# Groundwater Monitoring Report
# Third Quarter 2013

TOC Holdings Co.
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Mountlake Terrace, WA 98043


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# Sign-off Sheet

This document entitled, ***Groundwater Monitoring Report, Third Quarter 2013,*** was prepared by **Stantec Consulting Services Inc. (Stantec)** on behalf of **TOC Holdings Co. (TOC)** for specific application to TOC Facility No. 01-176 in Mountlake Terrace, Washington. Services conducted by Stantec for this project were conducted in accordance with the Environmental Services Contract between **HydroCon Environmental, LLC (HydroCon)** and Stantec. Any reliance on this document by a third party is strictly prohibited. The material in it reflects Stantec's professional judgment in light of the scope, schedule and other limitations stated in the document and in the contract between Stantec and HydroCon. The opinions in the document are based on conditions and information existing at the time the document was published and do not take into account any subsequent changes. In preparing the document, Stantec did not verify information supplied to it by others. Any use which a third party makes of this document is the responsibility of such third party. Such third party agrees that Stantec shall not be responsible for costs or damages of any kind, if any, suffered by it or any other third party as a result of decisions made or actions taken based on this document.

This document was prepared under the supervision and direction of the key staff identified below.

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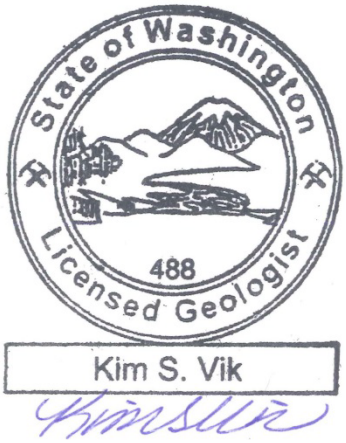


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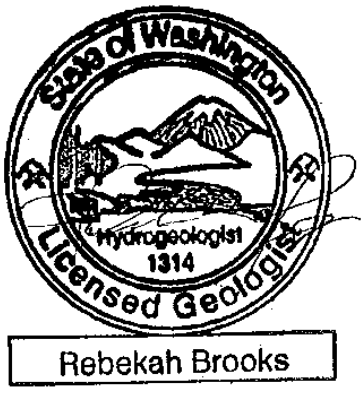


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## Acronyms & Abbreviations

| | |
|---|---|
| 2Q2013 | Second Quarter 2013 |
| 3Q2013 | Third Quarter 2013 |
| AO | Agreed Order |
| bgs | below ground surface |
| BTEX | benzene, toluene, ethylbenzene, and total xylenes |
| CSM | conceptual site model |
| DPE | dual-phase extraction |
| Ecology | Washington State Department of Ecology |
| EPA | U.S. Environmental Protection Agency |
| Friedman & Bruya | Friedman & Bruya, Inc. |
| GRPH | gasoline-range petroleum hydrocarbons |
| IRAWP | Interim Remedial Action Work Plan |
| LNAPL | light non-aqueous phase liquid |
| MDL | method detection limit |
| mL/min | milliliters per minute |
| MPE | multi-phase extraction |
| MRL | method reporting limit |
| MTBE | methyl tert-butyl ether |
| MTCA | Model Toxics Control Act |
| NWTPH-Gx | Northwest Total Petroleum Hydrocarbon - Gasoline Range Organics |
| PACE | PACE Engineers, Inc. |
| QA/QC | Quality Assurance / Quality Control |
| RI | Remedial Investigation |
| ROW | right-of-way |
| SES | SoundEarth Strategies, Inc. |
| Stantec | Stantec Consulting Services Inc. |
| SVE | soil vapor extraction |
| TOC | TOC Holdings Co. |
| UST | underground storage tank |

## List of Properties – TOC Site

| | |
|---|---|
| TOC Property | 24205 56th Avenue West, Mountlake Terrace, WA |
| TOC/Farmasonis Property | 24225 56th Avenue West, Mountlake Terrace, WA |
| Drake Property | 24309 56th Avenue West, Mountlake Terrace, WA |
| 56th Avenue West ROW | Right-of-way adjacent to TOC, TOC/Farmasonis & Drake properties |

## List of Properties – Adjacent to TOC Site

| | |
|---|---|
| Herman Property | 24311 56th Avenue West, Mountlake Terrace, WA |
| Shin/Choi Property | 24325 56th Avenue West, Mountlake Terrace, WA |
| 242nd Street Southwest ROW | Right-of-way adjacent to TOC Property |

# 1.0 INTRODUCTION

This report presents the results of the Third Quarter 2013 (3Q2013) groundwater performance monitoring event for the interim remedial action conducted at Facility No. 01-176 located in Mountlake Terrace, Snohomish County, Washington. Field activities were performed by SoundEarth Strategies, Inc. (SES) and are reported by Stantec Consulting Services Inc. (Stantec) on behalf of TOC Holdings Co. (TOC).

## 1.2 Groundwater Monitoring Scope of Work

Ongoing groundwater monitoring is conducted under Agreed Order (AO) No. DE 8661, entered in October 2011 between TOC and the Washington State Department of Ecology (Ecology 2011). The scope of work is defined in the *Interim Remedial Action Work Plan* (IRAWP; SES 2011) included as Exhibit C of the AO. Per the requirements of the IRAWP, the groundwater monitoring scope of work includes one annual field event (performed during the first quarter of each year) and three quarterly field events (performed during the second, third and fourth quarters). As specified in the IRAWP, the "TOC Site" encompasses the following four properties located in Mountlake Terrace, Washington:

- **TOC Property:** 24205 56th Avenue West
- **TOC/Farmasonis Property**: 24225 56th Avenue West
- **Drake Property:** 24309 56th Avenue West
- **56th Avenue West Right-of-Way (ROW):** adjacent to the TOC, TOC/Farmasonis and Drake properties

The groundwater monitoring scope of work defined in the IRAWP encompasses the four properties identified as the "TOC Site" as well as the following two adjacent properties:

- **Shin/Choi Property:** 24325 56th Avenue West (downgradient of the TOC Site)
- **242nd Street Southwest ROW:** adjacent to the TOC Property (upgradient of the TOC Site)

Following completion of the IRAWP, monitoring wells were installed on the following property:

- **Herman Property:** 24311 56th Avenue West (downgradient of the TOC Site)

Groundwater monitoring is conducted to monitor and evaluate the performance and efficacy of three multi-phase extraction (MPE) remediation systems (described in Section 4.0) located on the TOC Site and their effect on groundwater quality. The scope of work defined in the IRAWP for the annual (first quarter) groundwater monitoring event includes measuring depth-to-groundwater/light non-aqueous phase liquid (LNAPL) levels and collecting groundwater samples from all active monitoring and remediation wells, excluding monitoring wells MW71 through MW74 located on the Shin/Choi Property downgradient of the TOC Site (SES 2011).

The scope of work defined in the IRAWP for the quarterly groundwater monitoring events includes collecting depth-to-groundwater/LNAPL level measurements for all active monitoring and remediation wells (excluding monitoring wells MW71 through MW74 located on the Shin/Choi Property and MW75 located in the 56th Ave ROW) and collecting groundwater samples from 31 active wells installed on the TOC Site. Following completion of the IRAWP in

2011, one of the wells scheduled for quarterly sampling (MW21 located on the TOC Property) was decommissioned in 2012. Therefore, 30 active wells are currently sampled each quarter.

## 1.2 Groundwater Monitoring Scope of Work Updates

The groundwater monitoring scope of work was originally defined in the IRAWP in July 2011. At that time, 85 active monitoring and remediation wells were located on six properties (the TOC, TOC/Farmasonis, Drake and Shin/Choi properties and the 56th Avenue and 242nd Street ROWs). Four wells had been decommissioned. Following completion of the IRAWP, SES installed 18 new wells (12 monitoring and remediation wells on the TOC Site from October-November 2011 and six monitoring wells on the downgradient Herman Property in June 2013) and decommissioned two additional wells (MW83 on the TOC/Farmasonis Property in November 2011 and MW21 on the TOC Property in April 2012). Currently, 101 active monitoring and remediation wells are located on seven properties (the TOC, TOC/Farmasonis, Drake, Shin/Choi and Herman properties and the 56th Avenue and 242nd Street ROWs) and six wells have been decommissioned.

Following installation of the new wells on the TOC Site and Herman Property, SES updated the scope of work defined in the IRAWP for the annual and quarterly groundwater monitoring events. In addition to measuring depth-to-groundwater/LNAPL levels in the wells identified in the IRAWP, the updated scope of work includes gauging the 12 new wells installed on the TOC Site during annual and quarterly field events and gauging the six new wells installed on the downgradient Herman Property during the annual field event only. The scope of work for groundwater sampling was updated for the annual field event to include sampling of all 18 newly installed wells in addition to sampling the wells identified in the IRAWP. The groundwater sampling scope of work for the quarterly field events did not change.

## 1.3 3Q2013 Groundwater Monitoring Activities

This report presents a description of 3Q2013 groundwater monitoring activities performed by SES from September 3-5, 2013, and an evaluation of the field data and analytical results. Groundwater monitoring activities performed by SES included collecting depth-to-groundwater/LNAPL level measurements and groundwater samples in accordance with the scope of work identified in the IRAWP. A groundwater monitoring report was not prepared by SES following completion of the 3Q2013 field event. Since that time, Stantec was hired by TOC to take over environmental consulting responsibilities for the project. The results presented in this report have been re-evaluated by Stantec to accurately represent the data collected; however, data quality evaluations conducted by SES have not been reviewed or modified by Stantec.

During preparation of the *Groundwater Monitoring, Second Quarter 2013 Report* (Stantec 2015) and during updates to the Conceptual Site Model (CSM), Stantec discovered that well monuments on several wells had been damaged and different survey datum had been used by SES. As a result of these findings, Stantec procured PACE Engineers, Inc. (PACE) to conduct a survey in April and May 2014 for all of the wells and site features using a single datum. The updated survey information has been used to revise previous groundwater elevation tables prepared by SES. Additionally, because of inconsistencies observed between the laboratory

reports, draft data tables and information entered into the database by SES, a thorough quality control/quality assurance (QA/QC) review was performed for the data tables included in this report.

It should be noted that remediation well MW84 (located on the Drake Property) was sampled by SES approximately two weeks after the 3Q2013 groundwater monitoring event. SES was unable to collect a sample from the well during the quarterly field event due to insufficient groundwater sample volume. According to SES' field notes, the pump was removed from MW84 on September 17, 2013 and the well was sampled following removal of the pump. Due to the close proximity of the sampling date to the 3Q2013 field event, the analytical results for MW84 are included herein.

# 2.0 DESCRIPTION & BACKGROUND

## 2.1 Description of TOC Site

As described in Section 1.0, the TOC Site is located in the City of Mountlake Terrace in Snohomish County, Washington (**Figure 1**) and encompasses three adjacent properties and a portion of the 56th Avenue West ROW (**Figure 2**). The TOC Site is located in a mixed residential and commercial area and surface topography slopes gently toward the south. The TOC Site is bordered by 242nd Street Southwest and commercial properties to the north; by residential properties to the east and west; and by the Herman Property and vacant Mountlake Senior Property to the south. A description of each property included within the TOC Site is provided below.

- **TOC Property:** The vacant TOC Property consists of vegetated land with the exception of an asphalt area and graveled and fenced area housing a MPE remediation system (described in Section 4.0).
- **TOC/Farmasonis Property:** The TOC/Farmasonis Property consists of one commercial building (operating as a restaurant at the time of the field event and currently vacant), an asphalt parking area, vegetated land, and a graveled and fenced area housing two MPE remediation systems (described in Section 4.0).
- **Drake Property:** The Drake Property consists of one commercial building (currently occupied by Getaway Tavern) and asphalt and gravel parking areas.
- **56th Avenue West ROW:** The portion of the 56th Avenue ROW included in the TOC Site is adjacent to the TOC, TOC/Farmasonis and Drake properties.

## 2.2 Description of Adjacent Properties

In addition to the TOC Site, the scope of work (described in Section 1.0) includes a portion of the 242nd Street ROW (located directly north of the TOC Site) and two downgradient properties (the Herman and Shin/Choi properties located directly south of the TOC Site). As shown on **Figure 2**, the Herman Property is bordered by the TOC Site to the north, and the Shin/Choi Property is directly south of the Herman Property. The Herman and Shin/Choi properties are bordered by the Mountlake Senior Property (currently vacant vegetated land) and residential properties to the east; 56th Avenue West (the southern portion of the street not included within TOC Site) and residential properties to the west; and 244th Street Southwest/205th Street Northeast to the south. The Snohomish County boundary is defined by 244th Street and the King County boundary is defined by 205th Street.

A description of the properties adjacent to the TOC Site and included in the scope of work for groundwater monitoring is provided below.

- **Herman Property:** The Herman Property consists of one commercial building (occupied by Dave's Auto Service), an asphalt parking area and vegetated land.
- **Shin/Choi Property:** The Shin/Choi Property consists of one building (occupied by the EZ Corner Mart) and an asphalt parking area.
- **242nd Street Southwest ROW:** The portion of the 242nd Avenue ROW included in the scope of work is adjacent to the north boundary of the TOC Property.

## 2.3 Site Background

TOC operated a retail gasoline station on the TOC Property between 1968 and 1990. The facility included three underground storage tanks (USTs), six fuel dispensers and associated product delivery lines. One 8,000-gallon and two 6,000-gallon USTs and ancillary equipment were removed from the TOC Property in 1991 and petroleum constituents in the form of gasoline-range petroleum hydrocarbons (GRPH), benzene, and total xylenes were observed in soil and groundwater in excess of the applicable Model Toxics Control Act (MTCA) Method A Cleanup Levels. Between 1992 and 2013, site investigations were conducted to determine the extent of petroleum contamination and 107 monitoring and remediation wells (six of which have been decommissioned) were installed in three groundwater zones (defined as Shallow, Intermediate, and Deep and further described in Section 3.0) on the TOC Site and three adjacent properties (described in Sections 2.1 and 2.2).

In 1996, a dual-phase extraction (DPE) remediation system was installed at the TOC Property to remediate Shallow Zone groundwater impacted by petroleum hydrocarbons and remove LNAPL. The DPE system operated from February 1997 to June 2005 and was later removed following confirmation that the system effectively remediated Shallow Zone groundwater (SES 2013). In 2006, groundwater monitoring results collected by SES confirmed gasoline-related contamination extended directly downgradient of the TOC Property to the south and west.

In accordance with the AO entered between Ecology and TOC in October 2011 (described in Section 1.1), SES initiated a remedial investigation (RI) at the TOC Site and three MPE remediation systems (further discussed in Section 4.0) were installed between November 2011 and August 2012 to remediate residual petroleum-contaminated groundwater, soil vapor and LNAPL (if present) in the Intermediate Zone beneath and downgradient of the TOC Site. As shown on **Figure 3**, the MPE remediation systems are located within fenced enclosures on the TOC Property and TOC/Farmasonis Property and are served by remediation wells installed on the TOC, TOC/Farmasonis and Drake properties.

Available information regarding historical operations on the TOC/Farmasonis and Drake properties do not indicate the presence of USTs. Historical operations on the downgradient Herman and Shin/Choi properties indicate three USTs were removed from the Shin/Choi Property in 1991 and two USTs were removed from the Herman Property in 2001; however five additional USTs may still exist on the Herman Property. Available information on the locations of historical or current USTs and associated equipment downgradient properties is shown on **Figure 3.**

# 3.0 HYDROGEOLOGIC FRAMEWORK

In the *Draft Remedial Investigation Report* (SES 2013), three separate groundwater zones were identified at the TOC Site, based on the lithology, well screen intervals and groundwater level measurements. Stantec re-evaluated the data as part of updates and revisions to the CSM, as required by Ecology, based on comments provided to SES on the *Draft Remedial Investigation Report* (SES 2013). The results of the revised CSM will be provided to Ecology in a separate deliverable and will be incorporated into the final RI report prepared by Stantec.

Stantec agrees that three groundwater zones can be identified at the TOC Site; however, these zones do not appear to be separate, but are interconnected, as evidenced by the geology, groundwater elevations and contaminant distribution data. Since first-hand observations were not possible, Stantec's conceptualization of the hydrogeology is based on geologic field interpretations (e.g., boring logs) provided by SES and other consultants that previously managed the project.

Based on re-evaluation of the available data by Stantec, the three groundwater zones are defined in the following sections.

## 3.1 Shallow Water-Bearing Zone (Shallow Zone)

The Shallow Zone is a perched zone in the artificial fill or upper portion of the glacial till, at depths between approximately 5 to 20 feet below ground surface (bgs) throughout the TOC Site, depending on seasonal fluctuations of the water table. The saturation in these horizons can be seasonally discontinuous, as evidenced by some monitoring wells that are seasonally dry (e.g., MW04 during the December 2012 event), while others in the same season contain water. The primary source of recharge to the Shallow Zone is infiltration of natural precipitation through emplaced fill and native soil in unpaved areas. Other potential sources of recharge to the Shallow Zone reportedly included a former topographically closed depression, where surface runoff previously ponded, and a former stormwater infiltration pit, both of which were located in the southeast portion of the TOC Property (**Figure 3**). According to a 1975 TOC blueprint, the stormwater infiltration pit is located in proximity to MW18 and MW33; measures 10 feet square by 4 feet deep; and was backfilled with coarse gravel (Time Oil Co. 1975). Surface runoff intercepted by a catch basin located near the southeast corner of the paved asphalt area formerly discharged into the stormwater infiltration pit via a 6-inch-diameter drain pipe, which has been capped. Stantec was unable to confirm the location of the closed depression or the stormwater infiltration pit on the TOC Property during March 2014 site work.

## 3.2 Intermediate Water-Bearing Zone (Intermediate Zone)

The Intermediate Zone is an unconfined groundwater zone that is observed at depths between approximately 20 and 60 feet bgs. As reported by SES, this zone consists of glacial till deposits between approximately 20 and 40 feet bgs and discontinuous sand and/or gravel-rich glacial deposits within the lower portion of the glacial till between approximately 40 and 60 feet bgs (SES 2013). As discussed further in Section 6.1, groundwater elevations in the Intermediate Zone of the TOC Property appear to be mounded such that the upper boundary of the Intermediate

Zone appears closer to the base of the Shallow Zone in the vicinity of the UST excavation fill area and former stormwater infiltration pit. Explanations for the observed groundwater mounding are likely related to artificial recharge within the backfill of the former UST cavity, depression, and infiltration pit; the presence of low permeable deposits near the downgradient edge of the property; and/or from localized influence of the vacuum from the soil vapor extraction (SVE) system for the remediation system located on the TOC Property (see Section 4.0). The low permeable deposits in the upper portion of the intermediate groundwater bearing zone impede the vertical percolation of water into the deeper groundwater zones and decrease the horizontal flux of the groundwater in the immediate vicinity. The prevalence of low permeable deposits correlates with the location of steeper horizontal hydraulic gradients in this area (see Section 6.1). In downgradient areas where the Intermediate Zone consists primarily of higher permeability units (i.e., sands and gravels), the thickness of unsaturated materials and the distance between the Shallow and Intermediate Zones increase. The higher permeable deposits contribute to a flattening of the horizontal hydraulic gradient. The Intermediate Zone appears to receive recharge from natural precipitation via the Shallow Zone. A comparison of groundwater elevations and analytical data suggests that the Intermediate Zone is considered to be the current primary contaminant transport pathway at the TOC Site.

## 3.3 Deep Water-Bearing Zone (Deep Zone)

The Deep Zone consists of glacial sand and gravel located at depths greater than 60 feet bgs, based on deep well screen intervals. Within the vicinity of the artificial recharge area on the TOC Property, the groundwater elevation data indicate that downward vertical gradients appear to exist between all three zones. In downgradient areas, the groundwater elevation data suggest that vertical gradients shift from downward (between the Shallow and Intermediate Zones) to neutral or slightly upward (between the Intermediate and Deep Zones). Based on these observations and the presence of fully saturated well screens, these groundwater level conditions could be a reflection of a higher permeability zone at the base of a single groundwater unit that includes both the Intermediate and Deep Zones or could represent semi-confined conditions in a separate, but interconnected groundwater zone; however, the presence of a low permeability confining unit between the two zones is not obvious in the available data. The presence of upward vertical gradients between the Deep and Intermediate Zones appear to be effective in inhibiting downward migration of contamination in downgradient areas and effectively bounding the extent of vertical contamination.

As described above, the hydrogeologic framework of the TOC Site includes three groundwater zones that appear to be interconnected. Based on re-evaluation of available SES data by Stantec, 16 wells appear to have screen intervals that intersect multiple groundwater zones (either Shallow and Intermediate Zones, or Intermediate and Deep Zones) and may not represent the individual hydrogeological conditions of either zone. Therefore, for discussion purposes, monitoring and remediation wells are placed into five categories based on well screen intervals and intersected groundwater zones, including 1) Shallow Zone, 2) Intermediate Zone, 3) Deep Zone, 4) Wells intersecting Shallow-Intermediate Zones, and 5) Well intersecting Intermediate-Deep Zones. These five categories are defined in Section 6.0.

# 4.0 REMEDIATION SYSTEM STATUS

As described in Section 1.0, TOC and Ecology entered into an AO in October 2011. In accordance with the AO, SES initiated a RI at the TOC Site and three MPE remediation systems were installed between November 2011 and August 2012 to remediate residual petroleum-contaminated groundwater, soil vapor and LNAPL (if present) in the Intermediate Zone beneath and downgradient of the TOC Site. As shown on **Figure 3**, the MPE remediation systems are located within fenced enclosures on the TOC Property and TOC/Farmasonis Property and are served by remediation wells installed on the TOC, TOC/Farmasonis and Drake properties.

At the time of 3Q2013 field event, 24 remediation wells served the MPE remediation systems. The table below identifies the remediation wells connected to each system and their location. Operation of all three MPE remediation systems is ongoing.

**Wells Serving MPE Remediation Systems**

| System Name | System Location | Remediation Well ID | Remediation Well Location |
|---|---|---|---|
| **Unit 1** | TOC Property | • MW11 • MW29<br>• MW15 • MW32<br>• MW18 • MW90<br>• MW24 • MW91<br>• MW27 | TOC Property |
| **Unit 2** | TOC/Farmasonis Property | • MW31 • MW92<br>• MW41 • MW93<br>• MW57 • MW94 | TOC/Farmasonis Property |
| **Unit 3** | TOC/Farmasonis Property | • MW69 • MW97<br>• MW70 • MW98<br>• MW84* • MW99<br>• MW95 • MW101<br>• MW96 | Drake Property |

***Notes:***

**According to SES field notes, the pump was removed from MW84 on July 12, 2013 (following the Second Quarter 2013 [2Q2013] field event completed in June 2013) and then reinstalled sometime before August 1, 2013. Following the 3Q2013 field event, the pump was again removed from MW84 on September 17, 2013. MW84 is currently used as a monitoring well and no longer serves as a remediation well connected to Unit 3.*

Additional information describing the performance of the MPE remediation systems was provided in the *Operation and Maintenance Report, Third Quarter 2013* (Stantec 2014).

# 5.0 GROUNDWATER MONITORING SCOPE OF WORK & PROTOCOLS

The 3Q2013 groundwater monitoring event was conducted by SES from September 3-5, 2013. As described in Section 1.3, the results of groundwater monitoring for remediation well MW84 following removal of the pump (on September 17, 2013) are also included herein. The sections below summarize the field methods and protocols used by SES for this quarterly groundwater monitoring event and any deviations from the scope of work defined in the IRAWP (described in Sections 1.1 and 1.2).

## 5.1 Depth-to-Groundwater/LNAPL Level Measurements

In accordance with the scope of work defined in the IRAWP, depth-to-groundwater/LNAPL levels were measured by SES personnel from September 3-5, 2013 for the active monitoring and remediation wells located on the TOC Site and 242nd ROW. According to past quarterly groundwater monitoring reports prepared by SES, after opening the wells, groundwater levels were permitted to equilibrate with atmospheric pressure prior to recording the measurements (SES 2014). SES measured and recorded depth-to-groundwater/LNAPL levels relative to the top of the well casings to an accuracy of 0.01 feet using four instruments (either an electronic water level meter or an oil/water interface probe). Where LNAPL was previously observed or expected to occur, SES used an oil/water interface probe to check for the presence of LNAPL and measure the depth-to-groundwater. To check for consistency between the four instruments used for the depth-to-groundwater/LNAPL measurements during this event, SES took a baseline measurement from MW58 (located on the TOC/Farmasonis Property) using each of the four instruments. Any differences between these measurements were used to correct the groundwater elevations, as described in Section 6.1.

The wells identified in the table below were included in the 3Q2013 groundwater monitoring scope of work but depth-to-groundwater level measurements were not collected from these locations for the reasons stated.

**Wells not Gauged during Field Event**

| Well ID & Location (Property Name) | Explanation Provided on SES' Field Notes |
|---|---|
| • MW05 (TOC)<br>• MW13 (56th ROW)<br>• MW43 (56th ROW)<br>• MW44 (56th ROW)<br>• MW47 (56th ROW)<br>• MW50 (56th ROW)<br>• MW57 (TOC/Farmasonis)<br>• MW79 (TOC/Farmasonis)<br>• MW94 (TOC/Farmasonis)<br>• MW99 (Drake) | Unable to measure depth-to-water due to insufficient groundwater in monitoring wells or top of pump was encountered prior to groundwater level in remediation wells. |

| Well ID & Location (Property Name) | Explanation Provided on SES' Field Notes |
|---|---|
| • MW29 (TOC)<br>• MW31 (TOC/Farmasonis)<br>• MW41 (TOC/Farmasonis)<br>• MW69 (Drake)<br>• MW70 (Drake) | Probe diameter was too large to fit past pump tubing in two-inch remediation wells. |

Depth-to-groundwater/LNAPL level and groundwater elevation results are presented in Section 6.1.

## 5.2 Groundwater Sampling Methods & Procedures

Groundwater samples were collected by SES personnel from September 4-5, 2013 from 22 of the 30 active wells scheduled for quarterly groundwater sampling (per the scope of work defined in the IRAWP). The nine wells identified in the table below were included in the 3Q2013 groundwater monitoring scope of work but samples were not collected from these locations for the reasons stated.

**Wells not Sampled during Field Event**

| Well ID & Location (Property Name) | Explanation Provided on SES' Field Notes |
|---|---|
| • MW10 (TOC)<br>• MW22 (TOC)<br>• MW33 (TOC)<br>• MW50 (56th ROW)<br>• MW52 (56th ROW) | Insufficient water to fill sample containers. |
| • MW31 (TOC/Farmasonis)<br>• MW45 (56th ROW)<br>• MW69 (Drake) | SES did not provide explanation for excluding wells from SOW. |

The groundwater sampling methods, protocols and rationale used by SES were identified in their annual and quarterly groundwater monitoring reports prepared for past field events (SES 2014) and are also documented in the 2Q2013 groundwater monitoring report prepared by Stantec (Stantec 2015). Based on the rationale provided in previous reports (SES 2014), SES selected four sampling methods (peristaltic pump, bladder pump, bailer and pneumatic pump) for the 3Q2013 groundwater monitoring event and elected not to use submersible pumps for groundwater sampling. Low-flow sampling methods were conducted in accordance with low-flow protocols (EPA 1996).

Groundwater sampling methods and procedures used by SES for this field event included the following:

- **Pneumatic Pump:** For remediation wells connected to a MPE remediation system, SES collected groundwater samples using a dedicated downhole pneumatic pump (MW15, MW27, MW32 and MW70). The pneumatic pumps deliver a pulse of groundwater to the wellhead whenever the groundwater table rises above the pump intake. SES reports did

not include documentation of field procedures for well purging and groundwater sampling with a pneumatic pump and did not monitor field parameters during purging and sampling with pneumatic pumps.

- **Peristaltic Pump:** SES typically collected groundwater samples using a peristaltic pump in accordance with low-flow protocols for monitoring wells with depth-to-groundwater levels less than 31 feet bgs, because of the inability of the pump to lift the water for sampling from greater depths. According to 3Q2013 field notes, SES was unable to collect samples using a peristaltic pump at wells MW10 and MW22 (which were noted as dry at the time of sample collection) due to insufficient groundwater sample volume in the wells. Because groundwater levels were measured during this event at both wells at depths greater than 31 feet bgs, it is unknown whether the wells were actually dry or if the depths to groundwater exceeded the pump capacity.
- **Bladder Pump:** For monitoring wells with depth-to-groundwater levels greater than 31 feet bgs, SES collected samples using a bottom-loading bladder pump in accordance with low-flow protocols (MW55, MW56, MW58, MW59, MW60, MW63, MW65, MW84, MW85, MW86 and MW89). Well purging and sampling with a bladder pump was performed using disposable polyethylene tubing at flow rates ranging from 40 to 400 milliliters per minute (mL/min). Bladder pumps were suspended approximately 2 to 3 feet below the surface of the groundwater or at least 1 foot above the bottom of each monitoring well where the water level was below the top of the screen. In wells with a fully-saturated screen, the bladder pump was placed approximately mid-screen.
- **Bailer:** For monitoring wells with depth-to-groundwater levels greater than 31 feet bgs that were not sampled using a bottom-loading bladder pump, a disposable polyethylene bailer was used in accordance with low-flow protocols (MW09, MW20, MW48, MW49, MW51, MW53, MW66 and MW77). Bailers were used under the following circumstances:
    - Historical analytical results indicated that elevated turbidity associated with bailing likely would not result in detectable concentrations of petroleum hydrocarbons in groundwater samples.
    - Historical analytical results exceeded their respective cleanup levels to an extent that sampling method would have no bearing on the status of contamination or interpretation of the extent of contamination in groundwater.

  SES intended to collect samples from three additional wells (MW33, MW50 and MW52) using a bailer but were unable to due to insufficient groundwater sample volume in the wells. Well purging and groundwater sampling with disposable bailers required the removal of at least three well volumes from each monitoring well prior to sampling. SES did not monitor field parameters during purging and sampling with bailers. Upon removal of at least three well volumes of groundwater, water samples were collected from the bailer directly into laboratory-prepared sample containers. If fewer than three well volumes were purged from the wells when attempting to collect groundwater samples, the wells were allowed to recharge several hours or overnight before samples were collected.

- **QA/QC Sampling Methods:** SES intended to collect samples from MW09 using three different sampling methods (peristaltic pump, bladder pump and bailer) for QA/QC purposes (see Section 5.4). However, according to 3Q2013 field notes, SES was unable to collect samples from MW09 using a peristaltic pump and bladder pump due to insufficient groundwater sample volume. Therefore, groundwater sampling at MW09 was only conducted using a bailer.

When purging and sampling in accordance with low-flow protocols (EPA 1996), SES monitored water quality using Quanta and YSI Inc. water quality meters equipped with a flow-through cell. Field parameters, including temperature, pH, specific conductance, dissolved oxygen, turbidity, and oxidation-reduction potential, were monitored and recorded. Following purging and stabilization of the field parameters, groundwater samples were collected from the pump outlet tubing located upstream of the flow-through cell and placed directly into laboratory-prepared sample containers.

Purge water generated during this sampling event was placed in labeled 55-gallon steel drums and temporarily stored on the TOC Property for transfer to the remediation systems for treatment and permitted discharge to the sanitary sewer.

Each set of sample containers was labeled with a unique sample identification number, placed on ice in a cooler and transported to Friedman & Bruya, Inc. (Friedman & Bruya) under standard chain-of-custody protocols for laboratory analysis.

## 5.3 Laboratory Analyses

The types of laboratory analyses performed by Friedman & Bruya for the groundwater samples collected during the 3Q2013 field event are identified in the table provided in this section. The data were reportedly validated by SES and, in some cases, qualifiers were assigned. Results are reported between the method detection limits (MDLs) and the method reporting limits (MRLs) for all data packages. Results are typically reported as "not detected" when below the MRLs. In cases where the MRLs were not below MTCA Method A Cleanup Levels for groundwater, the results are reported between the MDL and MRL and are considered estimates that are used for informational purposes only.

**Laboratory Analyses for Groundwater Samples**

| Hazardous Substance | Method of Analysis | Sample Location / Well ID |
|---|---|---|
| **GRPH** | NWTPH-Gx | *Analyses performed for all groundwater samples collected during field event.* |
| **BTEX** | EPA Method 8021B | *Analyses performed for all groundwater samples collected during field event.* |
| **MTBE** | EPA Method 8260C | • MW65 • MW84 • MW86<br>• MW70 • MW85 • MW89<br>• MW77 |

**Acronyms:**
BTEX = Benzene, Toluene, Ethylbenzene, and Total Xylenes
EPA = U.S. Environmental Protection Agency
GRPH = Gasoline-Range Petroleum Hydrocarbons
MTBE = Methyl Tertiary-Butyl Ether
NWTPH-Gx = Northwest Total Petroleum Hydrocarbon, gasoline-range organics

## 5.4 QA/QC Sampling Methods & Data Quality Review

The scope of work for the quarterly groundwater monitoring events included collection and laboratory analyses of groundwater samples for QA/QC purposes. QA/QC samples collected for the 3Q2013 groundwater monitoring event are described below.

- **Method Duplicates:** In order to evaluate the effects of sample method on data quality, SES intended to collect multiple samples from MW09 using three different sampling methods (peristaltic pump, bladder pump and bailer). However, according to SES' 3Q2013 field notes, they were unable to collect samples from MW09 using a peristaltic pump and bladder pump due to insufficient groundwater sample volume. Therefore, groundwater sampling at MW09 was only conducted using a bailer.
- **Field Duplicates:** The locations and collection methods for non-blind field duplicate samples are identified in the table below.

**Field Duplicate Samples**

| Sample Location/ Well ID | Sampling Method | Primary Sample ID | Duplicate Sample ID |
|---|---|---|---|
| **MW66** | Bailer | MW66-20130904-BA | MW66-20130904-BA2 |
| **MW86** | Bladder Pump | MW86-20130904-BL | MW86-20130904-BL2 |

- **Rinsate Samples:** One rinsate sample was collected from water poured through the sampling equipment used at the location identified in the table below.

**Rinsate Samples**

| Sampling Method | Sample ID |
|---|---|
| Bladder Pump* | 01-176-20130916-RO1 |
| ***Notes:*** **The field notes and Chain of Custody form completed by SES do not document the sampling method. The rinsate sample was collected on September 16, 2013, eleven days after the end of the 3Q2013 field event, and one day prior to sampling at MW84 (following removal of the remediation pump). Since the only well sampled on September 17, 2013 was MW84, it is assumed the rinsate sample was collected prior to sample collection from MW84, using the same sampling method.* | |

# 6.0 GROUNDWATER MONITORING RESULTS

As described in Section 3.0, the hydrogeologic framework of the TOC Site includes three groundwater zones (Shallow, Intermediate and Deep) that appear to be interconnected. Based on re-evaluation of available SES data by Stantec and a comparison of site-specific lithology and groundwater elevations collected during multiple sampling events, 16 wells appear to have screen intervals that intersect multiple groundwater zones. At these locations, groundwater elevations do not correlate with a single, unique zone and appear to reflect some combination of the two intersected zones (either intersecting Shallow and Intermediate Zones or Intermediate and Deep Zones). Wells that are screened in multiple intervals are not considered to be representative of a single, unique groundwater zone and were not used by Stantec for groundwater elevation contouring. Therefore, the monitoring and remediation wells were placed into five different categories of well networks based on well screen intervals and intersected groundwater zones. The five categories include:

1. Shallow Zone,
2. Intermediate Zone,
3. Deep Zone,
4. Shallow-Intermediate Zone Intersect Wells, and
5. Intermediate-Deep Zone Intersect Wells.

**Table A-1** (**Appendix A**) provides a side-by-side comparison of SES' well classifications (provided in the *Draft Remediation Investigation Report* [SES 2013]) with Stantec's revised well classifications for the five categories described above. The revised well classifications are based on a comprehensive evaluation of data by Stantec during updates to the CSM.

Groundwater monitoring results for the 3Q2013 field event are organized by well network and summarized below. Historical groundwater elevations and analytical results since June 1992 are included in the annual (first quarter) groundwater monitoring reports.

## 6.1 Groundwater Elevations

The 3Q2013 groundwater elevations were contoured by Stantec and used to identify groundwater flow direction and hydraulic gradients (**Figures 4 through 6**). The depth-to-groundwater/LNAPL level measurements and groundwater elevations are summarized in the following sections and provided on **Table 2-1**.

To check for consistency between the four instruments used for the depth-to-groundwater/ LNAPL measurements during this event, SES took a baseline measurement from MW58 using each of the four instruments. Differences between the four measurements for MW58 varied by instrument and ranged from 0.01 to 0.04 feet. Based on these results, measurements obtained using the oil/water interface probe were selected by SES as the baseline measurement for data corrections for this field event. Field data obtained using the other three instruments were corrected by SES by +/-0.01 feet or -0.04 feet to account for differences between instruments.

As noted earlier, the groundwater elevations provided on **Table 2-1** were updated by Stantec based a survey performed by PACE in 2014 (see Section 1.0). It should be noted that depth-to-groundwater/LNAPL level measurements were collected by SES when the remediation systems were operating and therefore, may not represent baseline (i.e., non-pumping) groundwater flow patterns.

Depth-to-groundwater/LNAPL level measurements ranged from 13.51 feet for MW12 (located in the Shallow Zone) to 48.64 feet for MW26 (located in the Deep Zone). LNAPL was not observed in any of the monitoring wells during the 3Q2013 field event. A summary of groundwater elevations for each well network is provided in the following sections.

### 6.1.1 Shallow Zone

Groundwater flow in the Shallow Zone appears to be predominantly to the south-southeast based on groundwater elevations measured during the 3Q2013 event. As shown on **Figure 4,** there is a relatively consistent horizontal hydraulic gradient ranging from 0.01 to 0.08 feet/feet across the TOC Site, except in the southern portion of the TOC Property (located in the northern area of the TOC Site) where steepening of the slope to about 0.2 feet/feet occurs.

### 6.1.2 Intermediate Zone

Similar to the Shallow Zone, groundwater flow in the Intermediate Zone appears to be generally to the south-southeast based on groundwater elevations measured during the 3Q2013 event with horizontal hydraulic gradients ranging from approximately 0.09 to 0.4 feet/feet across the TOC Site. As discussed in Section 3.0 and shown on **Figure 5**, steepening in the slope of the horizontal gradient is apparent in the vicinity of the TOC Property's southern boundary and is thought to be related to mounding of groundwater in the area of the TOC Property. This mounding could reflect influences of the following: artificial recharge associated with emplaced fill in the former UST area and stormwater infiltration pit and depression; and/or the apparent presence of a low permeability material in that area. Also, localized mounding effects appear to be present in direct vicinity to some of the remediation wells (MW15, MW32 and MW91), likely associated with vacuum effects from the SVE components of the remediation systems. As groundwater moves downgradient and encounters higher permeability layers (e.g., gravels and sands), the horizontal hydraulic gradient flattens significantly as is evident from the potentiometric surface on **Figure 5**. The areas of depressed groundwater elevations on the TOC/Farmasonis Property and Drake Property at MW96 are likely related to influence of the remediation systems (Units 2 and 3, respectively) when operating.

### 6.1.3 Deep Zone

Groundwater flow in the Deep Zone appears to be generally to the southeast based on groundwater elevations measured during the 3Q2013 event. The horizontal hydraulic gradient is relatively flat at an average of about 0.01 feet/feet likely because the wells are screened in high permeability material. Groundwater elevations for the monitoring wells located in the Deep Zone are shown on **Figure 6**.

Within and in the vicinity of the artificial recharge area on the TOC Property, the groundwater elevation data indicate that downward vertical gradients appear to exist between all three zones; however, Deep Zone data in this area are limited. Downgradient of this area, the groundwater elevation data appear to indicate that vertical gradients shift from downward (between the Shallow and Intermediate Zones) to upward (between the Intermediate and Deep Zones). Groundwater elevations between the Intermediate and Deep Zones are similar, but the Deep Zone elevations are typically slightly elevated above the Intermediate Zone in downgradient areas. The presence of upward vertical gradients between the Deep and Intermediate Zones, downgradient of the TOC Property appear to be effective in inhibiting downward vertical flow of groundwater and migration of contamination in downgradient areas and effectively bounding the extent of vertical contamination.

### 6.1.4 Well Screens Intersecting Multiple Zones

As previously mentioned, 16 monitoring and remediation wells appear to intersect conditions of multiple groundwater zones. Since the elevations for these wells appear to be anomalous and do not correlate with a single, unique zone, they were not used for groundwater contouring but are shown on **Figure 5**. The two intersecting groundwater zones are defined below.

#### 6.1.4.1 Shallow-Intermediate Zone Intersect Wells

Fifteen monitoring and remediation wells appear to have screened intervals that intersect both Shallow and Intermediate Zone conditions (MW08, MW09, MW18, MW22, MW24, MW27, MW28, MW29, MW37, MW38, MW43, MW82, MW83, MW88 and MW100). Groundwater elevations for these wells are typically lower than Shallow Zone wells but higher than Intermediate Zone wells due to influence of groundwater conditions from both the Shallow and Intermediate Zones. These wells were previously classified by SES as "Intermediate Zone" or "Upper Intermediate Zone" wells (as shown on **Table A-1, Appendix A**).

#### 6.1.4.2 Intermediate-Deep Zone Intersect Wells

One monitoring well (MW16) appears to have a screened interval that intersects both Intermediate and Deep Zone conditions. The well has been dry during many sampling events but the groundwater elevations measured are typically lower than other Intermediate Zone wells due to influence from the Deep Zone. This well was previously classified by SES as an "Intermediate Zone" well (as shown on **Table A-1, Appendix A**).

## 6.2 Groundwater Quality Results

**Tables 1-1 through 1-2** summarize analytical results for the wells sampled during the 3Q2013 field event. The types of laboratory analyses performed by Friedman & Bruya for the groundwater samples collected during the quarterly event are identified on the table in Section 5.3 and analytical reports are provided in **Appendix B**. As shown on the attached tables, the analytical results indicate several constituents were detected in groundwater samples at concentrations above the MRLs (i.e., detected concentrations) and above MTCA Method A Cleanup Levels.

A summary of the analytical results that exceed the MTCA Method A Cleanup Levels for each well network is provided in the following sections.

### 6.2.1 Shallow Zone

The Shallow Zone well network includes 20 active monitoring wells. The scope of work defined in the IRAWP does not require quarterly groundwater sampling of any of the wells in this zone.

### 6.2.2 Intermediate Zone

The Intermediate Zone monitoring well network includes 60 active monitoring and remediation wells (20 of which were used as remediation wells at the time of the 3Q2013 field event). The scope of work defined in the IRAWP requires quarterly groundwater sampling of 28 of the 60 active wells in this zone.

The table below identifies groundwater samples exceeding MTCA Method A Cleanup Levels for Intermediate Zone wells. **Table 1-1** summarizes the analytical results for all groundwater samples collected from Intermediate Zone wells. Concentration distribution maps for GRPH and benzene in groundwater within the Intermediate Zone are provided as **Figures 7 and 8,** respectively.

**Analytical Results for Groundwater Samples Exceeding Cleanup Levels (Intermediate Zone Wells)**

| Analyte | MTCA Method A Cleanup Level (µg/L) | Well ID & Location (Property Name) | Concentration Exceeding Cleanup Level (µg/L) |
|---|---|---|---|
| **GRPH** | 1,000 or 800 when benzene is present | MW32 (TOC)<br>MW48 (TOC/Farmasonis)<br>MW86 (Drake)* | 2,000<br>18,000<br>1,100 |
| **Benzene** | 5 | MW48 (TOC/Farmasonis) | 60 |
| **Total Xylenes** | 1,000 | MW48 (TOC/Farmasonis) | 1,100 |

**Notes:**

**Indicates duplicate samples were collected for QA/QC purposes. In the event that a result for any chemical of concern in a QA/QC sample exceeded the primary sample result, and the QA/QC sample was collected using the same method as the primary sample, then the higher of the two values was reported. However, if the sample collection methods differed, then the primary sample results are reported, regardless of the QA/QC analytical result. **Table 1-1** provides analytical results for all groundwater samples collected.*

### 6.2.3 Deep Zone

The Deep Zone monitoring well network includes six active monitoring wells. The scope of work defined in the IRAWP does not require quarterly groundwater sampling of any of the active wells in this zone.

### 6.2.4 Well Screens Intersecting Multiple Zones

As described in the opening paragraph of Section 6.0, 16 monitoring wells appear to have wells screens that intersect conditions of multiple groundwater zones. The groundwater quality results for monitoring wells in these zones are discussed in the following sections.

#### 6.2.4.1 Shallow-Intermediate Zone Intersect Wells

The Shallow-Intermediate Zone intersect includes 15 active wells (four of which are currently used as remediation wells) and one decommissioned well. The scope of work defined in the IRAWP requires quarterly groundwater sampling of two (MW09 and MW27) of the 15 active wells in this zone. In addition MW09 and MW27, SES added MW22 the 3Q2013 field event but did not document the reason for adding this monitoring well to the sampling scope of work.

For illustration purposes, GRPH and benzene concentrations within wells screened across both Shallow and Intermediate Zones are shown with the Intermediate Zone wells on **Figures 7 and 8**, respectively.

The table below identifies groundwater samples exceeding MTCA Method A Cleanup Levels for Shallow-Intermediate Zone intersect wells. **Table 1-2** summarizes the analytical results for groundwater samples collected from Shallow-Intermediate Zone intersect wells.

**Analytical Results for Groundwater Samples Exceeding Cleanup Levels (Shallow-Intermediate Zone Intersect Wells)**

| Analyte | MTCA Method A Cleanup Level (µg/L) | Well ID & Location (Property Name) | Concentration Exceeding Cleanup Level (µg/L) |
|---|---|---|---|
| **GRPH** | 1,000 or 800 when benzene is present | MW27 (TOC) | 5,900 |

#### 6.2.4.2 Intermediate-Deep Zone Intersect Wells

The scope of work defined in the IRAWP does not require quarterly groundwater monitoring for the one monitoring well (MW16 located within the 242nd Street ROW) that intersects Intermediate and Deep Zone conditions.

## 6.3 QA/QC & Data Quality Results

As described in Section 5.4, the scope of work for the quarterly groundwater monitoring events included collection and laboratory analyses of groundwater samples for QA/QC purposes. It is assumed SES performed a QA/QC review of the analytical results, which included a review of accuracy and precision of data supplied by the laboratory. Analytical results for field duplicates are provided on **Table 1-1** and analytical results for all other QA/QC samples are provided in the laboratory reports (**Appendix B**).

# 7.0 CONCLUSIONS

Stantec's conclusions for the 3Q2013 groundwater monitoring event are summarized below, based on field data collected by SES.

- LNAPL was not observed in any of the monitoring wells.
- Depth-to-groundwater level measurements ranged from 13.51 feet for MW12 (located in the Shallow Zone) to 48.64 feet for MW26 (located in the Deep Zone).
- The overall direction of groundwater flow through the Shallow, Intermediate, and Deep Zones is toward the south-southeast.
- **Shallow Zone:** Groundwater samples were not collected from wells located in the Shallow Zone during this quarterly event.
- **Intermediate Zone:** As shown on **Figure 7,** concentrations of GRPH exceeding MTCA Method A Cleanup Levels were focused in an approximate 50 feet by 100 feet area in and downgradient from the historical UST excavation area on the TOC Property extending from well MW27 at north side of the property to MW20 at the south side of the property; at the southwest corner of the TOC/Farmasonis Property near MW48; and near the south-central border of the Drake Property near MW86. As shown on **Figure 8**, concentrations of benzene exceeding MTCA Method A Cleanup Levels were also focused near MW48.
- **Deep Zone:** Groundwater samples were not collected from wells located in the Deep Zone during this quarterly event.
- **Shallow-Intermediate Zone Intersect Wells:** As shown on **Figure 7**, concentrations of GRPH exceeding MTCA Method A Cleanup Levels were focused in the northwest area of the TOC Property near MW27 (located in the historical UST excavation area).
- **Intermediate-Deep Zone Intersect Wells:** Groundwater samples were not collected from the well located in the Intermediate-Deep Zone during this quarterly event.
- The distribution of petroleum hydrocarbons in Intermediate Zone groundwater, relative to the former UST excavation at the TOC Property, is consistent with the overall direction of groundwater flow toward the south and southeast.
- Mounded groundwater conditions within the Intermediate Zone appear to be centered beneath the southern portion of the former UST excavation. The location and elevation of the mounded conditions and the vertical and lateral distributions of petroleum hydrocarbons support the working hypothesis that contamination associated with the former UST excavation appears to be associated with contaminated groundwater remaining within the Intermediate Zone on the TOC, TOC/Farmasonis and Drake Properties.

# 8.0 FUTURE TASKS

SES conducted groundwater monitoring for the 4Q2013 field event in December 2013. The results will be presented in a subsequent groundwater monitoring report prepared by Stantec.

# 9.0 REFERENCES

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Lenhard and Parker 1990. Lenhard, R. J. and Parker, J. C. *Estimation of Free Hydrocarbon Volume from Fluid Levels in Monitoring Wells.* Groundwater, 28: 57–67. doi: 10.1111/j.1745-6584.1990.tb02229.x. January.

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# Tables

# TABLE 1-1
## Groundwater Quality Results for Intermediate Zone Wells
## Third Quarter 2013
TOC Holdings Co. Facility No. 01-176; Mountlake Terrace WA

| Well ID [1] | Property | Date | Sample ID [2] | Analytical Results (µg/L) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Total Petroleum Hydrocarbons | Volatile Organic Compounds | | | | |
| | | | | Method NWTPH-Gx | EPA Method 8021B | | | | EPA Method 8260C |
| | | | | GRPH | Benzene | Toluene | Ethyl-benzene | Total Xylenes | MTBE |
| **MW10** | TOC | 9/5/2013 | DRY [a] | NA | NA | NA | NA | NA | NA |
| **MW15 (RW)** | TOC | 9/4/2013 | MW15-20130904-PN | 100U | 1U | 1.1 | 1U | 3.8 | NA |
| **MW20** | TOC | 9/5/2013 | MW20-20130905-BA | 150 | 1U | 1U | 1U | 3U | NA |
| **MW31 (2" RW)** | TOC/Farmasonis | - | NS [b] | NA | NA | NA | NA | NA | NA |
| **MW32 (RW)** | TOC | 9/4/2013 | MW32-20130904-PN | **2,000** | 5U | 5.3 | 26 | 150 | NA |
| **MW33** | TOC | 9/5/2013 | DRY | NA | NA | NA | NA | NA | NA |
| **MW45** | 56th Ave ROW | - | NS [b] | NA | NA | NA | NA | NA | NA |
| **MW48** | 56th Ave ROW | 9/5/2013 | MW48-20130905-BA | **18,000** | **60** | 55 | 140 | **1,100** | NA |
| **MW49** | 56th Ave ROW | 9/5/2013 | MW49-20130905-BA | 100U | 1U | 1U | 1U | 3U | NA |
| **MW50** | 56th Ave ROW | 9/4/2013 | DRY [a] | NA | NA | NA | NA | NA | NA |
| **MW51** | 56th Ave ROW | 9/5/2013 | MW51-20130905-BA | 100U | 1U | 1U | 1U | 3U | NA |
| **MW52** | 56th Ave ROW | 9/4/2013 | DRY [a] | NA | NA | NA | NA | NA | NA |
| **MW53** | 56th Ave ROW | 9/5/2013 | MW53-20130905-BA | 100U | 1U | 1U | 1U | 3U | NA |
| **MW55** | 56th Ave ROW | 9/4/2013 | MW55-20130904-BL | 100U | 1U | 1U | 1U | 3U | NA |
| **MW56** | TOC/Farmasonis | 9/4/2013 | MW56-20130904-BL | 100U | 1U | 1U | 1U | 3U | NA |
| **MW58** | TOC/Farmasonis | 9/4/2013 | MW58-20130904-BL | 100U | 1U | 1U | 1U | 3U | NA |
| **MW59** | TOC/Farmasonis | 9/4/2013 | MW59-20130904-BL | 100U | 1U | 1U | 1U | 5.2 | NA |
| **MW60** | 56th Ave ROW | 9/4/2013 | MW60-20130904-BL | 100U | 1U | 1U | 1U | 3U | NA |
| **MW63** | 56th Ave ROW | 9/5/2013 | MW63-20130905-BL | 100U | 1U | 1U | 1U | 3U | NA |
| **MW65** | Drake | 9/4/2013 | MW65-20130904-BL | 100U | 1U | 1U | 1U | 3U | 1U |
| **MW66** | TOC/Farmasonis | 9/4/2013 | MW66-20130904-BA | 100U | 1U | 1U | 1U | 3U | NA |
| | | 9/4/2013 | MW66-20130904-BA2 [c] | 100U | 1U | 1U | 1U | 3U | NA |
| **MW69 (2" RW)** | Drake | - | NS [b] | NA | NA | NA | NA | NA | NA |
| **MW70 (2" RW)** | Drake | 9/4/2013 | MW70-20130904-PN | 100U | 1U | 1U | 1U | 3U | 1U |
| **MW77** | Drake | 9/4/2013 | MW77-20130904-BA | 100U | 1U | 1U | 1U | 3U | 1U |
| **MW84 (2" RW)** | Drake | 9/4/2013 | DRY [a] | NA | NA | NA | NA | NA | NA |
| | | 9/17/2013 | MW84-20130917-BL [d] | 130 | 1U | 1U | 1.1 | 3U | 1U |
| **MW85** | Drake | 9/4/2013 | MW85-20130904-BL | 100U | 1U | 1U | 1U | 3U | 1U |
| **MW86** | Drake | 9/4/2013 | MW86-20130904-BL | **1,100** | 1.9 | 3.7 | 1.7 | 3.6 | 1U |
| | | 9/4/2013 | MW86-20130904-BL2 [c] | **1,000** | 1U | 3.6 | 1.7 | 3U | 1U |
| **MW89** | Drake | 9/4/2013 | MW89-20130904-BL | 100U | 1U | 1U | 1U | 3U | 1U |
| **MTCA Method A Cleanup Level [3]** | | | | **1,000 / 800 [4]** | **5** | **1,000** | **700** | **1,000** | **20** |

**NOTES & DEFINITIONS:**

Field data was collected by SES and is reported by Stantec.

Groundwater samples were analyzed by Friedman & Bruya.

**Red** denotes concentration exceeds MTCA Method A Cleanup Levels for groundwater.

[1] Remediation wells are identified as "RW." RWs are 4 inches in diameter (unless noted as 2 inches) and are connected to multi-phase remediation system.

[2] Suffix of sample ID indicates type of sampling method used (BA = bailer, BL = bladder pump, PE = peristaltic pump, PN = pneumatic pump).

[3] MTCA Method A Cleanup Levels, Table 720-1 of Section 900 of Chapter 173-340 of the Washington Administrative Code, revised November 2007.

[4] Cleanup level is 1,000 µg/L when benzene is not present and 800 µg/L when benzene is present.

[a] DRY = Well could not be sampled due to insufficient groundwater sample volume.

[b] NS = SES did not provide explanation for excluding well from groundwater sampling scope of work.

[c] Field duplicate sample collected for quality assurance/quality control purposes.

[d] According to SES' field notes, MW84 was operating as a remediation well at the time of the field event and could not be sampled due to insufficient groundwater sample volume. On September 17, 2013, SES permanently removed the pump from MW84 and groundwater samples were collected. Due to the close proximity of the events, the results of this sample are included herein.

NA = Indicates the compound was not analyzed.

U = Indicates the compound was undetected at the method reporting limit.

**ACRONYMS & ABBREVIATIONS:**

µg/L = micrograms per liter

EPA = U.S. Environmental Protection Agency

GRPH = gasoline-range petroleum hydrocarbons

MTBE = methyl tertiary-butyl ether

MTCA = Model Toxics Control Act

NWTPH-Gx = Northwest Total Petroleum Hydrocarbon - gasoline-range organics

SES = SoundEarth Strategies, Inc.

**LIST OF PROPERTIES - TOC SITE:**

TOC = 24205 56th Avenue West, Mountlake Terrace WA

TOC/Farmasonis = 24225 56th Avenue West, Mountlake Terrace WA

Drake = 24309 56th Avenue West, Mountlake Terrace WA

56th Ave ROW = right-of-way adjacent to TOC, TOC/Farmasonis & Drake properties

# TABLE 1-2
## Groundwater Quality Results for Shallow-Intermediate Zone Intersect Wells
## Third Quarter 2013
TOC Holdings Co. Facility No. 01-176; Mountlake Terrace WA

| Well ID [1] | Property | Date | Sample ID [2] | Analytical Results (µg/L) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Total Petroleum Hydrocarbons | Volatile Organic Compounds | | | | |
| | | | | Method NWTPH-Gx | EPA Method 8021B | | | | EPA Method 8260C |
| | | | | GRPH | Benzene | Toluene | Ethyl-benzene | Total Xylenes | MTBE |
| **MW09** | TOC | 9/5/2013 | MW09-20130905-BA | 300 | 1.9 | 1.8 | 1.7 | 19 | NA |
| **MW22** | TOC | 9/5/2013 | DRY [a] | NA | NA | NA | NA | NA | NA |
| **MW27 (2" RW)** | TOC | 9/4/2013 | MW27-20130904-PN | **5,900** | 5U | 12 | 5U | 940 | NA |
| **MTCA Method A Cleanup Level** [3] | | | | **1,000 / 800** [4] | **5** | **1,000** | **700** | **1,000** | **20** |

**NOTES & DEFINITIONS:**

Field data was collected by SES and is reported by Stantec.

Groundwater samples were analyzed by Friedman & Bruya.

**Red** denotes concentration exceeds MTCA Method A Cleanup Levels for groundwater.

[1] Remediation wells are identified as "RW." RWs are 4 inches in diameter (unless noted as 2 inches) and are connected to multi-phase remediation system.

[2] Suffix of sample ID indicates type of sampling method used (BA = bailer, BL = bladder pump, PE = peristaltic pump, PN = pneumatic pump).

[3] MTCA Method A Cleanup Levels, Table 720-1 of Section 900 of Chapter 173-340 of the Washington Administrative Code, revised November 2007.

[4] Cleanup level is 1,000 µg/L when benzene is not present and 800 µg/L when benzene is present.

[a] DRY = Well could not be sampled due to insufficient groundwater sample volume.

NA = Indicates the compound was not analyzed.

U = Indicates the compound was undetected at the method reporting limit.

**ACRONYMS & ABBREVIATIONS:**

µg/L = micrograms per liter

EPA = U.S. Environmental Protection Agency

GRPH = gasoline-range petroleum hydrocarbons

MTBE = methyl tertiary-butyl ether

MTCA = Model Toxics Control Act

NWTPH-Gx = Northwest Total Petroleum Hydrocarbon - gasoline-range organics

SES = SoundEarth Strategies, Inc.

**LIST OF PROPERTIES:**

TOC = 24205 56th Avenue West, Mountlake Terrace WA

**TABLE 2-1**
**Depth-to-Groundwater/LNAPL Level Measurements**
**Third Quarter 2013**
TOC Holdings Co. Facility No. 01-176; Mountlake Terrace WA

| Well ID [1] | Property | Well Zone | Date | Ref. Elev. (feet) [2] | DTW (feet) [3,4] | Groundwater Elevation (feet) [5,6] | LNAPL Thickness (feet) | NOTES |
|---|---|---|---|---|---|---|---|---|
| MW01 | TOC | Shallow | NM | NM | NM | NM | NM | DECOMMISSIONED 10/2/2009 |
| MW02 | TOC | Shallow | 09/03/2013 | 358.71 | 14.51 | 344.20 | -- | |
| MW03 | TOC | Shallow | 09/03/2013 | 361.85 | 17.56 | 344.29 | -- | |
| MW04 | 56th Ave ROW | Shallow | 09/03/2013 | 361.96 | 16.51 | 345.45 | -- | |
| MW05 | 242nd St ROW | Shallow | 09/03/2013 | 363.70 | DRY | DRY | DRY | |
| MW06 | TOC | Shallow | 09/03/2013 | 358.98 | 14.71 | 344.27 | -- | |
| MW07 | TOC/Farmasonis | Intermediate | NM | NM | NM | NM | NM | DECOMMISSIONED 11/29/2004 |
| MW08 | 56th Ave ROW | Shallow-Intermediate Intersect | 09/03/2013 | 360.34 | 37.21 | 323.13 | -- | |
| MW09 | TOC | Shallow-Intermediate Intersect | 09/05/2013 | 360.32 | 38.11 | 322.21 | -- | |
| MW10 | TOC | Intermediate | 09/03/2013 | 357.91 | 38.05 | 319.86 | -- | |
| MW11 (RW) | TOC | Intermediate | 09/03/2013 | 362.34 | 33.06 | 329.28 | -- | |
| MW12 | 56th Ave ROW | Shallow | 09/03/2013 | 357.65 | 13.51 | 344.14 | -- | |
| MW13 | 56th Ave ROW | Intermediate | 09/03/2013 | 357.34 | DRY | DRY | DRY | |
| MW14 | TOC/Farmasonis | Intermediate | NM | NM | NM | NM | NM | DECOMMISSIONED 11/29/2004 |
| MW15 (RW) | TOC | Intermediate | 09/04/2013 | 357.56 | 37.19 | 320.37 | -- | |
| MW16 | 242nd St ROW | Intermediate-Deep Intersect | 09/03/2013 | 365.18 | 47.20 | 317.98 | -- | |
| MW17 | TOC/Farmasonis | Intermediate | NM | NM | NM | NM | NM | DECOMMISSIONED 11/29/2004 |
| MW18 (RW) | TOC | Shallow-Intermediate Intersect | 09/03/2013 | 357.91 | 28.44 | 329.47 | -- | |
| MW19 | TOC | Shallow | 09/03/2013 | 358.86 | 17.21 | 341.65 | -- | |
| MW20 | TOC | Intermediate | 09/05/2013 | 359.93 | 38.61 | 321.32 | -- | |
| MW21 | TOC | Intermediate | NM | NM | NM | NM | NM | DECOMMISSIONED 4/16/2012 |
| MW22 | TOC | Shallow-Intermediate Intersect | 09/03/2013 | 358.52 | 36.03 | 322.49 | -- | |
| MW23 | TOC | Intermediate | 09/03/2013 | 357.08 | 39.11 | 317.97 | -- | |
| MW24 (RW) | TOC | Shallow-Intermediate Intersect | 09/03/2013 | 361.97 | 33.23 | 328.74 | -- | |
| MW25 | TOC | Intermediate | 09/03/2013 | 358.70 | 37.48 | 321.22 | -- | |
| MW26 | TOC | Deep | 09/03/2013 | 363.81 | 48.64 | 315.17 | -- | |
| MW27 (2" RW) | TOC | Shallow-Intermediate Intersect | 09/04/2013 | 362.51 | 19.41 | 343.10 | -- | |
| MW28 | TOC | Shallow-Intermediate Intersect | 09/03/2013 | 358.41 | 29.83 | 328.58 | -- | |
| MW29 (2" RW) | TOC | Shallow-Intermediate Intersect | 09/03/2013 | 358.93 | NM | NM | NM | unable to gauge (probe diameter too large to fit past remediation well pump tubing) |
| MW30 | TOC/Farmasonis | Deep | 09/03/2013 | 356.46 | 40.67 | 315.79 | -- | |
| MW31 (2" RW) | TOC/Farmasonis | Intermediate | 09/03/2013 | 357.08 | NM | NM | NM | unable to gauge (probe diameter too large to fit past remediation well pump tubing) |
| MW32 (RW) | TOC | Intermediate | 09/04/2013 | 359.95 | 28.62 | 331.33 | -- | |
| MW33 | TOC | Intermediate | 09/03/2013 | 358.24 | 34.49 | 323.75 | -- | |
| MW34 | TOC | Shallow | 09/03/2013 | 357.88 | 15.90 | 341.98 | -- | |
| MW35 | TOC | Intermediate | 09/03/2013 | 358.46 | 39.66 | 318.80 | -- | |
| MW36 | TOC | Intermediate | 09/03/2013 | 357.98 | 42.68 | 315.30 | -- | |
| MW37 | TOC | Shallow-Intermediate Intersect | 09/03/2013 | 358.90 | 30.73 | 328.17 | -- | |
| MW38 | TOC | Shallow-Intermediate Intersect | 09/03/2013 | 364.42 | 26.23 | 338.19 | -- | |
| MW39 | TOC/Farmasonis | Deep | 09/03/2013 | 355.88 | 40.76 | 315.12 | -- | |
| MW40 | TOC/Farmasonis | Deep | 09/03/2013 | 356.32 | 40.73 | 315.59 | -- | |
| MW41 (2" RW) | TOC/Farmasonis | Intermediate | 09/03/2013 | 356.14 | NM | NM | NM | unable to gauge (probe diameter too large to fit past remediation well pump tubing) |
| MW42 | TOC/Farmasonis | Intermediate | 09/03/2013 | 356.43 | 39.74 | 316.69 | -- | |
| MW43 | 56th Ave ROW | Shallow-Intermediate Intersect | 09/03/2013 | 358.84 | DRY | DRY | DRY | |
| MW44 | 56th Ave ROW | Intermediate | 09/03/2013 | 354.93 | DRY | DRY | DRY | |
| MW45 | 56th Ave ROW | Intermediate | 09/03/2013 | 356.49 | 39.40 | 317.09 | -- | |
| MW46 | 56th Ave ROW | Intermediate | 09/03/2013 | 357.00 | 42.42 | 314.58 | -- | |
| MW47 | 56th Ave ROW | Intermediate | 09/03/2013 | 355.47 | DRY | DRY | DRY | |
| MW48 | 56th Ave ROW | Intermediate | 09/05/2013 | 355.41 | 42.64 | 312.77 | -- | |
| MW49 | 56th Ave ROW | Intermediate | 09/05/2013 | 356.44 | 43.32 | 313.12 | -- | |
| MW50 | 56th Ave ROW | Intermediate | 09/03/2013 | 361.99 | DRY | DRY | DRY | |
| MW51 | 56th Ave ROW | Intermediate | 09/05/2013 | 352.66 | 41.13 | 311.53 | -- | |
| MW52 | 56th Ave ROW | Intermediate | 09/03/2013 | 355.61 | 43.22 | 312.39 | -- | |
| MW53 | 56th Ave ROW | Intermediate | 09/05/2013 | 359.85 | 43.12 | 316.73 | -- | |
| MW54 | TOC/Farmasonis | Shallow | 09/03/2013 | 357.93 | 14.19 | 343.74 | -- | |
| MW55 | 56th Ave ROW | Intermediate | 09/04/2013 | 356.50 | 43.71 | 312.79 | -- | |
| MW56 | TOC/Farmasonis | Intermediate | 09/04/2013 | 357.49 | 44.39 | 313.10 | -- | |
| MW57 (RW) | TOC/Farmasonis | Intermediate | 09/03/2013 | 356.42 | DRY | DRY | DRY | |
| MW58 | TOC/Farmasonis | Intermediate | 09/04/2013 | 355.40 | 42.99 | 312.41 | -- | |
| MW59 | TOC/Farmasonis | Intermediate | 09/04/2013 | 356.51 | 43.21 | 313.30 | -- | |
| MW60 | 56th Ave ROW | Intermediate | 09/04/2013 | 358.58 | 43.37 | 315.21 | -- | |
| MW61 | 56th Ave ROW | Shallow | 09/03/2013 | 357.17 | 13.70 | 343.47 | -- | |
| MW62 | 56th Ave ROW | Shallow | 09/03/2013 | 360.50 | 16.35 | 344.15 | -- | |
| MW63 | 56th Ave ROW | Intermediate | 09/05/2013 | 355.11 | 42.69 | 312.42 | -- | |
| MW64 | 56th Ave ROW | Deep | 09/03/2013 | 355.18 | 40.07 | 315.11 | -- | |
| MW65 | Drake | Intermediate | 09/04/2013 | 353.08 | 41.33 | 311.75 | -- | |
| MW66 | TOC/Farmasonis | Intermediate | 09/04/2013 | 355.75 | 42.51 | 313.24 | -- | |
| MW67 | Drake | Shallow | 09/03/2013 | 355.73 | 15.51 | 340.22 | -- | |
| MW68 | Drake | Shallow | 09/03/2013 | 355.11 | 15.22 | 339.89 | -- | |
| MW69 (2" RW) | Drake | Intermediate | 09/03/2013 | 353.76 | NM | NM | NM | unable to gauge (probe diameter too large to fit past remediation well pump tubing) |
| MW70 (2" RW) | Drake | Intermediate | 09/04/2013 | 354.17 | NM | NM | NM | unable to gauge (probe diameter too large to fit past remediation well pump tubing) |
| MW71 | Shin/Choi | Shallow | NM | 347.92 | NM | NM | NM | not included in SOW for quarterly events |
| MW72 | Shin/Choi | Shallow | NM | 347.38 | NM | NM | NM | not included in SOW for quarterly events |
| MW73 | Shin/Choi | Intermediate | NM | 347.33 | NM | NM | NM | not included in SOW for quarterly events |
| MW74 | Shin/Choi | Intermediate | NM | 347.94 | NM | NM | NM | not included in SOW for quarterly events |

**TABLE 2-1**
**Depth-to-Groundwater/LNAPL Level Measurements**
**Third Quarter 2013**
TOC Holdings Co. Facility No. 01-176; Mountlake Terrace WA

| Well ID [1] | Property | Well Zone | Date | Ref. Elev. (feet) [2] | DTW (feet) [3,4] | Groundwater Elevation (feet) [5,6] | LNAPL Thickness (feet) | NOTES |
|---|---|---|---|---|---|---|---|---|
| MW75 | 56th Ave ROW | Intermediate | NM | 354.78 | NM | NM | NM | not included in SOW for quarterly events |
| MW76 | Drake | Intermediate | NM | 351.69 | 39.94 | 311.75 | -- | |
| MW77 | Drake | Intermediate | 09/04/2013 | 349.95 | 38.53 | 311.42 | -- | |
| MW78 | Drake | Deep | 09/03/2013 | 349.90 | 36.72 | 313.18 | -- | |
| MW79 | TOC/Farmasonis | Shallow | 09/03/2013 | 353.98 | DRY | DRY | DRY | |
| MW80 | TOC/Farmasonis | Shallow | 09/03/2013 | 353.83 | 18.16 | 335.67 | -- | |
| MW81 | TOC/Farmasonis | Intermediate | 09/03/2013 | 355.60 | 42.67 | 312.93 | -- | |
| MW82 | TOC/Farmasonis | Shallow-Intermediate Intersect | 09/03/2013 | 355.59 | 29.59 | 326.00 | -- | |
| MW83 | TOC/Farmasonis | Shallow-Intermediate Intersect | NM | NM | NM | NM | NM | DECOMMISSIONED 11/21/2011 |
| MW84 (RW) [7] | Drake | Intermediate | 09/03/2013 | 353.75 | NM | NM | NM | unable to gauge (probe diameter too large to fit past remediation well pump tubing) |
| MW84 [7] | Drake | Intermediate | 09/17/2013 | 353.75 | 45.65 | 308.10 | | unable to gauge well on 09/03/2013 |
| MW85 | Drake | Intermediate | 09/04/2013 | 351.28 | 39.78 | 311.50 | -- | |
| MW86 | Drake | Intermediate | 09/04/2013 | 352.72 | 41.20 | 311.52 | -- | |
| MW86 [8] | Drake | Intermediate | 09/17/2013 | 352.72 | 41.80 | 310.92 | | |
| MW87 | Drake | Intermediate | 09/03/2013 | 349.72 | 38.54 | 311.18 | -- | |
| MW88 | Drake | Shallow-Intermediate Intersect | 09/03/2013 | 351.63 | 20.38 | 331.25 | -- | |
| MW89 | Drake | Intermediate | 09/04/2013 | 353.86 | 42.09 | 311.77 | -- | |
| MW90 (RW) | TOC | Intermediate | 09/03/2013 | 362.87 | 34.96 | 327.91 | -- | |
| MW91 (RW) | TOC | Intermediate | 09/03/2013 | 362.67 | 32.62 | 330.05 | -- | |
| MW92 (RW) | TOC/Farmasonis | Intermediate | 09/03/2013 | 357.91 | 44.71 | 313.20 | -- | |
| MW93 (RW) | TOC/Farmasonis | Intermediate | 09/03/2013 | 355.97 | 41.91 | 314.06 | -- | |
| MW94 (RW) | TOC/Farmasonis | Intermediate | 09/03/2013 | 357.94 | DRY | DRY | DRY | |
| MW95 (RW) | Drake | Intermediate | 09/03/2013 | 354.67 | 41.97 | 312.70 | -- | |
| MW96 (RW) | Drake | Intermediate | 09/03/2013 | 356.00 | 47.44 | 308.56 | -- | |
| MW97 (RW) | Drake | Intermediate | 09/03/2013 | 354.29 | 41.43 | 312.86 | -- | |
| MW98 (RW) | Drake | Intermediate | 09/03/2013 | 354.75 | 41.89 | 312.86 | -- | |
| MW99 (RW) | Drake | Intermediate | 09/03/2013 | 353.58 | DRY | DRY | DRY | |
| MW100 | TOC/Farmasonis | Shallow-Intermediate Intersect | 09/03/2013 | 355.75 | 19.73 | 336.02 | -- | |
| MW101 (RW) | Drake | Intermediate | 09/03/2013 | 352.05 | 39.98 | 312.07 | -- | |
| MW102 | Herman | Shallow | NM | 352.39 | NM | NM | NM | not included in SOW for quarterly events |
| MW103 | Herman | Intermediate | NM | 352.21 | NM | NM | NM | not included in SOW for quarterly events |
| MW104 | Herman | Shallow | NM | 353.00 | NM | NM | NM | not included in SOW for quarterly events |
| MW105 | Herman | Intermediate | NM | 353.05 | NM | NM | NM | not included in SOW for quarterly events |
| MW106 | Herman | Shallow | NM | 349.24 | NM | NM | NM | not included in SOW for quarterly events |
| MW107 | Herman | Intermediate | NM | 349.56 | NM | NM | NM | not included in SOW for quarterly events |

**NOTES & DEFINITIONS:**
Field data was collected by SES and is reported by Stantec.

[1] Remediation wells are identified as "RW." RWs are 4 inches in diameter (unless noted as 2 inches) and are connected to multi-phase remediation system.

[2] Reference elevation is the north side of the top of the well casing (except for MW25 where the reference elevation is the high point on the PVC casing and the reference elevation for MW99 is the top of the well cap). Elevations were measured in feet above mean sea level (North American Vertical Datum of 1988 [NAVD88]).

[3] DTW as measured from a marked measuring point on the well casing rim to an accuracy of 0.01 feet using four instruments (either an electronic water level meter or an oil/water interface probe). Where LNAPL was previously observed or expected to occur, SES used an oil/water interface probe to check for the presence of LNAPL and measure the DTW.

[4] To check for consistency between the four instruments used for the DTW measurements, SES took a baseline measurement from MW58 using each of the four instruments. Differences between the four measurements for MW58 varied by instrument and ranged from 0.01 to 0.04 feet. Based on these results, measurements obtained using the oil/water interface probe were selected by SES as the baseline measurement for data corrections for this field event. Field data obtained using the other three instruments were corrected by SES by +/-0.01 feet or -0.04 feet to account for differences between instruments.

[5] Groundwater elevations represent "system on" data and are influenced by the remediation system (i.e., do not represent natural site conditions).

[6] If LNAPL thickness was measured, groundwater elevation adjusted to account for the presence of LNAPL in the well using the method in "Estimation of Free Hydrocarbon Volume from Fluid Levels in Monitoring Wells" [Lenhard and Parker 1990; Groundwater 28(1):57-67].

[7] According to SES' field notes, MW84 was operating as a two-inch remediation well at the time of the field event and could not be gauged (probe diameter was too large to fit past remediation well pump tubing). On September 17, 2013, SES permanently removed the pump from MW84 and measured the DTW level. Due to the close proximity of the events, the results of this measurement are included herein.

[8] According to SES' field notes, DTW levels were measured for MW86 during the 3Q2013 field event and again on September 17, 2013 (at the same time measurements were collected for MW84). Due to the close proximity of the events, the results of both measurements for MW86 are included herein.

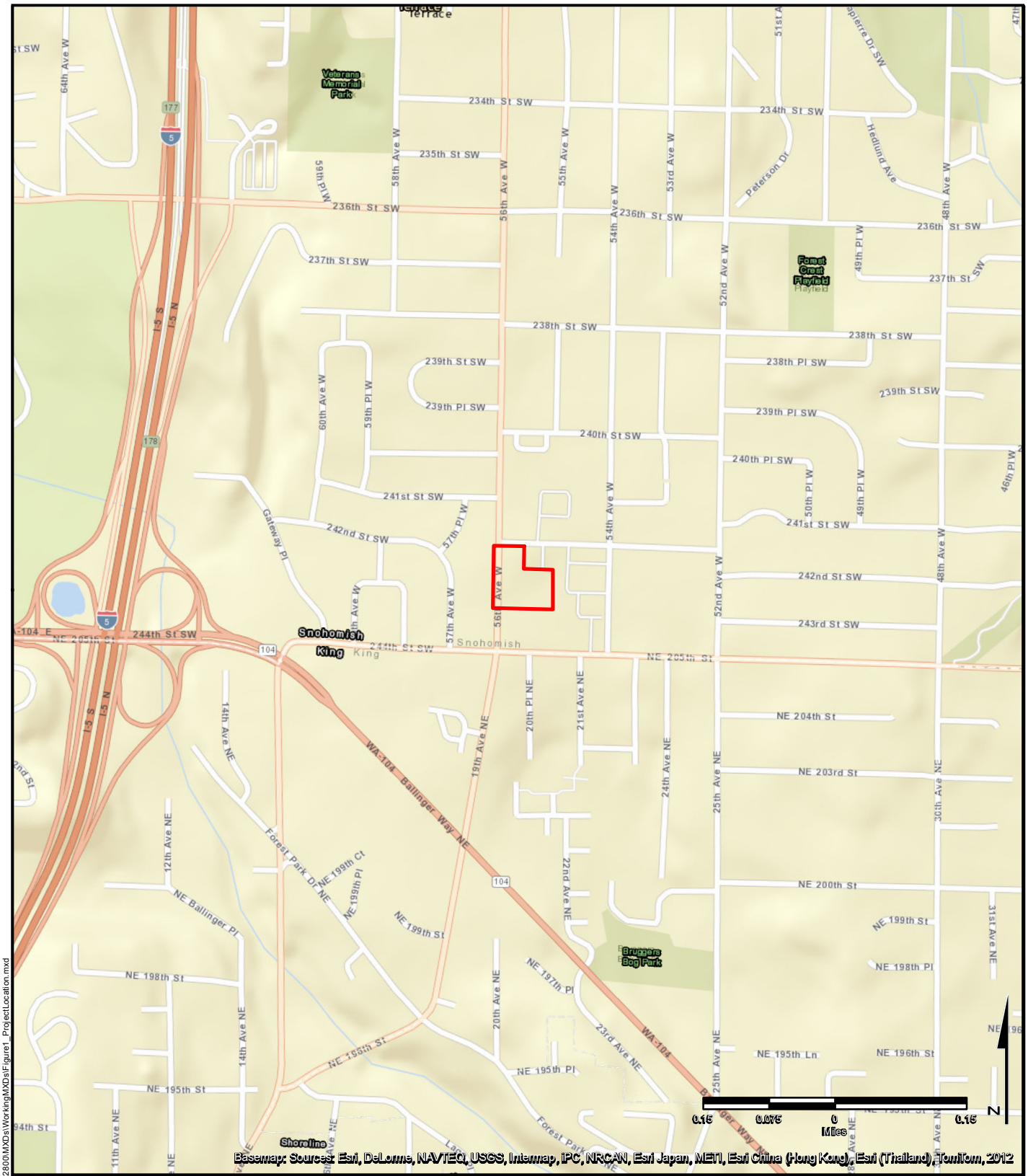
-- = no measurable product or odor observed
DRY = Unable to measure DTW due to insufficient groundwater (in monitoring well) or groundwater level was below top of pump (in remediation well).
NM = Well was not measured for reason stated in notes.

**ACRONYMS & ABBREVIATIONS:**
DTW = depth to water
LNAPL = light non-aqueous phase liquid
Ref. Elev. = Reference Elevation
SES = SoundEarth Strategies, Inc.
SOW = scope of work

**LIST OF PROPERTIES - TOC SITE:**
TOC = 24205 56th Avenue West, Mountlake Terrace WA
TOC/Farmasonis = 24225 56th Avenue West, Mountlake Terrace WA
Drake = 24309 56th Avenue West, Mountlake Terrace WA
56th Ave ROW = right-of-way adjacent to TOC, TOC/Farmasonis & Drake properties

**LIST OF PROPERTIES - ADJACENT TO TOC SITE:**
Herman = 24311 56th Avenue West, Mountlake Terrace WA (downgradient from TOC Site)
Shin/Choi = 24325 56th Avenue West, Mountlake Terrace WA (downgradient from TOC Site)
242nd St ROW = right-of-way adjacent to TOC Property (upgradient from TOC Site)

# Figures




Basemap: Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, IPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, 2012

## Legend

Site Boundary


TOC Holdings Co. Facility 01-176
24205 56th Avenue West
Mountlake Terrace, Washington

**FIGURE 1: PROJECT LOCATION**

Stantec

| | | | |
|---|---|---|---|
| DRAWN BY | D.H. | DATE DRAWN | 1/21/2015 |
| SCALE | 1 in = 0.16 miles | | |
| PROJECT | 203714085 | | |

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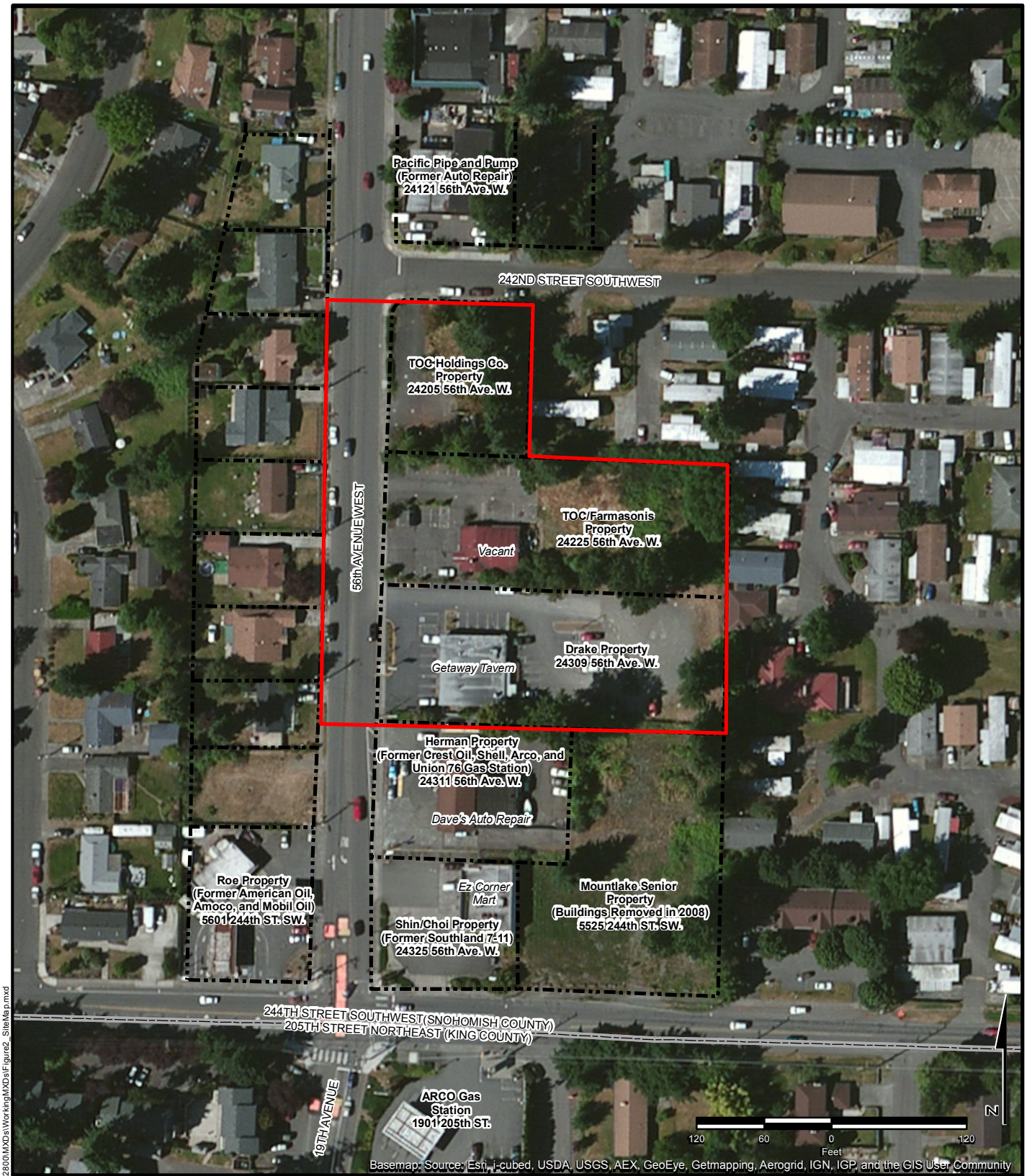


**Legend**

Site Boundary

PARCELS


TOC Holdings Co. Facility 01-176
24205 56th Avenue West
Mountlake Terrace, Washington

**FIGURE 2: SITE MAP**

Stantec

| | | | |
|---|---|---|---|
| DRAWN BY | D.H. | DATE DRAWN | 1/21/2015 |
| SCALE | 1 in = 120 feet | | |
| PROJECT | 203714085 | | |

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## Legend

- Site Boundary
- Historic Pump Islands (Removed)
- Parcels
- Remediation System Piping
- Compound Fence
- Historic Excavation
- Historic UST Location
- System Compound
- Abandoned Well
- Deep Well
- Intermediate Well
- Shallow Well
- Mix Zone Well
- Stormwater Infiltration Pit


TOC Holdings Co. Facility 01-176
24205 56th Avenue West
Mountlake Terrace, Washington

**FIGURE 3: LOCATIONS OF WELLS AND REMEDIATION SYSTEMS**

Stantec

| | | | |
|---|---|---|---|
| DRAWN BY | D.H. | DATE DRAWN | 2/3/2015 |
| SCALE | 1 in = 50 ft | | |
| PROJECT | 203714085 | | |

Path: X:\WA\Clients\Time_Oil\TOC-MountlakeTerrace_BA1402800\MXDs\WorkingMXDs\Figure3_SiteMap With Well Locations(11x17).mxd


## Legend

- Parcels
- MW72 — Groundwater Sample Location Identifier and Groundwater Elevation (ft, MSL) (NM = Not Measured) — 343.04
- 343 — Estimated Groundwater Elevation Contour (ft, MSL)
- Site Boundary
- Compound Fence
- System Compound
- Equipment Shed
- Historic Excavation


TOC Holdings Co. Facility 01-176
24205 56th Avenue West
Mountlake Terrace, Washington

**FIGURE 4: GROUNDWATER ELEVATION CONTOURS, SHALLOW ZONE, SEPTEMBER 2013 (SYSTEM ON)**

Stantec

| | |
|---|---|
| DRAWN BY | D.H. |
| DATE DRAWN | 2/27/2015 |
| SCALE | 1 in = 50 feet |
| PROJECT | 203714085 |

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Note:

1. Well symbols displayed in purple indicate wells that are screened across multiple zones and were not used for contouring. Groundwater elevations at these locations are displayed in red.

2. Dry/TP indicates that the top of the pump was encountered prior to the water surface.

3. Groundwater elevation at wells MW15, MW32, and MW91 may be mounded in part due to vacuum effects from the SVE remediation system.

242nd Street Southwest

56th Avenue West

TOC Holdings Co. Property

TOC/Farmasonis Property

Drake Property

Herman Property

Shin/Choi Property

Mountlake Senior Property

MW16 317.98
MW38 338.19
MW27 343.1
MW90 327.91
MW11 329.28
MW50 Dry
MW91 330.05
MW24 328.74
MW37 328.17
MW29 NM
MW09 322.21
MW08 323.13
MW32 331.33
MW25 321.22
MW28 328.58
MW35 318.8
MW36 315.3
MW20 321.32
MW10 NM
MW18 329.47
MW15 320.37
MW53 316.73
MW22 322.49
MW33 323.75
MW23 317.97
MW31 NM
MW94 Dry/TP
MW93 314.06
MW43 Dry
MW60 315.21
MW13 Dry
MW56 313.1
MW59 313.3
MW66 313.24
MW92 313.2
MW41 NM
MW82 326.0
MW45 317.09
MW49 313.12
MW100 336.02
MW81 312.93
MW46 314.58
MW57 Dry/TP
MW42 316.69/Dry
MW58 312.41
MW55 312.79
MW48 312.77
MW96 308.56
MW88 331.25
MW76 311.75
MW97 312.86
MW70 NM
MW63 312.42
MW44 Dry
MW98 312.86
MW47 Dry
MW52 312.39
MW95 312.7
MW99 Dry/TP
MW65 311.75
MW75 NM
MW69 NM
MW101 312.07
MW89 311.77
MW84 NM
MW77 311.42
MW87 311.18
MW86 311.52
MW85 311.5
MW51 311.53
MW105 NM
MW103 NM
MW107 NM
MW74 NM
MW73 NM

330 325 320 315 310

50 25 0 50 Feet

N

Basemaps Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

## Legend

- Parcels
- Site Boundary
- MW73 (Mix zone) / (Intermediate zone) 343.04 — Groundwater Sample Location Identifier and Groundwater Elevation (ft, MSL) (NM = Not Measured)
- Compound Fence
- Equipment Shed
- System Compound
- System Piping
- Historic Excavation
- 343 — Estimated Groundwater Elevation Contour (ft, MSL)


TOC Holdings Co. Facility 01-176
24205 56th Avenue West
Mountlake Terrace, Washington

**FIGURE 5: GROUNDWATER ELEVATION CONTOURS, INTERMEDIATE ZONE, SEPTEMBER 2013 (SYSTEM ON)**

Stantec

| | | | |
|---|---|---|---|
| DRAWN BY | D.H. | DATE DRAWN | 2/27/2015 |
| SCALE | 1 in = 50 feet | | |
| PROJECT | 203714085 | | |

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Note:

1. MW26 was not included in contouring due to anomalous results.

242nd Street Southwest

MW26
315.17

316

TOC Holdings Co.
Property

316

56th Avenue West

MW30
315.79

315

MW40
315.59

MW39
315.12

TOC/Farmasonis
Property

314

MW64
315.11

315

Drake Property

MW78
313.18

313

314

313

Herman Property

Shin/Choi
Property

Mountlake Senior
Property

N

50 25 0 50
Feet

Basemap: Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

## Legend

- Parcels
- Groundwater Sample Location Identifier and Groundwater Elevation (ft, MSL) (NM = Not Measured) — 343.04
- 315 Estimated Groundwater Elevation Contour (ft, MSL)
- Site Boundary
- Compound Fence
- Equipment Shed
- System Compound
- Historic Excavation

Washington

Project Location

TOC Holdings Co. Facility 01-176
24205 56th Avenue West
Mountlake Terrace, Washington

**FIGURE 6: GROUNDWATER ELEVATION CONTOURS, DEEP ZONE, SEPTEMBER 2013 (SYSTEM ON)**

Stantec

| | |
|---|---|
| DRAWN BY | D.H. |
| DATE DRAWN | 2/27/2015 |
| SCALE | 1 in = 50 feet |
| PROJECT | 203714085 |

X:\WA\Clients\Time_Oil\TOC-MountlakeTerrace_BA1402800\MXDs\Figures\3Q13 GW Report\Figure6_3Q13_GWE_IZ_Map.mxd

Notes:

1. ND = Not Detected
   NS = Well Not Sampled
   NA= Constituent Not Analyzed
2. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation
3. If a duplicate sample was collected, the higher result between the original and the duplicate is shown.
4. Well symbols displayed in purple indicate wells that are screened across multiple zones.
5. MW84 served as a remediation well and could not be sampled due to insufficient groundwater sample volume at the time of the 3Q2013 field event. On September 17, 2013 (approximately two weeks after the 3Q2013 field event), a groundwater sample was collected after the remediation pump was permanently removed from the well.

242nd Street Southwest

56th Avenue West

TOC Holdings Co. Property

TOC/Farmasonis Property

Drake Property

Herman Property

Shin/Choi Property

Mountlake Senior Property

MW16 NS
MW38 NS
MW27 5900
MW90 NS
MW11 NS
MW50 Dry
MW91 NS
MW37 NS
MW24 NS
MW29 NS
MW09 300
MW08 NS
MW32 2000
MW25 NS
MW28 NS
MW35 NS
MW36 NS
MW20 150
MW10 Dry
MW18 NS
MW15 ND
MW53 ND
MW22 Dry
MW33 NS
MW23 NS
MW31 Dry/TP
MW94 NS
MW93 NS
MW43 NS
MW60 ND
MW56 ND
MW59 ND
MW66 ND
MW13 NS
MW92 NS
MW82 NS
MW41 NS
MW45 Dry
MW49 ND
MW100 NS
MW81 NS
MW46 NS
MW57 NS
MW42 NS
MW58 ND
MW55 ND
MW48 18000
MW96 NS
MW97 NS
MW88 NS
MW76 NS
MW63 ND
MW70 Dry
MW44 NS
MW98 NS
MW47 NS
MW52 Dry
MW95 NS
MW99 NS
MW65 ND
MW75 NS
MW69 NS
MW101 NS
MW89 ND
MW84 (Pump Removed 2013) 130
MW86 1100
MW77 ND
MW87 NS
MW51 ND
MW85 ND
MW105 NS
MW103 NS
MW107 NS
MW74 NS
MW73 NS

50 25 0 50
Feet

N

Basemap: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

## Legend

- Parcels
- Site Boundary
- Compound Fence
- Equipment Shed
- System Compound
- System Piping
- Historic Excavation
- MW73 — Groundwater Sample Location Identifier and GRPH Concentration (µg/L)
- (Mix zone)
- (Intermediate zone)
- 343.04
- Minimum Preliminary Screening Level For GRPH(800 µg/L;MTCA Method A cleanup level)

Washington

Project Location

TOC Holdings Co. Facility 01-176
24205 56th Avenue West
Mountlake Terrace, Washington

**FIGURE 7: GRPH CONCENTRATIONS IN GROUNDWATER, INTERMEDIATE ZONE, SEPTEMBER 2013**

Stantec

| | |
|---|---|
| DRAWN BY | D.H. |
| DATE DRAWN | 3/26/2015 |
| SCALE | 1 in = 50 feet |
| PROJECT | 203714085 |

X:\WA\Clients\Time_Oil\TOC-Mountlake Terrace_BA1402800\MXDs\WorkingMXDs\3Q13 GW Report\Figure7_3Q13_GRPH_IZ_Map.mxd

Notes:

1. ND = Not Detected
   NS = Well Not Sampled
   NA= Constituent Not Analyzed

2. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation

3. If a duplicate sample was collected, the higher result between the original and the duplicate is shown.

4. Well symbols displayed in purple indicate wells that are screened across multiple zones.

5. MW27 and MW32 had elevated reporting limits due to dilution. These locations are reported as 5U or not detected at 5µg/l. The contour at MW32 is based on concentrations observed at this location during previous events.

6. MW84 served as a remediation well and could not be sampled due to insufficient groundwater sample volume at the time of the 3Q2013 field event. On September 17, 2013 (approximately two weeks after the 3Q2013 field event), a groundwater sample was collected after the remediation pump was permanently removed from the well.

242nd Street Southwest

56th Avenue West

TOC Holdings Co. Property

TOC/Farmasonis Property

Drake Property

Herman Property

Shin/Choi Property

Mountlake Senior Property

MW16 NS
MW38 NS
MW27 5U
MW90 NS
MW11 NS
MW50 Dry
MW91 NS
MW37 NS
MW24 NS
MW29 NS
MW09 1.9
MW08 NS
MW32 5U
MW25 NS
MW28 NS
MW35 NS
MW36 NS
MW20 ND
MW10 Dry
MW18 NS
MW15 ND
MW53 ND
MW22 Dry
MW33 Dry
MW23 NS
MW31 Dry/TP
MW94 NS
MW93 NS
MW43 NS
MW60 ND
MW13 NS
MW56 ND
MW59 ND
MW66 ND
MW92 NS
MW82 NS
MW41 NS
MW45 Dry
MW49 ND
MW100 NS
MW81 NS
MW46 NS
MW57 NS
MW42 NS
MW58 ND
MW55 ND
MW48 60
MW96 NS
MW88 NS
MW76 NS
MW97 NS
MW70 ND
MW63 ND
MW44 NS
MW98 NS
MW47 NS
MW52 Dry
MW95 NS
MW99 NS
MW65 ND
MW75 NS
MW69 NS
MW101 NS
MW89 ND
MW84 (Pump Removed 2013) NS
MW77 ND
MW87 NS
MW86 1.9
MW85 ND
MW51 ND
MW105 NS
MW103 NS
MW107 NS
MW74 NS
MW73 NS

N

50 25 0 50
Feet

Basemap: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

## Legend

- Parcels
- Site Boundary
- Compound Fence
- Equipment Shed
- System Compound
- System Piping
- Historic Excavation
- MW73 (Mix zone) (Intermediate zone) 343.04 — Groundwater Sample Location Identifier and Benzene Concentration (µg/L)
- Minimum Preliminary Screening Level For benzene(5 µg/L;MTCA Method A cleanup level)


TOC Holdings Co. Facility 01-176
24205 56th Avenue West
Mountlake Terrace, Washington

**FIGURE 8: BENZENE CONCENTRATIONS IN GROUNDWATER, INTERMEDIATE ZONE, SEPTEMBER 2013**

Stantec

| DRAWN BY | D.H. | DATE DRAWN | 3/26/2015 |
|---|---|---|---|
| SCALE | 1 in = 50 feet | | |
| PROJECT | 203714085 | | |

X:\WA\Clients\Time_Oil\TOC-MountlakeTerrace_BA1402800\MXDs\WorkingMXDs\3Q13.GW Report\Figure8_3Q13_Benzene_IZ_Map.mxd

# Appendix A

## Monitoring Well Zones

**TABLE A-1**

**Revised Monitoring Well Classifications**

TOC Holdings Co. Site 01-176; Mountlake Terrace WA

| Well ID [1] | Property | MW Zone Classification (Stantec) | MW Zone Classification (SoundEarth Strategies) |
|---|---|---|---|
| MW01* | TOC | Shallow | Shallow |
| MW02 | TOC | Shallow | Shallow |
| MW03 | TOC | Shallow | Shallow |
| MW04 | ROW (56th) | Shallow | Shallow |
| MW05 | ROW (242nd) | Shallow | Shallow |
| MW06 | TOC | Shallow | Shallow |
| MW07* | TOC/Farmasonis | Intermediate | Shallow |
| MW08 | ROW (56th) | Shallow-Intermediate Intersect | Intermediate |
| MW09 | TOC | Shallow-Intermediate Intersect | Intermediate |
| MW10 | TOC | Intermediate | Intermediate |
| MW11 (RW) | TOC | Intermediate | Intermediate |
| MW12 | ROW (56th) | Shallow | Shallow |
| MW13 | ROW (56th) | Intermediate | Intermediate |
| MW14* | TOC/Farmasonis | Intermediate | Intermediate |
| MW15 (RW) | TOC | Intermediate | Intermediate |
| MW16 | ROW (242nd) | Intermediate-Deep Intersect | Intermediate |
| MW17* | TOC/Farmasonis | Intermediate | Intermediate |
| MW18 (RW) | TOC | Shallow-Intermediate Intersect | Intermediate |
| MW19 | TOC | Shallow | Shallow |
| MW20 | TOC | Intermediate | Intermediate |
| MW21* | TOC | Intermediate | Intermediate |
| MW22 | TOC | Shallow-Intermediate Intersect | Intermediate |
| MW23 | TOC | Intermediate | Intermediate |
| MW24 (RW) | TOC | Shallow-Intermediate Intersect | Intermediate |
| MW25 | TOC | Intermediate | Intermediate |
| MW26 | TOC | Deep | Deep |
| MW27 (2" RW) | TOC | Shallow-Intermediate Intersect | Upper Intermediate |
| MW28 | TOC | Shallow-Intermediate Intersect | Upper Intermediate |
| MW29 (2" RW) | TOC | Shallow-Intermediate | Upper Intermediate |
| MW30 | TOC/Farmasonis | Deep | Deep |
| MW31 (2" RW) | TOC/Farmasonis | Intermediate | Intermediate |
| MW32 (RW) | TOC | Intermediate | Intermediate |
| MW33 | TOC | Intermediate | Intermediate |
| MW34 | TOC | Shallow | Shallow |
| MW35 | TOC | Intermediate | Intermediate |
| MW36 | TOC | Intermediate | Intermediate |
| MW37 | TOC | Shallow-Intermediate Intersect | Upper Intermediate |
| MW38 | TOC | Shallow-Intermediate Intersect | Upper Intermediate |
| MW39 | TOC/Farmasonis | Deep | Deep |
| MW40 | TOC/Farmasonis | Deep | Deep |
| MW41 (2" RW) | TOC/Farmasonis | Intermediate | Intermediate |
| MW42 | TOC/Farmasonis | Intermediate | Intermediate |
| MW43 | ROW (56th) | Shallow-Intermediate Intersect | Intermediate |
| MW44 | ROW (56th) | Intermediate | Intermediate |
| MW45 | ROW (56th) | Intermediate | Intermediate |
| MW46 | ROW (56th) | Intermediate | Intermediate |
| MW47 | ROW (56th) | Intermediate | Intermediate |
| MW48 | ROW (56th) | Intermediate | Intermediate |
| MW49 | ROW (56th) | Intermediate | Intermediate |
| MW50 | ROW (56th) | Intermediate | Intermediate |
| MW51 | ROW (56th) | Intermediate | Intermediate |
| MW52 | ROW (56th) | Intermediate | Intermediate |
| MW53 | ROW (56th) | Intermediate | Intermediate |
| MW54 | TOC/Farmasonis | Shallow | Shallow |
| MW55 | ROW (56th) | Intermediate | Intermediate |
| MW56 | TOC/Farmasonis | Intermediate | Intermediate |
| MW57 (RW) | TOC/Farmasonis | Intermediate | Intermediate |
| MW58 | TOC/Farmasonis | Intermediate | Intermediate |
| MW59 | TOC/Farmasonis | Intermediate | Intermediate |
| MW60 | ROW (56th) | Intermediate | Intermediate |
| MW61 | ROW (56th) | Shallow | Shallow |

**TABLE A-1**

**Revised Monitoring Well Classifications**

TOC Holdings Co. Site 01-176; Mountlake Terrace WA

| Well ID [1] | Property | MW Zone Classification (Stantec) | MW Zone Classification (SoundEarth Strategies) |
|---|---|---|---|
| MW62 | ROW (56th) | Shallow | Shallow |
| MW63 | ROW (56th) | Intermediate | Intermediate |
| MW64 | ROW (56th) | Deep | Deep |
| MW65 | Drake | Intermediate | Intermediate |
| MW66 | TOC/Farmasonis | Intermediate | Intermediate |
| MW67 | Drake | Shallow | Shallow |
| MW68 | Drake | Shallow | Shallow |
| MW69 (RW) | Drake | Intermediate | Intermediate |
| MW70 (2" RW) | Drake | Intermediate | Intermediate |
| MW71 | Shin/Choi | Shallow | Shallow |
| MW72 | Shin/Choi | Shallow | Shallow |
| MW73 | Shin/Choi | Intermediate | Intermediate |
| MW74 | Shin/Choi | Intermediate | Intermediate |
| MW75 | ROW (56th) | Intermediate | Intermediate |
| MW76 | Drake | Intermediate | Intermediate |
| MW77 | Drake | Intermediate | Intermediate |
| MW78 | Drake | Deep | Deep |
| MW79 | TOC/Farmasonis | Shallow | Shallow |
| MW80 | TOC/Farmasonis | Shallow | Upper Intermediate |
| MW81 | TOC/Farmasonis | Intermediate | Intermediate |
| MW82 | TOC/Farmasonis | Shallow-Intermediate Intersect | Upper Intermediate |
| MW83* | TOC/Farmasonis | Shallow-Intermediate Intersect | Upper Intermediate |
| MW84 | Drake | Intermediate | Intermediate |
| MW85 | Drake | Intermediate | Intermediate |
| MW86 | Drake | Intermediate | Intermediate |
| MW87 | Drake | Intermediate | Intermediate |
| MW88 | Drake | Shallow-Intermediate Intersect | Upper Intermediate |
| MW89 | Drake | Intermediate | Intermediate |
| MW90 (RW) | TOC | Intermediate | Intermediate |
| MW91 (RW) | TOC | Intermediate | Intermediate |
| MW92 (RW) | TOC/Farmasonis | Intermediate | Intermediate |
| MW93 (RW) | TOC/Farmasonis | Intermediate | Intermediate |
| MW94 (RW) | TOC/Farmasonis | Intermediate | Intermediate |
| MW95 (RW) | Drake | Intermediate | Intermediate |
| MW96 (RW) | Drake | Intermediate | Intermediate |
| MW97 (RW) | Drake | Intermediate | Intermediate |
| MW98 (RW) | Drake | Intermediate | Intermediate |
| MW99 (RW) | Drake | Intermediate | Intermediate |
| MW100 | TOC/Farmasonis | Shallow-Intermediate Intersect | Upper Intermediate |
| MW101 (RW) | Drake | Intermediate | Intermediate |
| MW102 | Herman | Shallow | Shallow |
| MW103 | Herman | Intermediate | Intermediate |
| MW104 | Herman | Shallow | Shallow |
| MW105 | Herman | Intermediate | Intermediate |
| MW106 | Herman | Shallow | Shallow |
| MW107 | Herman | Intermediate | Intermediate |

**NOTES:**

[1] Remediation wells are identified as "RW." RWs are 4" (unless noted as 2") and are connected to a remediation system.

*Decommissioned Well

**LIST OF PROPERTIES:**

TOC = 24205 56th Avenue West, Mountlake Terrace WA
TOC/Farmasonis = 24225 56th Avenue West, Mountlake Terrace WA
Drake = 24309 56th Avenue West, Mountlake Terrace WA
Herman = 24311 56th Avenue West, Mountlake Terrace WA
ROW (56th) = portion of 56th Avenue West, Mountlake Terrace WA
ROW (242nd) = portion of 242nd Street Southwest, Mountlake Terrace WA

# Appendix B

## Laboratory Analytical Reports

Stantec

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Kurt Johnson, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

September 12, 2013

Dee Gardner, Project Manager
SoundEarth Strategies
2811 Fairview Ave. East, Suite 2000
Seattle, WA 98102

Dear Ms. Gardner:

Included are the results from the testing of material submitted on September 5, 2013 from the TOC_01-176_20130905 WORFDB7, F&BI 309066 project. There are 4 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Audrey Hackett, Beau Johnson, Suzy Stumpf
SOU0912R.DOC

## CASE NARRATIVE

This case narrative encompasses samples received on September 5, 2013 by Friedman & Bruya, Inc. from the SoundEarth Strategies TOC_01-176_20130905 WORFDB7, F&BI 309066 project. Samples were logged in under the laboratory ID's listed below.

| Laboratory ID | SoundEarth Strategies |
|---|---|
| 309066 -01 | MW09-20130905-BA |
| 309066 -02 | MW15-20130904-PN |
| 309066 -03 | MW20-20130905-BA |
| 309066 -04 | MW27-20130904-PN |
| 309066 -05 | MW32-20130904-PN |
| 309066 -06 | Trip-24205 |

All quality control requirements were acceptable.

Date of Report: 09/12/13
Date Received: 09/05/13
Project: TOC_01-176_20130905 WORFDB7, F&BI 309066
Date Extracted: 09/06/13
Date Analyzed: 09/06/13

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx**

Results Reported as ug/L (ppb)

| Sample ID<br>Laboratory ID | Benzene | Toluene | Ethyl Benzene | Total Xylenes | Gasoline Range | Surrogate (% Recovery)<br>(Limit 52-124) |
|---|---|---|---|---|---|---|
| MW09-20130905-BA<br>309066-01 | 1.9 | 1.8 | 1.7 | 19 | 300 | 97 |
| MW15-20130904-PN<br>309066-02 | <1 | 1.1 | <1 | 3.8 | <100 | 86 |
| MW20-20130905-BA<br>309066-03 | <1 | <1 | <1 | <3 | 150 | 90 |
| MW27-20130904-PN<br>309066-04 1/5 | <5 | 12 | <5 | 940 | 5,900 | 101 |
| MW32-20130904-PN<br>309066-05 1/5 | <5 | 5.3 | 26 | 150 | 2,000 | 92 |
| Method Blank<br>03-1743 MB | <1 | <1 | <1 | <3 | <100 | 93 |

Date of Report: 09/12/13
Date Received: 09/05/13
Project: TOC_01-176_20130905 WORFDB7, F&BI 309066

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| Benzene | ug/L (ppb) | 50 | 95 | 95 | 72-119 | 0 |
| Toluene | ug/L (ppb) | 50 | 94 | 94 | 71-113 | 0 |
| Ethylbenzene | ug/L (ppb) | 50 | 95 | 95 | 72-114 | 0 |
| Xylenes | ug/L (ppb) | 150 | 87 | 87 | 72-113 | 0 |
| Gasoline | ug/L (ppb) | 1,000 | 101 | 100 | 70-119 | 1 |

# Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

A1 – More than one compound of similar molecule structure was identified with equal probability.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for this range fell outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte indicated may be due to carryover from previous sample injections.

d - The sample was diluted. Detection limits may be raised due to dilution.

ds - The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.

dv - Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.

fb - Analyte present in the blank and the sample.

fc – The compound is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. The variability is attributed to sample inhomogeneity.

ht - Analysis performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.

j – The result is below normal reporting limits. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.

jr - The rpd result in laboratory control sample associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the compound indicated is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc – The sample was received in a container not approved by the method. The value reported should be considered an estimate.

pr – The sample was received with incorrect preservation. The value reported should be considered an estimate.

ve - Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

309066

# SAMPLE CHAIN OF CUSTODY

TOC ME 09/05/13, V3

Send Report To: Dee Gardner; Suzanne Stempf
Company: Sundearth Strategies
Address: 2811 Fairview Ave
City, State, ZIP: Seattle, WA
Phone #: 206-306-1900 Fax #:

SAMPLERS (signature): KRISTA GARRETT, LITERY NAUBA, DANIEL NAYLOR

PROJECT NAME/NO.: Mountlake Terrace 01-176 0440-030-19

PO #:

REMARKS: HOLD TRIP-24205
Trip blank supplied by laboratory.

GEMS Y / N

Page ___ of ___

TURNAROUND TIME
- [x] Standard (2 Weeks)
- [ ] RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
- [x] Dispose after 30 days
- [ ] Return samples
- [ ] Will call with instructions

| Sample ID | Sample Location | Sample Depth | Lab ID | Date Sampled | Time Sampled | Matrix | # of jars | NWTPH-Dx | NWTPH-Gx | BTEX by 8021B | VOC's by 8260 | SVOCs by 8270 | RCRA-8 Metals | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | ANALYSES REQUESTED | | | | | | | | |
| MW09-20130905-BA | MW09 | | 01 A B | 09/05/13 | 1125 | $H_2O$ | 2 | | X | X | | | | | | |
| MW15-20130904-PN | MW15 | | 02 A C | 09/04/13 | 1124 | | 3 | | X | X | | | | | | |
| MW20-20130905-BA | MW20 | | 03 A C | 09/05/13 | 1110 | | 3 | | X | X | | | | | | |
| MW27-20130904-PN | MW27 | | 04 A C | 09/04/13 | 1026 | | 3 | | X | X | | | | | | |
| MW32-20130904-PN | MW32 | | 05 A C | 09/04/13 | 1003 | | 3 | | X | X | | | | | | |
| TRIP-24205 | | | 06 B | | | | 2 | | X | X | | | | | | HOLD |

KK 09/05/2013

| | SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|---|
| Relinquished by: | | KRISTA GARRETT | Sundearth | 9/5/13 | 1547 |
| Received by: | | VINA | FBI | 9/5/13 | 1547 |
| Relinquished by: | | | | | |
| Received by: | | | | | |

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044



Samples received at 4 °C

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Kurt Johnson, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

September 12, 2013

Dee Gardner, Project Manager
SoundEarth Strategies
2811 Fairview Ave. East, Suite 2000
Seattle, WA 98102

Dear Ms. Gardner:

Included are the results from the testing of material submitted on September 5, 2013 from the TOC_01-176_20130905 WORFDB7, F&BI 309067 project. There are 4 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Audrey Hackett, Beau Johnson
SOU0912R.DOC

## CASE NARRATIVE

This case narrative encompasses samples received on September 5, 2013 by Friedman & Bruya, Inc. from the SoundEarth Strategies TOC_01-176_20130905 WORFDB7, F&BI 309067 project. Samples were logged in under the laboratory ID's listed below.

| Laboratory ID | SoundEarth Strategies |
|---|---|
| 309067 -01 | MW48-20130905-BA |
| 309067 -02 | MW49-20130905-BA |
| 309067 -03 | MW51-20130905-BA |
| 309067 -04 | MW53-20130905-BA |
| 309067 -05 | MW55-20130904-BL |
| 309067 -06 | MW60-20130904-BL |
| 309067 -07 | MW63-20130905-BL |
| 309067 -08 | Trip-ROW |

All quality control requirements were acceptable.

Date of Report: 09/12/13
Date Received: 09/05/13
Project: TOC_01-176_20130905 WORFDB7, F&BI 309067
Date Extracted: 09/06/13
Date Analyzed: 09/06/13

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx**

Results Reported as ug/L (ppb)

| Sample ID<br>Laboratory ID | Benzene | Toluene | Ethyl Benzene | Total Xylenes | Gasoline Range | Surrogate (% Recovery)<br>(Limit 52-124) |
|---|---|---|---|---|---|---|
| MW48-20130905-BA<br>309067-01 1/5 | 60 | 55 | 140 | 1,100 | 18,000 | 114 |
| MW49-20130905-BA<br>309067-02 | <1 | <1 | <1 | <3 | <100 | 91 |
| MW51-20130905-BA<br>309067-03 | <1 | <1 | <1 | <3 | <100 | 91 |
| MW53-20130905-BA<br>309067-04 | <1 | <1 | <1 | <3 | <100 | 74 |
| MW55-20130904-BL<br>309067-05 | <1 | <1 | <1 | <3 | <100 | 91 |
| MW60-20130904-BL<br>309067-06 | <1 | <1 | <1 | <3 | <100 | 90 |
| MW63-20130905-BL<br>309067-07 | <1 | <1 | <1 | <3 | <100 | 88 |
| Method Blank<br>03-1743 MB | <1 | <1 | <1 | <3 | <100 | 93 |

Date of Report: 09/12/13
Date Received: 09/05/13
Project: TOC_01-176_20130905 WORFDB7, F&BI 309067

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| Benzene | ug/L (ppb) | 50 | 95 | 95 | 72-119 | 0 |
| Toluene | ug/L (ppb) | 50 | 94 | 94 | 71-113 | 0 |
| Ethylbenzene | ug/L (ppb) | 50 | 95 | 95 | 72-114 | 0 |
| Xylenes | ug/L (ppb) | 150 | 87 | 87 | 72-113 | 0 |
| Gasoline | ug/L (ppb) | 1,000 | 101 | 100 | 70-119 | 1 |

# Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

A1 – More than one compound of similar molecule structure was identified with equal probability.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for this range fell outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte indicated may be due to carryover from previous sample injections.

d - The sample was diluted. Detection limits may be raised due to dilution.

ds - The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.

dv - Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.

fb - Analyte present in the blank and the sample.

fc – The compound is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. The variability is attributed to sample inhomogeneity.

ht - Analysis performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.

j – The result is below normal reporting limits. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.

jr - The rpd result in laboratory control sample associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the compound indicated is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc – The sample was received in a container not approved by the method. The value reported should be considered an estimate.

pr – The sample was received with incorrect preservation. The value reported should be considered an estimate.

ve - Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

309067

# SAMPLE CHAIN OF CUSTODY

ME 09/05/13 V3

Page # 1 of 1

**Send Report To** Lee Gardner; Suzanne Stumpf
**Company** SoundEarth Strategies
**Address** 2811 Fairview Ave
**City, State, ZIP** Seattle, WA
**Phone #** 206-306-1900 **Fax #**

**SAMPLERS (signature)** KRISTA GARRETT, LARRY NAMBA, DANIEL NAYLOR

**PROJECT NAME/NO.** Mountlake Terrace 01-176 · 0440-030

**PO #**

**REMARKS** Trip blank supplied by laboratory. HOLD ~~TRIP~~-ROW.

**GEMS Y / N**

**TURNAROUND TIME**
- [X] Standard (2 Weeks)
- [ ] RUSH
- Rush charges authorized by:

**SAMPLE DISPOSAL**
- [X] Dispose after 30 days
- [ ] Return samples
- [ ] Will call with instructions

| Sample ID | Sample Location | Sample Depth | Lab ID | Date Sampled | Time Sampled | Matrix | # of jars | NWTRH-Dx | NWTPH-Gx | BTEX by 8021B | VOC's by 8260 | SVOC's by 8270 | RCRA-8 Metals | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW48-20130905-BA | MW48 | | 01 | 09/05/13 | 1232 | H2O | 3 | | X | X | | | | | | |
| MW49-20130905-BA | MW49 | | 02 | 09/05/13 | 1245 | | 3 | | X | X | | | | | | |
| MW51-20130905-BA | MW51 | | 03 | | 1291 | | 3 | | X | X | | | | | | |
| MW53-20130905-BA | MW53 | | 04 | | 1340 | | 3 | | X | X | | | | | | |
| MW55-20130904-BL | MW55 | | 05 | 09/04/13 | 1919 | | 3 | | X | X | | | | | | |
| MW60-20130904-BL | MW60 | | 06 | | 1422 | | 3 | | X | X | | | | | | |
| MW63-20130905-BL | MW63 | | 07 | 09/05/13 | 1109 | | 3 | | X | X | | | | | | |
| TRIP-ROW | ROW | | 08 | | | | 2 | | X | X | | | | | | HOLD |

Rec'd 09/05/2013

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: Krista Garrett | KRISTA GARRETT | SOUNDEARTH | 9/5/13 | 1542 |
| Received by: | VING | FBI | 9/5/13 | 1542 |
| Relinquished by: | | | | |
| Received by: | | | | |

*Friedman & Bruya, Inc.*
*3012 16th Avenue West*
*Seattle, WA 98119-2029*
*Ph. (206) 285-8282*
*Fax (206) 283-5044*

FORMS\COC\SESGEMSR1.DOC (Revision 1)

Samples received at 4 °C

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Kurt Johnson, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

September 12, 2013

Dee Gardner, Project Manager
SoundEarth Strategies
2811 Fairview Ave. East, Suite 2000
Seattle, WA 98102

Dear Ms. Gardner:

Included are the results from the testing of material submitted on September 5, 2013 from the TOC_01-176_20130905 WORFDB7, F&BI 309068 project. There are 5 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Audrey Hackett, Beau Johnson, Suzy Stumpf
SOU0912R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on September 5, 2013 by Friedman & Bruya, Inc. from the SoundEarth Strategies TOC_01-176_20130905 WORFDB7, F&BI 309068 project. Samples were logged in under the laboratory ID's listed below.

| Laboratory ID | SoundEarth Strategies |
|---|---|
| 309068 -01 | MW56-20130904-BL |
| 309068 -02 | MW58-20130904-BL |
| 309068 -03 | MW59-20130904-BL |
| 309068 -04 | MW66-20130904-BA |
| 309068 -05 | MW66-20130904-BA2 |
| 309068 -06 | Trip-24225 |

All quality control requirements were acceptable.

Date of Report: 09/12/13
Date Received: 09/05/13
Project: TOC_01-176_20130905 WORFDB7, F&BI 309068
Date Extracted: 09/06/13
Date Analyzed: 09/06/13

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, AND XYLENES USING METHOD 8021B**

Results Reported as ug/L (ppb)

| Sample ID<br>Laboratory ID | Benzene | Toluene | Ethyl Benzene | Total Xylenes | Surrogate (% Recovery)<br>Limit (50-150) |
|---|---|---|---|---|---|
| Trip-24225<br>309068-06 | <1 | <1 | <1 | <3 | 94 |
| Method Blank<br>03-1743 MB | <1 | <1 | <1 | <3 | 93 |

Date of Report: 09/12/13
Date Received: 09/05/13
Project: TOC_01-176_20130905 WORFDB7, F&BI 309068
Date Extracted: 09/06/13
Date Analyzed: 09/06/13

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx**

Results Reported as ug/L (ppb)

| Sample ID<br>Laboratory ID | Benzene | Toluene | Ethyl Benzene | Total Xylenes | Gasoline Range | Surrogate (% Recovery)<br>(Limit 50-150) |
|---|---|---|---|---|---|---|
| MW56-20130904-BL<br>309068-01 | <1 | <1 | <1 | <3 | <100 | 93 |
| MW58-20130904-BL<br>309068-02 | <1 | <1 | <1 | <3 | <100 | 95 |
| MW59-20130904-BL<br>309068-03 | <1 | <1 | <1 | 5.2 | <100 | 95 |
| MW66-20130904-BA<br>309068-04 | <1 | <1 | <1 | <3 | <100 | 94 |
| MW66-20130904-BA2<br>309068-05 | <1 | <1 | <1 | <3 | <100 | 81 |
| Method Blank<br>03-1743 MB | <1 | <1 | <1 | <3 | <100 | 93 |

Date of Report: 09/12/13
Date Received: 09/05/13
Project: TOC_01-176_20130905 WORFDB7, F&BI 309068

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| Benzene | ug/L (ppb) | 50 | 95 | 95 | 72-119 | 0 |
| Toluene | ug/L (ppb) | 50 | 94 | 94 | 71-113 | 0 |
| Ethylbenzene | ug/L (ppb) | 50 | 95 | 95 | 72-114 | 0 |
| Xylenes | ug/L (ppb) | 150 | 87 | 87 | 72-113 | 0 |
| Gasoline | ug/L (ppb) | 1,000 | 101 | 100 | 70-119 | 1 |

# Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

A1 – More than one compound of similar molecule structure was identified with equal probability.

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ve - Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

309068

# SAMPLE CHAIN OF CUSTODY

Romio's ME 09/05/13 V3

Page # 1 of 1

**Send Report To** Dee Gardner; Suzanne Stumpf

**Company** SoundEarth Strategies

**Address** 2811 Fairview Ave

**City, State, ZIP** Seattle, WA

**Phone #** 206-306-1900 **Fax #**

**SAMPLERS (signature)** KRISTA GARRETT, LARRY NAMBA, DANIEL NAYLOR

**PROJECT NAME/NO.** Mountlake Terrace 01-176 0440-030-19

**PO #**

**REMARKS**

**GEMS Y / N**

**TURNAROUND TIME**
- ☒ Standard (2 Weeks)
- ☐ RUSH
- Rush charges authorized by:

**SAMPLE DISPOSAL**
- ☒ Dispose after 30 days
- ☐ Return samples
- ☐ Will call with instructions

| Sample ID | Sample Location | Sample Depth | Lab ID | Date Sampled | Time Sampled | Matrix | # of jars | ANALYSES REQUESTED: NWTPH-Dx | NWTPH-Gx | BTEX by 8021B | VOC's by 8260 | SVOC's by 8270 | RCRA-8 Metals | | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW56-20130904-BL | MW56 | 47 | 01 AC | 09/04/13 | 1048 | $H_2O$ | 3 | | X | X | | | | | | |
| MW58-20130904-BL | MW58 | 46 | 02 AC | 09/04/13 | 1313 | | | | X | X | | | | | | |
| MW59-20130904-BL | MW59 | 47 | 03 AC | 09/04/13 | 1150 | | | | X | X | | | | | | |
| MW66-20130904-BA | MW66 | | 04 AC | 09/04/13 | 1345 | | | | X | X | | | | | | |
| MW66-20130904-BA2 | MW66 | | 05 AC | 09/04/13 | 1400 | | | | X | X | | | | | | |
| TRIP-24225 | | | 06 BT | | | $H_2O$ | 2 | | | X | | | | | | |

KKG 09/05/2013

| | SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|---|
| Relinquished by: | Krista Garrett | KRISTA GARRETT | SoundEarth | 9/5/13 | 1947 |
| Received by: | | VINA | FBI | 9/5/13 | 1547 |
| Relinquished by: | | | | | |
| Received by: | | | | | |

*Friedman & Bruya, Inc.*
*3012 16th Avenue West*
*Seattle, WA 98119-2029*
*Ph. (206) 285-8282*
*Fax (206) 283-5044*

FORMS\COC\SESGEMSR1.DOC (Revision 1)

Samples received at 5 °C

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Kurt Johnson, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
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fbi@isomedia.com
www.friedmanandbruya.com

September 13, 2013

Dee Gardner, Project Manager
SoundEarth Strategies
2811 Fairview Ave. East, Suite 2000
Seattle, WA 98102

Dear Ms. Gardner:

Included are the results from the testing of material submitted on September 5, 2013 from the TOC_01-176_20130905 WORFDB7, F&BI 309069 project. There are 14 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Audrey Hackett, Beau Johnson, Suzy Stumpf
SOU0913R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on September 5, 2013 by Friedman & Bruya, Inc. from the SoundEarth Strategies TOC_01-176_20130905 WORFDB7, F&BI 309069 project. Samples were logged in under the laboratory ID's listed below.

| Laboratory ID | SoundEarth Strategies |
|---|---|
| 309069 -01 | MW65-20130904-BL |
| 309069 -02 | MW70-20130904-PN |
| 309069 -03 | MW77-20130904-BA |
| 309069 -04 | MW85-20130904-BL |
| 309069 -05 | MW86-20130904-BL |
| 309069 -06 | MW86-20130904-BL2 |
| 309069 -07 | MW89-20130904-BL |
| 309069 -08 | Trip-24309 |

All quality control requirements were acceptable.

Date of Report: 09/13/13
Date Received: 09/05/13
Project: TOC_01-176_20130905 WORFDB7, F&BI 309069
Date Extracted: 09/09/13
Date Analyzed: 09/09/13

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx**

Results Reported as ug/L (ppb)

| Sample ID<br>Laboratory ID | Benzene | Toluene | Ethyl Benzene | Total Xylenes | Gasoline Range | Surrogate (% Recovery)<br>(Limit 52-124) |
|---|---|---|---|---|---|---|
| MW65-20130904-BL<br>309069-01 | <1 | <1 | <1 | <3 | <100 | 94 |
| MW70-20130904-PN<br>309069-02 | <1 | <1 | <1 | <3 | <100 | 99 |
| MW77-20130904-BA<br>309069-03 | <1 | <1 | <1 | <3 | <100 | 98 |
| MW85-20130904-BL<br>309069-04 | <1 | <1 | <1 | <3 | <100 | 99 |
| MW86-20130904-BL<br>309069-05 | 1.9 | 3.7 | 1.7 | 3.6 | 1,100 | 107 |
| MW86-20130904-BL2<br>309069-06 | <1 | 3.6 | 1.7 | <3 | 1,000 | 104 |
| MW89-20130904-BL<br>309069-07 | <1 | <1 | <1 | <3 | <100 | 92 |
| Trip-24309<br>309069-08 | <1 | <1 | <1 | <3 | <100 | 92 |
| Method Blank<br>03-1745 MB | <1 | <1 | <1 | <3 | <100 | 98 |

## Analysis For Volatile Compounds By EPA Method 8260C

| | | | |
|---|---|---|---|
| Client Sample ID: | MW65-20130904-BL | Client: | SoundEarth Strategies |
| Date Received: | 09/05/13 | Project: | TOC_01-176_20130905 WORFDB7 |
| Date Extracted: | 09/06/13 | Lab ID: | 309069-01 |
| Date Analyzed: | 09/06/13 | Data File: | 090609.D |
| Matrix: | Water | Instrument: | GCMS9 |
| Units: | ug/L (ppb) | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 101 | 50 | 150 |
| Toluene-d8 | 97 | 50 | 150 |
| 4-Bromofluorobenzene | 95 | 50 | 150 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Methyl t-butyl ether (MTBE) | <1 |

## Analysis For Volatile Compounds By EPA Method 8260C

| | | | |
|---|---|---|---|
| Client Sample ID: | MW70-20130904-PN | Client: | SoundEarth Strategies |
| Date Received: | 09/05/13 | Project: | TOC_01-176_20130905 WORFDB7 |
| Date Extracted: | 09/06/13 | Lab ID: | 309069-02 |
| Date Analyzed: | 09/06/13 | Data File: | 090610.D |
| Matrix: | Water | Instrument: | GCMS9 |
| Units: | ug/L (ppb) | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 101 | 50 | 150 |
| Toluene-d8 | 94 | 50 | 150 |
| 4-Bromofluorobenzene | 93 | 50 | 150 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Methyl t-butyl ether (MTBE) | <1 |

## Analysis For Volatile Compounds By EPA Method 8260C

| | | | |
|---|---|---|---|
| Client Sample ID: | MW77-20130904-BA | Client: | SoundEarth Strategies |
| Date Received: | 09/05/13 | Project: | TOC_01-176_20130905 WORFDB7 |
| Date Extracted: | 09/06/13 | Lab ID: | 309069-03 |
| Date Analyzed: | 09/06/13 | Data File: | 090611.D |
| Matrix: | Water | Instrument: | GCMS9 |
| Units: | ug/L (ppb) | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 103 | 50 | 150 |
| Toluene-d8 | 97 | 50 | 150 |
| 4-Bromofluorobenzene | 98 | 50 | 150 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Methyl t-butyl ether (MTBE) | <1 |

## Analysis For Volatile Compounds By EPA Method 8260C

| | | | |
|---|---|---|---|
| Client Sample ID: | MW85-20130904-BL | Client: | SoundEarth Strategies |
| Date Received: | 09/05/13 | Project: | TOC_01-176_20130905 WORFDB7 |
| Date Extracted: | 09/06/13 | Lab ID: | 309069-04 |
| Date Analyzed: | 09/06/13 | Data File: | 090612.D |
| Matrix: | Water | Instrument: | GCMS9 |
| Units: | ug/L (ppb) | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 103 | 50 | 150 |
| Toluene-d8 | 99 | 50 | 150 |
| 4-Bromofluorobenzene | 97 | 50 | 150 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Methyl t-butyl ether (MTBE) | <1 |

## Analysis For Volatile Compounds By EPA Method 8260C

| | | | |
|---|---|---|---|
| Client Sample ID: | MW86-20130904-BL | Client: | SoundEarth Strategies |
| Date Received: | 09/05/13 | Project: | TOC_01-176_20130905 WORFDB7 |
| Date Extracted: | 09/06/13 | Lab ID: | 309069-05 |
| Date Analyzed: | 09/06/13 | Data File: | 090613.D |
| Matrix: | Water | Instrument: | GCMS9 |
| Units: | ug/L (ppb) | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 100 | 50 | 150 |
| Toluene-d8 | 103 | 50 | 150 |
| 4-Bromofluorobenzene | 98 | 50 | 150 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Methyl t-butyl ether (MTBE) | <1 |

## Analysis For Volatile Compounds By EPA Method 8260C

| | | | |
|---|---|---|---|
| Client Sample ID: | MW86-20130904-BL2 | Client: | SoundEarth Strategies |
| Date Received: | 09/05/13 | Project: | TOC_01-176_20130905 WORFDB7 |
| Date Extracted: | 09/06/13 | Lab ID: | 309069-06 |
| Date Analyzed: | 09/06/13 | Data File: | 090614.D |
| Matrix: | Water | Instrument: | GCMS9 |
| Units: | ug/L (ppb) | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 103 | 50 | 150 |
| Toluene-d8 | 101 | 50 | 150 |
| 4-Bromofluorobenzene | 96 | 50 | 150 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Methyl t-butyl ether (MTBE) | <1 |

## Analysis For Volatile Compounds By EPA Method 8260C

| | | | |
|---|---|---|---|
| Client Sample ID: | MW89-20130904-BL | Client: | SoundEarth Strategies |
| Date Received: | 09/05/13 | Project: | TOC_01-176_20130905 WORFDB7 |
| Date Extracted: | 09/06/13 | Lab ID: | 309069-07 |
| Date Analyzed: | 09/06/13 | Data File: | 090615.D |
| Matrix: | Water | Instrument: | GCMS9 |
| Units: | ug/L (ppb) | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 102 | 50 | 150 |
| Toluene-d8 | 98 | 50 | 150 |
| 4-Bromofluorobenzene | 97 | 50 | 150 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Methyl t-butyl ether (MTBE) | <1 |

## Analysis For Volatile Compounds By EPA Method 8260C

| | | | |
|---|---|---|---|
| Client Sample ID: | Trip-24309 | Client: | SoundEarth Strategies |
| Date Received: | 09/05/13 | Project: | TOC_01-176_20130905 WORFDB7 |
| Date Extracted: | 09/06/13 | Lab ID: | 309069-08 |
| Date Analyzed: | 09/06/13 | Data File: | 090616.D |
| Matrix: | Water | Instrument: | GCMS9 |
| Units: | ug/L (ppb) | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 102 | 50 | 150 |
| Toluene-d8 | 101 | 50 | 150 |
| 4-Bromofluorobenzene | 99 | 50 | 150 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Methyl t-butyl ether (MTBE) | <1 |

## Analysis For Volatile Compounds By EPA Method 8260C

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | SoundEarth Strategies |
| Date Received: | NA | Project: | TOC_01-176_20130905 WORFDB7 |
| Date Extracted: | 09/06/13 | Lab ID: | 03-1710 mb |
| Date Analyzed: | 09/06/13 | Data File: | 090608.D |
| Matrix: | Water | Instrument: | GCMS9 |
| Units: | ug/L (ppb) | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 104 | 50 | 150 |
| Toluene-d8 | 99 | 50 | 150 |
| 4-Bromofluorobenzene | 100 | 50 | 150 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Methyl t-butyl ether (MTBE) | <1 |

Date of Report: 09/13/13
Date Received: 09/05/13
Project: TOC_01-176_20130905 WORFDB7, F&BI 309069

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 309069-01 (Duplicate)

| Analyte | Reporting Units | Sample Result | Duplicate Result | RPD (Limit 20) |
|---|---|---|---|---|
| Benzene | ug/L (ppb) | <1 | <1 | nm |
| Toluene | ug/L (ppb) | <1 | <1 | nm |
| Ethylbenzene | ug/L (ppb) | <1 | <1 | nm |
| Xylenes | ug/L (ppb) | <3 | <3 | nm |
| Gasoline | ug/L (ppb) | <100 | <100 | nm |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Benzene | ug/L (ppb) | 50 | 89 | 65-118 |
| Toluene | ug/L (ppb) | 50 | 90 | 72-122 |
| Ethylbenzene | ug/L (ppb) | 50 | 92 | 73-126 |
| Xylenes | ug/L (ppb) | 150 | 91 | 74-118 |
| Gasoline | ug/L (ppb) | 1,000 | 104 | 69-134 |

Date of Report: 09/13/13
Date Received: 09/05/13
Project: TOC_01-176_20130905 WORFDB7, F&BI 309069

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260C

Laboratory Code: 309069-01 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result | Percent Recovery MS | Acceptance Criteria |
|---|---|---|---|---|---|
| Methyl t-butyl ether (MTBE) | ug/L (ppb) | 50 | <1 | 104 | 68-125 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| Methyl t-butyl ether (MTBE) | ug/L (ppb) | 50 | 106 | 110 | 70-122 | 4 |

# Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

A1 – More than one compound of similar molecule structure was identified with equal probability.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for this range fell outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte indicated may be due to carryover from previous sample injections.

d - The sample was diluted. Detection limits may be raised due to dilution.

ds - The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.

dv - Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.

fb - Analyte present in the blank and the sample.

fc – The compound is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. The variability is attributed to sample inhomogeneity.

ht - Analysis performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.

j – The result is below normal reporting limits. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.

jr - The rpd result in laboratory control sample associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the compound indicated is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc – The sample was received in a container not approved by the method. The value reported should be considered an estimate.

pr – The sample was received with incorrect preservation. The value reported should be considered an estimate.

ve - Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

309069

# SAMPLE CHAIN OF CUSTODY

ME 09/05/13 V3

Send Report To: Dee Gardner; Suzanne Stumpf
Company: Sandeavan Strategies
Address: 2811 Fairview Ave
City, State, ZIP: Seattle, WA
Phone #: 206-306-1900 Fax #:

SAMPLERS (signature): ELIZABETH FORBES, KRISTA GARRETT, LARRY NAMBA, DANIEL NAYLOR

PROJECT NAME/NO.: Mountlake Terrace 01-176 0440-030

PO #:

REMARKS: Trip blank supplied by Laboratory.

GEMS Y / N

Page # 1 of 1

TURNAROUND TIME
- [x] Standard (2 Weeks)
- [ ] RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- [x] Dispose after 30 days
- [ ] Return samples
- [ ] Will call with instructions

| Sample ID | Sample Location | Sample Depth | Lab ID | Date Sampled | Time Sampled | Matrix | # of jars | NWTPH-Dx | NWTPH-Gx | BTEX by 8021B | VOC's by 8260 | SVOC's by 8270 | RCRA-8 Metals | MTBE | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW65-20130904-BL | MW65 | 47 | 01 A-D | 09/04/13 | 1305 | H2O | 4 | | X | X | | | | X | | |
| MW70-20130904-PN | MW70 | | 02 A-D | 09/04/13 | 1316 | | 4 | | X | X | | | | X | | |
| MW77-20130904-BA | MW77 | | 03 A-D | 09/04/13 | 1215 | | 4 | | X | X | | | | X | | |
| MW85-20130904-BL | MW85 | 43 | 04 A-C | 09/04/13 | 1050 | | 3 | | X | X | | | | X | | |
| MW80-20130904-BL | MW80 | 43.5 | 05 A-D | 09/04/13 | 1153 | | 4 | | X | X | | | | X | | |
| MW82-20130904-BL2 | MW82 | 43.5 | 06 A-D | 09/04/13 | 1130 | | 4 | | X | X | | | | X | | |
| MW89-20130904-BL | MW89 | 45 | 07 A-D | 09/04/13 | 1417 | | 4 | | X | X | | | | X | | |
| ~~MW65-20130904-BL~~ | ~~MW65~~ | 47 | | 09/04/13 | 1305 | | 4 | | X | X | | | | X | | ~~KKG~~ |
| TRIP-24309 | | | 08 A-B | | | H2O | 2 | | | X | | | | X | | |
| | | | | | KKG | 09/05/2013 | | | | | | | | | | |

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

| | SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|---|
| Relinquished by: | Krista Garrett | KRISTA GARRETT | Sandeavan | 9/5/13 | 1547 |
| Received by: | | VINA | FBI | 9/5/13 | 1547 |
| Relinquished by: | | | | | |
| Received by: | | | | | |

FORMS\COC\SESGEMSR1.DOC (Revision 1)

Samples received at 4 °C

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Kurt Johnson, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

September 24, 2013

Dee Gardner, Project Manager
SoundEarth Strategies
2811 Fairview Ave. East, Suite 2000
Seattle, WA 98102

Dear Ms. Gardner:

Included are the results from the testing of material submitted on September 17, 2013 from the TOC_01-176_20130917 WORFDB7, F&BI 309292 project. There are 7 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Audrey Hackett, Beau Johnson
SOU0924R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on September 17, 2013 by Friedman & Bruya, Inc. from the SoundEarth Strategies TOC_01-176_20130917 WORFDB7, F&BI 309292 project. Samples were logged in under the laboratory ID's listed below.

| Laboratory ID | SoundEarth Strategies |
|---|---|
| 309292 -01 | MW84-20130917-BL |

All quality control requirements were acceptable.

Date of Report: 09/24/13
Date Received: 09/17/13
Project: TOC_01-176_20130917 WORFDB7, F&BI 309292
Date Extracted: 09/17/13
Date Analyzed: 09/17/13

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx**

Results Reported as ug/L (ppb)

| Sample ID<br>Laboratory ID | Benzene | Toluene | Ethyl Benzene | Total Xylenes | Gasoline Range | Surrogate (% Recovery)<br>(Limit 52-124) |
|---|---|---|---|---|---|---|
| MW84-20130917-BL<br>309292-01 | <1 | <1 | 1.1 | <3 | 130 | 91 |
| Method Blank<br>03-1867 MB | <1 | <1 | <1 | <3 | <100 | 93 |

## Analysis For Volatile Compounds By EPA Method 8260C

| | | | |
|---|---|---|---|
| Client Sample ID: | MW84-20130917-BL | Client: | SoundEarth Strategies |
| Date Received: | 09/17/13 | Project: | TOC_01-176_20130917 WORFDB7 |
| Date Extracted: | 09/18/13 | Lab ID: | 309292-01 |
| Date Analyzed: | 09/18/13 | Data File: | 091808.D |
| Matrix: | Water | Instrument: | GCMS4 |
| Units: | ug/L (ppb) | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 98 | 57 | 121 |
| Toluene-d8 | 107 | 63 | 127 |
| 4-Bromofluorobenzene | 100 | 60 | 133 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Methyl t-butyl ether (MTBE) | <1 |

## Analysis For Volatile Compounds By EPA Method 8260C

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | SoundEarth Strategies |
| Date Received: | NA | Project: | TOC_01-176_20130917 WORFDB7 |
| Date Extracted: | 09/18/13 | Lab ID: | 03-1839 mb |
| Date Analyzed: | 09/18/13 | Data File: | 091807.D |
| Matrix: | Water | Instrument: | GCMS4 |
| Units: | ug/L (ppb) | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 86 | 57 | 121 |
| Toluene-d8 | 96 | 63 | 127 |
| 4-Bromofluorobenzene | 84 | 60 | 133 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Methyl t-butyl ether (MTBE) | <1 |

Date of Report: 09/24/13
Date Received: 09/17/13
Project: TOC_01-176_20130917 WORFDB7, F&BI 309292

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 309272-05 (Duplicate)

| Analyte | Reporting Units | Sample Result | Duplicate Result | RPD (Limit 20) |
|---|---|---|---|---|
| Benzene | ug/L (ppb) | <1 | <1 | nm |
| Toluene | ug/L (ppb) | <1 | <1 | nm |
| Ethylbenzene | ug/L (ppb) | <1 | <1 | nm |
| Xylenes | ug/L (ppb) | <3 | <3 | nm |
| Gasoline | ug/L (ppb) | <100 | <100 | nm |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Acceptance Criteria |
|---|---|---|---|---|
| Benzene | ug/L (ppb) | 50 | 90 | 65-118 |
| Toluene | ug/L (ppb) | 50 | 92 | 72-122 |
| Ethylbenzene | ug/L (ppb) | 50 | 93 | 73-126 |
| Xylenes | ug/L (ppb) | 150 | 93 | 74-118 |
| Gasoline | ug/L (ppb) | 1,000 | 105 | 69-134 |

Date of Report: 09/24/13
Date Received: 09/17/13
Project: TOC_01-176_20130917 WORFDB7, F&BI 309292

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260C

Laboratory Code: 309290-01 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result | Percent Recovery MS | Acceptance Criteria |
|---|---|---|---|---|---|
| Methyl t-butyl ether (MTBE) | ug/L (ppb) | 50 | <1 | 110 | 74-127 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| Methyl t-butyl ether (MTBE) | ug/L (ppb) | 50 | 98 | 113 | 64-147 | 14 |

# Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

A1 – More than one compound of similar molecule structure was identified with equal probability.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for this range fell outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte indicated may be due to carryover from previous sample injections.

d - The sample was diluted. Detection limits may be raised due to dilution.

ds - The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.

dv - Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.

fb - Analyte present in the blank and the sample.

fc – The compound is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. The variability is attributed to sample inhomogeneity.

ht - Analysis performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.

j – The result is below normal reporting limits. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.

jr - The rpd result in laboratory control sample associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the compound indicated is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc – The sample was received in a container not approved by the method. The value reported should be considered an estimate.

pr – The sample was received with incorrect preservation. The value reported should be considered an estimate.

ve - Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

309292

# SAMPLE CHAIN OF CUSTODY ME 09-17-13

Page # 1 of 1

Send Report To Dee Gardner

Company SoundEarth Strategies, Inc.

Address 2811 Fairview Ave E, Suite 2000

City, State, ZIP Seattle, WA 98102

Phone # 206-306-1900 Fax # 206-306-1907

SAMPLERS (signature) D. Naylor

PROJECT NAME/NO. TOC Holding Co. Facility No. 01-176 Mountlake Terrace

PO # 1

REMARKS

GEMS Y / N

TURNAROUND TIME
- ☐ Standard (2 Weeks)
- ☒ RUSH 2Day per DN

Rush charges authorized by: MG

SAMPLE DISPOSAL
- ☒ Dispose after 30 days
- ☐ Return samples
- ☐ Will call with instructions

| Sample ID | Sample Location | Sample Depth | Lab ID | Date Sampled | Time Sampled | Matrix | # of jars | ANALYSES REQUESTED: NWTPH-Dx | NWTPH-Gx | BTEX by 8021B | VOC's by 8260 | SVOC's by 8270 | RCRA-8 Metals | MTBE by 8260C | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW84-20130917-DN | MW84 | 45.5 | 01A-D | 9/17/13 | 1109 | W | 4 | | X | X | | | | X | | |
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| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | Danny Naylor | SoundEarth | 9/17/13 | 1255 |
| Received by: | Michele Costeles Pogiz | F&B | 9/17/13 | 1255 |
| Relinquished by: | | | | |
| Received by: | DO VO | F&B | 9-17-13 | 13:00 |

Samples received at 5 °C

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Kurt Johnson, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

September 24, 2013

Dee Gardner, Project Manager
SoundEarth Strategies
2811 Fairview Ave. East, Suite 2000
Seattle, WA 98102

Dear Ms. Gardner:

Included are the results from the testing of material submitted on September 17, 2013 from the TOC_01-176_20130917 WORFDB7, F&BI 309293 project. There are 5 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Audrey Hackett, Beau Johnson
SOU0924R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on September 17, 2013 by Friedman & Bruya, Inc. from the SoundEarth Strategies TOC_01-176_20130917 WORFDB7, F&BI 309293 project. Samples were logged in under the laboratory ID's listed below.

| Laboratory ID | SoundEarth Strategies |
|---|---|
| 309293 -01 | 01-176-20130916-R01 |

All quality control requirements were acceptable.

## Analysis For Volatile Compounds By EPA Method 8260C

| | | | |
|---|---|---|---|
| Client Sample ID: | 01-176-20130916-R01 | Client: | SoundEarth Strategies |
| Date Received: | 09/17/13 | Project: | TOC_01-176_20130917 WORFDB7 |
| Date Extracted: | 09/18/13 | Lab ID: | 309293-01 |
| Date Analyzed: | 09/18/13 | Data File: | 091809.D |
| Matrix: | Water | Instrument: | GCMS4 |
| Units: | ug/L (ppb) | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 95 | 57 | 121 |
| Toluene-d8 | 95 | 63 | 127 |
| 4-Bromofluorobenzene | 102 | 60 | 133 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Methyl t-butyl ether (MTBE) | <1 |
| Benzene | <0.35 |
| Toluene | <1 |
| Ethylbenzene | <1 |
| m,p-Xylene | <2 |
| o-Xylene | <1 |

## Analysis For Volatile Compounds By EPA Method 8260C

| | | | |
|---|---|---|---|
| Client Sample ID: | Method Blank | Client: | SoundEarth Strategies |
| Date Received: | Not Applicable | Project: | TOC_01-176_20130917 WORFDB7 |
| Date Extracted: | 09/18/13 | Lab ID: | 03-1839 mb |
| Date Analyzed: | 09/18/13 | Data File: | 091807.D |
| Matrix: | Water | Instrument: | GCMS4 |
| Units: | ug/L (ppb) | Operator: | VM |

| Surrogates: | % Recovery: | Lower Limit: | Upper Limit: |
|---|---|---|---|
| 1,2-Dichloroethane-d4 | 86 | 57 | 121 |
| Toluene-d8 | 96 | 63 | 127 |
| 4-Bromofluorobenzene | 84 | 60 | 133 |

| Compounds: | Concentration ug/L (ppb) |
|---|---|
| Methyl t-butyl ether (MTBE) | <1 |
| Benzene | <0.35 |
| Toluene | <1 |
| Ethylbenzene | <1 |
| m,p-Xylene | <2 |
| o-Xylene | <1 |

Date of Report: 09/24/13
Date Received: 09/17/13
Project: TOC_01-176_20130917 WORFDB7, F&BI 309293

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260C

Laboratory Code: 309290-01 (Matrix Spike)

| Analyte | Reporting Units | Spike Level | Sample Result | Percent Recovery MS | Acceptance Criteria |
|---|---|---|---|---|---|
| Methyl t-butyl ether (MTBE) | ug/L (ppb) | 50 | <1 | 110 | 74-127 |
| Benzene | ug/L (ppb) | 50 | 290 | 185 b | 76-125 |
| Toluene | ug/L (ppb) | 50 | 43 | 94 b | 76-122 |
| Ethylbenzene | ug/L (ppb) | 50 | 200 | 134 b | 69-135 |
| m,p-Xylene | ug/L (ppb) | 100 | 230 | 98 b | 69-135 |
| o-Xylene | ug/L (ppb) | 50 | 39 | 99 b | 60-140 |

Laboratory Code: Laboratory Control Sample

| Analyte | Reporting Units | Spike Level | Percent Recovery LCS | Percent Recovery LCSD | Acceptance Criteria | RPD (Limit 20) |
|---|---|---|---|---|---|---|
| Methyl t-butyl ether (MTBE) | ug/L (ppb) | 50 | 98 | 113 | 64-147 | 14 |
| Benzene | ug/L (ppb) | 50 | 94 | 96 | 69-134 | 2 |
| Toluene | ug/L (ppb) | 50 | 111 | 114 | 72-122 | 3 |
| Ethylbenzene | ug/L (ppb) | 50 | 97 | 95 | 77-124 | 2 |
| m,p-Xylene | ug/L (ppb) | 100 | 93 | 97 | 83-125 | 4 |
| o-Xylene | ug/L (ppb) | 50 | 95 | 101 | 81-121 | 6 |

# Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

A1 – More than one compound of similar molecule structure was identified with equal probability.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for this range fell outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte indicated may be due to carryover from previous sample injections.

d - The sample was diluted. Detection limits may be raised due to dilution.

ds - The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.

dv - Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.

fb - Analyte present in the blank and the sample.

fc – The compound is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. The variability is attributed to sample inhomogeneity.

ht - Analysis performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.

j – The result is below normal reporting limits. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.

jr - The rpd result in laboratory control sample associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the compound indicated is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc – The sample was received in a container not approved by the method. The value reported should be considered an estimate.

pr – The sample was received with incorrect preservation. The value reported should be considered an estimate.

ve - Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

309893 309293

# SAMPLE CHAIN OF CUSTODY ME 09-17-13 V1

Send Report To Dee Gardner
Company Sound Earth Strategies
Address 2811 Fairview Avenue East, Suite 2000
City, State, ZIP Seattle, WA 98102
Phone # 206.306.1900 Fax # 206.306.1907

SAMPLERS (signature): L. Namba
PROJECT NAME/NO.: TOC Holdings - Mountlake Terrace 01-176 0440-030-18
PO #:
REMARKS:
GEMS Y / N



TURNAROUND TIME
☑ Standard (2 Weeks)
~~☐ RUSH~~ No Rush per DN
Rush charges authorized by:

SAMPLE DISPOSAL
☑ Dispose after 30 days
☐ Return samples
☐ Will call with instructions

| Sample ID | Sample Location | Sample Depth | Lab ID | Date Sampled | Time Sampled | Matrix | # of jars | NWTPH-Dx | NWTPH-Gx | BTEX by 8021B | VOC's by 8260 | SVOC's by 8270 | RCRA-8 Metals | MTBE by 8021B | | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 01176-20130916-R01 | R01 | | 01A-C | 09/16/13 | 1615 | Water | 3 | | | ✓ | | | | ✓ | | |
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ANALYSES REQUESTED

| SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|
| Relinquished by: | Danny Naylor | SoundEarth | 9/17/13 | 1255 |
| Received by: | Michele Costales Poquiz | PEBI | 9/17/13 | 1255 |
| Relinquished by: | | | | |
| Received by: | | | | |

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044



Samples received at 5 °C