product" referred to by PES appears to actually have been a mixture of petroleum product and water. The PES report provides no documentation (e.g., manifests) of the removal of actual recovered petroleum product. The recovery by PES from the start of 2007 through October 2007 (when Stellar Environmental assumed environmental consulting activities) was limited to 0.6 gallon collected from the skimmers. In addition, there had been no removal of free product from well RW-1 since 2004, at which time approximately 50 gallons of free-floating product was reportedly (PES, 2004c) removed by active pumping although antidotal evidence suggests that much of this was purge water versus free product. The majority of petroleum product is indicated to have been removed by active pumping and removal activities rather than from the trench well skimmers, the petroleum product recovery being in the form of a mixture of water and hydrocarbons. In 2007, passive extraction of free product through trench well skimmers removed only 3.41 gallons. Stellar Environmental removed approximately 5.65 gallons of free product from these passive skimmers during the 2008 removal events. From 2011 until they were removed in 2014, the skimmers contained only water and a trace of oil when checked. Approximately 14.99 gallons of product were removed by active pumping on wells during 2008, 28.65 gallons in 2009, 39.52 gallons in 2010, 2.65 gallons in 2011, 0.798 gallons in 2012, 0.955 gallons in 2013, 0.369 gallons in 2014, and 0.176 gallons in 2015, indicating that the active pumping of site wells to be an effective means of product removal as compared to the passive skimmer system. With only about 0.015 gallons of product removed in 2016 (about 2 ounces) it would appear that going forward, the reduction of recoverable LNAPL volume is likely to continue to decrease. Active pumping however will continue to be an effective method of removing groundwater with high dissolved hydrocarbon concentrations which will act as migration control.

For the current monitoring event, 7 of 15 wells in which TVHg is historically detected showed an increase of that compound as compared to 8 of 15 wells for September 2015. Eight of 18 wells that have historically contained TVHd showed an increase in TEHd concentrations compared to 3 of 18 wells for September 2015. The observed increase in concentration of TVHg in some wells and the increase in TEHd eight wells for the current monitoring event compared to the September 2015 sampling event is likely be due to heavy LNAPL becoming at least partially emulsified, as intended. The reduction of LNAPL by active extraction, which has since 2013 been combined with surfactant injections in selected wells, was a necessary step prior to in-situ bio-remedial efforts, the first application of which occurred on September 3, 2015. Inconsistent trends in the hydrocarbon concentrations, particularly the upward spike in gasoline and diesel concentrations observed in wells since the surfactant injection in and/or near that wells may show more consistent trend lines after

additional bio-remedial efforts are conducted (see Section 6). Based on observations made during the September 2016 field work, wells MW-3 and RW-1 would benefit from additional surfactant application into those wells.

In general, residual hydrocarbons left in the soil after the USTs were removed from the site in the 1980's, is likely to continue to be a source of contamination to groundwater at the site. Additional surfactant applications at the site are expected to continue to reduce the degraded product present. Currently, wells RW-1 and MW-3 are the wells with detectable free, degraded LNAPL product on site that would benefit from surfactant application. Additional Nutrisulfate® application into the trench wells as mentioned above, are expected to be useful to speed the reduction of the dissolved hydrocarbon concentrations to levels acceptable to the regulatory community and to achieve eventual regulatory closure.

The outward effect of the surfactant injections based on observations made during product removal for the current monitoring event, has been a marked reduction in the viscous hydrocarbon substance in site wells. A significant increase in water yield from wells that received surfactant has not been observed. The total measured recovery volume of product (in gallons) from the 18 wells for the September 2016 monitoring event, compared to the September 2015 event, decreased form about 0.054 gallons to 0.0078 gallons which is likely attributable to the emulsification of LNAPL in the wells receiving the surfactant.

# 6.0 SUMMARY, CONCLUSIONS, AND PROPOSED ACTIONS

**FINDINGS AND CONCLUSIONS.**

- The subject property parcel was developed as early as 1958 with the Motor Freight Station, associated with Delta Lines, Inc. The Delta Lines complex contained an "Oil and Gas" building, located at the site of the present-day Emery Bay Phase I Condo complex and parking garage. In 1986, the building was demolished, and 12 UFSTs containing diesel and gasoline were removed from the Emery Bay Phase I and Phase II Condo complex parcels. Soil and groundwater contamination was discovered.
- In response to the contamination, a LNAPL groundwater pump-and-treat system was installed in 1989, but failed in 1991. Active pumping of free product began again in 2004, and a product extraction system consisting of passive product removal was installed in 2006. Groundwater monitoring events have been sporadically conducted since 1988; quarterly groundwater monitoring events were conducted for the first time in 2008. The quarterly sampling was reduced to a semi-annual frequency in 2009.
- The site currently contains 17 monitoring wells, 1 recovery well, and 9 product extraction trench wells. The current event is the 24$^{th}$ sampling event conducted since 1988.
- Site geological conditions consist of a combination of fill and soft bay sediment to between 15 and 20 feet bgs, covered by approximately 1 to 2 feet of pavement and imported fill. This is underlain by approximately 20 feet of firm soil consisting of primarily dense silty sand with intermittent layers of silty and sandy clay. Stiff to very stiff clay extends from a depth of approximately 40 feet to approximately 102 feet.
- The groundwater flow direction calculated during this monitoring event was found to be generally to the west.
- Groundwater elevations in site wells for the September 2016 ranged from 5.69 feet (MW-3) to 9.77 feet (MW-6) above mean sea level, with the average groundwater gradient for the current monitoring event being 0.007 foot/foot.

- The injection of a (non-hazardous) surfactant into selected site monitoring wells and into the nine trench wells over six separate occasions since 2013 was used to test the ability of the surfactant to emulsify the viscous hydrocarbon buildup in the injected wells and nearby wells. Based on field observations of site wells, 11 of 27 monitoring and trench wells had detectable LNAPL prior to the first surfactant injection in March 2013 compared to 6 of 27 for the current monitoring period.
- Surfactant injections into the A and C trench well arrays and wells MW-3, MW-8, MW-10, MW-11, MW-12, MW-13, MW-14, MW-15, MW-18 and MW-E have reduced or eliminated LNAPL in those wells, and may have contributed to an increase in concentrations of dissolved hydrocarbons and MBTEX in those wells and other site monitoring wells as compared to the September 2015 monitoring event.
- The near elimination of viscous LNAPL from site wells has allowed introduction of the product Nutrisulfate® which encourages natural attenuation/biodegradation and *in situ* chemical reduction via a sulfate delivery bioremediation compound. The metabolites in Nutrisulfate® greatly enhance microbial growth. An initial application of 500 lbs. of Nutrisulfate® Trench Well arrays A and C was conducted on September 3, 2015. 1,000 lbs of the product was introduced into Trench Well arrays A and C on February 17, 2016 and an additional application of 1,000 lbs of the product was introduced into trench wells A and C on August 3, 2016.
- Current contaminants of concern include TPHg, TPHd, and BTEX. Current groundwater concentrations exceeded the ESLs for these contaminants.
- MTBE was detected in one well (MW-14) during the current monitoring that equaled the ESL of 180 µg/L.
- The highest concentrations of TVHg (29,000 µg/L in MW-E) and TEHd (15,000 µg/L in MW-13) for the current event compares to concentrations of 36,000 µg/L TVHg in MW-8 and 11,000 µg/L TEHd in wells MW-11, MW-13 and MW-E in September 2015. Concentrations of hydrocarbons in well MW-13 have trended higher since the September 2015 sampling event with TVHg increasing from 13,000 µg/L to 20,000 µg/L, and TEHd increasing from 8,300 µg/L in 2015 to the current 15,000 µg/L. Concentrations of hydrocarbons in well MW-10 showed the largest change in hydrocarbon concentrations compared to the September 2015 sampling event, with TVHg increasing from 190 µg/L in to 19,000 µg/L for the current event, and TEHd decreasing from 11,000 µg/L in 2015 to the current 2,100 µg/L.

- Increases in September 30, 2016 TVHg concentrations compared to the September 2015 monitoring event were observed at wells MW-8, MW-10, MW-13, MW-14, MW-15, MW-16, MW-E and RW-1. This represents eight wells exhibiting an increase in TVHg as compared to eight wells reported in September 2016.
- Gasoline was detected above the ESL where groundwater is not a likely drinking water resource (440 micrograms per liter [µg/L]) in all wells except wells MW-3, MW-4, MW-5, MW-6, MW-9, MW-16 and MW-18 where Gasoline was also detected, but at concentrations below the ESL.
- Diesel was detected in all site wells above the ESL of 640 µg/L (where groundwater is not a likely drinking water resource) except for well MW-4, but showed a decrease in concentration in 12 of the 18 wells sampled as compared to 11 of 18 wells in the September 2015 sampling event.
- In monitoring wells MW-7, MW-8, MW-10, MW-11, MW-12, MW-13, MW-14, MW-15, MW-16, MW-17, MW-E and RW-1 concentrations of benzene exceeded the ESL of 1.0 µg/L for residential property where groundwater is not a drinking water resource. Comparing September 2015 results to the current results showed a decrease in benzene in 9 of the 18 site wells sampled. An increase in benzene was detected in 5 of the 18 wells. Benzene was detected in well MW-6 but at a concentration below the ESL. Perimeter wells MW-4 and MW-5 remain stable at concentrations below laboratory reporting limits for the current event.
- Toluene was detected at or above the ESL of 130 µg/L in monitoring wells MW-17 and MW-E. Toluene was also detected in wells MW-7, MW-8, MW-11, MW-12, MW-13, MW-14 and RW-1 but at levels below the ESL but at levels below the ESL.
- Ethylbenzene was detected above the 43 µg/L ESL in monitoring wells MW-8, MW-13, MW-14, MW-17 and MW-E. Ethylbenzene was also detected in wells MW-7, MW-11, MW-12 and RW-1 but at levels below the ESL.
- Total xylene concentrations in wells MW-8, MW-13, MW-17 and MW-E were above the 100-µg/L ESL where groundwater is not a likely drinking water resource. Total xylenes were detected in MW-7, MW-10, MW-14, MW-15 and RW-1 but below the ESL.
- MTBE was detected at the ESL of 180 µg/L in well MW-14. MTBE was detected in MW-3 but below the ESL. MTBE was not detected above the reporting limit in any other site well.

- Due to the ineffectiveness of the product skimmers that were in wells in recovery trenches A and C, the skimmers were removed from the wells in September 2014. The other reason for removal of the skimmers was that they were coated with oil, and thought to be contributing to dissolved hydrocarbon groundwater contamination. Lack of LNAPL allowed for the introduction of the Nutrisulfate® bioremediation product into the Trench Well arrays A and C in September 2105, February 2016 and August 2016.

- The central well (wells TA-M, TB-M and TC-M) in each of the three trench well arrays was sampled June 14, 2016 for the purpose of tracking hydrocarbon concentrations in the trench well arrays and to monitor differences in hydrocarbon concentrations in trenches A and C which have been receiving the Nutrisulfate® injections, versus trench B which has not received the Nutrisulfate®. Trench well TA-M contained concentrations of TPHg, TPHd and MBTEX exceeding ESLs for all constituents. Well TC-M contained TPHg and TPHd and benzene and ethylbenzene in concentrations exceeding ESLs but with the primary contaminant being TPHd at 62,000 µg/L. Trench well TB-M which has not received the Nutrisulfate®, contained lower concentrations of TPHg and TPHd overall (3,400 µg/L and 8,100 µg/L respectively) as compared to wells TA-M and TC-M. Benzene was detected at 18 µg/L in trench well TBM.

- Stellar Environmental conducted active dissolved product removal from all site monitoring wells, Trench B wells and recovery well RW-1. A total of approximately 525 gallons of groundwater that includes approximately 0.0078 gallons of free-floating petroleum product from all the wells was removed with the estimate based on free-product accumulation in the extraction drum after pumping each well. Although free product was noted by Blaine Tech Services in wells MW-3, MW-8, MW-10, MW-13, MW-15 and RW-1, the only well noted to actually yield free product during the extraction process for the current event was well RW-1. The current volume of 0.0078 gallons (about 1 ounce) of recovered product indicates a continued reduction of recoverable product from site wells.

- TPHg and TPHd concentrations in the central area of the site where historically, wells MW-8, MW-10, MW-12, MW-13, MW-14 and MW-16 have shown the highest concentrations of residual fuel generally trended towards higher concentrations for the current monitoring event. In addition, wells RW-1, MW-E are also showing higher concentrations for the current event.

## RECOMMENDATIONS

- Surfactant injections into wells MW-3 and RW-1 should be conducted in mid-January 2017, prior to the next scheduled semiannual monitoring event scheduled for March 2017. Monitoring well MW-3 and the recovery well RW-1 are the only wells currently onsite that contain enough detectable free product that can be expected to benefit from the surfactant.

- As part of the next recommended groundwater sampling event that would occur in March 2017, it is recommended that groundwater samples be collected from the central wells in each of the three trench well arrays. The goal of this work is to continue to track hydrochemical trends in wells TA-M and TC-M receiving the Nutrisulfate® product and to compare trends against the trench well TB-M which is not receiving the Nutrisulfate®.
- Active groundwater/dissolved product removal events should be continued to ascertain their effectiveness in reducing the plume size over time. Active product removal is currently being conducted on a semiannual basis immediately prior to the sampling event. For the next scheduled monitoring event in March 2017, it is recommended that the product removal be focused on wells MW-3, MW-8, MW-10, MW-12, MW-13, MW-14, MW-15, MW-E, RW-1 and trench wells TB-E, TB-M and TB-W. These are the wells with the highest hydrocarbon concentrations and/or contain detectable free product.
- Groundwater monitoring should be continued on a semiannual basis to document contaminant concentrations over time. This monitoring of site wells will allow follow-on evaluation of the Nutrisulfate® injection and its efficacy for scaling upward to move the site toward full regulatory site closure.
- An indoor air sampling event is recommended in the ground floor sales office building with an outside control based on the findings for the last such monitoring event in June 2016 which showed some risk of exposure from benzene intrusion to commercial occupants of the ground floor. The indoor air survey would be scheduled for June 2017 and will seek to determine if reductions in vapor intrusion have occurred along with the reduction in the groundwater concentrations.
- Electronic uploads to ACEH's ftp system and the State Water Board's GeoTracker system should be continued as required.

# 7.0 REFERENCES AND BIBLIOGRAPHY


Aqua Science Engineers (Aqua), 1986a. Hydrocarbon Contamination Abatement Plan for Bay Center, Emeryville, CA. May 23.

Aqua Science Engineers (Aqua), 1986b. Report – Soil Sampling and Determination of Hydrocarbon Contamination from Tank Removal at the Bay Port Development, 64th and Lacoste Street, Emeryville, CA. May 27.

Aqua Science Engineers (Aqua), 1986c. A Proposal for Installing a Fuel Contamination and Recovery System. August 27.

Aqua Science Engineers (Aqua), 1986d. Phase II – Extent of Groundwater Contamination Investigation, Bay Center. August 27.

Aqua Science Engineers (Aqua), 1986e. Project Report – Soils Gas Investigation, Bay Center. August 27.

Aqua Science Engineers (Aqua), 1986f. Request for Additional Information Regarding Aeration and Sampling Soils Contaminated with Motor Fuel Hydrocarbons. Information addressed to the Alameda County Health Care Services, Hazardous Materials Unit. July 28.

Aqua Science Engineers (Aqua), 1986g. Additional Information Regarding Aeration and Sampling Soils Contaminated with Motor Fuel Hydrocarbons. July 11.

Bay Area Air Quality Management District (BAAQMD), 1987. Letter to the Martin Company authorizing the contaminated groundwater and oil recovery system. April 13.

Chan, Barney, 2007. Project Officer, Alameda County Department of Environmental Health. Personal communication to Richard Makdisi of Stellar Environmental Solutions, Inc. April 10.

Creps, Rob, 2007. PES Environmental, Inc. Project Manager for the Phase I Apartment Complex Remediation. Personal communication to Teal Glass and Richard Makdisi of Stellar Environmental Solutions, Inc. April 19.

Earth Metrics, Inc., 1986a. Draft Soils Contamination Characterization for Garret Freight Lines Emeryville Site, 64th Street and Lacoste, Emeryville, CA. March 14.

Earth Metrics, Inc., 1986b. Environmental Assessment for the Proposed Bay Center Apartment Complex in the Redevelopment Project Area of the City of Emeryville. May.

Earth Metrics, Inc., 1986c. Draft Work Plan for Soils Contamination Characterization of Bay Center Site, Emeryville, CA. May 19.

Earth Metrics, Inc., 1986d. Soils and Groundwater Contamination Characterization of Bay Center Site, Emeryville, CA. August 20.

Earth Metrics, Inc., 1987. Safety Plan for Bay Center Offices and Apartments in Emeryville, CA. September 15.

Geomatrix, 1988. Observation and Testing of Earthwork Construction, Bay Center Apartments. May 20.

Groundwater Technology, Inc. (GTI), 1987a. Letter to Alameda County Health Department Hazardous Materials Division citing irregularities in the Aqua Science Laboratory Results. August 19.

Groundwater Technology, Inc. (GTI), 1987b. Report of Further Subsurface Hydrocarbon Investigation, Emeryville, CA, Bay Center Project. September 8.

Groundwater Technology, Inc. (GTI), 1989a. Well Replacement and Groundwater Assessment Report, Bay Center Project, Emeryville, CA. June.

Groundwater Technology, Inc. (GTI), 1989b. Water Treatment System Start-Up Report, Bay Center Project, Christie and 64th Streets, Emeryville, CA. April 10.

Groundwater Technology, Inc. (GTI), 1990a. First Quarter Sampling Event. Laboratory Analyses at the Bay Center Project. July 24.

Groundwater Technology, Inc. (GTI), 1990b. Letter to the Bay Center Apartment Associates detailing problems with the groundwater extraction system. August 14.

Groundwater Technology, Inc. (GTI), 1990c. Quarterly Report, Bay Center Apartment Associates, Bay Center Project, Christie and 64th Streets, Emeryville, CA. October 31.

Groundwater Technology, Inc. (GTI), 1991a. Quarterly Report, Bay Center Project, Christie and 64th Streets, Emeryville, CA. January.

Groundwater Technology, Inc. (GTI), 1991b. Quarterly Status Report. April 15.

Harding Lawson Associates (HLA), 1991. Preliminary Hazardous Materials Site Assessment. December 16.

Harding Lawson Associates (HLA), 1992a. Results of Soil and Groundwater Investigation. May 6.

Harding Lawson Associates (HLA), 1992b. Hazardous Waste Management Plan. May 26.

Harding Lawson Associates (HLA), 1992c. Conceptual Design of Venting System, Emerybay II Apartments. November 24.

Harding Lawson Associates (HLA), 1993. Results of Soil Sampling, Emerybay II Apartments. April 21.

Harding Lawson Associates (HLA), 1994. Results of Services During Construction, Emerybay Apartments – Phase II. May 19.

Johnson, Mark, 2007. Project Officer, Regional Water Quality Control Board. Personal communication to Teal Glass of Stellar Environmental Solutions, Inc. April 11.

Martin Company, 1986a. Letter to Lowell Miller of Alameda County Health Care Services documenting agreements for the construction workplan involving contaminated soil. June 5.

Martin Company, 1986b. Letter to Tom Owens of Emeryville Community Developers, Inc. documenting recognized contamination issues. May 21.

Martin Company, 1986c. Letter to Rafat Shahid of Alameda County Health Care Services documenting agreement of drum removal. May 16.

Martin Company, 1986d. Letter to the State Water Resources Control Board documenting unused underground storage tanks. December 11.

PES Environmental, Inc. (PES), 2004a. Status Report, Investigation of Subsurface Petroleum Hydrocarbon Residuals. Bay Center Apartments, Christie Avenue and 64th Street, Emeryville, CA. April 5.

PES Environmental, Inc. (PES), 2004b. Investigation for Missing Wells. April 5.

PES Environmental, Inc. (PES), 2004c. Status Report. August 30.

PES Environmental, Inc. (PES), 2007. Construction Implementation and Semi-Annual Operations Report. Free-Phase Hydrocarbon Product Remediation System. EmeryBay Commercial Association, Christie Avenue and 64th Street, Emeryville, CA. March 30.

Regional Water Quality Control Board (Water Board), 1999. East Bay Plain Groundwater Basin Beneficial Use Evaluation Report.

Regional Water Quality Control Board (Water Board), 2008. Environmental Screening Levels for residential properties on shallow soils where groundwater is a drinking water resource / is not a drinking water resource. Written February 2005, revised May 2008.

Stellar Environmental Solutions, Inc. (Stellar Environmental), 2007. Phase I Environmental Site Assessment – 6425-6475 Christie Avenue, Emeryville, CA. April 17.

Stellar Environmental Solutions, Inc. (Stellar Environmental), 2008a. 2007 Annual Groundwater Monitoring and Product Extraction Report. EmeryBay Condo Phase I Parking Garage – 6400 Christie Avenue, Emeryville, CA. January 28.

Stellar Environmental Solutions, Inc. (Stellar Environmental), 2008b. Quarter One 2008 Groundwater Monitoring and Product Extraction Report. EmeryBay Condo Phase I Parking Garage – 6400 Christie Avenue, Emeryville, CA. May 7.

Stellar Environmental Solutions, Inc. (Stellar Environmental), 2008c. Second Quarter 2008 Groundwater Monitoring and Product Extraction Report. EmeryBay Condo Phase I Parking Garage – 6400 Christie Avenue, Emeryville, CA. July 18.

Stellar Environmental Solutions, Inc. (Stellar Environmental), 2008d. Third Quarter 2008 Groundwater Monitoring and Product Extraction Report. EmeryBay Condo Phase I Parking Garage – 6400 Christie Avenue, Emeryville, CA. October 15.

Stellar Environmental Solutions, Inc. (Stellar Environmental), 2009a. Fourth Quarter 2008 Groundwater Monitoring, Product Extraction Report, and Annual Summary. EmeryBay Condo Phase I Parking Garage – 6400 Christie Avenue, Emeryville, CA. January 16.

Stellar Environmental Solutions, Inc. (Stellar Environmental), 2009b. Indoor Air and Preferential Pathway Survey Report. EmeryBay Condo Phase I Parking Garage – 6400 Christie Avenue, Emeryville, CA. April 4.

Stellar Environmental Solutions, Inc. (Stellar Environmental), 2009c. First Semiannual 2009 Groundwater Monitoring Report. EmeryBay Condo Phase I Parking Garage – 6400 Christie Avenue, Emeryville, CA. April 29.

Stellar Environmental Solutions, Inc. (Stellar Environmental), 2009d. Second Semiannual 2009 Groundwater Monitoring, Product Extraction Report, and Annual Summary. EmeryBay Condo Phase I Parking Garage – 6400 Christie Avenue, Emeryville, CA. December 31.

Stellar Environmental Solutions, Inc. (Stellar Environmental), 2011a. Indoor Air Sampling Report. EmeryBay Condo Phase I Parking Garage – 6400 Christie Avenue, Emeryville, CA. April 6, 2010.

Stellar Environmental Solutions, Inc. (Stellar Environmental), 2010b. First Semiannual 2010 Groundwater Monitoring Report. EmeryBay Condo Phase I Parking Garage – 6400 Christie Avenue, Emeryville, CA. April 21.

Stellar Environmental Solutions, Inc. (Stellar Environmental), 2011. Second Semiannual 2010 Groundwater Monitoring, Product Extraction Report, and Annual Summary. EmeryBay Condo Phase I Parking Garage – 6400 Christie Avenue, Emeryville, CA. January 4.

Stellar Environmental Solutions, Inc. (Stellar Environmental), 2011. First Semiannual 2011 Groundwater Monitoring, Product Extraction Report, and Annual Summary. EmeryBay Condo Phase I Parking Garage – 6400 Christie Avenue, Emeryville, CA. May 6.

Stellar Environmental Solutions, Inc. (Stellar Environmental), 2011. Second Semiannual 2011 Groundwater Monitoring, Product Extraction Report, and Annual Summary. EmeryBay Condo Phase I Parking Garage – 6400 Christie Avenue, Emeryville, CA. October 27.

Stellar Environmental Solutions, Inc. (Stellar Environmental), 2012. First Semiannual 2012 Groundwater Monitoring, Product Extraction Report, and Annual Summary. EmeryBay Condo Phase I Parking Garage – 6400 Christie Avenue, Emeryville, CA. June 11.

Stellar Environmental Solutions, Inc. (Stellar Environmental), 2012. Second Semiannual 2012 Groundwater Monitoring, Product Extraction Report, and Annual Summary. EmeryBay Condo Phase I Parking Garage – 6400 Christie Avenue, Emeryville, CA. November 12.

Stellar Environmental Solutions, Inc. (Stellar Environmental), 2013. First Semiannual 2013 Groundwater Monitoring, Product Extraction Report, and Annual Summary. EmeryBay Condo Phase I Parking Garage – 6400 Christie Avenue, Emeryville, CA. June 4.

Stellar Environmental Solutions, Inc. (Stellar Environmental), 2013. Second Semiannual 2013 Groundwater Monitoring, Product Extraction Report, and Annual Summary. EmeryBay Condo Phase I Parking Garage – 6400 Christie Avenue, Emeryville, CA. December 6.

Stellar Environmental Solutions, Inc. (Stellar Environmental), 2014. First Semiannual 2014 Groundwater Monitoring, Product Extraction Report, and Annual Summary. EmeryBay Condo Phase I Parking Garage – 6400 Christie Avenue, Emeryville, CA. May 14.

Stellar Environmental Solutions, Inc. (Stellar Environmental), 2014. Second Semiannual 2014 Groundwater Monitoring, Product Extraction Report, and Annual Summary. EmeryBay Condo Phase I Parking Garage – 6400 Christie Avenue, Emeryville, CA. December 22.

Stellar Environmental Solutions, Inc. (Stellar Environmental), 2015. First Semiannual 2015 Groundwater Monitoring, Product Extraction Report, and Annual Summary. EmeryBay Condo Phase I Parking Garage – 6400 Christie Avenue, Emeryville, CA. June 8.

# 8.0 LIMITATIONS

This report has been prepared for the exclusive use of Emerybay Commercial Association, their authorized representatives and assigns, and the regulatory agencies. No reliance on this report shall be made by anyone other than those for whom it was prepared.

The findings and conclusions presented in this report are based on a review of previous investigators' findings at the site, as well as site investigations conducted by SES in 2007, 2008, and 2009. This report has been prepared in accordance with generally accepted methodologies and standards of practice. The SES personnel who performed this limited remedial investigation are qualified to perform such investigations and have accurately reported the information available, but cannot attest to the validity of that information. No warranty, expressed or implied, is made as to the findings, conclusions, and recommendations included in the report.

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

# APPENDIX A

## Historical Groundwater Well Analytical Results

**TABLE A**
**Historical Groundwater Monitoring Well Groundwater Analytical Results**
**Petroleum and Aromatic Hydrocarbons (µg/L)**
**6400 Christie Avenue, Emeryville, California**

**MW-1**

| Sampling Event No. | Date Sampled | TEH-d | TVH-g | TEH-mo | Benzene | Toluene | Ethylbenzene | Total Xylenes | MTBE |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Dec-88 | 380 | 17,000 | NA | 8,600 | 940 | 250 | 570 | NA |
| 2 | May-89 | 130 | 24,000 | NA | 16,000 | 2,100 | 300 | 1,200 | NA |
| 3 | Feb-91 | <10 | 22,000 | NA | 6,800 | 3,500 | 410 | 2,000 | NA |
| **Monitoring well abandoned - date unclear** | | | | | | | | | |

**MW-2**

| Sampling Event No. | Date Sampled | TEH-d | TVH-g | TEH-mo | Benzene | Toluene | Ethylbenzene | Total Xylenes | MTBE |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Dec-88 | 72 | 22 | NA | <0.5 | <0.5 | <0.5 | <0.5 | NA |
| 2 | May-89 | 40 | 18 | NA | <0.5 | <0.5 | <0.5 | <0.5 | NA |
| 3 | Feb-91 | 83 | <10 | NA | <0.3 | <0.3 | <0.3 | <0.6 | NA |
| **Monitoring well abandoned - date unclear** | | | | | | | | | |

**MW-3**

| Sampling Event No. | Date Sampled | TEH-d | TVH-g | TEH-mo | Benzene | Toluene | Ethylbenzene | Total Xylenes | MTBE |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Dec-88 | <10 | 4,200 | NA | 77 | 1,400 | 140 | 560 | NA |
| 2 | May-89 | 110 | 1,800 | NA | 64 | 250 | 61 | 110 | NA |
| 3 | Feb-91 | NS | NS | NS | NS | NS | NS | NS | NS |
| 4 | Mar-04 | 3,400 | 440 | 3,900 | <0.5 | <0.5 | 1.5 | <1.0 | 9.7 |
| 5 | Dec-06 | 350 | 280 | 230 | <0.5 | <0.5 | <0.5 | <0.5 | 2.0 |
| 6 | Dec-07 | 960 | 150 | NA | 0.54 | 0.54 | <0.5 | <0.5 | <2.0 |
| 7 | Mar-08 | 6,600 | 450 | NA | <0.5 | <0.5 | 1.8 | 2.0 | 4.3 |
| 8 | Jun-08 | 4,500 | 440 | NA | <0.5 | <0.5 | 4.0 | 2.0 | 9.5 |
| 9 | Sep-08 | 1,700 | 280 | NA | <0.5 | <0.5 | 1.0 | <0.5 | <2.0 |
| 10 | Dec-08 | 2,300 | 240 | NA | <0.5 | <0.5 | 1.1 | <0.5 | <2.0 |
| 11 | Mar-09 | 4,300 | 260 | NA | 1.3 | <0.5 | 1.8 | 0.5 | 2.9 |
| 12 | Sep-09 | 5,000 | 300 | NA | 2.5 | <0.5 | <0.5 | <0.5 | <2.0 |
| 13 | Mar-10 | 4,500 | 230 | 670 | 1.7 | <0.5 | 1.0 | <0.5 | 2.7 |
| 14 | Sep-10 | 5,100 | 470 | NA | <0.5 | 0.64 | <0.5 | 1.6 | 2.9 |
| 15 | Mar-11 | 2,600 | 540 | NA | 47 | 28 | 7.6 | 11.8 | 17 |
| 16 | Sep-11 | 7,800 | 290 | NA | 13 | 1.5 | <0.50 | 2.0 | 9.5 |
| 17 | Mar-12 | 1,900 | 430 | NA | 3.3 | <0.5 | <0.5 | 2.5 | 2.7 |
| 18 | Sep-12 | 7,200 | 380 | NA | 18 | 14 | 6.0 | 25.3 | <2.0 |
| 19 | Mar-13 | 15,000 | 470 | NA | 1.3 | 0.68 | 2.1 | 2.1 | 8.6 |
| 20 | Sep-13 | 250,000 | 530 | NA | <0.5 | <0.5 | <0.5 | 2.4 | 5.6 |
| 21 | Mar-14 | 1,600 | 270 | NA | 1.4 | <0.5 | <0.5 | <0.5 | <2.0 |
| 22 | Sep-14 | 21,000 | 530 | NA | 0 | 0 | 0.0 | 0.0 | 0 |
| 23 | Mar-15 | 11,000 | 580 | NA | 29 | 2.7 | 12.0 | 4.4 | <2.0 |
| 24 | Sep-15 | 4,500 | 330 | NA | 0.71 | 0 | 0.0 | 3.2 | 0 |
| 25 | Mar-16 | 7,800 | 610 | NA | 2 | 2.3 | <0.50 | <0.50 | 2.6 |
| 26 | Sep-16 | 5,600 | <250 | NA | <2.5 | <2.5 | <2.5 | <2.5 | 13 |

**MW-4**

| Sampling Event No. | Date Sampled | TEH-d | TVH-g | TEH-mo | Benzene | Toluene | Ethylbenzene | Total Xylenes | MTBE |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Dec-88 | <10 | 100 | NA | 2.0 | 1.0 | <0.5 | 2.0 | NA |
| 2 | May-89 | 60 | 18 | NA | 1.0 | <0.5 | <0.5 | <0.5 | NA |
| 3 | Feb-91 | <10 | <10 | NA | <0.3 | <0.3 | <0.3 | <0.6 | NA |
| 4 | Mar-04 | NS | NS | NS | NS | NS | NS | NS | NS |
| 5 | Dec-06 | <50 | 50 | <200 | <0.5 | <0.5 | <0.5 | <0.5 | <1.0 |
| 6 | Dec-07 | 710 | <50 | NA | <0.5 | <0.5 | <0.5 | <0.5 | <2.0 |
| 7 | Mar-08 | 680 | 57 | NA | <0.5 | <0.5 | <0.5 | <0.5 | <2.0 |
| 8 | Jun-08 | 620 | <50 | NA | <0.5 | <0.5 | <0.5 | <0.5 | <2.0 |
| 9 | Sep-08 | 440 | <50 | NA | <0.5 | <0.5 | <0.5 | <0.5 | <2.0 |
| 10 | Dec-08 | 730 | <50 | NA | <0.5 | <0.5 | <0.5 | <0.5 | <2.0 |
| 11 | Mar-09 | 940 | <50 | NA | <0.5 | <0.5 | <0.5 | <0.5 | <2.0 |
| 12 | Sep-09 | 660 | <50 | NA | <0.5 | <0.5 | <0.5 | <0.5 | <2.0 |
| 13 | Mar-10 | 680 | <50 | 380 | <0.5 | <0.5 | <0.5 | <0.5 | <2.0 |
| 14 | Sep-10 | 770 | 71 | NA | <0.5 | <0.5 | <0.5 | <0.5 | <2.0 |
| 15 | Mar-11 | 590 | <50 | NA | <0.5 | <0.5 | <0.5 | <0.5 | 2.4 |
| 16 | Sep-11 | 380 | <50 | NA | <0.5 | <0.5 | <0.5 | <0.5 | <2.0 |
| 17 | Mar-12 | 340 | <50 | NA | <0.5 | <0.5 | <0.5 | <0.5 | <2.0 |
| 18 | Sep-12 | 350 | <50 | NA | <0.5 | <0.5 | <0.5 | <0.5 | <2.0 |
| 19 | Mar-13 | 390 | <50 | NA | <0.5 | <0.5 | <0.5 | <0.5 | <2.0 |
| 20 | Sep-13 | 250 | <50 | NA | <0.5 | <0.5 | <0.5 | <0.5 | <2.0 |
| 21 | Mar-14 | 380 | <50 | NA | <0.5 | <0.5 | <0.5 | <0.5 | <2.0 |
| 22 | Sep-14 | 380 | 0 | NA | 0 | 0 | 0 | 0 | 0 |
| 23 | Mar-15 | NA | NA | NA | NA | NA | NA | NA | NA |
| 24 | Sep-15 | 370 | 120 | NA | 0 | 0 | 0 | 0 | 0 |
| 25 | Mar-16 | NA | NA | NA | NA | NA | NA | NA | NA |
| 26 | Sep-16 | 350 | <50 | NA | <0.50 | <0.50 | <0.50 | <0.50 | <2.0 |

**MW-5**

| Sampling Event No. | Date Sampled | TEH-d | TVH-g | TEH-mo | Benzene | Toluene | Ethylbenzene | Total Xylenes | MTBE |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Dec-88 | 530 | 890 | NA | <1.0 | <1.0 | 1.0 | 3.0 | NA |
| 2 | May-89 | 90 | 5.0 | NA | 1.0 | <0.5 | <0.5 | <0.5 | NA |
| 3 | Feb-91 | 58 | <10 | NA | 0.6 | <0.3 | <0.3 | <0.6 | NA |
| 4 | Mar-04 | NS | NS | NS | NS | NS | NS | NS | NS |
| 5 | Dec-06 | 330 | <25 | <200 | 0.6 | <0.5 | <0.5 | <0.5 | <1.0 |
| 6 | Dec-07 | 5,100 | 1.3 | NA | 1.3 | <0.5 | <0.5 | 1.23 | <2.0 |
| 7 | Mar-08 | 4,500 | <50 | NA | 0.53 | <0.5 | <0.5 | <0.5 | <2.0 |
| 8 | Jun-08 | 3,300 | <50 | NA | 0.64 | <0.5 | <0.5 | <0.5 | <2.0 |
| 9 | Sep-08 | 4,200 | <50 | NA | <0.5 | <0.5 | <0.5 | <0.5 | <2.0 |
| 10 | Dec-08 | 5,200 | <50 | NA | 0.61 | <0.5 | <0.5 | <0.5 | <2.0 |
| 11 | Mar-09 | 5,800 | <50 | NA | <0.5 | <0.5 | <0.5 | <0.5 | <2.0 |
| 12 | Sep-09 | 5,600 | <50 | NA | <0.5 | <0.5 | <0.5 | <0.5 | <2.0 |
| 13 | Mar-10 | 4,300 | <50 | 5,400 | 4.9 | <0.5 | <0.5 | <0.5 | <2.0 |
| 14 | Sep-10 | 4,500 | <50 | NA | 0.58 | <0.5 | <0.5 | <0.5 | 2.0 |
| 15 | Mar-11 | 4,900 | <50 | NA | 1.3 | <0.5 | <0.5 | <0.5 | 5.9 |
| 16 | Sep-11 | 4,400 | <50 | NA | <0.5 | <0.5 | <0.5 | <0.5 | <2.0 |
| 17 | Mar-12 | 3,600 | <50 | NA | <0.5 | <0.5 | <0.5 | <0.5 | <2.0 |
| 18 | Sep-12 | 4,100 | <50 | NA | <0.5 | <0.5 | <0.5 | <0.5 | <2.0 |
| 19 | Mar-13 | 3,900 | <50 | NA | <0.5 | <0.5 | <0.5 | <0.5 | <2.0 |
| 20 | Sep-13 | 3,100 | <50 | NA | 0.65 | <0.5 | <0.5 | <0.5 | <2.0 |
| 21 | Mar-14 | 2,300 | <50 | NA | <0.5 | <0.5 | <0.5 | <0.5 | <2.0 |
| 22 | Sep-14 | 3,700 | 0 | NA | 0 | 0 | 0 | 0 | 0.0 |
| 23 | Mar-15 | 4,200 | 0 | NA | 0 | 0 | 0 | 0 | 0.0 |
| 24 | Sep-15 | 4,400 | 60 | NA | 0 | 0 | 0 | 0 | 0.0 |
| 25 | Mar-16 | 2,400 | <50 | NA | <0.50 | <0.50 | <0.50 | <0.50 | <2.0 |
| 26 | Sep-16 | 3,800 | <250 | NA | <2.5 | <2.5 | <2.5 | <2.5 | <10 |

**MW-6**

| Sampling Event No. | Date Sampled | TEH-d | TVH-g | TEH-mo | Benzene | Toluene | Ethylbenzene | Total Xylenes | MTBE |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Dec-88 | <10 | 52 | NA | 1.0 | <0.5 | <0.5 | <0.5 | NA |
| 2 | May-89 | 140 | 31 | NA | 1.0 | <0.5 | <0.5 | <0.5 | NA |
| 3 | Feb-91 | 130 | 40 | NA | 0.8 | <0.3 | <0.3 | <0.6 | NA |
| 4 | Mar-04 | NS | NS | NS | NS | NS | NS | NS | NS |
| 5 | Dec-06 | 200 | 43 | <200 | 1.1 | <0.5 | <0.5 | <0.5 | <1.0 |
| 6 | Dec-07 | 1,000 | <50 | NA | 0.98 | 0.81 | <0.5 | 0.5 | <2.0 |
| 7 | Mar-08 | 940 | <50 | NA | 0.87 | 1.0 | <0.5 | <0.5 | <2.0 |
| 8 | Jun-08 | 1,100 | 56 | NA | 0.92 | <0.5 | <0.5 | <0.5 | 2.9 |
| 9 | Sep-08 | 1,000 | <50 | NA | 0.91 | <0.5 | <0.5 | <0.5 | <2.0 |
| 10 | Dec-08 | 1,400 | <50 | NA | 1 | <0.5 | <0.5 | <0.5 | <2.0 |
| 11 | Mar-09 | 1,200 | <50 | NA | <0.5 | <0.5 | <0.5 | <0.5 | <2.0 |
| 12 | Sep-09 | 1,500 | <50 | NA | 0.79 | <0.5 | <0.5 | <0.5 | <2.0 |
| 13 | Mar-10 | 910 | <50 | 1,500 | 1.9 | <0.5 | <0.5 | <0.5 | <2.0 |
| 14 | Sep-10 | 1,200 | 72 | NA | 1.0 | <0.5 | <0.5 | <0.5 | <2.0 |
| 15 | Mar-11 | 1,900 | <50 | NA | 1.3 | <0.5 | <0.5 | <0.5 | 3.9 |
| 16 | Sep-11 | 1,900 | <50 | NA | 1.8 | <0.5 | <0.5 | <0.5 | <2.0 |
| 17 | Mar-12 | 2,300 | <50 | NA | 0.82 | <0.5 | <0.5 | <0.5 | <2.0 |
| 18 | Sep-12 | 2,200 | <50 | NA | 0.85 | <0.5 | <0.5 | <0.5 | <2.0 |
| 19 | Mar-13 | 1,600 | <50 | NA | 0.83 | <0.5 | <0.5 | <0.5 | <2.0 |
| 20 | Sep-13 | 1,100 | <50 | NA | 1.70 | <0.5 | <0.5 | <0.5 | <2.0 |
| 21 | Mar-14 | 830 | 65 | NA | 0.81 | <0.5 | <0.5 | <0.5 | <2.0 |
| 22 | Sep-14 | 1,600 | 0 | NA | 0.79 | <0.5 | <0.5 | <0.5 | <2.0 |
| 23 | Mar-15 | 1,200 | 61 | NA | 0.87 | 0.62 | <0.5 | <0.5 | <2.0 |
| 24 | Sep-15 | 1,700 | 65 | NA | 0.88 | 0 | 0 | 0 | 0 |
| 25 | Mar-16 | 1,500 | <50 | NA | 1.10 | <0.50 | <0.50 | <0.50 | <2.0 |
| 26 | Sep-16 | 1,200 | <50 | NA | 1.0 | <0.50 | <0.50 | <0.50 | <2.0 |

**MW-7**

| Sampling Event No. | Date Sampled | TEH-d | TVH-g | TEH-mo | Benzene | Toluene | Ethylbenzene | Total Xylenes | MTBE |
|---|---|---|---|---|---|---|---|---|---|
| **Installed in March 2004** | | | | | | | | | |
| 1 | Mar-04 | 1,600 | 490 | 1,900 | 240 | 100 | 14 | 56 | <2.5 |
| 2 | Dec-06 | 420 | <25 | 470 | <0.5 | <0.5 | <0.5 | <0.5 | <1.0 |
| 3 | Dec-07 | 6,300 | 3,100 | NA | 640 | 28 | 48 | 231 | <10 |
| 4 | Mar-08 | 7,000 | 360 | NA | 140 | 5.8 | 11 | 58 | <2.0 |
| 5 | Jun-08 | 5,400 | 1,700 | NA | 480 | 15 | 28 | 139 | <2.0 |
| 6 | Sep-08 | 9,400 | 1,200 | NA | 330 | 12 | 21 | 88 | <2.0 |
| 7 | Dec-08 | 8,700 | 2,200 | NA | 640 | 100 | 43 | 185 | <4.0 |
| 8 | Mar-09 | 8,700 | 1,700 | NA | 510 | 33 | 47 | 220 | <10 |
| 9 | Sep-09 | 6,800 | 620 | NA | 310 | 9.5 | 27 | 117 | <10 |
| 10 | Mar-10 | 8,700 | 330 | 6,800 | 68 | 2.2 | 10 | 31.6 | <2.0 |
| 11 | Sep-10 | 10,000 | 1,300 | NA | 580 | 54 | 35 | 163 | <20 |
| 12 | Mar-11 | 8,100 | 630 | NA | 160 | 5.3 | 14 | 65 | <2.0 |
| 13 | Sep-11 | 8,000 | 2,900 | NA | 900 | 46 | 51 | 284 | <2.0 |
| 14 | Mar-12 | 7,900 | 740 | NA | 220 | 150 | 14 | 140 | <2.0 |
| 15 | Sep-12 | 10,000 | 1,700 | NA | 660 | 35 | 32 | 137 | <2.0 |
| 16 | Mar-13 | 8,600 | 3,000 | NA | 950 | 39 | 30 | 149 | <33 |
| 17 | Sep-13 | 12,000 | 2,100 | NA | 540 | 29 | 17 | 89 | <29 |
| 18 | Mar-14 | 8,200 | 1,900 | NA | 440 | 22 | 14 | 63 | <29 |
| 19 | Sep-14 | 11,000 | 1,200 | NA | 330 | 21 | 5.8 | 68 | <29 |
| 20 | Mar-15 | 7,700 | 900 | NA | 260 | 13 | 8.8 | 47.8 | 7.1 |
| 21 | Sep-15 | 10,000 | 1,000 | NA | 280 | 16 | 10 | 52.9 | 21 |
| 22 | Mar-16 | 9,900 | 1,000 | NA | 280 | 15 | 7.9 | 35.7 | <2.0 |
| 23 | Sep-16 | 10,000 | 860 | NA | 170 | 8.6 | 5.1 | 23.7 | <10 |

**MW-8**

| Sampling Event No. | Date Sampled | TEH-d | TVH-g | TEH-mo | Benzene | Toluene | Ethylbenzene | Total Xylenes | MTBE |
|---|---|---|---|---|---|---|---|---|---|
| **Installed in March 2004** | | | | | | | | | |
| 1 | Mar-04 | 140,000 | 51,000 | 56,000 | 19,000 | 720 | 2,400 | 3,300 | <50 |
| 2 | Dec-06 | 2,400 | 29,000 | <380 | 13,000 | <100 | 640 | 500 | <200 |
| 3 | Dec-07 | 5,900 | 30,000 | NA | 11,000 | 180 | 650 | 561 | <100 |
| 4 | Mar-08 | 21,000 | 47,000 | NA | 10,000 | 260 | 1,200 | 458 | <2.0 |
| 5 | Jun-08 | 7,300 | 27,000 | NA | 9,300 | 140 | 790 | 290 | <2.0 |
| 6 | Sep-08 | 13,000 | 35,000 | NA | 11,000 | 190 | 900 | 402 | <100 |
| 7 | Dec-08 | 7,600 | 19,000 | NA | 6,800 | 110 | 380 | 236 | <50 |
| 8 | Mar-09 | 10,000 | 22,000 | NA | 9,400 | 200 | 640 | 358 | <50 |
| 9 | Sep-09 | 9,200 | 26,000 | NA | 8,600 | 100 | 630 | 230 | 170 |
| 10 | Mar-10 | 11,000 | 19,000 | 1,900 | 6,200 | 120 | 830 | 149 | <2.0 |
| 11 | Sep-10 | 7,600 | 7,800 | NA | 8,800 | 110 | 620 | 212 | <100 |
| 12 | Mar-11 | 8,800 | 19,000 | NA | 8,100 | 130 | 890 | 149 | <2.0 |
| 13 | Sep-11 | 18,000 | 13,000 | NA | 8,000 | 140 | 860 | 178 | <2.0 |
| 14 | Mar-12 | 9,800 | 380 | NA | 100 | 3 | 5.9 | 20 | <2.0 |
| 15 | Sep-12 | 24,000 | 73,000 | NA | 18,000 | 520 | 2,300 | 670 | <2.0 |
| 16 | Mar-13 | 38,000 | 39,000 | NA | 9,400 | 160 | 1,600 | 255 | <50 |
| 17 | Sep-13 | 2,100 | 14,000 | NA | 3,800 | 140 | 35 | 86 | 440 |
| 18 | Mar-14 | 13,000 | 23,000 | NA | 6,800 | 96 | 620 | 200 | <200 |
| 19 | Sep-14 | 13,000 | 15,000 | NA | 4,100 | 65 | 300 | 100 | 0 |
| 20 | Mar-15 | 20,000 | 36,000 | NA | 8,200 | 150 | 910 | 160 | < 170 |
| 21 | Sep-15 | 9,400 | 23,000 | NA | 7,100 | 100 | 510 | 267 | 0 |
| 22 | Mar-16 | 1,200 | 23,000 | NA | 5,400 | 140 | 570 | 294 | <170 |
| 23 | Sep-16 | 8,600 | 24,000 | NA | 5,300 | 77 | 400 | 180 | <170 |

**MW-9**

| Sampling Event No. | Date Sampled | TEH-d | TVH-g | TEH-mo | Benzene | Toluene | Ethylbenzene | Total Xylenes | MTBE |
|---|---|---|---|---|---|---|---|---|---|
| **Installed in March 2004** | | | | | | | | | |
| 1 | Mar-04 | 1,300 | 95 | 1,500 | 4.7 | 0.68 | <0.5 | <1.0 | <0.5 |
| 2 | Dec-06 | <50 | 92 | <200 | 2.8 | <0.5 | <0.5 | <0.5 | <1.0 |
| 3 | Dec-07 | 8,400 | 84 | NA | 4.7 | 1.1 | <0.5 | 1.9 | <2.0 |
| 4 | Mar-08 | 8,600 | 100 | NA | 4.1 | 1.1 | <0.5 | <0.5 | 2.0 |
| 5 | Jun-08 | 5,900 | 98 | NA | 4.9 | <0.5 | <0.5 | <0.5 | 2.3 |
| 6 | Sep-08 | 9,300 | 130 | NA | 4.6 | <0.5 | <0.5 | <0.5 | <50 |
| 7 | Dec-08 | 7,800 | 95 | NA | 4.0 | 0.54 | <0.5 | <0.5 | <2.0 |
| 8 | Mar-09 | 9,400 | 130 | NA | 4.6 | <0.5 | <0.5 | <0.5 | <2.0 |
| 9 | Sep-09 | 8,200 | 98 | NA | 4.0 | <0.5 | <0.5 | <0.5 | <2.0 |
| 10 | Mar-10 | 6,500 | 140 | 4,000 | 5.2 | <0.5 | <0.5 | <0.5 | <2.0 |
| 11 | Sep-10 | 6,400 | 170 | NA | 4.8 | 0.77 | <0.5 | <0.5 | <2.0 |
| 12 | Mar-11 | 11,000 | 150 | NA | 5.9 | 0.61 | <0.5 | 0.5 | <2.0 |
| 13 | Sep-11 | 9,400 | 62 | NA | 4.2 | <0.5 | <0.5 | <0.5 | <2.0 |
| 14 | Mar-12 | 9,400 | 140 | NA | 6.2 | 0.61 | <0.5 | 0.51 | <2.0 |
| 15 | Sep-12 | 10,000 | 130 | NA | 7.2 | <0.5 | 0.53 | 0.92 | <2.0 |
| 16 | Mar-13 | 8,500 | 170 | NA | 14.0 | 0.73 | 0.7 | 0.63 | <2.0 |
| 17 | Sep-13 | 11,000 | 130 | NA | 12.0 | <0.5 | 0.92 | <0.5 | 4.9 |
| 18 | Mar-14 | 7,300 | 140 | NA | 9.8 | 2 | <0.5 | <0.5 | <2.0 |
| 19 | Sep-14 | 10,000 | 120 | NA | 8.6 | 2 | 0.55 | 0 | 0 |
| 20 | Mar-15 | 9,000 | 310 | NA | 8.7 | 0.75 | <0.5 | 1.25 | <2.0 |
| 21 | Sep-15 | 11,000 | 190 | NA | 8.0 | 0.71 | 0 | 0.87 | 0 |
| 22 | Mar-16 | 9,300 | 230 | NA | 7.7 | 0.82 | <0.50 | <0.50 | <2.0 |
| 23 | Sep-16 | 9,200 | <500 | NA | <5.0 | <5.0 | <5.0 | <5.0 | <20 |

**MW-10**

| Sampling Event No. | Date Sampled | TEH-d | TVH-g | TEH-mo | Benzene | Toluene | Ethylbenzene | Total Xylenes | MTBE |
|---|---|---|---|---|---|---|---|---|---|
| **Installed in March 2004** | | | | | | | | | |
| 1 | Mar-04 | 840,000 | 14,000 | <100,000 | 4,000 | 77 | 200 | 120 | <50 |
| 2 | Dec-06 | 19,000 | 12,000 | <4,000 | 4,600 | 42 | 90 | 52 | <50 |
| 3 | Dec-07 | 4,700 | 13,000 | NA | 5,300 | 96 | 42 | 86 | <50 |
| 4 | Mar-08 | 280,000 | 10,000 | NA | 2,600 | 50 | 37 | 58.7 | 22 |
| 5 | Jun-08 | 4,800 | 10,000 | NA | 3,800 | 62 | 24 | 61 | <2.0 |
| 6 | Sep-08 | 4,700 | 1,200 | NA | 350 | 11 | 3.4 | 11 | <2.0 |
| 7 | Dec-08 | 3,200 | 2,900 | NA | 550 | 45 | 15 | 56 | <20 |
| 8 | Mar-09 | 6,200 | 8,200 | NA | 890 | 46 | 78 | 130 | <20 |
| 9 | Sep-09 | 6,100 | 1,400 | NA | 1,200 | 35 | 19 | 31 | <20 |
| 10 | Mar-10 | 3,900 | 7,800 | 960 | 1,200 | 46 | 34 | 56 | 54 |
| 11 | Sep-10 | 3,500 | 3,400 | NA | 1,500 | 47 | 18 | 44 | <40 |
| 12 | Mar-11 | 4,500 | 3,700 | NA | 1,200 | 81 | 25 | 46.4 | <2.0 |
| 13 | Sep-11 | 3,800 | 4,600 | NA | 720 | 49 | 26 | 52.4 | <2.0 |
| 14 | Mar-12 | 3,500 | 2,400 | NA | 240 | 27 | 10 | 33.6 | <2.0 |
| 15 | Sep-12 | 13,000 | 6,600 | NA | 1,800 | 89 | 130 | 46 | <2.0 |
| 16 | Mar-13 | 24,000 | 15,000 | NA | 1,300 | 66 | 130 | 94 | <50 |
| 17 | Sep-13 | 3,800 | 4,600 | NA | 900 | 87 | 29 | 56 | <42 |
| 18 | Mar-14 | 3,300 | 6,200 | NA | 940 | 43 | <0.5 | 53 | <40 |
| 19 | Sep-14 | 42,000 | 7,000 | NA | 1,500 | 68 | 28 | 36 | 0 |
| 20 | Mar-15 | 7,300 | 6,500 | NA | 640 | 53 | 44 | 22 | <67 |
| 21 | Sep-15 | 11,000 | 190 | NA | 8 | 1 | 0 | 0.87 | 0 |
| 22 | Mar-16 | 6,000 | 12,000 | NA | 2,600 | 87 | 91 | 50 | <67 |
| 23 | Sep-16 | 2,100 | 19,000 | NA | 1200 | <170 | <170 | <170 | <670 |

**MW-11**

| Sampling Event No. | Date Sampled | TEH-d | TVH-g | TEH-mo | Benzene | Toluene | Ethylbenzene | Total Xylenes | MTBE |
|---|---|---|---|---|---|---|---|---|---|
| **Installed in May 2004** | | | | | | | | | |
| 1 | Dec-06 | <50 | 920 | <200 | 26 | 4.5 | 1.8 | 5.4 | <1.0 |
| 2 | Dec-07 | 6,900 | 1,500 | NA | 320 | 44 | 53 | 140 | <2.0 |
| 3 | Mar-08 | 7,500 | 1,200 | NA | 120 | 7.6 | 10 | 24.9 | 3.0 |
| 4 | Jun-08 | 5,100 | 2,000 | NA | 190 | 11 | 7.7 | 16.3 | <2.0 |
| 5 | Sep-08 | 5,600 | 2,200 | NA | 260 | 20 | 34 | 60 | <2.0 |
| 6 | Dec-08 | 7,800 | 2,100 | NA | 270 | 14 | 7.6 | 15.6 | <2.0 |
| 7 | Mar-09 | 7,100 | 1,400 | NA | 200 | 6.4 | 7.3 | 10.4 | <2.0 |
| 8 | Sep-09 | 6,400 | 1,900 | NA | 320 | 13 | 9.8 | 15.2 | 2.0 |
| 9 | Mar-10 | 6,500 | 1,600 | 6,900 | 150 | <0.5 | 3.9 | 12.8 | 2.9 |
| 10 | Sep-10 | 5,500 | 1,300 | NA | 330 | 15 | 9.2 | 17.3 | <2.0 |
| 11 | Mar-11 | 6,500 | 3,400 | NA | 1300 | 22 | 9.6 | 19.9 | <2.0 |
| 12 | Sep-11 | 4,400 | 3,600 | NA | 1200 | 36 | 16 | 39.1 | <2.0 |
| 13 | Mar-12 | 4,600 | 5,700 | NA | 2100 | 27 | 12 | 16.7 | <2.0 |
| 14 | Sep-12 | 5,200 | 4,100 | NA | 1,500 | 33 | <0.5 | 18 | <2.0 |
| 15 | Mar-13 | 8,400 | 1,800 | NA | 97 | 18 | 19 | 30 | <2.0 |
| 16 | Sep-13 | 7,900 | 1,900 | NA | 60 | <0.5 | 3.6 | 13 | 27.0 |
| 17 | Mar-14 | 5,700 | 2,000 | NA | 60 | <0.5 | 3.8 | 14.2 | <2.0 |
| 18 | Sep-14 | 7,800 | 2,000 | NA | 89 | 0 | 6 | 14.4 | 0.0 |
| 19 | Mar-15 | 7,900 | 1,600 | NA | 140 | 14 | 5.3 | 15.5 | 61.0 |
| 20 | Sep-15 | 8,000 | 1,300 | NA | 110 | 16 | 2.1 | 20.4 | 0.0 |
| 21 | Mar-16 | 5,500 | 1,900 | NA | 91 | 14 | 6.4 | 12.7 | <2.0 |
| 22 | Sep-16 | 5,800 | 1,300 | NA | 130 | 6.2 | 3.3 | 6.2 | <10 |

**MW-12**

| Sampling Event No. | Date Sampled | TEH-d | TVH-g | TEH-mo | Benzene | Toluene | Ethylbenzene | Total Xylenes | MTBE |
|---|---|---|---|---|---|---|---|---|---|
| **Installed in May 2004** | | | | | | | | | |
| 1 | Dec-06 | <50 | 19,000 | <200 | 9,100 | 51 | <50 | 110 | <100 |
| 2 | Dec-07 | 2,700 | 17,000 | NA | 8,000 | 110 | 25 | 115 | <40 |
| 3 | Mar-08 | 3,300 | 33,000 | NA | 9,200 | 140 | 85 | 116 | <2.0 |
| 4 | Jun-08 | 3,000 | 17,000 | NA | 6,600 | 95 | 50 | 110 | <2.0 |
| 5 | Sep-08 | 3,100 | 14,000 | NA | 6,200 | 79 | 18 | 83 | <10 |
| 6 | Dec-08 | 3,600 | 19,000 | NA | 7,900 | 140 | 72 | 124 | <50 |
| 7 | Mar-09 | 4,100 | 14,000 | NA | 6,100 | 150 | 130 | 111 | <40 |
| 8 | Sep-09 | 3,000 | 1,900 | NA | 4,500 | 80 | 14 | 51 | <40 |
| 9 | Mar-10 | 4,000 | 15,000 | 1,900 | 6,200 | 110 | 73 | 101 | <2.0 |
| 10 | Sep-10 | 3,100 | 4,900 | NA | 5,900 | 97 | 47 | 73 | <100 |
| 11 | Mar-11 | 3,300 | 15,000 | NA | 7,900 | 180 | 200 | 127 | <2.0 |
| 12 | Sep-11 | 1,800 | 8,600 | NA | 2,700 | 85 | 31 | 63 | <2.0 |
| 13 | Mar-12 | 2,500 | 17,000 | NA | 6,300 | 160 | 180 | 124 | <2.0 |
| 14 | Sep-12 | 2,300 | 10,000 | NA | 4,600 | 160 | 210 | 85 | <2.0 |
| 15 | Mar-13 | 9,800 | 9,100 | NA | 2,600 | 110 | 170 | 111 | <2.0 |
| 16 | Sep-13 | 7,800 | 9,400 | NA | 2,400 | 130 | 130 | 125 | 520 |
| 17 | Mar-14 | 7,800 | 10,000 | NA | 2,500 | 89 | 68 | 55 | <100 |
| 18 | Sep-14 | 4,000 | 6,500 | NA | 1,500 | 110 | 26 | 59.9 | 0 |
| 19 | Mar-15 | 3,500 | 14,000 | NA | 3,800 | 120 | 82 | 73 | 66 |
| 20 | Sep-15 | 3,100 | 13,000 | NA | 4,300 | 110 | 52 | 71 | 0 |
| 21 | Mar-16 | 2,900 | 13,000 | NA | 2,600 | 74 | 83 | 30 | <50 |
| 22 | Sep-16 | 2,700 | 7,800 | NA | 1,300 | 25 | 19 | <13 | <50 |

**MW-13**

| Sampling Event No. | Date Sampled | TEH-d | TVH-g | TEH-mo | Benzene | Toluene | Ethylbenzene | Total Xylenes | MTBE |
|---|---|---|---|---|---|---|---|---|---|
| **Installed in April 2004** | | | | | | | | | |
| 1 | Dec-06 | 12,000 | 87,000 | 2,100 | 18,000 | 470 | 2,400 | 3,500 | <400 |
| 2 | Dec-07 | NA | 68,000 | NA | 19,000 | 650 | 1,700 | 2,440 | <100 |
| 3 | Mar-08 | 1,100,000 | 98,000 | NA | 19,000 | 820 | 2,300 | 3,190 | <100 |
| 4 | Jun-08 | 71,000 | 44,000 | NA | 12,000 | 510 | 1,600 | 1,950 | <2.0 |
| 5 | Sep-08 | 440,000 | 52,000 | NA | <100 | 500 | 1,600 | 1,500 | <100 |
| 6 | Dec-08 | 1,100,000 | 2,700,000 | NA | 23,000 | <250 | 40,000 | 45,000 | <1,000 |
| 7 | Mar-09 | 2,000,000 | 330,000 | NA | 25,000 | 1,300 | 6,400 | 8,500 | <1,000 |
| 8 | Sep-09 | 38,000 | 1,400,000 | NA | 19,000 | 2,500 | 19,000 | 21,300 | <1,000 |
| 9 | Mar-10 | 15,000 | 43,000 | 670 | 12,000 | 310 | 1,600 | 1,140 | <2,500 |
| 10 | Sep-10 | 3,100,000 | 1,700,000 | NA | 21,000 | 2,300 | 30,000 | 17,200 | 7,000 |
| 11 | Mar-11 | 13,000 | 86,000 | NA | 7,900 | 180 | 200 | 127 | <2.0 |
| 12 | Sep-11 | 15,000 | 49,000 | NA | 16,000 | 380 | 1900 | 850 | <2.0 |
| 13 | Mar-12 | 1,100,000 | 260,000 | NA | 23,000 | 1500 | 5700 | 4100 | <2.0 |
| 14 | Sep-12 | 7,200,000 | 60,000 | NA | 22,000 | 580 | 2,100 | 1,700 | <2.0 |
| 15 | Mar-13 | 23,000 | 27,000 | NA | 5,600 | 260 | 1,300 | 1,080 | <200 |
| 16 | Sep-13 | 39,000 | 19,000 | NA | 3,400 | 180 | 760 | 515 | <200 |
| 17 | Mar-14 | 19,000 | 20,000 | NA | 3,700 | 120 | 710 | 361 | <200 |
| 18 | Sep-14 | 11,000 | 16,000 | NA | 2,400 | 70 | 460 | 253 | 0 |
| 19 | Mar-15 | 11,000 | 14,000 | NA | 2,200 | 76 | 430 | 160 | <100 |
| 20 | Sep-15 | 8,300 | 13,000 | NA | 3,100 | 78 | 440 | 255 | 0 |
| 21 | Mar-16 | 11,000 | 18,000 | NA | 4,000 | 100 | 510 | 252 | <100 |
| 22 | Sep-16 | 15,000 | 20,000 | NA | 3,700 | 66 | 480 | 205 | <100 |

**MW-14**

| Sampling Event No. | Date Sampled | TEH-d | TVH-g | TEH-mo | Benzene | Toluene | Ethylbenzene | Total Xylenes | MTBE |
|---|---|---|---|---|---|---|---|---|---|
| **Installed in April 2004** | | | | | | | | | |
| 1 | Dec-06 | <50 | 8,300 | <200 | 3,700 | 240 | 230 | 260 | <50 |
| 2 | Dec-07 | 2,600 | 6,800 | NA | 3,100 | 150 | 220 | 168 | <20 |
| 3 | Mar-08 | 4,400 | 18,000 | NA | 4,400 | 330 | 340 | 245 | <2.0 |
| 4 | Jun-08 | 2,600 | 7,700 | NA | 2,600 | 180 | 200 | 141 | <2.0 |
| 5 | Sep-08 | 2,500 | 4,100 | NA | 1,300 | 50 | 80 | 61 | <10 |
| 6 | Dec-08 | 2,800 | 2,300 | NA | 830 | 27 | 45 | 30.7 | <10 |
| 7 | Mar-09 | 3,200 | 13,000 | NA | 4,300 | 870 | 260 | 283 | <50 |
| 8 | Sep-09 | 2,100 | 550 | NA | 630 | 14 | 28 | 17 | <20 |
| 9 | Mar-10 | 3,900 | 6,700 | 3,100 | 2,400 | 400 | 140 | 185 | <20 |
| 10 | Sep-10 | 2,500 | 2,000 | NA | 1,700 | 44 | 98 | 89 | <40 |
| 11 | Mar-11 | 2,800 | 16,000 | NA | 6,600 | 1600 | 450 | 600 | <2.0 |
| 12 | Sep-11 | 5,900 | 20,000 | NA | 6,600 | 690 | 550 | 740 | <2.0 |
| 13 | Mar-12 | 4,400 | 13,000 | NA | 3,000 | 1400 | 340 | 870 | <2.0 |
| 14 | Sep-12 | 9,900 | 31,000 | NA | 4,800 | 2400 | 740 | 2,450 | <2.0 |
| 15 | Mar-13 | 21,000 | 11,000 | NA | 2,300 | 340 | 280 | 371 | <50 |
| 16 | Sep-13 | 24,000 | 7,200 | NA | 1,900 | 200 | 160 | 197 | <83 |
| 17 | Mar-14 | 8,200 | 6,900 | NA | 2,100 | 220 | 170 | 155 | <110 |
| 18 | Sep-14 | 8,500 | 7,100 | NA | 1,600 | 220 | 120 | 180 | 0 |
| 19 | Mar-15 | 11,000 | 14,000 | NA | 2,900 | 390 | 210 | 222 | <100 |
| 20 | Sep-15 | 5,500 | 9,500 | NA | 2,600 | 250 | 190 | 237 | 0 |
| 21 | Mar-16 | 7,300 | 12,000 | NA | 3,100 | 250 | 220 | 223 | <100 |
| 22 | Sep-16 | 4,700 | 9,900 | NA | 2,100 | 100 | 150 | 77 | 180 |

**MW-15**

| Sampling Event No. | Date Sampled | TEH-d | TVH-g | TEH-mo | Benzene | Toluene | Ethylbenzene | Total Xylenes | MTBE |
|---|---|---|---|---|---|---|---|---|---|
| **Installed in April 2004** | | | | | | | | | |
| 1 | Dec-06 | <50 | 9,200 | <200 | 3,700 | <25 | 60 | 57 | <50 |
| 2 | Dec-07 | 3,300 | 8,100 | NA | 3,000 | 48 | 28 | 44.5 | <20 |
| 3 | Mar-08 | 3,000 | 13,000 | NA | 3,600 | 66 | 210 | 59.5 | <64 |
| 4 | Jun-08 | 2,900 | 15,000 | NA | 5,800 | 61 | 230 | 56.4 | <2.0 |
| 5 | Sep-08 | 3,400 | 18,000 | NA | 7,800 | 73 | 270 | 59.9 | <10 |
| 6 | Dec-08 | 3,000 | 20,000 | NA | 7,600 | 95 | 300 | 84.2 | <50 |
| 7 | Mar-09 | 3,400 | 17,000 | NA | 7,200 | 91 | 170 | 60 | <50 |
| 8 | Sep-09 | 2,700 | 2,300 | NA | 6,200 | 71 | 68 | 42 | <50 |
| 9 | Mar-10 | 3,700 | 14,000 | 910 | 5,900 | 74 | 170 | 69 | <2.0 |
| 10 | Sep-10 | 3,500 | 5,800 | NA | 8,100 | 95 | 170 | 71 | <100 |
| 11 | Mar-11 | 3,200 | 11,000 | NA | 5,600 | 88 | 110 | 66.1 | <2.0 |
| 12 | Sep-11 | 2,200 | 15,000 | NA | 6,400 | 100 | 71 | 77.7 | <2.0 |
| 13 | Mar-12 | 3,500 | 16,000 | NA | 7,200 | 110 | 160 | 177 | <2.0 |
| 14 | Sep-12 | 3,500 | 28,000 | NA | 12,000 | 300 | 380 | 297 | <2.0 |
| 15 | Mar-13 | 3,100 | 15,000 | NA | 6,100 | 170 | 360 | 266 | <67 |
| 16 | Sep-13 | 2,800 | 17,000 | NA | 4,100 | 92 | 76 | 144 | <200 |
| 17 | Mar-14 | 2,200 | 12,000 | NA | 3,900 | 75 | 30 | 54 | <2.0 |
| 18 | Sep-14 | 3,300 | 9,500 | NA | 2,600 | 110 | 22 | 46.7 | 0 |
| 19 | Mar-15 | 8,500 | 16,000 | NA | 3,400 | 66 | 93 | 29 | <100 |
| 20 | Sep-15 | 3,100 | 10,000 | NA | 3,100 | 63 | 33 | 48 | 0 |
| 21 | Mar-16 | 3,200 | 19,000 | NA | 3,800 | 96 | 44 | 41 | <100 |
| 22 | Sep-16 | 5,300 | 18,000 | NA | 5,000 | 66 | <25 | 49 | <100 |

**MW-16**

| Sampling Event No. | Date Sampled | TEH-d | TVH-g | TEH-mo | Benzene | Toluene | Ethylbenzene | Total Xylenes | MTBE |
|---|---|---|---|---|---|---|---|---|---|
| **Installed in April 2004** | | | | | | | | | |
| 1 | Dec-06 | <50 | 190 | <200 | 11.0 | 1.4 | <0.5 | <0.5 | <1.0 |
| 2 | Dec-07 | 8,500 | 71 | NA | 13 | 2.6 | <0.5 | 1.46 | <2.0 |
| 3 | Mar-08 | 12,000 | 60 | NA | 11 | 0.73 | <0.5 | <0.5 | <2.0 |
| 4 | Jun-08 | 10,000 | 120 | NA | 13 | 2.2 | <0.5 | <0.5 | 2 |
| 5 | Sep-08 | 8,200 | 64 | NA | 9.9 | 1.9 | <0.5 | <0.5 | <2.0 |
| 6 | Dec-08 | 8,800 | 60 | NA | 11 | 2.8 | <0.5 | 0.53 | <2.0 |
| 7 | Mar-09 | 14,000 | 78 | NA | 12 | 2.3 | <0.5 | <0.5 | <2.0 |
| 8 | Sep-09 | 10,000 | 51 | NA | 9.3 | 1.6 | <0.5 | <0.5 | 2.2 |
| 9 | Mar-10 | 12,000 | 70 | 4,700 | 12 | 2.1 | 0.56 | 1.35 | <2.0 |
| 10 | Sep-10 | 9,800 | 77 | NA | 12 | 1.9 | <0.5 | 0.55 | 2 |
| 11 | Mar-11 | 9,900 | 64 | NA | 13 | 1.6 | <0.5 | 2.3 | 16 |
| 12 | Sep-11 | 10,000 | 74 | NA | 17 | 2.3 | <0.5 | 1.33 | <2.0 |
| 13 | Mar-12 | 8,400 | 66 | NA | 12 | 1.8 | <0.5 | 1.07 | <2.0 |
| 14 | Sep-12 | 7,700 | 84 | NA | 17 | 1.5 | 0.57 | 0.69 | <2.0 |
| 15 | Mar-13 | 8,100 | 80 | NA | 15 | 1.4 | <0.5 | 0.75 | <2.0 |
| 16 | Sep-13 | 9,800 | 66 | NA | 13 | 1.7 | <0.5 | 1.38 | <2.0 |
| 17 | Mar-14 | 5,900 | 76 | NA | 11 | 1.2 | <0.5 | 0.94 | <2.0 |
| 18 | Sep-14 | 10,000 | 110 | NA | 14 | 1.5 | 0 | 0 | 0 |
| 19 | Mar-15 | 9,500 | 200 | NA | 34 | 2.4 | 2.5 | 1.82 | <2 |
| 20 | Sep-15 | 6,200 | 110 | NA | 10 | 1.1 | 0 | 0 | 0 |
| 21 | Mar-16 | 8,200 | 80 | NA | 12 | 1.9 | <0.50 | 1.46 | <2.0 |
| 22 | Sep-16 | 8,500 | 330 | NA | 7.9 | <2.5 | <2.5 | <2.5 | <10 |

| MW-17 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Sampling Event No.** | **Date Sampled** | **TEH-d** | **TVH-g** | **TEH-mo** | **Benzene** | **Toluene** | **Ethylbenzene** | **Total Xylenes** | **MTBE** |
| **Installed in April 2004** | | | | | | | | | |
| 1 | Dec-06 | <50 | 14,000 | <200 | 3,400 | 1,100 | 480 | <0.5 | <1.0 |
| 2 | Dec-07 | 2,900 | 5,000 | NA | 1,100 | 260 | 110 | 206 | <10 |
| 3 | Mar-08 | 3,100 | 6,800 | NA | 1,200 | 110 | 91 | 94 | 21 |
| 4 | Jun-08 | 2,900 | 7,200 | NA | 1,100 | 45 | 75 | 66 | <2.0 |
| 5 | Sep-08 | 3,300 | 5,500 | NA | 900 | 63 | 69 | 69 | <10 |
| 6 | Dec-08 | 3,200 | 7,100 | NA | 1,100 | 530 | 190 | 390 | <10 |
| 7 | Mar-09 | 3,000 | 5,400 | NA | 770 | 150 | 87 | 161 | <2.0 |
| 8 | Sep-09 | 3,000 | 2,200 | NA | 120 | 3.1 | 11 | 1.6 | <2.0 |
| 9 | Mar-10 | 3,400 | 5,000 | 1,900 | 910 | 66 | 73 | 93 | <2.0 |
| 10 | Sep-10 | 2,800 | 3,500 | NA | 1,400 | 62 | 46 | 76 | <40 |
| 11 | Mar-11 | 3,900 | 6,100 | NA | 1,100 | 44 | 55 | 70 | <2.0 |
| 12 | Sep-11 | 2,400 | 4,600 | NA | 850 | 49 | 51 | 64 | <2.0 |
| 13 | Mar-12 | 2,200 | 5,800 | NA | 1,500 | 57 | 58 | 67 | <2.0 |
| 14 | Sep-12 | 1,400 | 4,800 | NA | 1,300 | 45 | 100 | 41 | <2.0 |
| 15 | Mar-13 | 2,900 | 7,200 | NA | 1,200 | 89 | 220 | 110 | <25 |
| 16 | Sep-13 | 2,100 | 8,000 | NA | 1,400 | 150 | 220 | 122 | <67 |
| 17 | Mar-14 | 2,600 | 8,600 | NA | 1,800 | 150 | 320 | 118 | <67 |
| 18 | Sep-14 | 3,000 | 7,900 | NA | 1,500 | 160 | 130 | 91 | 0 |
| 19 | Mar-15 | 3,200 | 9,800 | NA | 1,600 | 220 | 120 | 136 | 57 |
| 20 | Sep-15 | 3,700 | 8,100 | NA | 1,800 | 160 | 90 | 143 | 0 |
| 21 | Mar-16 | 2,900 | 10,000 | NA | 1,100 | 75 | 42 | 90 | <50 |
| 22 | Sep-16 | 1,900 | 7,900 | NA | 1,200 | 230 | 81.0 | 146 | <50 |

| MW-18 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Sampling Event No.** | **Date Sampled** | **TEH-d** | **TVH-g** | **TEH-mo** | **Benzene** | **Toluene** | **Ethylbenzene** | **Total Xylenes** | **MTBE** |
| **Installed in May 2004** | | | | | | | | | |
| 1 | Dec-06 | <50 | 120 | <200 | 22 | 6.2 | 3.2 | 6.2 | <2.0 |
| 2 | Dec-07 | 8,600 | <50 | NA | 0.98 | <0.5 | <0.5 | <0.5 | <2.0 |
| 3 | Mar-08 | 9,800 | <50 | NA | 0.52 | <0.5 | <0.5 | <0.5 | 2.0 |
| 4 | Jun-08 | 8,800 | <50 | NA | <0.5 | <0.5 | <0.5 | <0.5 | 3.1 |
| 5 | Sep-08 | 8,600 | <50 | NA | <0.5 | <0.5 | <0.5 | <0.5 | <2.0 |
| 6 | Dec-08 | 9,300 | <50 | NA | <0.5 | <0.5 | <0.5 | <0.5 | <2.0 |
| 7 | Mar-09 | 10,000 | <50 | NA | <0.5 | <0.5 | <0.5 | <0.5 | <2.0 |
| 8 | Sep-09 | 11,000 | <50 | NA | <0.5 | <0.5 | <0.5 | <0.5 | <2.0 |
| 9 | Mar-10 | 9,400 | <50 | 2,700 | <0.5 | <0.5 | <0.5 | <0.5 | <2.0 |
| 10 | Sep-10 | 6,400 | 1,800 | NA | 2200 | 45 | 64.0 | 78.0 | <50 |
| 11 | Mar-11 | 10,000 | 68 | NA | 5.5 | 1.1 | <0.5 | 1.3 | 17 |
| 12 | Sep-11 | 9,800 | <50 | NA | 0.58 | <0.5 | <0.5 | <0.5 | <2.0 |
| 13 | Mar-12 | 9,200 | <50 | NA | <0.5 | <0.5 | <0.5 | <0.5 | <2.0 |
| 14 | Sep-12 | 11,000 | 160 | NA | 5.1 | <0.5 | 5.7 | 0.6 | <2.0 |
| 15 | Mar-13 | 9,600 | <50 | NA | <0.5 | <0.5 | <0.5 | <0.5 | <2.0 |
| 16 | Sep-13 | 11,000 | <50 | NA | 0.52 | <0.5 | <0.5 | <0.5 | <2.0 |
| 17 | Mar-14 | 8,200 | <50 | NA | 0.52 | <0.5 | <0.5 | <0.5 | <2.0 |
| 18 | Sep-14 | 12,000 | 0 | NA | 0 | 0 | 0.0 | 0.0 | 0 |
| 19 | Mar-15 | 10,000 | 69 | NA | 6 | <0.5 | <0.5 | <0.5 | 0 |
| 20 | Sep-15 | 9,700 | 0 | NA | 0 | 0 | 0.0 | 0.0 | 0 |
| 21 | Mar-16 | 9,000 | <50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <2.0 |
| 22 | Sep-16 | 9,900 | <250 | NA | <2.5 | <2.5 | <2.5 | <2.5 | <10 |

| MW-E | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Sampling Event No.** | **Date Sampled** | **TEH-d** | **TVH-g** | **TEH-mo** | **Benzene** | **Toluene** | **Ethylbenzene** | **Total Xylenes** | **MTBE** |
| 1 | Dec-88 | 100 | 5,400 | NA | 3,200 | 690 | 97 | 330 | NA |
| 2 | May-89 | NS | NS | NS | NS | NS | NS | NS | NS |
| 3 | Feb-91 | NS | NS | NS | NS | NS | NS | NS | NS |
| 4 | Mar-04 | 470 | 810 | <500 | 340 | 6.1 | 2.2 | 7.7 | <1.0 |
| 5 | Dec-06 | 280 | 1,900 | <200 | 910 | <10 | 10 | <10 | <20 |
| 6 | Dec-07 | 6,900 | 7,000 | NA | 3,300 | 50 | 51 | 80 | <20 |
| 7 | Mar-08 | 6,300 | 2,700 | NA | 780 | 17 | 20 | 20.9 | 12 |
| 8 | Jun-08 | 5,200 | 7,400 | NA | 2,900 | 43 | 85 | 50 | <2.0 |
| 9 | Sep-08 | 7,800 | 11,000 | NA | 3,800 | 170 | 130 | 257 | <50 |
| 10 | Dec-08 | 9,400 | 9,100 | NA | 3,400 | 110 | 180 | 182 | <50 |
| 11 | Mar-09 | 5,600 | 850 | NA | 270 | 7.5 | 13 | 17.5 | <2.0 |
| 12 | Sep-09 | 6,200 | 540 | NA | 1,200 | 22 | 37 | 37.2 | <2.0 |
| 13 | Mar-10 | 3,800 | 2,400 | 5,100 | 1,000 | 20 | 37 | 26.9 | 4.9 |
| 14 | Sep-10 | 6,600 | 1,800 | NA | 2,200 | 45 | 64 | 78 | <50 |
| 15 | Mar-11 | 5,900 | 4,400 | NA | 2,600 | 46 | 64 | 90 | <50 |
| 16 | Sep-11 | 7,600 | 3,600 | NA | 4,500 | 150 | 340 | 402 | <2.0 |
| 17 | Mar-12 | 5,800 | 6,500 | NA | 2,600 | 50 | 52 | 84 | <2.0 |
| 18 | Sep-12 | 8,300 | 7,800 | NA | 5,500 | 190 | 430 | 431 | <2.0 |
| 19 | Mar-13 | 7,700 | 21,000 | NA | 5,900 | 210 | 850 | 970 | <50 |
| 20 | Sep-13 | 9,400 | 15,000 | NA | 3,800 | 120 | 470 | 351 | 200 |
| 21 | Mar-14 | 5,600 | 9,500 | NA | 3,200 | 110 | 240 | 178 | <140 |
| 22 | Sep-14 | 7,800 | 6,800 | NA | 1,800 | 55 | 86 | 87 | 0 |
| 23 | Mar-15 | 12,000 | 6,800 | NA | 2,200 | 70 | 140 | 131 | <67 |
| 24 | Sep-15 | 11,000 | 22,000 | NA | 6,400 | 230 | 750 | 810 | 120 |
| 25 | Mar-16 | 4,200 | 9,000 | NA | 1,700 | 55 | 130 | 181 | <67 |
| 26 | Sep-16 | 9,400 | 29,000 | NA | 3,500 | 190 | 360 | 370 | <670 |

| RW-1 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Sampling Event No.** | **Date Sampled** | **TEH-d** | **TVH-g** | **TEH-mo** | **Benzene** | **Toluene** | **Ethylbenzene** | **Total Xylenes** | **MTBE** |
| 1 | Dec-88 | NS | NS | NS | NS | NS | NS | NS | NS |
| 2 | May-89 | NS | NS | NS | NS | NS | NS | NS | NS |
| 3 | Feb-91 | NS | NS | NS | NS | NS | NS | NS | NS |
| 4 | Mar-04 | NS | NS | NS | NS | NS | NS | NS | NS |
| 5 | Dec-06 | <50 | 640 | <200 | 100 | 1.3 | 2 | 1.6 | <1.0 |
| 6 | Dec-07 | 2,100 | 770 | NA | 110 | <0.5 | 3.8 | 1.96 | <2.0 |
| 7 | Mar-08 | 11,000 | 890 | NA | 100 | 4.2 | 4.4 | 2.0 | <2.0 |
| 8 | Jun-08 | 1,500 | 1,200 | NA | 290 | 4.8 | 10 | 4.8 | <2.0 |
| 9 | Sep-08 | 1,900 | 1,400 | NA | 280 | 9.8 | 10 | 6.7 | <2.0 |
| 10 | Dec-08 | 54,000 | 1,100,000 | NA | 500 | <250 | 3,200 | 530 | <1,000 |
| 11 | Mar-09 | 2,800 | 950 | NA | 180 | 3.6 | 13 | 3 | <2.0 |
| 12 | Sep-09 | 770 | 350 | NA | 120 | 3.1 | 11 | 2 | <2.0 |
| 13 | Mar-10 | 810 | 200 | <300 | <0.5 | <0.5 | <0.5 | <0.5 | <2.0 |
| 14 | Sep-10 | 980 | 860 | NA | 170 | 4.0 | 5.6 | 2.8 | 8.0 |
| 15 | Mar-11 | 810 | 310 | NA | 15 | 4.4 | 2.5 | 3.9 | 8.8 |
| 16 | Sep-11 | 440 | 230 | NA | 28 | 2.7 | 1.7 | 1.5 | <2.0 |
| 17 | Mar-12 | 1,900 | 502 | NA | 70 | 2.0 | 2.2 | 2.1 | <2.0 |
| 18 | Sep-12 | 890 | 790 | NA | 150 | 9.6 | 5.5 | 12.0 | <2.0 |
| 19 | Mar-13 | 2,800 | 280 | NA | 2.7 | 1.7 | 2.5 | 1.9 | <2.0 |
| 20 | Sep-13 | 1,500 | 420 | NA | 10.2 | 6.0 | <0.5 | 5.7 | 8.2 |
| 21 | Mar-14 | 4,700 | 410 | NA | 1.3 | 1.0 | 2.4 | 3.4 | 2.8 |
| 22 | Sep-14 | 1,000 | 440 | NA | 41 | 0.9 | 1.5 | 2.2 | 2.8 |
| 23 | Mar-15 | 2,300 | 710 | NA | 100 | 3.8 | 6.6 | 131.0 | <2 |
| 24 | Sep-15 | 660 | 450 | NA | 75 | 4.2 | 1.4 | 0.0 | 0.0 |
| 25 | Mar-16 | 830 | 260 | NA | 7.3 | <0.540 | 1.9 | 1.1 | <2.0 |
| 26 | Sep-16 | 1,500 | 1,100 | NA | 49 | 4.6 | 6.5 | 8.9 | <2.0 |

Notes:

The 1988, 1989, and 1991 sampling events were conducted by Groundwater Technology, Inc.

The 2004 and 2006 sampling events were conducted by PES Environmental.

NS = Not sampled

NA = Not analyzed for this constituent

All concentrations shown in µg/L

# APPENDIX B

## Groundwater Monitoring
## Field Data Sheets

# WELL GAUGING DATA

Project # 2007-65 Date 9-30-16 Client Stellar Env.

Site 6400 Christie Ave Emeryville CA

| Well ID | Time | Well Size (in.) | Sheen / Odor | Depth to Immiscible Liquid (ft.) | Thickness of Immiscible Liquid (ft.) | Volume of Immiscibles Removed (ml) | Depth to water (ft.) | Depth to well bottom (ft.) | Survey Point: TOB or TOC | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| MW-4 | 0802 | 2 | | | | | 8.48 | 24.90 | | |
| MW-5 | 0808 | 2 | | | | | 10.09 | 24.87 | | |
| MW-6 | 0815 | 2 | | | | | 7.75 | 23.34 | | |
| MW-17 | 0826 | 3/4 | odor | | | | 9.62 | 19.54 | | |
| MW-7 | 0805 | 3/4 | | | | | 10.77 | 19.89 | | |
| MW-9 | 0812 | 3/4 | | | | | 10.02 | 19.67 | | |
| MW-11 | 0819 | 3/4 | | | | | 10.39 | 19.70 | | |
| MW-12 | 0827 | 3/4 | | | | | 9.28 | 19.00 | | |
| MW-16 | 0836 0815 | 3/4 | | | | | 10.31 | 19.02 | | |
| MW-18 | 0844 | 3/4 | | | | | 9.61 | 19.50 | | |
| MW-E | 0857 | 2 | | | | | 10.15 | 47.46 | | |
| MW-8 | 0806 | 3/4 | odor | 9.89 | 0.01 | | 9.90 | — | | |
| MW-10 | 0815 | 3/4 | odor | 9.27 | 0.01 | | 9.28 | — | | |
| MW-13 | 0822 | 3/4 | odor | 9.35 | 0.01 | | 9.36 | — | | |
| MW-14 | 0830 | 3/4 | | | | | 9.05 | 19.51 | | |
| MW-15 | 0838 | 3/4 | odor | 9.75 | 0.01 | | 9.76 | — | | |
| MW-3 | 0847 | 2 | odor | 10.99 | 0.02 | | 11.01 | — | | |

# WELL GAUGING DATA

Project # **2007-65** Date 9-30-16 Client Stellar Env

Site 6400 Christie Ave Emeryville CA

| Well ID | Time | Well Size (in.) | Sheen / Odor | Depth to Immiscible Liquid (ft.) | Thickness of Immiscible Liquid (ft.) | Volume of Immiscibles Removed (ml) | Depth to water (ft.) | Depth to well bottom (ft.) | Survey Point: TOB or TOC | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| RW-1 | 0854 | 10 | odor | SPH TO THICK FOR READING | | | 9.90 | — | | |
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# WELL MONITORING DATA SHEET

| | |
|---|---|
| Project #: **2007-65** | Client: Stellar Environmental Solutions @ Bay Center Apts |
| Sampler: MM / DM | Date: 9/30/2016 |
| Well I.D.: MW-E | Well Diameter: (2) 3 4 6 8 ____ |
| Total Well Depth (TD): 47.40 | Depth to Water (DTW): 10.15 |
| Depth to Free Product: | Thickness of Free Product (feet): |
| Referenced to: (PVC) Grade | D.O. Meter (if req'd): YSI HACH |
| DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 11.64 | |

Purge Method: Bailer 7.95 Waterra
Disposable Bailer Peristaltic
Positive Air Displacement Extraction Pump
Electric Submersible Other Hand check

Sampling Method: Bailer
Disposable Bailer
Extraction Port
Dedicated Tubing
Other: hand check

6 (Gals.) X 3 = 18 Gals.
1 Case Volume | Specified Volumes | Calculated Volume

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

| Time | Temp (°F or °C) | pH | Cond. (mS or µS) | Turbidity (NTUs) | Gals. Removed | Observations |
|---|---|---|---|---|---|---|
| 1118 | 70.4 | 8.30 | 3118 | 499 | 6 | |
| 1128 | 69.3 | 8.17 | 3105 | 513 | 12 | |
| | well | dewatered | @ | 13.5 | gal | |
| | | | | | | |
| 1200 | 69.1 | 8.05 | 3011 | 16 | — | |

Did well dewater? (Yes) No Gallons actually evacuated: 13.5

Sampling Date: 9/30/16 Sampling Time: 1200 Depth to Water: 17.51

Sample I.D.: MW-E Laboratory: Curtis & Tompkins

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

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

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

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

# WELL MONITORING DATA SHEET

| | |
|---|---|
| Project #: **2007-65** | Client: Stellar Environmental Solutions @ Bay Center Apts |
| Sampler: MM / DM | Date: 9/30/2016 |
| Well I.D.: MW- 3 | Well Diameter: (2) 3 4 6 8 ____ |
| Total Well Depth (TD): — | Depth to Water (DTW): 11.01 |
| Depth to Free Product: 10.99 | Thickness of Free Product (feet): 0.02 |
| Referenced to: (PVC) Grade | D.O. Meter (if req'd): YSI HACH |
| DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: | |

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

Sampling Method: Bailer; Disposable Bailer; Extraction Port; Dedicated Tubing; Other: new Tubing

| ____(Gals.) X | ____ | = ____ Gals. |
|---|---|---|
| 1 Case Volume | Specified Volumes | Calculated Volume |

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

| Time | Temp (°F or °C) | pH | Cond. (mS or µS) | Turbidity (NTUs) | Gals. Removed | Observations |
|---|---|---|---|---|---|---|
| 1100 | - Start | purge | | | | DTW= 11.09 |
| 1106 | - Stop | purge | | | | DTW= 11.19 |
| | | | | | | |
| | | | | | | |
| | | | | | | |

Did well dewater? Yes (No) Gallons actually evacuated: .20

Sampling Date: 9/30/16 Sampling Time: 1107 Depth to Water: 11.19

Sample I.D.: MW- 3 Laboratory: Curtis & Tompkins

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

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

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

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

# WELL MONITORING DATA SHEET

| | |
|---|---|
| Project #: 2007-65 | Client: Stellar Environmental Solutions @ Bay Center Apts |
| Sampler: MM / DO | Date: 9/30/2016 |
| Well I.D.: MW- 4 | Well Diameter: (2) 3 4 6 8 ____ |
| Total Well Depth (TD): 24.90 | Depth to Water (DTW): 8.48 |
| Depth to Free Product: — | Thickness of Free Product (feet): — |
| Referenced to: (PVC) Grade | D.O. Meter (if req'd): YSI HACH |
| DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: | |

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

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

2.6 (Gals.) X 3 = 7.9 Gals.
1 Case Volume | Specified Volumes | Calculated Volume

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

| ~~Time~~ Time | Temp (°F or °C) | pH | Cond. (mS or µS) | Turbidity (NTUs) | Gals. Removed | Observations |
|---|---|---|---|---|---|---|
| 1025 | 18.9 | 7.26 | 1520 | 6 | 2.6 | clear, odor |
| 1035 | 19.2 | 7.54 | 1501 | 7 | 5.2 | ↓ |
| 1045 | 19.8 | 7.41 | 1474 | 6 | 7.9 | ↓ |
| | | | | | | |
| | | | | | | |

Did well dewater? Yes (No) Gallons actually evacuated: 7.9

Sampling Date: 9/30/16 Sampling Time: 1050 Depth to Water: 8.48

Sample I.D.: MW- 4 Laboratory: Curtis & Tompkins

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

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

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

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

# WELL MONITORING DATA SHEET

| | |
|---|---|
| Project #: 2007-65 | Client: Stellar Environmental Solutions @ Bay Center Apts |
| Sampler: MM / DO | Date: 9/30/2016 |
| Well I.D.: MW- 5 | Well Diameter: (2) 3 4 6 8 ____ |
| Total Well Depth (TD): 24.87 | Depth to Water (DTW): 10.09 |
| Depth to Free Product: | Thickness of Free Product (feet): |
| Referenced to: (PVC) Grade | D.O. Meter (if req'd): YSI HACH |
| DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 13.05 | |

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

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

| 2.4 (Gals.) X | 3 | = | 7.1 Gals. |
|---|---|---|---|
| 1 Case Volume | Specified Volumes | | Calculated Volume |

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

| Time | Temp (°F or °C) | pH | Cond. (mS or µS) | Turbidity (NTUs) | Gals. Removed | Observations |
|---|---|---|---|---|---|---|
| 1115 | 19.3 | 7.65 | 2393 | 85 | 2.4 | Lightly cloudy & odor, grey |
| 1123 | Dewatered @ | | | | 4.4 | ↓ |
| | | | | | | ↓ |
| 1355 | 19.4 | 7.61 | 2324 | 41 | Grab | DTW: 10.30 |
| | | | | | | |

Did well dewater? (Yes) No — Gallons actually evacuated: 4.4

Sampling Date: 9/30/16 — Sampling Time: 1355 — Depth to Water: 10.30

Sample I.D.: MW- 5 — Laboratory: Curtis & Tompkins

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

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

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

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

# WELL MONITORING DATA SHEET

| | |
|---|---|
| Project #: 2007-65 | Client: Stellar Environmental Solutions @ Bay Center Apts |
| Sampler: MM / DO | Date: 9/30/2016 |
| Well I.D.: MW- 6 | Well Diameter: (2) 3 4 6 8 ____ |
| Total Well Depth (TD): 23.34 | Depth to Water (DTW): 7.75 |
| Depth to Free Product: — | Thickness of Free Product (feet): — |
| Referenced to: (PVC) Grade | D.O. Meter (if req'd): YSI HACH |
| DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 10.87 | |

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

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

| 2.5 (Gals.) X | 3 | = | 7.5 Gals. |
|---|---|---|---|
| 1 Case Volume | Specified Volumes | | Calculated Volume |

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

| Time | Temp (°F or °C) | pH | Cond. (mS or µS) | Turbidity (NTUs) | Gals. Removed | Observations |
|---|---|---|---|---|---|---|
| 1145 | 19.1 | 11.37 | 1569 | 5 | 2.5 | clear, odor, green |
| 1148 | 18.6 | 11.28 | 1614 | 4 | 5.0 | |
| 1208 | 18.6 | 11.41 | 1606 | 4 | 7.5 | |
| | | | | | | |
| | | | | | | |

Did well dewater? Yes (No) Gallons actually evacuated: 7.5

Sampling Date: 9/30/16 Sampling Time: 1213 Depth to Water: 7.80

Sample I.D.: MW- 6 Laboratory: Curtis & Tompkins

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

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

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

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

# WELL MONITORING DATA SHEET

| | |
|---|---|
| Project #: 2007-65 | Client: Stellar Environmental Solutions @ Bay Center Apts |
| Sampler: (MM) / ____ | Date: 9/30/2016 |
| Well I.D.: MW- 7 | Well Diameter: 2 3 4 6 8 3/4 |
| Total Well Depth (TD): 19.89 | Depth to Water (DTW): 10.77 |
| Depth to Free Product: | Thickness of Free Product (feet): |
| Referenced to: (PVC) Grade | D.O. Meter (if req'd): YSI HACH |
| DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 12.59 | |

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

Sampling Method: Bailer; Disposable Bailer; Extraction Port; Dedicated Tubing; Other: NEW TUBING

0.2 (Gals.) X 3 = 0.6 Gals.
1 Case Volume | Specified Volumes | Calculated Volume

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

| Time | Temp (°F or (°C)) | pH | Cond. ((mS) or µS) | Turbidity (NTUs) | Gals. Removed | Observations |
|---|---|---|---|---|---|---|
| 0938 | 16.3 | 8.12 | 11.49 | 21 | 0.2 | Brown |
| 0941 | 16.2 | 8.15 | 11.47 | 39 | 0.4 | ↓ |
| 0943 | 16.2 | 8.16 | 11.46 | 44 | 0.6 | ↓ |
| | | | | | | |
| | | | | | | |

Did well dewater? Yes (No) Gallons actually evacuated: 0.6

Sampling Date: 9/30/16 Sampling Time: 0955 Depth to Water: 12.42

Sample I.D.: MW- 7 Laboratory: Curtis & Tompkins

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

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

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

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

# WELL MONITORING DATA SHEET

| | |
|---|---|
| Project #: 2007-65 | Client: Stellar Environmental Solutions @ Bay Center Apts |
| Sampler: MM / DM | Date: 9/30/2016 |
| Well I.D.: MW- 8 | Well Diameter: 2 3 4 6 8 3/4 |
| Total Well Depth (TD): — | Depth to Water (DTW): 9.90 |
| Depth to Free Product: 9.89 | Thickness of Free Product (feet): 0.01 |
| Referenced to: (PVC) Grade | D.O. Meter (if req'd): YSI HACH |
| DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: ✓ | |

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

Sampling Method: Bailer; Disposable Bailer; Extraction Port; Dedicated Tubing; Other: per pump / new Tubg

| ✓ (Gals.) X | ✓ | = ✓ Gals. |
|---|---|---|
| 1 Case Volume | Specified Volumes | Calculated Volume |

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

| Time | Temp (°F or °C) | pH | Cond. (mS or µS) | Turbidity (NTUs) | Gals. Removed | Observations |
|---|---|---|---|---|---|---|
| 0925 | - Started | | purge — | | | DTW = 9.90 |
| 0931 | - Finished | | purge — | | | DTW = 10.15 |
| | | | | | | |
| | | | | | | |
| | | | | | | |

Did well dewater? Yes (No) Gallons actually evacuated: .15

Sampling Date: 9 / / 16 Sampling Time: 0933 Depth to Water: 10.15

Sample I.D.: MW- 8 Laboratory: Curtis & Tompkins

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

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

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

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

# WELL MONITORING DATA SHEET

| | |
|---|---|
| Project #: 2007-65 | Client: Stellar Environmental Solutions @ Bay Center Apts |
| Sampler: MM | Date: 9/30/2016 |
| Well I.D.: MW- 9 | Well Diameter: 2 3 4 6 8 3/4 |
| Total Well Depth (TD): 19.67 | Depth to Water (DTW): 10.02 |
| Depth to Free Product: | Thickness of Free Product (feet): |
| Referenced to: (PVC) Grade | D.O. Meter (if req'd): YSI HACH |
| DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 11.95 | |

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

Sampling Method: Bailer; Disposable Bailer; Extraction Port; Dedicated Tubing; Other: NEW TUBING

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

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

| Time | Temp (°F or °C) | pH | Cond. (mS or (µS)) | Turbidity (NTUs) | Gals. Removed | Observations |
|---|---|---|---|---|---|---|
| 1008 | 16.5 | 9.39 | 2737 | 11 | 0.2 | clear, odor |
| 1009 | 16.5 | 9.45 | 2659 | 10 | 0.4 | ↓ ↓ |
| 1010 | 16.5 | 9.46 | 2654 | 9 | 0.6 | ↓ ↓ |
| | | | | | | |
| | | | | | | |

Did well dewater? Yes (No) Gallons actually evacuated: 0.6

Sampling Date: 9/30/16 Sampling Time: 1015 Depth to Water: 11.31

Sample I.D.: MW- 9 Laboratory: Curtis & Tompkins

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

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

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

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

# WELL MONITORING DATA SHEET

| | |
|---|---|
| Project #: 2007-65 | Client: Stellar Environmental Solutions @ Bay Center Apts |
| Sampler: MM / BM | Date: 9/30/2016 |
| Well I.D.: MW-10 | Well Diameter: 2 3 4 6 8 3/4 |
| Total Well Depth (TD): — | Depth to Water (DTW): 9.30 |
| Depth to Free Product: 9.27 | Thickness of Free Product (feet): 0.03 |
| Referenced to: (PVC) Grade | D.O. Meter (if req'd): YSI HACH |
| DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: / | |

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

Sampling Method: Bailer; Disposable Bailer; Extraction Port; Dedicated Tubing; Other: New Tubing

/ (Gals.) X / = / Gals.
1 Case Volume | Specified Volumes | Calculated Volume

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

| Time | Temp (°F or °C) | pH | Cond. (mS or µS) | Turbidity (NTUs) | Gals. Removed | Observations |
|---|---|---|---|---|---|---|
| 0945 | - Start | | Purge | - | | DTW = 9.30 |
| 0951 | - End | | Purge | - | | DTW = 9.47 |
| | | | | | | |
| | | | | | | |
| | | | | | | |

Did well dewater? Yes (No) Gallons actually evacuated: .15

Sampling Date: 9/30/16 Sampling Time: 0953 Depth to Water: 9.47

Sample I.D.: MW-10 Laboratory: Curtis & Tompkins

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

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

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

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

# WELL MONITORING DATA SHEET

| | |
|---|---|
| Project #: 2007-65 | Client: Stellar Environmental Solutions @ Bay Center Apts |
| Sampler: MM / ____ | Date: 9/30/2016 |
| Well I.D.: MW-11 | Well Diameter: 2 3 4 6 8 3/4 |
| Total Well Depth (TD): 19.70 | Depth to Water (DTW): 10.39 |
| Depth to Free Product: | Thickness of Free Product (feet): |
| Referenced to: (PVC) Grade | D.O. Meter (if req'd): YSI HACH |
| DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 12.25 | |

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

Sampling Method: Bailer; Disposable Bailer; Extraction Port; Dedicated Tubing; Other: New Tubing

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

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

| Time | Temp (°F or (°C)) | pH | Cond. (mS or (µS)) | Turbidity (NTUs) | Gals. Removed | Observations |
|---|---|---|---|---|---|---|
| 1212 | 16.0 | 8.45 | 2166 | 30 | 0.2 | clear odor |
| 1214 | 16.0 | 8.01 | 2144 | 14 | 0.4 | ↓ ↓ |
| 1216 | 16.1 | 7.89 | 2141 | 10 | 0.6 | |
| | | | | | | |
| | | | | | | |

Did well dewater? Yes (No) Gallons actually evacuated: 0.6

Sampling Date: 9/30/16 Sampling Time: 1225 Depth to Water: 11.42

Sample I.D.: MW-11 Laboratory: Curtis & Tompkins

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

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

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

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

# WELL MONITORING DATA SHEET

| | |
|---|---|
| Project #: 2007-65 | Client: Stellar Environmental Solutions @ Bay Center Apts |
| Sampler: MM / ____ | Date: 9/30/2016 |
| Well I.D.: MW-12 | Well Diameter: 2 3 4 6 8 3/4 |
| Total Well Depth (TD): 19.00 | Depth to Water (DTW): 9.28 |
| Depth to Free Product: | Thickness of Free Product (feet): |
| Referenced to: (PVC) Grade | D.O. Meter (if req'd): YSI HACH |
| DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 11.22 | |

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

Sampling Method: Bailer; Disposable Bailer; Extraction Port; Dedicated Tubing; Other: NEW Tubing

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

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

| Time | Temp (°F or (°C)) | pH | Cond. (mS or (µS)) | Turbidity (NTUs) | Gals. Removed | Observations |
|---|---|---|---|---|---|---|
| 1113 | 15.8 | 7.81 | 1939 | 15 | .2 | clear odor |
| 1117 | 15.9 | 7.47 | 1898 | 8 | .4 | |
| 1121 | 15.9 | 7.42 | 1890 | 6 | .6 | ↓ ↓ |
| | | | | | | |
| | | | | | | |

Did well dewater? Yes (No) Gallons actually evacuated: 0.6

Sampling Date: 9/30/16 Sampling Time: 1125 Depth to Water: 9.59

Sample I.D.: MW-12 Laboratory: Curtis & Tompkins

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

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

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

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

# WELL MONITORING DATA SHEET

| | |
|---|---|
| Project #: 2007-65 | Client: Stellar Environmental Solutions @ Bay Center Apts |
| Sampler: MM / DY | Date: 9/30/2016 |
| Well I.D.: MW- 13 | Well Diameter: 2 3 4 6 8 3/4 |
| Total Well Depth (TD): | Depth to Water (DTW): 9.36 |
| Depth to Free Product: 9.35 | Thickness of Free Product (feet): 0.01 |
| Referenced to: (PVC) Grade | D.O. Meter (if req'd): YSI HACH |
| DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: ✓ | |

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

Sampling Method: Bailer; Disposable Bailer; Extraction Port; Dedicated Tubing; Other: New Tubing

| ✓ (Gals.) X | ✓ = | ✓ Gals. |
|---|---|---|
| 1 Case Volume | Specified Volumes | Calculated Volume |

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

| Time | Temp (°F or °C) | pH | Cond. (mS or µS) | Turbidity (NTUs) | Gals. Removed | Observations |
|---|---|---|---|---|---|---|
| 1104 | - Start | | purge - | | | DTW= 9.36 |
| 1010 | - Stop | | purge - | | | DTW= 9.44 |
| | | | | | | |
| | | | | | | |
| | | | | | | |

Did well dewater? Yes (No) Gallons actually evacuated: .15

Sampling Date: 9/30/16 Sampling Time: 1011 Depth to Water: 9.44

Sample I.D.: MW- 13 Laboratory: Curtis & Tompkins

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

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

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

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

# WELL MONITORING DATA SHEET

| | |
|---|---|
| Project #: **2007-65** | Client: Stellar Environmental Solutions @ Bay Center Apts |
| Sampler: MM / ____ | Date: 9/30/2016 |
| Well I.D.: MW- 14 | Well Diameter: 2 3 4 6 8 3/4 |
| Total Well Depth (TD): 19.51 | Depth to Water (DTW): 9.05 |
| Depth to Free Product: | Thickness of Free Product (feet): |
| Referenced to: (PVC) Grade | D.O. Meter (if req'd): YSI HACH |
| DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 11.14 | |

Purge Method: Bailer 10.46 Waterra
Disposable Bailer Peristaltic
Positive Air Displacement Extraction Pump
Electric Submersible Other____

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

0.2 (Gals.) X 3 = 0.6 Gals.
1 Case Volume | Specified Volumes | Calculated Volume

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

| Time | Temp (°F or °C) | pH | Cond. (mS or µS) | Turbidity (NTUs) | Gals. Removed | Observations |
|---|---|---|---|---|---|---|
| 1213 | 69.4 | 7.81 | 2471 | 36 | 0.2 | |
| 1216 | 69.7 | 7.73 | 2505 | 41 | 0.4 | |
| 1219 | 69.7 | 7.79 | 2528 | 19 | 0.6 | |
| | | | | | | |
| | | | | | | |

Did well dewater? Yes (No) Gallons actually evacuated: 0.6

Sampling Date: 9/30/16 Sampling Time: 1220 Depth to Water: 11.09

Sample I.D.: MW- 14 Laboratory: Curtis & Tompkins

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

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

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

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

# WELL MONITORING DATA SHEET

| | |
|---|---|
| Project #: 2007-65 | Client: Stellar Environmental Solutions @ Bay Center Apts |
| Sampler: MM / DM | Date: 9/30/2016 |
| Well I.D.: MW- 15 | Well Diameter: 2 3 4 6 8 3/4 |
| Total Well Depth (TD): | Depth to Water (DTW): 9.76 |
| Depth to Free Product: 9.75 | Thickness of Free Product (feet): 0.01 |
| Referenced to: (PVC) Grade | D.O. Meter (if req'd): YSI HACH |
| DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: | |

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

Sampling Method: Bailer, Disposable Bailer, Extraction Port, Dedicated Tubing, Other: New Tubing

| ___ (Gals.) X | ___ | = ___ Gals. |
|---|---|---|
| 1 Case Volume | Specified Volumes | Calculated Volume |

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

| Time | Temp (°F or °C) | pH | Cond. (mS or µS) | Turbidity (NTUs) | Gals. Removed | Observations |
|---|---|---|---|---|---|---|
| 1023 | -START | | PURGE - | | | DTW = 9.76 |
| 1029 | -STOP | | PURGE - | | | DTW = 9.93 |
| | | | | | | |
| | | | | | | |
| | | | | | | |

Did well dewater? Yes (No) Gallons actually evacuated: .15

Sampling Date: 9/30/16 Sampling Time: 1030 Depth to Water: 9.93

Sample I.D.: MW- 15 Laboratory: Curtis & Tompkins

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

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

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

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

# WELL MONITORING DATA SHEET

| | |
|---|---|
| Project #: 2007-65 | Client: Stellar Environmental Solutions @ Bay Center Apts |
| Sampler: MM | Date: 9/30/2016 |
| Well I.D.: MW-16 | Well Diameter: 2 3 4 6 8 (3/4) |
| Total Well Depth (TD): 19.02 | Depth to Water (DTW): 10.31 |
| Depth to Free Product: | Thickness of Free Product (feet): |
| Referenced to: (PVC) Grade | D.O. Meter (if req'd): YSI HACH |
| DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 12.05 | |

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

Sampling Method: Bailer; Disposable Bailer; Extraction Port; Dedicated Tubing; Other: New Tubing

| 0.2 (Gals.) X | 3 | = | 0.6 Gals. |
|---|---|---|---|
| 1 Case Volume | Specified Volumes | | Calculated Volume |

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

| Time | Temp (°F or (°C)) | pH | Cond. (mS or µS) | Turbidity (NTUs) | Gals. Removed | Observations |
|---|---|---|---|---|---|---|
| 1143 | 16.2 | 10.02 | ~~10.02~~ 2882 | 393 | 0.2 | cloudy odor |
| 1145 | 16.4 | 10.19 | 2767 | 112 | 0.4 | " |
| 1147 | 16.4 | 10.30 | 2777 | 88 | 0.6 | " |
| | | | | | | |
| | | | | | | |

Did well dewater? Yes (No) Gallons actually evacuated: 0.6

Sampling Date: 9/30/16 Sampling Time: 1155 Depth to Water: 10.92

Sample I.D.: MW-16 Laboratory: Curtis & Tompkins

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

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

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

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

# WELL MONITORING DATA SHEET

| | |
|---|---|
| Project #: **2007-65** | Client: Stellar Environmental Solutions @ Bay Center Apts |
| Sampler: MM / DO | Date: 9/30/2016 |
| Well I.D.: MW- 17 | Well Diameter: 2 3 4 6 8 3/4" |
| Total Well Depth (TD): 19.54 | Depth to Water (DTW): 9.62 |
| Depth to Free Product: | Thickness of Free Product (feet): |
| Referenced to: (PVC) Grade | D.O. Meter (if req'd): YSI HACH |
| DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 11.60 | |

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

Sampling Method: Bailer, Disposable Bailer, Extraction Port, Dedicated Tubing, Other:_____

29.50Z 88.30Z

0.23 (Gals.) X 3 = 0.68 Gals.
1 Case Volume | Specified Volumes | Calculated Volume

| Well Diameter | Multiplier | Well Diameter | Multiplier |
|---|---|---|---|
| 1" | 0.04 | 4" | 0.65 |
| 2" | 0.16 | 6" | 1.47 |
| 3" | 0.37 | Other 3/4" | radius² * 0.163 0.023 r = 0.375 |

| Time | Temp (°F or (°C)) | pH | Cond. (mS or (µS)) | Turbidity (NTUs) | Gals. Removed | Observations |
|---|---|---|---|---|---|---|
| 1320 | 19.4 | 7.80 | 850 | 4 | 0.23 | clear, odor |
| 1326 | 19.5 | 7.36 | 873 | 2 | 0.46 | ↓ |
| 1332 | 19.3 | 7.29 | 895 | 2 | 0.68 | ↓ |
| | | | | | | |
| | | | | | | |

Did well dewater? Yes No Gallons actually evacuated: 0.68

Sampling Date: 9/30/16 Sampling Time: 1337 Depth to Water: 9.62

Sample I.D.: MW- 17 Laboratory: Curtis & Tompkins

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

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

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

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

# WELL MONITORING DATA SHEET

| | |
|---|---|
| Project #: **2007-65** | Client: Stellar Environmental Solutions @ Bay Center Apts |
| Sampler: MM | Date: 9/30/2016 |
| Well I.D.: MW-18 | Well Diameter: 2 3 4 6 8 3/4 |
| Total Well Depth (TD): 19.50 | Depth to Water (DTW): 9.61 |
| Depth to Free Product: | Thickness of Free Product (feet): |
| Referenced to: (PVC) Grade | D.O. Meter (if req'd): YSI HACH |
| DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 11.58 | |

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

Sampling Method: Bailer; Disposable Bailer; Extraction Port; Dedicated Tubing; Other: NEW Tubing

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

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

| Time | Temp (°F or (°C)) | pH | Cond. (mS or (µS)) | Turbidity (NTUs) | Gals. Removed | Observations |
|---|---|---|---|---|---|---|
| 1036 | 16.0 | 6.49 | 6856 | >1000 | ,2 | cloudy, odor |
| 1038 | 16.0 | 6.72 | 6575 | >1000 | ,4 | ↓ ↓ |
| 1040 | 16.0 | 6.75 | 66089 | >1000 | ,6 | |
| | | | | | | |
| | | | | | | |

Did well dewater? Yes (No) Gallons actually evacuated: 0.6

Sampling Date: 9/30/16 Sampling Time: 1045 Depth to Water: 10.97

Sample I.D.: MW-18 Laboratory: Curtis & Tompkins

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

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

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

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

# ELL MONITORING DATA SHEET

| | |
|---|---|
| Project #: 2007-65 | Client: Stellar Environmental Solutions @ Bay Center Apts |
| Sampler: MM / DM | Date: 9/30/2016 |
| Well I.D.: ~~MW-~~ RW-1 | Well Diameter: 2 3 4 6 8 10' |
| Total Well Depth (TD): | Depth to Water (DTW): 9.90 |
| Depth to Free Product: | Thickness of Free Product (feet): |
| Referenced to: (PVC) Grade | D.O. Meter (if req'd): YSI HACH |
| DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: | |

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

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

_____(Gals.) X _____ = _____ Gals.
1 Case Volume | Specified Volumes | Calculated Volume

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

| Time | Temp (°F or °C) | pH | Cond. (mS or µS) | Turbidity (NTUs) | Gals. Removed | Observations |
|---|---|---|---|---|---|---|
| 1042 | — START | | purge — | | | DTW = 9.90 |
| 1048 | — STOP | | purge — | | | DTW = 9.90 |
| | | | | | | |
| | | | | | | |
| | | | | | | |

Did well dewater? Yes (No) Gallons actually evacuated: ~30

Sampling Date: 9/30/16 Sampling Time: ~~1054~~ 1050 Depth to Water: 9.90

Sample I.D.: ~~MW-~~ RW-1 Laboratory: Curtis & Tompkins

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

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

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

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

# WELLHEAD INSPECTION CHECKLIST



Client Stellar Env. Date 9/30/16

Site Address 6400 Christie Ave Emeryville CA

Job Number 160930-MM1 Technician MM, DM, DC

| Well ID | Well Inspected - No Corrective Action Required | Water Bailed From Wellbox | Wellbox Components Cleaned | Cap Replaced | Lock Replaced | Other Action Taken (explain below) | Well Not Inspected (explain below) | Repair Order Submitted |
|---|---|---|---|---|---|---|---|---|
| MW-4 | X | | | | NL | | | |
| MW-5 | X | | | | NL | | | |
| MW-6 | X | | | | NL | | | |
| MW-17 | | | | | | X | | |
| MW-7 | | | | | | X | | |
| MW-9 | | | | | | X | | |
| MW-11 | X | | | | | | | |
| MW-12 | X | | | | | | | |
| MW-16 | | | | | | X | | |
| MW-18 | X | | | | | | | |
| MW-E | | | | | | X | | |
| MW-8 | X | | | | | | | |
| MW-10 | X | | | | | | | |
| MW-13 | X | | | | | | | |
| MW-14 | X | | | | | | | |
| MW-15 | X | | | | | | | |

NOTES: MW-7 - 1/2 bolts, MW-E - 2/2 screws

MW-9 - 1/2 bolts

MW-16 - 1/2 bolts

MW-17 - 1/2 bolts

# WELLHEAD INSPECTION CHECKLIST



Client Stellar Env. Date 9-30-16

Site Address 6400 Christie Ave Emeryville CA

Job Number 160930-MM1 Technician MM, DM, DO

| Well ID | Well Inspected - No Corrective Action Required | Water Bailed From Wellbox | Wellbox Components Cleaned | Cap Replaced | Lock Replaced | Other Action Taken (explain below) | Well Not Inspected (explain below) | Repair Order Submitted |
|---|---|---|---|---|---|---|---|---|
| MW-3 | X | | | | NC | | | |
| | | | | | | | | |
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NOTES:

# TEST EQUIPMENT CALIBRATION LOG

| PROJECT NAME Bay Center Apt. Emeryville | | | | PROJECT NUMBER 160930-MM1 | | | |
|---|---|---|---|---|---|---|---|
| EQUIPMENT NAME | EQUIPMENT NUMBER | DATE/TIME OF TEST | STANDARDS USED | EQUIPMENT READING | CALIBRATED TO: OR WITHIN 10%: | TEMP. | INITIALS |
| Myron L Ultrameter | 62/5733 | 9-30-16 0845 | pH 7.0 10.0 4.0 | pH 7.04 10.01 4.00 | Yes | | MM |
| ↓ | ↓ | ↓ | Cond. 3900 µS | Cond 3902 µS | Yes | | MM |
| | | | | | | | |
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# TEST EQUIPMENT CALIBRATION LOG

| PROJECT NAME Bay Center Apt Emeryville, CA | | | | PROJECT NUMBER 160930-MM | | | |
|---|---|---|---|---|---|---|---|
| EQUIPMENT NAME | EQUIPMENT NUMBER | DATE/TIME OF TEST | STANDARDS USED | EQUIPMENT READING | CALIBRATED TO: OR WITHIN 10%: | TEMP. | INITIALS |
| Myron L Ultrameter II | ~~6223641~~ 6219621 | 09/30/16 0930 | pH 7.00<br>10.00<br>4.00 | 6.99<br>10.01<br>4.00 | Y<br>Y<br>Y | | DO |
| | | | Cond 3900 | 3898 | Y | | DO |
| | | | | | | | |
| | | | | | | | |
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# SPH or Purge Water Drum Log

Client: Stauffer

Site Address: 6900 CHRISTIE AVE, EMERYVILLE, CA

| STATUS OF DRUM(S) UPON ARRIVAL | | | | | | |
|---|---|---|---|---|---|---|
| Date | 3/30/15 | 3/31/16 | 9-30-16 | | | |
| Number of drum(s) empty: | 3 | 5 | 2 | | | |
| Number of drum(s) 1/4 full: | | | | | | |
| Number of drum(s) 1/2 full: | | | | | | |
| Number of drum(s) 3/4 full: | | | | | | |
| Number of drum(s) full: | | | | | | |
| Total drum(s) on site: | 3 + 1 BAKER (1100 gal) | 5 + 1 Baker | 2 + 1 BAKER | | | |
| Are the drum(s) properly labeled? | yes | Y | Y | | | |
| Drum ID & Contents: | purge H2O | purge H2O → | | | | |
| If any drum(s) are partially or totally filled, what is the first use date: | NA | N/A | | | | |

**- If you add any SPH to an empty or partially filled drum, drum must have at least 20 gals. of Purgewater or DI Water.**

**-If drum contains SPH, the drum MUST be steel AND labeled with the appropriate label.**

**-All BTS drums MUST be labeled appropriately.**

| STATUS OF DRUM(S) UPON DEPARTURE | | | | | | |
|---|---|---|---|---|---|---|
| Date | 3/30/15 | 3/31/16 | 9-30-16 | | | |
| Number of drums empty: | 3 | 5 | 1 | | | |
| Number of drum(s) 1/4 full: | | | | | | |
| Number of drum(s) 1/2 full: | | | 1 | | | |
| Number of drum(s) 3/4 full: | | | | | | |
| Number of drum(s) full: | | | | | | |
| Total drum(s) on site: | 3+1 BAKER (1100 gal) | 5+ Baker | 2 + BAKER | | | |
| Are the drum(s) properly labeled? | yes | Y | Y | | | |
| Drum ID & Contents: | purged | purge H2O → | | | | |

| LOCATION OF DRUM(S) |
|---|
| Describe location of drum(s): NE CORNER OF COMPLEX. FENCED COMPOUND, PURPLE LOCK. "COMBO IS "40" |

| FINAL STATUS | | | | | | |
|---|---|---|---|---|---|---|
| Number of new drum(s) left on site this event | 0 | 0 | 0 | | | |
| Date of inspection: | 3/31/15 | 3/31/16 | 9-30-16 | | | |
| Drum(s) labelled properly: | yes | Y | | | | |
| Logged by BTS Field Tech: | MW | MW | | | | |
| Office reviewed by: | [illegible] | | | | | |

# APPENDIX C

## Analytical Laboratory Report and Chain-of-Custody Record


Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

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

**Laboratory Job Number 281645**
**ANALYTICAL REPORT**

Stellar Environmental Solutions
2198 6th Street
Berkeley, CA 94710

Project : 2007-65
Location : Bay Center Apartment
Level : II

| Sample ID | Lab ID |
|---|---|
| MW-4 | 281645-001 |
| MW-5 | 281645-002 |
| MW-6 | 281645-003 |
| MW-17 | 281645-004 |
| MW-7 | 281645-005 |
| MW-9 | 281645-006 |
| MW-11 | 281645-007 |
| MW-12 | 281645-008 |
| MW-16 | 281645-009 |
| MW-18 | 281645-010 |
| MW-E | 281645-011 |
| MW-8 | 281645-012 |
| MW-10 | 281645-013 |
| MW-13 | 281645-014 |
| MW-14 | 281645-015 |
| MW-15 | 281645-016 |
| MW-3 | 281645-017 |
| RW-1 | 281645-018 |

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

Signature: Tracy Babjar Date: 10/13/2016

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

CA ELAP# 2896, NELAP# 4044-001

Curtis & Tompkins, Ltd.

# CASE NARRATIVE

| | |
|---|---|
| Laboratory number: | **281645** |
| Client: | **Stellar Environmental Solutions** |
| Project: | **2007-65** |
| Location: | **Bay Center Apartment** |
| Request Date: | **09/30/16** |
| Samples Received: | **09/30/16** |

This data package contains sample and QC results for eighteen water samples, requested for the above referenced project on 09/30/16. The samples were received cold and intact.

**TPH-Purgeables and/or BTXE by GC (EPA 8015B and EPA 8021B):**
Many samples were diluted due to foaming. Many samples were diluted due to client history of high non-target or organic acid interference. MW-7 (lab # 281645-005), MW-18 (lab # 281645-010), and MW-E (lab # 281645-011) had pH greater than 2. No other analytical problems were encountered.

**TPH-Extractables by GC (EPA 8015B):**
MW-8 (lab # 281645-012) was diluted due to the dark and viscous nature of the sample extract. No other analytical problems were encountered.

281645

# Chain of Custody Record

Lab job no. _____
Date 9-30-16
Page 1 of 2

Laboratory CURTIS & TOMPKINS
Address 2323 FIFTH ST.
BERKELEY, CA

Project Owner _____
Site Address 6400 CHRISTIE AVE
BERKELEY, CA
Project Name BAY CENTER APARTMENT
Project Number 2007-65

Method of Shipment HAND DELIVERY or LAB COURIER
Shipment No. _____
Airbill No. _____
Cooler No. _____
Project Manager R. MAKDISI
Telephone No. (510) 644-3123
Fax No. (510) 644-3859
Samplers: (Signature)

| | Field Sample Number | Location/ Depth | Date | Time | Sample Type | Type/Size of Container | Preservation: Cooler | Preservation: Chemical | Filtered | No. of Containers | TEH-D (8015M) | TPH-G / M/BTEX | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | MW-4 | | 9-30-2016 | 1050 | W | 3x40mL VOA HCl 2x500mL AG,B | | | N | 5 | X | X | |
| 2 | MW-5 | | | 1355 | | | | | N | 5 | X | X | |
| 3 | MW-6 | | | 1213 | | | | | N | 5 | X | X | |
| 4 | MW-17 | | | 1337 | | | | | N | 5 | X | X | |
| 5 | MW-7 | | | 0955 | | | | | N | 5 | X | X | |
| 6 | MW-9 | | | 1015 | | | | | N | 5 | X | X | |
| 7 | MW-11 | | | 1225 | | | | | N | 5 | X | X | |
| 8 | MW-12 | | | 1125 | | | | | N | 5 | X | X | |
| 9 | MW-16 | | | 1155 | | | | | N | 5 | X | X | |
| 10 | MW-18 | | | 1045 | | | | | N | 5 | X | X | |
| 11 | MW-E | | | 1200 | | | | | N | 5 | X | X | |

Analysis Required

| Relinquished by: | Date | Received by: | Date |
|---|---|---|---|
| Signature | 9-30-2016 | Signature | 09/30 |
| Printed Mark McCulloch | Time 1515 | Printed Mitelle Chong | Time 1515 |
| Company Blaine Tech Services | | Company CT | |

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

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

Turnaround Time: STANDARD
Comments: EDF REQUIRED
GLOBAL ID # SLT2005561

2000-00-01

★ Stellar Environmental Solutions

2198 Sixth Street #201, Berkeley, CA 94710

281645

# Chain of Custody Record

Lab job no. _____
Date 9-30-16
Page 2 of 2

Laboratory CURTIS & TOMPKINS
Address 2323 FIFTH ST. BERKELEY, CA
Project Owner _____
Site Address 6400 CHRISTIE AVE BERKELEY, CA
Project Name BAY CENTER APARTMENT
Project Number 2007-65

Method of Shipment HAND DELIVERY or LAB COURIER
Shipment No. _____
Airbill No. _____
Cooler No. _____
Project Manager R. MAKDISI
Telephone No. (510) 644-3123
Fax No. (510) 644-3859
Samplers: (Signature)

| | Field Sample Number | Location/ Depth | Date | Time | Sample Type | Type/Size of Container | Preservation: Cooler | Preservation: Chemical | Filtered | No. of Containers | TEH-D (8015M) | BTEX+MTBE (8260B) | TPH-G, M/BTEX | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12 | MW-8 | | 9-30-2016 | 0933 | W | 3x40mL VOA w/HCl, 2x500mL AGB | | | N | 5 | X | | X | |
| 13 | MW-10 | | | 0953 | | | | | N | 5 | X | | X | |
| 14 | MW-13 | | | 1011 | | | | | N | 5 | X | | X | |
| 15 | MW-14 | | | 1220 | | | | | N | 5 | X | | X | |
| 16 | MW-15 | | | 1030 | | | | | N | 5 | X | | X | |
| 17 | MW-3 | | | 1107 | | | | | N | 5 | X | | X | |
| 18 | RW-1 | | | 1050 | | | | | N | 5 | X | | X | |

| Relinquished by: | Date | Received by: | Date | Relinquished by: | Date | Received by: | Date |
|---|---|---|---|---|---|---|---|
| Signature | 9.30.2016 | Signature | 09/30 | Signature | | Signature | |
| Printed Mark McCulloch | Time 1515 | Printed Michelle Chong | Time 195 | Printed | Time | Printed | Time |
| Company Blaine Tech Services | | Company CT | | Company | | Company | |

Turnaround Time: STANDARD
Comments: EDF REQUIRED
GLOBAL ID # SLT2005561

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

2000-00-01

★ Stellar Environmental Solutions

2198 Sixth Street #201, Berkeley, CA 94710

**COOLER RECEIPT CHECKLIST** Curtis & Tompkins, Ltd.

Login # 281645 Date Received 9/30 Number of coolers 3
Client SES Project 2007-65

Date Opened 9/30 By (print) DTN (sign) dnguyen
Date Logged in ↓ By (print) ↓ (sign) ↓
Date Labeled ↓ By (print) ↓ (sign) ↓

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

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

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

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

Type of ice used: ☒ Wet ☐ Blue/Gel ☐ None Temp(°C) 3.4, 3.3, 2.2

☐ Temperature blank(s) included? ☐ Thermometer# ____ ☒ IR Gun# 6

☒ 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? (pH strip lot# ____) 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
20. 1/3 VOAs received w/ bubble >6mm for sample 5

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# Detections Summary for 281645

Results for any subcontracted analyses are not included in this summary.

Client : Stellar Environmental Solutions
Project : 2007-65
Location : Bay Center Apartment

Client Sample ID : MW-4 Laboratory Sample ID : 281645-001

| Analyte | Result | Flags | RL | Units | Basis | IDF | Method | Prep Method |
|---|---|---|---|---|---|---|---|---|
| Diesel C10-C24 | 350 | Y | 49 | ug/L | As Recd | 1.000 | EPA 8015B | EPA 3520C |

Client Sample ID : MW-5 Laboratory Sample ID : 281645-002

| Analyte | Result | Flags | RL | Units | Basis | IDF | Method | Prep Method |
|---|---|---|---|---|---|---|---|---|
| Diesel C10-C24 | 3,800 | Y | 49 | ug/L | As Recd | 1.000 | EPA 8015B | EPA 3520C |

Client Sample ID : MW-6 Laboratory Sample ID : 281645-003

| Analyte | Result | Flags | RL | Units | Basis | IDF | Method | Prep Method |
|---|---|---|---|---|---|---|---|---|
| Benzene | 1.0 | | 0.50 | ug/L | As Recd | 1.000 | EPA 8021B | EPA 5030B |
| Diesel C10-C24 | 1,200 | Y | 49 | ug/L | As Recd | 1.000 | EPA 8015B | EPA 3520C |

Client Sample ID : MW-17 Laboratory Sample ID : 281645-004

| Analyte | Result | Flags | RL | Units | Basis | IDF | Method | Prep Method |
|---|---|---|---|---|---|---|---|---|
| Gasoline C7-C12 | 7,900 | | 1,300 | ug/L | As Recd | 25.00 | EPA 8015B | EPA 5030B |
| Benzene | 1,200 | | 13 | ug/L | As Recd | 25.00 | EPA 8021B | EPA 5030B |
| Toluene | 230 | | 13 | ug/L | As Recd | 25.00 | EPA 8021B | EPA 5030B |
| Ethylbenzene | 81 | | 13 | ug/L | As Recd | 25.00 | EPA 8021B | EPA 5030B |
| m,p-Xylenes | 100 | | 13 | ug/L | As Recd | 25.00 | EPA 8021B | EPA 5030B |
| o-Xylene | 46 | | 13 | ug/L | As Recd | 25.00 | EPA 8021B | EPA 5030B |
| Diesel C10-C24 | 1,900 | Y | 50 | ug/L | As Recd | 1.000 | EPA 8015B | EPA 3520C |

Client Sample ID : MW-7 Laboratory Sample ID : 281645-005

| Analyte | Result | Flags | RL | Units | Basis | IDF | Method | Prep Method |
|---|---|---|---|---|---|---|---|---|
| Gasoline C7-C12 | 860 | | 250 | ug/L | As Recd | 5.000 | EPA 8015B | EPA 5030B |
| Benzene | 170 | | 2.5 | ug/L | As Recd | 5.000 | EPA 8021B | EPA 5030B |
| Toluene | 8.6 | | 2.5 | ug/L | As Recd | 5.000 | EPA 8021B | EPA 5030B |
| Ethylbenzene | 5.1 | | 2.5 | ug/L | As Recd | 5.000 | EPA 8021B | EPA 5030B |
| m,p-Xylenes | 18 | | 2.5 | ug/L | As Recd | 5.000 | EPA 8021B | EPA 5030B |
| o-Xylene | 5.7 | C | 2.5 | ug/L | As Recd | 5.000 | EPA 8021B | EPA 5030B |
| Diesel C10-C24 | 10,000 | Y | 50 | ug/L | As Recd | 1.000 | EPA 8015B | EPA 3520C |

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Client Sample ID : MW-9 Laboratory Sample ID : 281645-006

| Analyte | Result | Flags | RL | Units | Basis | IDF | Method | Prep Method |
|---|---|---|---|---|---|---|---|---|
| Diesel C10-C24 | 9,200 | Y | 49 | ug/L | As Recd | 1.000 | EPA 8015B | EPA 3520C |

Client Sample ID : MW-11 Laboratory Sample ID : 281645-007

| Analyte | Result | Flags | RL | Units | Basis | IDF | Method | Prep Method |
|---|---|---|---|---|---|---|---|---|
| Gasoline C7-C12 | 1,300 | | 250 | ug/L | As Recd | 5.000 | EPA 8015B | EPA 5030B |
| Benzene | 130 | | 2.5 | ug/L | As Recd | 5.000 | EPA 8021B | EPA 5030B |
| Toluene | 6.2 | | 2.5 | ug/L | As Recd | 5.000 | EPA 8021B | EPA 5030B |
| Ethylbenzene | 3.3 | | 2.5 | ug/L | As Recd | 5.000 | EPA 8021B | EPA 5030B |
| m,p-Xylenes | 6.2 | | 2.5 | ug/L | As Recd | 5.000 | EPA 8021B | EPA 5030B |
| Diesel C10-C24 | 5,800 | Y | 49 | ug/L | As Recd | 1.000 | EPA 8015B | EPA 3520C |

Client Sample ID : MW-12 Laboratory Sample ID : 281645-008

| Analyte | Result | Flags | RL | Units | Basis | IDF | Method | Prep Method |
|---|---|---|---|---|---|---|---|---|
| Gasoline C7-C12 | 7,800 | | 1,300 | ug/L | As Recd | 25.00 | EPA 8015B | EPA 5030B |
| Benzene | 1,300 | | 13 | ug/L | As Recd | 25.00 | EPA 8021B | EPA 5030B |
| Toluene | 25 | | 13 | ug/L | As Recd | 25.00 | EPA 8021B | EPA 5030B |
| Ethylbenzene | 19 | | 13 | ug/L | As Recd | 25.00 | EPA 8021B | EPA 5030B |
| Diesel C10-C24 | 2,700 | Y | 49 | ug/L | As Recd | 1.000 | EPA 8015B | EPA 3520C |

Client Sample ID : MW-16 Laboratory Sample ID : 281645-009

| Analyte | Result | Flags | RL | Units | Basis | IDF | Method | Prep Method |
|---|---|---|---|---|---|---|---|---|
| Gasoline C7-C12 | 330 | Z | 250 | ug/L | As Recd | 5.000 | EPA 8015B | EPA 5030B |
| Benzene | 7.9 | | 2.5 | ug/L | As Recd | 5.000 | EPA 8021B | EPA 5030B |
| Diesel C10-C24 | 8,500 | Y | 49 | ug/L | As Recd | 1.000 | EPA 8015B | EPA 3520C |

Client Sample ID : MW-18 Laboratory Sample ID : 281645-010

| Analyte | Result | Flags | RL | Units | Basis | IDF | Method | Prep Method |
|---|---|---|---|---|---|---|---|---|
| Diesel C10-C24 | 9,900 | Y | 50 | ug/L | As Recd | 1.000 | EPA 8015B | EPA 3520C |

Client Sample ID : MW-E Laboratory Sample ID : 281645-011

| Analyte | Result | Flags | RL | Units | Basis | IDF | Method | Prep Method |
|---|---|---|---|---|---|---|---|---|
| Gasoline C7-C12 | 29,000 | | 17,000 | ug/L | As Recd | 333.3 | EPA 8015B | EPA 5030B |
| Benzene | 3,500 | | 170 | ug/L | As Recd | 333.3 | EPA 8021B | EPA 5030B |
| Toluene | 190 | C | 170 | ug/L | As Recd | 333.3 | EPA 8021B | EPA 5030B |
| Ethylbenzene | 360 | | 170 | ug/L | As Recd | 333.3 | EPA 8021B | EPA 5030B |
| m,p-Xylenes | 370 | | 170 | ug/L | As Recd | 333.3 | EPA 8021B | EPA 5030B |
| Diesel C10-C24 | 9,400 | Y | 50 | ug/L | As Recd | 1.000 | EPA 8015B | EPA 3520C |

Client Sample ID : MW-8 Laboratory Sample ID : 281645-012

| Analyte | Result | Flags | RL | Units | Basis | IDF | Method | Prep Method |
|---|---|---|---|---|---|---|---|---|
| Gasoline C7-C12 | 24,000 | | 4,200 | ug/L | As Recd | 83.33 | EPA 8015B | EPA 5030B |
| Benzene | 5,300 | | 42 | ug/L | As Recd | 83.33 | EPA 8021B | EPA 5030B |
| Toluene | 77 | | 42 | ug/L | As Recd | 83.33 | EPA 8021B | EPA 5030B |
| Ethylbenzene | 400 | | 42 | ug/L | As Recd | 83.33 | EPA 8021B | EPA 5030B |
| m,p-Xylenes | 180 | | 42 | ug/L | As Recd | 83.33 | EPA 8021B | EPA 5030B |
| Diesel C10-C24 | 8,600 | Y | 100 | ug/L | As Recd | 2.000 | EPA 8015B | EPA 3520C |

Client Sample ID : MW-10 Laboratory Sample ID : 281645-013

| Analyte | Result | Flags | RL | Units | Basis | IDF | Method | Prep Method |
|---|---|---|---|---|---|---|---|---|
| Gasoline C7-C12 | 19,000 | Z | 17,000 | ug/L | As Recd | 333.3 | EPA 8015B | EPA 5030B |
| Benzene | 1,200 | | 170 | ug/L | As Recd | 333.3 | EPA 8021B | EPA 5030B |
| Diesel C10-C24 | 2,100 | Y | 50 | ug/L | As Recd | 1.000 | EPA 8015B | EPA 3520C |

Client Sample ID : MW-13 Laboratory Sample ID : 281645-014

| Analyte | Result | Flags | RL | Units | Basis | IDF | Method | Prep Method |
|---|---|---|---|---|---|---|---|---|
| Gasoline C7-C12 | 20,000 | Z | 2,500 | ug/L | As Recd | 50.00 | EPA 8015B | EPA 5030B |
| Benzene | 3,700 | | 25 | ug/L | As Recd | 50.00 | EPA 8021B | EPA 5030B |
| Toluene | 66 | | 25 | ug/L | As Recd | 50.00 | EPA 8021B | EPA 5030B |
| Ethylbenzene | 480 | | 25 | ug/L | As Recd | 50.00 | EPA 8021B | EPA 5030B |
| m,p-Xylenes | 180 | | 25 | ug/L | As Recd | 50.00 | EPA 8021B | EPA 5030B |
| o-Xylene | 25 | | 25 | ug/L | As Recd | 50.00 | EPA 8021B | EPA 5030B |
| Diesel C10-C24 | 15,000 | Y | 49 | ug/L | As Recd | 1.000 | EPA 8015B | EPA 3520C |

Client Sample ID : MW-14 Laboratory Sample ID : 281645-015

| Analyte | Result | Flags | RL | Units | Basis | IDF | Method | Prep Method |
|---|---|---|---|---|---|---|---|---|
| Gasoline C7-C12 | 9,900 | | 2,500 | ug/L | As Recd | 50.00 | EPA 8015B | EPA 5030B |
| MTBE | 180 | C | 100 | ug/L | As Recd | 50.00 | EPA 8021B | EPA 5030B |
| Benzene | 2,100 | | 25 | ug/L | As Recd | 50.00 | EPA 8021B | EPA 5030B |
| Toluene | 100 | | 25 | ug/L | As Recd | 50.00 | EPA 8021B | EPA 5030B |
| Ethylbenzene | 150 | | 25 | ug/L | As Recd | 50.00 | EPA 8021B | EPA 5030B |
| m,p-Xylenes | 77 | | 25 | ug/L | As Recd | 50.00 | EPA 8021B | EPA 5030B |
| Diesel C10-C24 | 4,700 | Y | 50 | ug/L | As Recd | 1.000 | EPA 8015B | EPA 3520C |

Client Sample ID : MW-15 Laboratory Sample ID : 281645-016

| Analyte | Result | Flags | RL | Units | Basis | IDF | Method | Prep Method |
|---|---|---|---|---|---|---|---|---|
| Gasoline C7-C12 | 18,000 | | 2,500 | ug/L | As Recd | 50.00 | EPA 8015B | EPA 5030B |
| Benzene | 5,000 | | 25 | ug/L | As Recd | 50.00 | EPA 8021B | EPA 5030B |
| Toluene | 66 | | 25 | ug/L | As Recd | 50.00 | EPA 8021B | EPA 5030B |
| m,p-Xylenes | 49 | | 25 | ug/L | As Recd | 50.00 | EPA 8021B | EPA 5030B |
| Diesel C10-C24 | 5,300 | Y | 49 | ug/L | As Recd | 1.000 | EPA 8015B | EPA 3520C |

Curtis & Tompkins, Ltd.

Client Sample ID : MW-3 Laboratory Sample ID : 281645-017

| Analyte | Result | Flags | RL | Units | Basis | IDF | Method | Prep Method |
|---|---|---|---|---|---|---|---|---|
| MTBE | 13 | C | 10 | ug/L | As Recd | 5.000 | EPA 8021B | EPA 5030B |
| Diesel C10-C24 | 5,600 | Y | 50 | ug/L | As Recd | 1.000 | EPA 8015B | EPA 3520C |

Client Sample ID : RW-1 Laboratory Sample ID : 281645-018

| Analyte | Result | Flags | RL | Units | Basis | IDF | Method | Prep Method |
|---|---|---|---|---|---|---|---|---|
| Gasoline C7-C12 | 1,100 | | 50 | ug/L | As Recd | 1.000 | EPA 8015B | EPA 5030B |
| Benzene | 49 | | 0.50 | ug/L | As Recd | 1.000 | EPA 8021B | EPA 5030B |
| Toluene | 4.6 | C | 0.50 | ug/L | As Recd | 1.000 | EPA 8021B | EPA 5030B |
| Ethylbenzene | 6.5 | | 0.50 | ug/L | As Recd | 1.000 | EPA 8021B | EPA 5030B |
| m,p-Xylenes | 3.8 | | 0.50 | ug/L | As Recd | 1.000 | EPA 8021B | EPA 5030B |
| o-Xylene | 5.1 | C | 0.50 | ug/L | As Recd | 1.000 | EPA 8021B | EPA 5030B |
| Diesel C10-C24 | 1,500 | Y | 50 | ug/L | As Recd | 1.000 | EPA 8015B | EPA 3520C |

C = Presence confirmed, but RPD between columns exceeds 40%
Y = Sample exhibits chromatographic pattern which does not resemble standard
Z = Sample exhibits unknown single peak or peaks

Curtis & Tompkins, Ltd.

# Curtis & Tompkins Laboratories Analytical Report

| | | | |
|---|---|---|---|
| Lab #: | 281645 | Location: | Bay Center Apartment |
| Client: | Stellar Environmental Solutions | Prep: | EPA 5030B |
| Project#: | 2007-65 | | |
| Matrix: | Water | Sampled: | 09/30/16 |
| Units: | ug/L | Received: | 09/30/16 |

| | | | |
|---|---|---|---|
| Field ID: | MW-4 | Diln Fac: | 1.000 |
| Type: | SAMPLE | Batch#: | 239744 |
| Lab ID: | 281645-001 | Analyzed: | 10/03/16 |

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

| Surrogate | %REC | Limits | Analysis |
|---|---|---|---|
| Bromofluorobenzene (FID) | 94 | 80-132 | EPA 8015B |
| Bromofluorobenzene (PID) | 104 | 71-141 | EPA 8021B |

| | | | |
|---|---|---|---|
| Field ID: | MW-5 | Diln Fac: | 5.000 |
| Type: | SAMPLE | Batch#: | 239744 |
| Lab ID: | 281645-002 | Analyzed: | 10/04/16 |

| Analyte | Result | RL | Analysis |
|---|---|---|---|
| Gasoline C7-C12 | ND | 250 | EPA 8015B |
| MTBE | ND | 10 | EPA 8021B |
| Benzene | ND | 2.5 | EPA 8021B |
| Toluene | ND | 2.5 | EPA 8021B |
| Ethylbenzene | ND | 2.5 | EPA 8021B |
| m,p-Xylenes | ND | 2.5 | EPA 8021B |
| o-Xylene | ND | 2.5 | EPA 8021B |

| Surrogate | %REC | Limits | Analysis |
|---|---|---|---|
| Bromofluorobenzene (FID) | 95 | 80-132 | EPA 8015B |
| Bromofluorobenzene (PID) | 103 | 71-141 | EPA 8021B |

| | | | |
|---|---|---|---|
| Field ID: | MW-6 | Lab ID: | 281645-003 |
| Type: | SAMPLE | Diln Fac: | 1.000 |

| Analyte | Result | RL | Batch# | Analyzed | Analysis |
|---|---|---|---|---|---|
| Gasoline C7-C12 | ND | 50 | 239784 | 10/04/16 | EPA 8015B |
| MTBE | ND | 2.0 | 239744 | 10/03/16 | EPA 8021B |
| Benzene | 1.0 | 0.50 | 239744 | 10/03/16 | EPA 8021B |
| Toluene | ND | 0.50 | 239744 | 10/03/16 | EPA 8021B |
| Ethylbenzene | ND | 0.50 | 239744 | 10/03/16 | EPA 8021B |
| m,p-Xylenes | ND | 0.50 | 239744 | 10/03/16 | EPA 8021B |
| o-Xylene | ND | 0.50 | 239744 | 10/03/16 | EPA 8021B |

| Surrogate | %REC | Limits | Batch# | Analyzed | Analysis |
|---|---|---|---|---|---|
| Bromofluorobenzene (FID) | 100 | 80-132 | 239784 | 10/04/16 | EPA 8015B |
| Bromofluorobenzene (PID) | 105 | 71-141 | 239744 | 10/03/16 | EPA 8021B |

C= Presence confirmed, but RPD between columns exceeds 40%
Z= Sample exhibits unknown single peak or peaks
NA= Not Analyzed
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Curtis & Tompkins Laboratories Analytical Report

| | | | |
|---|---|---|---|
| Lab #: | 281645 | Location: | Bay Center Apartment |
| Client: | Stellar Environmental Solutions | Prep: | EPA 5030B |
| Project#: | 2007-65 | | |
| Matrix: | Water | Sampled: | 09/30/16 |
| Units: | ug/L | Received: | 09/30/16 |

| | | | |
|---|---|---|---|
| Field ID: | MW-17 | Diln Fac: | 25.00 |
| Type: | SAMPLE | Batch#: | 239744 |
| Lab ID: | 281645-004 | Analyzed: | 10/03/16 |

| Analyte | Result | RL | Analysis |
|---|---|---|---|
| Gasoline C7-C12 | 7,900 | 1,300 | EPA 8015B |
| MTBE | ND | 50 | EPA 8021B |
| Benzene | 1,200 | 13 | EPA 8021B |
| Toluene | 230 | 13 | EPA 8021B |
| Ethylbenzene | 81 | 13 | EPA 8021B |
| m,p-Xylenes | 100 | 13 | EPA 8021B |
| o-Xylene | 46 | 13 | EPA 8021B |

| Surrogate | %REC | Limits | Analysis |
|---|---|---|---|
| Bromofluorobenzene (FID) | 92 | 80-132 | EPA 8015B |
| Bromofluorobenzene (PID) | 100 | 71-141 | EPA 8021B |

| | | | |
|---|---|---|---|
| Field ID: | MW-7 | Diln Fac: | 5.000 |
| Type: | SAMPLE | Batch#: | 239744 |
| Lab ID: | 281645-005 | Analyzed: | 10/04/16 |

| Analyte | Result | RL | Analysis |
|---|---|---|---|
| Gasoline C7-C12 | 860 | 250 | EPA 8015B |
| MTBE | ND | 10 | EPA 8021B |
| Benzene | 170 | 2.5 | EPA 8021B |
| Toluene | 8.6 | 2.5 | EPA 8021B |
| Ethylbenzene | 5.1 | 2.5 | EPA 8021B |
| m,p-Xylenes | 18 | 2.5 | EPA 8021B |
| o-Xylene | 5.7 C | 2.5 | EPA 8021B |

| Surrogate | %REC | Limits | Analysis |
|---|---|---|---|
| Bromofluorobenzene (FID) | 99 | 80-132 | EPA 8015B |
| Bromofluorobenzene (PID) | 105 | 71-141 | EPA 8021B |

C= Presence confirmed, but RPD between columns exceeds 40%
Z= Sample exhibits unknown single peak or peaks
NA= Not Analyzed
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Curtis & Tompkins Laboratories Analytical Report

| | | | |
|---|---|---|---|
| Lab #: | 281645 | Location: | Bay Center Apartment |
| Client: | Stellar Environmental Solutions | Prep: | EPA 5030B |
| Project#: | 2007-65 | | |
| Matrix: | Water | Sampled: | 09/30/16 |
| Units: | ug/L | Received: | 09/30/16 |

| | | | |
|---|---|---|---|
| Field ID: | MW-9 | Diln Fac: | 10.00 |
| Type: | SAMPLE | Batch#: | 239744 |
| Lab ID: | 281645-006 | Analyzed: | 10/04/16 |

| Analyte | Result | RL | Analysis |
|---|---|---|---|
| Gasoline C7-C12 | ND | 500 | EPA 8015B |
| MTBE | ND | 20 | EPA 8021B |
| Benzene | ND | 5.0 | EPA 8021B |
| Toluene | ND | 5.0 | EPA 8021B |
| Ethylbenzene | ND | 5.0 | EPA 8021B |
| m,p-Xylenes | ND | 5.0 | EPA 8021B |
| o-Xylene | ND | 5.0 | EPA 8021B |

| Surrogate | %REC | Limits | Analysis |
|---|---|---|---|
| Bromofluorobenzene (FID) | 95 | 80-132 | EPA 8015B |
| Bromofluorobenzene (PID) | 104 | 71-141 | EPA 8021B |

| | | | |
|---|---|---|---|
| Field ID: | MW-11 | Diln Fac: | 5.000 |
| Type: | SAMPLE | Batch#: | 239744 |
| Lab ID: | 281645-007 | Analyzed: | 10/04/16 |

| Analyte | Result | RL | Analysis |
|---|---|---|---|
| Gasoline C7-C12 | 1,300 | 250 | EPA 8015B |
| MTBE | ND | 10 | EPA 8021B |
| Benzene | 130 | 2.5 | EPA 8021B |
| Toluene | 6.2 | 2.5 | EPA 8021B |
| Ethylbenzene | 3.3 | 2.5 | EPA 8021B |
| m,p-Xylenes | 6.2 | 2.5 | EPA 8021B |
| o-Xylene | ND | 2.5 | EPA 8021B |

| Surrogate | %REC | Limits | Analysis |
|---|---|---|---|
| Bromofluorobenzene (FID) | 96 | 80-132 | EPA 8015B |
| Bromofluorobenzene (PID) | 101 | 71-141 | EPA 8021B |

C= Presence confirmed, but RPD between columns exceeds 40%
Z= Sample exhibits unknown single peak or peaks
NA= Not Analyzed
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Curtis & Tompkins Laboratories Analytical Report

| | | | |
|---|---|---|---|
| Lab #: | 281645 | Location: | Bay Center Apartment |
| Client: | Stellar Environmental Solutions | Prep: | EPA 5030B |
| Project#: | 2007-65 | | |
| Matrix: | Water | Sampled: | 09/30/16 |
| Units: | ug/L | Received: | 09/30/16 |

| | | | |
|---|---|---|---|
| Field ID: | MW-12 | Diln Fac: | 25.00 |
| Type: | SAMPLE | Batch#: | 239744 |
| Lab ID: | 281645-008 | Analyzed: | 10/03/16 |

| Analyte | Result | RL | Analysis |
|---|---|---|---|
| Gasoline C7-C12 | 7,800 | 1,300 | EPA 8015B |
| MTBE | ND | 50 | EPA 8021B |
| Benzene | 1,300 | 13 | EPA 8021B |
| Toluene | 25 | 13 | EPA 8021B |
| Ethylbenzene | 19 | 13 | EPA 8021B |
| m,p-Xylenes | ND | 13 | EPA 8021B |
| o-Xylene | ND | 13 | EPA 8021B |

| Surrogate | %REC | Limits | Analysis |
|---|---|---|---|
| Bromofluorobenzene (FID) | 97 | 80-132 | EPA 8015B |
| Bromofluorobenzene (PID) | 105 | 71-141 | EPA 8021B |

| | | | |
|---|---|---|---|
| Field ID: | MW-16 | Diln Fac: | 5.000 |
| Type: | SAMPLE | Batch#: | 239744 |
| Lab ID: | 281645-009 | Analyzed: | 10/04/16 |

| Analyte | Result | RL | Analysis |
|---|---|---|---|
| Gasoline C7-C12 | 330 Z | 250 | EPA 8015B |
| MTBE | ND | 10 | EPA 8021B |
| Benzene | 7.9 | 2.5 | EPA 8021B |
| Toluene | ND | 2.5 | EPA 8021B |
| Ethylbenzene | ND | 2.5 | EPA 8021B |
| m,p-Xylenes | ND | 2.5 | EPA 8021B |
| o-Xylene | ND | 2.5 | EPA 8021B |

| Surrogate | %REC | Limits | Analysis |
|---|---|---|---|
| Bromofluorobenzene (FID) | 99 | 80-132 | EPA 8015B |
| Bromofluorobenzene (PID) | 107 | 71-141 | EPA 8021B |

C= Presence confirmed, but RPD between columns exceeds 40%
Z= Sample exhibits unknown single peak or peaks
NA= Not Analyzed
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Curtis & Tompkins Laboratories Analytical Report

| | | | |
|---|---|---|---|
| Lab #: | 281645 | Location: | Bay Center Apartment |
| Client: | Stellar Environmental Solutions | Prep: | EPA 5030B |
| Project#: | 2007-65 | | |
| Matrix: | Water | Sampled: | 09/30/16 |
| Units: | ug/L | Received: | 09/30/16 |

| | | | |
|---|---|---|---|
| Field ID: | MW-18 | Diln Fac: | 5.000 |
| Type: | SAMPLE | Batch#: | 239744 |
| Lab ID: | 281645-010 | Analyzed: | 10/04/16 |

| Analyte | Result | RL | Analysis |
|---|---|---|---|
| Gasoline C7-C12 | ND | 250 | EPA 8015B |
| MTBE | ND | 10 | EPA 8021B |
| Benzene | ND | 2.5 | EPA 8021B |
| Toluene | ND | 2.5 | EPA 8021B |
| Ethylbenzene | ND | 2.5 | EPA 8021B |
| m,p-Xylenes | ND | 2.5 | EPA 8021B |
| o-Xylene | ND | 2.5 | EPA 8021B |

| Surrogate | %REC | Limits | Analysis |
|---|---|---|---|
| Bromofluorobenzene (FID) | 92 | 80-132 | EPA 8015B |
| Bromofluorobenzene (PID) | 99 | 71-141 | EPA 8021B |

| | | | |
|---|---|---|---|
| Field ID: | MW-E | Diln Fac: | 333.3 |
| Type: | SAMPLE | Batch#: | 239744 |
| Lab ID: | 281645-011 | Analyzed: | 10/03/16 |

| Analyte | Result | RL | Analysis |
|---|---|---|---|
| Gasoline C7-C12 | 29,000 | 17,000 | EPA 8015B |
| MTBE | ND | 670 | EPA 8021B |
| Benzene | 3,500 | 170 | EPA 8021B |
| Toluene | 190 C | 170 | EPA 8021B |
| Ethylbenzene | 360 | 170 | EPA 8021B |
| m,p-Xylenes | 370 | 170 | EPA 8021B |
| o-Xylene | ND | 170 | EPA 8021B |

| Surrogate | %REC | Limits | Analysis |
|---|---|---|---|
| Bromofluorobenzene (FID) | 95 | 80-132 | EPA 8015B |
| Bromofluorobenzene (PID) | 104 | 71-141 | EPA 8021B |

C= Presence confirmed, but RPD between columns exceeds 40%
Z= Sample exhibits unknown single peak or peaks
NA= Not Analyzed
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

## Curtis & Tompkins Laboratories Analytical Report

| | | | |
|---|---|---|---|
| Lab #: | 281645 | Location: | Bay Center Apartment |
| Client: | Stellar Environmental Solutions | Prep: | EPA 5030B |
| Project#: | 2007-65 | | |
| Matrix: | Water | Sampled: | 09/30/16 |
| Units: | ug/L | Received: | 09/30/16 |

| | | | |
|---|---|---|---|
| Field ID: | MW-8 | Diln Fac: | 83.33 |
| Type: | SAMPLE | Batch#: | 239744 |
| Lab ID: | 281645-012 | Analyzed: | 10/03/16 |

| Analyte | Result | RL | Analysis |
|---|---|---|---|
| Gasoline C7-C12 | 24,000 | 4,200 | EPA 8015B |
| MTBE | ND | 170 | EPA 8021B |
| Benzene | 5,300 | 42 | EPA 8021B |
| Toluene | 77 | 42 | EPA 8021B |
| Ethylbenzene | 400 | 42 | EPA 8021B |
| m,p-Xylenes | 180 | 42 | EPA 8021B |
| o-Xylene | ND | 42 | EPA 8021B |

| Surrogate | %REC | Limits | Analysis |
|---|---|---|---|
| Bromofluorobenzene (FID) | 100 | 80-132 | EPA 8015B |
| Bromofluorobenzene (PID) | 109 | 71-141 | EPA 8021B |

| | | | |
|---|---|---|---|
| Field ID: | MW-10 | Diln Fac: | 333.3 |
| Type: | SAMPLE | Batch#: | 239744 |
| Lab ID: | 281645-013 | Analyzed: | 10/03/16 |

| Analyte | Result | RL | Analysis |
|---|---|---|---|
| Gasoline C7-C12 | 19,000 Z | 17,000 | EPA 8015B |
| MTBE | ND | 670 | EPA 8021B |
| Benzene | 1,200 | 170 | EPA 8021B |
| Toluene | ND | 170 | EPA 8021B |
| Ethylbenzene | ND | 170 | EPA 8021B |
| m,p-Xylenes | ND | 170 | EPA 8021B |
| o-Xylene | ND | 170 | EPA 8021B |

| Surrogate | %REC | Limits | Analysis |
|---|---|---|---|
| Bromofluorobenzene (FID) | 99 | 80-132 | EPA 8015B |
| Bromofluorobenzene (PID) | 108 | 71-141 | EPA 8021B |

C= Presence confirmed, but RPD between columns exceeds 40%
Z= Sample exhibits unknown single peak or peaks
NA= Not Analyzed
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Curtis & Tompkins Laboratories Analytical Report

| | | | |
|---|---|---|---|
| Lab #: | 281645 | Location: | Bay Center Apartment |
| Client: | Stellar Environmental Solutions | Prep: | EPA 5030B |
| Project#: | 2007-65 | | |
| Matrix: | Water | Sampled: | 09/30/16 |
| Units: | ug/L | Received: | 09/30/16 |

| | | | |
|---|---|---|---|
| Field ID: | MW-13 | Diln Fac: | 50.00 |
| Type: | SAMPLE | Batch#: | 239744 |
| Lab ID: | 281645-014 | Analyzed: | 10/03/16 |

| Analyte | Result | RL | Analysis |
|---|---|---|---|
| Gasoline C7-C12 | 20,000 Z | 2,500 | EPA 8015B |
| MTBE | ND | 100 | EPA 8021B |
| Benzene | 3,700 | 25 | EPA 8021B |
| Toluene | 66 | 25 | EPA 8021B |
| Ethylbenzene | 480 | 25 | EPA 8021B |
| m,p-Xylenes | 180 | 25 | EPA 8021B |
| o-Xylene | 25 | 25 | EPA 8021B |

| Surrogate | %REC | Limits | Analysis |
|---|---|---|---|
| Bromofluorobenzene (FID) | 95 | 80-132 | EPA 8015B |
| Bromofluorobenzene (PID) | 100 | 71-141 | EPA 8021B |

| | | | |
|---|---|---|---|
| Field ID: | MW-14 | Diln Fac: | 50.00 |
| Type: | SAMPLE | Batch#: | 239744 |
| Lab ID: | 281645-015 | Analyzed: | 10/04/16 |

| Analyte | Result | RL | Analysis |
|---|---|---|---|
| Gasoline C7-C12 | 9,900 | 2,500 | EPA 8015B |
| MTBE | 180 C | 100 | EPA 8021B |
| Benzene | 2,100 | 25 | EPA 8021B |
| Toluene | 100 | 25 | EPA 8021B |
| Ethylbenzene | 150 | 25 | EPA 8021B |
| m,p-Xylenes | 77 | 25 | EPA 8021B |
| o-Xylene | ND | 25 | EPA 8021B |

| Surrogate | %REC | Limits | Analysis |
|---|---|---|---|
| Bromofluorobenzene (FID) | 95 | 80-132 | EPA 8015B |
| Bromofluorobenzene (PID) | 104 | 71-141 | EPA 8021B |

C= Presence confirmed, but RPD between columns exceeds 40%
Z= Sample exhibits unknown single peak or peaks
NA= Not Analyzed
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Curtis & Tompkins Laboratories Analytical Report

| | | | |
|---|---|---|---|
| Lab #: | 281645 | Location: | Bay Center Apartment |
| Client: | Stellar Environmental Solutions | Prep: | EPA 5030B |
| Project#: | 2007-65 | | |
| Matrix: | Water | Sampled: | 09/30/16 |
| Units: | ug/L | Received: | 09/30/16 |

| | | | |
|---|---|---|---|
| Field ID: | MW-15 | Diln Fac: | 50.00 |
| Type: | SAMPLE | Batch#: | 239744 |
| Lab ID: | 281645-016 | Analyzed: | 10/04/16 |

| Analyte | Result | RL | Analysis |
|---|---|---|---|
| Gasoline C7-C12 | 18,000 | 2,500 | EPA 8015B |
| MTBE | ND | 100 | EPA 8021B |
| Benzene | 5,000 | 25 | EPA 8021B |
| Toluene | 66 | 25 | EPA 8021B |
| Ethylbenzene | ND | 25 | EPA 8021B |
| m,p-Xylenes | 49 | 25 | EPA 8021B |
| o-Xylene | ND | 25 | EPA 8021B |

| Surrogate | %REC | Limits | Analysis |
|---|---|---|---|
| Bromofluorobenzene (FID) | 102 | 80-132 | EPA 8015B |
| Bromofluorobenzene (PID) | 113 | 71-141 | EPA 8021B |

| | | | |
|---|---|---|---|
| Field ID: | MW-3 | Diln Fac: | 5.000 |
| Type: | SAMPLE | Batch#: | 239744 |
| Lab ID: | 281645-017 | Analyzed: | 10/04/16 |

| Analyte | Result | RL | Analysis |
|---|---|---|---|
| Gasoline C7-C12 | ND | 250 | EPA 8015B |
| MTBE | 13 C | 10 | EPA 8021B |
| Benzene | ND | 2.5 | EPA 8021B |
| Toluene | ND | 2.5 | EPA 8021B |
| Ethylbenzene | ND | 2.5 | EPA 8021B |
| m,p-Xylenes | ND | 2.5 | EPA 8021B |
| o-Xylene | ND | 2.5 | EPA 8021B |

| Surrogate | %REC | Limits | Analysis |
|---|---|---|---|
| Bromofluorobenzene (FID) | 95 | 80-132 | EPA 8015B |
| Bromofluorobenzene (PID) | 105 | 71-141 | EPA 8021B |

C= Presence confirmed, but RPD between columns exceeds 40%
Z= Sample exhibits unknown single peak or peaks
NA= Not Analyzed
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

# Curtis & Tompkins Laboratories Analytical Report

| | | | |
|---|---|---|---|
| Lab #: | 281645 | Location: | Bay Center Apartment |
| Client: | Stellar Environmental Solutions | Prep: | EPA 5030B |
| Project#: | 2007-65 | | |
| Matrix: | Water | Sampled: | 09/30/16 |
| Units: | ug/L | Received: | 09/30/16 |

| | | | |
|---|---|---|---|
| Field ID: | RW-1 | Diln Fac: | 1.000 |
| Type: | SAMPLE | Batch#: | 239744 |
| Lab ID: | 281645-018 | Analyzed: | 10/04/16 |

| Analyte | Result | RL | Analysis |
|---|---|---|---|
| Gasoline C7-C12 | 1,100 | 50 | EPA 8015B |
| MTBE | ND | 2.0 | EPA 8021B |
| Benzene | 49 | 0.50 | EPA 8021B |
| Toluene | 4.6 C | 0.50 | EPA 8021B |
| Ethylbenzene | 6.5 | 0.50 | EPA 8021B |
| m,p-Xylenes | 3.8 | 0.50 | EPA 8021B |
| o-Xylene | 5.1 C | 0.50 | EPA 8021B |

| Surrogate | %REC | Limits | Analysis |
|---|---|---|---|
| Bromofluorobenzene (FID) | 116 | 80-132 | EPA 8015B |
| Bromofluorobenzene (PID) | 114 | 71-141 | EPA 8021B |

| | | | |
|---|---|---|---|
| Type: | BLANK | Batch#: | 239744 |
| Lab ID: | QC854062 | Analyzed: | 10/03/16 |
| Diln Fac: | 1.000 | | |

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

| Surrogate | %REC | Limits | Analysis |
|---|---|---|---|
| Bromofluorobenzene (FID) | 94 | 80-132 | EPA 8015B |
| Bromofluorobenzene (PID) | 104 | 71-141 | EPA 8021B |

| | | | |
|---|---|---|---|
| Type: | BLANK | Batch#: | 239784 |
| Lab ID: | QC854204 | Analyzed: | 10/04/16 |
| Diln Fac: | 1.000 | Analysis: | EPA 8015B |

| Analyte | Result | RL |
|---|---|---|
| Gasoline C7-C12 | ND | 50 |

| Surrogate | Result | %REC | Limits |
|---|---|---|---|
| Bromofluorobenzene (FID) | | 83 | 80-132 |
| Bromofluorobenzene (PID) | NA | | |

C= Presence confirmed, but RPD between columns exceeds 40%
Z= Sample exhibits unknown single peak or peaks
NA= Not Analyzed
ND= Not Detected
RL= Reporting Limit

Batch QC Report

## Curtis & Tompkins Laboratories Analytical Report

| | | | |
|---|---|---|---|
| Lab #: | 281645 | Location: | Bay Center Apartment |
| Client: | Stellar Environmental Solutions | Prep: | EPA 5030B |
| Project#: | 2007-65 | Analysis: | EPA 8015B |
| Type: | LCS | Diln Fac: | 1.000 |
| Lab ID: | QC854057 | Batch#: | 239744 |
| Matrix: | Water | Analyzed: | 10/03/16 |
| Units: | ug/L | | |

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Gasoline C7-C12 | 1,000 | 1,011 | 101 | 80-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Bromofluorobenzene (FID) | 95 | 80-132 |

Curtis & Tompkins, Ltd.

Batch QC Report

## Curtis & Tompkins Laboratories Analytical Report

| | | | |
|---|---|---|---|
| Lab #: | 281645 | Location: | Bay Center Apartment |
| Client: | Stellar Environmental Solutions | Prep: | EPA 5030B |
| Project#: | 2007-65 | Analysis: | EPA 8021B |
| Matrix: | Water | Batch#: | 239744 |
| Units: | ug/L | Analyzed: | 10/03/16 |
| Diln Fac: | 1.000 | | |

Type: BS Lab ID: QC854058

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| MTBE | 10.00 | 10.98 | 110 | 74-137 |
| Benzene | 10.00 | 11.28 | 113 | 80-120 |
| Toluene | 10.00 | 10.86 | 109 | 80-120 |
| Ethylbenzene | 10.00 | 11.29 | 113 | 80-120 |
| m,p-Xylenes | 10.00 | 11.06 | 111 | 80-120 |
| o-Xylene | 10.00 | 10.85 | 109 | 80-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Bromofluorobenzene (PID) | 99 | 71-141 |

Type: BSD Lab ID: QC854059

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| MTBE | 10.00 | 11.45 | 114 | 74-137 | 4 | 37 |
| Benzene | 10.00 | 11.24 | 112 | 80-120 | 0 | 20 |
| Toluene | 10.00 | 11.03 | 110 | 80-120 | 1 | 20 |
| Ethylbenzene | 10.00 | 11.28 | 113 | 80-120 | 0 | 20 |
| m,p-Xylenes | 10.00 | 10.95 | 109 | 80-120 | 1 | 20 |
| o-Xylene | 10.00 | 10.93 | 109 | 80-120 | 1 | 20 |

| Surrogate | %REC | Limits |
|---|---|---|
| Bromofluorobenzene (PID) | 102 | 71-141 |

RPD= Relative Percent Difference

Batch QC Report

## Curtis & Tompkins Laboratories Analytical Report

| | | | |
|---|---|---|---|
| Lab #: | 281645 | Location: | Bay Center Apartment |
| Client: | Stellar Environmental Solutions | Prep: | EPA 5030B |
| Project#: | 2007-65 | Analysis: | EPA 8015B |
| Field ID: | MW-4 | Batch#: | 239744 |
| MSS Lab ID: | 281645-001 | Sampled: | 09/30/16 |
| Matrix: | Water | Received: | 09/30/16 |
| Units: | ug/L | Analyzed: | 10/04/16 |
| Diln Fac: | 1.000 | | |

Type: MS Lab ID: QC854060

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Gasoline C7-C12 | 27.72 | 2,000 | 2,094 | 103 | 76-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Bromofluorobenzene (FID) | 106 | 80-132 |

Type: MSD Lab ID: QC854061

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Gasoline C7-C12 | 2,000 | 2,086 | 103 | 76-120 | 0 | 20 |

| Surrogate | %REC | Limits |
|---|---|---|
| Bromofluorobenzene (FID) | 99 | 80-132 |

RPD= Relative Percent Difference

Batch QC Report

## Curtis & Tompkins Laboratories Analytical Report

| | | | |
|---|---|---|---|
| Lab #: | 281645 | Location: | Bay Center Apartment |
| Client: | Stellar Environmental Solutions | Prep: | EPA 5030B |
| Project#: | 2007-65 | Analysis: | EPA 8015B |
| Type: | LCS | Diln Fac: | 1.000 |
| Lab ID: | QC854201 | Batch#: | 239784 |
| Matrix: | Water | Analyzed: | 10/04/16 |
| Units: | ug/L | | |

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Gasoline C7-C12 | 1,000 | 954.7 | 95 | 80-120 |

| Surrogate | %REC | Limits |
|---|---|---|
| Bromofluorobenzene (FID) | 81 | 80-132 |

Batch QC Report

## Curtis & Tompkins Laboratories Analytical Report

| | | | |
|---|---|---|---|
| Lab #: | 281645 | Location: | Bay Center Apartment |
| Client: | Stellar Environmental Solutions | Prep: | EPA 5030B |
| Project#: | 2007-65 | Analysis: | EPA 8015B |
| Field ID: | MW-6 | Batch#: | 239784 |
| MSS Lab ID: | 281645-003 | Sampled: | 09/30/16 |
| Matrix: | Water | Received: | 09/30/16 |
| Units: | ug/L | Analyzed: | 10/04/16 |
| Diln Fac: | 1.000 | | |

Type: MS Lab ID: QC854202

| Analyte | MSS Result | Spiked | Result | %REC | Limits |
|---|---|---|---|---|---|
| Gasoline C7-C12 | 43.39 | 2,000 | 2,029 | 99 | 76-120 |

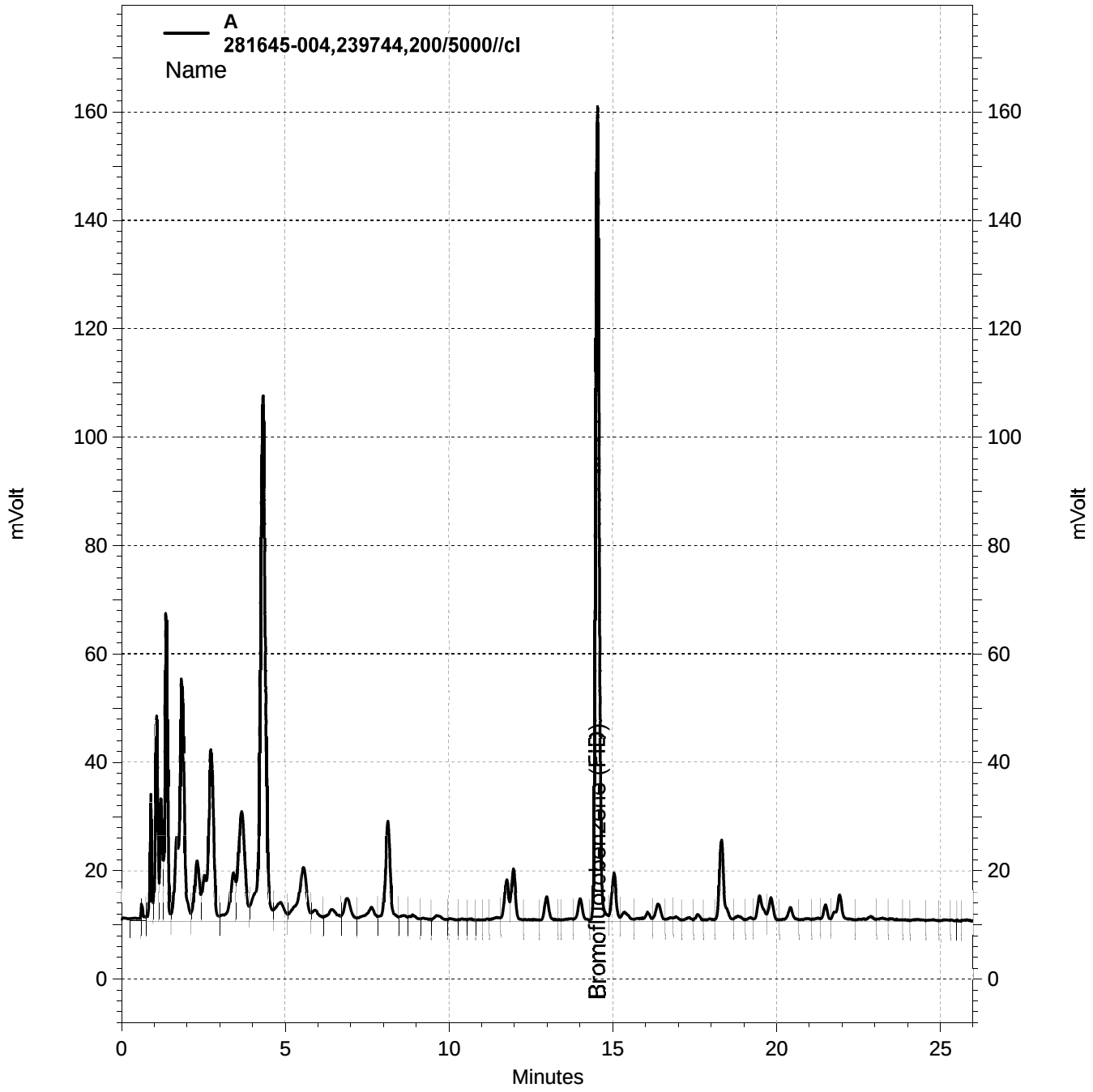
| Surrogate | %REC | Limits |
|---|---|---|
| Bromofluorobenzene (FID) | 101 | 80-132 |

Type: MSD Lab ID: QC854203

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Gasoline C7-C12 | 2,000 | 1,957 | 96 | 76-120 | 4 | 20 |

| Surrogate | %REC | Limits |
|---|---|---|
| Bromofluorobenzene (FID) | 100 | 80-132 |

RPD= Relative Percent Difference

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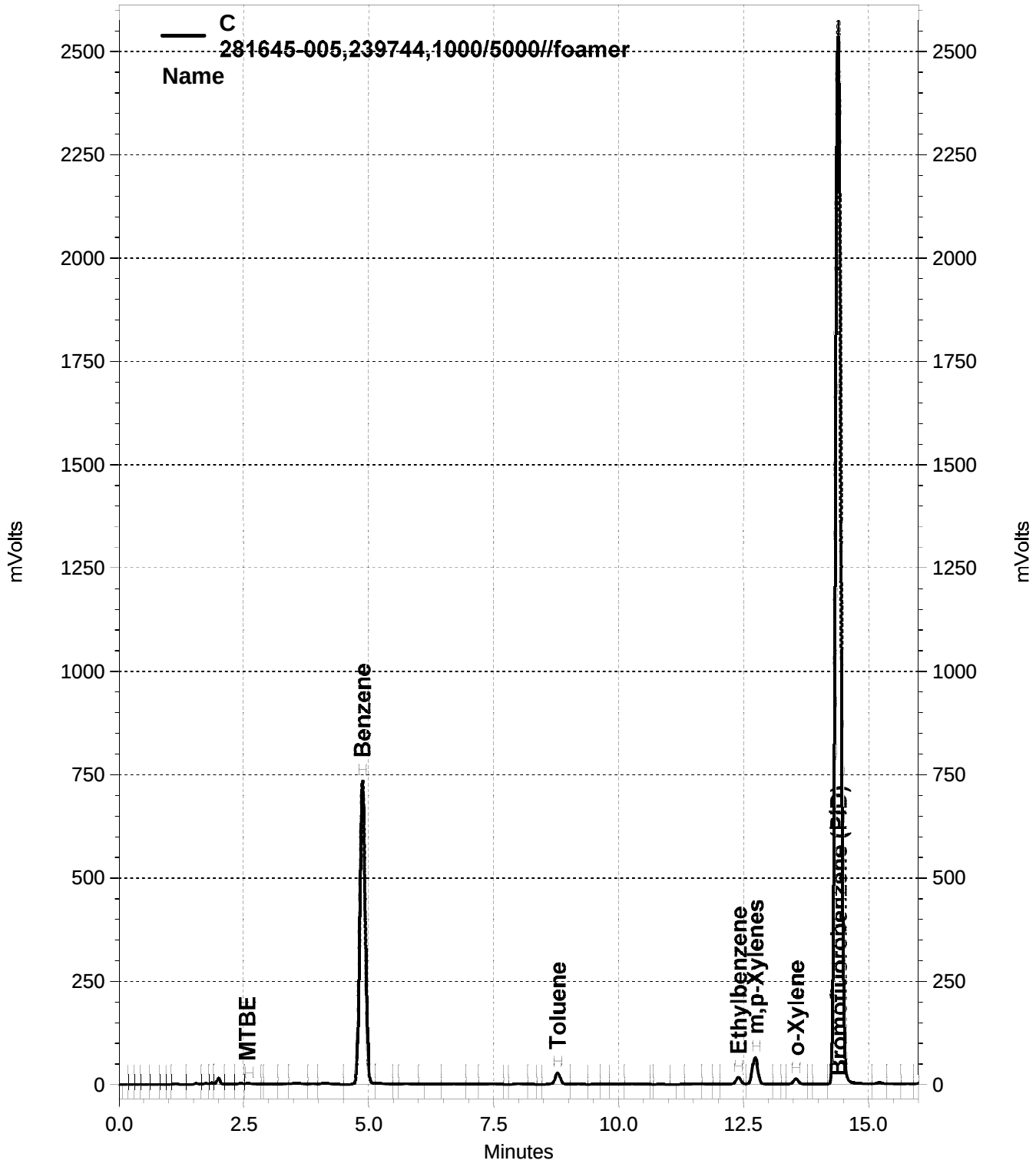


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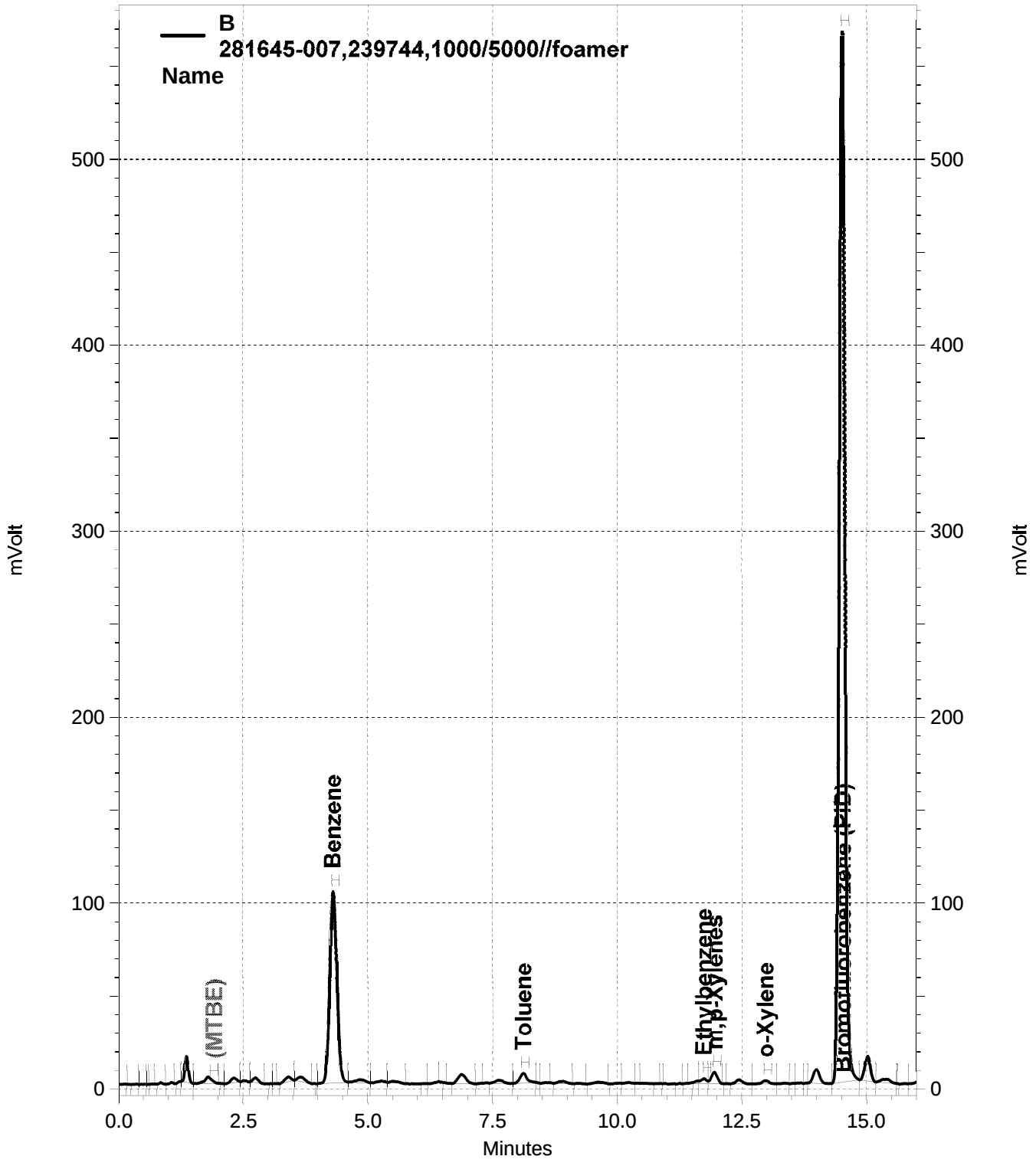
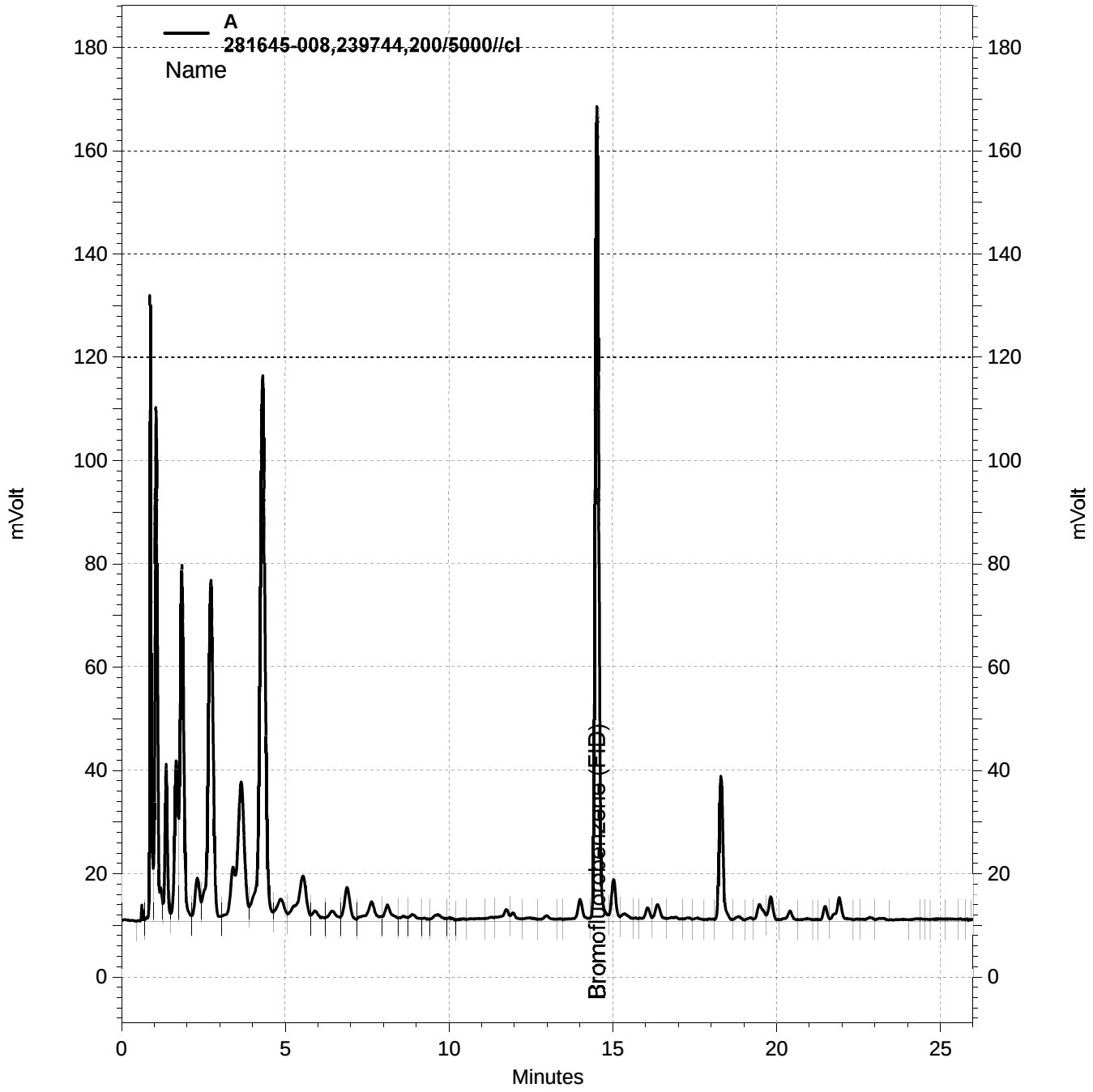
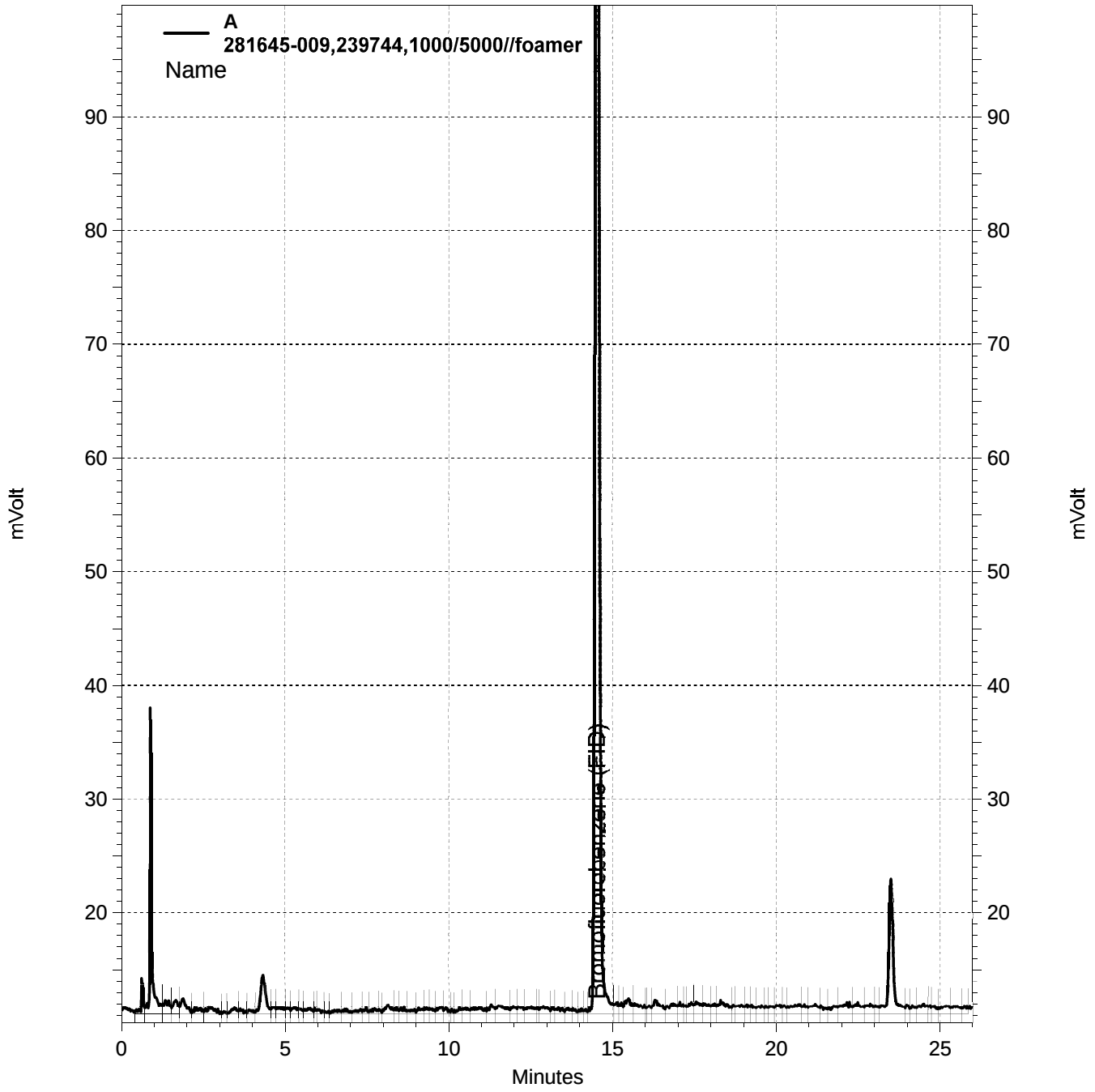
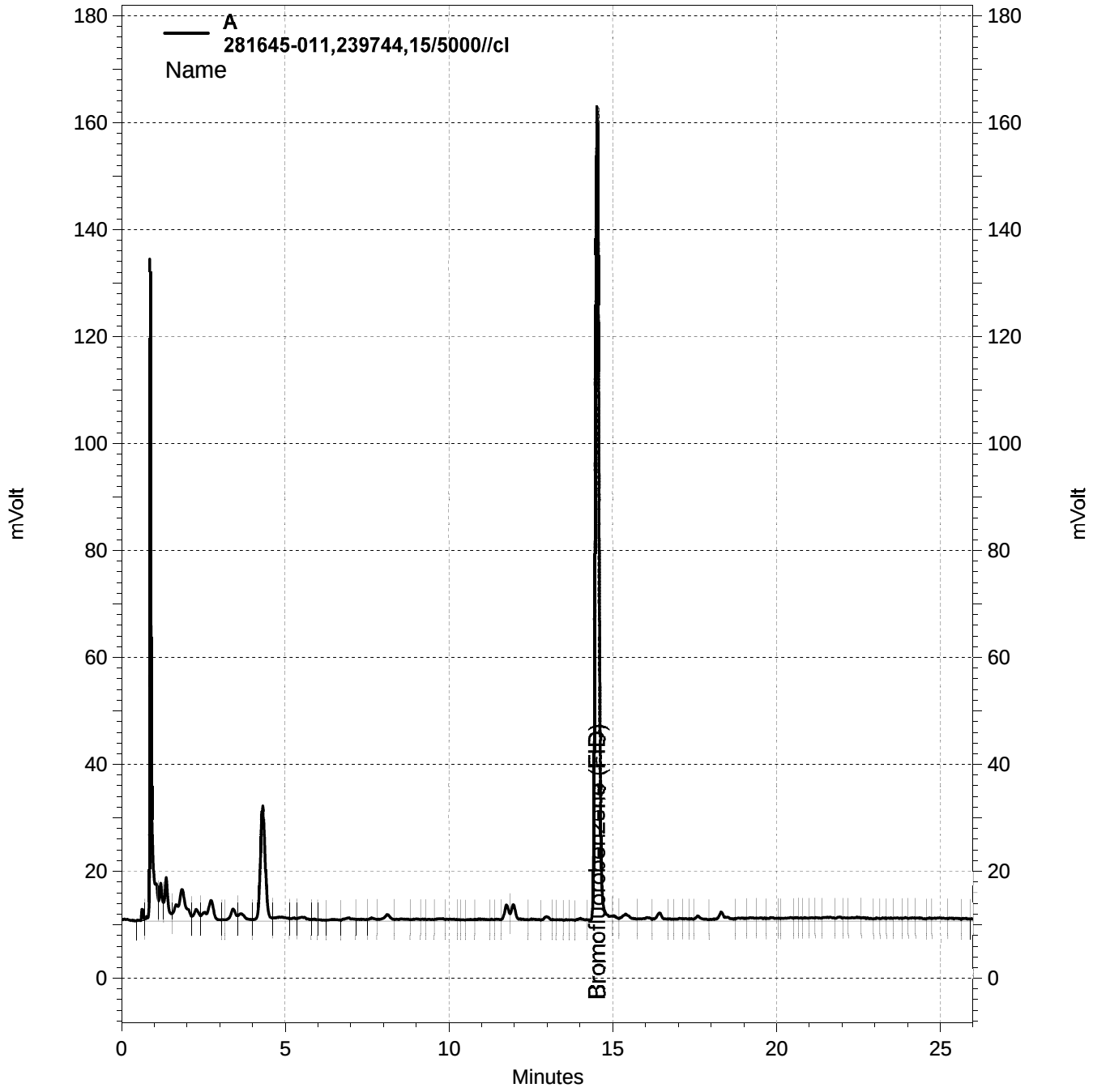

B
281645-007,239744,1000/5000//foamer
Name
500
400
300
200
100
0
mVolt
(MTBE)
Benzene
Toluene
Ethylbenzene
m,p-Xylenes
o-Xylene
Bromofluorobenzene (PID)
0.0
2.5
5.0
7.5
10.0
12.5
15.0
Minutes
\\Lims\gdrive\ezchrom\Projects\GC19\Data\277-035, B




\\Lims\gdrive\ezchrom\Projects\GC19\Data\277-011, A


A
281645-009,239744,1000/5000//foamer
Name
mVolt
mVolt
90
80
70
60
50
40
30
20
Bromofluorobenzene (FID)
0
5
10
15
20
25
Minutes
\\Lims\gdrive\ezchrom\Projects\GC19\Data\277-036, A

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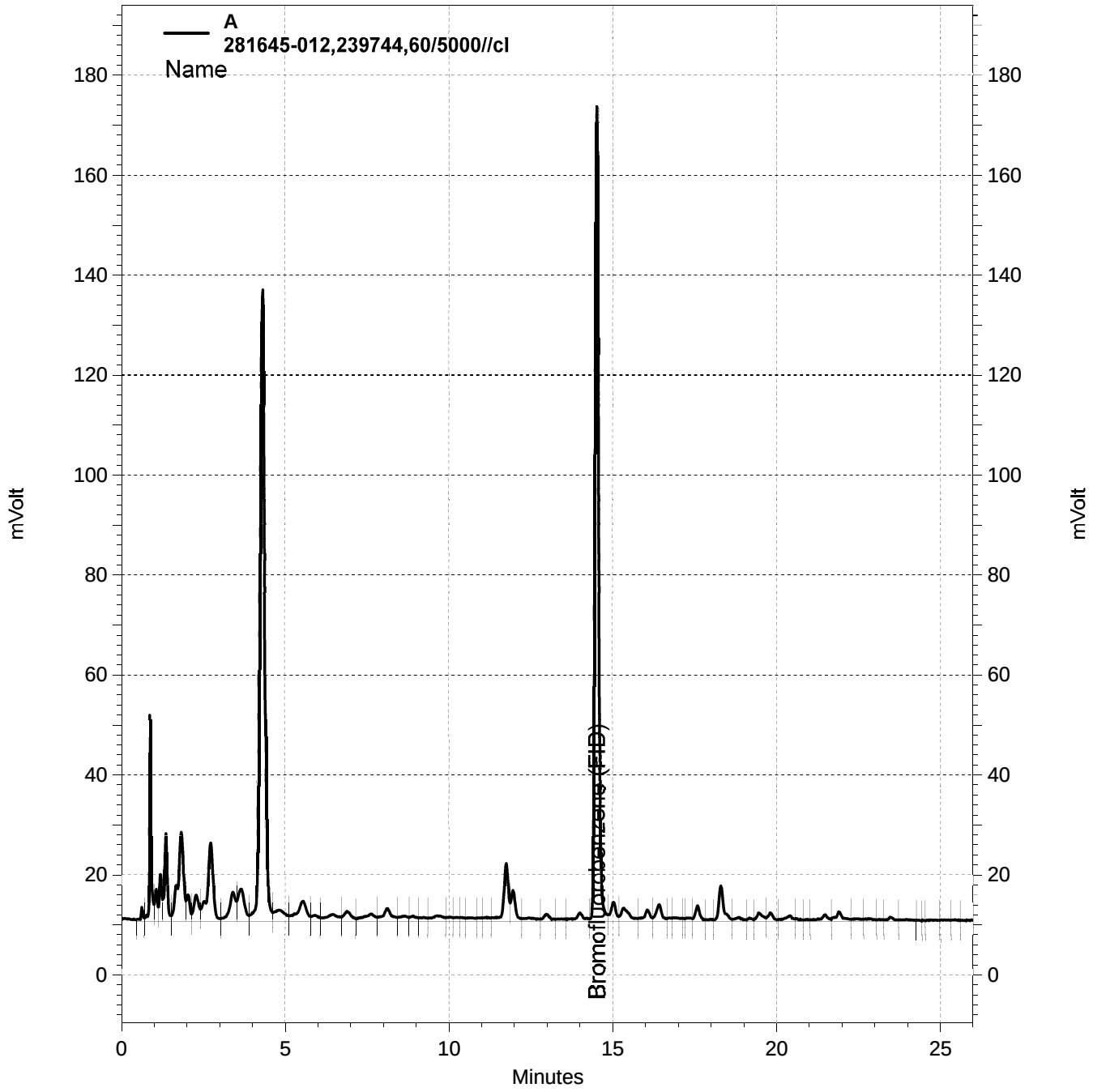


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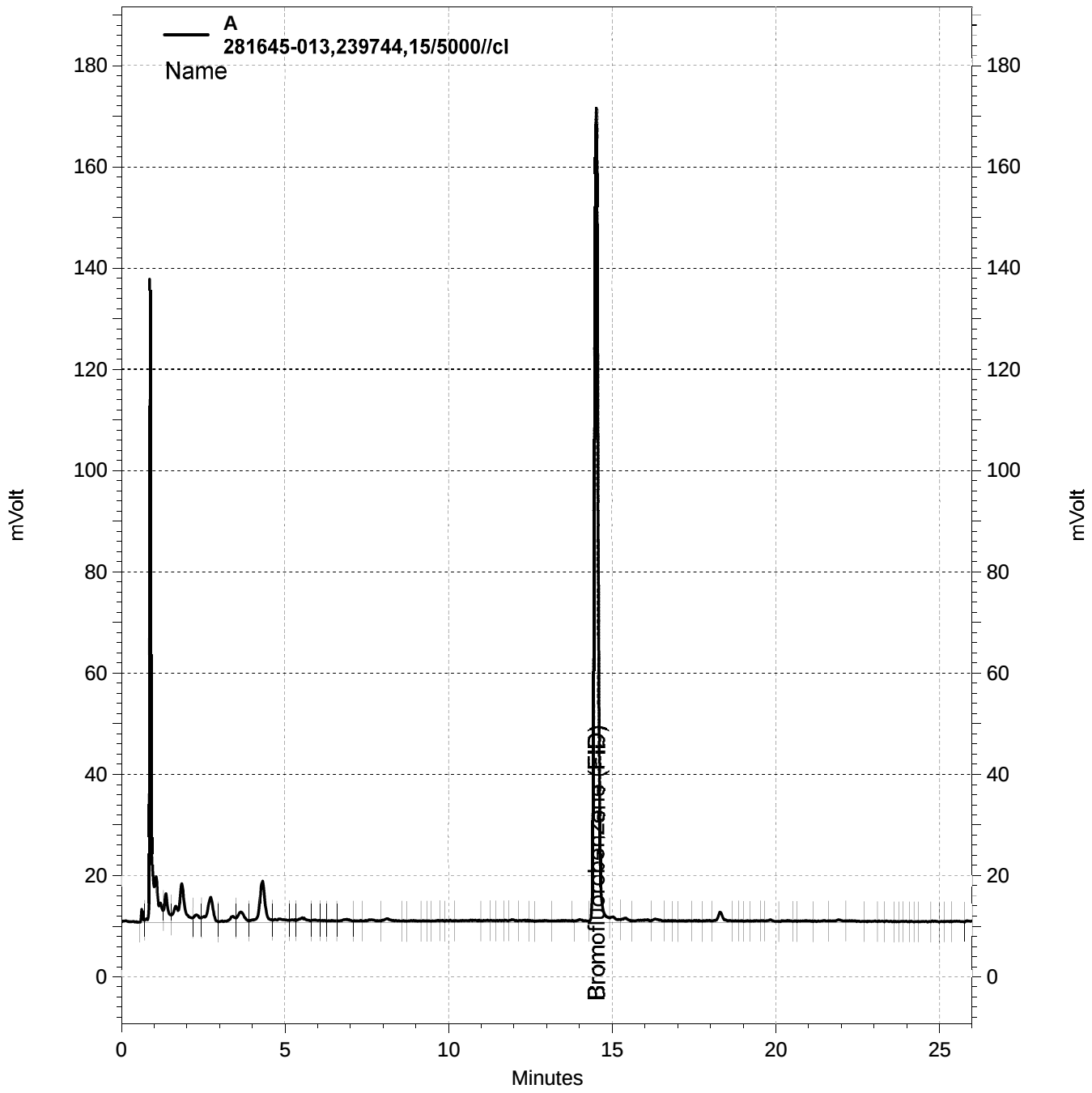


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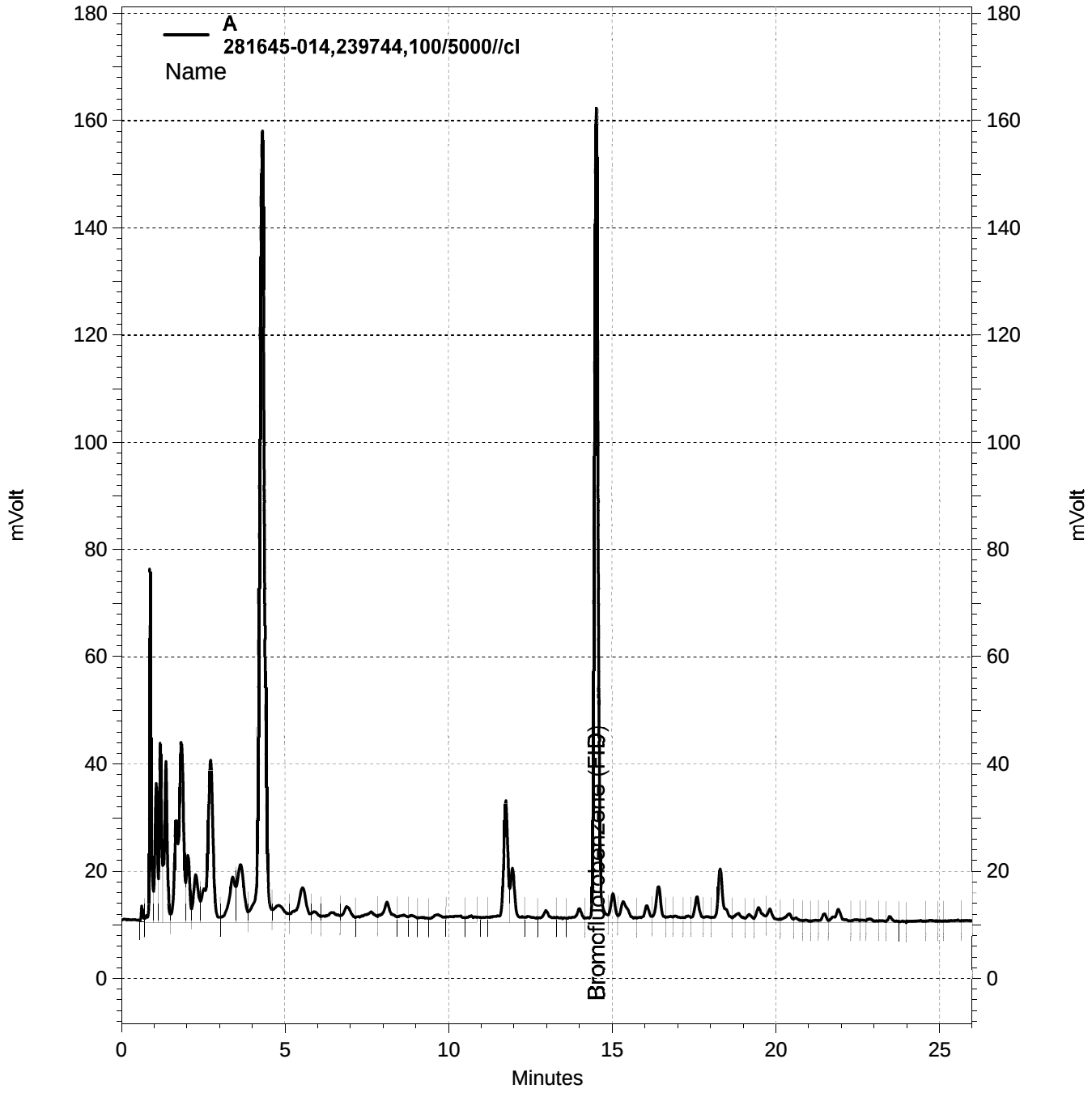
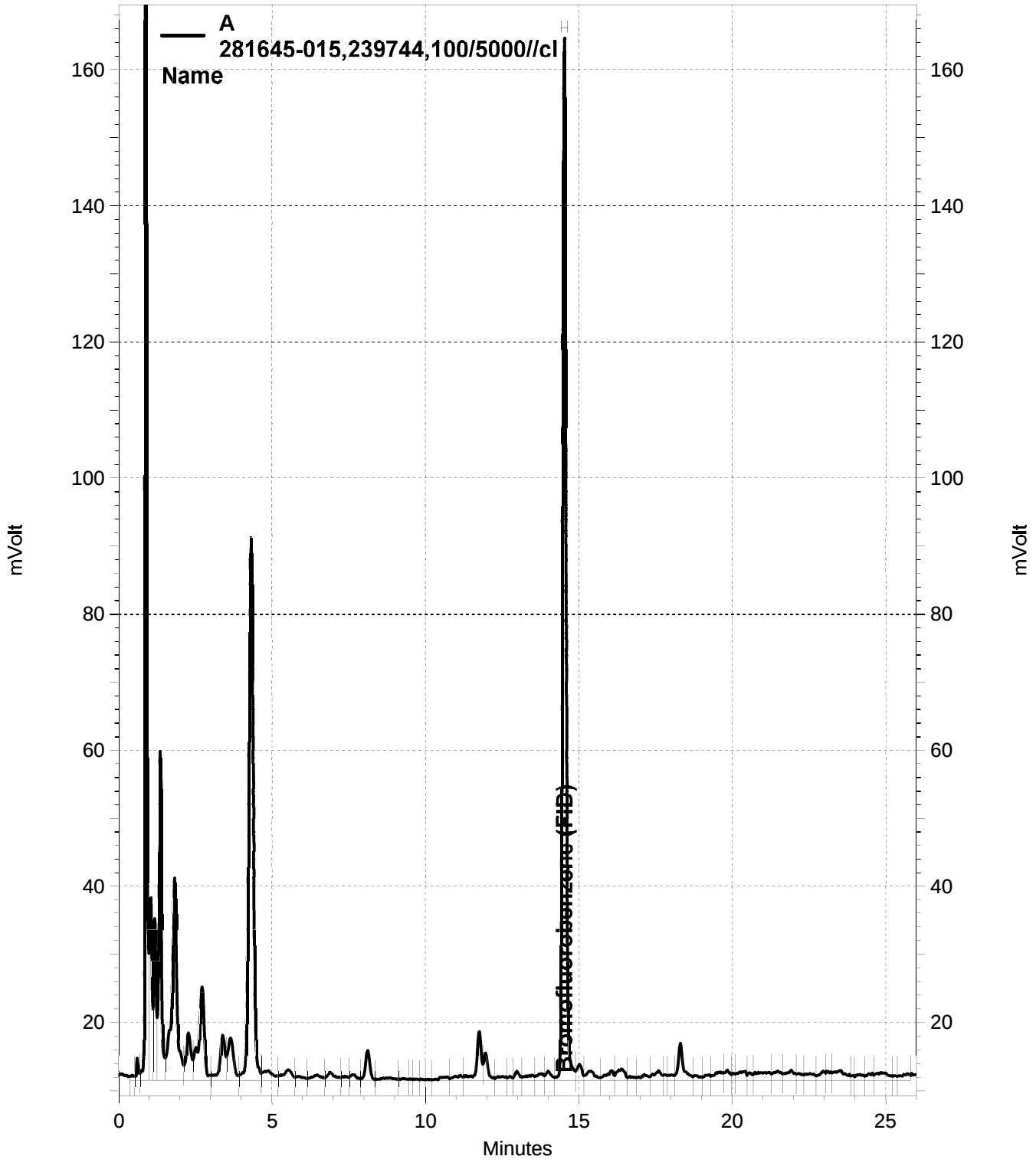
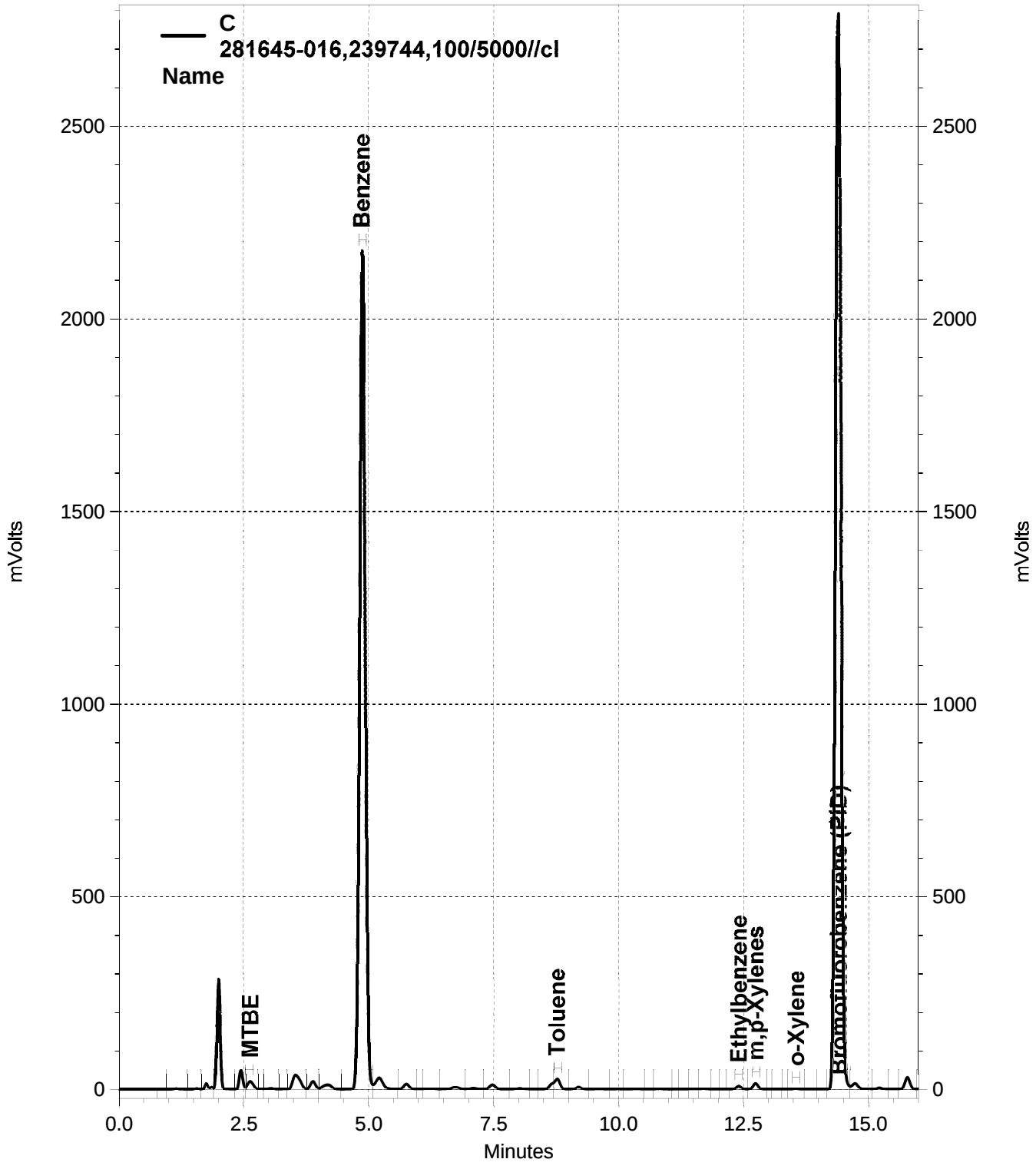
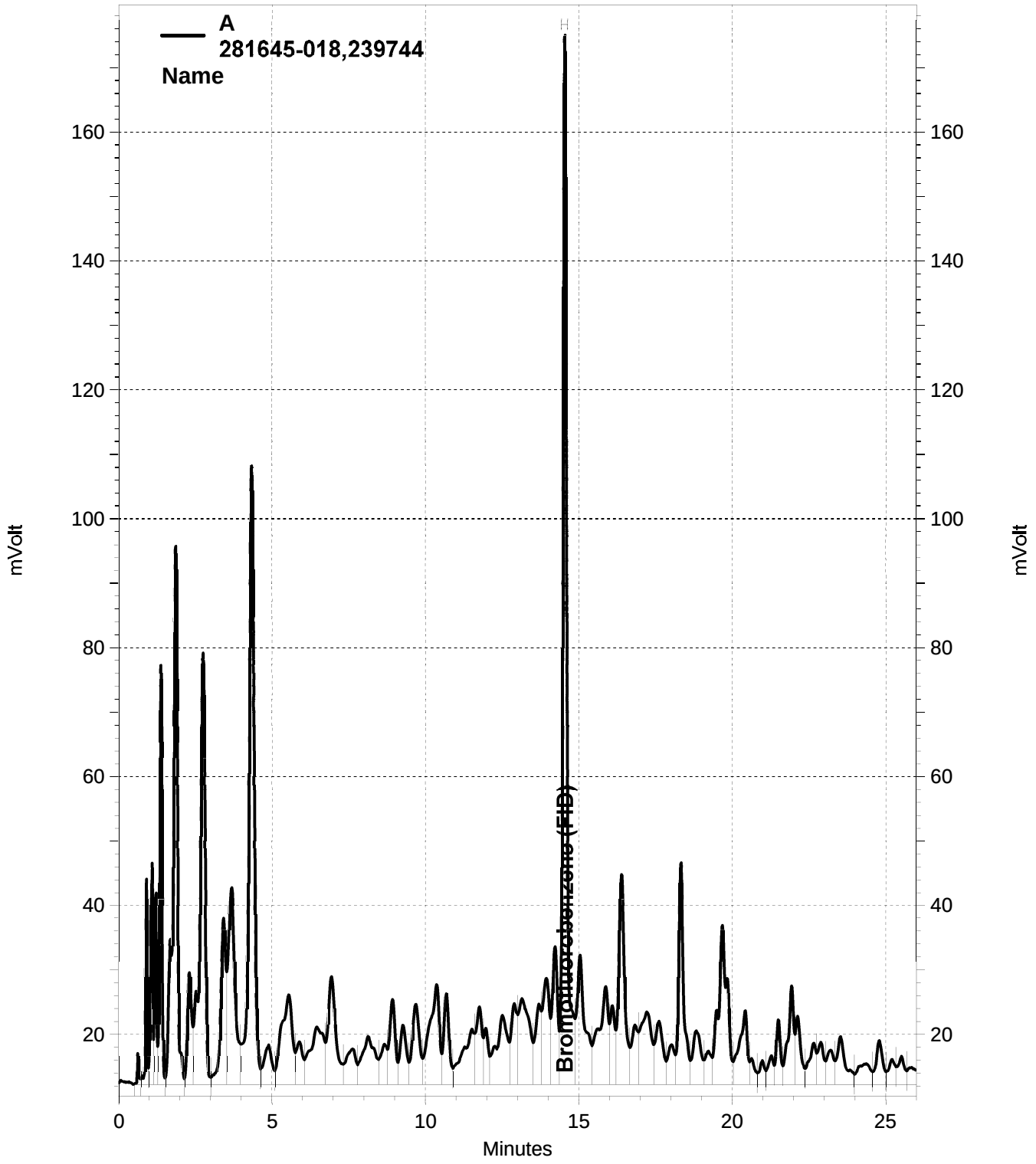
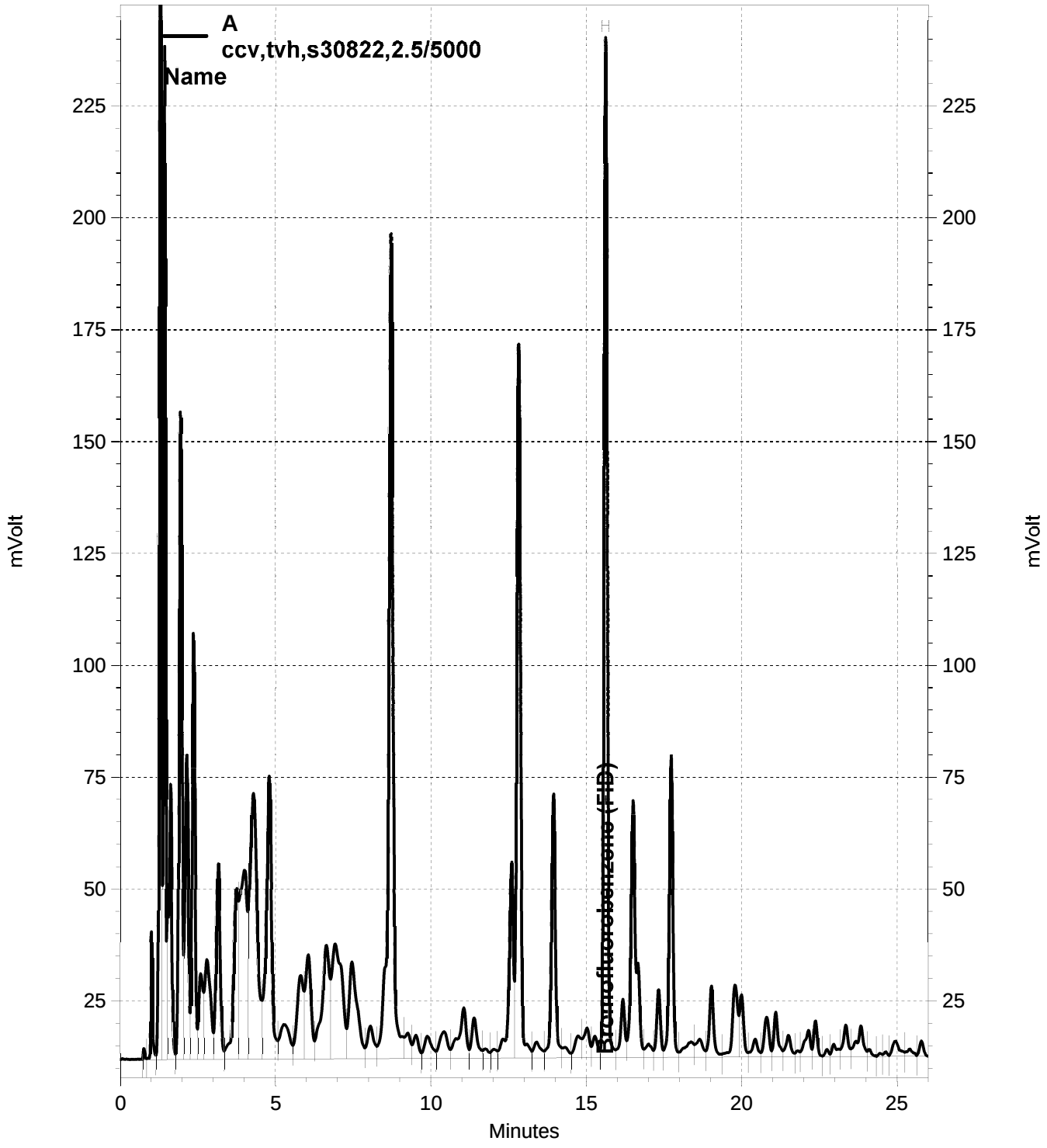

A
281645-014,239744,100/5000//cl
Name
mVolt
mVolt
Bromofluorobenzene (FID)
Minutes
0
5
10
15
20
25
0
20
40
60
80
100
120
140
160
180
\\Lims\gdrive\ezchrom\Projects\GC19\Data\277-015, A


A
281645-015,239744,100/5000//cl
Name
Bromofluorobenzene (FID)
mVolt
mVolt
160
140
120
100
80
60
40
20
0
5
10
15
20
25
Minutes
\\Lims\gdrive\ezchrom\Projects\GC19\Data\277-024, A


C
281645-016,239744,100/5000//cl
Name
Benzene
MTBE
Toluene
Ethylbenzene
m,p-Xylenes
o-Xylene
Bromofluorobenzene (PID)
mVolts
mVolts
Minutes
0
500
1000
1500
2000
2500
0.0
2.5
5.0
7.5
10.0
12.5
15.0
\\Lims\gdrive\ezchrom\Projects\GC19\Data\277-025, C


A
281645-018,239744
Name
Bromofluorobenzene (FID)
mVolt
mVolt
Minutes
0
5
10
15
20
25
20
40
60
80
100
120
140
160
\\Lims\gdrive\ezchrom\Projects\GC19\Data\277-023, A


A
ccv,tvh,s30822,2.5/5000
Name
Bromofluorobenzene (FID)
mVolt
mVolt
225
200
175
150
125
100
75
50
25
0
5
10
15
20
25
Minutes
\\Lims\gdrive\ezchrom\Projects\GC07\Data\278-003, A

Curtis & Tompkins, Ltd.

# Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 281645 | Location: | Bay Center Apartment |
| Client: | Stellar Environmental Solutions | Prep: | EPA 3520C |
| Project#: | 2007-65 | Analysis: | EPA 8015B |
| Matrix: | Water | Sampled: | 09/30/16 |
| Units: | ug/L | Received: | 09/30/16 |
| Batch#: | 239835 | Prepared: | 10/05/16 |

| | | | |
|---|---|---|---|
| Field ID: | MW-4 | Diln Fac: | 1.000 |
| Type: | SAMPLE | Analyzed: | 10/10/16 |
| Lab ID: | 281645-001 | | |

| Analyte | Result | RL |
|---|---|---|
| Diesel C10-C24 | 350 Y | 49 |

| Surrogate | %REC | Limits |
|---|---|---|
| o-Terphenyl | 92 | 67-136 |

| | | | |
|---|---|---|---|
| Field ID: | MW-5 | Diln Fac: | 1.000 |
| Type: | SAMPLE | Analyzed: | 10/10/16 |
| Lab ID: | 281645-002 | | |

| Analyte | Result | RL |
|---|---|---|
| Diesel C10-C24 | 3,800 Y | 49 |

| Surrogate | %REC | Limits |
|---|---|---|
| o-Terphenyl | 92 | 67-136 |

| | | | |
|---|---|---|---|
| Field ID: | MW-6 | Diln Fac: | 1.000 |
| Type: | SAMPLE | Analyzed: | 10/10/16 |
| Lab ID: | 281645-003 | | |

| Analyte | Result | RL |
|---|---|---|
| Diesel C10-C24 | 1,200 Y | 49 |

| Surrogate | %REC | Limits |
|---|---|---|
| o-Terphenyl | 90 | 67-136 |

| | | | |
|---|---|---|---|
| Field ID: | MW-17 | Diln Fac: | 1.000 |
| Type: | SAMPLE | Analyzed: | 10/10/16 |
| Lab ID: | 281645-004 | | |

| Analyte | Result | RL |
|---|---|---|
| Diesel C10-C24 | 1,900 Y | 50 |

| Surrogate | %REC | Limits |
|---|---|---|
| o-Terphenyl | 85 | 67-136 |

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

Curtis & Tompkins, Ltd.

## Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 281645 | Location: | Bay Center Apartment |
| Client: | Stellar Environmental Solutions | Prep: | EPA 3520C |
| Project#: | 2007-65 | Analysis: | EPA 8015B |
| Matrix: | Water | Sampled: | 09/30/16 |
| Units: | ug/L | Received: | 09/30/16 |
| Batch#: | 239835 | Prepared: | 10/05/16 |

Field ID: MW-7 Diln Fac: 1.000
Type: SAMPLE Analyzed: 10/10/16
Lab ID: 281645-005

| Analyte | Result | RL |
|---|---|---|
| Diesel C10-C24 | 10,000 Y | 50 |

| Surrogate | %REC | Limits |
|---|---|---|
| o-Terphenyl | 70 | 67-136 |

Field ID: MW-9 Diln Fac: 1.000
Type: SAMPLE Analyzed: 10/10/16
Lab ID: 281645-006

| Analyte | Result | RL |
|---|---|---|
| Diesel C10-C24 | 9,200 Y | 49 |

| Surrogate | %REC | Limits |
|---|---|---|
| o-Terphenyl | 86 | 67-136 |

Field ID: MW-11 Diln Fac: 1.000
Type: SAMPLE Analyzed: 10/10/16
Lab ID: 281645-007

| Analyte | Result | RL |
|---|---|---|
| Diesel C10-C24 | 5,800 Y | 49 |

| Surrogate | %REC | Limits |
|---|---|---|
| o-Terphenyl | 92 | 67-136 |

Field ID: MW-12 Diln Fac: 1.000
Type: SAMPLE Analyzed: 10/10/16
Lab ID: 281645-008

| Analyte | Result | RL |
|---|---|---|
| Diesel C10-C24 | 2,700 Y | 49 |

| Surrogate | %REC | Limits |
|---|---|---|
| o-Terphenyl | 92 | 67-136 |

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

Curtis & Tompkins, Ltd.

## Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 281645 | Location: | Bay Center Apartment |
| Client: | Stellar Environmental Solutions | Prep: | EPA 3520C |
| Project#: | 2007-65 | Analysis: | EPA 8015B |
| Matrix: | Water | Sampled: | 09/30/16 |
| Units: | ug/L | Received: | 09/30/16 |
| Batch#: | 239835 | Prepared: | 10/05/16 |

Field ID: MW-16 | Diln Fac: 1.000
Type: SAMPLE | Analyzed: 10/10/16
Lab ID: 281645-009

| Analyte | Result | RL |
|---|---|---|
| Diesel C10-C24 | 8,500 Y | 49 |

| Surrogate | %REC | Limits |
|---|---|---|
| o-Terphenyl | 82 | 67-136 |

Field ID: MW-18 | Diln Fac: 1.000
Type: SAMPLE | Analyzed: 10/10/16
Lab ID: 281645-010

| Analyte | Result | RL |
|---|---|---|
| Diesel C10-C24 | 9,900 Y | 50 |

| Surrogate | %REC | Limits |
|---|---|---|
| o-Terphenyl | 88 | 67-136 |

Field ID: MW-E | Diln Fac: 1.000
Type: SAMPLE | Analyzed: 10/10/16
Lab ID: 281645-011

| Analyte | Result | RL |
|---|---|---|
| Diesel C10-C24 | 9,400 Y | 50 |

| Surrogate | %REC | Limits |
|---|---|---|
| o-Terphenyl | 87 | 67-136 |

Field ID: MW-8 | Diln Fac: 2.000
Type: SAMPLE | Analyzed: 10/12/16
Lab ID: 281645-012

| Analyte | Result | RL |
|---|---|---|
| Diesel C10-C24 | 8,600 Y | 100 |

| Surrogate | %REC | Limits |
|---|---|---|
| o-Terphenyl | 84 | 67-136 |

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

Curtis & Tompkins, Ltd.

## Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 281645 | Location: | Bay Center Apartment |
| Client: | Stellar Environmental Solutions | Prep: | EPA 3520C |
| Project#: | 2007-65 | Analysis: | EPA 8015B |
| Matrix: | Water | Sampled: | 09/30/16 |
| Units: | ug/L | Received: | 09/30/16 |
| Batch#: | 239835 | Prepared: | 10/05/16 |

Field ID: MW-10 Diln Fac: 1.000
Type: SAMPLE Analyzed: 10/11/16
Lab ID: 281645-013

| Analyte | Result | RL |
|---|---|---|
| Diesel C10-C24 | 2,100 Y | 50 |

| Surrogate | %REC | Limits |
|---|---|---|
| o-Terphenyl | 91 | 67-136 |

Field ID: MW-13 Diln Fac: 1.000
Type: SAMPLE Analyzed: 10/11/16
Lab ID: 281645-014

| Analyte | Result | RL |
|---|---|---|
| Diesel C10-C24 | 15,000 Y | 49 |

| Surrogate | %REC | Limits |
|---|---|---|
| o-Terphenyl | 79 | 67-136 |

Field ID: MW-14 Diln Fac: 1.000
Type: SAMPLE Analyzed: 10/11/16
Lab ID: 281645-015

| Analyte | Result | RL |
|---|---|---|
| Diesel C10-C24 | 4,700 Y | 50 |

| Surrogate | %REC | Limits |
|---|---|---|
| o-Terphenyl | 83 | 67-136 |

Field ID: MW-15 Diln Fac: 1.000
Type: SAMPLE Analyzed: 10/11/16
Lab ID: 281645-016

| Analyte | Result | RL |
|---|---|---|
| Diesel C10-C24 | 5,300 Y | 49 |

| Surrogate | %REC | Limits |
|---|---|---|
| o-Terphenyl | 80 | 67-136 |

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

Curtis & Tompkins, Ltd.

## Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 281645 | Location: | Bay Center Apartment |
| Client: | Stellar Environmental Solutions | Prep: | EPA 3520C |
| Project#: | 2007-65 | Analysis: | EPA 8015B |
| Matrix: | Water | Sampled: | 09/30/16 |
| Units: | ug/L | Received: | 09/30/16 |
| Batch#: | 239835 | Prepared: | 10/05/16 |

Field ID: MW-3 Diln Fac: 1.000
Type: SAMPLE Analyzed: 10/11/16
Lab ID: 281645-017

| Analyte | Result | RL |
|---|---|---|
| Diesel C10-C24 | 5,600 Y | 50 |

| Surrogate | %REC | Limits |
|---|---|---|
| o-Terphenyl | 81 | 67-136 |

Field ID: RW-1 Diln Fac: 1.000
Type: SAMPLE Analyzed: 10/11/16
Lab ID: 281645-018

| Analyte | Result | RL |
|---|---|---|
| Diesel C10-C24 | 1,500 Y | 50 |

| Surrogate | %REC | Limits |
|---|---|---|
| o-Terphenyl | 101 | 67-136 |

Type: BLANK Diln Fac: 1.000
Lab ID: QC854405 Analyzed: 10/10/16

| Analyte | Result | RL |
|---|---|---|
| Diesel C10-C24 | ND | 50 |

| Surrogate | %REC | Limits |
|---|---|---|
| o-Terphenyl | 85 | 67-136 |

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

Curtis & Tompkins, Ltd.

Batch QC Report

## Total Extractable Hydrocarbons

| | | | |
|---|---|---|---|
| Lab #: | 281645 | Location: | Bay Center Apartment |
| Client: | Stellar Environmental Solutions | Prep: | EPA 3520C |
| Project#: | 2007-65 | Analysis: | EPA 8015B |
| Matrix: | Water | Batch#: | 239835 |
| Units: | ug/L | Prepared: | 10/05/16 |
| Diln Fac: | 1.000 | Analyzed: | 10/10/16 |

Type: BS Lab ID: QC854406

| Analyte | Spiked | Result | %REC | Limits |
|---|---|---|---|---|
| Diesel C10-C24 | 2,500 | 2,393 | 96 | 60-121 |

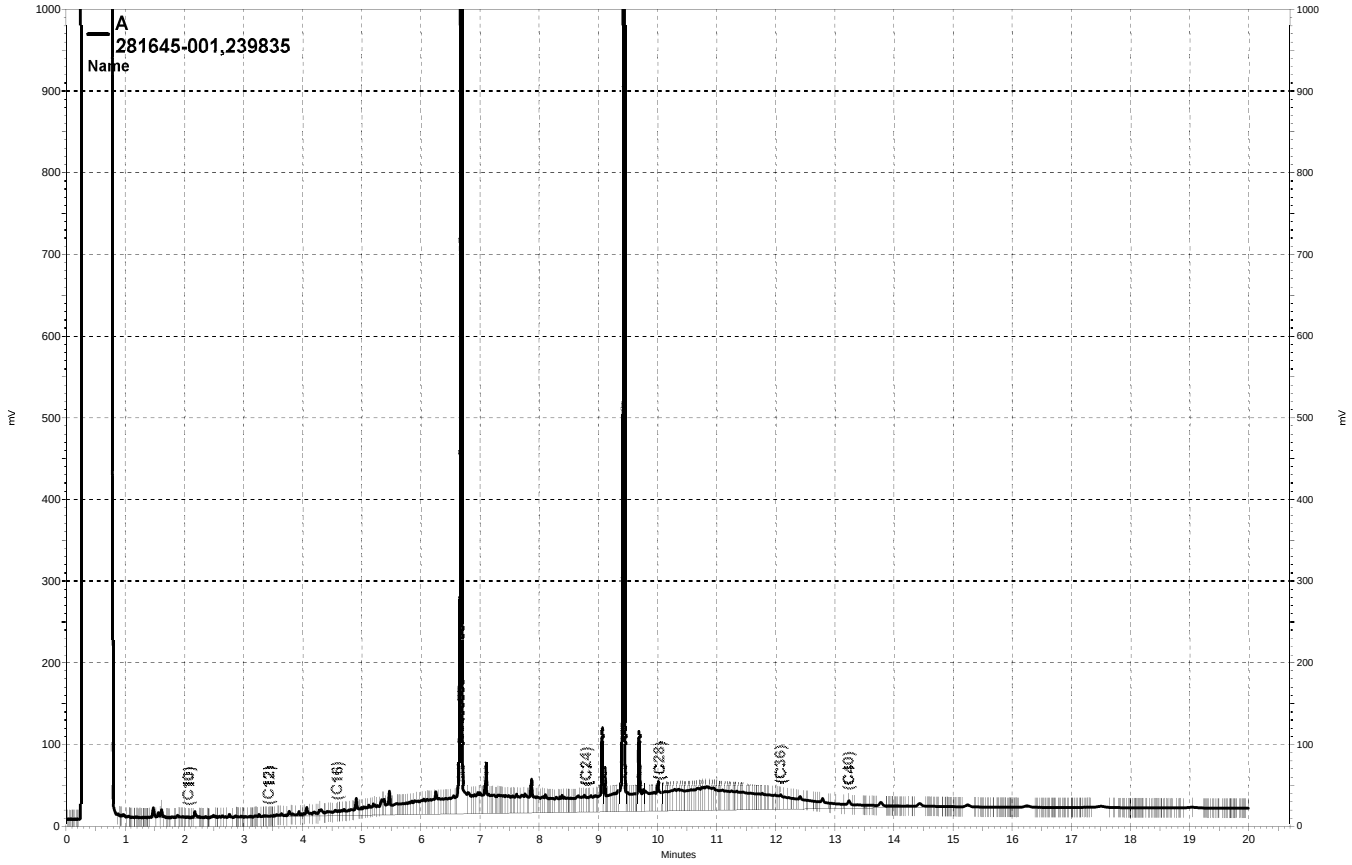
| Surrogate | %REC | Limits |
|---|---|---|
| o-Terphenyl | 100 | 67-136 |

Type: BSD Lab ID: QC854407

| Analyte | Spiked | Result | %REC | Limits | RPD | Lim |
|---|---|---|---|---|---|---|
| Diesel C10-C24 | 2,500 | 2,251 | 90 | 60-121 | 6 | 32 |

| Surrogate | %REC | Limits |
|---|---|---|
| o-Terphenyl | 94 | 67-136 |

RPD= Relative Percent Difference

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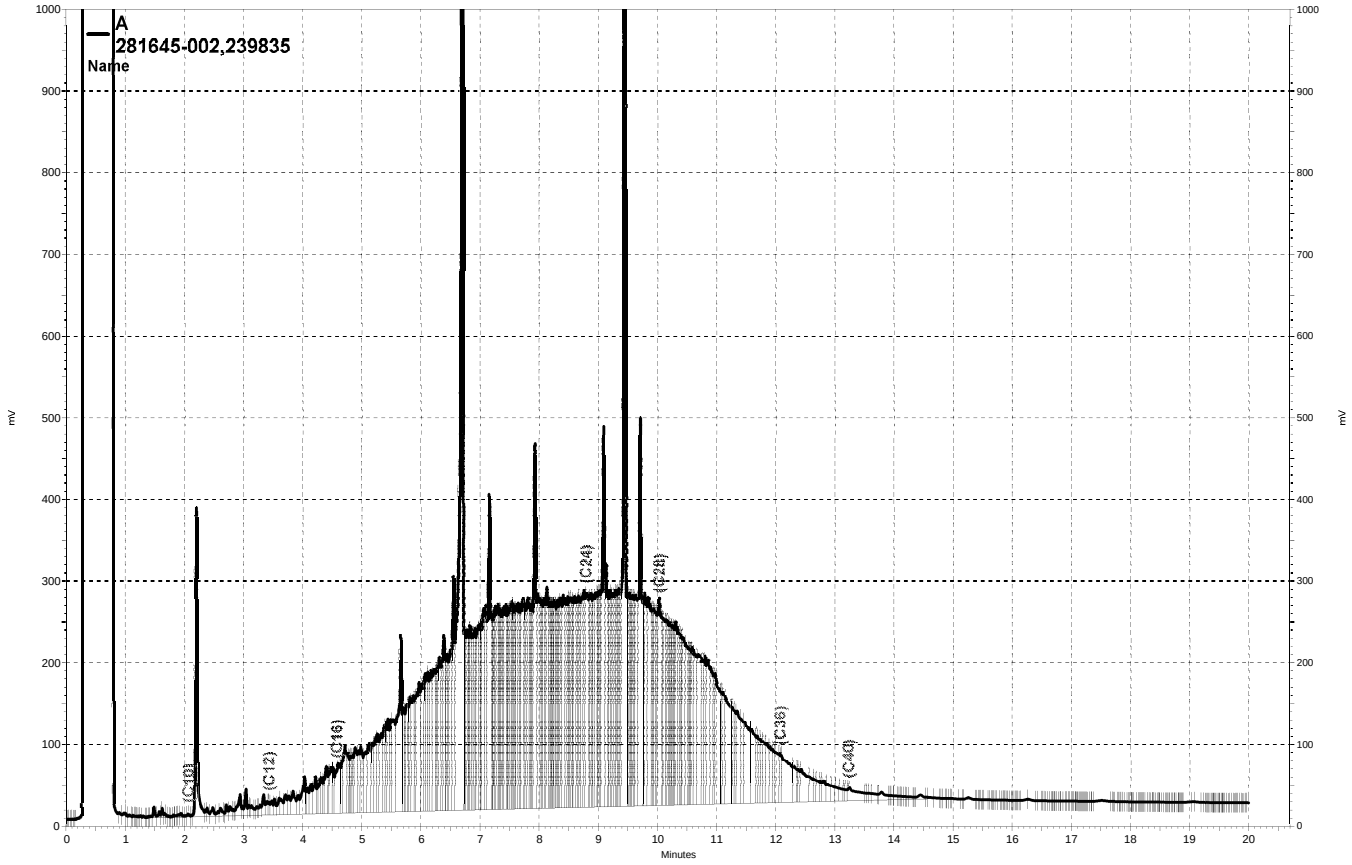


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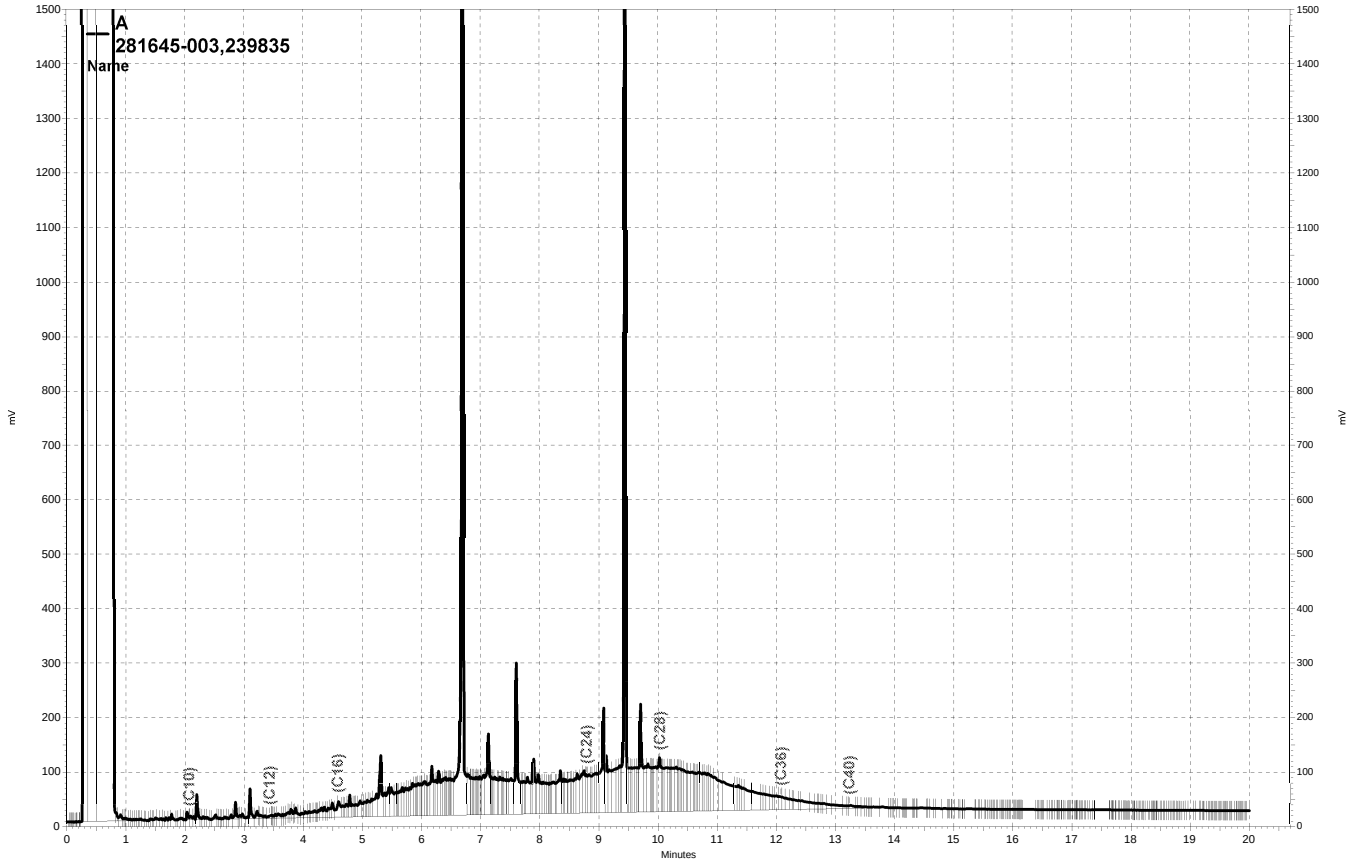


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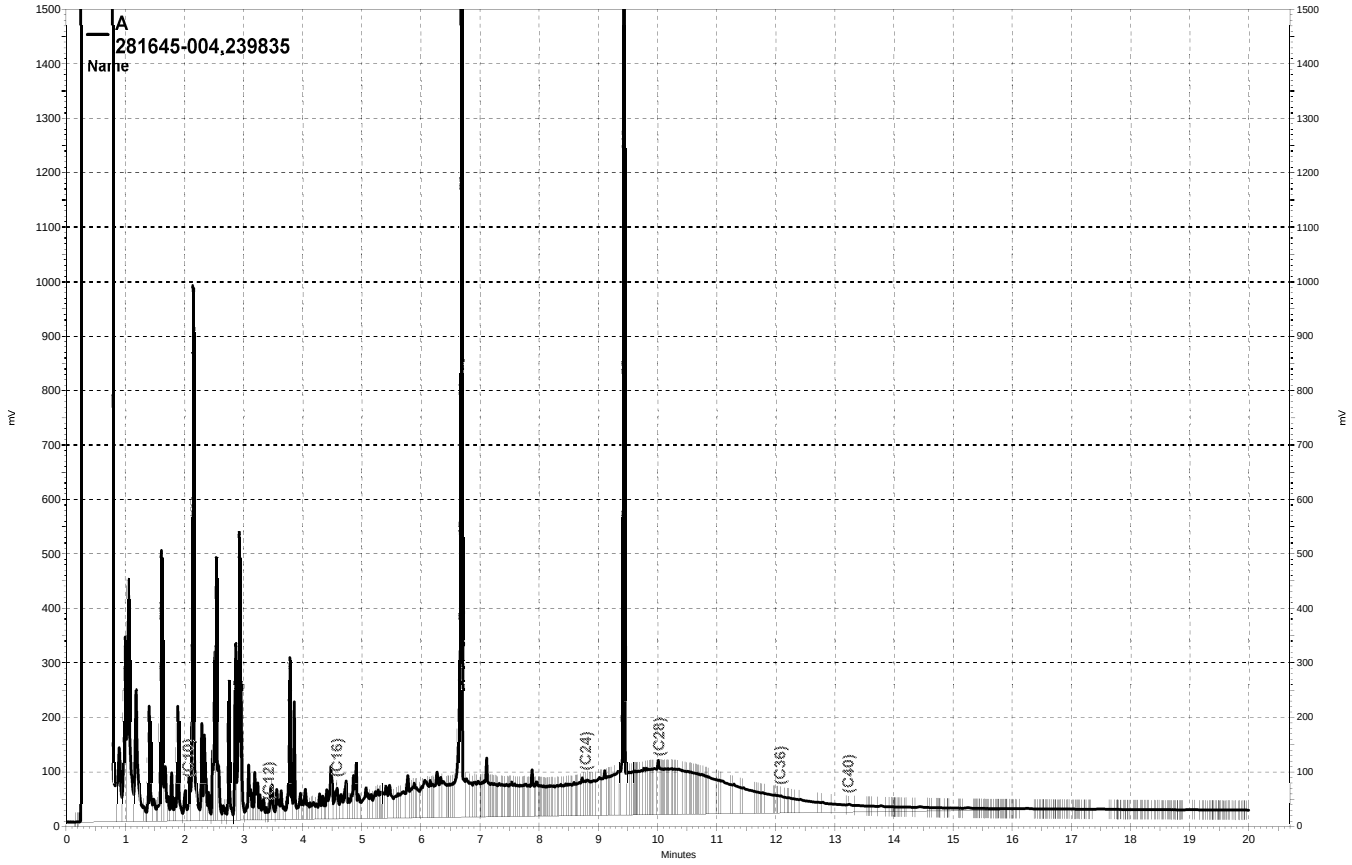


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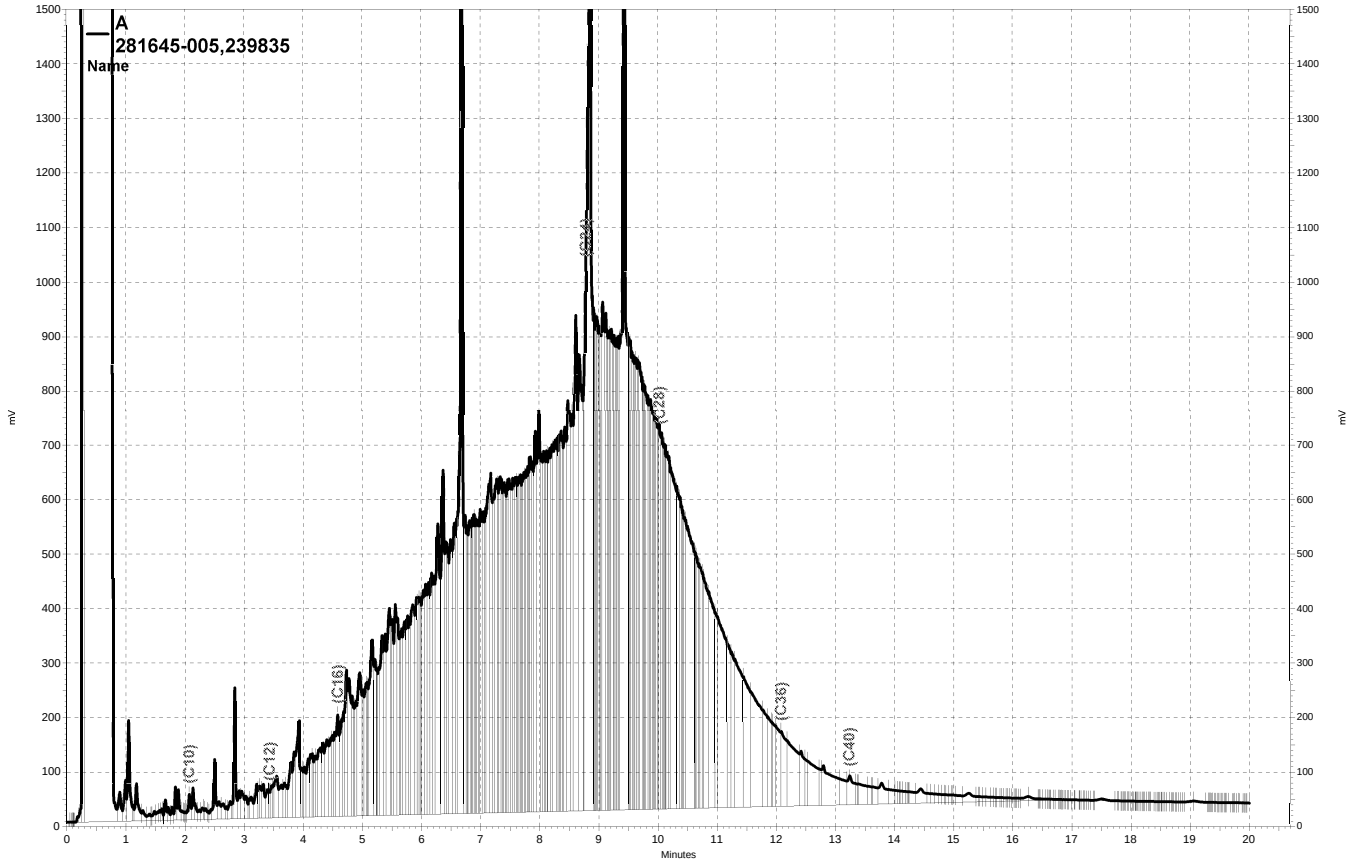


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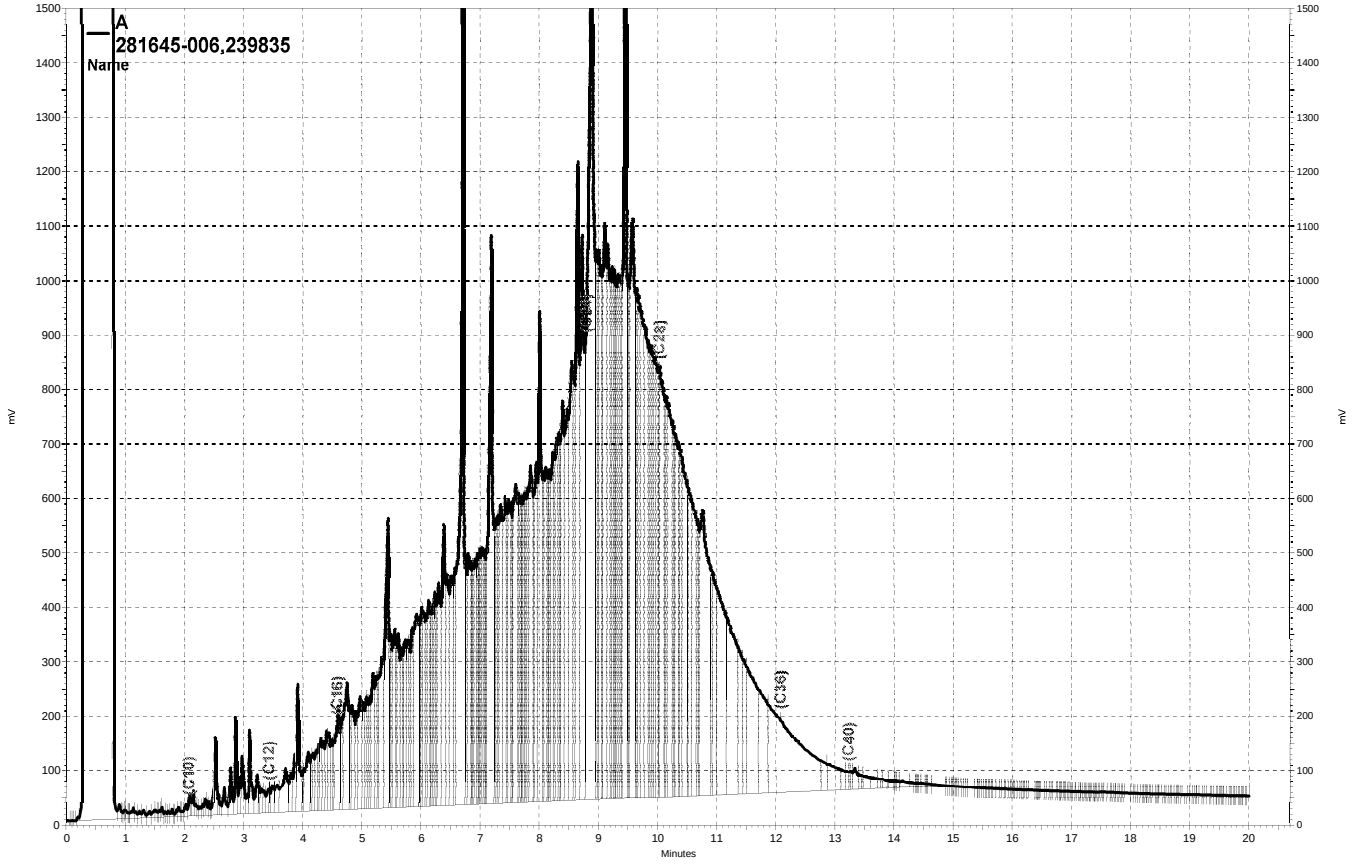


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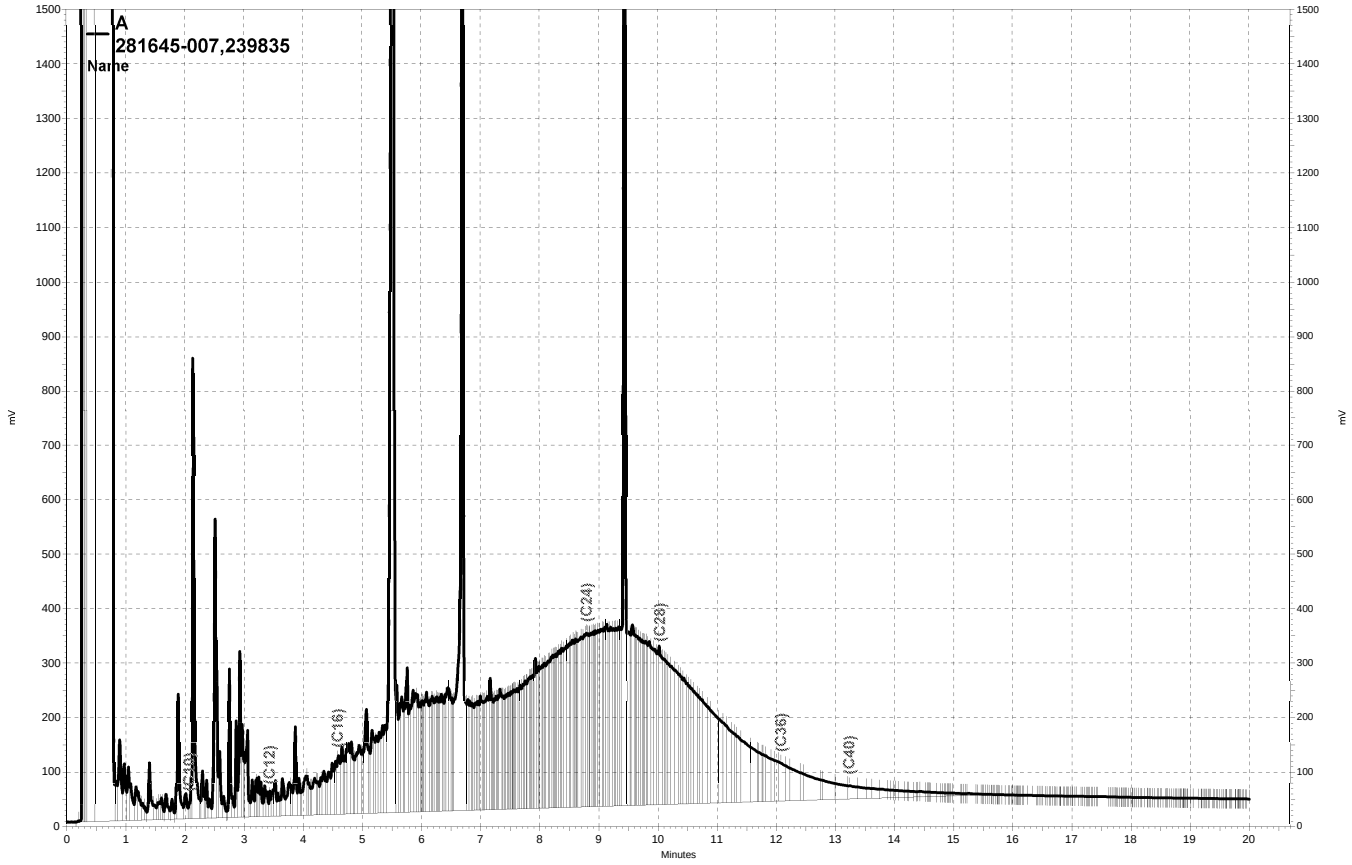


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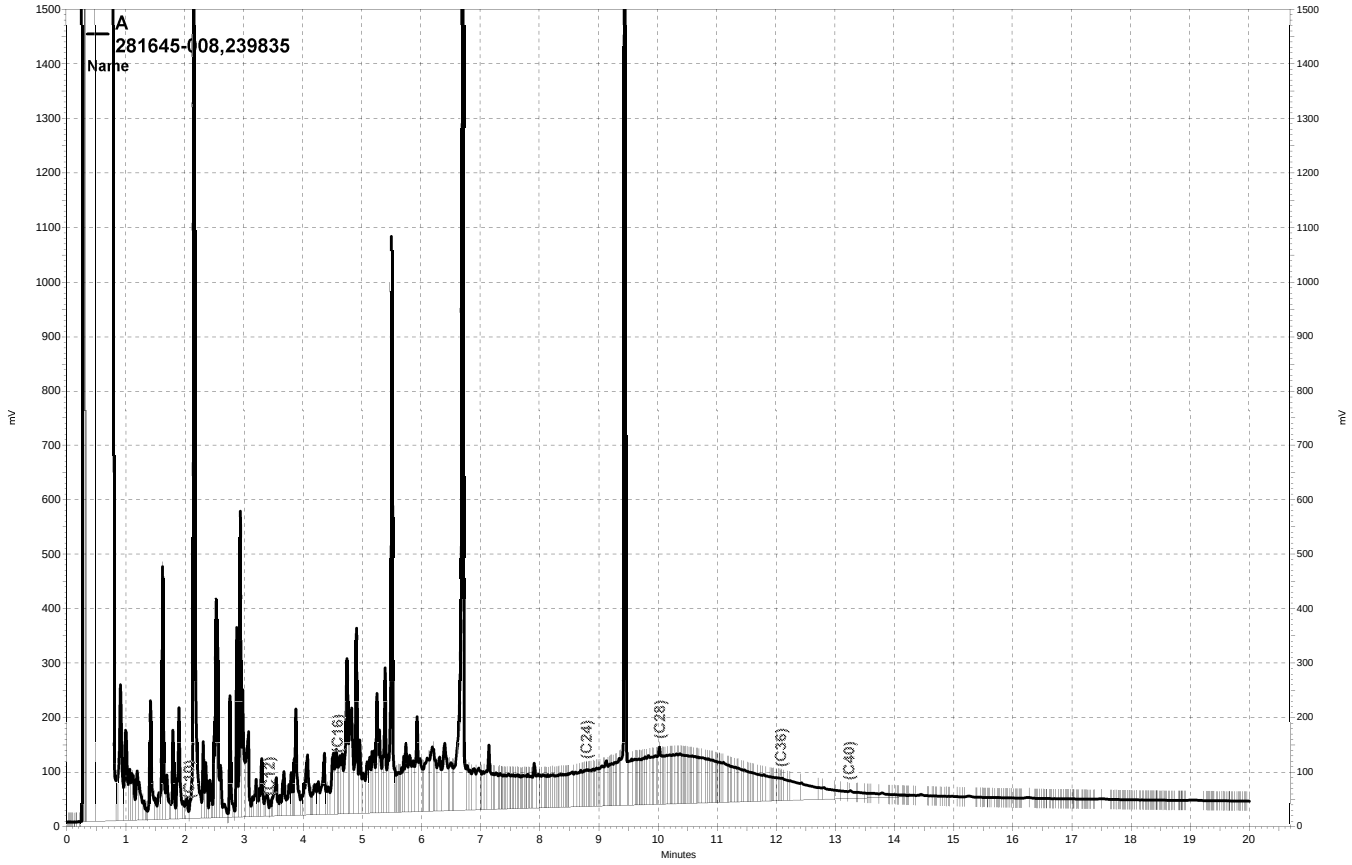


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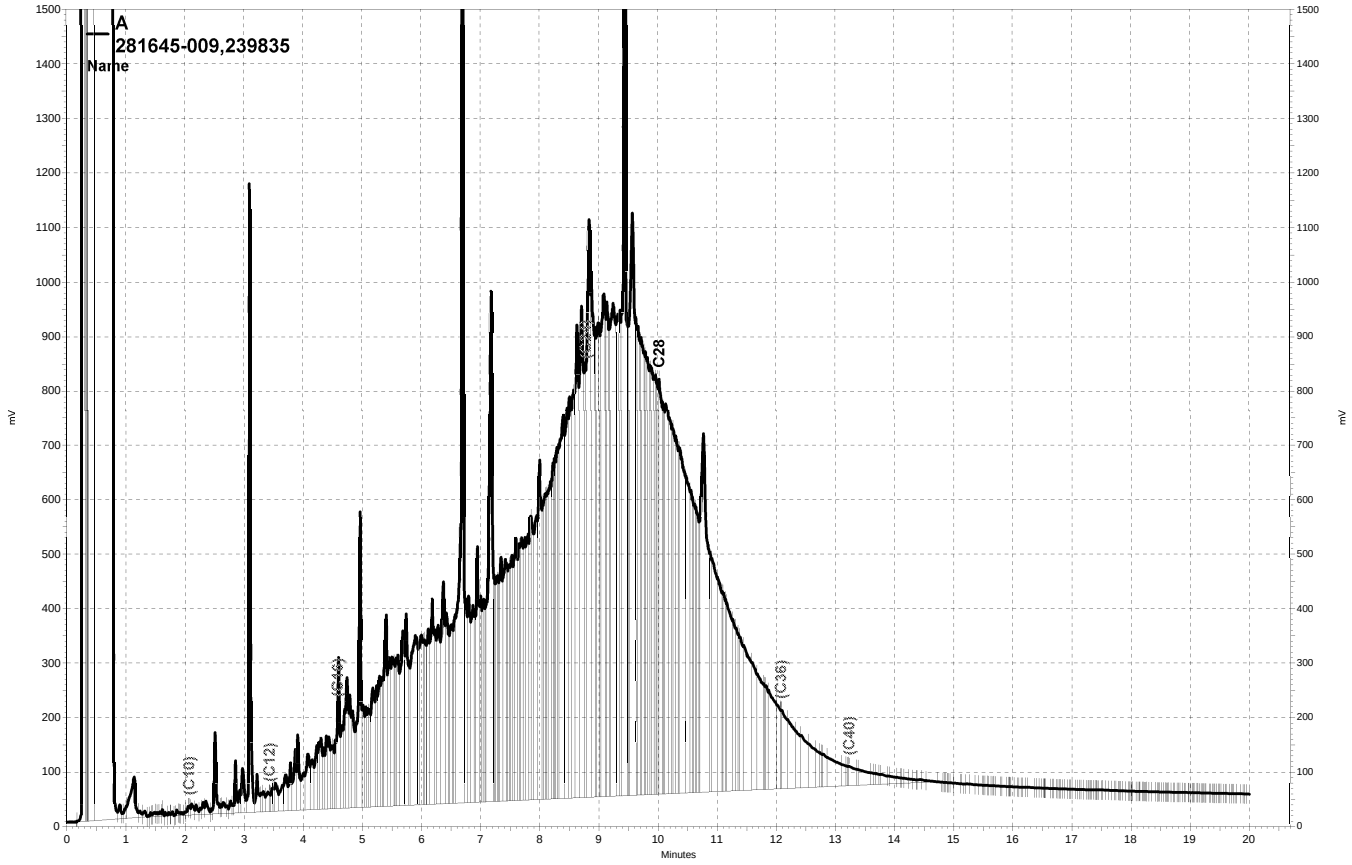


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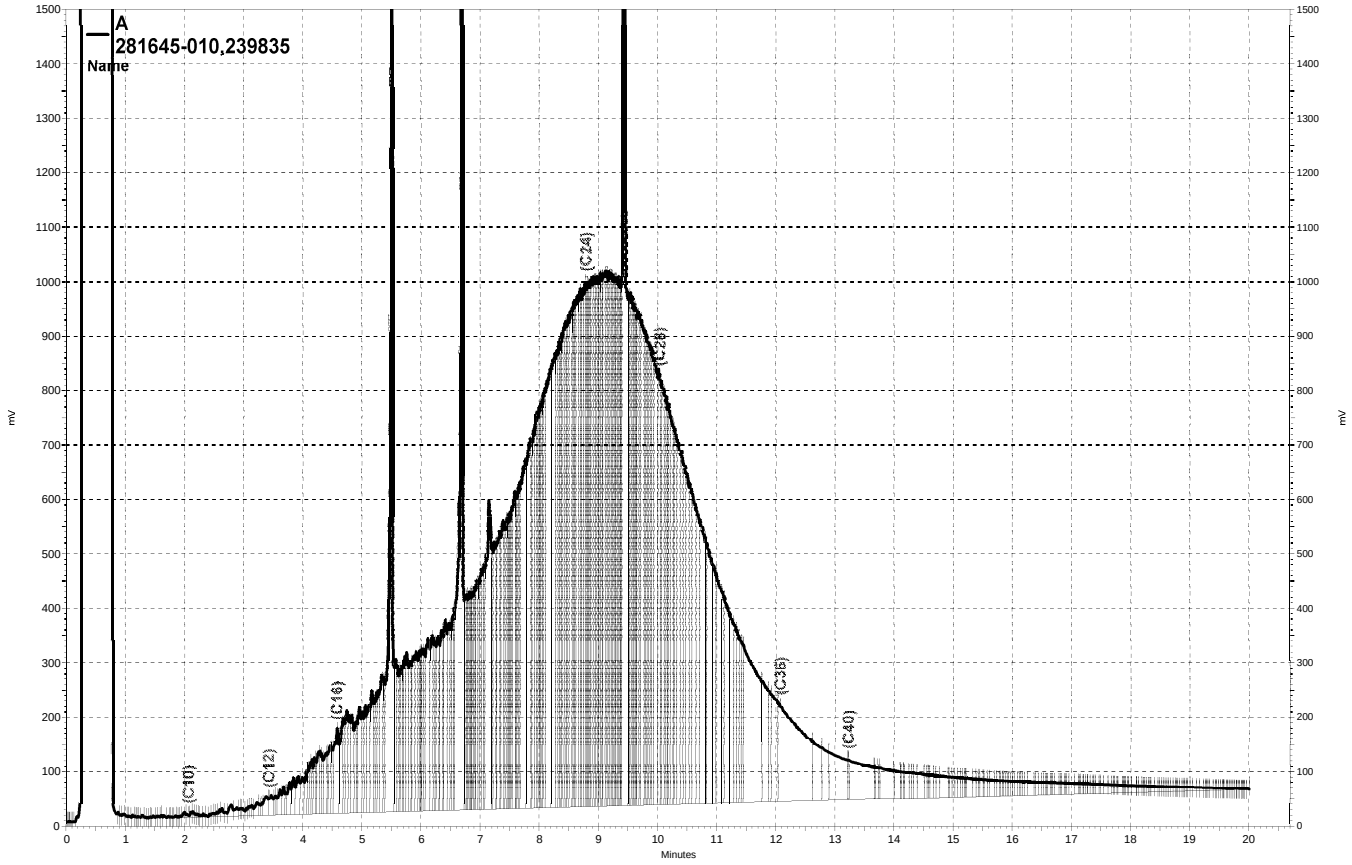


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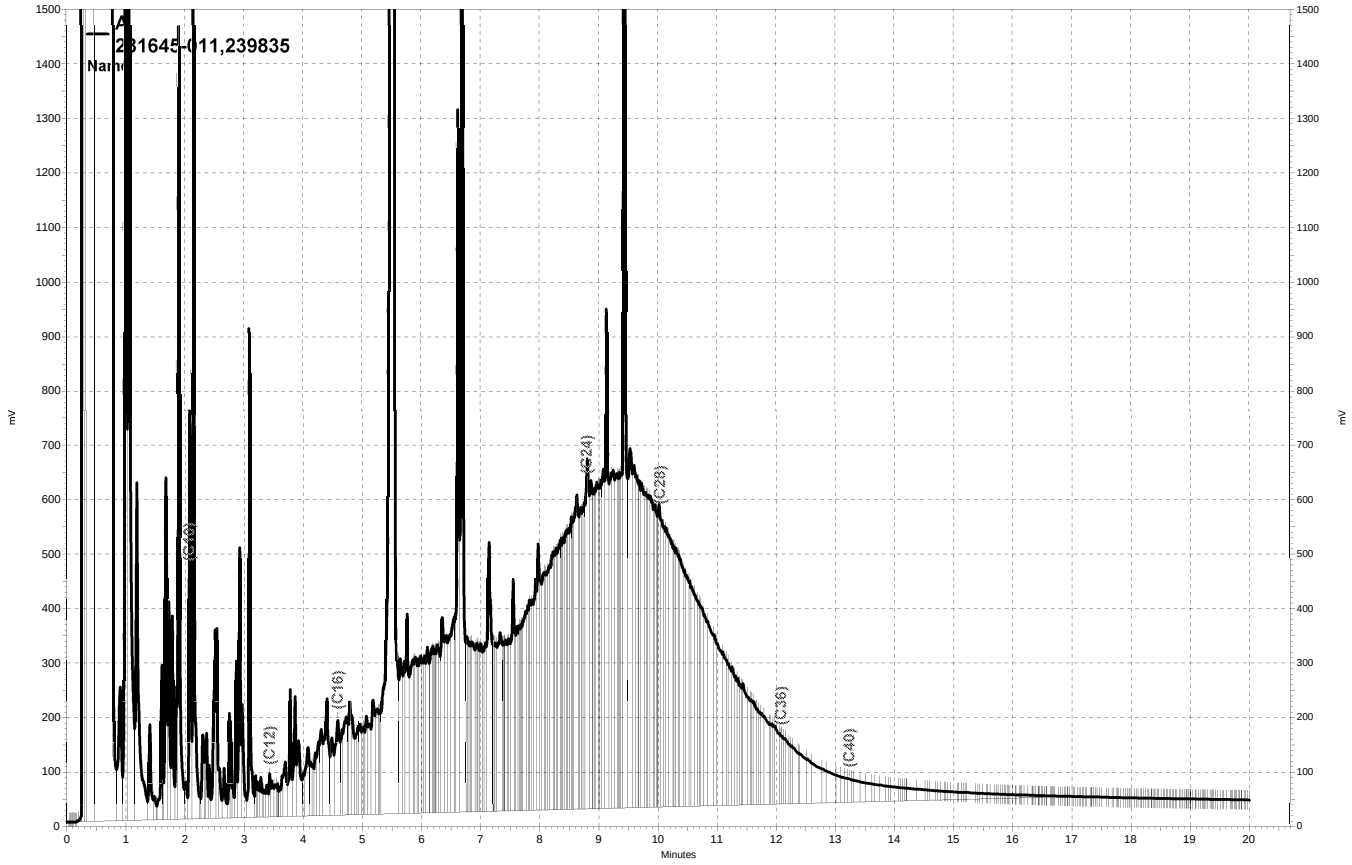


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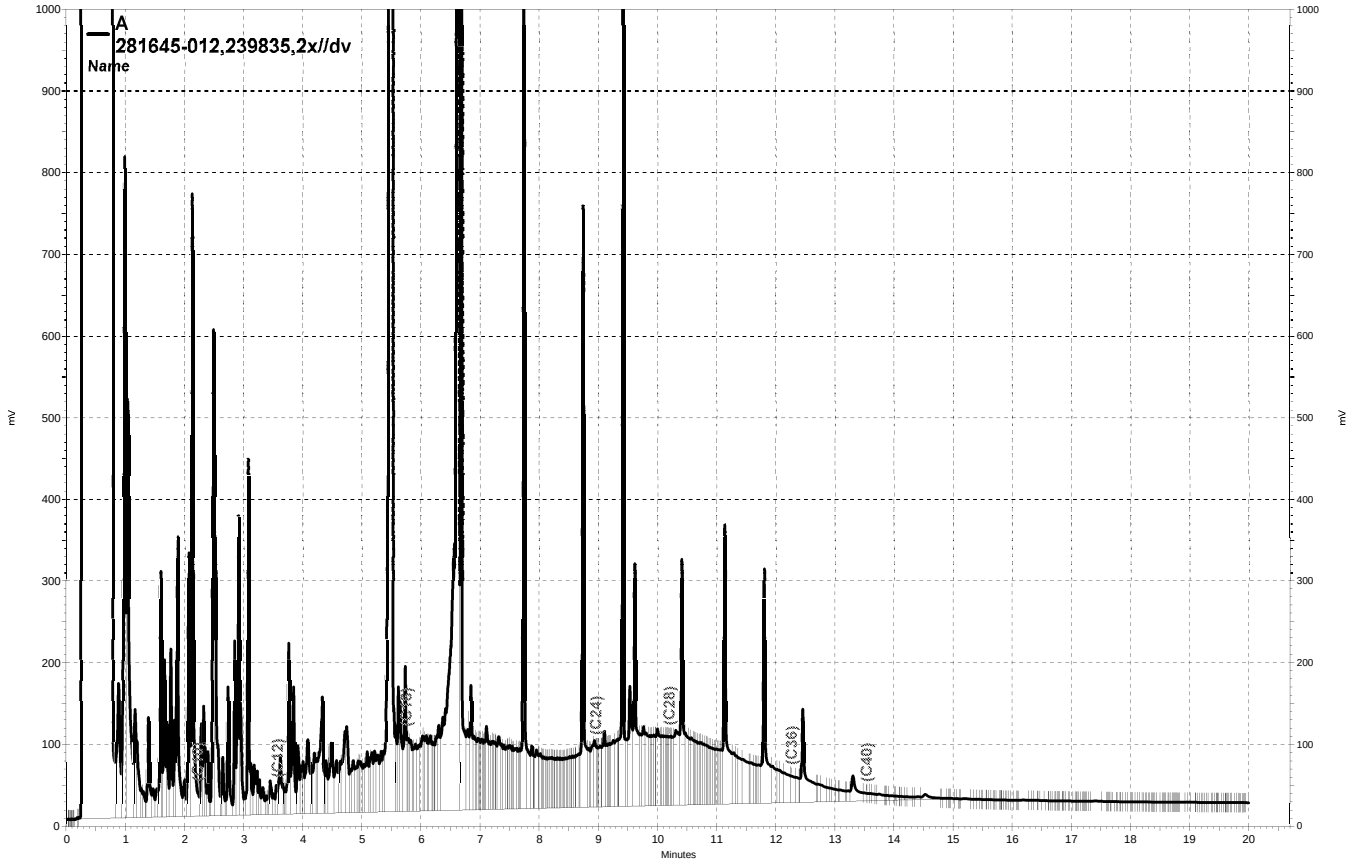


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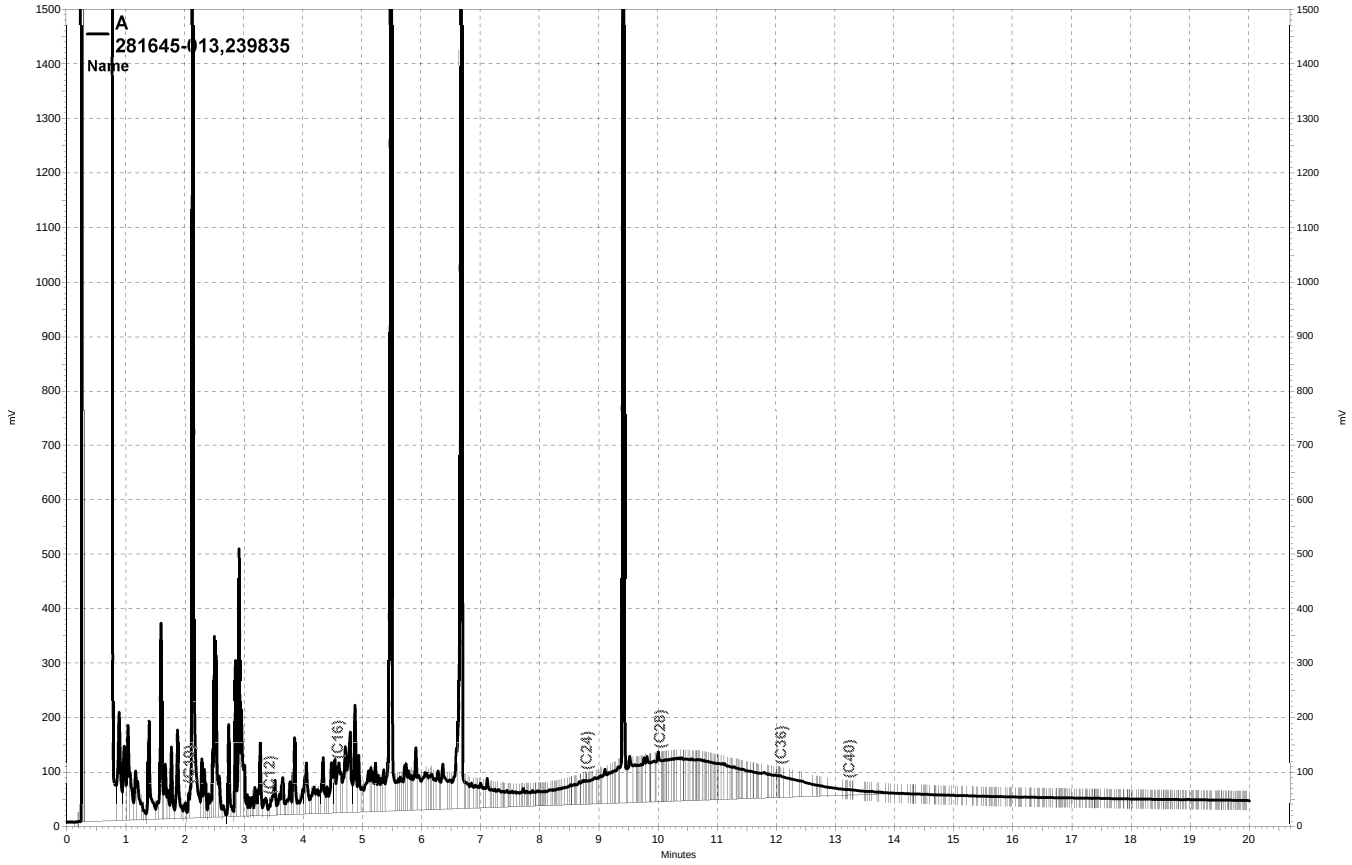


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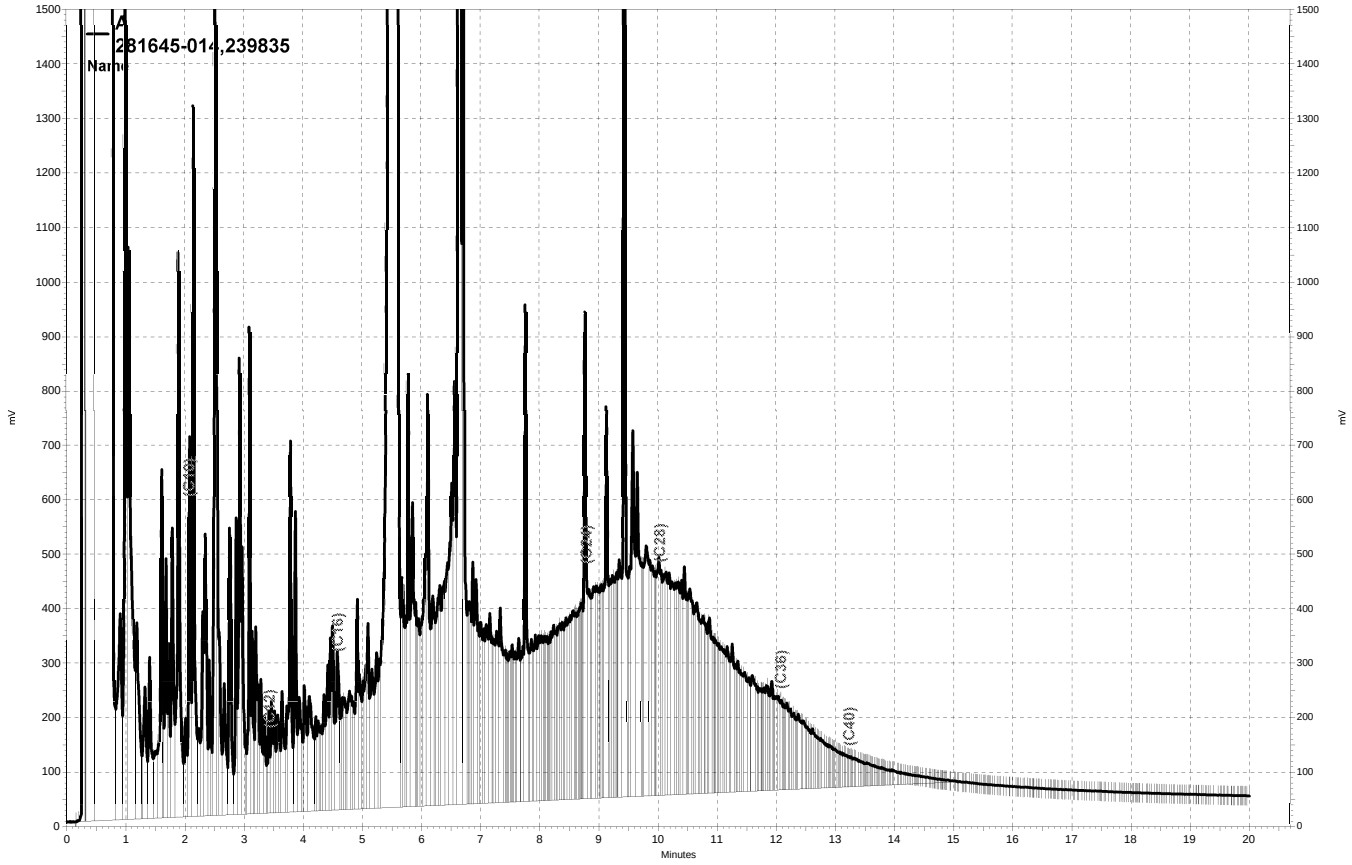


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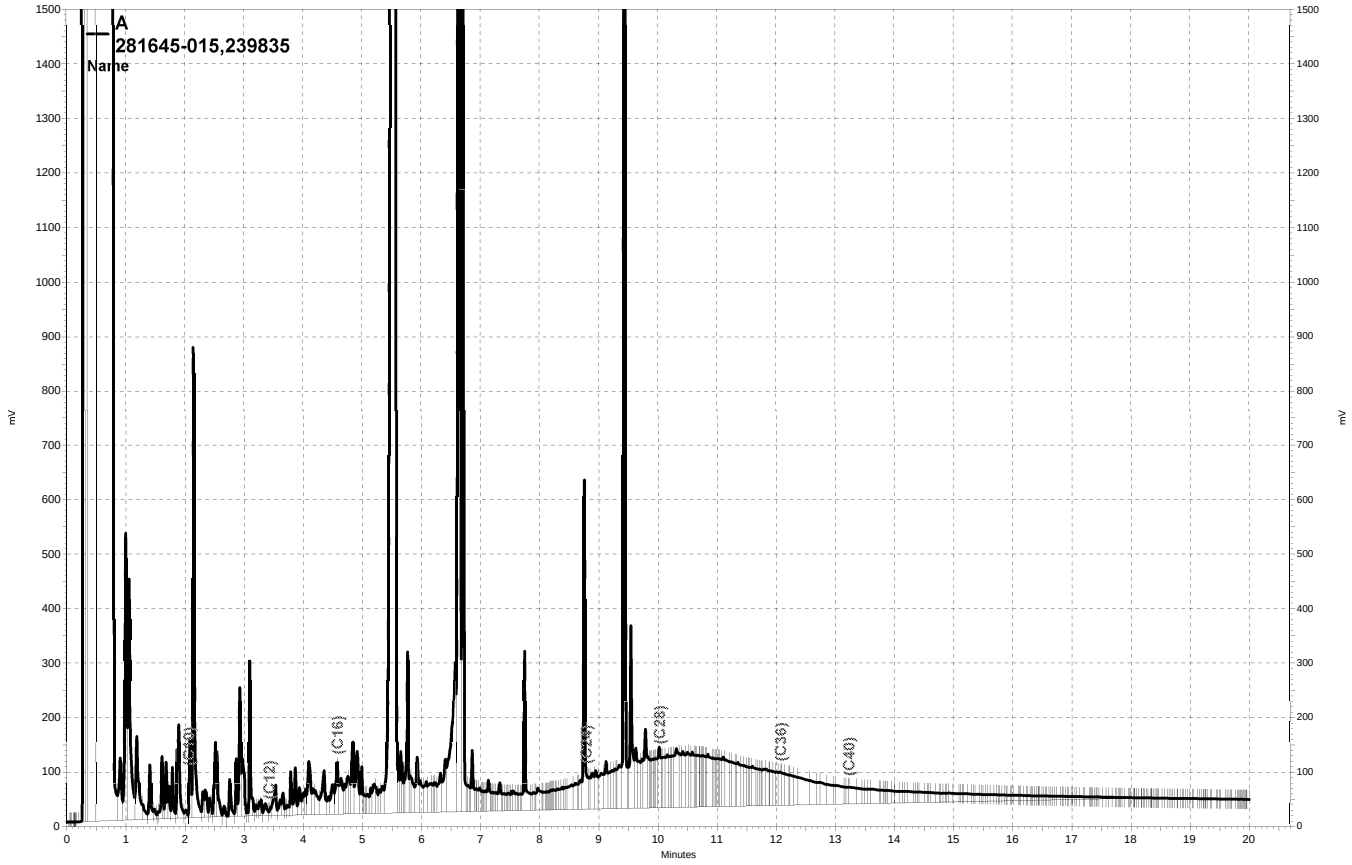
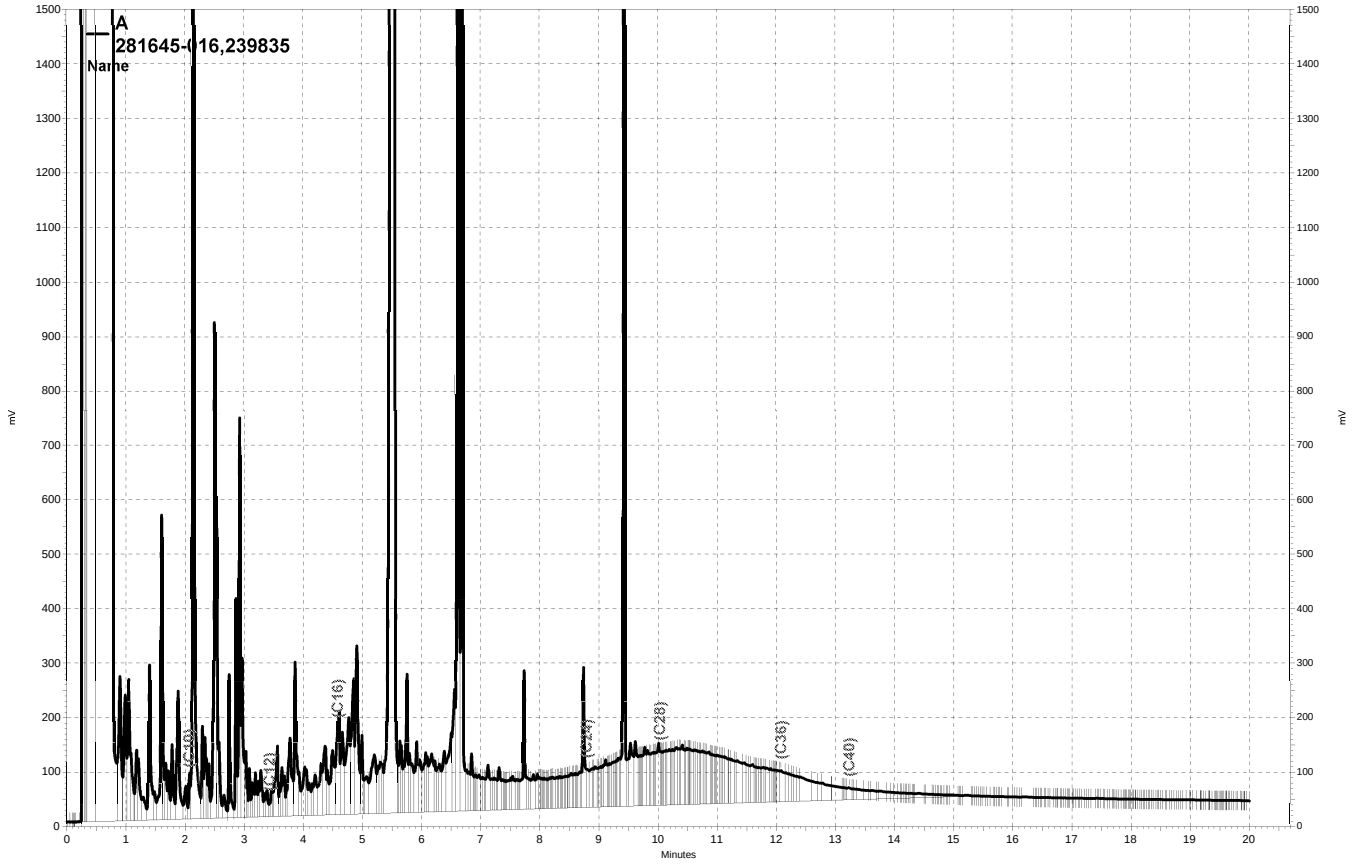



\\kraken\gdrive\ezchrom\Projects\GC17a\Data\284a028, A

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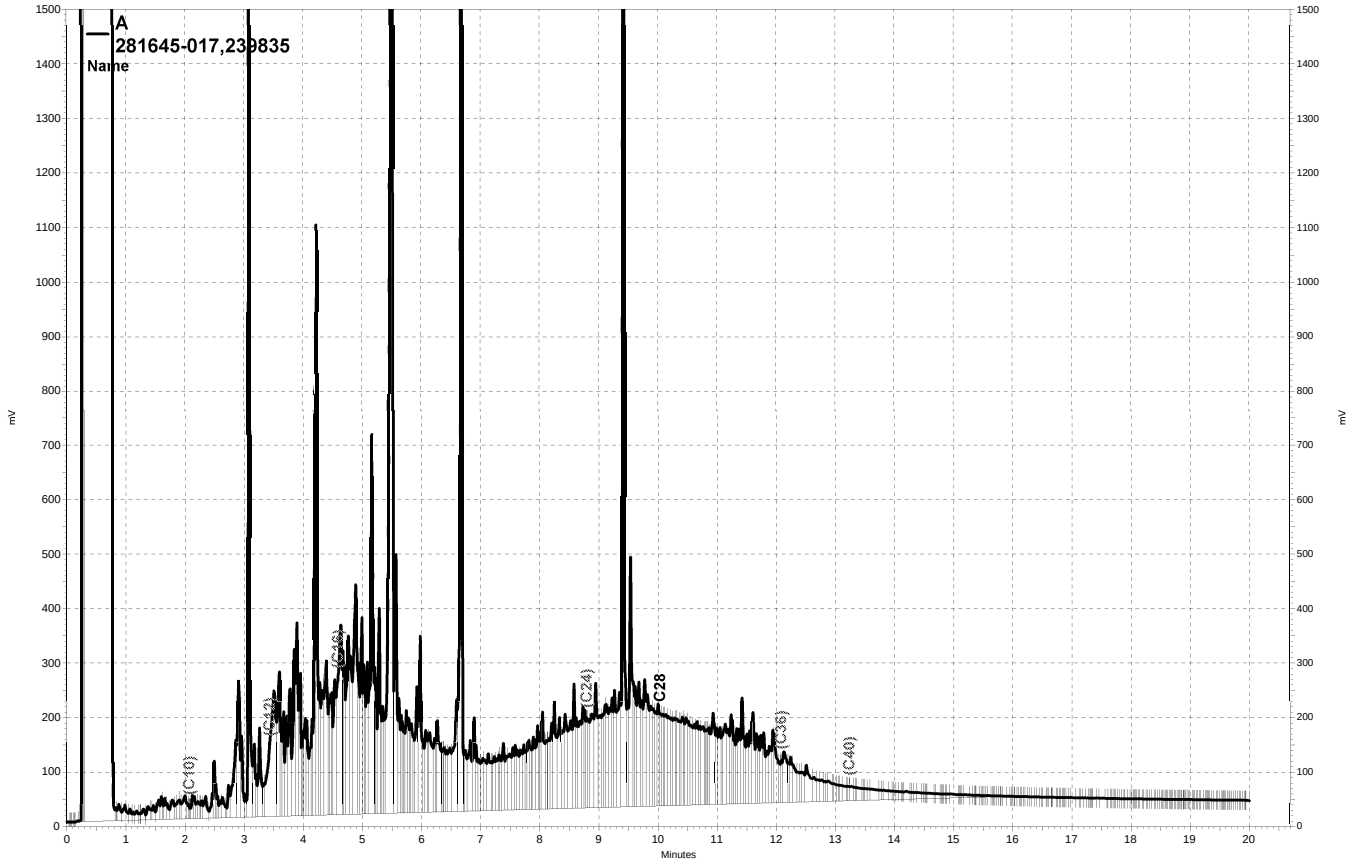


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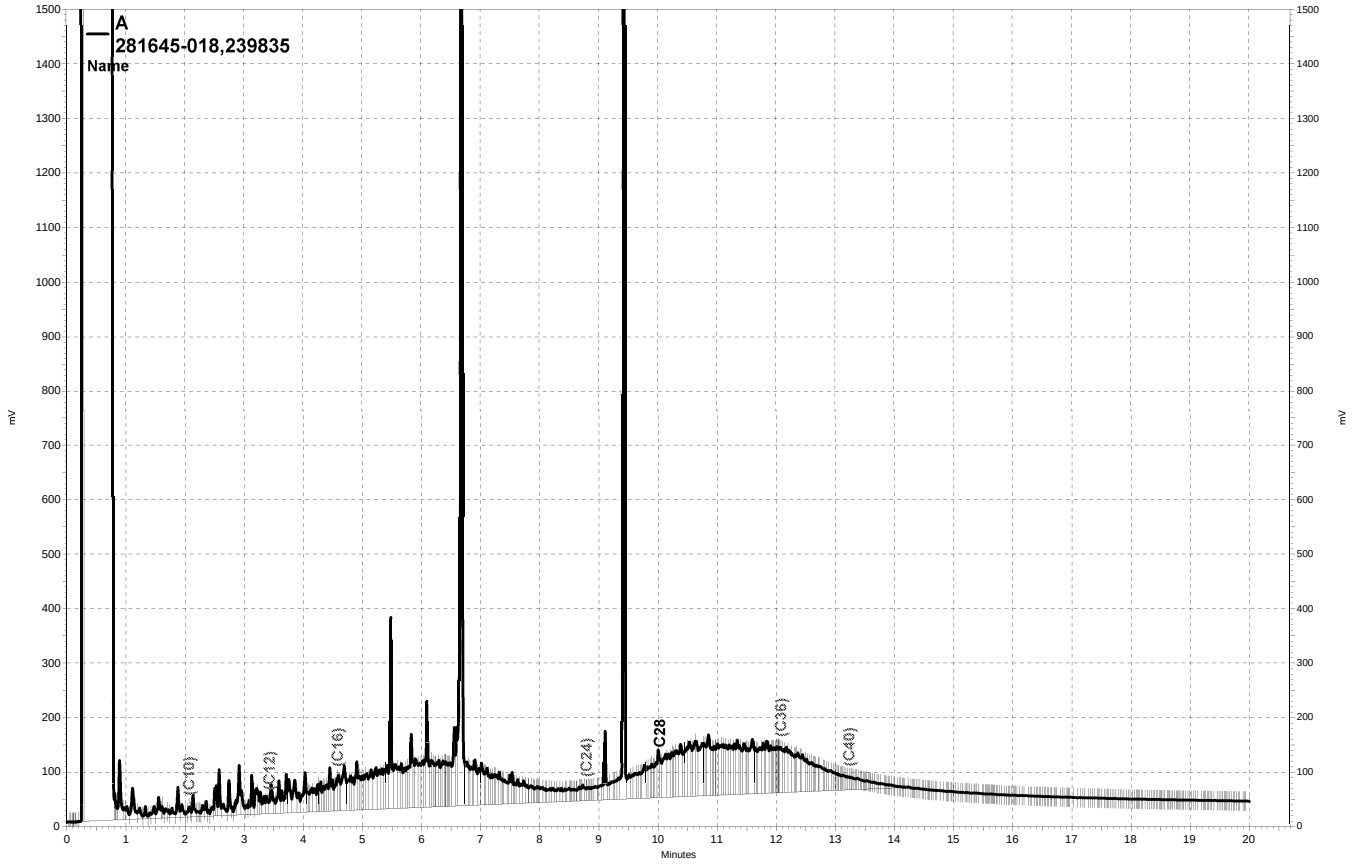


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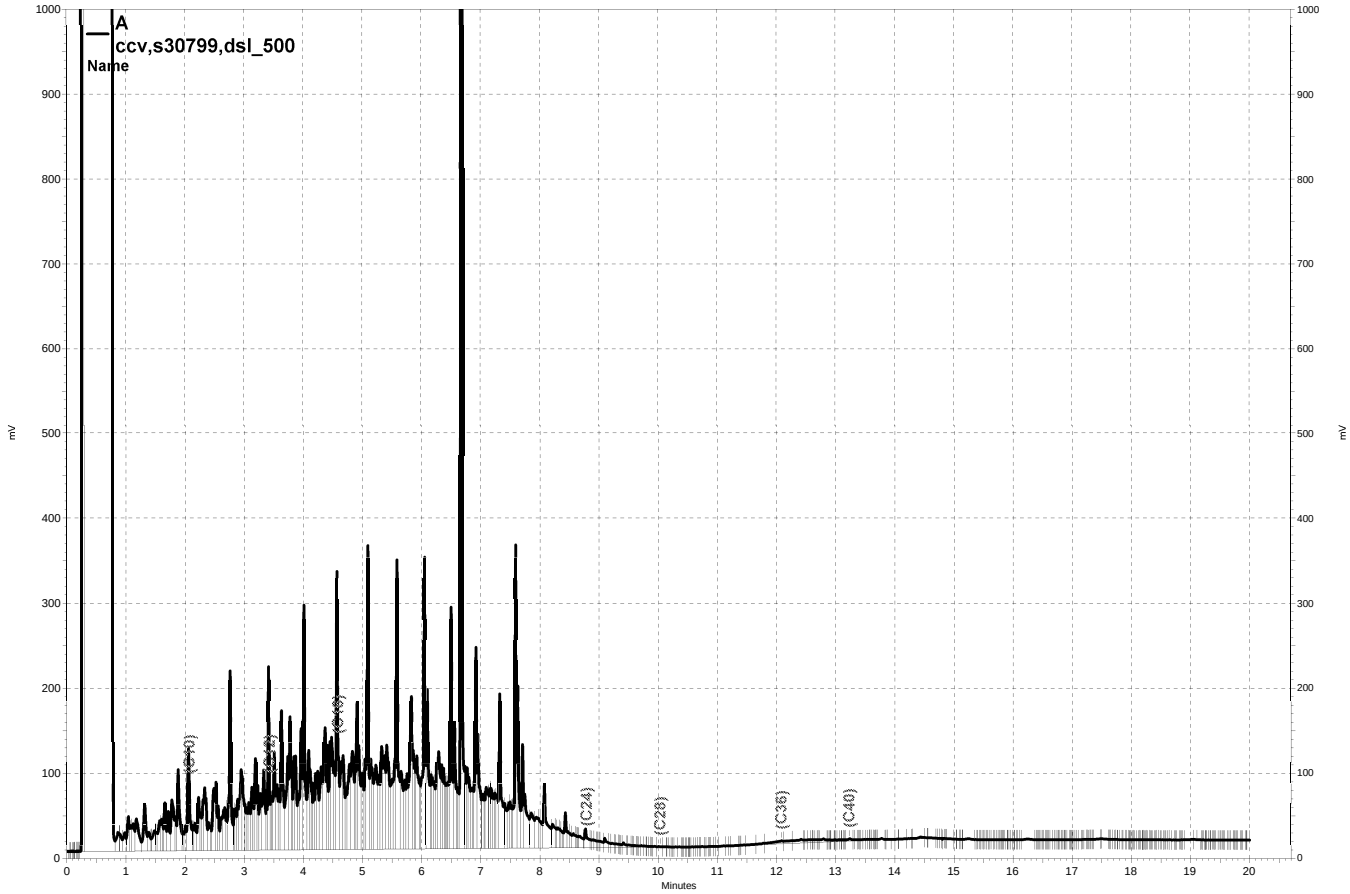


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# APPENDIX D

# Historical Groundwater Elevation Data

**TABLE B**
**Historical Monitoring, Extraction, and Trench Well Elevations**
**6400 Christie Avenue, Emeryville, California**

| MW-1 | | | | | |
|---|---|---|---|---|---|
| **Sampling Event No.** | **Date** | **TOC Elevation** | **DTW** | **DTP** | **GW Elevation** |
| 1 | Dec-88 | 14.39 | 9.60 | NP | 4.79 |
| 2 | May-89 | 14.31[a] | 8.73 | NP | 5.58 |
| 3 | Feb-91 | 14.31 | 9.18 | NP | 5.13 |
| **Monitoring well abandoned - date unclear** | | | | | |

| MW-2 | | | | | |
|---|---|---|---|---|---|
| **Sampling Event No.** | **Date** | **TOC Elevation** | **DTW** | **DTP** | **GW Elevation** |
| 1 | Dec-88 | 14.36 | 9.64 | NP | 4.72 |
| 2 | May-89 | 14.28[a] | 8.78 | NP | 5.50 |
| 3 | Feb-91 | 14.28 | 9.61 | NP | 4.67 |
| **Monitoring well abandoned - date unclear** | | | | | |

| MW-3 | | | | | |
|---|---|---|---|---|---|
| **Sampling Event No.** | **Date** | **TOC Elevation** | **DTW** | **DTP** | **GW Elevation** |
| 1 | Dec-88 | 14.53 | 8.93 | trace | 5.60 |
| 2 | May-89 | 14.43[a] | 8.69 | NP | 5.74 |
| 3 | Feb-91 | 14.43 | 8.31 | NP | 6.12 |
| 4 | Mar-04 | 16.96[b] | 9.47 | NP | 7.49 |
| 5 | Dec-06 | NA | NA | NA | NA |
| 6 | Dec-07 | 16.65[c] | 7.76 [e] | 7.76 | 8.89 |
| 7 | Mar-08 | 16.65 | 8.72 | 8.70 | 7.93 |
| 8 | Jun-08 | 16.65 | 8.56 | NP | 8.09 |
| 9 | Sep-08 | 16.65 | 9.27 | 7.95 | 7.38 |
| 10 | Dec-08 | 16.65 | 8.36 | 7.49 | 8.29 |
| 11 | Mar-09 | 16.65 | 7.94 | NP | 8.71 |
| 12 | Sep-09 | 16.65 | 8.58 | NP | 8.07 |
| 13 | Mar-10 | 16.65 | 8.08 [e] | 8.08 | 8.57 |
| 14 | Sep-10 | 16.65 | 8.68 [e] | 8.68 | 7.97 |
| 15 | Mar-11 | 16.65 | 10.40 | NM | 6.25 |
| 16 | Sep-11 | 16.65 | 10.84 | 10.83 | 6.17 |
| 17 | Mar-12 | 16.65 | 8.21 | NM | 8.44 |
| 18 | Sep-12 | 16.65 | 10.77 | NM | 5.88 |
| 19 | Mar-13 | 16.65 | 11.27 | NM | 5.38 |
| 20 | Sep-13 | 16.65 | 11.50 | NM | 5.15 |
| 21 | Mar-14 | 16.65 | 9.64 | 9.61 | 7.01 |
| 22 | Sep-14 | 16.65 | NM | 10.85 | NM |
| 23 | Mar-15 | 16.65 | 9.40 | 9.35 | 7.25 |
| 24 | Sep-15 | 16.65 | 9.00 | 7.22 | 7.65 |
| 25 | Mar-16 | 16.65 | 11.35 | NM | 5.30 |
| 26 | Sep-16 | 16.65 | 11.01 | NM | 5.64 |

*Thick pro

| MW-4 | | | | | |
|---|---|---|---|---|---|
| **Sampling Event No.** | **Date** | **TOC Elevation** | **DTW** | **DTP** | **GW Elevation** |
| 1 | Dec-88 | 14.21 | 8.29 | NP | 5.92 |
| 2 | May-89 | 14.12[a] | 7.75 | NP | 6.37 |
| 3 | Feb-91 | 14.12 | 8.04 | NP | 6.08 |
| 4 | Mar-04 | 16.74[b] | 6.90 | NP | 7.49 |
| 5 | Dec-06 | NA | NA | NA | NA |
| 6 | Dec-07 | 16.29[c] | 6.61 | NP | 9.68 |
| 7 | Mar-08 | 16.29 | 7.24 | NP | 9.05 |
| 8 | Jun-08 | 16.29 | 6.94 | NP | 9.35 |
| 9 | Sep-08 | 16.29 | 6.85 | NP | 6.85 |
| 10 | Dec-08 | 16.29 | 7.42 | NP | 8.87 |
| 11 | Mar-09 | 16.29 | 6.90 | NP | 9.39 |
| 12 | Sep-09 | 16.29 | 7.40 | NP | 8.89 |
| 13 | Mar-10 | 16.29 | 7.08 | NP | 9.21 |
| 14 | Sep-10 | 16.29 | 7.08 | NP | 9.21 |
| 15 | Mar-11 | 16.29 | 7.02 | NP | 9.27 |
| 16 | Sep-11 | 16.29 | 7.83 | NP | 8.46 |
| 17 | Mar-12 | 16.29 | 7.01 | NP | 9.28 |
| 18 | Sep-12 | 16.29 | 7.82 | NP | 8.45 |
| 19 | Mar-13 | 16.29 | 9.15 | NP | 7.14 |
| 20 | Sep-13 | 16.29 | 8.00 | NP | 8.29 |
| 21 | Mar-14 | 16.29 | 7.72 | NP | 8.57 |
| 22 | Sep-14 | 16.29 | 8.23 | NP | 8.06 |
| 23 | Mar-15 | 16.29 | 8.42 | NP | 7.87 |
| 24 | Sep-15 | 16.29 | 7.68 | NP | 8.61 |
| 25 | Mar-16 | 16.29 | NM | NM | -- |
| 26 | Sep-16 | 16.29 | 8.48 | NP | 7.81 |

| MW-5 | | | | | |
|---|---|---|---|---|---|
| **Sampling Event No.** | **Date** | **TOC Elevation** | **DTW** | **DTP** | **GW Elevation** |
| 1 | Dec-88 | 14.65 | 10.23 | NP | 4.42 |
| 2 | May-89 | 14.56[a] | 9.29 | NP | 5.27 |
| 3 | Feb-91 | 14.56 | 10.04 | NP | 4.52 |
| 4 | Mar-04 | 17.11[b] | 9.10 | NP | 8.01 |
| 5 | Dec-06 | NA | NA | NA | NA |
| 6 | Dec-07 | 16.72[c] | 9.66 | NA | 7.06 |
| 7 | Mar-08 | 16.72 | 9.72 | NP | 7.00 |
| 8 | Jun-08 | 16.72 | 9.72 | NP | 7.00 |
| 9 | Sep-08 | 16.72 | 8.56 | NP | 8.16 |
| 10 | Dec-08 | 16.72 | 9.75 | NP | 6.97 |
| 11 | Mar-09 | 16.72 | 9.31 | NP | 7.41 |
| 12 | Sep-09 | 16.72 | 9.79 | NP | 6.93 |
| 13 | Mar-10 | 16.72 | 9.48 | NP | 7.24 |
| 14 | Sep-10 | 16.72 | 9.90 | NP | 6.82 |
| 15 | Mar-11 | 16.72 | 9.29 | NP | 7.43 |
| 16 | Sep-11 | 16.72 | 9.77 | NP | 6.95 |
| 17 | Mar-12 | 16.72 | 9.19 | NP | 7.53 |
| 18 | Sep-12 | 16.72 | 9.70 | NP | 7.02 |
| 19 | Mar-13 | 16.72 | 10.63 | NP | 6.09 |
| 20 | Sep-13 | 16.72 | 10.20 | NP | 6.52 |
| 21 | Mar-14 | 16.72 | 9.68 | NP | 7.04 |
| 22 | Sep-14 | 16.72 | 9.73 | NP | 6.99 |
| 23 | Mar-15 | 16.72 | 9.59 | NP | 7.13 |
| 24 | Sep-15 | 16.72 | 9.78 | NP | 6.94 |
| 25 | Mar-16 | 16.72 | 8.03 | NP | 8.69 |
| 26 | Sep-16 | 16.72 | 10.09 | NP | 6.63 |

| MW-6 | | | | | |
|---|---|---|---|---|---|
| **Sampling Event No.** | **Date** | **TOC Elevation** | **DTW** | **DTP** | **GW Elevation** |
| 1 | Dec-88 | 14.75 | 8.10 | NP | 6.65 |
| 2 | May-89 | 14.67[a] | 7.58 | NP | 7.09 |
| 3 | Feb-91 | 14.67 | 7.05 | NP | 7.62 |
| 4 | Mar-04 | 17.22[b] | 6.51 | NP | 10.71 |
| 5 | Dec-06 | NA | NA | NA | NA |
| 6 | Dec-07 | 16.82[c] | 6.61 | NP | 10.21 |
| 7 | Mar-08 | 16.82 | 7.02 | NP | 9.80 |
| 8 | Jun-08 | 16.82 | 7.55 | NP | 9.27 |
| 9 | Sep-08 | 16.82 | 6.06 | NP | 10.76 |
| 10 | Dec-08 | 16.82 | 6.91 | NP | 9.91 |
| 11 | Mar-09 | 16.82 | 6.45 | NP | 10.37 |
| 12 | Sep-09 | 16.82 | 8.05 | NP | 8.77 |
| 13 | Mar-10 | 16.82 | 6.66 | NP | 10.16 |
| 14 | Sep-10 | 16.82 | 7.98 | NP | 8.84 |
| 15 | Mar-11 | 16.82 | 5.91 | NP | 10.91 |
| 16 | Sep-11 | 16.82 | 7.66 | NP | 9.16 |
| 17 | Mar-12 | 16.82 | 5.65 | NP | 11.17 |
| 18 | Sep-12 | 16.82 | 7.51 | NP | 9.31 |
| 19 | Mar-13 | 16.82 | 7.60 | NP | 9.22 |
| 20 | Sep-13 | 16.82 | 5.65 | NP | 11.17 |
| 21 | Mar-14 | 16.82 | 6.33 | NP | 10.49 |
| 22 | Sep-14 | 16.82 | 8.13 | NP | 8.69 |
| 23 | Mar-15 | 16.82 | 7.63 | NP | 9.19 |
| 24 | Sep-15 | 16.82 | 9.09 | NP | 7.73 |
| 25 | Mar-16 | 16.82 | 6.39 | NP | 10.43 |
| 26 | Sep-16 | 16.82 | 7.75 | NP | 9.07 |

| MW-7 | | | | | |
|---|---|---|---|---|---|
| **Sampling Event No.** | **Date** | **TOC Elevation** | **DTW** | **DTP** | **GW Elevation** |
| **Installed March 2004** | | | | | |
| 1 | Mar-04 | 18.09 | 9.93 | NP | 8.16 |
| 2 | Dec-06 | NA | NA | NA | NA |
| 3 | Dec-07 | 17.73[c] | 10.30 | NP | 7.43 |
| 4 | Mar-08 | 17.73 | 10.51 | NP | 7.22 |
| 5 | Jun-08 | 17.73 | 10.50 | NP | 7.23 |
| 6 | Sep-08 | 17.73 | 10.37 | NP | 7.36 |
| 7 | Dec-08 | 17.73 | 10.60 | NP | 7.13 |
| 8 | Mar-09 | 17.73 | 10.13 | NP | 7.60 |
| 9 | Sep-09 | 17.73 | 10.61 | NP | 7.12 |
| 10 | Mar-10 | 17.73 | 10.02 | NP | 7.71 |
| 11 | Sep-10 | 17.73 | 10.59 | NP | 7.14 |
| 12 | Mar-11 | 17.73 | 10.14 | NP | 7.59 |
| 13 | Sep-11 | 17.73 | 10.58 | NP | 7.15 |
| 14 | Mar-12 | 17.73 | 10.12 | NP | 7.61 |
| 15 | Sep-12 | 17.73 | 10.50 | NP | 7.23 |
| 16 | Mar-13 | 17.73 | 11.30 | NP | 6.43 |
| 17 | Sep-13 | 17.73 | 5.50 | NP | 12.23 |
| 18 | Mar-14 | 17.73 | 10.82 | NP | 6.91 |
| 19 | Sep-14 | 17.73 | 10.61` | NP | 7.02 |
| 20 | Mar-15 | 17.73 | 10.57 | NP | 7.16 |
| 21 | Sep-15 | 17.73 | 10.54 | NP | 7.19 |
| 22 | Mar-16 | 17.73 | 10.51 | NP | 7.22 |
| 23 | Sep-16 | 17.73 | 10.77 | NP | 6.96 |

| MW-8 | | | | | |
|---|---|---|---|---|---|
| **Sampling Event No.** | **Date** | **TOC Elevation** | **DTW** | **DTP** | **GW Elevation** |
| **Installed March 2004** | | | | | |
| 1 | Mar-04 | 18.25 | 9.32 | 8.15 | 8.93 |
| 2 | Nov-06[d] | 16.96 | 10.59 | NP | 6.37 |
| 3 | Dec-07 | 17.84[c] | 9.42 | NP | 8.42 |
| 4 | Mar-08 | 17.84 | 10.50 | 9.18 | 7.34 |
| 5 | Jun-08 | 17.84 | 9.68 | 9.10 | 8.16 |
| 6 | Sep-08 | 17.84 | 9.63 | 8.89 | 8.21 |
| 7 | Dec-08 | 17.84 | 9.58 | 8.89 | 8.26 |
| 8 | Mar-09 | 17.84 | 9.62 | 8.89 | 8.22 |
| 9 | Sep-09 | 17.84 | 8.55 [e] | 8.55 | 9.29 |
| 10 | Mar-10 | 17.84 | 9.02 [e] | 9.02 | 8.82 |
| 11 | Sep-10 | 17.84 | 9.75 | 9.89 | 7.95 |
| 12 | Mar-11 | 17.84 | 8.89 | 8.99 | 8.85 |
| 13 | Sep-11 | 17.84 | 9.87 | 9.55 | 7.97 |
| 14 | Mar-12 | 17.84 | 9.29 | 9.01 | 8.55 |
| 15 | Sep-12 | 17.84 | 9.25 | 8.46 | 8.59 |
| 16 | Mar-13 | 17.84 | 9.95 | 9.59 | 7.89 |
| 17 | Sep-13 | 17.84 | 10.32 | 10.28 | 7.52 |
| 18 | Mar-14 | 17.84 | 10.22 | 10.28 | 7.62 |
| 19 | Sep-14 | 17.84 | 9.91 | 9.85 | 7.93 |
| 20 | Mar-15 | 17.84 | 9.71 | 9.47 | 8.13 |
| 21 | Sep-15 | 17.84 | 9.88 | 9.93 | 7.96 |
| 22 | Mar-16 | 17.84 | 9.51 | 9.46 | 8.33 |
| 23 | Sep-16 | 17.84 | 9.90 | 9.89 | 7.94 |

| MW-9 | | | | | |
|---|---|---|---|---|---|
| **Sampling Event No.** | **Date** | **TOC Elevation** | **DTW** | **DTP** | **GW Elevation** |
| **Installed March 2004** | | | | | |
| 1 | Mar-04 | 18.27 | 9.38 | NP | 8.89 |
| 2 | Dec-06 | NA | NA | NA | NA |
| 3 | Dec-07 | 17.84[c] | 9.54 | NP | 8.30 |
| 4 | Mar-08 | 17.84 | 9.77 | NP | 8.07 |
| 5 | Jun-08 | 17.84 | 9.68 | NP | 9.27 |
| 6 | Sep-08 | 17.84 | 9.30 | NP | 8.54 |
| 7 | Dec-08 | 17.84 | 9.83 | NP | 8.01 |
| 8 | Mar-09 | 17.84 | 9.37 | NP | 8.47 |
| 9 | Sep-09 | 17.84 | 9.70 | NP | 8.14 |
| 10 | Mar-10 | 17.84 | 9.46 | NP | 8.38 |
| 11 | Sep-10 | 17.84 | 9.75 | NP | 8.09 |
| 12 | Mar-11 | 17.84 | 9.52 | NP | 8.32 |
| 13 | Sep-11 | 17.84 | 9.80 | NP | 8.04 |
| 14 | Mar-12 | 17.84 | 9.54 | NP | 8.30 |
| 15 | Sep-12 | 17.84 | 9.54 | NP | 8.30 |
| 16 | Mar-13 | 17.84 | 10.08 | NP | 7.76 |
| 17 | Sep-13 | 17.84 | 10.13 | NP | 7.71 |
| 18 | Mar-14 | 17.84 | 10.01 | NP | 7.83 |
| 19 | Mar-15 | 17.84 | 9.98 | NP | 7.86 |
| 20 | Sep-15 | 17.84 | 10.05 | NP | 7.79 |
| 21 | Mar-16 | 17.84 | 9.72 | NP | 8.12 |
| 22 | Sep-16 | 17.84 | 10.02 | NP | 7.82 |

| MW-10 | | | | | |
|---|---|---|---|---|---|
| **Sampling Event No.** | **Date** | **TOC Elevation** | **DTW** | **DTP** | **GW Elevation** |
| **Installed March 2004** | | | | | |
| 1 | Mar-04 | 18.21 | 9.87 | 8.24 | 8.34 |
| 2 | Dec-06 | 18.21 | 9.30 | 8.86 | 8.91 |
| 3 | Dec-07 | 17.83[c] | 8.98 [e] | 8.98 | 8.85 |
| 4 | Mar-08 | 17.83 | 9.28 | 8.98 | 8.55 |
| 5 | Jun-08 | 17.83 | 8.86 | 8.78 | 7.23 |
| 6 | Sep-08 | 17.83 | 8.95 | 8.84 | 8.88 |
| 7 | Dec-08 | 17.83 | 8.97 | 8.74 | 8.86 |
| 8 | Mar-09 | 17.83 | 9.25 | 8.54 | 9.25 |
| 9 | Sep-09 | 17.83 | 8.63 | 8.52 | 9.20 |
| 10 | Mar-10 | 17.83 | 10.30 | 8.58 | 7.53 |
| 11 | Sep-10 | 17.83 | 8.76 | 8.82 | 9.01 |
| 12 | Mar-11 | 17.83 | 8.15 | 8.14 | 9.68 |
| 13 | Sep-11 | 17.83 | 8.83 | 8.78 | 9.00 |
| 14 | Mar-12 | 17.83 | 7.89 | 7.75 | 9.94 |
| 15 | Sep-12 | 17.83 | 7.48 | 7.40 | 10.35 |
| 16 | Mar-13 | 17.83 | 10.30 | 9.33 | 7.53 |
| 17 | Sep-13 | 17.83 | 10.02 | 9.65 | 7.81 |
| 18 | Mar-14 | 17.83 | 9.92 | 9.65 | 7.91 |
| 19 | Sep-14 | 17.83 | 9.74 | 9.36 | 8.09 |
| 20 | Mar-15 | 17.83 | 9.19 | 9.16 | 8.64 |
| 21 | Sep-15 | 17.83 | 9.69 | 9.34 | 8.14 |
| 22 | Mar-16 | 17.83 | 9.30 | 9.29 | 8.53 |
| 23 | Sep-16 | 17.83 | 9.28 | 9.27 | 8.55 |

| MW-11 | | | | | |
|---|---|---|---|---|---|
| **Sampling Event No.** | **Date** | **TOC Elevation** | **DTW** | **DTP** | **GW Elevation** |
| **Installed May 2004** | | | | | |
| 1 | Nov-06[d] | 17.76[c] | 10.33 | NP | 7.43 |
| 2 | Dec-07 | 17.76 | 10.27 | NP | 7.49 |
| 3 | Mar-08 | 17.76 | 10.34 | NP | 7.42 |
| 4 | Jun-08 | 17.76 | 10.20 | NP | 8.16 |
| 5 | Sep-08 | 17.76 | 10.03 | NP | 7.73 |
| 6 | Dec-08 | 17.76 | 10.34 | NP | 7.42 |
| 7 | Mar-09 | 17.76 | 10.20 | NP | 7.56 |
| 8 | Sep-10 | 17.76 | 10.25 | NP | 7.51 |
| 9 | Mar-10 | 17.76 | 10.23 | NP | 7.53 |
| 10 | Sep-10 | 17.76 | 10.24 | NP | 7.52 |
| 11 | Mar-11 | 17.76 | 10.10 | NP | 7.66 |
| 12 | Sep-11 | 17.76 | 10.30 | NP | 7.46 |
| 13 | Mar-12 | 17.76 | 10.18 | NP | 7.58 |
| 14 | Sep-12 | 17.76 | 10.24 | NP | 7.52 |
| 15 | Mar-13 | 17.76 | 10.62 | NP | 7.14 |
| 16 | Sep-13 | 17.76 | 10.21 | NP | 7.55 |
| 17 | Mar-14 | 17.76 | 10.33 | NP | 7.43 |
| 18 | Sep-14 | 17.76 | 10.40 | NP | 7.36 |
| 19 | Mar-15 | 17.76 | 10.40 | NP | 7.36 |
| 20 | Sep-15 | 17.76 | 10.48 | NP | 7.28 |
| 21 | Mar-16 | 17.76 | 10.35 | 10.34 | 7.41 |
| 22 | Sep-16 | 17.76 | 10.39 | NP | 7.37 |

| MW-12 | | | | | |
|---|---|---|---|---|---|
| **Sampling Event No.** | **Date** | **TOC Elevation** | **DTW** | **DTP** | **GW Elevation** |
| **Installed between 2004-2006** | | | | | |
| 1 | Nov-06[d] | 17.83[c] | 9.37 | NP | 8.46 |
| 2 | Dec-07 | 17.83 | 9.15 | NP | 8.68 |
| 3 | Mar-08 | 17.83 | 9.11 | NP | 8.72 |
| 4 | Jun-08 | 17.83 | 8.86 | NP | 8.97 |
| 5 | Sep-08 | 17.83 | 8.76 | NP | 9.07 |
| 6 | Dec-08 | 17.83 | 8.98 | NP | 8.85 |
| 7 | Mar-09 | 17.83 | 8.50 | NP | 9.33 |
| 8 | Sep-09 | 17.83 | 8.95 | NP | 8.88 |
| 9 | Mar-10 | 17.83 | 8.66 | NP | 9.17 |
| 10 | Sep-10 | 17.83 | 8.89 | NP | 8.94 |
| 11 | Mar-11 | 17.83 | 8.18 | NP | 9.65 |
| 12 | Sep-11 | 17.83 | 8.80 | NP | 9.03 |
| 13 | Mar-12 | 17.83 | 7.79 | NP | 10.04 |
| 14 | Sep-12 | 17.83 | 7.44 | NP | 10.39 |
| 15 | Mar-13 | 17.83 | 9.39 | NP | 8.44 |
| 16 | Sep-13 | 17.83 | 9.72 | NP | 8.11 |
| 17 | Mar-14 | 17.83 | 9.55 | NP | 8.26 |
| 18 | Sep-14 | 17.83 | 9.46 | NP | 8.37 |
| 19 | Mar-15 | 17.83 | 9.18 | NP | 8.65 |
| 20 | Sep-15 | 17.83 | 10.48 | NP | 7.35 |
| 21 | Mar-16 | 17.83 | 9.19 | NP | 8.64 |
| 22 | Sep-16 | 17.83 | 9.28 | NP | 8.55 |

| MW-13 | | | | | |
|---|---|---|---|---|---|
| **Sampling Event No.** | **Date** | **TOC Elevation** | **DTW** | **DTP** | **GW Elevation** |
| **Installed between 2004-2006** | | | | | |
| 1 | Dec-06 | 17.66[c] | 9.81 | 9.44 | 7.85 |
| 2 | Dec-07 | 17.66 | 9.95 | 9.39 | 7.71 |
| 3 | Mar-08 | 17.66 | 10.02 | 9.54 | 7.64 |
| 4 | Jun-08 | 17.66 | 9.86 | 9.45 | 7.80 |
| 5 | Sep-08 | 17.66 | 10.34 | 9.54 | 7.32 |
| 6 | Dec-08 | 17.66 | 10.54 | 9.65 | 7.12 |
| 7 | Mar-09 | 17.66 | 9.26 | 9.14 | 8.40 |
| 8 | Sep-09 | 17.66 | 9.91[e] | 9.72 | 7.75 |
| 9 | Mar-10 | 17.66 | 9.22[e] | 9.22 | 8.44 |
| 10 | Sep-10 | 17.66 | 9.40 | 10.18 | 7.48 |
| 11 | Mar-11 | 17.66 | 9.90 | NM | NM |
| 12 | Sep-11 | 17.66 | 10.41 | 9.64 | 7.25 |
| 13 | Mar-12 | 17.66 | 10.09 | 9.02 | 7.57 |
| 14 | Sep-12 | 17.66 | 9.54 | 9.23 | 8.12 |
| 15 | Mar-13 | 17.66 | 9.36 | 9.35 | 8.30 |
| 16 | Sep-13 | 17.66 | 9.48 | 9.45 | 8.18 |
| 17 | Mar-14 | 17.66 | 9.58 | 9.45 | 8.08 |
| 18 | Sep-14 | 17.66 | 8.89 | 8.87 | 8.77 |
| 19 | Mar-15 | 17.66 | 9.13 | 9.12 | 8.53 |
| 20 | Sep-15 | 17.66 | 9.59 | 9.57 | 8.07 |
| 21 | Mar-16 | 17.66 | 9.24 | 9.23 | 8.42 |
| 22 | Sep-16 | 17.66 | 9.36 | 9.35 | 8.30 |

| MW-14 | | | | | |
|---|---|---|---|---|---|
| **Sampling Event No.** | **Date** | **TOC Elevation** | **DTW** | **DTP** | **GW Elevation** |
| **Installed between 2004-2006** | | | | | |
| 1 | Nov-06[d] | 17.60[c] | 9.11 | 9.11(sheen) | 8.49 |
| 2 | Dec-07 | 17.60 | 8.86 | 8.84 | 8.74 |
| 3 | Mar-08 | 17.60 | 8.91 | 8.88 | 8.69 |
| 4 | Jun-08 | 17.60 | 8.66 | 8.62 | 8.94 |
| 5 | Sep-08 | 17.60 | 8.64 | NP | 8.96 |
| 6 | Dec-08 | 17.60 | 8.70 | NP | 8.90 |
| 7 | Mar-09 | 17.60 | 9.25 | NP | 9.25 |
| 8 | Sep-09 | 17.60 | 8.80 | NP | 8.80 |
| 9 | Mar-10 | 17.60 | 8.42 | NP | 9.18 |
| 10 | Sep-10 | 17.60 | 8.56 | 8.62 | 8.98 |
| 11 | Mar-11 | 17.60 | 7.93 | 7.92 | 9.67 |
| 12 | Sep-11 | 17.60 | 8.60 | 8.55 | 9.00 |
| 13 | Mar-12 | 17.60 | 7.71 | 7.61 | 9.89 |
| 14 | Sep-12 | 17.60 | 7.22 | 7.20 | 10.38 |
| 15 | Mar-13 | 17.60 | 9.18 | 9.17 | 8.42 |
| 16 | Sep-13 | 17.60 | 9.49 | 9.47 | 8.11 |
| 17 | Mar-14 | 17.60 | 9.48 | 9.47 | 8.12 |
| 18 | Sep-14 | 17.60 | 9.16 | NP | 8.44 |
| 19 | Mar-15 | 17.60 | 8.93 | NP | 8.67 |
| 20 | Sep-15 | 17.60 | 8.41 | NP | 8.19 |
| 21 | Mar-16 | 17.60 | 9.40 | NP | 8.20 |
| 22 | Sep-16 | 17.60 | 9.05 | NP | 8.55 |

| MW-15 | | | | | |
|---|---|---|---|---|---|
| **Sampling Event No.** | **Date** | **TOC Elevation** | **DTW** | **DTP** | **GW Elevation** |
| **Installed between 2004-2006** | | | | | |
| 1 | Dec-06 | 17.80[c] | 9.15 | NP | 8.65 |
| 2 | Dec-07 | 17.80 | 9.30 | NP | 8.50 |
| 3 | Mar-08 | 17.80 | 9.20 | 9.18 | 8.60 |
| 4 | Jun-08 | 17.80 | 9.60 | 9.63 | 8.20 |
| 5 | Sep-08 | 17.80 | 8.84 | 8.84[f] | 8.96 |
| 6 | Dec-08 | 17.80 | 9.19 | 8.36 | 8.61 |
| 7 | Mar-09 | 17.80 | 8.70 | NP | 9.10 |
| 8 | Sep-09 | 17.80 | 9.40 [e] | 9.22 | 8.08 |
| 9 | Mar-10 | 17.80 | 8.81 [e] | 8.81 | 8.99 |
| 10 | Sep-10 | 17.80 | 9.42 | 9.45 | 8.35 |
| 11 | Mar-11 | 17.80 | 8.50 | NM | 9.30 |
| 12 | Sep-11 | 17.80 | 9.32 | NP | 8.48 |
| 13 | Mar-12 | 17.80 | 8.55 | NP | 9.25 |
| 14 | Sep-12 | 17.80 | 8.03 | NP | 9.77 |
| 15 | Mar-13 | 17.80 | 9.45 | NP | 8.35 |
| 16 | Sep-13 | 17.80 | 10.01 | NP | 7.79 |
| 17 | Mar-14 | 17.80 | 10.18 | NP | 7.62 |
| 18 | Sep-14 | 17.80 | 9.74 | NP | 8.06 |
| 19 | Mar-15 | 17.80 | 9.34 | NP | 8.46 |
| 20 | Sep-15 | 17.80 | 9.85 | NP | 7.95 |
| 21 | Mar-16 | 17.80 | 9.36 | 9.35 | 8.44 |
| 22 | Sep-16 | 17.80 | 9.76 | 9.75 | 8.04 |

| MW-16 | | | | | |
|---|---|---|---|---|---|
| **Sampling Event No.** | **Date** | **TOC Elevation** | **DTW** | **DTP** | **GW Elevation** |
| **Installed between 2004-2006** | | | | | |
| 1 | Dec-06 | NA | NA | NA | NA |
| 2 | Dec-07 | 17.74[c] | 9.36 | NP | 8.38 |
| 3 | Mar-08 | 17.74 | 9.88 | NP | 7.86 |
| 4 | Jun-08 | 17.74 | 9.25 | NP | 7.80 |
| 5 | Sep-08 | 17.74 | 9.07 | NP | 8.67 |
| 6 | Dec-08 | 17.74 | 9.45 | NP | 8.29 |
| 7 | Mar-09 | 17.74 | 8.88 | NP | 8.86 |
| 8 | Sep-09 | 17.74 | 9.51 | NP | 8.23 |
| 9 | Mar-10 | 17.74 | 8.92 | NP | 8.82 |
| 10 | Sep-10 | 17.74 | 9.40 | NP | 8.34 |
| 11 | Mar-11 | 17.74 | 9.16 | NP | 8.57 |
| 12 | Sep-11 | 17.74 | 9.56 | NP | 8.18 |
| 13 | Mar-12 | 17.74 | 9.38 | NP | 8.36 |
| 14 | Sep-12 | 17.74 | 9.15 | NP | 8.59 |
| 15 | Mar-13 | 17.74 | 9.60 | NP | 8.14 |
| 16 | Sep-13 | 17.74 | 10.03 | NP | 7.71 |
| 17 | Mar-14 | 17.74 | 9.81 | NP | 7.93 |
| 18 | Sep-14 | 17.74 | 9.80 | NP | 7.94 |
| 19 | Mar-15 | 17.74 | 9.56 | NP | 8.18 |
| 20 | Sep-15 | 17.74 | 8.50 | NP | 9.24 |
| 21 | Mar-16 | 17.74 | 9.46 | NP | 8.28 |
| 22 | Sep-16 | 17.74 | 10.31 | NP | 7.43 |

| MW-17 | | | | | |
|---|---|---|---|---|---|
| **Sampling Event No.** | **Date** | **TOC Elevation** | **DTW** | **DTP** | **GW Elevation** |
| **Installed between 2004-2006** | | | | | |
| 1 | Dec-06 | NA | NA | NA | NA |
| 2 | Dec-07 | 18.17[c] | 9.40 | 9.32 | 8.77 |
| 3 | Mar-08 | 18.17 | 9.34 | 9.18 | 8.83 |
| 4 | Jun-08 | 18.17 | 8.98 | 8.97 | 9.19 |
| 5 | Sep-08 | 18.17 | 9.21 | 7.92 | 8.96 |
| 6 | Dec-08 | 18.17 | 9.25 | 9.11 | 8.92 |
| 7 | Mar-09 | 18.17 | 8.89 | NP | 9.28 |
| 8 | Sep-09 | 18.17 | 9.31 | NP | 8.86 |
| 9 | Mar-10 | 18.17 | 8.93 | NP | 9.24 |
| 10 | Sep-10 | 18.17 | 9.15 | NP | 9.02 |
| 11 | Mar-11 | 18.17 | 8.52 | 8.50 | 9.65 |
| 12 | Sep-11 | 18.17 | 9.15 | NP | 9.02 |
| 13 | Mar-12 | 18.17 | 8.17 | NP | 10.00 |
| 14 | Sep-12 | 18.17 | 7.77 | NP | 10.40 |
| 15 | Mar-13 | 18.17 | 9.17 | NP | 9.00 |
| 16 | Sep-13 | 18.17 | 10.00 | NP | 8.17 |
| 17 | Mar-14 | 18.17 | 10.00 | NP | 8.17 |
| 18 | Sep-14 | 18.17 | 9.72 | NP | 8.45 |
| 19 | Mar-15 | 18.17 | 9.51 | NP | 8.86 |
| 20 | Sep-15 | 18.17 | 10.00 | NP | 8.17 |
| 21 | Mar-16 | 18.17 | 9.98 | NP | 8.19 |
| 22 | Sep-16 | 18.17 | 9.62 | NP | 8.55 |

| MW-18 | | | | | |
|---|---|---|---|---|---|
| **Sampling Event No.** | **Date** | **TOC Elevation** | **DTW** | **DTP** | **GW Elevation** |
| **Installed between 2004-2006** | | | | | |
| 1 | Dec-06 | NA | NA | NA | NA |
| 2 | Dec-07 | 16.35[c] | 8.30 | NP | 8.05 |
| 3 | Mar-04 | 16.35 | 8.34 | NP | 8.01 |
| 4 | Jun-08 | 16.35 | 8.34 | NP | 8.20 |
| 5 | Sep-08 | 16.35 | 8.48 | NP | 7.87 |
| 6 | Dec-08 | 16.35 | 8.61 | NP | 7.74 |
| 7 | Mar-09 | 16.35 | 7.75 | NP | 8.60 |
| 8 | Sep-09 | 16.35 | 8.50 | NP | 7.85 |
| 9 | Mar-10 | 16.35 | 7.97 | NP | 8.38 |
| 10 | Sep-10 | 16.35 | 8.28 | NP | 8.07 |
| 11 | Mar-11 | 16.35 | 8.63 | NP | 7.72 |
| 12 | Sep-11 | 16.35 | 8.90 | NP | 7.45 |
| 13 | Mar-12 | 16.35 | 8.56 | NP | 7.79 |
| 14 | Sep-12 | 16.35 | 8.59 | NP | 7.76 |
| 15 | Mar-13 | 16.35 | 9.92 | NP | 6.43 |
| 16 | Sep-13 | 16.35 | 9.81 | NP | 6.54 |
| 17 | Mar-14 | 16.35 | 9.19 | NP | 7.16 |
| 18 | Sep-14 | 16.35 | 9.56 | NP | 6.79 |
| 19 | Mar-15 | 16.35 | 8.51 | NP | 6.84 |
| 20 | Sep-15 | 16.35 | 8.69 | NP | 7.66 |
| 21 | Mar-16 | 16.35 | 8.66 | NP | 7.69 |
| 22 | Sep-16 | 16.35 | 9.61 | NP | 6.74 |

| MW-E | | | | | |
|---|---|---|---|---|---|
| **Sampling Event No.** | **Date** | **TOC Elevation** | **DTW** | **DTP** | **GW Elevation** |
| 1 | Dec-88 | NM | NM | NM | NM |
| 2 | May-89 | 15.32 | 10.39 | NP | 4.93 |
| 3 | Feb-91 | NM | NM | NM | NM |
| 4 | Mar-04 | 17.80 | 9.92 | NP | 7.88 |
| 5 | Nov-06[d] | 17.80 | 10.22 | NP | 7.58 |
| 6 | Dec-07 | 17.47[c] | 10.03 | NP | 7.44 |
| 7 | Mar-08 | 17.47 | 10.21 | NP | 7.26 |
| 8 | Jun-08 | 17.47 | 10.20 | NP | 7.27 |
| 9 | Sep-08 | 17.47 | 9.55 | NP | 7.92 |
| 10 | Dec-08 | 17.47 | 10.32 | NP | 7.15 |
| 11 | Mar-09 | 17.47 | 9.79 | NP | 7.68 |
| 12 | Sep-09 | 17.47 | 10.22 | NP | 7.25 |
| 13 | Mar-10 | 17.47 | 9.82 | NP | 7.65 |
| 14 | Sep-10 | 17.47 | 10.11 | NP | 7.36 |
| 15 | Mar-11 | 17.47 | 9.10 | NP | 8.37 |
| 16 | Sep-11 | 17.47 | 8.41 | NP | 9.06 |
| 17 | Mar-12 | 17.47 | 9.86 | NP | 7.61 |
| 18 | Sep-12 | 17.47 | 9.95 | NP | 7.52 |
| 19 | Mar-13 | 17.47 | 10.41 | NP | 7.06 |
| 20 | Sep-13 | 17.47 | 10.21 | NP | 7.26 |
| 21 | Mar-14 | 17.47 | 10.15 | NP | 7.32 |
| 22 | Sep-14 | 17.47 | 9.98 | NP | 7.49 |
| 23 | Mar-15 | 17.47 | 10.15 | NP | 7.32 |
| 24 | Sep-15 | 17.47 | 10.07 | NP | 7.40 |
| 25 | Mar-16 | 17.47 | 10.00 | NP | 7.47 |
| 26 | Sep-16 | 17.47 | 10.15 | NP | 7.32 |

| RW-1 | | | | | |
|---|---|---|---|---|---|
| **Sampling Event No.** | **Date** | **TOC Elevation** | **DTW** | **DTP** | **GW Elevation** |
| 1 | Dec-88 | NM | NM | NM | NM |
| 2 | May-89 | 14.54 | 10.17 | 10.14 | 4.37 |
| 3 | Feb-91 | 14.54 | 11.46 | 10.85 | 3.57 |
| 4 | Mar-04 | 18.32 | 7.20 | 5.62 | 11.12 |
| 5 | Nov-06[d] | 18.32 | 9.15 | 9.11 | 9.17 |
| 6 | Dec-07 | 16.70[c] | 9.53 [e] | 9.53 | 7.17 |
| 7 | Mar-08 | 16.70 | 8.99 | 8.92 | 7.71 |
| 8 | Jun-08 | 16.70 | 8.95 | 8.87 | 7.75 |
| 9 | Sep-08 | 16.70 | NM[c] | NM[c] | NM[c] |
| 10 | Dec-08 | 16.70 | NM | NM | NM |
| 11 | Mar-09 | 16.70 | 9.06 [e] | 9.06 | 7.64 |
| 12 | Sep-09 | 16.70 | 9.45 [e] | 9.45 | 7.25 |
| 13 | Mar-10 | 16.70 | 8.93 [e] | 8.93 | 7.77 |
| 14 | Sep-10 | 16.70 | 9.50 | 9.65 | 7.05 |
| 15 | Mar-11 | 16.70 | 9.05 | 9.04 | 7.65 |
| 16 | Sep-11 | 16.70 | 9.75 | 9.74 | 6.95 |
| 17 | Mar-12 | 16.70 | 9.33 | NP | 7.35 |
| 18 | Sep-12 | 16.70 | NM | 9.69 | NM |
| 19 | Mar-13 | 16.70 | NM | 9.99 | NM |
| 20 | Sep-13 | 16.70 | 11.60 | 9.99 | 5.10 |
| 21 | Mar-14 | 16.70 | 9.13 | 9.99 | 7.57 |
| 22 | Sep-14 | 16.70 | 11.10 | 11.09 | 5.60 |
| 23 | Mar-15 | 16.70 | 9.67 | 11.09 | 7.03 |
| 24 | Sep-15 | 16.70 | 9.69 | 11.09 | 7.01 |
| 25 | Mar-16 | 16.70 | 9.29 | 9.29 | 7.41 |
| 26 | Sep-16 | 16.70 | 9.90 | NA | 6.80 |

Notes:

The 1988, 1989, and 1991 water elevations were measured by Groundwater Technology, Inc.

The 2004 and 2006 water elevations were measured by PES Environmental.

NS = Not sampled

NP = No product

NM - Not measured/Could Not Measure

NA = data not available from the previous consultant for this event

TOC Elevation = Top of Casing Elevation

DTW = Depth to water from the top of the casing

DTP - Depth to product from the top of the casing

GW Elevation - Groundwater elevation as compared to mean sea level

[a] Wells resurveyed in May 1989

[b] New elevation recorded by PES. Date of survey unclear.

[c] Wells resurveyed by PES in April 2007

[d] no water level data available for the December 2006 sampling event

[e] Thickness of product interfered with determining oil/water interface.

[f] Depth to groundwater = depth to free product as difference could not be determined

# APPENDIX E

## Historical Product Extraction Data Table

## Historical Trench and Monitoring Well Product Recovery, 6400 Christie Avenue, Emeryville, CA

| Extraction Date | MW-3 | MW-4 | MW-5 | MW-6 | MW-7 | MW-8 | MW-9 | MW-10 | MW-11 | MW-12 | MW-13 | MW-14 | MW-15 | MW-16 | MW-17 | MW-18 | MW-E | RW-1 | TA-E | TA-M | TA-W | TB-E | TB-M | TB-W | TC-E | TC-M | TC-W | Total Extracted |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Apr-04 | --- | --- | --- | --- | --- | 1.00 | --- | 1.00 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 19.75 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 21.75 |
| May-04 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 22.5 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 22.50 |
| Sep-04 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 0.74 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 0.74 |
| Oct-04 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 5.22 | --- | --- | --- | --- | --- | --- | --- | --- | --- | 0.00 |
| **2004 Total** | | | | | | | | | | | | | | | | | | | | | | | | | | | | **44.99** |
| Jan-05 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 0.00 |
| Apr-06 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 3.3 | --- | --- | --- | --- | --- | --- | 3.30 |
| Jun-06 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 8.9 | 9.2 | 10.3 | --- | --- | --- | --- | --- | --- | 28.40 |
| Jul-06 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 3.6 | 5 | 5.3 | --- | --- | --- | --- | --- | --- | 13.90 |
| Aug-06 | --- | --- | --- | --- | --- | 0.8 | --- | 0.8 | --- | --- | 1 | 0.2 | 0.2 | --- | --- | --- | --- | --- | 0.2 | 0.2 | 0.4 | --- | --- | --- | --- | --- | --- | 3.80 |
| Sep-06 | --- | --- | --- | --- | --- | --- | --- | 0.8 | --- | --- | 0.2 | 0.3 | --- | --- | --- | --- | --- | --- | 0.6 | --- | 0.6 | --- | --- | --- | --- | --- | --- | 2.50 |
| Nov-06 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 0.2 | --- | --- | --- | --- | --- | --- | --- | --- | 0.20 |
| Dec-06 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 0.2 | --- | --- | --- | --- | --- | --- | --- | --- | 0.20 |
| **2006 Total** | | | | | | | | | | | | | | | | | | | | | | | | | | | | **52.30** |
| Jan-07 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 0.2 | --- | --- | --- | --- | --- | --- | --- | --- | 0.20 |
| Feb-07 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 0.2 | --- | --- | --- | --- | --- | --- | --- | --- | 0.20 |
| Mar-07 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 0.2 | --- | --- | --- | --- | --- | --- | --- | --- | 0.20 |
| Nov-07 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 0.81 | 0.68 | --- | --- | --- | 0.63 | --- | --- | 2.12 |
| Dec-07 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 0.01 | 0.61 | 0.07 | --- | --- | --- | 0.002 | --- | --- | 0.69 |
| **2007 Total** | | | | | | | | | | | | | | | | | | | | | | | | | | | | **3.41** |
| Feb-08 | 0.03 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 0.45 | 0.08 | 0.06 | 0.18 | 0.04 | 0.06 | 0.06 | 0.08 | 0.05 | 0.05 | 1.14 |
| Feb-08 | --- | --- | 0.05 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 0.45 | 0.15 | 0.15 | 0.30 | --- | --- | --- | --- | --- | --- | 1.10 |
| Mar-08 | --- | --- | --- | 0.02 | 0.002 | 0.02 | 0.001 | 0.04 | 0.02 | 0.03 | 0.004 | 0.01 | 0.02 | 0.01 | 0.01 | 0.003 | 0.012 | 0.3 | 0.09 | 0.06 | 0.09 | --- | --- | --- | 0.06 | --- | --- | 0.80 |
| Mar-08 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 0.002 | 0.008 | --- | --- | --- | --- | --- | --- | 0.01 |
| May-08 | 0.09 | --- | --- | --- | --- | --- | --- | 0.075 | --- | 0.075 | 0.019 | 0.009 | --- | --- | 0.13 | --- | --- | 1.397 | 0.866 | 1.466 | 1.431 | --- | --- | --- | --- | --- | --- | 5.56 |
| Jun-08 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 0.15 | 0.11 | 0.57 | --- | --- | --- | --- | --- | --- | 0.83 |
| Aug-08 | 0.12 | --- | --- | --- | --- | --- | --- | 0.048 | --- | 0.024 | 0.009 | --- | --- | --- | --- | --- | --- | 0.75 | 0.9 | 1.6 | 0.7 | 0.3 | 0.3 | --- | 0.15 | --- | --- | 4.90 |
| Sep-08 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 0.03 | 0.09 | 0.048 | --- | --- | --- | --- | --- | --- | 0.17 |
| Nov-08 | 0.078 | --- | --- | --- | --- | 0.009 | --- | --- | --- | 0.06 | 0.009 | --- | --- | 0.003 | 0.06 | --- | --- | 0.6 | 0.1 | 0.03 | --- | 0.06 | 0.06 | 0.06 | 0.06 | 0.09 | 0.09 | 1.37 |
| Dec-08 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 0.0003 | 0.08 | --- | --- | --- | --- | 0.03 | --- | --- | 0.11 |
| **2008 Total** | | | | | | | | | | | | | | | | | | | | | | | | | | | | **14.99** |
| Mar-09 | 0.279 | --- | --- | --- | --- | 0.378 | --- | 0.369 | --- | 0.261 | 0.007 | 0.023 | 0.117 | --- | 0.342 | --- | 0.023 | 1.800 | 0.750 | 0.950 | 1.010 | 0.153 | 0.153 | 0.153 | 0.653 | 0.153 | 0.153 | 7.73 |
| Jun-09 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 0.5 | --- | --- | --- | --- | --- | --- | --- | --- | 0.50 |
| Sep-09 | 0.286 | --- | --- | --- | 0.022 | 0.418 | --- | 0.176 | 0.308 | 0.176 | 0.088 | 0.007 | 0.176 | 0.088 | 0.176 | 0.022 | 0.066 | 7.15 | 1.4 | 1.1 | 1.2 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 19.46 |
| Dec-09 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 0 | 0.9 | 0.06 | --- | --- | --- | 0 | --- | --- | 0.96 |
| **2009 Total** | | | | | | | | | | | | | | | | | | | | | | | | | | | | **28.65** |
| Mar-10 | 0.14 | --- | --- | --- | 0.01 | 0.18 | 0.02 | 0.60 | --- | 0.60 | 0.03 | 0.10 | 0.69 | 0.04 | 0.30 | 0.02 | --- | 8.00 | 1.30 | 1.00 | 1.00 | 0.50 | 1.00 | 0.50 | 1.00 | 1.00 | 1.00 | 19.03 |
| Jun-10 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 0.75 | --- | --- | --- | --- | --- | --- | --- | 0.75 |
| Sep-10 | 0.3 | 0.2 | 0.4 | 0.5 | 0.01 | 0.5 | 0.01 | 0.5 | --- | 1.6 | 0.02 | 0.01 | 1.5 | 0.02 | 1.0 | 0.02 | 0.1 | 6.9 | 1.00 | 1.00 | 1.00 | 0.3 | 0.3 | 0.4 | 1.00 | 0.5 | 0.5 | 19.59 |
| Dec-10 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 0.10 | 0.00 | 0.05 | --- | --- | --- | 0.00 | --- | --- | 0.15 |
| **2010 Total** | | | | | | | | | | | | | | | | | | | | | | | | | | | | **39.52** |
| Mar-11 | --- | --- | --- | --- | --- | 0.002 | --- | 0.002 | --- | --- | --- | 0.002 | --- | --- | 0.003 | --- | --- | 0.002 | 0.06 | 0.06 | 0.02 | --- | --- | --- | 0 | --- | --- | 0.15 |
| Sep-11 | 0.2 | -- | -- | -- | -- | 0.3 | -- | -- | -- | -- | 0.2 | -- | -- | 0.1 | -- | -- | -- | 0.5 | -- | 0.45 | 0.25 | 0.1 | 0.1 | 0.1 | -- | 0.1 | 0.1 | 2.50 |
| **2011 Total** | | | | | | | | | | | | | | | | | | | | | | | | | | | | **2.65** |
| Mar-12 | 0.015 | -- | -- | -- | -- | 0.015 | -- | -- | -- | -- | 0.06 | -- | -- | -- | 0.01 | -- | -- | 0.06 | 0.13 | 0.03 | 0.015 | -- | 0.01 | -- | -- | 0.015 | 0.015 | 0.375 |
| Sep-12 | -- | -- | -- | -- | -- | 0.03 | -- | 0.023 | -- | -- | 0.08 | -- | -- | -- | -- | -- | 0.015 | 0.06 | 0.045 | 0.08 | 0.09 | -- | -- | -- | -- | -- | -- | 0.423 |
| **2012 Total** | | | | | | | | | | | | | | | | | | | | | | | | | | | | **0.798** |
| Mar-13 | 0.06 | -- | -- | -- | -- | 0.08 | -- | 0.015 | -- | -- | 0.08 | -- | -- | -- | -- | -- | 0.01 | 0.06 | 0.05 | 0.12 | 0.07 | -- | -- | -- | 0.03 | 0.03 | 0.03 | 0.635 |
| Sep-13 | 0.06 | -- | -- | -- | -- | 0.02 | -- | 0.05 | -- | -- | -- | -- | -- | -- | -- | -- | 0.02 | 0.06 | 0.02 | 0.02 | 0.02 | -- | -- | -- | 0.01 | 0.02 | 0.02 | 0.320 |
| **2013 Total** | | | | | | | | | | | | | | | | | | | | | | | | | | | | **0.955** |
| Mar-14 | 0.08 | -- | -- | -- | -- | -- | -- | 0.023 | -- | -- | -- | -- | -- | 0.015 | -- | -- | 0.01 | 0.09 | 0.03 | 0.03 | 0.015 | -- | -- | -- | 0.015 | 0.015 | 0.015 | 0.338 |
| Sep-14 | -- | -- | -- | -- | -- | -- | -- | 0.031 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0.031 |
| **2014 Total** | | | | | | | | | | | | | | | | | | | | | | | | | | | | **0.369** |
| Mar-15 | -- | -- | -- | -- | -- | -- | -- | 0.031 | -- | -- | -- | -- | -- | -- | -- | -- | 0.0078 | 0.0078 | 0.031 | 0.0228 | 0.0228 | -- | -- | -- | -- | -- | -- | 0.123 |
| Sep-15 | 0.015 | -- | -- | -- | -- | 0.015 | -- | 0.0078 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0.015 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0.053 |
| **2015 Total** | | | | | | | | | | | | | | | | | | | | | | | | | | | | **0.176** |
| Mar-16 | -- | -- | -- | -- | -- | -- | -- | 0.008 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0.008 |
| Sep-16 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0.008 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0.008 |
| **2016 Total** | | | | | | | | | | | | | | | | | | | | | | | | | | | | **0.016** |
| **Total Extracted** | **1.74** | **0.00** | **0.40** | **0.50** | **0.04** | **3.75** | **0.03** | **4.62** | **0.31** | **2.72** | **0.61** | **0.16** | **2.50** | **0.28** | **1.89** | **0.06** | **0.26** | **76.85** | **22.03** | **25.96** | **28.80** | **2.51** | **3.02** | **2.31** | **4.83** | **3.08** | **3.08** | **194.94** |

Note: All free product quantities presented in gallons

Product extraction events conducted before November 2007 were completed by PES Environmental

46 gallons removed from trench wells by PES between April 2006 and March 2007

About 30 of that was rei gallons removed from trench wells by PES between April 2006 and March 2008

The majori gallons removed from trench wells by PES between April 2006 and March 2009

Depth to w gallons removed from trench wells by PES between April 2006 and March 2010